APX

APDS PARKING
EXTENSIONS

Data Dictionary

APX Specification: technical documentation

Version 0.16.0 (draft)

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Introduction

This data dictionary gives the definitions and characteristics of every class, attribute, association role, enumeration and external code list that the APX API defines. It is generated from the normative OpenAPI document, `spec/dist/apx-v1.yaml`, each time the documents are built, so it always matches the API.

It follows the layout of the APDS 4.1 Data Dictionary:

- **A.1** is ordered by package. APX has one package per module. Each package lists its classes, specializations, associations and attributes.
- **A.2** lists the datatypes.
- **A.3** lists the enumerations alphabetically.
- **A.4** lists the external code lists (APX registries) with every entry.
- **Annex B** lists the APDS 4.1 classes APX carries, and says where the APX overlay adds to or corrects them.
- **Annex C** links each APX class to the data element proposed from it to APDS.

APDS 4.1 classes are not redefined here. Where an APX member uses one, its type names the APDS domain and class (for example `Session.Session`), and its definition is in the APDS 4.1 Data Dictionary.

How to read the tables

The tables use the columns of the APDS 4.1 Data Dictionary, with three additions for APX:

1. **Class name:** the symbolic name (UpperCamelCase) of the class, as it appears in the OpenAPI document.
2. **Association end / Attribute name:** the symbolic name of the member. A member of an unnamed structure is written `owner.member`.
3. **Designation:** the name in natural language.
4. **Definition:** the definition, taken from the OpenAPI document. Where the document gives none, the definition of the referenced class is used, or the wording APX uses for the same member elsewhere. A definition marked ‡ was derived from the member's name because the API gives no description. A definition marked † was written by the editors from the APX standard text because the API gives none. Both marks show where the OpenAPI descriptions should be filled in, so that a later edition can drop the marks. An enumeration value shown with "—" has no definition yet.
5. **Kind:** `class`, `union` (one of several shapes) or `enumeration`.
6. **Multiplicity:** written m..n, as in APDS. m is 0 for optional and 1 or more for mandatory; n is a number or `*`.
7. **Target / Type:** the class, datatype or enumeration of the member, written `Domain.Name` for APDS 4.1 types and `Package.Name` for APX types. "code list" names the APX registry whose values the member takes.
8. **Notes (APX):** `read-only` (set by the server), `write-only` (accepted on input, never returned), `nullable` (may be sent as null) and `deprecated`.
9. **APDS status (APX):** `APX only` when the class stays in the APX specification, or the APDS element proposed from it and its tier (see 06 Requests to APDS).

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A.1 Data dictionary of packages for "APX"

A.1.1 "Common" package

A.1.1.1 Location of "Common" package. The location of the "Common" package is:

`-- APX/Common` (source: `spec/openapi/domains/common/schemas.yaml`; normative text: APX Parts 4, 5, 10 and 12)

A.1.1.2 Classes of the "Common" package

Table A.1 -- Classes of the "Common" package

Class name	Designation	Definition	Kind	APDS status
ApxResourceCore	Apx resource core	Identity core shared by every APX-defined resource. Shaped so any APX resource can itself be the target of an APDS Reference or VersionedReference (RFC 4122 UUID identifier + integer version).	class	APX only
CodeListValue	Code list value	A value drawn from an APX or implementer UserDefinedCodeList — carries the defined value plus an optional ReferencedCodeListEntry-style pointer to the list that defines it.	class	APX only
CredentialDigest	Credential digest	The `apds-ext:apx:credential-digest@1.0` decoration (Part 9 §9.6 rule 6): a keyed digest of a normalized credential identification (a plate), so a consumer that only needs "same plate?" can match without the plate itself. `value` is base64url(HMAC-SHA-256(key, normalized identification)); the key is named by `keyId` and distributed through `GET /v1/digest-keys`. Visible under `apx.data:read`.	class	APX only
EventEnvelope	Event envelope	The single envelope for all APX asynchronous delivery (webhooks and SSE). Attribute names are aligned with CloudEvents 1.0 (informative mapping in the standard's annex); `subject` carries an APDS Reference so events bind to APDS/APX entities natively.	class	APX only
Extensions	Extensions	The official APDS extension container (Use Case Document §C.2.5). Keys MUST follow `apds-ext:<namespace>:<class>@<major>.<minor>`. Implementations MUST preserve unknown extension keys on round-trip (tolerant reader, faithful writer). An APX decoration key, wherever the container appears, MUST carry a value valid against that decoration's schema (Part 4 §4.3); other keys are any object.	class	APX only
Problem	Problem	RFC 9457 problem details. APX problem `type` URIs are registered in the APX problem-type registry. Used for all APX error responses; APDS-native routes may alternatively use the APDS ResponseStatus shape.	class	APX only

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Class name	Designation	Definition	Kind	APDS status
RecordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	class	Proposed: RecordType (Tier 3)

A.1.1.3 Specializations of the "Common" package

There are no specializations in the "Common" package.

A.1.1.4 Associations of the "Common" package

Table A.2 -- Associations of the "Common" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ApxResourceCore	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
CodeListValue	codeListId	Code list id	VersionedReference to the defining UserDefinedCodeList.	0..1	PkCommon.VersionedReference	
EventEnvelope	subject	Subject	The entity this event is about.	0..1	PkCommon.Reference	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
Extensions	apds-ext:apx:devicestatus@1.0	0	Live state overlay keyed by Reference to an APDS SupplementalEquipment — never duplicates its descriptive fields. APDS 4.1 has no general equipment status list: its RefillPointStatusEnum (Data Dictionary A.3.53) covers refill points only and is absent from apds-api-4.1.yaml. deviceState values come from the APX registry apx-device-states, which follows that enumeration's style and shares its available, occupied, inoperative and unknown values. Attachable to APDS payloads as apds-ext:apx:devicestatus@1.0.	0..1	Control.DeviceStatus	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	apds-ext:apx:ratepolicy@1.0	0	Level B decoration on an APDS RateTable, carried in its `extensions` container as `apds-ext:apx:ratepolicy@1.0` (Part 6 §6.6). APDS models the rate deck completely; it has no way to say which tables an agent may offer as a negotiated rate. This is that flag — and because it rides inside the RateTable, every consumer mirroring the deck through the native `/rates` route (Part 5 §5.2) receives it with the table, no second query. APX deliberately defines NO selection rules here (length of stay, time of day, caller type): the system presenting the deck to an agent or a third party applies its own guardrails. The server's only rule is enforcement — a pushNegotiatedRate naming a table that is not flagged negotiable is refused (422 rate-not-negotiable).	0..1	Control.RatePolicy	
	apds-ext:apx:lpr-read@1.0	0	What a modern LPR camera knows beyond the plate string and one overall score (Part 13 §13.3a). Carried on the ingested APDS Observation as the Level B decoration `apds-ext:apx:lpr-read@1.0` in its `extensions` container (Part 4 §4.3 — plain APDS consumers ignore it), and projected on `LprRead.detail` and `PlateCandidate.detail`. Every field optional; each recognized attribute carries its own confidence. APDS's `vehicleAncillaryIdentification` (country, stateProvince, make, model, color) remains the APDS-visible copy of the winning values; this block adds the per-attribute confidence, the candidates that lost, and the passage geometry APDS has no fields for.	0..1	Lpr.LprReadDetail	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	apds-ext:apx:lane-cameras@1.0	0	The LPR cameras on a lane and which way each one faces (Part 13 §13.3a(5)). Carried on an APDS VehicularAccess as the Level B decoration `apds-ext:apx:lane-cameras@1.0` in its `extensions` container (Part 4 §4.3). Facing is relative to the facility, not to the lane's mode, so it holds on `reversible` lanes. Describes the setup only; APX derives nothing from it.	0..1	Lpr.LaneCameras	
	apds-ext:apx:reservation@1.0	0	The apds-ext:apx:reservation@1.0 extension object attached to a native AssignedRight. Presence of this extension marks the AssignedRight as a reservation; state transitions follow Part 14 §14.1 (transition table). `plannedStart`/`plannedEnd` MUST mirror the AssignedRight's `plannedUses[0].startTime`/`endTime`, which is authoritative.	0..1	Reservations.ReservationExtension	
	apds-ext:apx:permit@1.0	0	The `apds-ext:apx:permit@1.1` extension object (Part 14 §14.2; `@1.0` remains valid and carries the first two members only): links a renewal permit to the one it renews, so a portal can follow the chain, and caps how many of a multi-vehicle permit's vehicles may be parked at once (§14.2d).	0..1	Reservations.PermitExtension	
	apds-ext:apx:permit@1.1	1	The `apds-ext:apx:permit@1.1` extension object (Part 14 §14.2; `@1.0` remains valid and carries the first two members only): links a renewal permit to the one it renews, so a portal can follow the chain, and caps how many of a multi-vehicle permit's vehicles may be parked at once (§14.2d).	0..1	Reservations.PermitExtension	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	apds-ext:apx:session-detail@1.0	0	The `apds-ext:apx:session-detail@1.0` decoration on an APDS Session (Part 5 §5.8): what the pairing of reads decided and APDS has no members for — the reads behind the visit, why and how it ended, the matches it rests on, and the parent visit of an area Session. Written with the native Session POST/PUT by an external pairing engine; a server that pairs reads itself SHOULD write the same block on its own Sessions. A plain APDS client ignores it. It adds no event topic and carries no plate characters. A write that breaks a consistency rule of §5.8 is 422 and nothing is written.	0..1	Data.SessionDetail	
	apds-ext:apx:match-evidence@1.0	0	How a link to a Session was established and how sure it is (Part 5 §5.8; shared by the `matches[]` member of `apds-ext:apx:session-detail@1.0` and the decoration `apds-ext:apx:match-evidence@1.0` on a Violation or ValetTicket). Carries no plate characters and no vehicle attribute values (Part 9 §9.6). Where both ends of one link carry evidence (the Session's `matches[]` entry and the decoration on the Violation or ValetTicket), the two MUST agree. Evidence with `plate.method: lenient` or `applied: false` may excuse a stay but never accuse one: `issue` on a Violation resting on it is 409 `violation-not-issuable` (Part 19 §19.4 rule 5).	0..1	Data.MatchEvidence	
	apds-ext:apx:stay-compliance@1.0	0	The `apds-ext:apx:stay-compliance@1.0` decoration on an APDS Session (Part 5 §5.9): the outcome a compliance engine scored for the stay, and the policy it measured against. Written with the native Session POST/PUT by the engine; a server that scores stays itself SHOULD write the same block. The rules that produce the outcome stay in the engine.	0..1	Data.StayCompliance	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	apds-ext:apx:violation-source@1.0	0	The `apds-ext:apx:violation-source@1.0` decoration (Part 19 §19.13): a violation issued by an external enforcement system and imported through `POST /v1/enforcement/violation-imports`, keyed on `system` + `recordId`. `sourceRevision`, or without one `sourceUpdatedTime`, orders the source's revisions.	0..1	Violations.ViolationSource	
	apds-ext:apx:payment-detail@1.0	0	The `apds-ext:apx:payment-detail@1.0` decoration (Part 13 §13.6a) on a `PaymentRecord` or an APDS `Payment`: the rate sold and the lines that sum to the total, so revenue reports and the deck price check have the base amount, the fee, and the product without a bilateral code. On a `PaymentRecord` it carries `rateSold` and `lines`; on a native APDS `Payment` it carries `rateSold` only, because the Payment's own `paymentLines` are the itemization there.	0..1	Accounts.PaymentDetail	
	apds-ext:apx:credential-digest@1.0	0	The `apds-ext:apx:credential-digest@1.0` decoration (Part 9 §9.6 rule 6): a keyed digest of a normalized credential identification (a plate), so a consumer that only needs "same plate?" can match without the plate itself. `value` is base64url(HMAC-SHA-256(key, normalized identification)); the key is named by `keyId` and distributed through `GET /v1/digest-keys`. Visible under `apx.data:read`.	0..1	Common.CredentialDigest	
	apds-ext:apx:equipment-detail@1.0	0	What a piece of hardware is, where it is, and what it does (Part 26 §26.1). Carried on an APDS SupplementalEquipment as the Level B decoration `apds-ext:apx:equipment-detail@1.0` in its `extensions` container (Part 4 §4.3). The equipment TYPE stays the APDS `EquipmentTypeEnum` (often `paymentMachine` or `other`); `role` says what the item does on the site, from the fixed code list `apx-equipment-roles`.	0..1	SiteConfiguration.EquipmentDetail	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	apds-ext:apx:camera@1.0	0	A camera anywhere on the site, not only on a lane (Part 26 §26.3). Carried on a SupplementalEquipment whose EquipmentDetail `role` is `camera`, as the Level B decoration `apds-ext:apx:camera@1.0`. Where the camera is (`area`, `level`, `lane`) and what it is built into (`builtInto`) are EquipmentDetail members, shared with every other piece of hardware; this decoration adds how it is mounted, what it looks at, and how it can be viewed. It holds no addresses, usernames or passwords: a view is obtained through `POST /v1/cameras/{id}/views` and the password never leaves the site (Part 26 §26.3). Camera models and stream profiles follow ONVIF (Profile S, Profile T) and are not redefined. `apds-ext:apx:lane-cameras@1.0` (Part 13) is unchanged.	0..1	SiteConfiguration.CameraDetail	
	apds-ext:apx:external-ids@1.0	0	The ids other systems use for the same place, lane or equipment (Part 26 §26.6). Carried on any HierarchyElement as the Level B decoration `apds-ext:apx:external-ids@1.0`. APDS `SupplementalFacility.externalIdentifiers` holds untyped strings; here each id says which system issued it. `system` is a URI the issuer owns, usually its own domain, so APX names no products or platforms. `POST /v1/identifiers:resolve` finds the APX record from such an id.	0..1	SiteConfiguration.ExternalIdentifiers	
	apds-ext:apx:place-operations@1.0	0	Operational facts about a place that a call centre needs before a call (Part 26 §26.5). Carried on a place HierarchyElement as the Level B decoration `apds-ext:apx:place-operations@1.0`. `escalationContacts` lists roles in calling order, never names or phone numbers: the call platform holds those, so APX carries no personal contact data. A Part 17 approval request is addressed to a role from this list.	0..1	SiteConfiguration.PlaceOperations	
RecordInfo	creator	Creator	Reference to the creating Organisation or Contact.	0..1	PkCommon.Reference	

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A.1.1.5 Attributes of the "Common" package

Table A.3 -- Attributes of the "Common" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
ApxResourceCore	id	Id	RFC 4122 UUID, unique within the resource class.	1..1	Uuid	
	version	Version	Monotonically increasing object version.	1..1	Integer	
CodeListValue	value	Value	The definedValue from the code list entry.	1..1	String	
CredentialDigest	alg	Alg	The digest algorithm: HMAC-SHA-256. †	1..1	CredentialDigest.alg (enumeration)	
	keyId	Key id	The digest key the value was computed under (rotation by keyId).	1..1	String	
	value	Value	base64url, no padding.	1..1	String	
	credentialType	Credential type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	0..1	Right.CredentialTypeEnum	
EventEnvelope	id	Id	Unique event id (delivery-stable; retries reuse it).	1..1	Uuid	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	type	Type	Event topic. Either an APX topic (`apx.<domain>.<event>.vN`) or an APDS EventTypeEnum value (e.g. `SessionCreated`).	1..1	String	
	source	Source	Identifies the publishing implementation/site.	1..1	String	
	time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	dataschema	Dataschema	Optional URI of the schema that `data` validates against.	0..1	Url	
	data	Data	Event payload. For APDS EventTypeEnum topics this is the APDS EventData shape.	1..1	Object	
Problem	type	Type	Problem type URI from the APX problem registry.	1..1	Url	
	title	Title	Short human-readable summary of the problem type.	1..1	String	
	status	Status	HTTP status code.	1..1	Integer	
	detail	Detail	Human-readable explanation specific to this occurrence.	0..1	String	
	instance	Instance	URI reference identifying this specific occurrence.	0..1	String	
RecordInfo	creationTime	Creation time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	creationUser	Creation user	Human or system principal that created the record.	0..1	String	
	lastUpdate	Last update	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	lastUpdateUser	Last update user	Human or system principal that last updated the record.	0..1	String	
	origin	Origin	The implementation that first created the record, when it differs from the one serving it (Part 18 §18.6 replication): the origin's `EventEnvelope.source` value. Absent on records the serving implementation created itself.	0..1	String	

A.1.2 "Discovery" package

A.1.2.1 Location of "Discovery" package. The location of the "Discovery" package is:

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`-- APX/Discovery` (source: `spec/openapi/domains/discovery/schemas.yaml`; normative text: APX Part 16)

A.1.2.2 Classes of the "Discovery" package

Table A.4 -- Classes of the "Discovery" package

Class name	Designation	Definition	Kind	APDS status
ApxConfiguration	Apx configuration	Unauthenticated bootstrap configuration document.	class	APX only
DiscoveryDocument	Discovery document	What THIS credential can do: exactly the endpoints, commands, topics, and places reachable with the presented token's scopes and grants. Two clients with different grants receive different documents; a client can call everything its document lists and nothing more.	class	APX only

A.1.2.3 Specializations of the "Discovery" package

There are no specializations in the "Discovery" package.

A.1.2.4 Associations of the "Discovery" package

Table A.5 -- Associations of the "Discovery" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ApxConfiguration	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
DiscoveryDocument	organisation	Organisation	The client's Organisation (token claim apx_org).	0..1	PkCommon.Reference	
	uiSurfaces	Ui surfaces	The vendor screens this client may launch (Part 25 §25.1), each with its display and launch modes and the actions it reports back. Present only when the host implements `apx-ui-launch` and the client holds `apx.ui:launch`.	0..*	UiLaunch.UiSurface	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

A.1.2.5 Attributes of the "Discovery" package

Table A.6 -- Attributes of the "Discovery" package

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
ApxConfiguration	apxVersion	Apx version	APX standard version implemented (semver). This is the edition (Part 3 §3.4) whose Parts and registries the implementation follows; when `edition` is also present the two are equal.	1..1	String	
	edition	Edition	The APX edition implemented (Part 3 §3.4), as named in its `spec/edition.json`.	0..1	String	
	apdsVersion	Apds version	APDS version this implementation extends.	1..1	String	
	tokenEndpoint	Token endpoint	OAuth2 token endpoint (client-credentials grant).	1..1	Url	
	apiBase	Api base	The URL every path in the bundle is relative to (APX `/v1/…` and APDS-native routes alike). Absent means the origin root that serves this document. REQUIRED when the API is mounted elsewhere (Part 16 §16.1).	0..1	Url	
	conformanceClasses	Conformance classes	APX conformance classes this implementation supports, closed under the Part 3 §3.1 dependency table, plus any vendor classes (`<vendor-ns>-<class>`). Clients ignore classes they do not recognise.	0..*	String	
	features	Features	Optional features the implementation offers — definedValues from `apx-features` or vendor features (Part 6 §6.5, Part 11, Part 16 §16.1).	0..*	String (code list apx-features)	
	registries	Registries	Locations of the published UserDefinedCodeList registries, keyed by the registry `name` from Part 11 (vendor lists by their own name).	0..1	Map of Url	
	registryVersions	Registry versions	The version of each registry the implementation validates against, keyed as `registries`.	0..1	Map of Integer	
DiscoveryDocument	client	Client	The OAuth client id this document was computed for.	1..1	String	
	conformanceClasses	Conformance classes	Server classes usable by this client (intersection with its scopes). Always a subset of the bootstrap document's `conformanceClasses` (Part 16 §16.2).	0..*	String	
	scopes	Scopes	The scopes of the presented token, reflected exactly (Part 16 §16.2). †	0..*	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	places	Places	Granted HierarchyElement subtree roots (token claim apx_places), reflected exactly. Fail-closed semantics (Part 9 §9.3): an empty array means NO places; the explicit wildcard entry "*" means all places. A token with no `apx_places` claim is reflected as `[]`, never by omitting the member (Part 16 §16.2).	0..*	String	
	endpoints	Endpoints	Callable endpoints (APDS-native, APX, and vendor routes under `/apx/x/<vendor-ns>/`), each callable for at least one target inside the granted places (Part 16 §16.2).	0..*	Structure (members below)	
	endpoints.path	Path	The OpenAPI path template exactly as it appears in the bundle (`/v1/commands/{id}`; APDS-native routes unchanged), relative to the bootstrap document's `apiBase`.	1..1	String	
	endpoints.methods	Methods	Upper-case HTTP method names.	0..*	String	
	commandTypes	Command types	Command types this client may execute (empty without apx.control:execute). A permission list; what the host offers is `features` (Part 16 §16.2).	0..*	String	
	features	Features	Optional features of claimed classes that this client may use (definedValues from `apx-features`, Part 11; Part 6 §6.5). Listed whenever the host offers the feature and the client holds a read or execute scope of the class, so a read-only client can see it too.	0..*	String (code list apx-features)	
	placeCapabilities	Place capabilities	What each granted place can do, before a call (Part 16 §16.2): the command types the site executes, the surfaces offered there, and the optional features it supports. A site with no revenue control link lists no command types, so an agent knows to use the vendor's screen instead. Absent when every place offers the same as the document-level `commandTypes`, `uiSurfaces` and `features`.	0..*	Structure (members below)	
	placeCapabilities.place	Place	The HierarchyElement subtree root the row applies to.	1..1	Uuid	
	placeCapabilities.commandTypes	Command types	The apx-command-types values this client may send at this place (Part 16 §16.2). †	0..*	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	placeCapabilities.uiSurfaces	Ui surfaces	apx-ui-surfaces values offered at this place.	0..*	String	
	placeCapabilities.features	Features	The apx-features values the implementation offers at this place. †	0..*	String	
	topics	Topics	Topics this client may subscribe to: APX registry topics, APDS `EventTypeEnum` values (Part 8), and vendor topics (`<vendor-ns>.`).	0..*	String	
	rateLimits	Rate limits	Advisory per-credential limits (Part 16 §16.2). Defined keys: `requestsPerMinute`, `commandsPerMinute`, `burst` (most requests in any one second), `subscriptionsMax`, `streamConnectionsMax`. Every value is a per-credential integer; other keys are advisory vendor additions.	0..1	Map of Integer	
	replication	Replication	Part 18 §18.6 — for a place this implementation shares with a replicated site or aggregator implementation, which side is authoritative for each entity class. A write to a class from the non-authoritative side is 409 `not-authoritative`. Absent when the implementation replicates nothing.	0..*	Structure (members below)	
	replication.place	Place	The HierarchyElement subtree root the row applies to.	1..1	Uuid	
	replication.class	Class	An APDS class (`Session`, `RateTable`…) or APX resource class (`Violation`, `Alert`…).	1..1	String	
	replication.authority	Authority	Which side, site or aggregator, is authoritative for the class at the place (Part 18 §18.6). †	1..1	DiscoveryDocument.replication.authority (enumeration)	
	replication.peer	Peer	The other implementation's `EventEnvelope.source`.	0..1	String	

A.1.3 "Data" package

A.1.3.1 Location of "Data" package. The location of the "Data" package is:

`-- APX/Data` (source: `spec/openapi/domains/data/schemas.yaml`; normative text: APX Parts 5 and 18)

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A.1.3.2 Classes of the "Data" package

Table A.7 -- Classes of the "Data" package

Class name	Designation	Definition	Kind	APDS status
AssignedRightChangePayload	Assigned right change payload	A change-mode body for native `PUT /rights/assigned/{id}` (Part 5 §5.1a): `id` plus only the AssignedRight members that changed; an absent member is unchanged and an explicit `null` clears it. Every member present is checked against the class, and a member the class does not define is refused. Generated at build time (tools/change-payloads.mjs); the generic ChangePayload remains the shape of change-feed items.	class	APX only
ChangeFeedCursor	Change feed cursor	`mode=change` only. Opaque cursor resuming strictly after the last change in this page (Part 5 §5.2 rules 1, 2, 5).	datatype	APX only
ChangeFeedGrantAdditions	Change feed grant additions	`mode=change` only. Present on the first page served after the credential's `apx_places` grant gained subtrees: the new subtree roots, which the client full-syncs with the route's `place` filter before relying on the feed for them (Part 5 §5.2 rule 7).	list	APX only
ChangeFeedNext	Change feed next	`mode=change` only. Link to the next page when more changes are immediately available (the same request with this page's `cursor`); null otherwise.	datatype	APX only
ChangeFeedPage	Change feed page	Response of a native APDS list route when called with `mode=change`. Items are VERBATIM APDS entities carrying only changed fields plus identity (change semantics per Part 5: explicit null = clear the field, absent = unchanged — generalizing APDS Use Case C.1.1.6). Deletions are APDS DeletedReferences (tombstones).	class	APX only
ChangeFeedTombstones	Change feed tombstones	`mode=change` only. Resources removed since the cursor (retention purge, Part 9 §9.6; release of a moved place, Part 18 §18.4), as APDS DeletedReferences carrying the APX resource's schema name as `className`. Retained for the cursor window (Part 5 §5.2 rule 4).	list	APX only
ChangeFeedUpdateMode	Change feed update mode	Present, with the value `change`, exactly when the page answers `mode=change` (Part 5 §5.2 rule 8); absent on an ordinary list page.	datatype	APX only
ChangePayload	Change payload	A change-mode payload for any native APDS entity class (Part 5 §5.1): the entity's identity plus only the members that changed. An absent member is unchanged; an explicit `null` clears it. Nested objects that carry their own `id` (a Session segment, say) follow the same rule.	class	APX only
ContactPointChangePayload	Contact point change payload	A change-mode body for native `PUT /contacts/{contactId}` (Part 5 §5.1a): `id` plus only the ContactPoint members that changed; an absent member is unchanged and an explicit `null` clears it. Every member present is checked against the class, and a member the class does not define is refused. Generated at build time (tools/change-payloads.mjs); the generic ChangePayload remains the shape of change-feed items.	class	APX only

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Class name	Designation	Definition	Kind	APDS status
HierarchyElementChangePayload	Hierarchy element change payload	A change-mode body for native `PUT /places/{id}` (Part 5 §5.1a): `id` plus only the HierarchyElement members that changed; an absent member is unchanged and an explicit `null` clears it. Every member present is checked against the class, and a member the class does not define is refused. Generated at build time (tools/change-payloads.mjs); the generic ChangePayload remains the shape of change-feed items.	class	APX only
MatchEvidence	Match evidence	How a link to a Session was established and how sure it is (Part 5 §5.8; shared by the `matches[]` member of `apds-ext:apx:session-detail@1.0` and the decoration `apds-ext:apx:match-evidence@1.0` on a Violation or ValetTicket). Carries no plate characters and no vehicle attribute values (Part 9 §9.6). Where both ends of one link carry evidence (the Session's `matches[]` entry and the decoration on the Violation or ValetTicket), the two MUST agree. Evidence with `plate.method: lenient` or `applied: false` may excuse a stay but never accuse one: `issue` on a Violation resting on it is 409 `violation-not-issuable` (Part 19 §19.4 rule 5).	class	Proposed: MatchEvidence (Tier 3); Proposed: MatchTypeEnum (Tier 3); Proposed: MatchDecisionEnum (Tier 3)
ObservationElementChangePayload	Observation element change payload	A change-mode body for native `PUT /observations/{id}` (Part 5 §5.1a): `id` plus only the ObservationElement members that changed; an absent member is unchanged and an explicit `null` clears it. Every member present is checked against the class, and a member the class does not define is refused. Generated at build time (tools/change-payloads.mjs); the generic ChangePayload remains the shape of change-feed items.	class	APX only
OccupancyHistoryPage	Occupancy history page	Occupancy per clock interval for one HierarchyElement (Part 5 §5.5a): the history behind the §5.5 snapshot, derived from the APDS DemandTable records the implementation holds. Buckets are aligned to the interval boundary in the place's time zone; a bucket with no demand record carries no counts, never a guess.	class	Proposed: DemandType (Tier 3)
OccupancySnapshot	Occupancy snapshot	Current occupancy for one HierarchyElement, computed from the APDS occupancy model (Supply + DemandTable) that natively lives in the Place hierarchy. A convenience READ (Part 5 §5.5): the Place payload remains the source of truth; this answers "how full is it right now" without pulling the hierarchy. Composed entirely of verbatim APDS occupancy classes — APX adds no parallel occupancy datatypes.	class	APX only
RateTableChangePayload	Rate table change payload	A change-mode body for native `PUT /rates/{id}` (Part 5 §5.1a): `id` plus only the RateTable members that changed; an absent member is unchanged and an explicit `null` clears it. Every member present is checked against the class, and a member the class does not define is refused. Generated at build time (tools/change-payloads.mjs); the generic ChangePayload remains the shape of change-feed items.	class	APX only

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Class name	Designation	Definition	Kind	APDS status
RightSpecificationChangePayload	Right specification change payload	A change-mode body for native `PUT /rights/specs/{id}` (Part 5 §5.1a): `id` plus only the RightSpecification members that changed; an absent member is unchanged and an explicit `null` clears it. Every member present is checked against the class, and a member the class does not define is refused. Generated at build time (tools/change-payloads.mjs); the generic ChangePayload remains the shape of change-feed items.	class	APX only
SessionChangePayload	Session change payload	A change-mode body for native `PUT /sessions/{id}` (Part 5 §5.1a): `id` plus only the Session members that changed; an absent member is unchanged and an explicit `null` clears it. Every member present is checked against the class, and a member the class does not define is refused. Generated at build time (tools/change-payloads.mjs); the generic ChangePayload remains the shape of change-feed items.	class	APX only
SessionClosure	Session closure	Why and how a Session ended (Part 5 §5.8).	class	Proposed: SessionClosure (Tier 1)
SessionDetail	Session detail	The `apds-ext:apx:session-detail@1.0` decoration on an APDS Session (Part 5 §5.8): what the pairing of reads decided and APDS has no members for — the reads behind the visit, why and how it ended, the matches it rests on, and the parent visit of an area Session. Written with the native Session POST/PUT by an external pairing engine; a server that pairs reads itself SHOULD write the same block on its own Sessions. A plain APDS client ignores it. It adds no event topic and carries no plate characters. A write that breaks a consistency rule of §5.8 is 422 and nothing is written.	class	Proposed: Session (Tier 1); Proposed: SessionLifecycleEnum (Tier 2)
SessionReadBinding	Session read binding	One LPR read attached to a Session by the pairing engine (Part 5 §5.8, member `reads[]` of `apds-ext:apx:session-detail@1.0`).	class	Proposed: SessionRead (Tier 1); Proposed: SessionReadRoleEnum (Tier 1)
StayCompliance	Stay compliance	The `apds-ext:apx:stay-compliance@1.0` decoration on an APDS Session (Part 5 §5.9): the outcome a compliance engine scored for the stay, and the policy it measured against. Written with the native Session POST/PUT by the engine; a server that scores stays itself SHOULD write the same block. The rules that produce the outcome stay in the engine.	class	APX only

A.1.3.3 Specializations of the "Data" package

There are no specializations in the "Data" package.

A.1.3.4 Associations of the "Data" package

Table A.8 -- Associations of the "Data" package

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
AssignedRightChangePayload	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	nullable
ChangeFeedGrantAdditions	item	Item	`mode=change` only. Present on the first page served after the credential's `apx_places` grant gained subtrees: the new subtree roots, which the client full-syncs with the route's `place` filter before relying on the feed for them (Part 5 §5.2 rule 7).	0..*		
ChangeFeedPage	publisher	Publisher	The publishing Organisation.	0..1	PkCommon.Reference	
	items	Items	Changed APDS entities of the route's class, each a change payload (identity plus only the changed members; Part 5 §5.1).	0..*	Data.ChangePayload	
	deleted	Deleted	Tombstones for deleted entities.	0..*	PkCommon.DeletedReference	
ChangeFeedTombstones	item	Item	`mode=change` only. Resources removed since the cursor (retention purge, Part 9 §9.6; release of a moved place, Part 18 §18.4), as APDS DeletedReferences carrying the APX resource's schema name as `className`. Retained for the cursor window (Part 5 §5.2 rule 4).	0..*	PkCommon.DeletedReference	
ContactPointChangePayload	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	nullable
HierarchyElementChangePayload	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	nullable
MatchEvidence	target	Target	The record at the other end of the link. In `matches[]`: an AssignedRight, a ValetTicket, a Violation, a PlateListEntry, or an Observation. In the decoration on a Violation or ValetTicket: the Session.	1..1	PkCommon.Reference	
ObservationElementChangePayload	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	nullable
OccupancyHistoryPage	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
OccupancySnapshot	place	Place	The HierarchyElement (Place, Level, Area, …) this snapshot describes.	1..1	PkCommon.Reference	
	supply	Supply	The element's supply (verbatim APDS Supply).	0..1	Occupancy.Supply	
	demand	Demand	The latest area demand record (verbatim APDS DemandType — count, percentage, occupancyCalculation, recordDateTime).	0..1	Occupancy.DemandType	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
RateTableChangePayload	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	nullable
RightSpecificationChangePayload	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	nullable
SessionChangePayload	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	nullable
SessionDetail	reads	Reads	The reads attached to this Session. A read already bound as `entry` or `exit` to another Session of the same place is refused with 409 `read-already-bound` unless `supersedes` names that Session. A read naming no Observation visible to the caller is 422 `reference-unknown`.	0..*	Data.SessionReadBinding	
	supersedes	Supersedes	The Session whose reads this write takes over (a re-pairing).	0..1	PkCommon.Reference	
	closure	Closure	Why and how a Session ended (Part 5 §5.8).	0..1	Data.SessionClosure	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	matches	Matches	How a link to a Session was established and how sure it is (Part 5 §5.8; shared by the `matches[]` member of `apds-ext:apx:session-detail@1.0` and the decoration `apds-ext:apx:match-evidence@1.0` on a Violation or ValetTicket). Carries no plate characters and no vehicle attribute values (Part 9 §9.6). Where both ends of one link carry evidence (the Session's `matches[]` entry and the decoration on the Violation or ValetTicket), the two MUST agree. Evidence with `plate.method: lenient` or `applied: false` may excuse a stay but never accuse one: `issue` on a Violation resting on it is 409 `violation-not-issuable` (Part 19 §19.4 rule 5).	0..*	Data.MatchEvidence	
	parent	Parent	The visit this area Session is part of (className `Session`). The parent's `hierarchyElement` MUST be an ancestor of this Session's (422 `request-unprocessable` otherwise). Consumers count visits by Sessions without `parent`; children still open when the parent ends SHOULD be closed no later than its `actualEnd` with `endReason` `parentExit`.	0..1	PkCommon.Reference	
SessionReadBinding	observation	Observation	The APDS ObservationElement (className `ObservationElement`).	1..1	PkCommon.Reference	
StayCompliance	policy	Policy	The EnforcementPolicy, at its version, the evaluation used (Part 19 §19.10), whose `stayGrace` explains the result. Naming no policy visible to the caller is 422 `reference-unknown`.	0..1	PkCommon.VersionedReference	

A.1.3.5 Attributes of the "Data" package

Table A.9 -- Attributes of the "Data" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
AssignedRightChangePayload	id	Id	The entity identifier (APDS VersionedIdentity.id).	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	version	Version	Positive integer representing the object version.	0..1	Integer	nullable
	rightSpecification	Right specification	The RightSpecification the right was granted under. †	0..1	Object	nullable
	rightHolder	Right holder	The holder of the right. †	0..1	Object	nullable
	assignedRightIssuer	Assigned right issuer	The party that issued the right; server-assigned. †	0..1	Object	nullable
	issueMethod	Issue method	How the right's credential was issued: electronic, permit or ticket. †	0..1	Right.IssueMethodTypeEnum	nullable
	issuanceTime	Issuance time	The datetime this AssignedRight was issued.	0..1	DateTime	nullable
	minutesAvailable	Minutes available	Number of decimal minutes that are remaining for use under a specified AssignedRight.	0..1	Decimal	nullable
	minutesUsed	Minutes used	Number of decimal minutes that have been used under a specified AssignedRight.	0..1	Decimal	nullable
	totalMinutes	Total minutes	Number of decimal minutes that have been issued under a specified AssignedRight.	0..1	Decimal	nullable
	remainingValue	Remaining value	The value of the right not yet used. †	0..1	Object	nullable
	totalRightValue	Total right value	The total value of the right. †	0..1	Object	nullable
	instancesUsed	Instances used	The total number of instances that have been used under a specified RightSpecification.	0..1	Integer	nullable
	instancesAvailable	Instances available	The total number of instances that are available for use under a specified RightSpecification.	0..1	Integer	nullable
	totalInstances	Total instances	The total number of instances that have been issued under a specified AssignedRight.	0..1	Integer	nullable
	expiry	Expiry	The datetime when the specific AssignedRight expires, and is not longer available for use.	0..1	DateTime	nullable
	plannedUses	Planned uses	The planned future uses of the AssignedRight. †	0..*	Object	nullable
	payments	Payments	The payments made for the AssignedRight. †	0..*	Object	nullable
	monetaryValue	Monetary value	A record of the monetary value of the right and the service provider that sells it. †	0..1	Object	nullable
ChangeFeedPage	publicationTime	Publication time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	updateMode	Update mode	Marks the page as a change page; always `change` (Part 5 §5.2). †	1..1	String (fixed value "change")	
	cursor	Cursor	Opaque cursor to resume AFTER the last change in this page.	1..1	String	
	grantAdditions	Grant additions	Present on the first page served after the credential's apx_places grant gained subtrees (Part 5 §5.2 rule 7): the new subtree roots. The client MUST full-sync these subtrees before relying on the feed for them — the cursor does not retroactively cover their history.	0..*	Uuid	
	next	Next	Link to the next page when more changes are immediately available; null otherwise.	0..1	String	nullable
ChangePayload	id	Id	The entity's identifier (APDS VersionedIdentity.id).	1..1	String	
	version	Version	On a write, the version the client last read (the precondition, Part 4 §4.2a); on a feed item, the version after the change.	0..1	Integer	
ContactPointChangePayload	contactType	Contact type	Whether the contact carries its details or refers to an existing contact. †	0..1	PkCommon.ContactTypeEnum	nullable
	contactNotDefined	Contact not defined	When true, there is currently no contact defined for the selected role and/or timeframe. Don't use the specialisations in this case.	0..1	Boolean	nullable
	contactUnknown	Contact unknown	When true, the contact for the selected role and/or timeframe is unknown. Don't use the specialisations in this case.	0..1	Boolean	nullable
	shareWithPublic	Share with public	When true, the details of this contact may be shared with the public. If false these contacts details are for internal purposes only.	0..1	Boolean	nullable
	validityOfContact	Validity of contact	The period during which the contact is valid. †	0..1	Object	nullable
	id	Id	The entity identifier (APDS VersionedIdentity.id).	1..1	String	
	version	Version	Positive integer representing the object version.	0..1	Integer	nullable
	organisationName	Organisation name	The name of the organisation of the contact. †	0..*	Object	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	type	Type	Defines the supported lists of types of contact. * customerService : Contact details for parking customer support for a facility or specific entity * emergencyContact : Contact details for emergency assistance or support for a facility or specific entity specifically related to parking operations * enforcementSystemProvider : Contact details for the provider of the enforcement system * operator : Contact details for the parking operator for a facility or specific entity * owner : Contact details for the owner of a facility or specific entity. * propertyManager : Contact details for the property manager of a facility or related facility. * securityService : Contact details for security services for a facility or specific entity * serviceProvider : Contact details for a parking service provider (e.g. pay-by-mobile provider)	0..1	PkCommon.ContactPointTypeEnum	nullable
	address	Address	The addresses of the contact. †	0..*	Object	nullable
	contactDetails	Contact details	Details for the person, service or parking site, especially address information. †	0..*	Object	nullable
	eMailCommonData	E mail common data	The e-mail point of contact. †	0..*	Object	nullable
	telephoneContacts	Telephone contacts	The telephone points of contact. †	0..*	Object	nullable
	pointLocations	Point locations	The geographic location of the contact point. †	0..*	Object	nullable
HierarchyElementChangePayload	id	Id	The entity identifier (APDS VersionedIdentity.id).	1..1	String	
	version	Version	Positive integer representing the object version.	0..1	Integer	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	type	Type	Defines the supported lists of types of parking hierarchy elements permissible * campus : a data structure holding information about a large, often ill-defined area, which may contain many parking structures. * identifiedArea : a data structure holding information about a coherent feature, such as a set of parking spaces that all share the same characteristics. * place : a data structure holding information about a single identifiable parking place. * space : a data structure holding information about a single space for parking, usually designed for one vehicle, which may be denoted by painted or other road surface markers. * subplaceElement : a sub-division of a place for the convenience of the operator that may be used for parking related or other purposes. * specificArea : a specialisation of an identified area that denotes a specific geographic area in a place that has a common physical infrastructure purpose and common characteristics. * vehicularAccess : a specialisation of an identified area defining vehicular access areas. * electricChargingEquipment : a specialisation of a supplemental facility for electric charging areas. * supplementalEquipment : a specialisation of a supplemental facility which is available on some site, for example on a rest area. * supplementalServiceFacility : a specialisation of a supplemental facility to specify the type and number of available sub-facilities, for example 20 restaurants.	0..1	Place.HierarchyElementTypeEnum	nullable
	name	Name	Name in natural language.	0..*	Object	nullable
	description	Description	Free-text description.	0..*	Object	nullable
	aliases	Aliases	Array of SpecificLanguageString objects representing multi language text.	0..*	PkCommon.MultilingualString	nullable
	operatorDefinedReference	Operator defined reference	The operator's own reference for the element, the designated alias for a source identifier (Part 4 §4.1a). †	0..1	Object	nullable
	parentId	Parent id	The element directly above this one in the place hierarchy. †	0..1	Object	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	childIds	Child ids	The child nodes directly related to this hierarchy element. †	0..*	Object	nullable
	layer	Layer	Indicator of the position of this hierarchy element in the specific hierarchy, with the top of the hierarchy numbered layer 0.	0..1	Integer	nullable
	rightSpecifications	Right specifications	The RightSpecifications associated with the element. †	0..*	Object	nullable
	hierarchyElementRecord	Hierarchy element record	Information concerning the creation of the hierarchy element. †	0..1	Object	nullable
	hierarchyElementReference	Hierarchy element reference	A unique reference identifier for this part of the place hierarchy. †	0..1	Object	nullable
	occupancyLevel	Occupancy level	The occupancy level of the element, as specified by the data supplier. †	0..1	Object	nullable
	responsibilityRoleAssignments	Responsibility role assignments	The roles and responsibilities for the element, such as its operator. †	0..*	Object	nullable
	characteristics	Characteristics	Information concerning the characteristics of the parking facility. †	0..1	Object	nullable
	contacts	Contacts	Contact information for the hierarchy element. †	0..*	Object	nullable
	marketing	Marketing	A link to marketing material for the facility. †	0..1	Object	nullable
	operatingRestrictions	Operating restrictions	The operating restrictions for the hierarchy element. †	0..*	Object	nullable
	rgbColours	Rgb colours	Colours associated with the hierarchy element. †	0..*	Object	nullable
	times	Times	The time periods of the facility, such as hours of operation, access and egress, and entrance and exit open times. †	0..1	Object	nullable
	paymentMethods	Payment methods	The payment methods accepted at the hierarchy element. †	0..*	Object	nullable
	safetyStandardClassifications	Safety standard classifications	The safety standard classifications of the place. †	0..*	Object	nullable
	timeZone	Time zone	IANA time-zone (see https://www.iana.org/time-zones)	0..1	String	nullable
	placeStreetAddress	Place street address	The street address of the place. †	0..1	Object	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	placeBoundedZone	Place bounded zone	The geographic area bounding the place. †	0..*	Object	nullable
	indicativePointLocation	Indicative point location	An indicative point location for the element. †	0..*	Object	nullable
	spaceId	Space id	A reference identifying the space. †	0..1	Object	nullable
	detection	Detection	The method used to detect occupancy of the space by a vehicle. †	0..1	Occupancy.ParkingSpaceOccupancyDetectionEnum	nullable
	spaceBoundedZone	Space bounded zone	The geographic area of the space, as a GeoJSON object. †	0..1	Object	nullable
	spaceDimension	Space dimension	The dimensions of the space. †	0..1	Object	nullable
	spaceMaximumDims	Space maximum dims	The maximum physical dimensions for the space's defined purpose. †	0..1	Object	nullable
MatchEvidence	matchType	Match type	The kind of link: `right` — an AssignedRight covers the stay; `valet` — a ValetTicket's stay; `violation` — a Violation's stay; `list` — a plate-list entry matched the vehicle (Part 24); `exitPairing` — an exit read paired to the Session's entry; `sweep` — the vehicle seen during an inventory or patrol sweep tied to the Session; `other` — anything else.	1..1	MatchEvidence.matchType (enumeration)	
	plate	Plate	How the plate strings agreed, when the link rests on a plate.	0..1	Structure (members below)	
	plate.method	Method	`exact` — the same characters; `alias` — a plate the right or account lists for the same vehicle; `fold` — equal after folding look-alike characters (O/0, I/1, B/8); `fuzzy` — within the implementation's edit-cost threshold; `lenient` — accepted under a relaxed rule that may excuse a stay but never accuse one; `reviewer` — a person judged the plates to match where no automatic method did.	1..1	MatchEvidence.plate.method (enumeration)	
	plate.editCost	Edit cost	The weighted edit cost of a `fuzzy` or `lenient` match; null otherwise.	0..1	Decimal	nullable
	plate.jurisdiction	Jurisdiction	Issuing jurisdiction of the plate (state, province or country).	0..1	MatchEvidence.plate.jurisdiction (enumeration)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	vehicle	Vehicle	The vehicle-attribute evidence (make, model, colour) behind the match, as a level and a score — never the values.	0..1	Structure (members below)	
	vehicle.level	Level	`unknown` — not compared; `mismatch` — the attributes contradict the match; `inconclusive` — compared, no signal; `weak`, `good`, `strong` — increasing support.	1..1	MatchEvidence.vehicle.level (enumeration)	
	vehicle.llr	Llr	Log-likelihood ratio of the vehicle evidence.	0..1	Decimal	
	vehicle.model	Model	The evidence model and version that scored it, opaque.	0..1	String	
	applied	Applied	False is a shadow match — recorded for evaluation, not acted on. A link the record actually carries has `applied: true`.	1..1	Boolean	
	decidedBy	Decided by	Whether software or a person made the link. A `matchTicket` that binds a lane-inquiry candidate SHOULD be recorded as `person` (Part 5 §5.8 rule 5).	0..1	MatchEvidence.decidedBy (enumeration)	
	decidedTime	Decided time	When the link was made.	0..1	PkCommon.DateTime	
ObservationElementChangePayload	id	Id	The entity identifier (APDS VersionedIdentity.id).	1..1	String	
	version	Version	Positive integer representing the object version.	0..1	Integer	nullable
	method	Method	A list of the supported observation types.	0..1	Observation.ObservationTypeEnum	nullable
	observer	Observer	The individual person making the observation recorded in this observation element.	0..1	String	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	type	Type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	0..1	Right.CredentialTypeEnum	nullable
	observedCredentialId	Observed credential id	Specific identifier to the referenced observed credential.	0..1	String	nullable
	observationStartTime	Observation start time	The initial date and time of the observation.	0..1	DateTime	nullable
	observationEndTime	Observation end time	The ending date and time of the observation, when it was continous since `observationStartTime`.	0..1	DateTime	nullable
	description	Description	Free-text description.	0..*	Object	nullable
	creationDateTime	Creation date time	The date and time stamp for the creation of the observation element.	0..1	DateTime	nullable
	location	Location	The location of the observation: where it was observed and where the observer was (APDS Data Dictionary, Observation package). †	0..1	Object	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	images	Images	Still or moving images that are evidence for the observation, or references to such evidence. †	0..*	Object	nullable
	elementIds	Element ids	The hierarchy element (for example a Place, Area or lane) at which the observation was made. †	0..1	Object	nullable
	vehicleAncillaryIdentification	Vehicle ancillary identification	Further identification of the observed vehicle, such as make, model and colour. †	0..1	Object	nullable
	observerOrganisation	Observer organisation	The organisation responsible for the observation. †	0..1	Object	nullable
	confidence	Confidence	Confidence in the value, from 0 to 1.	0..1	Object	nullable
	characterConfidence	Character confidence	Per-character confidence in the observed identifier, such as a plate read. †	0..1	Object	nullable
OccupancyHistoryPage	interval	Interval	The bucket length as requested (ISO 8601 duration, e.g. PT1H).	1..1	PkCommon.Duration	
	from	From	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	to	To	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	buckets	Buckets	The occupancy figures for each interval, aligned to the interval boundary in the place's time zone (Part 5 §5.5a). †	0..*	Structure (members below)	
	buckets.start	Start	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	buckets.maxCount	Max count	The highest demand count recorded in the bucket.	0..1	Integer	
	buckets.avgCount	Avg count	The time-weighted mean demand count over the bucket.	0..1	Decimal	
	buckets.supplyQuantity	Supply quantity	The supply in force during the bucket (APDS Supply.supplyQuantity).	0..1	Integer	
	buckets.samples	Samples	How many demand records the bucket is computed from.	0..1	Integer	
OccupancySnapshot	computedAt	Computed at	When this snapshot was computed.	1..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	available	Available	Convenience derivation: supply.supplyQuantity − demand.count when both are known; null when either side is unknown. Never negative — overfull facilities clamp to 0 (the demand record still shows the true count).	0..1	Integer	nullable
	evCharging	Ev charging	Part 23 §23.7 — charging availability under this element, derived from ChargingPointStatus. Optional; present only when the implementation claims `apx-charging`. Counts are of charging points (APDS ElectricChargingEquipment), not connectors. Absent counts are unknown, never guessed.	0..1	Structure (members below)	
	evCharging.pointsTotal	Points total	The number of charging points under the element. †	0..1	Integer	
	evCharging.available	Available	Points with `availability: available`.	0..1	Integer	
	evCharging.charging	Charging	The number of charging points under the element that are charging. †	0..1	Integer	
	evCharging.occupiedNotCharging	Occupied not charging	Points `occupied` (cable connected, no energy) — includes complete and idle sessions.	0..1	Integer	
	evCharging.blocked	Blocked	Points whose bay holds a vehicle that is not plugged in, or is obstructed.	0..1	Integer	
	evCharging.inoperative	Inoperative	Points `inoperative` or `outOfOrder`.	0..1	Integer	
RateTableChangePayload	id	Id	The entity identifier (APDS VersionedIdentity.id).	1..1	String	
	version	Version	Positive integer representing the object version.	0..1	Integer	nullable
	rateTableName	Rate table name	The name of the rate table. †	0..*	Object	nullable
	rateTableID	Rate table ID	An identifier of the rate table. †	0..*	Object	nullable
	availability	Availability	* private : Parking access is limited to known and authorized individuals. * public : Open to the public. * restricted : Open to the public but requires a direct purpose or permission to use from owner (e.g. Doctor's surgery, storefront...)"	0..1	Rates.RateAvailabilityTypeEnum	nullable
	rateResponsibleParty	Rate responsible party	The organisation responsible for fee collection under the rate table; server-assigned. †	0..1	Object	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	rateSupersedeLink	Rate supersede link	The rate table that this rate table temporarily supersedes, for the duration set by its expiration times. †	0..1	Object	nullable
	validation	Validation	Indicates if validations are accepted when using this RateTable.	0..1	Boolean	nullable
	rateType	Rate type	The type of rates in the table: contract, daily, event or hourly. †	0..1	Rates.RateTypeEnum	nullable
	additionalInformation	Additional information	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	nullable
	validity	Validity	When the rate table is valid. †	0..1	Object	nullable
	rateLineCollections	Rate line collections	The rate line collections that define the rate table. †	0..*	Object	nullable
RightSpecificationChangePayload	id	Id	The entity identifier (APDS VersionedIdentity.id).	1..1	String	
	version	Version	Positive integer representing the object version.	0..1	Integer	nullable
	description	Description	Free-text description.	0..*	Object	nullable
	type	Type	Defines the type of RightSpecification * accessPermission : intended grant access permission * loadingUnloading : intended granting permissions to load and unload vehicles. * oneTimeUseParking : intended for one time or limited parking usage * permitParking : intended for multi-use parking usage * setDownPickup : intended for passenger set down and pick up * waiting : intended to grant permission for an accompanied vehicle to wait	0..1	Right.RightSpecificationTypeEnum	nullable
	financialReference	Financial reference	Creator defined free-text reference to financial transactions associated to the specific Right Specification.	0..1	String	nullable
	transferable	Transferable	Whether the RightSpecification is available to be transferred between assigned right holders or users. †	0..1	Boolean	nullable
	transferableConditions	Transferable conditions	The conditions under which the RightSpecification may be transferred. †	0..1	Boolean	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	credentials	Credentials	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	0..*	Right.CredentialTypeEnum	nullable
	validity	Validity	When the RightSpecification is valid. †	0..1	Object	nullable
	expiry	Expiry	Date/time showing the timestamp for when a RightSpecification ceases to be valid.	0..1	DateTime	nullable
	rightPools	Right pools	The pools sharing the number of AssignedRights available, in use or intended for use under the specification in given periods by a given issuer. †	0..*	Object	nullable
	issuer	Issuer	The party that issues rights of this specification; server-assigned. †	0..1	Object	nullable
	hierarchyElements	Hierarchy elements	The places where the RightSpecification is available. †	0..*	Object	nullable
	rateEligibility	Rate eligibility	The combinations of eligibility requirements and RateTables that apply to the RightSpecification. †	0..*	Object	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	rateTransition	Rate transition	The rate transition rules that apply to rights of this specification. †	0..1	Object	nullable
SessionChangePayload	id	Id	The entity identifier (APDS VersionedIdentity.id).	1..1	String	
	version	Version	Positive integer representing the object version.	0..1	Integer	nullable
	actualStart	Actual start	The date/time of the start of the session.	0..1	DateTime	nullable
	actualEnd	Actual end	The date/time of the end of the session.	0..1	DateTime	nullable
	initiator	Initiator	The party that initiated the session; server-assigned. †	0..1	Object	nullable
	hierarchyElement	Hierarchy element	The element of the place hierarchy where the session takes place. †	0..1	Object	nullable
	identifiedCredentials	Identified credentials	The credentials used for verification during the session. †	0..*	Object	nullable
	segments	Segments	The segments that record changes of rate and assigned right during the session. †	0..*	Object	nullable
	identifiedVehicle	Identified vehicle	The vehicle identified for the session. †	0..1	Object	nullable
SessionClosure	endReason	End reason	definedValue from `apx-session-end-reasons` (Part 11) or an implementer code list.	0..1	String (code list apx-session-end-reasons)	
	endInferred	End inferred	True when `actualEnd` was set by a rule rather than observed.	0..1	Boolean	
	startObserved	Start observed	False declares `actualStart` synthetic — an exit-only Session whose entry was never observed; the writer SHOULD then set `actualStart` equal to `actualEnd`. Consumers MUST exclude such Sessions from dwell statistics and from occupancy (Part 5 §5.8 rule 4). Absent means true.	0..1	Boolean	
	rule	Rule	The implementer rule that closed a `stale` Session (e.g. `transient-48h`); null when none applied.	0..1	String	nullable

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
SessionDetail	lifecycle	Lifecycle	`open` — a vehicle is in the facility, no `actualEnd` yet; `ended` — closed, may still be revised; `final` — no further revision expected; `disputed` — under review. Every state but `open` requires `actualEnd`, and `open` forbids it (422 `request-unprocessable` otherwise). `final` is the writer's statement, never a lock: a server MUST NOT refuse a later revision on that ground.	0..1	SessionDetail.lifecycle (enumeration)	
	flags	Flags	Open flags — `entryUnknown`, `orphanExit`, `reentry`, `passThrough`, or implementer values.	0..*	String	
	passThrough	Pass through	An area stay shorter than the area's minimum dwell — never scored or billed.	0..1	Boolean	
SessionReadBinding	role	Role	`entry` and `exit` are the passages that opened and closed the visit; `duplicate` is the same passage seen by another camera or frame; `activity` is the vehicle seen inside (a sweep, a bay camera).	1..1	SessionReadBinding.role (enumeration)	
	representative	Representative	The read that stands for the visit in lists and screen-pops. At most one per Session; two are 422 `request-unprocessable` (Part 5 §5.8 rule 1).	0..1	Boolean	
StayCompliance	status	Status	definedValue of apx-stay-compliance-statuses, or an implementer code.	1..1	String	
	family	Family	The family of the status. For a registry status it MUST be the family the registry gives (422 `request-unprocessable`). `compliant` — rights or an exemption covered the stay `violation` — the stay was not covered as the policy requires `withheld` — not scored, or held back for review `other` — an outcome none of the other families fits, for example paid after exit	1..1	StayCompliance.family (enumeration)	
	pendingStatus	Pending status	The status the stay would have once a person confirms it; present only with `status` `reviewRequired` (422 `request-unprocessable` otherwise).	0..1	String	
	flags	Flags	Facts behind the status — definedValues of apx-stay-compliance-flags, or implementer codes.	0..*	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	evaluatedTime	Evaluated time	When the evaluation ran.	1..1	PkCommon.DateTime	
	sequence	Sequence	Orders the evaluations of one Session. A write with a lower `sequence` than the one held is 409 `evaluation-out-of-order`; an equal one replaces it.	1..1	Integer	
	final	Final	The writer's statement that no further evaluation is expected; never a lock.	0..1	Boolean	

A.1.4 "Events" package

A.1.4.1 Location of "Events" package. The location of the "Events" package is:

`-- APX/Events` (source: `spec/openapi/domains/events/schemas.yaml`; normative text: APX Part 8)

A.1.4.2 Classes of the "Events" package

Table A.10 -- Classes of the "Events" package

Class name	Designation	Definition	Kind	APDS status
ApxEventSubscription	Apx event subscription	Superset of the APDS 4.1 EventSubscription. A stock APDS client sending only `{endpoint, topics}` (EventTypeEnum values) gets stock behavior; the APX fields are additive and optional.	class	APX only
ApxEventSubscriptionPatch	Apx event subscription patch	Body of `PATCH /webhooks/{id}`: a JSON Merge Patch (RFC 7396) over ApxEventSubscription. Members present replace the stored value, an explicit `null` clears an optional member, and absent members are unchanged — so `{"status": "active"}` alone resumes a subscription. `version`, when given, is the precondition (Part 4 §4.2a); a stale one is 409 `version-conflict`. `id`, `activeKeyIds`, and `recordInfo` are server-managed and cannot be patched.	class	APX only
DeliveryAttempt	Delivery attempt	One delivery attempt of one event to one subscription.	class	APX only
DeliveryRecord	Delivery record	One entry in a subscription's delivery ledger.	class	APX only
SubscriptionFailure	Subscription failure	Data of `apx.subscription.failed.v1` (Part 8 §8.3): which subscription stopped, where it was delivering, and the attempt that exhausted the schedule. The envelope `subject` references the same subscription.	class	APX only
SubscriptionFilters	Subscription filters	Server-side delivery filtering.	class	APX only

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A.1.4.3 Specializations of the "Events" package

There are no specializations in the "Events" package.

A.1.4.4 Associations of the "Events" package

Table A.11 -- Associations of the "Events" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ApxEventSubscription	filters	Filters	Server-side delivery filtering.	0..1	Events.SubscriptionFilters	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
ApxEventSubscriptionPatch	filters	Filters	Replaces the stored filters; `{}` removes every filter.	0..1	Events.SubscriptionFilters	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
DeliveryRecord	attemptHistory	Attempt history	Every attempt so far, oldest first (Part 8 §8.3). `deliveryId` and `lastCode` above are those of the latest entry. The normative schedule makes at most 27 attempts per event.	0..*	Events.DeliveryAttempt	
SubscriptionFailure	subscription	Subscription	The subscription (`className` `ApxEventSubscription`).	1..1	PkCommon.Reference	

A.1.4.5 Attributes of the "Events" package

Table A.12 -- Attributes of the "Events" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
ApxEventSubscription	id	Id	Assigned at creation; used with DELETE/PATCH /webhooks/{id}.	0..1	Uuid	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	version	Version	Version number of the record; increases by one on each change (Part 4).	0..1	Integer	
	endpoint	Endpoint	Client endpoint URL for webhook deliveries (required for transport=webhook).	0..1	PkCommon.Url	
	topics	Topics	APDS EventTypeEnum values (e.g. SessionCreated) and/or APX topics (apx.<domain>.<event>.vN) — freely mixed.	1..*	String	
	transport	Transport	How events reach the subscriber: by webhook or by server-sent events stream (Part 8). †	0..1	ApxEventSubscription.transport (enumeration)	
	secret	Secret	HMAC signing secret (≥32 bytes of entropy, used as raw UTF-8 key material; shorter is 400 `invalid-request`). For `transport: webhook` only: server-generated when absent and returned EXACTLY ONCE — in the Prefer=representation creation response. Never present in GET/PATCH responses. An SSE subscription has nothing to sign and gets no secret (Part 8 §8.1).	0..1	String	
	secretRef	Secret ref	Identifier of an out-of-band-exchanged secret (Part 9 §9.4) — supply INSTEAD of `secret` when key material must never transit the API. Never a secret value itself.	0..1	String	write-only
	keyId	Key id	Identifier the client chooses for the key it supplies with `secret` or `secretRef`; deliveries signed with that key carry it in `APX-Key-Id`. Server-assigned when absent (Part 8 §8.1).	0..1	String	write-only
	retireKeyIds	Retire key ids	PATCH only: key ids to retire now, ending a rotation overlap early. Retiring the last active key is 400 `invalid-request`. Without it, the server retires the superseded key 24 hours after the rotation (Part 8 §8.1).	0..*	String	write-only
	activeKeyIds	Active key ids	Identifiers of the currently valid signing keys — two entries during a rotation overlap window, matching deliveries' APX-Key-Id header (Part 9 §9.4).	0..*	String	read-only

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	status	Status	`active` delivers; `paused` holds matching events for up to 24 hours and delivers them in order on resume (Part 8 §8.1); `failed` is server-assigned when the retry schedule is exhausted (a client setting it is 400 `invalid-request`). PATCH `status: active` to resume a paused or failed subscription.	0..1	ApxEventSubscription.status (enumeration)	
ApxEventSubscriptionPatch	version	Version	The version the client last read.	0..1	Integer	
	endpoint	Endpoint	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
	topics	Topics	The topics the subscription delivers, replacing the stored list. †	0..*	String	
	transport	Transport	How events reach the subscriber: by webhook or by server-sent events stream (Part 8). †	0..1	ApxEventSubscriptionPatch.transport (enumeration)	
	secret	Secret	A new signing secret; starts a rotation overlap (Part 8 §8.1).	0..1	String	
	secretRef	Secret ref	A reference to a new signing secret exchanged out of band, never the secret itself; starts a key rotation (Part 9 §9.4). †	0..1	String	write-only
	keyId	Key id	The name the client gives the new signing key; the server assigns one when absent (Part 8 §8.1). †	0..1	String	write-only
	retireKeyIds	Retire key ids	The signing keys to retire, ending a rotation overlap (Part 8 §8.1). †	0..*	String	write-only
	status	Status	`active` or `paused` — the client-settable states. `failed` is server-assigned; a PATCH setting it is 400 `invalid-request`.	0..1	ApxEventSubscriptionPatch.status (enumeration)	
DeliveryAttempt	deliveryId	Delivery id	The attempt's `APX-Delivery-Id` (unique per attempt).	1..1	Uuid	
	time	Time	When the attempt was sent — also its `APX-Timestamp` (each attempt is signed afresh, Part 8 §8.3).	1..1	PkCommon.DateTime	
	code	Code	HTTP status code received (0 = network error or timeout).	1..1	Integer	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
DeliveryRecord	deliveryId	Delivery id	The `APX-Delivery-Id` of the latest delivery attempt (Part 8 §8.3). †	1..1	Uuid	
	eventId	Event id	EventEnvelope.id delivered (stable across retries).	1..1	Uuid	
	attempts	Attempts	The number of delivery attempts made for the event so far (Part 8 §8.3). †	1..1	Integer	
	status	Status	Whether the event was delivered, is still being retried, or failed. †	1..1	DeliveryRecord.status (enumeration)	
	lastCode	Last code	Last HTTP status code received from the endpoint (0 = network error).	0..1	Integer	
	time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
SubscriptionFailure	endpoint	Endpoint	The endpoint that stopped answering (webhook transport).	0..1	PkCommon.Url	
	failedTime	Failed time	When the subscription entered `failed`.	1..1	PkCommon.DateTime	
	firstFailedEventId	First failed event id	EventEnvelope.id of the first event that could not be delivered.	0..1	Uuid	
	attempts	Attempts	Attempts made for that event before the schedule was exhausted.	0..1	Integer	
	lastCode	Last code	The last HTTP status code received (0 = network error).	0..1	Integer	
SubscriptionFilters	places	Places	Only events bound to these HierarchyElement subtrees are delivered (Part 8 §8.5). Every entry must lie inside the token's `apx_places` grant, else 403 `insufficient-grant`.	0..*	Uuid	
	severityFloor	Severity floor	For alert topics — minimum severity delivered.	0..1	SubscriptionFilters.severityFloor (enumeration)	
	alertTypes	Alert types	For alert topics — only alerts whose `alertType` is listed are delivered (Part 8 §8.5a). Values are `apx-alert-types` entries or implementer types; combines with `severityFloor` (both must hold).	0..*	String (code list apx-alert-types)	

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A.1.5 "Control" package

A.1.5.1 Location of "Control" package. The location of the "Control" package is:

`-- APX/Control` (source: `spec/openapi/domains/control/schemas.yaml`; normative text: APX Part 6)

A.1.5.2 Classes of the "Control" package

Table A.13 -- Classes of the "Control" package

Class name	Designation	Definition	Kind	APDS status
Approval	Approval	Approval evidence, REQUIRED on a write whose AllowedAction said requiresApproval (Part 17 §17.3). Servers MUST reject a requires-approval action without it (403 approval-required). One shared shape for control commands and domain actions (e.g. refunds).	class	APX only
Command	Command	A request for an operational action against a lane/device/place. Perishable (expiryTime), idempotent (Idempotency-Key), fully audited (immutable statusHistory).	class	APX only
CommandResult	Command result	The structured outcome of a command, populated by the server when the command reaches `succeeded` (Part 6 §6.1a) and absent before then. Members are normative per command type: `lostTicket` → `ticketNumber`, `session`, `amountDue`; `matchTicket` → `session`, `amountDue`; `pushNegotiatedRate` → `amountDue`, and `rateTable` when a table was selected (absent for a stated amount, which the lane inquiry reports as `currentTicket.negotiatedAmount`). Other command types leave it absent unless a registry entry says otherwise. It restates what the lane inquiry shows, so a console can continue (print, take payment) without parsing `statusHistory[].detail` or making a second call.	class	APX only
DeviceStatus	Device status	Live state overlay keyed by Reference to an APDS SupplementalEquipment — never duplicates its descriptive fields. APDS 4.1 has no general equipment status list: its RefillPointStatusEnum (Data Dictionary A.3.53) covers refill points only and is absent from apds-api-4.1.yaml. deviceState values come from the APX registry apx-device-states, which follows that enumeration's style and shares its available, occupied, inoperative and unknown values. Attachable to APDS payloads as apds-ext:apx:devicestatus@1.0.	class	Proposed: EquipmentStatus (Tier 1)
DisplayProof	Display proof	What a sign or display confirmed it showed, and when (Part 6 §6.1a): `CommandResult.display` for a commanded message, and the proof members of a Part 26 §26.9 DisplayRecord for any message. Carries a hash and the wording version, never the message text.	class	APX only
LaneStatus	Lane status	The transaction context at a lane right now (the call-center screen-pop). Composes APDS references and data; adds no parallel entities.	class	APX only

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Class name	Designation	Definition	Kind	APDS status
MatchCandidate	Match candidate	An open session at the place that plausibly belongs to the vehicle in the lane (Part 6 §6.7). Produced by the lane inquiry from the lane's own LPR read, a presented credential, the account registry (by plate or phone), or a checked-in reservation. Composes APDS references; adds no parallel session store. Advisory until a matchTicket command binds one.	class	APX only
RatePolicy	Rate policy	Level B decoration on an APDS RateTable, carried in its `extensions` container as `apds-ext:apx:ratepolicy@1.0` (Part 6 §6.6). APDS models the rate deck completely; it has no way to say which tables an agent may offer as a negotiated rate. This is that flag — and because it rides inside the RateTable, every consumer mirroring the deck through the native `/rates` route (Part 5 §5.2) receives it with the table, no second query. APX deliberately defines NO selection rules here (length of stay, time of day, caller type): the system presenting the deck to an agent or a third party applies its own guardrails. The server's only rule is enforcement — a pushNegotiatedRate naming a table that is not flagged negotiable is refused (422 rate-not-negotiable).	class	Proposed: RateTable (Tier 2)
ValidationProvider	Validation provider	A venue/organisation allowed to validate tickets at a place.	class	APX only

A.1.5.3 Specializations of the "Control" package

There are no specializations in the "Control" package.

A.1.5.4 Associations of the "Control" package

Table A.14 -- Associations of the "Control" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
Approval	approvalRequest	Approval request	The Part 17 §17.3a ApprovalRequest whose decision this evidence cites, when the approval was asked for through APX.	0..1	PkCommon.Reference	
Command	target	Target	Reference to the target — SupplementalEquipment (device) or a VehicularAccess/Place HierarchyElement (lane/place scope).	1..1	PkCommon.Reference	
	requestedBy	Requested by	The organisation requesting the action (defaults to the token's apx_org).	0..1	PkCommon.Reference	
	resolutionContext	Resolution context	The ResolutionContext this command resolves (Part 17) — links the action into the interaction's audit chain.	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	approval	Approval	Approval evidence, REQUIRED on a write whose AllowedAction said requiresApproval (Part 17 §17.3). Servers MUST reject a requires-approval action without it (403 approval-required). One shared shape for control commands and domain actions (e.g. refunds).	0..1	Control.Approval	
	result	Result	The structured outcome of a command, populated by the server when the command reaches `succeeded` (Part 6 §6.1a) and absent before then. Members are normative per command type: `lostTicket` → `ticketNumber`, `session`, `amountDue`; `matchTicket` → `session`, `amountDue`; `pushNegotiatedRate` → `amountDue`, and `rateTable` when a table was selected (absent for a stated amount, which the lane inquiry reports as `currentTicket.negotiatedAmount`). Other command types leave it absent unless a registry entry says otherwise. It restates what the lane inquiry shows, so a console can continue (print, take payment) without parsing `statusHistory[].detail` or making a second call.	0..1	Control.CommandResult	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
CommandResult	session	Session	The APDS Session the ticket belongs to (lostTicket, matchTicket).	0..1	PkCommon.Reference	
	amountDue	Amount due	The amount due on the ticket immediately after the command.	0..1	Rates.AmountInCurrency	
	rateTable	Rate table	The RateTable at the exact version applied (pushNegotiatedRate with a table; absent for a stated amount).	0..1	PkCommon.VersionedReference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	display	Display	Proof of display for `displayMessage` (Part 6 §6.1a): what the device confirmed it showed, when, and whether the player or an operator acknowledged it. A Part 26 §26.9 DisplayRecord that names this command MUST agree with it.	0..1	Control.DisplayProof	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
DeviceStatus	device	Device	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
LaneStatus	lane	Lane	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	currentTicket.session	Session	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	currentTicket.amountDue	Amount due	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	currentTicket.validations.provider	Provider	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	currentTicket.validations.amountReduced	Amount reduced	The ACTUAL value this validation removed from the amount due (dispute evidence).	0..1	Rates.AmountInCurrency	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	currentTicket.lpr.observation	Observation	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	currentTicket.negotiatedRate.rateTable	Rate table	The RateTable selected (VersionedReference — the exact version applied).	1..1	PkCommon.VersionedReference	
	currentTicket.negotiatedRate.command	Command	The pushNegotiatedRate Command that applied it — carries `agent`, `reason`, and the audit trail.	1..1	PkCommon.Reference	
	currentTicket.negotiatedRate.policy	Policy	The table's `apds-ext:apx:ratepolicy@1.0` decoration as it stood when applied (its displayName is what the agent saw).	0..1	Control.RatePolicy	
	currentTicket.negotiatedAmount.amount	Amount	The amount stated, as the command's `parameters.amount`.	1..1	Rates.AmountInCurrency	
	currentTicket.negotiatedAmount.command	Command	The pushNegotiatedRate Command that applied it — the audit trail.	1..1	PkCommon.Reference	
	currentTicket.matchedCommand	Matched command	When this ticket was bound to an open session by a matchTicket command (Part 6 §6.7), the Command that made the match — carries `agent`, `parameters.evidence`, and the audit trail. Absent for a ticket physically inserted at the lane.	0..1	PkCommon.Reference	
	matchCandidates	Match candidates	Open sessions at this lane's place that plausibly belong to the vehicle in the lane, best first (Part 6 §6.7). Computed when the lane has no ticket in the machine, or whenever the caller passes a `plate`, `phone`, or `credential` lookup parameter. ADVISORY: the agent confirms with the driver; the server never binds a candidate without a matchTicket command.	0..*	Control.MatchCandidate	
	monthlyCredential.credential	Credential	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	monthlyCredential.recentEvents.lane	Lane	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
MatchCandidate	session	Session	The open APDS Session this candidate proposes.	1..1	PkCommon.Reference	
	entryLane	Entry lane	The VehicularAccess the session entered through.	0..1	PkCommon.Reference	
	evidence	Evidence	The record that produced the match — the entry Observation, the Credential, the RightHolder account, or the AssignedRight — so the agent can show it and the matchTicket command can cite it.	0..1	PkCommon.Reference	
	amountDueIfMatched	Amount due if matched	What the exit would price at from this session's true entry time — so the agent can tell the driver before matching.	0..1	Rates.AmountInCurrency	
ValidationProvider	provider	Provider	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	program	Program	The ValidationProgram this row is derived from, when the server claims `apx-validations` (Part 20) — additive; absent otherwise.	0..1	PkCommon.Reference	
	benefit.amount	Amount	Fixed money off.	0..1	Rates.AmountInCurrency	

A.1.5.5 Attributes of the "Control" package

Table A.15 -- Attributes of the "Control" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
Approval	approvedBy	Approved by	The approving principal (role per AllowedAction.approvalRole).	1..1	String	
	approvedAt	Approved at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	note	Note	Free-text note from the actor.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
Command	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	commandType	Command type	definedValue from apx-command-types (vendGate, lostTicket, pushRate, applyValidation, pushNegotiatedRate, matchTicket, …).	1..1	String	
	parameters	Parameters	Command-type-specific parameters. Normative parameter schemas per commandType are given in Part 6 (e.g. lostTicket.method, pushRate.rateTable VersionedReference, applyValidation.ticket + provider, displayMessage.message, setDeviceState.state, pushNegotiatedRate.rateTable VersionedReference to a RateTable flagged negotiable, or pushNegotiatedRate.amount AmountInCurrency (any amount the agent states, where the host offers the negotiatedAmounts feature), matchTicket.session + evidence, resetPassback/forceIn/forceOut.credential, courtesyExit.holder).	0..1	Object	
	agent	Agent	Opaque principal of the human or AI agent who initiated the command (mirrors SupportInteraction.agent, Part 17 §17.6). Distinct from requestedBy (the organisation) and from approval.approvedBy (the approver). REQUIRED for pushNegotiatedRate and matchTicket (Part 6 §6.6–6.7): who selected the rate, who made the match.	0..1	String	
	agentType	Agent type	Whether `agent` is a person or an AI agent (mirrors SupportInteraction.agentType).	0..1	Command.agentType (enumeration)	
	reason	Reason	Free-text or code-list reason for the action (audit).	0..1	String	
	resolutionContextVersion	Resolution context version	The `version` of the ResolutionContext whose allowed actions this write was checked against, recorded by the server so the decision stays reconstructible after the context is recomputed or expires (Part 17 §17.2).	0..1	Integer	read-only
	correlationId	Correlation id	Correlation chain id (Part 17 §17.7) — one id connects call → context → command → events → support interaction.	0..1	Uuid	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	expiryTime	Expiry time	Commands are perishable — MUST NOT be dispatched after this instant.	0..1	PkCommon.DateTime	
	priority	Priority	Priority of the command. ‡	0..1	Command.priority (enumeration)	
	status	Status	The command's lifecycle state (Part 6 §6.1). †	1..1	Command.status (enumeration)	read-only
	confirmationLevel	Confirmation level	How far success is actually confirmed (Part 6 §6.1): the command was accepted; the device acknowledged it; or the physical outcome was verified (e.g. gate-state sensor). Consumers — AI agents especially — MUST NOT claim a physical outcome ("the gate is open") beyond this level ("the open command was accepted").	0..1	Command.confirmationLevel (enumeration)	read-only
	statusHistory	Status history	Immutable, append-only lifecycle audit — THE audit trail (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The command status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
CommandResult	ticketNumber	Ticket number	The ticket the command issued or bound (lostTicket).	0..1	String	
DeviceStatus	deviceState	Device state	definedValue from apx-device-states.	1..1	String	
	lastCommunication	Last communication	When the device last reported; an agent reads "offline since" from it (Part 6 §6.4).	0..1	PkCommon.DateTime	
	stateChangedTime	State changed time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	fault	Fault	The current fault, when `deviceState` is `fault` or `inoperative` and the device reports one (Part 6 §6.4).	0..1	Structure (members below)	
	fault.code	Code	The implementation's fault code, as the device reports it.	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	fault.displayText	Display text	What the device shows or what the technician reads for the code.	0..1	String	
	fault.since	Since	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	consumables	Consumables	Supply levels the device reports (Part 6 §6.4). `low` or `empty` raises the Part 7 `consumableLow` alert.	0..*	Structure (members below)	
	consumables.kind	Kind	Which consumable the level is reported for (Part 6 §6.4). †	1..1	DeviceStatus.consumables.kind (enumeration)	
	consumables.level	Level	How much of the consumable is left, as a level, not a count. †	1..1	DeviceStatus.consumables.level (enumeration)	
	maintenanceMode	Maintenance mode	The device is under test or maintenance; calls and events from it are excluded from service figures (Part 6 §6.4).	0..1	Boolean	
DisplayProof	shownTime	Shown time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	contentHash	Content hash	Hash of the rendered content, so a dispute can prove what was shown.	0..1	String	
	wordingVersion	Wording version	The wording version the template was rendered under.	0..1	String	
	screenshot	Screenshot	Access-controlled link to a capture of the display (Part 9 §9.6).	0..1	PkCommon.Url	
	acknowledgedBy	Acknowledged by	Acknowledged by of the display proof. ‡	0..1	DisplayProof.acknowledgedBy (enumeration)	
LaneStatus	currentTicket	Current ticket	The ticket/credential currently in the machine, if any.	0..1	Structure (members below)	
	currentTicket.ticketNumber	Ticket number	Number printed on, or encoded in, the parking ticket.	0..1	String	
	currentTicket.issuedTime	Issued time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	currentTicket.paidInFull	Paid in full	Whether the amount due on the ticket has been paid in full. †	0..1	Boolean	
	currentTicket.validations	Validations	The validations applied to the ticket, each with its provider and the actual amount reduced. †	0..*	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	currentTicket.validations.providerName	Provider name	Human-readable vendor name (from the place's ValidationProvider list).	0..1	String	
	currentTicket.validations.validationType	Validation type	The provider's validation type at time of application.	0..1	String	
	currentTicket.validations.validationId	Validation id	Unique id of this applied validation — maps to APDS Segment.validationId.	0..1	String	
	currentTicket.validations.appliedTime	Applied time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	currentTicket.lpr	Lpr	Latest plate read at this lane (APDS Observation-derived).	0..1	Structure (members below)	
	currentTicket.lpr.plate	Plate	Vehicle license plate text as read or entered.	0..1	String	
	currentTicket.lpr.confidence	Confidence	Confidence in the value, from 0 to 1.	0..1	Decimal	
	currentTicket.lpr.imageLink	Image link	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
	currentTicket.negotiatedRate	Negotiated rate	The negotiated rate in effect on this ticket, if a pushNegotiatedRate command that selected a RateTable succeeded for it (Part 6 §6.6). Absent when the ticket prices from the lane's normal rate deck, and absent when the agent stated an amount instead (see `negotiatedAmount`). At most one of `negotiatedRate` and `negotiatedAmount` is present: the latest succeeded pushNegotiatedRate for the ticket decides which.	0..1	Structure (members below)	
	currentTicket.negotiatedRate.agent	Agent	The principal who selected the rate (copied from the command for the screen-pop).	0..1	String	
	currentTicket.negotiatedAmount	Negotiated amount	The amount an agent stated for this ticket, if a pushNegotiatedRate command carrying `parameters.amount` succeeded for it (the negotiatedAmounts feature, Part 6 §6.3, §6.6). Absent otherwise. It is what the ticket owes, not a discount. At most one of `negotiatedRate` and `negotiatedAmount` is present: the latest succeeded pushNegotiatedRate for the ticket decides which.	0..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	currentTicket.negotiatedAmount.reason	Reason	The command's `reason`, copied for the screen-pop.	1..1	String	
	currentTicket.negotiatedAmount.agent	Agent	The principal who stated the amount (the command's `agent`), copied for the screen-pop.	1..1	String	
	monthlyCredential	Monthly credential	Monthly-parker credential context at the lane, if presented.	0..1	Structure (members below)	
	monthlyCredential.cardNumber	Card number	The access credential number presented, not a payment card number. †	0..1	String	
	monthlyCredential.accessGranted	Access granted	Whether access was granted to the presented credential. †	0..1	Boolean	
	monthlyCredential.denialReason	Denial reason	When access is denied — definedValue from `apx-access-denial-reasons` or an implementer code list (Part 11), the same vocabulary as Part 21 access events.	0..1	String (code list apx-access-denial-reasons)	
	monthlyCredential.lastActivity	Last activity	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	monthlyCredential.recentEvents	Recent events	The last 10 activity events on this credential (trend view).	0..10	Structure (members below)	
	monthlyCredential.recentEvents.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	monthlyCredential.recentEvents.event	Event	The kind of activity recorded, such as entry or exit. †	0..1	String	
MatchCandidate	ticketNumber	Ticket number	The entry ticket number, if a ticket was issued at entry.	0..1	String	
	entryTime	Entry time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	plate	Plate	The plate recorded on the session at entry, if any.	0..1	String	
	matchedBy	Matched by	How this candidate was found: the lane's LPR read against the entry read (plateRead); a credential presented at the lane (credential); the account registry by plate or phone (account); a checked-in reservation carrying the plate (reservation).	1..1	MatchCandidate.matchedBy (enumeration)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	confidence	Confidence	Server's confidence that this is the vehicle in the lane (a plate-read match projects APDS Confidence.overallConfidence).	1..1	Decimal	
	imageLink	Image link	The entry image, for visual confirmation (access-controlled per Part 9 §9.6).	0..1	PkCommon.Url	
RatePolicy	negotiable	Negotiable	Whether this RateTable MAY be selected by a pushNegotiatedRate command.	1..1	Boolean	
	displayName	Display name	Short agent-facing label for the table when offered as a negotiated rate (e.g. "Customer-service flat $20").	0..1	String	
	note	Note	Free-text guidance for the presenting system or agent. Informative — never evaluated by the server.	0..1	String	
ValidationProvider	name	Name	Name in natural language.	0..1	String	
	validationType	Validation type	e.g. flat discount, hours comped — implementer code list.	0..1	String	
	benefit	Benefit	What the validation is WORTH — disclosed in the lookup so agents can answer disputes. Exactly one of amount (money off), duration (comped time, priced at the applicable rate), or percentage (proportionate discount) applies.	0..1	Structure (members below)	
	benefit.description	Description	Human-readable statement of the benefit.	1..1	String	
	benefit.duration	Duration	Comped parking time (ISO 8601), valued at the applicable rate.	0..1	PkCommon.Duration	
	benefit.percentage	Percentage	Proportionate discount on the amount due, mirrored from a percentage ValidationProgram (Part 20 §20.1).	0..1	Decimal	

A.1.6 "SiteConfiguration" package

A.1.6.1 Location of "SiteConfiguration" package. The location of the "SiteConfiguration" package is:

`-- APX/SiteConfiguration` (source: `spec/openapi/domains/siteconfig/schemas.yaml`; normative text: APX Part 26)

A.1.6.2 Classes of the "SiteConfiguration" package

Table A.16 -- Classes of the "SiteConfiguration" package

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Class name	Designation	Definition	Kind	APDS status
CameraDetail	Camera detail	A camera anywhere on the site, not only on a lane (Part 26 §26.3). Carried on a SupplementalEquipment whose EquipmentDetail `role` is `camera`, as the Level B decoration `apds-ext:apx:camera@1.0`. Where the camera is (`area`, `level`, `lane`) and what it is built into (`builtInto`) are EquipmentDetail members, shared with every other piece of hardware; this decoration adds how it is mounted, what it looks at, and how it can be viewed. It holds no addresses, usernames or passwords: a view is obtained through `POST /v1/cameras/{id}/views` and the password never leaves the site (Part 26 §26.3). Camera models and stream profiles follow ONVIF (Profile S, Profile T) and are not redefined. `apds-ext:apx:lane-cameras@1.0` (Part 13) is unchanged.	class	Proposed: Camera (Tier 2); Proposed: CameraMountingEnum (Tier 2); Proposed: CameraViewEnum (Tier 2)
CameraView	Camera view	A single-use, short-lived link to a camera's live stream, a still, or a recording (Part 26 §26.3). Bound to the agent it was issued to and logged against the `correlationId`; it expires at `expiresAt`, never more than 5 minutes after issue, and it never contains a camera credential.	class	APX only
CameraViewRequest	Camera view request	Asks for a short-lived link to see a camera (Part 26 §26.3). Whoever holds the camera answers, the PARCS, the video system or an on-site gateway, and the camera's password never leaves the site. `playback` needs `from` and `to` and the `cameraPlayback` feature.	class	APX only
CommsPoint	Comms point	Any way a parker reaches help from a lane or a location (Part 26 §26.4): an intercom, an analog dialler, a posted phone number, a kiosk, a QR code, an app. A call platform matches an inbound contact to a comms point by the number it calls out as (`callerId`), the number it called (`phoneNumber`), or its own device id (`commsDeviceId`), and APX then answers with the lane, or with the location only when the comms point serves no single lane (a posted number shared by many lanes can never name the lane by itself).	class	Proposed: CommsPoint (Tier 3)
DisplayRecord	Display record	The record that a sign showed a message (Part 26 §26.9): which sign, which kind of message, when, and for which read or stay. Written by whichever system drove the display, the edge controller, the PARCS or the sign's own player, often with no APX command involved; immutable once written. It is the proof of display a refused-service message needs (Part 24 §24.4), and the data an operator measures the signs by.	class	APX only
EquipmentDetail	Equipment detail	What a piece of hardware is, where it is, and what it does (Part 26 §26.1). Carried on an APDS SupplementalEquipment as the Level B decoration `apds-ext:apx:equipment-detail@1.0` in its `extensions` container (Part 4 §4.3). The equipment TYPE stays the APDS `EquipmentTypeEnum` (often `paymentMachine` or `other`); `role` says what the item does on the site, from the fixed code list `apx-equipment-roles`.	class	Proposed: SupplementalEquipment (Tier 2)

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Class name	Designation	Definition	Kind	APDS status
EquipmentRecord	Equipment record	An APDS SupplementalEquipment as APX serves it (Part 26 §26.1): the stock APDS record plus its `extensions` container, which carries the `apds-ext:apx:equipment-detail@1.0` decoration (REQUIRED on every record this class serves), `apds-ext:apx:camera@1.0` on a camera, and `apds-ext:apx:external-ids@1.0` where other systems have ids for it. The APDS record itself is never reshaped.	class	APX only
ExternalIdentifiers	External identifiers	The ids other systems use for the same place, lane or equipment (Part 26 §26.6). Carried on any HierarchyElement as the Level B decoration `apds-ext:apx:external-ids@1.0`. APDS `SupplementalFacility.externalIdentifiers` holds untyped strings; here each id says which system issued it. `system` is a URI the issuer owns, usually its own domain, so APX names no products or platforms. `POST /v1/identifiers:resolve` finds the APX record from such an id.	class	APX only
IdentifierResolution	Identifier resolution	The APX record an external id names (Part 26 §26.6).	class	APX only
IdentifierResolveRequest	Identifier resolve request	An external id to look up (Part 26 §26.6), as it appears in an ExternalIdentifiers entry.	class	APX only
PlaceOperations	Place operations	Operational facts about a place that a call centre needs before a call (Part 26 §26.5). Carried on a place HierarchyElement as the Level B decoration `apds-ext:apx:place-operations@1.0`. `escalationContacts` lists roles in calling order, never names or phone numbers: the call platform holds those, so APX carries no personal contact data. A Part 17 approval request is addressed to a role from this list.	class	APX only

A.1.6.3 Specializations of the "SiteConfiguration" package

Table A.17 -- Specializations of the "SiteConfiguration" package

Class name	Parent class name
CommsPoint	Common.ApxResourceCore
DisplayRecord	Common.ApxResourceCore
DisplayRecord	Control.DisplayProof
EquipmentRecord	Place.SupplementalEquipment

A.1.6.4 Associations of the "SiteConfiguration" package

Table A.18 -- Associations of the "SiteConfiguration" package

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
CameraDetail	recorder.equipment	Equipment	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
CameraView	camera	Camera	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
CommsPoint	place	Place	The location it serves.	1..1	PkCommon.Reference	
	lane	Lane	The VehicularAccess it serves, when it serves exactly one.	0..1	PkCommon.Reference	
	equipment	Equipment	The SupplementalEquipment it is, when it is inventoried hardware (role `intercom`, `analogDialer`, `emergencyPhone`).	0..1	PkCommon.Reference	
	serves	Serves	The barrier an agent opens for this comms point, a gate or an access door, when there is one.	0..1	PkCommon.Reference	
	coverage.period	Period	Defines a continuous time period or a set of discontinuous time periods defined by the intersection of a set of criteria all within an overall delimiting interval.	0..1	PkCommon.Period	
DisplayRecord	display	Display	The sign, a SupplementalEquipment of §26.1 (role `laneDisplay` or `countSign`).	1..1	PkCommon.Reference	
	place	Place	The place of the display; the server derives it from the device, and a body value that disagrees is 422 `request-unprocessable`.	0..1	PkCommon.Reference	
	observation	Observation	The read that triggered the message (className `ObservationElement`), when there was one.	0..1	PkCommon.Reference	
	session	Session	The stay the message was for (className `Session`), when there was one.	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	command	Command	The Part 6 `displayMessage` command that drove the sign, when one did; `shownTime` and `contentHash` then agree with its `CommandResult.display`.	0..1	PkCommon.Reference	
EquipmentDetail	lane	Lane	The VehicularAccess the item serves. Absent for place-level equipment (an access door, a pay-on-foot station, a server).	0..1	PkCommon.Reference	
	builtInto	Built into	The host equipment this item is part of (an intercom in a door's call box, a camera in a pay station).	0..1	PkCommon.Reference	
	controls	Controls	The barriers this device opens (an exit verifier that controls gate 2, a card reader that controls an access door).	0..*	PkCommon.Reference	
	serviceProvider.organisation	Organisation	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
EquipmentRecord	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
IdentifierResolution	target	Target	The place, lane, equipment or comms point found.	1..1	PkCommon.Reference	
	place	Place	The place the target belongs to (the target itself when it is a place).	0..1	PkCommon.Reference	
PlaceOperations	escalationContacts.hours	Hours	When this role is reachable. Absent means always.	0..1	PkCommon.Period	

A.1.6.5 Attributes of the "SiteConfiguration" package

Table A.19 -- Attributes of the "SiteConfiguration" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
CameraDetail	mounting	Mounting	When `builtIn`, EquipmentDetail `builtInto` names the host, for example a pay station's driver camera.	0..1	CameraDetail.mounting (enumeration)	
	view	View	What the camera looks at; one camera may cover several.	1..*	CameraDetail.view (enumeration)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	faces	Faces	For lanes, plazas and ramps, relative to the facility (Part 13 §13.3a).	0..1	CameraDetail.faces (enumeration)	
	primary	Primary	Show this camera first for its lane or area.	0..1	Boolean	
	ptz	Ptz	Can pan, tilt and zoom.	0..1	Boolean	
	recorder	Recorder	The DVR or NVR that records it (an equipment item with role `videoRecorder`) and the channel.	0..1	Structure (members below)	
	recorder.channel	Channel	The channel on the recorder that keeps this camera. †	0..1	String	
	streams	Streams	What the camera can deliver, so a host knows what kind of view to ask for.	0..*	Structure (members below)	
	streams.protocol	Protocol	The stream protocol the camera can deliver (Part 26 §26.3). †	1..1	CameraDetail.streams.protocol (enumeration)	
	streams.transport	Transport	The transport of the stream, such as tcp or udp for RTSP. †	0..1	String	
	streams.resolution	Resolution	The picture size of the stream, such as 1920x1080. †	0..1	String	
	retentionDays	Retention days	How long recordings are kept; stated per camera because `driver` and `pedestrians` views capture faces (Part 26 §26.3).	0..1	Integer	
	credentialRef	Credential ref	For a camera that cannot sit behind a gateway, the label of the credential the receiving system looks up in its own vault. NEVER the secret itself; the secret is exchanged once, outside APX, at onboarding (Part 9 §9.7).	0..1	String	
CameraView	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	
	kind	Kind	The kind of view the link delivers. †	1..1	CameraView.kind (enumeration)	
	url	Url	The single-use link, bound to the agent, that delivers the view until expiresAt (Part 26 §26.3). †	1..1	Url	
	protocol	Protocol	What the link serves (`snapshot` is an image).	0..1	CameraView.protocol (enumeration)	
	expiresAt	Expires at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	issuedTo	Issued to	The agent, echoed.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	from	From	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	to	To	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
CameraViewRequest	kind	Kind	Whether a live view, a snapshot or a playback is asked for (Part 26 §26.3). †	1..1	CameraViewRequest.kind (enumeration)	
	from	From	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	to	To	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	agent	Agent	The staff member the view is issued to; every view is logged against them.	1..1	String	
	agentType	Agent type	Whether a person or an AI agent will view the camera. †	0..1	CameraViewRequest.agentType (enumeration)	
	correlationId	Correlation id	The interaction the view belongs to; a view link MUST NOT be reused outside it.	1..1	Uuid	
	interactionId	Interaction id	The calling application's opaque interaction identifier (Part 17 §17.7). †	0..1	String	
CommsPoint	id	Id	Unique identifier of the record (Part 4).	0..1	Uuid	read-only
	version	Version	Server-managed; bodies carry it only for a versioned replace (Part 4 §4.2a).	0..1	Integer	read-only
	type	Type	definedValue from apx-comms-point-types.	1..1	String	
	phoneNumber	Phone number	E.164. The number that is called when help is requested, dialled by the parker for a posted number, or by the intercom or dialler when its button is pushed.	0..1	String	
	callerId	Caller id	E.164. The number the device calls out as.	0..1	String	
	commsDeviceId	Comms device id	The id the call platform uses for this comms point when it identifies it by neither caller id nor dialled number.	0..1	String	
	coverage	Coverage	When the comms point is answered and in which languages. The answering call centre itself is not named.	0..*	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	coverage.languages	Languages	BCP 47 language tags.	0..*	String	
DisplayRecord	id	Id	Unique identifier of the record (Part 4).	0..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	0..1	Integer	read-only
	messageKind	Message kind	definedValue of apx-display-message-kinds, or an implementer code for a location's own messages.	1..1	String	
EquipmentDetail	role	Role	definedValue from apx-equipment-roles (a fixed list; `other` is a code, not free text).	1..1	String	
	manufacturer	Manufacturer	The maker of the item, as named on it (Part 26 §26.1). †	0..1	String	
	model	Model	Vehicle model.	0..1	String	
	firmwareVersion	Firmware version	The firmware release running on the item; recommended. †	0..1	String	
	softwareVersion	Software version	The application software on the device, when distinct from its firmware.	0..1	String	
	serialNumber	Serial number	The maker's serial number of the item. †	0..1	String	
	macAddresses	Mac addresses	One per network interface, lower-case hex without separators.	0..*	String	
	installedAt	Installed at	The date the item went into service. †	0..1	Date	
	area	Area	Where on the site the item is, a definedValue from apx-area-types (Part 26 §26.2).	0..1	String	
	level	Level	The floor label as signed on site.	0..1	String	
	serviceProvider	Service provider	Who services the item. An organisation and a support reference, never a person.	0..1	Structure (members below)	
	serviceProvider.supportReference	Support reference	The provider's own reference for this unit or contract (an asset tag, a contract number).	0..1	String	
ExternalIdentifiers	identifiers	Identifiers	The identifiers other systems use for this element, each with the system that issued it (Part 26 §26.6). †	1..*	Structure (members below)	
	identifiers.system	System	A URI owned by the system that issued the id.	1..1	Url	
	identifiers.id	Id	Unique identifier of the record (Part 4).	1..1	String	
IdentifierResolution	className	Class name	The target's class, repeated for convenience.	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
IdentifierResolveRequest	system	System	The URI of the system that issued the identifier, as it appears in the element's external identifiers. †	1..1	Url	
	id	Id	Unique identifier of the record (Part 4).	1..1	String	
PlaceOperations	commsAccountId	Comms account id	The id the call platform uses for the whole site (its account), the site-level pair of `CommsPoint.commsDeviceId`.	0..1	String	
	escalationContacts	Escalation contacts	Who to escalate to, by role, in order.	0..*	Structure (members below)	
	escalationContacts.role	Role	definedValue from apx-escalation-roles.	1..1	String	
	escalationContacts.order	Order	Calling order; 1 is tried first.	1..1	Integer	

A.1.7 "Alerts" package

A.1.7.1 Location of "Alerts" package. The location of the "Alerts" package is:

`-- APX/Alerts` (source: `spec/openapi/domains/alerts/schemas.yaml`; normative text: APX Part 7)

A.1.7.2 Classes of the "Alerts" package

Table A.20 -- Classes of the "Alerts" package

Class name	Designation	Definition	Kind	APDS status
Alert	Alert	An operational condition requiring attention. Alert types are OPEN (UserDefinedCodeList `apx-alert-types`, seeded from APDS Use Case C.2.2 transaction exceptions and space statuses); severity is CLOSED.	class	Proposed: Alert (Tier 2); Proposed: AlertSeverityEnum (Tier 2); Proposed: AlertStatusEnum (Tier 2)
AlertTransition	Alert transition	Optional body of `POST /v1/alerts/{id}/acknowledge` and `/resolve` (Part 7 §7.2). Annotates the `statusHistory[]` entry the transition appends. Sending no body is equivalent to sending `{}`.	class	APX only

A.1.7.3 Specializations of the "Alerts" package

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There are no specializations in the "Alerts" package.

A.1.7.4 Associations of the "Alerts" package

Table A.21 -- Associations of the "Alerts" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
Alert	source.device	Device	Reference to a SupplementalEquipment.	0..1	PkCommon.Reference	
	relatedEntity	Related entity	The APDS/APX entity this alert concerns (Session, AssignedRight, Command…).	0..1	PkCommon.Reference	
	supportInteraction	Support interaction	The Part 17 SupportInteraction the alert was raised from, when a call produced it (a receipt request, a refund request, a damage report; Part 7 §7.6).	0..1	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
AlertTransition	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

A.1.7.5 Attributes of the "Alerts" package

Table A.22 -- Attributes of the "Alerts" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
Alert	id	Id	Server-assigned when the raise carries none. A client MAY supply its own UUID on raise (Part 4 §4.1, Part 7 §7.1); an id that already exists is 409 `id-collision`.	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	alertType	Alert type	definedValue from apx-alert-types or an implementer code list.	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	severity	Severity	How serious the condition is, from info to critical (Part 7). †	1..1	Alert.severity (enumeration)	
	status	Status	Lifecycle: raised → acknowledged → resolved | expired.	1..1	Alert.status (enumeration)	read-only
	source	Source	Where the condition was detected.	0..1	Structure (members below)	
	source.place	Place	HierarchyElement UUID (subtree semantics for filtering).	0..1	Uuid	
	occurrenceTime	Occurrence time	When the condition actually occurred (may precede detection).	0..1	PkCommon.DateTime	
	detectionTime	Detection time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	expiryTime	Expiry time	The end of the alert's validity window (Part 7 §7.3). Settable on raise; when absent the server MAY default it by policy per `alertType`, and returns the value it applies. If the alert is still `raised` or `acknowledged` at this instant the server transitions it to `expired` and publishes `apx.alert.status.v1`. Absent means the alert never expires on its own.	0..1	PkCommon.DateTime	
	description	Description	Human-readable detail.	0..1	PkCommon.MultilingualString	
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The alert status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	Client/agent principal that caused the transition.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
AlertTransition	detail	Detail	Copied verbatim into the appended history entry's `detail`.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	agent	Agent	The human or AI principal acting through the calling client (as `Command.agent`, Part 6 §6.1). When given it is recorded as the appended entry's `actor`; otherwise `actor` is the principal derived from the token. Attribution only: authorization is always the token's.	0..1	String	

A.1.8 "Accounts" package

A.1.8.1 Location of "Accounts" package. The location of the "Accounts" package is:

`-- APX/Accounts` (source: `spec/openapi/domains/accounts/schemas.yaml`; normative text: APX Part 13)

A.1.8.2 Classes of the "Accounts" package

Table A.23 -- Classes of the "Accounts" package

Class name	Designation	Definition	Kind	APDS status
Account	Account	A billable parking account (monthly parker, fleet…), anchored on an APDS RightHolder.	class	Proposed: RightHolder (Tier 2); Proposed: AccountStatusEnum (Tier 2)
AccountSearch	Account search	Request body of `POST /v1/accounts:search` (Part 13 §13.1): the same keys as the `GET` lookup, carried in a body so personal data never enters a URL (Part 9 §9.6).	class	APX only
PaymentDetail	Payment detail	The `apds-ext:apx:payment-detail@1.0` decoration (Part 13 §13.6a) on a `PaymentRecord` or an APDS `Payment`: the rate sold and the lines that sum to the total, so revenue reports and the deck price check have the base amount, the fee, and the product without a bilateral code. On a `PaymentRecord` it carries `rateSold` and `lines`; on a native APDS `Payment` it carries `rateSold` only, because the Payment's own `paymentLines` are the itemization there.	class	Proposed: RateSold (Tier 3); Proposed: RateProductEnum (Tier 3); Proposed: RateClassEnum (Tier 3)
PaymentLink	Payment link	A hosted payment link sent to a customer (Part 13 §13.1a) — the customer-service payment action of first resort. APX carries the link's lifecycle, never card data; the hosted page is the implementer's PCI scope.	class	APX only

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Class name	Designation	Definition	Kind	APDS status
PaymentLinkCancel	Payment link cancel	Request body cancelling a payment link before the customer pays (Part 13 §13.1a). The body is optional; `reason` is recorded on the link's audit trail.	class	APX only
PaymentRecord	Payment record	A payment taken through APX (maps to the APDS Payment concept; card capture stays in the implementer's PCI scope).	class	Proposed: Payment (Tier 2); Proposed: PaymentStatusEnum (Tier 2); Proposed: CaptureStatusEnum (Tier 2)
PaymentSearch	Payment search	Request body of `POST /v1/payments:search` (Part 13 §13.2): the same keys and rules as the `GET` lookup, in a body (Part 9 §9.6).	class	APX only
Posting	Posting	An accounting write-back of a payment to a monthly-parking/AR system.	class	APX only
PostingRequest	Posting request	Request body for the accounting write-back of a payment.	class	APX only
ReceiptDelivery	Receipt delivery	The outcome of a receipt request (Part 13 §13.1a).	class	APX only
ReceiptRequest	Receipt request	Asks the implementation to send the receipt for a settled payment again (Part 13 §13.1a). The `destination` travels in the body, never in a URL, and is not stored beyond the delivery.	class	APX only

A.1.8.3 Specializations of the "Accounts" package

There are no specializations in the "Accounts" package.

A.1.8.4 Associations of the "Accounts" package

Table A.24 -- Associations of the "Accounts" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
Account	holder	Holder	Reference to the APDS RightHolder.	0..1	PkCommon.Reference	
	credentials	Credentials	The account's CredentialRecords (Part 21), when the server claims `apx-credentials` — additive; `cardNumber` and `plates` remain the APDS-only summary.	0..*	PkCommon.Reference	
	balance	Balance	Current balance due.	0..1	Rates.AmountInCurrency	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	places	Places	HierarchyElement subtree roots this account is valid at. On aggregating implementations (one endpoint fronting many locations) this is how consumers attribute the account to its site(s); results of place-less account lookups MUST stay within the caller's `apx_places` grant (Part 13 §13.5).	0..*	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
PaymentDetail	rateSold.rateTable	Rate table	The APDS RateTable at the version applied, when known.	0..1	PkCommon.VersionedReference	
	lines	Lines	The itemization, as APDS `PaymentLines` (by `$ref`, never re-shaped). Each line's code is its `idCode`: a definedValue of `apx-payment-line-codes` (Part 11) or an implementer code. A line coded `validation` has `paymentType: validation` and its `value` is the value the validation offset (not money collected); every other line has `paymentType: payment`, and a reduction (`discount`) is a negative `value`. The `currencyValues` of the `paymentType: payment` lines MUST sum to the record's `amount`, in its `currencyType`; otherwise 422 `request-unprocessable` and nothing is charged. Only on a `PaymentRecord`: on a native APDS `Payment` the itemization is that Payment's own `paymentLines` and this member is absent (one store, Part 13 §13.6a).	0..*	Rates.PaymentLine	
PaymentLink	place	Place	Site binding (Part 13 §13.5).	1..1	PkCommon.Reference	
	account	Account	The account the payment settles (or omit and use ticketNumber).	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	session	Session	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	amount	Amount	Requested amount; omit to charge the current amount due.	0..1	Rates.AmountInCurrency	
	payment	Payment	The resulting PaymentRecord once paid.	0..1	PkCommon.Reference	
	resolutionContext	Resolution context	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	approval	Approval	Approval evidence, when the context's AllowedAction for the link said requiresApproval (Part 17 §17.3).	0..1	Control.Approval	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
PaymentRecord	place	Place	The HierarchyElement (site) this payment is bound to. REQUIRED so every payment — in API responses and in `apx.accounts.payment.recorded.v1` events — is attributable to its location on implementations fronting many places (Part 13 §13.5).	1..1	PkCommon.Reference	
	amount	Amount	A class supporting the definition of a unit of currency in a defined currency.	1..1	Rates.AmountInCurrency	
	refundedAmount	Refunded amount	Cumulative amount refunded so far (Part 13 §13.1a). Absent or zero = nothing refunded. When it reaches `amount` the record is `reversed`; a partial refund leaves it `approved` with this member showing what was given back.	0..1	Rates.AmountInCurrency	read-only

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	account	Account	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	postings	Postings	Accounting write-backs (PARIS-style) applied for this payment.	0..*	Accounts.Posting	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
Posting	newBalance	New balance	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
PostingRequest	account	Account	Account to post against when the payment isn't already account-bound.	0..1	PkCommon.Reference	
ReceiptDelivery	payment	Payment	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	

A.1.8.5 Attributes of the "Accounts" package

Table A.25 -- Attributes of the "Accounts" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
Account	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	
	name	Name	Name in natural language.	0..1	String	
	phone	Phone	The contact phone number on file, personal data returned only under `apx.accounts:read` (Part 9 §9.6). †	0..1	String	
	email	Email	Contact e-mail on file. Personal data under the same Part 9 §9.6 minimization rule as `phone`: returned only under `apx.accounts:read` (Part 13 §13.1).	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	cardNumber	Card number	Access credential number (NOT a payment card PAN).	0..1	String	
	plates	Plates	The licence plates registered to the account. †	0..*	String	
	accountStatus	Account status	Whether the account is enabled for use. †	1..1	Account.accountStatus (enumeration)	
AccountSearch	name	Name	Name in natural language.	0..1	String	
	phone	Phone	A phone number to look accounts up by. †	0..1	String	
	email	Email	An e-mail address to look accounts up by. †	0..1	String	
	card	Card	Truncated card digits only (two to four); more is 422 `personal-data-not-permitted`.	0..1	String	
	plate	Plate	Vehicle license plate text as read or entered.	0..1	String	
	place	Place	HierarchyElements that narrow the lookup to accounts valid at them. †	0..*	Uuid	
	page	Page	Pagination information for this page of results.	0..1	Integer	
PaymentDetail	rateSold	Rate sold	The rate the vendor sold, as the vendor names it.	0..1	Structure (members below)	
	rateSold.id	Id	The vendor's rate id, or the APDS RateTable id when the deck is the source.	0..1	String	
	rateSold.name	Name	Name in natural language.	0..1	String	
	rateSold.product	Product	The kind of product the rate sold. †	0..1	PaymentDetail.rateSold.product (enumeration)	
	rateSold.class	Class	How the price of the rate sold was arrived at. †	0..1	PaymentDetail.rateSold.class (enumeration)	
PaymentLink	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	ticketNumber	Ticket number	Number printed on, or encoded in, the parking ticket.	0..1	String	
	channel	Channel	Delivery channel (sms | email | other implementer code list).	1..1	String	
	sentTo	Sent to	Masked destination (e.g. "+1•••••••4567"). PII-minimized.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	status	Status	The link's lifecycle state (Part 13 §13.1a). †	1..1	PaymentLink.status (enumeration)	read-only
	expiresAt	Expires at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	correlationId	Correlation id	Identifier that links related requests and records.	0..1	Uuid	
	resolutionContextVersion	Resolution context version	The `version` of the ResolutionContext whose allowed actions this write was checked against, recorded by the server so the decision stays reconstructible after the context is recomputed or expires (Part 17 §17.2).	0..1	Integer	read-only
PaymentLinkCancel	reason	Reason	Why the link was cancelled (implementer code list, e.g. wrongRecipient, paidOtherwise).	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
PaymentRecord	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	transactionID	Transaction ID	The transaction identifier of the payment, returned when it is taken (Part 13 §13.1). †	1..1	String	read-only
	dateCollected	Date collected	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	read-only
	meansOfPayment	Means of payment	How the customer paid, in APDS's own vocabulary (`MeansOfPaymentEnum`, which APDS uses for the means a place accepts). A card whose credit or debit type the payment layer does not report is `unknown`.	0..1	Rates.MeansOfPaymentEnum	
	channel	Channel	Where the payment was captured. `lane` = a lane device; `payStation` = a pay-on-foot or pay station; `agent` = a person on the implementer's own PCI-scoped terminal; `autoAttendant` = a PCI-compliant IVR that captures the card out of band; `online` = web or mobile app. APX never carries PANs, whichever channel is used.	0..1	PaymentRecord.channel (enumeration)	
	paymentStatus	Payment status	The payment layer's answer. `approved` = approved (for a hold, see `captureStatus`); `declined` = refused by the payment layer; `reversed` = a hold voided, or a payment refunded in full. Transitions per Part 13 §13.1a.	1..1	PaymentRecord.paymentStatus (enumeration)	read-only

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	captureStatus	Capture status	Whether an approved payment's funds have been collected (Part 13 §13.1a). `authorized` = a hold: the payment layer approved an authorization-only request (`captureLater: true`), funds are held, nothing is collected yet; settled by `POST /v1/payments/{id}/capture` or released by …`/void`. `captured` = collected. Absent = `captured` (a sale). A hold is returned to the caller that created it, but is not listed by `GET /v1/payments` unless asked for, is not published on `apx.accounts.payment.recorded.v1`, and is not materialized as an APDS Payment until captured.	0..1	PaymentRecord.captureStatus (enumeration)	read-only
	captureLater	Capture later	Create-time intent: `true` asks for authorization only (the record is created `paymentStatus: approved`, `captureStatus: authorized` and is settled later by `POST /v1/payments/{id}/capture` or released by …`/void`). Absent or `false` = sale (authorize and capture at once). A server that does not model an authorization lifecycle refuses `true` with 422 `request-unprocessable` (Part 13 §13.1a).	0..1	Boolean	
	ticketNumber	Ticket number	Number printed on, or encoded in, the parking ticket.	0..1	String	
	cardLast4	Card last4	Truncated payment-card digits (PCI-permitted). For transient parkers with no LPR and no readable ticket, this is often the ONLY key a caller can provide — the lookup of last resort.	0..1	String	
PaymentSearch	ticketLast4	Ticket last4	The last four digits of the ticket number, a truncated key limited to the last 8 hours without a date (Part 13 §13.2). †	0..1	String	
	cardLast4	Card last4	The last four digits of the payment card, a truncated key limited to the last 8 hours without a date (Part 13 §13.2). †	0..1	String	
	ticketNumber	Ticket number	Number printed on, or encoded in, the parking ticket.	0..1	String	
	account	Account	The identifier of an account whose payments are sought (Part 13 §13.2). †	0..1	Uuid	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	date	Date	The date the payments were made, narrowing a keyed query. †	0..1	Date	
	place	Place	HierarchyElements that narrow a keyed query to payments bound to them. †	0..*	Uuid	
	captureStatus	Capture status	Whether to return only holds or only collected payments; holds are excluded unless asked for (Part 13 §13.2). †	0..1	PaymentSearch.capture Status (enumeration)	
	page	Page	Pagination information for this page of results.	0..1	Integer	
Posting	confirmationNumber	Confirmation number	The confirmation number the accounting system returned for the posting. †	1..1	String	
	accountUpdated	Account updated	Whether the accounting system updated the account. †	1..1	Boolean	
	postedTo	Posted to	Target accounting system identifier (e.g. "paris").	0..1	String	
	time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
PostingRequest	postedTo	Posted to	Target accounting system identifier; server default applies when omitted.	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ReceiptDelivery	channel	Channel	The channel the receipt was sent by. †	1..1	ReceiptDelivery.channel (enumeration)	
	status	Status	Whether the receipt is queued, sent or failed. †	1..1	ReceiptDelivery.status (enumeration)	
	link	Link	For `channel` = `link`, the receipt's short-lived URL.	0..1	Url	
	requestedAt	Requested at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
ReceiptRequest	channel	Channel	`print` re-prints at the device the payment was taken on; `link` returns a short-lived URL for the agent to read out or forward.	1..1	ReceiptRequest.channel (enumeration)	
	destination	Destination	The e-mail address or E.164 number for `email` and `sms`; ignored for `print` and `link`.	0..1	String	
	agent	Agent	The agent who asked for the receipt to be re-sent, for the audit record. †	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	correlationId	Correlation id	Identifier that links related requests and records.	0..1	Uuid	

A.1.9 "Lpr" package

A.1.9.1 Location of "Lpr" package. The location of the "Lpr" package is:

`-- APX/Lpr` (source: `spec/openapi/domains/lpr/schemas.yaml`; normative text: APX Part 13)

A.1.9.2 Classes of the "Lpr" package

Table A.26 -- Classes of the "Lpr" package

Class name	Designation	Definition	Kind	APDS status
AttributeRead	Attribute read	One recognized attribute with its own confidence (0–1, APDS Confidence scale).	class	Proposed: AttributeRead (Tier 1)
LaneCameras	Lane cameras	The LPR cameras on a lane and which way each one faces (Part 13 §13.3a(5)). Carried on an APDS VehicularAccess as the Level B decoration `apds-ext:apx:lane-cameras@1.0` in its `extensions` container (Part 4 §4.3). Facing is relative to the facility, not to the lane's mode, so it holds on `reversible` lanes. Describes the setup only; APX derives nothing from it.	class	Proposed: VehicularAccess (Tier 2); Proposed: LaneCamera (Tier 2); Proposed: CameraFacingEnum (Tier 2)
LprRead	Lpr read	One plate read joined with its ticket/session context.	class	Proposed: ImageTypeEnum (Tier 2)

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Class name	Designation	Definition	Kind	APDS status
LprReadDetail	Lpr read detail	What a modern LPR camera knows beyond the plate string and one overall score (Part 13 §13.3a). Carried on the ingested APDS Observation as the Level B decoration `apds-ext:apx:lpr-read@1.0` in its `extensions` container (Part 4 §4.3 — plain APDS consumers ignore it), and projected on `LprRead.detail` and `PlateCandidate.detail`. Every field optional; each recognized attribute carries its own confidence. APDS's `vehicleAncillaryIdentification` (country, stateProvince, make, model, color) remains the APDS-visible copy of the winning values; this block adds the per-attribute confidence, the candidates that lost, and the passage geometry APDS has no fields for.	class	Proposed: ObservationElement (Tier 1); Proposed: AlternateRead (Tier 1); Proposed: ReadReview (Tier 2); Proposed: Image (Tier 2); Proposed: ImageRegion (Tier 2); Proposed: ReadAttributeEnum (Tier 1); Proposed: VehicleMovementEnum (Tier 1); Proposed: PlateFaceEnum (Tier 2); Proposed: ReadReviewStateEnum (Tier 2)
LprReadSearch	Lpr read search	Request body of `POST /v1/lpr/reads:search` (Part 13 §13.3): the same keys as the `GET` lookup, carried in a body so a plate never enters a URL that proxies and access logs keep (Part 9 §9.6). At least one of `plate`, `ticket`, `observation`, or `session` is REQUIRED.	class	APX only
PlateCorrection	Plate correction	Request body of `PUT /v1/lpr/reads/{observation}/plate` (Part 13 §13.3a(4a)): a reviewer's decision on one read. `confirmed` keeps the engine's values; `corrected` replaces them with the ones given; `rejected` marks the read unusable for pairing and enforcement. `plate`, `country`, and `stateProvince` belong to `corrected` only: sent with another decision they are 422 `request-unprocessable`.	class	APX only

A.1.9.3 Specializations of the "Lpr" package

There are no specializations in the "Lpr" package.

A.1.9.4 Associations of the "Lpr" package

Table A.27 -- Associations of the "Lpr" package

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
LprRead	place	Place	The HierarchyElement (site) where the read occurred. REQUIRED so cross-lookups and `apx.data.observation.created.v1` consumers can always attribute the read to its location (Part 13 §13.5).	1..1	PkCommon.Reference	
	detail	Detail	Further detail, in free text.	0..1	Lpr.LprReadDetail	
	observation	Observation	The underlying APDS Observation.	0..1	PkCommon.Reference	
	session	Session	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	lane	Lane	The VehicularAccess (lane) the read was taken at, when the Observation's `elementIds` reference one. Whether the read was an entry or an exit is `detail.accessEvent` (Part 13 §13.3a(4)); the lane used does not decide it.	0..1	PkCommon.Reference	
	recentReservations	Recent reservations	The same customer's last 10 reservations (newest first) — customer resolved from the plate via the account registry or the reservation's own vehicle credentials.	0..10	Reservations.ReservationSummary	
	extensions	Extensions	The underlying Observation's `extensions`, projected minus the `apds-ext:apx:lpr-read@1.0` block (which is `detail`), so vendor keys preserved on ingest are visible here (Part 13 §13.3a, Part 4 §4.3).	0..1	Common.Extensions	
LprReadDetail	plate	Plate	Vehicle license plate text as read or entered.	0..1	Lpr.AttributeRead	
	country	Country	Plate issuing country (APDS VehicleAncillaryIdentification.country vocabulary).	0..1	Lpr.AttributeRead	
	stateProvince	State province	Plate issuing state/province (APDS VehicleAncillaryIdentification.stateProvince vocabulary).	0..1	Lpr.AttributeRead	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	plateCategory	Plate category	The plate's category where the issuing country uses one (e.g. the prefix on some Gulf-state plates). Absent where the country has none.	0..1	Lpr.AttributeRead	
	make	Make	Vehicle make.	0..1	Lpr.AttributeRead	
	model	Model	Vehicle model.	0..1	Lpr.AttributeRead	
	color	Color	One recognized attribute with its own confidence (0–1, APDS Confidence scale).	0..1	Lpr.AttributeRead	
	bodyType	Body type	The engine's own vehicle class label (SUV, sedan, pickup, bus, truck…), carried as the engine reports it and not mapped to a standard list.	0..1	Lpr.AttributeRead	
	review.original.plate	Plate	Vehicle license plate text as read or entered.	0..1	Lpr.AttributeRead	
	review.original.country	Country	One recognized attribute with its own confidence (0–1, APDS Confidence scale).	0..1	Lpr.AttributeRead	
	review.original.stateProvince	State province	State or province that issued the plate.	0..1	Lpr.AttributeRead	
PlateCorrection	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

A.1.9.5 Attributes of the "Lpr" package

Table A.28 -- Attributes of the "Lpr" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
AttributeRead	value	Value	The recognised value; for plate, country, state, make, model and colour it equals the value carried in the observed credential or vehicle ancillary identification. †	1..1	String	
	confidence	Confidence	Confidence in the value, from 0 to 1.	0..1	Decimal	
LaneCameras	cameras	Cameras	The LPR cameras on the lane, each with its identifier and the way it faces. †	1..*	Structure (members below)	
	cameras.cameraId	Camera id	The camera, as `Image.cameraID` names it on its reads. MUST be unique within the Place.	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	cameras.faces	Faces	`inward` — looking into the facility, the way entering traffic travels (reads the rear plates of entering vehicles); `outward` — looking out of it, the way exiting traffic travels (reads the rear plates of exiting vehicles).	1..1	LaneCameras.cameras.faces (enumeration)	
LprRead	plate	Plate	Vehicle license plate text as read or entered.	1..1	String	
	confidence	Confidence	Overall read accuracy (APDS 4.1 Confidence.overallConfidence). Per-attribute confidences are in `detail`.	0..1	Decimal	
	laneTravel	Lane travel	DEPRECATED since 0.12.0, removed at 1.0. APX no longer derives direction; use `detail.accessEvent` (entry | exit), which the LPR system reports (Part 13 §13.3a(4)). Servers SHOULD return `unknown`.	0..1	LprRead.laneTravel (enumeration)	read-only, deprecated
	observationDateTime	Observation date time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	ticketNumber	Ticket number	Number printed on, or encoded in, the parking ticket.	0..1	String	
	imageLink	Image link	Screenshot/still of the read (APDS Image). Absent when no image was taken or the imagery has been purged (see `purgedImagery`). The preferred still; every unpurged image is in `images[]`.	0..1	PkCommon.Url	
	images	Images	Every unpurged image of the read (Part 13 §13.3c), by kind: the APDS `ImageTypeEnum` values plus `plateExtended` (a wider crop around the plate) and `context` (the scene around the vehicle, wider than the overview), carried as `imageType` strings until APDS adds them. Same access and purge rules as `imageLink`.	0..*	Structure (members below)	
	images.id	Id	The APDS Image id.	1..1	String	
	images.imageType	Image type	`overview`, `plate` (APDS ImageTypeEnum), `plateExtended`, `context`, or an implementer kind.	0..1	String	
	images.imageLink	Image link	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
	images.cameraId	Camera id	The camera that captured the image, as `Image.cameraID` names it (Part 13 §13.3a(5)). †	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	cameraId	Camera id	The capturing camera (APDS Image.cameraID), opaque.	0..1	String	
	purgedImagery	Purged imagery	True when imagery for this read existed and was purged under the published retention schedule (Part 13 §13.3b), so a consumer can tell "picture purged" from "no picture taken". Absent or false otherwise.	0..1	Boolean	read-only
LprReadDetail	alternateReads	Alternate reads	The other candidate plate strings the engine considered for this capture, best first — kept so a correction (Part 17 §17.5) can pick a loser.	0..*	Structure (members below)	
	alternateReads.plate	Plate	Vehicle license plate text as read or entered.	1..1	String	
	alternateReads.stateProvince	State province	State or province that issued the plate.	0..1	String	
	alternateReads.confidence	Confidence	Confidence in the value, from 0 to 1.	0..1	Decimal	
	frameReads	Frame reads	How many frames read this plate as the vehicle passed. Engines need at least two to call `movement`, so a camera that sees only one of the vehicle's plates still reports it (Part 13 §13.3a(3)).	0..1	Integer	
	platesRead	Plates read	How many distinct plates of the vehicle were read in the passage (1 = one plate; 2 = front and rear).	0..1	Integer	
	plateFace	Plate face	Which plate of the vehicle was read, for engines that can tell.	0..1	LprReadDetail.plateFace (enumeration)	
	plateBox	Plate box	The plate's position in the camera frame, as fractions 0–1 of the frame's height (`top`, `bottom`) and width (`left`, `right`), so it survives image resizing.	0..1	Structure (members below)	
	plateBox.top	Top	The top edge of the plate, as a fraction 0–1 of the frame's height. †	1..1	Decimal	
	plateBox.left	Left	The left edge of the plate, as a fraction 0–1 of the frame's width. †	1..1	Decimal	
	plateBox.bottom	Bottom	The bottom edge of the plate, as a fraction 0–1 of the frame's height. †	1..1	Decimal	
	plateBox.right	Right	The right edge of the plate, as a fraction 0–1 of the frame's width. †	1..1	Decimal	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	movement	Movement	The vehicle's motion relative to the camera: toward it, away from it, or stopped. A camera fact, not a statement about the facility. `approaching` and `receding` are deprecated synonyms of `toward` and `away` — accepted until 1.0; writers SHOULD send the new values (Part 13 §13.3a(3)).	0..1	LprReadDetail.movement (enumeration)	
	speed	Speed	Vehicle speed in km/h when the engine measures it; absent otherwise, never a sentinel such as -1.	0..1	Decimal	
	accessEvent	Access event	Whether this read was a vehicle entering or leaving the facility, as reported by the LPR system — not the lane's configured purpose (the lane's APDS `accessType`), and never inferred by the APX server. Absent means `unknown`. The LPR system MAY revise it through PUT `/v1/lpr/reads/{observation}/access-event` (Part 13 §13.3a(4)).	0..1	LprReadDetail.accessEvent (enumeration)	
	captureGroup	Capture group	Opaque id linking the reads of one vehicle's passage — several frames, and one camera or several (e.g. front plate and rear plate) — so consumers can treat them as one event. Reads of one group SHOULD carry the same `accessEvent` (Part 13 §13.3a(6)).	0..1	String	
	engine	Engine	Recognition engine/vendor identifier, opaque (for confidence calibration downstream).	0..1	String	
	review	Review	The human-review state of the read (Part 13 §13.3a(4a)): a low-confidence read, or any read in a jurisdiction that requires review, is `pending` until a reviewer confirms, corrects, or rejects it through PUT `/v1/lpr/reads/{observation}/plate`. `notRequired` is a read no rule sent to review. Absent means the implementation does not review reads.	0..1	Structure (members below)	
	review.state	State	Where the read is in human review (Part 13 §13.3a(4a)). †	0..1	LprReadDetail.review.state (enumeration)	
	review.reasons	Reasons	Why the read was sent to review — definedValues from `apx-read-review-reasons` (Part 11) or implementer values.	0..*	String (code list apx-read-review-reasons)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	review.decidedTime	Decided time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	review.decidedBy	Decided by	Opaque reviewer principal.	0..1	String	
	review.original	Original	The engine's values before the first correction, with their confidences, kept so the correction is auditable. Set by the server on the first `corrected` decision and never changed afterwards (Part 13 §13.3a(4a)).	0..1	Structure (members below)	
LprReadSearch	plate	Plate	Vehicle license plate text as read or entered.	0..1	String	
	ticket	Ticket	A ticket number whose reads are sought. †	0..1	String	
	observation	Observation	The identifier of an Observation whose read is sought. †	0..1	Uuid	
	session	Session	The identifier of a Session whose reads are sought. †	0..1	Uuid	
	place	Place	Narrow results below the grant to one HierarchyElement and its subtree.	0..1	Uuid	
	page	Page	Pagination information for this page of results.	0..1	Integer	
PlateCorrection	decision	Decision	The reviewer's decision on the read. †	1..1	PlateCorrection.decision (enumeration)	
	plate	Plate	The corrected plate. Required when `decision` is `corrected`; not allowed otherwise.	0..1	String	
	country	Country	APDS VehicleAncillaryIdentification.country vocabulary. Only with `corrected`.	0..1	String	
	stateProvince	State province	APDS VehicleAncillaryIdentification.stateProvince vocabulary. Only with `corrected`.	0..1	String	
	reason	Reason	Why the action was taken.	0..1	String	
	reviewer	Reviewer	Opaque reviewer principal (recorded as `review.decidedBy`).	0..1	String	

A.1.10 "Reservations" package

A.1.10.1 Location of "Reservations" package. The location of the "Reservations" package is:

`-- APX/Reservations` (source: `spec/openapi/domains/reservations/schemas.yaml`; normative text: APX Part 14)

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A.1.10.2 Classes of the "Reservations" package

Table A.29 -- Classes of the "Reservations" package

Class name	Designation	Definition	Kind	APDS status
PermitExtension	Permit extension	The `apds-ext:apx:permit@1.1` extension object (Part 14 §14.2; `@1.0` remains valid and carries the first two members only): links a renewal permit to the one it renews, so a portal can follow the chain, and caps how many of a multi-vehicle permit's vehicles may be parked at once (§14.2d).	class	Proposed: OverageBilling (Tier 2); Proposed: OverageBillingModeEnum (Tier 2)
PermitIssueRequest	Permit issue request	Issue a permit from a pooled RightSpecification — creates a native AssignedRight with (possibly multiple) vehicle credentials, per the APDS annual-permit use case (one right, multiple vehicles).	class	APX only
PoolAvailability	Pool availability	Availability of one RightPool of a pooled RightSpecification (APDS RightPool profile, Part 14 §14.2). `issued` = `RightPool.distributedAssignedRights`, `available` = `RightPool.availableAssignedRights`, `capacity` = their sum.	class	APX only
ReservationExtension	Reservation extension	The apds-ext:apx:reservation@1.0 extension object attached to a native AssignedRight. Presence of this extension marks the AssignedRight as a reservation; state transitions follow Part 14 §14.1 (transition table). `plannedStart`/`plannedEnd` MUST mirror the AssignedRight's `plannedUses[0].startTime`/`endTime`, which is authoritative.	class	Proposed: AssignedRight (Tier 2); Proposed: ReservationStateEnum (Tier 2)
ReservationSummary	Reservation summary	Compact view of one past/current reservation, for customer-history lookups. Also the `data` of `apx.reservation.noshow.v1` (Part 14 §14.1 step 6).	class	APX only

A.1.10.3 Specializations of the "Reservations" package

There are no specializations in the "Reservations" package.

A.1.10.4 Associations of the "Reservations" package

Table A.30 -- Associations of the "Reservations" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
PermitExtension	renews	Renews	The AssignedRight this permit renews.	0..1	PkCommon.Reference	
	renewedBy	Renewed by	Set by the server on the renewed permit when a renewal is issued.	0..1	PkCommon.Reference	read-only

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	overageBilling.dayRate	Day rate	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
PermitIssueRequest	rightSpecification	Right specification	Represents a reference to an identifiable object where the combination of the identifier and version is unique. It is composed of an unique identifier, a version and potentially a string identifying the class of the referenced object.	1..1	PkCommon.VersionedReference	
	holder	Holder	The RightHolder the permit is issued to; materialized as a `CustomerCredential` on the AssignedRight (Part 14 §14.2).	1..1	PkCommon.Reference	
	extensions	Extensions	Extension container (Part 4 §4.3). `apds-ext:apx:permit@1.0` links a renewal to the permit it renews (Part 14 §14.2).	0..1	Common.Extensions	
	extensions.apds-ext:apx:permit@1.0	0	The `apds-ext:apx:permit@1.1` extension object (Part 14 §14.2; `@1.0` remains valid and carries the first two members only): links a renewal permit to the one it renews, so a portal can follow the chain, and caps how many of a multi-vehicle permit's vehicles may be parked at once (§14.2d).	0..1	Reservations.PermitExtension	
PoolAvailability	rightSpecification	Right specification	Represents a reference to an identifiable object where the combination of the identifier and version is unique. It is composed of an unique identifier, a version and potentially a string identifying the class of the referenced object.	1..1	PkCommon.VersionedReference	
	pool	Pool	The RightPool these counts are for (selected per Part 14 §14.2).	0..1	PkCommon.VersionedReference	
	validity	Validity	The selected pool's validity window (APDS `RightPool.validity`), when it has one.	0..1	PkCommon.Validity	
ReservationExtension	checkInSession	Check in session	Set when a Session referencing this AssignedRight is created.	0..1	PkCommon.Reference	
ReservationSummary	reservation	Reservation	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	amountPaid	Amount paid	What the customer prepaid, so an agent at the lane sees it without a payment lookup.	0..1	Rates.AmountInCurrency	

A.1.10.5 Attributes of the "Reservations" package

Table A.31 -- Attributes of the "Reservations" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
PermitExtension	maxConcurrentVehicles	Max concurrent vehicles	How many of the permit's registered vehicles may be parked at the place at once (Part 14 §14.2d). Absent means every registered vehicle may. A vehicle beyond the limit is an overage.	0..1	Integer	
	overageBilling	Overage billing	What an overage costs (Part 14 §14.2d).	0..1	Structure (members below)	
	overageBilling.mode	Mode	`rack` — the place's transient rate deck; `dayRate` — the flat `dayRate`; `none` — recorded, not billed.	1..1	PermitExtension.overageBilling.mode (enumeration)	
PermitIssueRequest	credentials	Credentials	Vehicle credentials (e.g. plates) usable under this one permit; each is materialized as a `VehicleCredential` (Part 14 §14.2).	0..*	Structure (members below)	
	credentials.credentialType	Credential type	An APDS `CredentialTypeEnum` value, which MUST also be in the RightSpecification's `credentials` allow-list (Part 14 §14.2).	0..1	String	
	credentials.credentialIdentification	Credential identification	What the lane reads — the plate string, tag id, or card number.	0..1	String	
	validity	Validity	The permit's validity window; materialized as one `PlannedUse` (`startTime`/`endTime`) and `expiry` = `end` (Part 14 §14.2).	0..1	Structure (members below)	
	validity.start	Start	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	validity.end	End	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
PoolAvailability	capacity	Capacity	Permits the pool can issue in total (`issued` + `available`); may exceed `spaces` when the operator oversells.	1..1	Integer	
	issued	Issued	The number of permits the pool has issued (APDS RightPool.distributedAssignedRights). †	1..1	Integer	
	available	Available	The number of permits the pool can still issue (APDS RightPool.availableAssignedRights). †	1..1	Integer	
	spaces	Spaces	Physical spaces behind the pool, when the operator sells above that count. Informative.	0..1	Integer	
ReservationExtension	reservationState	Reservation state	The current state of the reservation (Part 14 §14.1). †	1..1	ReservationExtension.reservationState (enumeration)	
	plannedStart	Planned start	Mirror of `plannedUses[0].startTime` (Part 14 §14.1).	0..1	PkCommon.DateTime	
	plannedEnd	Planned end	Mirror of `plannedUses[0].endTime` (Part 14 §14.1).	0..1	PkCommon.DateTime	
	noShowAfter	No show after	SERVER-SET: the instant after which a reservation still without a check-in transitions to `noShow` (`plannedStart` plus the operator's grace period, Part 14 §14.1 step 6), so a platform can tell a customer when the booking lapses. Clients do not send it.	0..1	PkCommon.DateTime	read-only
ReservationSummary	reservationState	Reservation state	The current state of the reservation (Part 14 §14.1). †	0..1	ReservationSummary.reservationState (enumeration)	
	plannedStart	Planned start	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	plannedEnd	Planned end	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	noShowAfter	No show after	When a reservation not yet checked in lapses to `noShow` (see ReservationExtension.noShowAfter).	0..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	issuer	Issuer	Who sold the reservation, so a code that several sellers could have issued is read against the right one (Part 14 §14.1, Part 17 §17.2). An operator code or the seller's domain.	0..1	String	

A.1.11 "Tolling" package

A.1.11.1 Location of "Tolling" package. The location of the "Tolling" package is:

`-- APX/Tolling` (source: `spec/openapi/domains/tolling/schemas.yaml`; normative text: APX Part 15)

A.1.11.2 Classes of the "Tolling" package

Table A.32 -- Classes of the "Tolling" package

Class name	Designation	Definition	Kind	APDS status
TollDisputeOpen	Toll dispute open	Request body opening a dispute on a toll transaction.	class	APX only
TollDisputeResolution	Toll dispute resolution	Request body resolving an open dispute.	class	APX only
TollPaymentAttachment	Toll payment attachment	Request body attaching the settling Payment to a toll transaction.	class	APX only
TollPricing	Toll pricing	Request body pricing a `created` toll transaction (Part 15 §15.1), for operators whose pricing engine runs outside the APX server.	class	APX only
TollTransaction	Toll transaction	A toll charge assembled from plate/transponder reads: Observation refs → pricing → Payment ref, with a dispute lifecycle.	class	Proposed: TollTransaction (Tier 2); Proposed: TollDispute (Tier 2); Proposed: TollTransactionStatusEnum (Tier 2)
TollVoid	Toll void	Request body voiding a toll transaction that should never have been charged (Part 15 §15.1).	class	APX only

A.1.11.3 Specializations of the "Tolling" package

There are no specializations in the "Tolling" package.

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A.1.11.4 Associations of the "Tolling" package

Table A.33 -- Associations of the "Tolling" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
TollDisputeOpen	disputedBy	Disputed by	The party on whose behalf the operator raises the dispute (RightHolder, Organisation, or Contact). MAY be absent for an operator-initiated dispute (Part 15 §15.1).	0..1	PkCommon.Reference	
TollDisputeResolution	adjustedPricing	Adjusted pricing	The new amount owed. REQUIRED when `resolution` is `adjusted` (otherwise 400 `invalid-request`) and ignored for any other value; the server moves the old `pricing` to `dispute.originalPricing` (Part 15 §15.1).	0..1	Rates.AmountInCurrency	
TollPaymentAttachment	payment	Payment	Reference to the settling APDS Payment (or APX PaymentRecord).	1..1	PkCommon.Reference	
TollPricing	pricing	Pricing	A class supporting the definition of a unit of currency in a defined currency.	1..1	Rates.AmountInCurrency	
TollTransaction	tollPoint	Toll point	Reference to the toll point (SupplementalEquipment).	1..1	PkCommon.Reference	
	observations	Observations	The underlying APDS Observations (plate/transponder reads).	0..*	PkCommon.Reference	
	pricing	Pricing	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	payment	Payment	Reference to the settling PaymentRecord/APDS Payment.	0..1	PkCommon.Reference	
	dispute.disputedBy	Disputed by	The party on whose behalf the dispute was raised (RightHolder, Organisation, or Contact); absent for an operator-initiated dispute (Part 15 §15.1).	0..1	PkCommon.Reference	read-only
	dispute.originalPricing	Original pricing	Set by the server when an `adjusted` resolution rewrites `pricing`: the amount before the adjustment (Part 15 §15.1).	0..1	Rates.AmountInCurrency	read-only

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

A.1.11.5 Attributes of the "Tolling" package

Table A.34 -- Attributes of the "Tolling" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
TollDisputeOpen	reason	Reason	Dispute reason — definedValue from `apx-toll-dispute-reasons` (wrongVehicle | duplicateCharge | wrongClass | notLiable | other, Part 15 §15.1) or an implementer code list (Part 11).	1..1	String (code list apx-toll-dispute-reasons)	
	detail	Detail	Further detail, in free text.	0..1	String	
TollDisputeResolution	resolution	Resolution	Resolution — definedValue from `apx-toll-dispute-resolutions` (upheld | refunded | adjusted | withdrawn, Part 15 §15.1) or an implementer code list (Part 11).	1..1	String (code list apx-toll-dispute-resolutions)	
	note	Note	Free-text note from the actor.	0..1	String	
TollPaymentAttachment	note	Note	Free-text note from the actor.	0..1	String	
TollPricing	detail	Detail	Pricing basis recorded in `statusHistory` (e.g. vehicle class, rate id).	0..1	String	
TollTransaction	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	credential	Credential	The credential observed (licensePlate, rfid transponder…).	0..1	Structure (members below)	
	credential.credentialType	Credential type	Read technology. Senders SHOULD use an APDS `CredentialTypeEnum` value (`licensePlate`, `rfid`, …); Part 15 §15.1.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	credential.credentialIdentification	Credential identification	What was read — the plate string or the transponder/tag id, as read.	0..1	String	
	transactionStatus	Transaction status	The lifecycle stage of the toll charge. †	1..1	TollTransaction.transactionStatus (enumeration)	read-only
	dispute	Dispute	The dispute raised against the charge, when one was opened (Part 15 §15.1). †	0..1	Structure (members below)	
	dispute.reason	Reason	definedValue from `apx-toll-dispute-reasons` or an implementer code list (Part 11).	0..1	String (code list apx-toll-dispute-reasons)	
	dispute.openedTime	Opened time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	dispute.resolvedTime	Resolved time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	dispute.resolution	Resolution	definedValue from `apx-toll-dispute-resolutions` (upheld | refunded | adjusted | withdrawn, Part 15 §15.1) or an implementer code list (Part 11).	0..1	String (code list apx-toll-dispute-resolutions)	
	statusHistory	Status history	Immutable lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The transaction status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
TollVoid	reason	Reason	Why the transaction is void (implementer code list, e.g. duplicate, exemptVehicle, misread).	1..1	String	
	note	Note	Free-text note from the actor.	0..1	String	

A.1.12 "Violations" package

A.1.12.1 Location of "Violations" package. The location of the "Violations" package is:

`-- APX/Violations` (source: `spec/openapi/domains/violations/schemas.yaml`; normative text: APX Part 19)

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A.1.12.2 Classes of the "Violations" package

Table A.35 -- Classes of the "Violations" package

Class name	Designation	Definition	Kind	APDS status
EligibilityResult	Eligibility result	"Is this vehicle entitled to be here right now?" — the guided-enforcement screen-pop (Part 19 §19.3). A convenience READ composed from the APDS entities that natively answer the question: AssignedRights (APDS's own enforcement source of truth), Sessions, and reservation/permit profiles. Adds no parallel entitlement entity; the AssignedRight remains authoritative.	class	APX only
EnforcementPolicy	Enforcement policy	The jurisdictional rules that govern issuing and escalating violations at a place (Part 19 §19.10): lawful notice delivery per detection mode, the initial penalty cap, the escalation schedule, windows, and whether posted signage is required. Bound to a HierarchyElement with subtree inheritance — the nearest ancestor's policy applies unless a descendant overrides it. A machine-readable summary an operator configures from the governing statute; never the statute itself. Edits use versioned `PUT` with the version last read as `If-Match` or body `version` (Part 4 §4.2a; 409 `version-conflict` when stale).	class	Proposed: EnforcementPolicy (Tier 2); Proposed: NoticeDeliveryRule (Tier 2); Proposed: PenaltyLimit (Tier 3); Proposed: EscalationStep (Tier 2)
Signage	Signage	A record of what is posted at a place — the text, a photo, the sign's position, and when it was in force (Part 19 §19.11). Bound to a HierarchyElement with subtree inheritance. Versioned so an appeal can show the sign as it stood on the day: superseding a sign is a new version or a new record with `effectiveTo` set, never an edit in place of historical text. Edits use versioned `PUT` (Part 4 §4.2a).	class	Proposed: Signage (Tier 2); Proposed: SignTypeEnum (Tier 2)

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Class name	Designation	Definition	Kind	APDS status
Violation	Violation	An enforcement finding against a vehicle at a place: the detection (automated, guided, or manual), the eligibility check that justified it, the evidence, the issued notice/citation, settlement, and any appeal — with the immutable lifecycle audit (Part 4 §4.2).	class	Proposed: Violation (Tier 1); Proposed: Notice (Tier 1); Proposed: Appeal (Tier 2); Proposed: ViolationStatusEnum (Tier 1); Proposed: NoticeKindEnum (Tier 1); Proposed: NoticeDeliveryMethodEnum (Tier 1); Proposed: AppealReasonEnum (Tier 2); Proposed: AppealResolutionEnum (Tier 2)
ViolationAppealOpen	Violation appeal open	Request body opening an appeal on an issued violation, or on a paid one within the policy's appeal window (pay-then-appeal).	class	APX only
ViolationAppealResolution	Violation appeal resolution	Request body resolving an open appeal.	class	APX only
ViolationAppliedPayment	Violation applied payment	One payment applied to a violation (Part 19 §19.6a): a partial payment or the settling one. `payment` references the Part 13 record (APDS Payment or APX PaymentRecord) when the money moved through this server; a payment an import source took itself (§19.13) may carry only the source's own `reference`.	class	APX only
ViolationDetection	Violation detection	How and when the candidate was found.	class	Proposed: ViolationDetection (Tier 1); Proposed: DetectionModeEnum (Tier 1)
ViolationEvidence	Violation evidence	Evidence media, as access-controlled LINKS (Part 9 §9.6 — never inline). Each item points at an APDS Image reachable under the same authentication and place grant as this resource.	list	APX only

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Class name	Designation	Definition	Kind	APDS status
ViolationImport	Violation import	Request body of `POST /v1/enforcement/violation-imports` (Part 19 §19.13): a violation as an external enforcement system reports it — in any state, with the `statusHistory[]` times the source recorded, the notice, the amounts and payments, and the `apds-ext:apx:violation-source@1.0` decoration that keys it. The members mean what they mean on `Violation`; the difference is that `violationStatus`, `notice`, `amountPaid`, `payments`, and `statusHistory` are written by the caller here, because the source, not this server, decided them. A state at or past issuance (`issued`, `paid`, `appealed`, `closed`) REQUIRES `notice` (with `noticeNumber` and `issuedTime`) and `amount` (400 `invalid-request` otherwise); `paid` with `amountPaid` below `amount` is 422 `request-unprocessable`. A warning with no fine is `issued` (or `closed`) with `notice.noticeKind` `warning` and a zero `amount`.	class	APX only
ViolationIssue	Violation issue	Request body issuing the notice/citation for a confirmed (or, under automated policy, detected) violation.	class	APX only
ViolationLocation	Violation location	Where the violation was observed and from where — modelled on the APDS Observation `Location` shape (Part 19 §19.9), with two differences: `observerLocation` is optional here (APDS requires it; an automated finding copied from a fixed sensor may have none), and `accuracyMetres` is added. The member names and the `PointLocation` types are APDS's own. GeoJSON positions are [longitude, latitude] in that order; enforcement tools that store latitude first MUST swap on the wire. Automated detections SHOULD copy this from the underlying Observation.	class	APX only
ViolationPaymentAttachment	Violation payment attachment	Request body attaching a Payment to an issued violation. The full amount (or the remainder) settles it (`paid`); a smaller `amount` is a partial payment (Part 19 §19.6a) that stays `issued`.	class	APX only
ViolationReview	Violation review	Request body for guided-enforcement review — confirm or dismiss a detected candidate.	class	APX only
ViolationSessionLink	Violation session link	Request body of `POST /v1/violations/{id}/session` (Part 19 §19.13): sets, corrects, or clears `relatedSession` after creation, carrying the match evidence. `session: null` clears the link. `If-Match` carries the Violation version last read.	class	APX only
ViolationSource	Violation source	The `apds-ext:apx:violation-source@1.0` decoration (Part 19 §19.13): a violation issued by an external enforcement system and imported through `POST /v1/enforcement/violation-imports`, keyed on `system` + `recordId`. `sourceRevision`, or without one `sourceUpdatedTime`, orders the source's revisions.	class	APX only
ViolationVehicle	Violation vehicle	The credential observed on the vehicle (an APDS CredentialTypeEnum credential).	class	APX only
ViolationVoid	Violation void	Request body voiding a violation (terminal; never deletes the audit).	class	APX only

A.1.12.3 Specializations of the "Violations" package

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There are no specializations in the "Violations" package.

A.1.12.4 Associations of the "Violations" package

Table A.36 -- Associations of the "Violations" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
EligibilityResult	place	Place	The HierarchyElement the question was asked for.	1..1	PkCommon.Reference	
	basis.right	Right	The AssignedRight considered.	0..1	PkCommon.Reference	
	basis.session	Session	The Session considered (pay-by-plate, transient).	0..1	PkCommon.Reference	
	lastRead.observation	Observation	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
EnforcementPolicy	place	Place	The HierarchyElement this policy binds to (a state- or city-wide root, a lot, a level).	1..1	PkCommon.Reference	
	penaltyCap.maximumAmount	Maximum amount	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	escalation.addAmount	Add amount	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	overallCeiling.maximumAmount	Maximum amount	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
Signage	place	Place	The HierarchyElement the sign governs (the lot, a level, a zone).	1..1	PkCommon.Reference	
	location	Location	Where the sign stands (GeoJSON Point).	0..1	PkCommon.GeoJsonObject	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	policy	Policy	The EnforcementPolicy whose disclosure requirements this sign satisfies, when applicable.	0..1	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
Violation	place	Place	The HierarchyElement (Place, Area, Space…) where the violation was observed.	1..1	PkCommon.Reference	
	space	Space	The specific APDS Space, when the detection is space-resolved (sensor, bay camera).	0..1	PkCommon.Reference	
	detection	Detection	How and when the candidate was found.	1..1	Violations.ViolationDetection	
	vehicle	Vehicle	The credential observed on the vehicle (an APDS CredentialTypeEnum credential).	0..1	Violations.ViolationVehicle	
	observations	Observations	The underlying APDS Observations (plate reads, sensor events) the finding is built from.	0..*	PkCommon.Reference	
	eligibilityCheck	Eligibility check	The entitlement check performed at detection time (the same shape `GET /v1/enforcement/eligibility` returns).	0..1	Violations.EligibilityResult	
	relatedSession	Related session	The APDS Session the vehicle was in, when one exists.	0..1	PkCommon.Reference	
	relatedRight	Related right	The AssignedRight that was closest to covering the stay (expired permit, wrong-zone reservation…).	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	location	Location	Where the violation was observed and from where — modelled on the APDS Observation `Location` shape (Part 19 §19.9), with two differences: `observerLocation` is optional here (APDS requires it; an automated finding copied from a fixed sensor may have none), and `accuracyMetres` is added. The member names and the `PointLocation` types are APDS's own. GeoJSON positions are [longitude, latitude] in that order; enforcement tools that store latitude first MUST swap on the wire. Automated detections SHOULD copy this from the underlying Observation.	0..1	Violations.ViolationLocation	
	policy	Policy	The EnforcementPolicy resolved for `place` at `issue` (Part 19 §19.10), frozen with its version.	0..1	PkCommon.VersionedReference	read-only
	signage	Signage	The Signage records in force at `place` (and ancestors) at `detectedTime`, frozen at `issue` with their versions — the evidence of what was posted (Part 19 §19.11).	0..*	PkCommon.VersionedReference	read-only
	unpaidAmount	Unpaid amount	The unpaid parking fee this violation relates to — the basis for the policy's relative penalty caps (`maximumMultipleOfUnpaid`, `maximumPercentOverUnpaid`). Computed by the server at `issue` from the rate deck in force for the stay and frozen with the policy (Part 19 §19.10). Absent when the policy in force has no relative cap or no fee could be derived.	0..1	Rates.AmountInCurrency	read-only
	capAmount	Cap amount	The effective penalty cap at `issue` (the lowest of the policy's `penaltyCap` bounds, relative ones applied to `unpaidAmount`), frozen so an appeal can check `penalty-exceeds-cap` without recomputing it. Absent when no cap applied.	0..1	Rates.AmountInCurrency	read-only
	amountHistory.amount	Amount	A class supporting the definition of a unit of currency in a defined currency.	1..1	Rates.AmountInCurrency	
	amountHistory.requestedAmount	Requested amount	The amount the `issue` call asked for, when `reason` is `cap` (the entry's `amount` is the clamped figure).	0..1	Rates.AmountInCurrency	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	notice.issuedBy	Issued by	The issuing Organisation or officer Contact.	0..1	PkCommon.Reference	
	amount	Amount	The amount payable on the issued notice (after any appeal reduction).	0..1	Rates.AmountInCurrency	
	payment	Payment	Reference to the settling APDS Payment or APX PaymentRecord (Part 13).	0..1	PkCommon.Reference	
	payments	Payments	Every payment applied to the notice, in order (Part 19 §19.6a). `payment` remains the settling one; a partial payment appears here, raises `amountPaid`, and leaves the state `issued` until `amountPaid` reaches `amount`. For an imported violation (§19.13) an item may carry only the source's own payment `reference`, when the money never moved through this server's Part 13 records.	0..*	Violations.ViolationAppliedPayment	read-only
	amountPaid	Amount paid	The sum received so far against `amount` (Part 19 §19.6a). `paid` means `amountPaid` ≥ `amount`. Absent means nothing received.	0..1	Rates.AmountInCurrency	read-only
	appeal.appellant	Appellant	The appealing party (Contact), when identified.	0..1	PkCommon.Reference	
	appeal.refund	Refund	The Part 13 refund (APX PaymentRecord or APDS Payment) that returned money on a pay-then-appeal resolved `reduced` (partial) or `dismissed` (full).	0..1	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
ViolationAppealOpen	appellant	Appellant	The appealing party (Contact), when identified.	0..1	PkCommon.Reference	
ViolationAppealResolution	adjustedAmount	Adjusted amount	The new amount payable. Required when `resolution` is `reduced`; a `reduced` resolution without it is 400 `invalid-request` with `errors[].pointer` `/adjustedAmount` (Part 19 §19.1 rule 3).	0..1	Rates.AmountInCurrency	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	refund	Refund	For a pay-then-appeal resolved `reduced` or `dismissed`: the Part 13 refund returning the difference or the whole payment (`POST /v1/payments/{id}/refund`). Recorded on `appeal.refund`.	0..1	PkCommon.Reference	
ViolationAppliedPayment	amount	Amount	The amount applied to this violation.	1..1	Rates.AmountInCurrency	
	payment	Payment	The APDS Payment or APX PaymentRecord (Part 13), when one exists on this server.	0..1	PkCommon.Reference	
ViolationDetection	detector	Detector	The detecting device (SupplementalEquipment) or, for guided/manual, the officer's Contact.	0..1	PkCommon.Reference	
ViolationEvidence	item.device	Device	The capturing SupplementalEquipment (camera, handheld).	0..1	PkCommon.Reference	
ViolationImport	place	Place	The HierarchyElement where the violation was observed.	1..1	PkCommon.Reference	
	space	Space	The specific APDS Space, when space-resolved.	0..1	PkCommon.Reference	
	detection	Detection	How and when the candidate was found.	1..1	Violations.ViolationDetection	
	vehicle	Vehicle	The credential observed on the vehicle (an APDS CredentialTypeEnum credential).	0..1	Violations.ViolationVehicle	
	observations	Observations	The underlying APDS Observations, when the source shared them.	0..*	PkCommon.Reference	
	relatedSession	Related session	The APDS Session the vehicle was in, when known (or set later through `POST /v1/violations/{id}/session`).	0..1	PkCommon.Reference	
	relatedRight	Related right	The AssignedRight closest to covering the stay, when known.	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	location	Location	Where the violation was observed and from where — modelled on the APDS Observation `Location` shape (Part 19 §19.9), with two differences: `observerLocation` is optional here (APDS requires it; an automated finding copied from a fixed sensor may have none), and `accuracyMetres` is added. The member names and the `PointLocation` types are APDS's own. GeoJSON positions are [longitude, latitude] in that order; enforcement tools that store latitude first MUST swap on the wire. Automated detections SHOULD copy this from the underlying Observation.	0..1	Violations.ViolationLocation	
	notice.issuedBy	Issued by	The issuing Organisation or officer Contact, when it is known here.	0..1	PkCommon.Reference	
	amount	Amount	The amount payable now, as the source reports it.	0..1	Rates.AmountInCurrency	
	amountPaid	Amount paid	The total paid toward `amount`, as the source reports it.	0..1	Rates.AmountInCurrency	
	payments	Payments	The payments the source applied, in order.	0..*	Violations.ViolationAppliedPayment	
	extensions	Extensions	The extension container; MUST carry `apds-ext:apx:violation-source@1.0`.	1..1	Common.Extensions	
ViolationIssue	amount	Amount	A class supporting the definition of a unit of currency in a defined currency.	1..1	Rates.AmountInCurrency	
	issuedBy	Issued by	The issuing Organisation or officer Contact, when different from the token's organisation.	0..1	PkCommon.Reference	
ViolationLocation	observedLocation	Observed location	The vehicle's position (GeoJSON Point).	0..1	PkCommon.GeoJsonObject	
	observerLocation	Observer location	The officer's or camera's position when the finding was made (GeoJSON Point).	0..1	PkCommon.GeoJsonObject	
ViolationPaymentAttachment	payment	Payment	Reference to the settling APDS Payment (or APX PaymentRecord taken via `POST /v1/payments`).	1..1	PkCommon.Reference	
	amount	Amount	The amount this payment contributes; absent means the full outstanding amount.	0..1	Rates.AmountInCurrency	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ViolationReview	reviewer	Reviewer	The reviewing officer's Contact, when the token is a system credential.	0..1	PkCommon.Reference	
ViolationSessionLink	session	Session	The APDS Session (className `Session`), or null to clear the link.	1..1	PkCommon.Reference	nullable
	evidence	Evidence	How the match was made; written onto the violation as `apds-ext:apx:match-evidence@1.0`, with the Session as `target`.	0..1	Data.MatchEvidence	
ViolationVoid	refund	Refund	When voiding a `paid` violation: the Part 13 refund that returned the payment (SHOULD be given; Part 19 §19.1 rule 4).	0..1	PkCommon.Reference	

A.1.12.5 Attributes of the "Violations" package

Table A.37 -- Attributes of the "Violations" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
EligibilityResult	credential	Credential	The credential the eligibility question was asked about. †	1..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	credential.credentialType	Credential type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	1..1	Right.CredentialTypeEnum	
	credential.credentialIdentification	Credential identification	The plate or other credential value checked. †	1..1	String	
	checkedTime	Checked time	The instant the answer applies to (the `at` parameter, or now).	1..1	PkCommon.DateTime	
	entitled	Entitled	True when at least one basis entry is `valid` for the place at `checkedTime`.	1..1	Boolean	
	basis	Basis	Every right or session considered, newest first, with why it does or does not cover the stay.	0..*	Structure (members below)	
	basis.rightType	Right type	Human-readable product (from the RightSpecification) — monthly permit, reservation, pay-by-plate.	0..1	String	
	basis.validFrom	Valid from	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	basis.validTo	Valid to	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	basis.status	Status	Why this basis does or does not entitle the vehicle here, now.	1..1	EligibilityResult.basis.status (enumeration)	
	suggestedViolationType	Suggested violation type	When not entitled — the `apx-violation-types` value the server's rules suggest (never binding on the officer).	0..1	String (code list apx-violation-types)	
	graceUntil	Grace until	When the grace on the stay ends, derived from the `stayGrace` of the EnforcementPolicy in force at `checkedTime` (Part 19 §19.3 rule 5): the stay's start plus `entryMinutes` while no right covers it, or the end of its last covering right plus `exitMinutes` once its rights have ended. Absent when that side has no grace, no policy is in force, or a right covers the stay.	0..1	PkCommon.DateTime	
	lastRead	Last read	The most recent plate read of this credential at the place (APDS Observation-derived).	0..1	Structure (members below)	
	lastRead.observationDateTime	Observation date time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	lastRead.confidence	Confidence	Confidence in the value, from 0 to 1.	0..1	Decimal	
	lastRead.imageLink	Image link	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
EnforcementPolicy	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	name	Name	Name in natural language.	0..1	String	
	policyStatus	Policy status	Whether the policy is in force, superseded or retired. †	1..1	EnforcementPolicy.policyStatus (enumeration)	
	effectiveFrom	Effective from	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	effectiveTo	Effective to	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	authority	Authority	Provenance — where the rules come from.	0..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	authority.jurisdiction	Jurisdiction	ISO 3166-2 or implementer code for the legal jurisdiction.	0..1	String	
	authority.citation	Citation	Statute, ordinance, or regulation citation.	0..1	String	
	authority.url	Url	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
	deliveryRules	Delivery rules	Which notice delivery methods are lawful for which detection modes, and by when.	0..*	Structure (members below)	
	deliveryRules.detectionModes	Detection modes	The detection modes this delivery rule covers. †	0..*	EnforcementPolicy.deliveryRules.detectionModes (enumeration)	
	deliveryRules.deliveryMethods	Delivery methods	Lawful `notice.deliveryMethod` values for these modes (implementer code list — windshield, handed, mail, electronic).	0..*	String	
	deliveryRules.noticeDeadline	Notice deadline	Latest lawful `issue` after `detectedTime` for these methods (ISO 8601).	0..1	PkCommon.Duration	
	deliveryRules.minimumEvidence	Minimum evidence	What the violation MUST carry before a notice by these methods is lawful.	0..1	Structure (members below)	
	deliveryRules.minimumEvidence.observations	Observations	The minimum number of observations the violation must carry before a notice by these methods is lawful (Part 19 §19.10). †	0..1	Integer	
	deliveryRules.minimumEvidence.images	Images	The minimum number of evidence images the violation must carry before a notice by these methods is lawful (Part 19 §19.10). †	0..1	Integer	
	deliveryRules.minimumEvidence.locationRequired	Location required	Whether the violation must carry an observed location before a notice by these methods is lawful (Part 19 §19.10). †	0..1	Boolean	
	unreviewedIssuance	Unreviewed issuance	Whether an `automated` detection may go `detected → issued` without a human `review` (Part 19 §19.4 rule 1). When present the server MUST apply it at `issue` (409 `violation-not-issuable` otherwise); when absent the operator's published documentation governs, as before. `guided` and `manual` detections are always reviewed, whatever this says.	0..1	Structure (members below)	
	unreviewedIssuance.permitted	Permitted	True when unreviewed automated issuance is lawful and permitted at this place.	0..1	Boolean	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	unreviewedIssuance.minimumConfidence	Minimum confidence	Lowest `detection.confidence` that may be issued unreviewed; a detection below it, or with no confidence, needs review.	0..1	Decimal	
	unreviewedIssuance.violationTypes	Violation types	The `violationType` values that may be issued unreviewed; absent = every type.	0..*	String	
	penaltyCap	Penalty cap	Ceiling on the amount at `issue`. When more than one bound is present the lowest applies. Relative bounds apply to the violation's `unpaidAmount`, which the server computes and freezes at `issue` together with the resulting `capAmount`.	0..1	Structure (members below)	
	penaltyCap.maximumMultipleOfUnpaid	Maximum multiple of unpaid	Cap as a multiple of the unpaid parking fee the violation relates to (e.g. 2 = twice the unpaid fee).	0..1	Decimal	
	penaltyCap.maximumPercentOverUnpaid	Maximum percent over unpaid	Cap as unpaid fee plus this percentage of it.	0..1	Decimal	
	penaltyCap.onExceed	On exceed	`refuse` → 422 `penalty-exceeds-cap`; `clamp` → issue at the cap and record `reason: cap` in amountHistory.	0..1	EnforcementPolicy.penaltyCap.onExceed (enumeration)	
	escalation	Escalation	Ordered, server-applied steps (Part 19 §19.10). Each fires once when `afterDays` have elapsed since `notice.issuedTime` with the violation still `issued`; days spent `appealed` do not count (the clock pauses during an appeal). The result is appended to `amountHistory` and never exceeds `overallCeiling`. A step whose fixed `addAmount` alone exceeds `overallCeiling.maximumAmount` is refused at create/update (422 `request-unprocessable`).	0..*	Structure (members below)	
	escalation.step	Step	Stable step id recorded in `amountHistory[].step`.	1..1	String	
	escalation.afterDays	After days	The days after the notice was issued, not counting days under appeal, at which the step fires (Part 19 §19.10). †	1..1	Integer	
	escalation.addPercent	Add percent	Percentage of the CURRENT amount to add.	0..1	Decimal	
	escalation.description	Description	Free-text description.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	overallCeiling	Overall ceiling	Hard ceiling on `amount` after any escalation.	0..1	Structure (members below)	
	overallCeiling.maximumMultipleOfIssued	Maximum multiple of issued	e.g. 3 = never more than three times the issued amount.	0..1	Decimal	
	appealWindowDays	Appeal window days	Days after `notice.issuedTime` during which an appeal MUST be accepted — from `issued`, or from `paid` (pay-then-appeal). After it, servers MAY refuse with 409 `appeal-closed`.	0..1	Integer	
	paymentGraceDays	Payment grace days	Days after `notice.issuedTime` before the first escalation step MAY fire, regardless of `afterDays` (days spent `appealed` do not count).	0..1	Integer	
	signageRequired	Signage required	When true, `issue` is refused (422 `signage-required`) unless Signage was in force at the place at `detectedTime`.	0..1	Boolean	
	stayGrace	Stay grace	How long a stay may go uncovered at each end before it needs a right (Part 19 §19.10 rule 7). Both members are optional and independent: absent means no grace on that side, `0` states explicitly that there is none. The policy states the minutes only; how they combine with the rights into a stay's outcome is the evaluating system's rule. The source of `EligibilityResult.graceUntil` (§19.3 rule 5).	0..1	Structure (members below)	
	stayGrace.entryMinutes	Entry minutes	Minutes after entry before a right (a payment, a permit, a reservation) must cover the stay.	0..1	Integer	
	stayGrace.exitMinutes	Exit minutes	Minutes after the end of the last covering right before the stay must be over.	0..1	Integer	
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The policy status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
Signage	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	text	Text	The posted text, verbatim, per language.	1..1	PkCommon.MultilingualString	
	signageStatus	Signage status	Whether the sign is in force, superseded or removed. †	1..1	Signage.signageStatus (enumeration)	
	effectiveFrom	Effective from	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	effectiveTo	Effective to	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	imageLink	Image link	Access-controlled photo of the physical sign (Part 9 §9.6).	0..1	PkCommon.Url	
	signType	Sign type	Implementer code list — entrance, payStation, perSpace, towAway, ratesBoard.	0..1	String	
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The signage status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
Violation	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	violationType	Violation type	definedValue from `apx-violation-types` or an implementer code list.	1..1	String (code list apx-violation-types)	
	violationStatus	Violation status	Current lifecycle state (see schema description for transitions).	1..1	Violation.violationStatus (enumeration)	read-only

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	evidence	Evidence	Evidence media, as access-controlled LINKS (Part 9 §9.6 — never inline). Each item points at an APDS Image reachable under the same authentication and place grant as this resource.	0..1	Violations.ViolationEvidence	
	amountHistory	Amount history	Every change to `amount`, in order: the issued amount, each server-applied escalation step, and each appeal reduction (Part 19 §19.10). `amount` always equals the last entry. The first entry is written at `issue`: `reason: issued`, or, when the requested amount was clamped to the cap, a single entry with `reason: cap`, the clamped `amount`, and the amount asked for in `requestedAmount`.	0..*	Structure (members below)	read-only
	amountHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	amountHistory.reason	Reason	Why the action was taken.	1..1	Violation.amountHistory.reason (enumeration)	
	amountHistory.step	Step	The policy escalation step id that fired, when `reason` is `escalation`.	0..1	String	
	amountHistory.detail	Detail	Further detail, in free text.	0..1	String	
	notice	Notice	The notice, warning, or citation issued for this violation. Absent until `issued`.	0..1	Structure (members below)	read-only
	notice.noticeKind	Notice kind	What was issued — warning, notice, citation (implementer code list; jurisdictional vocabulary).	0..1	String	
	notice.noticeNumber	Notice number	The operator's/jurisdiction's printed or mailed notice number.	0..1	String	
	notice.issuedTime	Issued time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	notice.deliveryMethod	Delivery method	How the notice reached the driver — windshield, handed, mail, electronic (implementer code list).	0..1	String	
	dueTime	Due time	When payment falls due.	0..1	PkCommon.DateTime	
	appeal	Appeal	The appeal on this violation, if one was opened. One appeal per violation.	0..1	Structure (members below)	read-only
	appeal.reason	Reason	Appeal reason (implementer code list).	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	appeal.detail	Detail	Further detail, in free text.	0..1	String	
	appeal.openedTime	Opened time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	appeal.openedFrom	Opened from	The state the appeal was opened from; `paid` is a pay-then-appeal (Part 19 §19.6). `upheld` and `reduced` return the violation to this state.	0..1	Violation.appeal.openedFrom (enumeration)	
	appeal.resolvedTime	Resolved time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	appeal.resolution	Resolution	upheld | reduced | dismissed (implementer code list).	0..1	String	
	appeal.resolutionNote	Resolution note	A free-text note explaining how the appeal was resolved. †	0..1	String	
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The violation status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	Client/agent principal that caused the transition.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
ViolationAppealOpen	reason	Reason	Appeal reason (implementer code list).	1..1	String	
	detail	Detail	Further detail, in free text.	0..1	String	
	evidenceLinks	Evidence links	Appellant-supplied evidence, as access-controlled links.	0..*	PkCommon.Url	
ViolationAppealResolution	resolution	Resolution	upheld | reduced | dismissed (implementer code list). `upheld` returns the violation to the state the appeal was opened from (`issued`, or `paid` for a pay-then-appeal); `reduced` does the same with `amount` replaced by `adjustedAmount`; `dismissed` closes it.	1..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ViolationAppliedPayment	paidTime	Paid time	When the payment was made (for an import, as the source reported it).	0..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	reference	Reference	The import source's own identifier for the payment, when it reported one.	0..1	String	
ViolationDetection	mode	Mode	`automated` — a camera/sensor pipeline created the violation with no human in the loop. `guided` — the system surfaced a candidate (typically to a handheld) and an officer confirms on site. `manual` — an officer created the violation directly.	1..1	ViolationDetection.mode (enumeration)	
	detectedTime	Detected time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	principal	Principal	Opaque principal of the human or system that detected (officer badge id, pipeline name).	0..1	String	
	confidence	Confidence	Detection confidence (plate read × rule certainty), when the detector reports one.	0..1	Decimal	
	rule	Rule	Implementer identifier of the enforcement rule that fired (automated mode).	0..1	String	
ViolationEvidence	item.imageLink	Image link	Represents a Url for an internet accessible resource.	1..1	PkCommon.Url	
	item.imageType	Image type	the nature of the captured image	0..1	Observation.ImageTypeEnum	
	item.capturedTime	Captured time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	item.description	Description	Free-text description.	0..1	String	
ViolationImport	id	Id	The source's id for the violation, when it is a UUID the server may keep; the server MAY mint its own.	0..1	Uuid	
	violationType	Violation type	definedValue from `apx-violation-types` or an implementer code list.	1..1	String (code list apx-violation-types)	
	violationStatus	Violation status	The APX state the source's status maps to. `paid` requires `amountPaid` at least `amount`; a part-paid violation is `issued` (Part 19 §19.6a). The source's own wording goes in the decoration's `sourceStatus`.	1..1	ViolationImport.violationStatus (enumeration)	
	evidence	Evidence	Evidence media, as access-controlled LINKS (Part 9 §9.6 — never inline). Each item points at an APDS Image reachable under the same authentication and place grant as this resource.	0..1	Violations.ViolationEvidence	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	notice	Notice	The notice, warning, or citation as the source issued it.	0..1	Structure (members below)	
	notice.noticeKind	Notice kind	warning | notice | citation (implementer code list).	0..1	String	
	notice.noticeNumber	Notice number	The number printed on the notice — the lookup a driver can make (`?noticeNumber=`).	1..1	String	
	notice.issuedTime	Issued time	When the source issued it, as the source reported it.	1..1	PkCommon.DateTime	
	notice.deliveryMethod	Delivery method	windshield | handed | mail | electronic (implementer code list).	0..1	String	
	dueTime	Due time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	statusHistory	Status history	The lifecycle as the source recorded it, oldest first, with the source's own times (`actor` is the source's principal — an officer badge, the system name). Append-only: the server keeps the entries it already holds and appends only those later than its last one (Part 4 §4.2).	1..*	Structure (members below)	
	statusHistory.state	State	The violation status the source recorded at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
ViolationIssue	noticeKind	Notice kind	warning | notice | citation (implementer code list). Default is implementation policy.	0..1	String	
	noticeNumber	Notice number	Client-supplied notice number (pre-printed handheld stock). Server-assigned when absent.	0..1	String	
	dueTime	Due time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	deliveryMethod	Delivery method	windshield | handed | mail | electronic (implementer code list).	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
ViolationLocation	observedLocationTextual	Observed location textual	Human-readable address or description of the observed location.	0..1	PkCommon.MultilingualString	
	accuracyMetres	Accuracy metres	Horizontal accuracy reported by the capturing device.	0..1	Decimal	
ViolationPaymentAttachment	note	Note	Free-text note from the actor.	0..1	String	
ViolationReview	decision	Decision	The reviewer's decision on the detected candidate: confirm or dismiss. †	1..1	ViolationReview.decision (enumeration)	
	reason	Reason	Required when `decision` is `dismiss` (implementer code list — permitDisplayed, plateMisread, gracePeriod…); a dismissal without it is 400 `invalid-request` with `errors[].pointer` `/reason` (Part 19 §19.1 rule 1).	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
	violationType	Violation type	Corrects the violation type on confirmation, when the officer's finding differs from the detector's.	0..1	String	
ViolationSessionLink	reason	Reason	Why the link was set or changed (implementer code list — lateMatch, reviewerCorrection, mismatch…).	0..1	String	
ViolationSource	system	System	The issuing system, opaque (`passport`, `aims`…).	1..1	String	
	recordId	Record id	The source's own citation or record id.	1..1	String	
	sourceStatus	Source status	The source's own status vocabulary, carried as reported (`issued`, `warned`, `voided`, `dismissed`, `partiallyPaid`…).	0..1	String	
	sourceRevision	Source revision	The source's revision counter; a re-import with a higher value updates the record.	0..1	Integer	
	sourceUpdatedTime	Source updated time	When the source last changed the record. Orders revisions when the source keeps no `sourceRevision`.	0..1	PkCommon.DateTime	
	receivedTime	Received time	When this server applied the revision it now holds. Server-set.	0..1	PkCommon.DateTime	read-only
	officer	Officer	The source's officer identifier, opaque.	0..1	String	
	violationCode	Violation code	The source's own violation code, when it has no `apx-violation-types` equivalent.	0..1	String (code list apx-violation-types)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
ViolationVehicle	credentialType	Credential type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	1..1	Right.CredentialTypeEnum	
	credentialIdentification	Credential identification	The credential value — plate string, permit number, transponder id.	1..1	String	
	jurisdiction	Jurisdiction	Issuing jurisdiction of the plate/credential (state, province, country code).	0..1	String	
	description	Description	Free-text vehicle description captured by the officer (make, colour).	0..1	String	
ViolationVoid	reason	Reason	Void reason (implementer code list — issuedInError, duplicate, policyException…).	1..1	String	
	note	Note	Free-text note from the actor.	0..1	String	

A.1.13 "Validations" package

A.1.13.1 Location of "Validations" package. The location of the "Validations" package is:

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`-- APX/Validations` (source: `spec/openapi/domains/validations/schemas.yaml`; normative text: APX Part 20)

A.1.13.2 Classes of the "Validations" package

Table A.38 -- Classes of the "Validations" package

Class name	Designation	Definition	Kind	APDS status
ValidationBenefit	Validation benefit	What a validation is worth. Exactly one of `amount` (money off), `duration` (comped time, valued at the applicable rate), or `percentage` (proportionate discount — the APDS RateDiscount `discountRate` semantics) applies; `description` is always present so agents can answer disputes in plain language. A program body whose benefit carries none or more than one of the three is refused with 422 `request-unprocessable` (Part 20 §20.1); the rule is stated here rather than as a schema `oneOf` so that existing request bodies keep validating.	class	Proposed: ValidationBenefit (Tier 2)
ValidationInstrument	Validation instrument	The current state of one validation code — the pay-station / merchant-app "is this code good?" read.	class	Proposed: ValidationInstrument (Tier 2); Proposed: ValidationInstrumentStatusEnum (Tier 2)
ValidationIssuance	Validation issuance	A batch of validation instruments issued to a program — printed codes, QR codes, stamp stock, digital tokens. `codes[]` is returned EXACTLY ONCE, in the creation response (the webhook-secret convention, Part 8 §8.1); later reads omit it. `stamp` and `api` batches carry no codes.	class	Proposed: ValidationIssuance (Tier 2); Proposed: ValidationIssuanceMethodEnum (Tier 2); Proposed: ValidationIssuanceStatusEnum (Tier 2)
ValidationIssuanceRequest	Validation issuance request	Request body for `POST /v1/validations/programs/{id}/issuances`: the writable members of `ValidationIssuance`. The program is the one the path names; `program` MAY be repeated in the body, and a value that differs from the path is 422 `request-unprocessable` (Part 20 §20.2). Server-assigned members (`id`, `version`, `codes`, `issuanceStatus`) are ignored if sent.	class	APX only

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Class name	Designation	Definition	Kind	APDS status
ValidationProgram	Validation program	A merchant's enrolment to validate parking at a place: who the provider is, what the validation is worth, the rules that bound it, how the merchant is billed, and how instruments are issued. Active programs ARE the source of the Part 6 `GET /v1/validations/providers` list when `apx-validations` is claimed.	class	Proposed: ValidationProgram (Tier 2); Proposed: ValidationRules (Tier 2); Proposed: ValidationBilling (Tier 3); Proposed: ValidationBillingModelEnum (Tier 3); Proposed: ValidationBillingCycleEnum (Tier 3)
ValidationRedemption	Validation redemption	One validation applied to one ticket/session — the ledger entry every channel writes: a pay station scanning a code, a merchant app, an agent's `applyValidation` command (Part 6), or a lane device. `validationId` is the APDS `Segment.validationId`, so APDS consumers see the same redemption without speaking APX. `amountReduced` is the ACTUAL value removed from the amount due (dispute evidence), never the nominal benefit.	class	Proposed: ValidationRedemption (Tier 1); Proposed: ValidationRedemptionStatusEnum (Tier 1)
ValidationRedemptionReversal	Validation redemption reversal	Request body reversing a redemption (wrong ticket, merchant dispute, fraud).	class	APX only
ValidationStatement	Validation statement	A program's redemptions and billable total for a period. Returned as a computed preview by `GET …/statement`, and as an IMMUTABLE record once a period is closed by `POST …/statements` (`statementStatus: closed`; the operator's accounting system invoices from it). Closed periods MUST NOT overlap (409 `statement-overlap`).	class	APX only
ValidationStatementClose	Validation statement close	Request body closing a billing period for a program.	class	APX only
ValidationVoid	Validation void	Request body voiding an issuance batch or a single instrument code (Part 20 §20.2 rule 5) — a stolen sheet, a leaked code, a misprint.	class	APX only
ValidationVoidDetail	Validation void detail	Who voided an issuance or instrument, when, and why. Present once `void`.	class	APX only

A.1.13.3 Specializations of the "Validations" package

There are no specializations in the "Validations" package.

A.1.13.4 Associations of the "Validations" package

Table A.39 -- Associations of the "Validations" package

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ValidationBenefit	amount	Amount	Fixed money off.	0..1	Rates.AmountInCurrency	
ValidationInstrument	program	Program	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	issuance	Issuance	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	benefit	Benefit	What redeeming this code is worth (from the program), so a pay station can show it before applying.	0..1	Validations.ValidationBenefit	
	redemption	Redemption	The ValidationRedemption that consumed the code, when `redeemed`.	0..1	PkCommon.Reference	
	voidDetail	Void detail	Who voided an issuance or instrument, when, and why. Present once `void`.	0..1	Validations.ValidationVoidDetail	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
ValidationIssuance	program	Program	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	voidDetail	Void detail	Who voided an issuance or instrument, when, and why. Present once `void`.	0..1	Validations.ValidationVoidDetail	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ValidationIssuanceRequest	program	Program	Optional; defaults to, and MUST equal, the program in the path.	0..1	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
ValidationProgram	place	Place	The HierarchyElement (Place or subtree root) the program validates parking at.	1..1	PkCommon.Reference	
	provider	Provider	The merchant — an APDS Contact or Organisation.	1..1	PkCommon.Reference	
	benefit	Benefit	What a validation is worth. Exactly one of `amount` (money off), `duration` (comped time, valued at the applicable rate), or `percentage` (proportionate discount — the APDS RateDiscount `discountRate` semantics) applies; `description` is always present so agents can answer disputes in plain language. A program body whose benefit carries none or more than one of the three is refused with 422 `request-unprocessable` (Part 20 §20.1); the rule is stated here rather than as a schema `oneOf` so that existing request bodies keep validating.	1..1	Validations.ValidationBenefit	
	rules.applicableRateTables	Applicable rate tables	Restrict to these APDS RateTables; absent = all tables at the place that accept validations.	0..*	PkCommon.Reference	
	billing.unitPrice	Unit price	What the merchant pays per redemption (merchantPays), or the base for `merchantShare` (split). Absent = billed at the actual amount reduced.	0..1	Rates.AmountInCurrency	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ValidationRedemption	program	Program	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	session	Session	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	command	Command	The Part 6 Command that applied it, when the channel was `callCenter/api` via `applyValidation`.	0..1	PkCommon.Reference	
	amountReduced	Amount reduced	Actual reduction of the amount due.	0..1	Rates.AmountInCurrency	
	reversal.closedStatement	Closed statement	When the redemption was already billed on a closed statement: that statement. It is not edited; the correction is a credit line on the next closed statement (Part 20 §20.4).	0..1	PkCommon.Reference	
	reversal.creditedOn	Credited on	The closed statement carrying the credit line for this reversal; absent until that period closes.	0..1	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ValidationStatement	program	Program	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	totalReduced	Total reduced	Sum of `amountReduced` over applied redemptions.	0..1	Rates.AmountInCurrency	
	billableAmount	Billable amount	What the merchant owes for the period under the program's billing model, net of any `credit` lines (reversals of redemptions billed on an earlier closed statement, Part 20 §20.6).	1..1	Rates.AmountInCurrency	
	lines.redemption	Redemption	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	lines.originalStatement	Original statement	For a `credit` line, the closed statement that billed the redemption.	0..1	PkCommon.Reference	
	lines.amountReduced	Amount reduced	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	lines.billable	Billable	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

A.1.13.5 Attributes of the "Validations" package

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Table A.40 -- Attributes of the "Validations" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
ValidationBenefit	description	Description	Free-text description.	1..1	String	
	duration	Duration	Comped parking time (ISO 8601), valued at the applicable rate.	0..1	PkCommon.Duration	
	percentage	Percentage	Proportionate discount on the amount due (APDS RateDiscount.discountRate semantics).	0..1	Decimal	
ValidationInstrument	code	Code	The instrument's code. †	1..1	String	
	instrumentStatus	Instrument status	Whether the instrument may still be redeemed. †	1..1	ValidationInstrument.instrumentStatus (enumeration)	
	validFrom	Valid from	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	validTo	Valid to	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
ValidationIssuance	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	quantity	Quantity	The number of instruments in the batch. †	1..1	Integer	
	method	Method	The form of the instruments in the batch. †	1..1	ValidationIssuance.method (enumeration)	
	validFrom	Valid from	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	validTo	Valid to	Expiry of every instrument in the batch; defaults from the program's `rules.validityWindow`.	0..1	PkCommon.DateTime	
	issuedTo	Issued to	Opaque principal or merchant contact the stock was handed to.	0..1	String	
	codes	Codes	The instrument codes — present ONLY in the creation response.	0..*	String	read-only
	issuanceStatus	Issuance status	`void` after `POST …/issuances/{issuanceId}/void` (Part 20 §20.2 rule 5).	1..1	ValidationIssuance.issuanceStatus (enumeration)	read-only

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	note	Note	Free-text note from the actor.	0..1	String	
ValidationIssuanceRequest	id	Id	Unique identifier of the record (Part 4).	0..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	0..1	Integer	read-only
	quantity	Quantity	The number of instruments to issue in the batch. †	1..1	Integer	
	method	Method	The form of the instruments to issue. †	1..1	ValidationIssuanceRequest.method (enumeration)	
	validFrom	Valid from	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	validTo	Valid to	Expiry of every instrument in the batch; defaults from the program's `rules.validityWindow`.	0..1	PkCommon.DateTime	
	issuedTo	Issued to	Opaque principal or merchant contact the stock was handed to.	0..1	String	
	codes	Codes	Server-generated instrument codes; ignored if sent (Part 20 §20.2). †	0..*	String	read-only
	issuanceStatus	Issuance status	Server-assigned batch status; ignored if sent (Part 20 §20.2). †	0..1	ValidationIssuanceRequest.issuanceStatus (enumeration)	read-only
	note	Note	Free-text note from the actor.	0..1	String	
ValidationProgram	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	name	Name	Display name shown to agents and on receipts.	0..1	String	
	validationType	Validation type	Implementer code list naming the validation product (matches `ValidationProvider.validationType`).	0..1	String	
	programStatus	Program status	The program's lifecycle state (Part 20 §20.1). †	1..1	ValidationProgram.programStatus (enumeration)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	rules	Rules	The closed rule set every implementation evaluates at redemption (Part 20 §20.3). Anything beyond it rides in `extensions`.	0..1	Structure (members below)	
	rules.maxPerTicket	Max per ticket	Redemptions of THIS program allowed on one ticket/session.	0..1	Integer	
	rules.maxPerDay	Max per day	Redemptions of this program allowed per calendar day at the place.	0..1	Integer	
	rules.validityWindow	Validity window	How long after issuance an instrument stays redeemable (ISO 8601).	0..1	PkCommon.Duration	
	rules.stackable	Stackable	Whether this program may combine with other programs on the same ticket. Evaluated both ways (Part 20 §20.3 rule 3): a redemption is refused when the incoming program is not stackable and another program is already applied, or when any program already applied is not stackable.	0..1	Boolean	
	billing	Billing	How the operator charges the merchant for redemptions.	0..1	Structure (members below)	
	billing.model	Model	Vehicle model.	1..1	ValidationProgram.billing.model (enumeration)	
	billing.merchantShare	Merchant share	Percentage of the amount reduced the merchant pays under `split`.	0..1	Decimal	
	billing.billingCycle	Billing cycle	How often the merchant is billed for redemptions. †	0..1	ValidationProgram.billing.billingCycle (enumeration)	
	issuanceMethods	Issuance methods	Instrument forms this program may issue.	0..*	ValidationProgram.issuanceMethods (enumeration)	
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The program status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
ValidationRedemption	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	instrumentCode	Instrument code	The code redeemed, when the channel used one.	0..1	String	
	ticketNumber	Ticket number	Number printed on, or encoded in, the parking ticket.	0..1	String	
	appliedTime	Applied time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	channel	Channel	The channel through which the validation was applied (Part 20 §20.3). †	1..1	ValidationRedemption.channel (enumeration)	
	appliedBy	Applied by	Opaque principal (device id, merchant user, agent id).	0..1	String	
	validationId	Validation id	The APDS Segment.validationId materialized on the session.	0..1	String	read-only
	durationComped	Duration comped	ISO8601 format definition of an interval of time in format [PnnYnnMnnDTnnHnnMnnS].	0..1	PkCommon.Duration	
	redemptionStatus	Redemption status	Whether the redemption stands or was reversed. †	1..1	ValidationRedemption.redemptionStatus (enumeration)	read-only
	reversal	Reversal	How and when the redemption was reversed, and any statement it was billed or credited on (Part 20 §20.4). †	0..1	Structure (members below)	read-only
	reversal.reason	Reason	Why the action was taken.	0..1	String	
	reversal.note	Note	Free-text note from the actor.	0..1	String	
	reversal.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	reversal.actor	Actor	The person or system that performed the action.	0..1	String	
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The redemption status entered at this point in the lifecycle. †	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
ValidationRedemptionReversal	reason	Reason	Implementer code list.	1..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ValidationStatement	id	Id	Present only on closed statements.	0..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	0..1	Integer	read-only
	periodStart	Period start	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	periodEnd	Period end	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statementStatus	Statement status	Whether the statement is a computed preview or a closed, immutable record (Part 20 §20.6). †	0..1	ValidationStatement.statementStatus (enumeration)	read-only
	billingModel	Billing model	The program's billing model the statement was computed under. †	0..1	ValidationStatement.billingModel (enumeration)	
	redemptionCount	Redemption count	Applied redemptions in the period (reversed ones excluded).	1..1	Integer	
	reversedCount	Reversed count	The number of redemptions in the period that were reversed. †	0..1	Integer	
	creditCount	Credit count	Number of `credit` lines — post-closure reversals credited in this period.	0..1	Integer	
	lines	Lines	Per-redemption detail; MAY be omitted from list responses.	0..*	Structure (members below)	
	lines.lineKind	Line kind	`redemption` (default when absent) — a redemption applied in the period. `credit` — a redemption billed on an earlier closed statement and reversed since; `billable` is negative.	0..1	ValidationStatement.lines.lineKind (enumeration)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	lines.appliedTime	Applied time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	lines.ticketNumber	Ticket number	Number printed on, or encoded in, the parking ticket.	0..1	String	
	closedTime	Closed time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	closedBy	Closed by	The principal that closed the statement. †	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ValidationStatementClose	periodStart	Period start	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	periodEnd	Period end	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	note	Note	Free-text note from the actor.	0..1	String	
ValidationVoid	reason	Reason	Implementer code list — lost, stolen, leaked, misprint, programEnded.	1..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ValidationVoidDetail	reason	Reason	Why the action was taken.	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
	time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	actor	Actor	The person or system that performed the action.	0..1	String	
	voidedCount	Voided count	On an issuance, how many un-redeemed instruments the void moved to `void` (redeemed ones are unaffected).	0..1	Integer	

A.1.14 "Credentials" package

A.1.14.1 Location of "Credentials" package. The location of the "Credentials" package is:

`-- APX/Credentials` (source: `spec/openapi/domains/credentials/schemas.yaml`; normative text: APX Part 21)

A.1.14.2 Classes of the "Credentials" package

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Table A.41 -- Classes of the "Credentials" package

Class name	Designation	Definition	Kind	APDS status
AccessEvent	Access event	One access attempt at a lane, whether or not the presented credential matched a CredentialRecord — the item of `GET /v1/access-events` and the data of `apx.credentials.access.v1`. `credential` is REQUIRED whenever a record matched; it is absent only for `denialReason: unknownCredential`, where `presented` is REQUIRED instead (Part 21 §21.4). Every `CredentialAccessEvent` is a valid `AccessEvent`; this schema exists because `CredentialAccessEvent.credential` is required and relaxing it would break clients of the per-credential history.	class	Proposed: AccessEvent (Tier 1); Proposed: AccessOutcomeEnum (Tier 1)
CredentialAccessEvent	Credential access event	One access attempt with a credential at a lane — granted or denied, and why. Fills the gap that APDS EventTypeEnum has no access events (published as `apx.credentials.access.v1`).	class	APX only
CredentialRecord	Credential record	One access credential — keycard, fob, RFID tag or transponder, mobile credential, hangtag, or a plate used as the credential — with its holder, validity, physical media, and lifecycle. `credentialType` is the APDS read technology; `media.form` is the physical form.	class	Proposed: CredentialAssigned (Tier 1); Proposed: CredentialMedia (Tier 1); Proposed: CredentialSuspension (Tier 1); Proposed: CredentialStatusEnum (Tier 1); Proposed: CredentialMediaFormEnum (Tier 1); Proposed: DepositStatusEnum (Tier 1)
CredentialReplaceRequest	Credential replace request	Request body issuing a successor credential. The new record inherits holder, account, assigned rights, places, and validity unless overridden; the old record becomes `replaced` and is removed from the APDS AssignedRights at the same instant the successor is materialized.	class	APX only
CredentialTransition	Credential transition	Request body for activate / suspend / resume / report-lost / revoke.	class	APX only
PresentedCredential	Presented credential	What the reader actually read at the lane. Carried on an access event when no CredentialRecord matched (`denialReason: unknownCredential`), and MAY be carried otherwise. Personal data under Part 21 §21.5: returned only under `apx.credentials:*` scopes.	class	Proposed: PresentedCredential (Tier 1)

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A.1.14.3 Specializations of the "Credentials" package

There are no specializations in the "Credentials" package.

A.1.14.4 Associations of the "Credentials" package

Table A.42 -- Associations of the "Credentials" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
AccessEvent	credential	Credential	The matched CredentialRecord; absent only when nothing matched.	0..1	PkCommon.Reference	
	presented	Presented	What the reader actually read at the lane. Carried on an access event when no CredentialRecord matched (`denialReason: unknownCredential`), and MAY be carried otherwise. Personal data under Part 21 §21.5: returned only under `apx.credentials:*` scopes.	0..1	Credentials.PresentedCredential	
	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	lane	Lane	The VehicularAccess where the attempt occurred.	0..1	PkCommon.Reference	
	device	Device	The reader (SupplementalEquipment).	0..1	PkCommon.Reference	
	session	Session	The APDS Session opened or closed by a granted access.	0..1	PkCommon.Reference	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
CredentialAccessEvent	credential	Credential	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	lane	Lane	The VehicularAccess where the attempt occurred.	0..1	PkCommon.Reference	
	device	Device	The reader (SupplementalEquipment).	0..1	PkCommon.Reference	
	session	Session	The APDS Session opened or closed by a granted access.	0..1	PkCommon.Reference	
	presented	Presented	What the reader actually read at the lane. Carried on an access event when no CredentialRecord matched (`denialReason: unknownCredential`), and MAY be carried otherwise. Personal data under Part 21 §21.5: returned only under `apx.credentials:*` scopes.	0..1	Credentials.PresentedCredential	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
CredentialRecord	holder	Holder	The APDS RightHolder (or Contact) the credential is issued to.	0..1	PkCommon.Reference	
	account	Account	The APX Account (Part 13) this credential belongs to, when the holder is a billable account.	0..1	PkCommon.Reference	
	assignedRights	Assigned rights	The APDS AssignedRights this credential is materialized on (Part 21 §21.2).	0..*	PkCommon.Reference	
	places	Places	HierarchyElement subtree roots this credential is valid at.	0..*	PkCommon.Reference	
	media.deposit	Deposit	Deposit taken for the physical item.	0..1	Rates.AmountInCurrency	
	replaces	Replaces	The CredentialRecord this one succeeded.	0..1	PkCommon.Reference	
	replacedBy	Replaced by	The successor, when `replaced`.	0..1	PkCommon.Reference	read-only
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
CredentialReplaceRequest	media.deposit	Deposit	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	

A.1.14.5 Attributes of the "Credentials" package

Table A.43 -- Attributes of the "Credentials" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
AccessEvent	id	Id	Unique identifier of the record (Part 4).	0..1	Uuid	
	occurredAt	Occurred at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	direction	Direction	Whether the attempt was to enter or to leave. †	1..1	AccessEvent.direction (enumeration)	
	outcome	Outcome	Whether access was granted or refused. †	1..1	AccessEvent.outcome (enumeration)	
	denialReason	Denial reason	When denied — definedValue from `apx-access-denial-reasons` or an implementer code list (Part 11).	0..1	String (code list apx-access-denial-reasons)	
CredentialAccessEvent	id	Id	Unique identifier of the record (Part 4).	0..1	Uuid	
	occurredAt	Occurred at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	direction	Direction	Whether the attempt was to enter or to leave. †	1..1	CredentialAccessEvent.direction (enumeration)	
	outcome	Outcome	Whether access was granted or refused. †	1..1	CredentialAccessEvent.outcome (enumeration)	
	denialReason	Denial reason	When denied — definedValue from `apx-access-denial-reasons` or an implementer code list (Part 11). The `credential*` values mirror the non-active lifecycle states.	0..1	String (code list apx-access-denial-reasons)	
CredentialRecord	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	credentialType	Credential type	The APDS read technology (rfid, bluetooth, electronicID, hangtag, licensePlate…).	1..1	Right.CredentialTypeEnum	
	credentialIdentification	Credential identification	The value the lane reads — card number, tag id, plate. Unique per (credentialType) within the implementation among non-terminal records; a collision is 409 `credential-identification-in-use` whose `detail` MUST NOT identify the holding record, its holder, or its place (Part 21 §21.1 rule 2, §21.5).	1..1	String	
	credentialAssignedType	Credential assigned type	APDS CredentialAssignedTypeEnum — what the credential identifies.	0..1	CredentialRecord.credentialAssignedType (enumeration)	
	validity	Validity	When the credential may be used. `end`, when given, MUST be in the future at issue and after `start`; otherwise the issue is 422 `request-unprocessable` (Part 21 §21.1 rule 7).	0..1	Structure (members below)	
	validity.start	Start	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	validity.end	End	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	activateOnStart	Activate on start	When true, the server moves the record `issued` → `active` by itself at `validity.start` (or at issue, when `validity.start` is absent or already past), with actor `system`, and publishes `apx.credentials.status.v1` (Part 21 §21.1 rule 6). When false or absent the record stays `issued` until `activate` is called — the card handed over at the desk.	0..1	Boolean	
	media	Media	The physical (or virtual) form the credential was issued on.	0..1	Structure (members below)	
	media.form	Form	The physical or virtual form of the item the credential was issued on. †	0..1	CredentialRecord.media.form (enumeration)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	media.serialNumber	Serial number	Manufacturer or stock serial of the physical item (distinct from `credentialIdentification`).	0..1	String	
	media.batch	Batch	Stock batch or print run.	0..1	String	
	media.issuedTime	Issued time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	media.depositStatus	Deposit status	What has happened to the deposit taken for the item. †	0..1	CredentialRecord.media.depositStatus (enumeration)	
	credentialStatus	Credential status	The credential's lifecycle status (Part 21 §21.1). †	1..1	CredentialRecord.credentialStatus (enumeration)	read-only
	suspension	Suspension	Present while `suspended`.	0..1	Structure (members below)	read-only
	suspension.reason	Reason	Why the action was taken.	0..1	String	
	suspension.until	Until	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The credential status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	
CredentialReplaceRequest	reason	Reason	Implementer code list (lost, stolen, damaged, upgrade, reissue).	1..1	String	
	credentialType	Credential type	Successor read technology; defaults to the old record's.	0..1	Right.CredentialTypeEnum	
	credentialIdentification	Credential identification	Successor identification; server-assigned when absent (pre-encoded stock).	0..1	String	
	media	Media	Successor media; same shape as `CredentialRecord.media`.	0..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	media.form	Form	The physical or virtual form of the successor's item. †	0..1	CredentialReplaceRequest.media.form (enumeration)	
	media.serialNumber	Serial number	The serial number of the successor's physical item. †	0..1	String	
	media.batch	Batch	The batch the successor's physical item belongs to. †	0..1	String	
	oldDepositStatus	Old deposit status	What happens to the old record's deposit.	0..1	CredentialReplaceRequest.oldDepositStatus (enumeration)	
	note	Note	Free-text note from the actor.	0..1	String	
CredentialTransition	reason	Reason	Implementer code list (nonPayment, holderRequest, securityIncident, stolen…).	1..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
	until	Until	For `suspend` — automatic resume time; absent = until resumed. MUST be in the future; a past `until` is 422 `request-unprocessable` (Part 21 §21.1 rule 7).	0..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
PresentedCredential	credentialType	Credential type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	1..1	Right.CredentialTypeEnum	
	credentialIdentification	Credential identification	The value read (card number, tag id, plate).	1..1	String	

A.1.15 "Valet" package

A.1.15.1 Location of "Valet" package. The location of the "Valet" package is:

`-- APX/Valet` (source: `spec/openapi/domains/valet/schemas.yaml`; normative text: APX Part 22)

A.1.15.2 Classes of the "Valet" package

Table A.44 -- Classes of the "Valet" package

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Class name	Designation	Definition	Kind	APDS status
ConditionReport	Condition report	The vehicle's condition as recorded by an attendant (or a scanning device) at drop-off or handback: free-text notes, per-area damage entries, and access-controlled image links (Part 9 §9.6). The drop-off report is the evidence a damage claim is answered with.	class	Proposed: ConditionReport (Tier 2); Proposed: DamageItem (Tier 2); Proposed: DamageSeverityEnum (Tier 2)
ValetCancelRequest	Valet cancel request	Request body abandoning a drop-off before custody was taken; the ticket becomes `cancelled` (terminal).	class	APX only
ValetCancelRetrievalRequest	Valet cancel retrieval request	Request body cancelling an open retrieval request; the vehicle returns to `parked`.	class	APX only
ValetHandbackRequest	Valet handback request	Request body handing the vehicle to a verified customer, with the handback condition report.	class	APX only
ValetParkRequest	Valet park request	Request body recording where the vehicle was parked and where its keys are.	class	APX only
ValetPickupRequest	Valet pickup request	Request body recording that a runner has gone to fetch the car (`requested → retrieving`).	class	APX only
ValetRetrievalRequest	Valet retrieval request	Request body asking for the car — from the customer (text, app, web, voice bot) or an attendant.	class	APX only
ValetStageRequest	Valet stage request	Request body recording the vehicle at the staging lane, ready for handback.	class	APX only
ValetTicket	Valet ticket	The custody record for one valeted vehicle: drop-off (with condition evidence), where it is parked and where the keys are, the retrieval request and its ETA, staging, and handback — with the immutable lifecycle audit. The APDS Session remains the stay and the money; this record is what the attendant board, the customer's phone, and a damage claim look at.	class	Proposed: RightTypeEnum (Tier 2); Proposed: ValetTicket (Tier 2); Proposed: ValetStatusEnum (Tier 2); Proposed: HandbackVerificationEnum (Tier 2)

A.1.15.3 Specializations of the "Valet" package

There are no specializations in the "Valet" package.

A.1.15.4 Associations of the "Valet" package

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Table A.45 -- Associations of the "Valet" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ValetHandbackRequest	conditionReport	Condition report	The vehicle's condition as recorded by an attendant (or a scanning device) at drop-off or handback: free-text notes, per-area damage entries, and access-controlled image links (Part 9 §9.6). The drop-off report is the evidence a damage claim is answered with.	0..1	Valet.ConditionReport	
ValetParkRequest	space	Space	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
ValetStageRequest	stagingLane	Staging lane	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
ValetTicket	place	Place	The HierarchyElement (the facility or valet stand).	1..1	PkCommon.Reference	
	session	Session	The APDS Session for the stay (opened at drop-off).	0..1	PkCommon.Reference	
	assignedRight	Assigned right	The APDS AssignedRight (the valet ticket as a right), when the operator issues one.	0..1	PkCommon.Reference	
	customer.contact	Contact	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	customer.account	Account	The APX Account (Part 13), for members and hotel guests on file.	0..1	PkCommon.Reference	
	dropOff.lane	Lane	The VehicularAccess or valet stand where custody was taken.	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	dropOff.conditionReport	Condition report	The vehicle's condition as recorded by an attendant (or a scanning device) at drop-off or handback: free-text notes, per-area damage entries, and access-controlled image links (Part 9 §9.6). The drop-off report is the evidence a damage claim is answered with.	0..1	Valet.ConditionReport	
	storage.space	Space	The APDS Space, when the facility is space-mapped.	0..1	PkCommon.Reference	
	retrieval.stagingLane	Staging lane	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	handback.conditionReport	Condition report	The vehicle's condition as recorded by an attendant (or a scanning device) at drop-off or handback: free-text notes, per-area damage entries, and access-controlled image links (Part 9 §9.6). The drop-off report is the evidence a damage claim is answered with.	0..1	Valet.ConditionReport	
	charging.session	Session	The Part 23 ChargingSession the valet opened.	0..1	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

A.1.15.5 Attributes of the "Valet" package

Table A.46 -- Attributes of the "Valet" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
ConditionReport	notes	Notes	Free-text observations.	0..1	String	
	damage	Damage	Structured damage entries, one per finding.	0..*	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	damage.area	Area	Implementer code list — frontBumper, rearBumper, driverDoor, passengerDoor, hood, roof, trunk, wheelFL/FR/RL/RR, windshield, interior…	1..1	String	
	damage.description	Description	Free-text description.	0..1	String	
	damage.severity	Severity	How serious the damage finding is. †	0..1	ConditionReport.damage.severity (enumeration)	
	damage.imageLink	Image link	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
	damage.recordedTime	Recorded time	Set by the server on an entry appended after drop-off (`POST …/condition`, Part 22 §22.2 rule 3); absent on the original entries, which share the report's `recordedTime`.	0..1	PkCommon.DateTime	
	damage.recordedBy	Recorded by	Opaque principal that recorded an appended entry.	0..1	String	
	imageLinks	Image links	Walk-around photos or scan captures, as access-controlled links.	0..*	PkCommon.Url	
	recordedTime	Recorded time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	recordedBy	Recorded by	Opaque principal (attendant id, scanning device id).	0..1	String	
	customerAcknowledged	Customer acknowledged	Whether the customer acknowledged the report (signature, tap, spoken confirmation).	0..1	Boolean	
ValetCancelRequest	reason	Reason	Implementer code list (customerLeft, selfParked, duplicateTicket, refused…).	1..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ValetCancelRetrievalRequest	reason	Reason	Why the action was taken.	1..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ValetHandbackRequest	verificationMethod	Verification method	How the person collecting the vehicle was verified. †	1..1	ValetHandbackRequest.verificationMethod (enumeration)	
	verificationValue	Verification value	What was presented (ticket number, one-time code…); never stored beyond the check.	0..1	String	
	handedTo	Handed to	A description of the person the vehicle was handed to, as verified. †	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	mileage	Mileage	Odometer reading.	0..1	Integer	
	notes	Notes	Free-text notes.	0..1	String	
ValetParkRequest	zone	Zone	The zone, row or level where the vehicle was parked, for facilities that are not space-mapped. †	0..1	String	
	keyLocation	Key location	Where the vehicle's keys are kept. †	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ValetPickupRequest	retrievingBy	Retrieving by	Opaque principal of the runner; absent = the calling principal.	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ValetRetrievalRequest	channel	Channel	Where the retrieval request came from (Part 22 §22.3). †	1..1	ValetRetrievalRequest.channel (enumeration)	
	requestedFor	Requested for	Scheduled pickup; absent = as soon as possible.	0..1	PkCommon.DateTime	
	interaction	Interaction	Opaque interaction id (Part 17 §17.6) when raised through a support channel or bot.	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ValetStageRequest	note	Note	Free-text note from the actor.	0..1	String	
ValetTicket	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	ticketNumber	Ticket number	The number printed on the claim ticket / shown in the app.	0..1	String	
	vehicle	Vehicle	The vehicle in custody: its plate or other credential read at drop-off, jurisdiction, make, model, colour and description. †	0..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	vehicle.credentialType	Credential type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	0..1	Right.CredentialTypeEnum	
	vehicle.credentialIdentification	Credential identification	The plate (or other credential) read at drop-off.	0..1	String	
	vehicle.jurisdiction	Jurisdiction	Issuing jurisdiction of the plate (state, province or country).	0..1	String	
	vehicle.make	Make	Vehicle make.	0..1	String	
	vehicle.model	Model	Vehicle model.	0..1	String	
	vehicle.colour	Colour	The colour of the vehicle. †	0..1	String	
	vehicle.description	Description	Free-text description.	0..1	String	
	customer	Customer	Who the car belongs to — minimized (Part 9 §9.6); enough to verify at handback and reach them for ETA.	0..1	Structure (members below)	
	customer.displayName	Display name	The customer's display name, minimized (Part 9 §9.6). †	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	customer.contactChannel	Contact channel	How to reach the customer about retrieval; the handle is opaque/masked — no telephony in the contract.	0..1	Structure (members below)	
	customer.contactChannel.type	Type	The kind of channel the customer is reached on about retrieval. †	0..1	ValetTicket.customer.contactChannel.type (enumeration)	
	customer.contactChannel.handle	Handle	Opaque or masked handle (push token id, masked number).	0..1	String	
	dropOff	Drop off	When, where and by whom custody was taken, with mileage, fuel level, key tag, items left and the condition report (Part 22 §22.1). †	1..1	Structure (members below)	
	dropOff.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	dropOff.attendant	Attendant	Opaque principal.	0..1	String	
	dropOff.mileage	Mileage	Odometer reading.	0..1	Integer	
	dropOff.fuelLevelPercent	Fuel level percent	The fuel level at drop-off, as a percentage of a full tank. †	0..1	Decimal	
	dropOff.keyTag	Key tag	The key hook / tag identifier.	0..1	String	
	dropOff.itemsLeft	Items left	Declared items left in the vehicle.	0..1	String	
	storage	Storage	Where the vehicle and its keys are.	0..1	Structure (members below)	
	storage.zone	Zone	Zone/row/level text for facilities that are not space-mapped.	0..1	String	
	storage.keyLocation	Key location	Where the vehicle's keys are kept. †	0..1	String	
	storage.parkedTime	Parked time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	storage.parkedBy	Parked by	The attendant who parked the vehicle. †	0..1	String	
	retrieval	Retrieval	The current (or last) retrieval request.	0..1	Structure (members below)	
	retrieval.requestedTime	Requested time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	retrieval.requestedFor	Requested for	A scheduled pickup time; absent = as soon as possible.	0..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	retrieval.channel	Channel	Where the retrieval request came from (Part 22 §22.3). †	0..1	ValetTicket.retrieval.channel (enumeration)	
	retrieval.requestedBy	Requested by	Opaque principal (customer handle, attendant, bot id).	0..1	String	
	retrieval.interaction	Interaction	Opaque interaction id (Part 17 §17.6 convention) linking to the support interaction that raised it, if any.	0..1	String	
	retrieval.etaMinutes	Eta minutes	Whole minutes from now until `promisedTime`, never negative — `max(0, floor(promisedTime − now))` — recomputed on every read and event (Part 22 §22.3 rule 1). For a scheduled pickup it counts down to `requestedFor`.	0..1	Integer	
	retrieval.promisedTime	Promised time	When the car is promised at the staging lane — `requestedFor` when scheduled, else `requestedTime` plus the operator's estimate.	0..1	PkCommon.DateTime	
	retrieval.retrievingBy	Retrieving by	Opaque principal of the runner fetching the car (set by `pickup`).	0..1	String	
	retrieval.stagedTime	Staged time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	retrieval.cancelledTime	Cancelled time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	retrieval.cancelReason	Cancel reason	Why the retrieval request was cancelled, such as `re-parked` (Part 22 §22.1). †	0..1	String	
	handback	Handback	When and to whom the vehicle was handed back, how the claimant was verified, and the handback condition report (Part 22 §22.4). †	0..1	Structure (members below)	read-only
	handback.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	handback.handedTo	Handed to	Opaque description of the recipient as verified.	0..1	String	
	handback.verificationMethod	Verification method	How the person collecting the vehicle was verified. †	0..1	ValetTicket.handback.verificationMethod (enumeration)	
	handback.attendant	Attendant	The attendant who handed the vehicle back. †	0..1	String	
	handback.mileage	Mileage	Odometer reading.	0..1	Integer	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	handback.notes	Notes	Free-text notes.	0..1	String	
	charging	Charging	Part 23 §23.8 — the guest asked the valet to charge the car. Additive and optional; the charge itself is a Part 23 ChargingSession referenced here once the valet plugs in.	0..1	Structure (members below)	
	charging.requested	Requested	The customer asked for the vehicle to be charged during the stay.	0..1	Boolean	
	charging.targetStateOfChargePercent	Target state of charge percent	The state of charge the customer asked the vehicle to be charged to, as a percentage (Part 23 §23.8). †	0..1	Decimal	
	charging.instructions	Instructions	Free text from the customer (charge port side, adapter in trunk…).	0..1	String	
	valetStatus	Valet status	The stage of the vehicle in valet custody (Part 22 §22.1). †	1..1	ValetTicket.valetStatus (enumeration)	read-only
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The valet status entered at this point in the lifecycle. †	1..1	String	
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	

A.1.16 "PlateLists" package

A.1.16.1 Location of "PlateLists" package. The location of the "PlateLists" package is:

`-- APX/PlateLists` (source: `spec/openapi/domains/platelists/schemas.yaml`; normative text: APX Part 24)

A.1.16.2 Classes of the "PlateLists" package

Table A.47 -- Classes of the "PlateLists" package

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Class name	Designation	Definition	Kind	APDS status
PlateList	Plate list	A list of credentials with a category and per-place behaviour (Part 24). Entries are kept separately (`PlateListEntry`); the list carries the policy.	class	Proposed: PlateList (Tier 2)
PlateListEntry	Plate list entry	One credential on a list (Part 24 §24.2). The plate value appears only under `apx.platelists:read`/`:manage`; a consumer that only screens may hold the `apds-ext:apx:credential-digest@1.0` decoration instead (Part 9 §9.6 rule 6).	class	Proposed: PlateListEntry (Tier 2)
PlateListPlaceFlags	Plate list place flags	What the list does at one place (Part 24 §24.1).	class	Proposed: PlateListPlaceFlags (Tier 2)

A.1.16.3 Specializations of the "PlateLists" package

There are no specializations in the "PlateLists" package.

A.1.16.4 Associations of the "PlateLists" package

Table A.48 -- Associations of the "PlateLists" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
PlateList	owner	Owner	The Organisation that maintains the list (a city, an operator).	0..1	PkCommon.Reference	
	places	Places	Where the list applies, with per-place flags; a list with no `places` applies nowhere.	0..*	PlateLists.PlateListPlaceFlags	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
PlateListEntry	list	List	The PlateList this entry belongs to.	0..1	PkCommon.Reference	read-only
	details.amountOwed	Amount owed	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
PlateListPlaceFlags	place	Place	The HierarchyElement subtree the flags apply to.	1..1	PkCommon.Reference	

A.1.16.5 Attributes of the "PlateLists" package

Table A.49 -- Attributes of the "PlateLists" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
PlateList	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	name	Name	Name in natural language.	1..1	String	
	category	Category	definedValue from `apx-plate-list-categories` (Part 11) — `allow`, `watch`, `scofflaw`, `enforcementVehicle` — or an implementer category.	1..1	String (code list apx-plate-list-categories)	
	status	Status	Whether the list applies, is suspended or is retired (Part 24 §24.1). †	1..1	PlateList.status (enumeration)	
	description	Description	Free-text description.	0..1	String	
	entryCount	Entry count	The number of entries on the list. †	0..1	Integer	read-only
PlateListEntry	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	credential	Credential	The credential on the list: its type, value and issuing jurisdiction (Part 24 §24.2). †	1..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	credential.credentialType	Credential type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	1..1	Right.CredentialTypeEnum	
	credential.credentialIdentification	Credential identification	The plate or credential value.	1..1	String	
	credential.jurisdiction	Jurisdiction	Issuing jurisdiction of the plate (state, province, country code).	0..1	String	
	validity	Validity	When the entry is in force; absent bounds are open.	0..1	Structure (members below)	
	validity.start	Start	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	validity.end	End	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	details	Details	Why the credential is on the list, as the list owner records it.	0..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	details.noticeCount	Notice count	The number of unresolved notices the list owner records against the credential. †	0..1	Integer	
	details.reference	Reference	The owner's case or file reference, opaque.	0..1	String	
	details.note	Note	Free-text note from the actor.	0..1	String	
	vehicle	Vehicle	A description that helps an officer confirm the match; never a registry.	0..1	Structure (members below)	
	vehicle.description	Description	Free-text description.	0..1	String	
PlateListPlaceFlags	enforced	Enforced	A match counts for compliance (`allow`) or enforcement (`scofflaw`, `watch`) at this place.	0..1	Boolean	
	alertOnArrival	Alert on arrival	A match raises the Part 7 arrival alert of the list's category.	0..1	Boolean	
	refuseService	Refuse service	A match refuses service at the lane (the refused-service sign, Part 6 `displayMessage`).	0..1	Boolean	

A.1.17 "Resolution" package

A.1.17.1 Location of "Resolution" package. The location of the "Resolution" package is:

`-- APX/Resolution` (source: `spec/openapi/domains/resolution/schemas.yaml`; normative text: APX Part 17)

A.1.17.2 Classes of the "Resolution" package

Table A.50 -- Classes of the "Resolution" package

Class name	Designation	Definition	Kind	APDS status
AllowedAction	Allowed action	One policy decision about one action, evaluated for THIS context, THIS credential, and THIS moment (Part 17 §17.3). The server — never the consuming agent, human or AI — decides permissibility. Approval requirements are policy-dependent, which is why they live here at runtime and not in a registry.	class	APX only
ApprovalDecision	Approval decision	The decision on an ApprovalRequest (Part 17 §17.3a), also the body of `POST /v1/approvals/{id}/decide`.	class	APX only

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Class name	Designation	Definition	Kind	APDS status
ApprovalRequest	Approval request	Asking someone with authority to approve an action before it runs (Part 17 §17.3a). An agent whose AllowedAction said `requiresApproval` creates one, addressed to a `role` (an escalation role of the place, Part 26 §26.5, or the AllowedAction's `approvalRole`); the approver decides through `POST /v1/approvals/{id}/decide`; the resulting `Approval` evidence on the write cites the request. Every change is published as `apx.approvals.changed.v1`.	class	APX only
OverrideRecord	Override record	A recent manual override relevant to this context (courtesy exits, gate opens, passback resets…). Summarizes a Part 6 Command.	class	APX only
PassbackStatus	Passback status	Anti-passback state overlay for one APDS Credential.	class	APX only
PlateCandidate	Plate candidate	One candidate plate read for correction workflows (Part 17 §17.5) — a projection over APDS Observations, imagery as access-controlled links (Part 9 §9.6).	class	APX only
ResolutionContext	Resolution context	The aggregated customer-service context (Part 17): everything the server could resolve about one interaction, plus the policy-decided allowed actions. Every section beyond the required core is OPTIONAL — implementations include what they know and omit what they don't (graceful degradation), and MUST NOT include sections the caller's scopes/grants could not read directly.	class	APX only
ResolutionIssue	Resolution issue	The machine-classified issue this context describes. `code` is a definedValue from the apx-issue-types registry (open, per Part 11); `display` is the human-readable summary shown to agents.	class	APX only
ResolutionResolveRequest	Resolution resolve request	Whatever PARKING-DOMAIN identifiers are currently known — the server resolves every relationship it can (Part 17 §17.2). At least one IDENTIFYING member is required — `device`, `place`, `lane`, `session`, `holder`, `credential`, `plate`, `ticketNumber`, `reservationCode`, `guestReference`, `commsPoint`, `callerId`, `dialedNumber`, or `commsDeviceId`; all are optional individually. `interactionId`, `correlationId`, `channel`, and `reservationIssuer` are metadata and do not count: a body without an identifying member is 400 `invalid-request` (Part 17 §17.1). Unknown members are ignored (tolerant reader) and never used for resolution. (`minProperties: 1` is the only part of this rule the schema states; the full rule is enforced by the server.)	class	APX only
SupportInteraction	Support interaction	One customer-service interaction (human or AI agent), recorded so future resolution contexts can surface "they called twice yesterday".	class	Proposed: SupportInteraction (Tier 3); Proposed: SupportAgentTypeEnum (Tier 3)

A.1.17.3 Specializations of the "Resolution" package

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Table A.51 -- Specializations of the "Resolution" package

Class name	Parent class name
ApprovalRequest	Common.ApxResourceCore

A.1.17.4 Associations of the "Resolution" package

Table A.52 -- Associations of the "Resolution" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
AllowedAction	target	Target	The Reference the action should be executed against.	0..1	PkCommon.Reference	
	execution.subject	Subject	For type=ui — the entity to open the surface on; defaults to the action's `target`.	0..1	PkCommon.Reference	
ApprovalRequest	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	target	Target	What the action is to be executed against.	0..1	PkCommon.Reference	
	decision	Decision	The decision on an ApprovalRequest (Part 17 §17.3a), also the body of `POST /v1/approvals/{id}/decide`.	0..1	Resolution.ApprovalDecision	read-only
OverrideRecord	command	Command	Reference to the full Command (audit trail).	0..1	PkCommon.Reference	
	requestedBy	Requested by	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
PassbackStatus	credential	Credential	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	lastAccess.place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	lastAccess.lane	Lane	The VehicularAccess where the access occurred.	0..1	PkCommon.Reference	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
PlateCandidate	detail	Detail	Per-attribute confidences, alternate reads, and passage geometry (Part 13 §13.3a), when the read carried them.	0..1	Lpr.LprReadDetail	
	lane	Lane	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	observation	Observation	The underlying APDS Observation.	0..1	PkCommon.Reference	
	extensions	Extensions	The underlying Observation's `extensions`, minus the `apds-ext:apx:lpr-read@1.0` block (which is `detail`) — Part 13 §13.3a.	0..1	Common.Extensions	
ResolutionContext	issue	Issue	The machine-classified issue this context describes. `code` is a definedValue from the apx-issue-types registry (open, per Part 11); `display` is the human-readable summary shown to agents.	0..1	Resolution.ResolutionIssue	
	place	Place	The facility this interaction is anchored to.	1..1	PkCommon.Reference	
	lane	Lane	The VehicularAccess (lane) if resolved.	0..1	PkCommon.Reference	
	laneStatus	Lane status	The live lane inquiry result (Part 6 §6.2).	0..1	Control.LaneStatus	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	session	Session	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	holder	Holder	The RightHolder (parker) if identified.	0..1	PkCommon.Reference	
	account	Account	A billable parking account (monthly parker, fleet…), anchored on an APDS RightHolder.	0..1	Accounts.Account	
	assignedRight	Assigned right	The permit/reservation AssignedRight if resolved.	0..1	PkCommon.Reference	
	reservation	Reservation	Compact view of one past/current reservation, for customer-history lookups. Also the `data` of `apx.reservation.noshow.v1` (Part 14 §14.1 step 6).	0..1	Reservations.ReservationSummary	
	credential	Credential	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	passback	Passback	Anti-passback state overlay for one APDS Credential.	0..1	Resolution.PassbackStatus	
	payments	Payments	Recent relevant payments (most recent first).	0..*	Accounts.PaymentRecord	
	devices	Devices	Live status of the lane's devices — surfaces equipment faults before the agent asks the customer to retry.	0..*	Control.DeviceStatus	
	recentOverrides	Recent overrides	A recent manual override relevant to this context (courtesy exits, gate opens, passback resets…). Summarizes a Part 6 Command.	0..*	Resolution.OverrideRecord	
	supportHistory	Support history	Recent SupportInteractions for the same subjects.	0..*	Resolution.SupportInteraction	
	allowedActions	Allowed actions	The policy layer's decisions — see AllowedAction. May be empty.	0..*	Resolution.AllowedAction	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
ResolutionResolveRequest	device	Device	A SupplementalEquipment the interaction is anchored to (only meaningful if inventoried in the Place hierarchy).	0..1	PkCommon.Reference	
	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	lane	Lane	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	session	Session	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	holder	Holder	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	credential	Credential	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	commsPoint	Comms point	The Part 26 CommsPoint the contact came from, when the call platform already knows it.	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
SupportInteraction	place	Place	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	1..1	PkCommon.Reference	
	issue	Issue	The machine-classified issue this context describes. `code` is a definedValue from the apx-issue-types registry (open, per Part 11); `display` is the human-readable summary shown to agents.	0..1	Resolution.ResolutionIssue	
	subjects.session	Session	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	subjects.holder	Holder	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	subjects.account	Account	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	subjects.credential	Credential	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	subjects.reservation	Reservation	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	actions	Actions	References to actions executed during the interaction (Commands, PaymentLinks, domain mutations).	0..*	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

A.1.17.5 Attributes of the "Resolution" package

Table A.53 -- Attributes of the "Resolution" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
AllowedAction	action	Action	Logical action identifier: the apx-command-types value for control actions, or the effective-spec operationId for domain actions.	1..1	String	
	display	Display	Agent-facing label.	0..1	String	
	allowed	Allowed	Whether policy permits the action now. †	1..1	Boolean	
	requiresApproval	Requires approval	When true, the executing request MUST carry approval evidence (Part 17 §17.3).	0..1	Boolean	
	approvalRole	Approval role	Role that can approve (implementer/operator code list).	0..1	String	
	execution	Execution	How to execute (RECOMMENDED). Exactly one of command/operationId/ surface per type. `ui` says the action is done in the vendor's own screen (Part 25): the agent launches `surface` on `subject` and the implementation reports what was done as the module's native resource or a UiActionRecord carrying the launch's correlation id. The value set grows additively: a client MUST skip an action whose `type` it does not recognise rather than fail (Part 17 §17.3).	0..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	execution.type	Type	Whether the action runs as a Part 6 control command or as a domain API operation. †	1..1	AllowedAction.execution.type (enumeration)	
	execution.command	Command	For type=control — the apx-command-types value for POST /v1/commands.	0..1	String	
	execution.operationId	Operation id	For type=domain — the operationId of the executing operation in the effective OpenAPI description.	0..1	String	
	execution.surface	Surface	For type=ui — the apx-ui-surfaces value to launch (Part 25 §25.5).	0..1	String	
	reason	Reason	Why the action is denied or gated. REQUIRED when allowed=false or requiresApproval=true.	0..1	Structure (members below)	
	reason.code	Code	Machine-readable policy reason code (operator code list).	1..1	String	
	reason.display	Display	The agent-facing explanation of why the action is denied or gated. †	0..1	String	
	reason.policy	Policy	Identifier of the matched operator policy (opaque to APX).	0..1	String	
ApprovalDecision	outcome	Outcome	Whether the role approved or denied the action. †	1..1	ApprovalDecision.outcome (enumeration)	
	decidedBy	Decided by	The approving principal, in the role the request named.	1..1	String	
	decidedAt	Decided at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	read-only
	note	Note	Free-text note from the actor.	0..1	String	
ApprovalRequest	id	Id	Unique identifier of the record (Part 4).	0..1	Uuid	read-only
	version	Version	Server-managed; bodies carry it only for a versioned replace (Part 4 §4.2a).	0..1	Integer	read-only
	action	Action	The apx-command-types value or effective-spec operationId to be approved (the AllowedAction.action).	1..1	String	
	requestedBy	Requested by	The agent asking.	1..1	String	
	agentType	Agent type	Whether a person or an AI agent asked for the approval. †	0..1	ApprovalRequest.agentType (enumeration)	
	role	Role	The role asked to decide (apx-escalation-roles value or the AllowedAction's approvalRole).	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	interactionId	Interaction id	The calling application's opaque interaction identifier (Part 17 §17.7). †	0..1	String	
	correlationId	Correlation id	The interaction's correlation id (Part 17 §17.7).	1..1	Uuid	
	reason	Reason	Why the agent is asking, in one line.	0..1	String	
	status	Status	Where the request stands: pending, approved, denied or expired (Part 17 §17.3a). †	1..1	ApprovalRequest.status (enumeration)	read-only
	expiresAt	Expires at	When a pending request lapses to `expired`. Settable on create; the server MAY default it by policy.	0..1	PkCommon.DateTime	
OverrideRecord	commandType	Command type	definedValue from apx-command-types.	1..1	String	
	occurredAt	Occurred at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	agent	Agent	The human or AI principal who initiated the override, copied from the summarized Command's `agent`.	0..1	String	
	agentType	Agent type	Copied from the summarized Command's `agentType`.	0..1	OverrideRecord.agentType (enumeration)	
	reason	Reason	The override's recorded reason, copied from the summarized Command's `reason`.	0..1	String	
PassbackStatus	state	State	Whether the credential is in a passback violation. †	1..1	PassbackStatus.state (enumeration)	
	expectedPresence	Expected presence	Where the credential is expected to be, inside or outside the facility. †	0..1	PassbackStatus.expectedPresence (enumeration)	
	recordedPresence	Recorded presence	Where the anti-passback record places the credential, inside or outside the facility. †	0..1	PassbackStatus.recordedPresence (enumeration)	
	lastAccess	Last access	The most recent access event for this credential.	0..1	Structure (members below)	
	lastAccess.direction	Direction	Whether the last access was an entry or an exit. †	1..1	PassbackStatus.lastAccess.direction (enumeration)	
	lastAccess.occurredAt	Occurred at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
PlateCandidate	plate	Plate	Vehicle license plate text as read or entered.	1..1	String	
	country	Country	Plate issuing country (APDS VehicleAncillaryIdentification.country vocabulary).	0..1	String	
	stateProvince	State province	Plate issuing state/province (APDS VehicleAncillaryIdentification.stateProvince vocabulary).	0..1	String	
	confidence	Confidence	Projection of APDS Confidence.overallConfidence (0–1) for the read.	1..1	Decimal	
	observationDateTime	Observation date time	When the read was captured (aligned with LprRead.observationDateTime; APDS ObservationElement.observationStartTime).	1..1	PkCommon.DateTime	
	plateImage	Plate image	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
	vehicleImage	Vehicle image	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
	purgedImagery	Purged imagery	True when imagery for this read existed and was purged under the retention schedule (Part 13 §13.3b); `plateImage`/`vehicleImage` are then absent.	0..1	Boolean	read-only
ResolutionContext	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Increments each time the context is recomputed.	1..1	Integer	read-only
	computedAt	Computed at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	status	Status	partial = at least one source has not answered yet; re-read to refresh.	1..1	ResolutionContext.status (enumeration)	
	pendingSources	Pending sources	Names of sources still resolving when status=partial (implementer-defined identifiers).	0..*	String	
	interactionId	Interaction id	Echo of the caller's opaque interaction identifier.	0..1	String	
	correlationId	Correlation id	Identifier that links related requests and records.	0..1	Uuid	
	placeDisplay	Place display	The display name of the facility. †	0..1	String	
	vehicle	Vehicle	The vehicle as best resolved (usually via LPR). Plate vocabulary follows APDS VehicleAncillaryIdentification (country/stateProvince).	0..1	Structure (members below)	
	vehicle.plate	Plate	Vehicle license plate text as read or entered.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	vehicle.country	Country	The plate's issuing country, as in APDS VehicleAncillaryIdentification. †	0..1	String	
	vehicle.stateProvince	State province	State or province that issued the plate.	0..1	String	
	vehicle.confidence	Confidence	Projection of APDS Confidence.overallConfidence (0–1).	0..1	Decimal	
	vehicle.plateImage	Plate image	Represents a Url for an internet accessible resource.	0..1	PkCommon.Url	
	holderDisplay	Holder display	Display name only — contact details require the account read (PII minimization).	0..1	String	
	accessDecision	Access decision	The most recent access decision at the lane.	0..1	Structure (members below)	
	accessDecision.status	Status	The outcome of the most recent access decision at the lane. †	0..1	ResolutionContext.accessDecision.status (enumeration)	
	accessDecision.reasonCode	Reason code	Operator code-list value.	0..1	String	
	accessDecision.reasonDisplay	Reason display	A human-readable explanation of the access decision. †	0..1	String	
	accessDecision.occurredAt	Occurred at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	recommendedAction	Recommended action	The server's suggested next step (advisory, never binding). MUST be one of allowedActions.	0..1	Structure (members below)	
	recommendedAction.action	Action	The AllowedAction.action value being recommended.	1..1	String	
	recommendedAction.reason	Reason	Why the action was taken.	0..1	String	
ResolutionIssue	code	Code	definedValue from apx-issue-types.	1..1	String	
	display	Display	The human-readable summary of the issue shown to agents. †	0..1	String	
ResolutionResolveRequest	interactionId	Interaction id	OPAQUE identifier of the calling application's customer interaction (a call, chat, SMS session…). APX never interprets it — it only echoes it for correlation (Part 17 §17.7). Not an identifier for resolution.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	correlationId	Correlation id	Caller-minted correlation id; echoed on the context and reusable on Commands.	0..1	Uuid	
	channel	Channel	How the interaction arrived, for context/history display (voice | intercom | chat | web | other).	0..1	String	
	plate	Plate	Vehicle license plate text as read or entered.	0..1	String	
	ticketNumber	Ticket number	Number printed on, or encoded in, the parking ticket.	0..1	String	
	reservationCode	Reservation code	A reservation code the customer presented. †	0..1	String	
	reservationIssuer	Reservation issuer	Who sold the reservation, when the code alone is ambiguous across sellers (Part 17 §17.2, ReservationSummary.issuer). Metadata, not an identifier.	0..1	String	
	guestReference	Guest reference	A guest without a plate or ticket — a hotel room, a company, a tenant's employee, an event (Part 17 §17.2). The server resolves it through the place's guest arrangements.	0..1	Structure (members below)	
	guestReference.kind	Kind	What kind of reference the guest gave (Part 17 §17.1). †	1..1	ResolutionResolveRequest.guestReference.kind (enumeration)	
	guestReference.value	Value	The reference as the guest gave it, such as the room number or the company name. †	1..1	String	
	callerId	Caller id	E.164. The number the contact came from; matched against `CommsPoint.callerId` (Part 26 §26.4). A parker's own mobile number resolves to nothing and is not stored.	0..1	String	
	dialedNumber	Dialed number	E.164. The number the contact called; matched against `CommsPoint.phoneNumber`. A posted number shared by many lanes resolves to the place only.	0..1	String	
	commsDeviceId	Comms device id	The call platform's device id; matched against `CommsPoint.commsDeviceId`.	0..1	String	
SupportInteraction	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	channel	Channel	voice | chat | email | sms | other (implementer code list).	1..1	String	
	agentType	Agent type	Whether a person or an AI agent handled the interaction. †	1..1	SupportInteraction.agentType (enumeration)	
	agent	Agent	Agent identifier (human or system principal).	0..1	String	
	startedAt	Started at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	endedAt	Ended at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	summary	Summary	Short outcome summary. NOT a transcript — PII minimization (Part 9 §9.6).	0..1	String	
	subjects	Subjects	What/who the interaction was about (all optional).	0..1	Structure (members below)	
	subjects.plate	Plate	Vehicle license plate text as read or entered.	0..1	String	
	interactionId	Interaction id	The calling application's opaque interaction identifier.	0..1	String	
	resolution	Resolution	How the interaction ended.	0..1	Structure (members below)	
	resolution.code	Code	A definedValue of apx-interaction-outcomes (Part 11) or an implementer code (Part 17 §17.5).	0..1	String	
	resolution.display	Display	A human-readable description of how the interaction ended. †	0..1	String	
	correlationId	Correlation id	Correlation chain id (Part 17 §17.7).	0..1	Uuid	

A.1.18 "UiLaunch" package

A.1.18.1 Location of "UiLaunch" package. The location of the "UiLaunch" package is:

`-- APX/UiLaunch` (source: `spec/openapi/domains/ui/schemas.yaml`; normative text: APX Part 25)

A.1.18.2 Classes of the "UiLaunch" package

Table A.54 -- Classes of the "UiLaunch" package

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Class name	Designation	Definition	Kind	APDS status
UiActionRecord	Ui action record	What an agent did in a launched screen when the implementation could not express it as the module's own resource or Command (Part 25 §25.4). The native resource is always preferred: a lost ticket issued in the vendor's screen MUST appear as a `lostTicket` Command carrying the launch's `correlationId`. Only an action with no APX operation on this implementation is recorded here, with the `fields` the host asked for in `returnFields`, and `unavailable[]` for the ones it could not supply. Published as `apx.ui.action.recorded.v1`.	class	APX only
UiLaunch	Ui launch	One opening of a surface for one agent (Part 25 §25.3). Created by the handshake (`POST /v1/ui/launches`) or minted by the implementation when a signed token is presented. `url` is single-use and expires at `expiresAt`; the record itself stays readable for audit and carries the `actions[]` the screen reported.	class	APX only
UiLaunchRequest	Ui launch request	What the host sends to open a surface for one agent (Part 25 §25.2). The same members are the claims of a signed launch token (UiLaunchToken). `correlationId` ties everything the agent does in the screen back to the host's record; `returnFields` lists the APX paths the host wants back when the implementation has to answer with a UiActionRecord instead of a native resource.	class	APX only
UiLaunchToken	Ui launch token	INFORMATIVE. The claims of a signed launch token (JWS, ES256 or RS256) in the `signedToken` launch mode (Part 25 §25.3). `aud` is the implementation, `exp` is at most 60 s after `iat`, `jti` is unique and single-use. The remaining claims are the UiLaunchRequest members. The token travels by form POST or in the URL fragment, never in the query string, and the implementation checks it against the host's keys registered at onboarding (Part 25 §25.6).	class	APX only
UiSurface	Ui surface	One screen an implementation offers for launch (Part 25 §25.1). Listed in the discovery document's `uiSurfaces[]`, so a host learns which screens exist, how each may be shown, which launch modes it accepts, and which actions it reports back. The `surface` name is a definedValue of `apx-ui-surfaces` (`<module>.<view>`, Part 11); its registry entry names the subject class the surface opens.	class	APX only

A.1.18.3 Specializations of the "UiLaunch" package

Table A.55 -- Specializations of the "UiLaunch" package

Class name	Parent class name
UiLaunch	Common.ApxResourceCore
UiLaunch	UiLaunch.UiLaunchRequest

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Class name	Parent class name
UiLaunchToken	UiLaunch.UiLaunchRequest

A.1.18.4 Associations of the "UiLaunch" package

Table A.56 -- Associations of the "UiLaunch" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
UiActionRecord	launch	Launch	The UiLaunch this record belongs to.	0..1	PkCommon.Reference	read-only
	result	Result	The native resource or Command the action produced, when one exists (then `fields` MAY be omitted).	0..1	PkCommon.Reference	
UiLaunch	actions	Actions	Every UiActionRecord reported for this launch, oldest first (Part 25 §25.4).	0..*	UiLaunch.UiActionRecord	read-only
UiLaunchRequest	subject	Subject	The entity the surface opens on (its class per the surface's registry entry). Required unless the surface is general.	0..1	PkCommon.Reference	
	place	Place	The facility the launch concerns; MUST lie inside the caller's grant.	1..1	PkCommon.Reference	
	lane	Lane	The VehicularAccess, when the launch concerns one lane.	0..1	PkCommon.Reference	
UiSurface	places	Places	The HierarchyElement subtrees where the surface is offered. Absent means everywhere the credential is granted.	0..*	PkCommon.Reference	

A.1.18.5 Attributes of the "UiLaunch" package

Table A.57 -- Attributes of the "UiLaunch" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
UiActionRecord	id	Id	Unique identifier of the record (Part 4).	0..1	Uuid	read-only
	action	Action	The apx-command-types value or effective-spec operationId the action corresponds to, or `other` when none does (Part 25 §25.4).	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	outcome	Outcome	Whether the action completed, failed or was not taken (Part 25 §25.4). †	1..1	UiActionRecord.outcome (enumeration)	
	occurredAt	Occurred at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	agent	Agent	The agent who acted; defaults to the launch's `agent`.	0..1	String	
	summary	Summary	One line a host can show in the call record. Carries no personal data beyond what the host already holds.	1..1	String	
	fields	Fields	The values the host asked for, keyed by the `returnFields` path.	0..1	Map of Any	
	unavailable	Unavailable	Requested paths the implementation could not fill, and why.	0..*	Structure (members below)	
	unavailable.field	Field	The return field, as a JSON pointer, that the implementation could not supply. †	1..1	String	
	unavailable.reason	Reason	Why the action was taken.	1..1	UiActionRecord.unavailable.reason (enumeration)	
	correlationId	Correlation id	The launch's correlation id, echoed.	0..1	Uuid	
UiLaunch	id	Id	Unique identifier of the record (Part 4).	0..1	Uuid	read-only
	version	Version	Server-managed; bodies carry it only for a versioned replace (Part 4 §4.2a).	0..1	Integer	read-only
	url	Url	The single-use HTTPS address the host opens for the agent. Present only on the create response and the first read within `expiresAt`; never carries personal data or secrets in its query string (Part 25 §25.6).	0..1	Url	read-only
	expiresAt	Expires at	When `url` (or the signed token) stops working. At most 60 s after issue.	1..1	PkCommon.DateTime	
	status	Status	`issued` → `opened` on first use of the url or token (single use) → `closed` when the screen reports it is done, or `expired` when `expiresAt` passes unused. An opened launch not closed within the implementation's limit (RECOMMENDED 1 h) also becomes `expired` (Part 25 §25.3).	1..1	UiLaunch.status (enumeration)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	openedAt	Opened at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	closedAt	Closed at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
UiLaunchRequest	surface	Surface	definedValue from apx-ui-surfaces.	1..1	String	
	agent	Agent	The staff member the screen is opened for; the implementation logs them in as this agent.	1..1	String	
	agentType	Agent type	Whether a person or an AI agent will use the surface (Part 25 §25.2). †	1..1	UiLaunchRequest.agentType (enumeration)	
	interactionId	Interaction id	The host's opaque interaction identifier (Part 17 §17.7), echoed on every record the launch produces.	0..1	String	
	correlationId	Correlation id	Host-minted correlation id, carried by every native resource, Command, or UiActionRecord that results from the screen (Part 25 §25.4).	1..1	Uuid	
	displayMode	Display mode	How the host will show the surface; must be one the surface lists. †	1..1	UiLaunchRequest.displayMode (enumeration)	
	returnFields	Return fields	JSON-pointer paths, relative to the module resource the surface's actions produce, that the host wants back in `UiActionRecord.fields` (`/amount`, `/session/id`). A value the implementation cannot supply is listed in `unavailable[]` with a reason.	0..*	String	
	expiresIn	Expires in	Seconds the launch `url` stays usable. Never more than 60 (Part 25 §25.6).	0..1	Integer	
UiLaunchToken	iss	Iss	The host's issuer identifier, as registered.	1..1	String	
	aud	Aud	The implementation the token is for.	1..1	String	
	exp	Exp	Expiry, seconds since the epoch; at most `iat` + 60.	1..1	Integer	
	iat	Iat	Issued at, seconds since the epoch.	1..1	Integer	
	jti	Jti	Unique token id; the implementation refuses a replay.	1..1	String	
UiSurface	surface	Surface	definedValue from apx-ui-surfaces.	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	subjectClass	Subject class	The APDS or APX class a launch of this surface opens (`VehicularAccess`, `Session`, `Violation`...). Absent for a general surface such as `place.console` or `module.home`.	0..1	String	
	displayModes	Display modes	How the host may show the surface. `embed` needs the host's origin registered with the implementation (Part 25 §25.6); `popup` is the fallback every surface MUST support.	1..*	UiSurface.displayModes (enumeration)	
	launchModes	Launch modes	`handshake` — the host calls `POST /v1/ui/launches` and opens the returned single-use `url`. `signedToken` — the host signs a UiLaunchToken and sends it to `launchUrl` (Part 25 §25.3).	1..*	UiSurface.launchModes (enumeration)	
	launchUrl	Launch url	Where a signed launch token is sent (signedToken mode only). HTTPS only.	0..1	Url	
	actions	Actions	What the surface can report back (Part 25 §25.4): apx-command-types values and effective-spec operationIds. A host uses it to decide which `returnFields` to ask for.	0..*	String	

A.1.19 "Charging" package

A.1.19.1 Location of "Charging" package. The location of the "Charging" package is:

`-- APX/Charging` (source: `spec/openapi/domains/charging/schemas.yaml`; normative text: APX Part 23)

A.1.19.2 Classes of the "Charging" package

Table A.58 -- Classes of the "Charging" package

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Class name	Designation	Definition	Kind	APDS status
ChargingBayPresence	Charging bay presence	Part 23 — what the bay in front of a charging point physically contains, as observed by an overhead camera, a ground sensor, the charger's own connector state, or an attendant — fused by the server (Part 23 §23.3). Distinguishes the cases the charger alone cannot: a vehicle parked in the bay but not plugged in (an ICE vehicle, or an EV not charging), and a bay blocked by something that is not a vehicle. Also the request body a camera analytics system POSTs to …`/points/{id}/bay`.	class	Proposed: ChargingBayPresence (Tier 3); Proposed: BayPresenceEnum (Tier 3); Proposed: BayPresenceSourceEnum (Tier 3)
ChargingEvent	Charging event	Part 23 — one physical-timeline event the charging-network bridge reports for a session — the APX counterpart of an OCPP 2.0.1 TransactionEvent. The server applies the lifecycle transition (Part 23 §23.2) and appends `statusHistory`. `meterValue` events update `energy` without a state change. Idempotent by `Idempotency-Key` (bridges retry).	class	APX only
ChargingPaymentAttachment	Charging payment attachment	Part 23 — request body attaching the settling payment to an `unplugged` `directPayment` session, or recording the network's charge detail record for a `chargingNetwork` one.	class	APX only
ChargingPointStatus	Charging point status	Part 23 — live state overlay keyed by Reference to an APDS ElectricChargingEquipment — the dynamic counterpart of the static ElectricChargingPoint (APDS `refillPointIndex` exists precisely "to link static and dynamic publications"). Never duplicates the static descriptive fields (connector types, power ratings live in APDS). Carries availability per point and per connector, the current session, a reservation, and what the bay camera sees. Same pattern as Part 6 DeviceStatus. Also the request body the charging-network bridge PUTs to …`/points/{id}/status`.	class	Proposed: ChargingPointStatus (Tier 3); Proposed: ConnectorStatus (Tier 3)
ChargingSession	Charging session	Part 23 — one charge of one vehicle at one charging point, as the parking system sees it: who was authorized and how, the timeline from plug-in to unplug, energy delivered, the idle period after charging completed, cost, and how it settles — while the APDS Session remains the parking stay and is only referenced. The charging network's own identifiers (OCPP transaction, OCPI session/CDR) ride along opaquely so the two records can be reconciled without APX redefining either protocol.	class	Proposed: ChargingSession (Tier 3); Proposed: ChargingCost (Tier 3); Proposed: ChargingIdleTerms (Tier 3); Proposed: ChargingSessionStatusEnum (Tier 3); Proposed: ChargingStopReasonEnum (Tier 3); Proposed: ChargingSettlementModeEnum (Tier 3)

A.1.19.3 Specializations of the "Charging" package

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There are no specializations in the "Charging" package.

A.1.19.4 Associations of the "Charging" package

Table A.59 -- Associations of the "Charging" package

Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
ChargingBayPresence	observation	Observation	The APDS Observation carrying the camera/sensor evidence (Part 13 §13.3 conventions).	0..1	PkCommon.Reference	
ChargingPaymentAttachment	payment	Payment	The settling APDS Payment / APX PaymentRecord.	0..1	PkCommon.Reference	
ChargingPointStatus	chargingPoint	Charging point	The APDS ElectricChargingEquipment (HierarchyElement).	1..1	PkCommon.Reference	
	place	Place	The containing Place (event binding and place filters).	0..1	PkCommon.Reference	
	space	Space	The APDS Space (bay) this point serves, when the facility is space-mapped.	0..1	PkCommon.Reference	
	connectors.currentSession	Current session	Represents a reference to an identifiable object where the identifier is unique. It is composed of an unique identifier and a string identifying the class of the referenced object. If multiple versions exists for the object, the latest version is considered.	0..1	PkCommon.Reference	
	currentSession	Current session	The ChargingSession in progress at this point, if any.	0..1	PkCommon.Reference	
	reservedFor	Reserved for	The APDS AssignedRight (Part 14 reservation) holding this point, if any.	0..1	PkCommon.Reference	
	bay	Bay	Part 23 — what the bay in front of a charging point physically contains, as observed by an overhead camera, a ground sensor, the charger's own connector state, or an attendant — fused by the server (Part 23 §23.3). Distinguishes the cases the charger alone cannot: a vehicle parked in the bay but not plugged in (an ICE vehicle, or an EV not charging), and a bay blocked by something that is not a vehicle. Also the request body a camera analytics system POSTs to …`/points/{id}/bay`.	0..1	Charging.ChargingBayPresence	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	
ChargingSession	place	Place	The Place (facility) — event binding and grant check.	1..1	PkCommon.Reference	
	chargingPoint	Charging point	The APDS ElectricChargingEquipment.	1..1	PkCommon.Reference	
	space	Space	The APDS Space (bay), when space-mapped.	0..1	PkCommon.Reference	
	parkingSession	Parking session	The APDS Session for the parking stay this charge happened inside. REQUIRED when `settlement.mode` is `parkingSession`.	0..1	PkCommon.Reference	
	assignedRight	Assigned right	The APDS AssignedRight used — a charging reservation (Part 14) or the permit that entitles charging.	0..1	PkCommon.Reference	
	valetTicket	Valet ticket	The Part 22 ValetTicket when the valet plugged the car in.	0..1	PkCommon.Reference	
	authorization.credential	Credential	The Part 21 CredentialRecord (or APDS CredentialAssigned) presented.	0..1	PkCommon.Reference	
	authorization.account	Account	The Part 13 Account charged, when settlement is on account.	0..1	PkCommon.Reference	
	idlePolicy.idleRate	Idle rate	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	cost.energy	Energy	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	cost.time	Time	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	cost.idle	Idle	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	cost.fees	Fees	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	cost.total	Total	A class supporting the definition of a unit of currency in a defined currency.	0..1	Rates.AmountInCurrency	
	settlement.payment	Payment	The settling APDS Payment / APX PaymentRecord (`directPayment`).	0..1	PkCommon.Reference	

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Class name	Association end	Designation	Definition	Multiplicity	Target	Notes
	network.operator	Operator	The charge point operator — a Reference to the operator's contact/organisation record, as Part 20 references a merchant.	0..1	PkCommon.Reference	
	recordInfo	Record info	Provenance metadata for an APX resource, aligned to the APDS Information Model's RecordType (creationTime/creator/lastUpdate). All timestamps are RFC 3339 (APDS DateTime).	0..1	Common.RecordInfo	
	extensions	Extensions	Implementer extensions, keyed by a namespaced name (Part 10).	0..1	Common.Extensions	

A.1.19.5 Attributes of the "Charging" package

Table A.60 -- Attributes of the "Charging" package

Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
ChargingBayPresence	presence	Presence	`empty` — nothing in the bay; `vehiclePluggedIn` — a vehicle is present and the charger reports a connected cable; `vehicleNotPluggedIn` — a vehicle is present and no cable is connected (ICE-ing, or an EV not charging); `blocked` — the bay is obstructed by something other than a parked vehicle (cones, debris, a vehicle straddling); `unknown`.	1..1	ChargingBayPresence.presence (enumeration)	
	source	Source	The evidence source this presence state was derived from (the strongest one, when fused).	0..1	ChargingBayPresence.source (enumeration)	
	observedTime	Observed time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	sinceTime	Since time	When the current presence state began — the dwell clock for not-plugged-in and idle handling.	0..1	PkCommon.DateTime	
	vehicle	Vehicle	The vehicle seen in the bay, minimized (Part 9 §9.6). Omitted on the customer scope.	0..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	vehicle.credentialType	Credential type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	0..1	Right.CredentialTypeEnum	
	vehicle.credentialIdentification	Credential identification	The plate read, when the camera has LPR.	0..1	String	
	vehicle.jurisdiction	Jurisdiction	Issuing jurisdiction of the plate (state, province or country).	0..1	String	
	vehicle.evCapable	Ev capable	Whether the vehicle appears able to charge (make/model or badge recognition) — `false` is the ICE-in-EV-bay signal; `null` when unknown.	0..1	Boolean	nullable
	confidence	Confidence	The analytics system's confidence in `presence`.	0..1	Decimal	
	imageLink	Image link	Access-controlled evidence image (Part 9 §9.6), never inline.	0..1	PkCommon.Url	
	detail	Detail	Further detail, in free text.	0..1	String	
ChargingEvent	eventType	Event type	The kind of physical-timeline event reported (Part 23 §23.2). †	1..1	ChargingEvent.eventType (enumeration)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	connectorIndex	Connector index	The 1-based position in the point's static APDS `connectors[]` of the connector the event concerns. †	0..1	Integer	
	meterWh	Meter wh	Cumulative meter reading at `time`.	0..1	Decimal	
	powerKw	Power kw	The power being delivered at the time of the event, in kilowatts. †	0..1	Decimal	
	stateOfChargePercent	State of charge percent	The vehicle's state of charge at the time of the event, as a percentage, when the vehicle reports it. †	0..1	Decimal	
	suspendedBy	Suspended by	With `suspended`.	0..1	ChargingEvent.suspendedBy (enumeration)	
	stopReason	Stop reason	With `chargingEnded`.	0..1	ChargingEvent.stopReason (enumeration)	
	faultCode	Fault code	With `fault` — the charger's error code, opaque.	0..1	String	
	externalEventId	External event id	The bridge's own id for this event (OCPP seqNo, message id) for reconciliation.	0..1	String	
	detail	Detail	Further detail, in free text.	0..1	String	
ChargingPaymentAttachment	externalReference	External reference	The charging network's CDR id.	0..1	String	
	note	Note	Free-text note from the actor.	0..1	String	
ChargingPointStatus	refillPointIndex	Refill point index	The APDS RefillPoint index of the static publication this status describes.	0..1	Integer	
	evseId	Evse id	The EVSE identifier as the charging network knows it (ISO 15118 / eMI3 form) — opaque bridge to OCPP/OCPI.	0..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	availability	Availability	Point-level availability (the busiest connector wins): `available`; `occupied` — a cable is connected but no energy is flowing (plugged in, suspended, complete, or idle); `charging`; `reserved` (Part 14 AssignedRight in force); `blocked` — the bay is occupied or obstructed without a connected cable (from `bay.presence`); `inoperative` (planned: maintenance, closed hours); `outOfOrder` (fault); `unknown`. Aligned with the OCPI EVSE status vocabulary.	1..1	ChargingPointStatus.availability (enumeration)	
	connectors	Connectors	Per-connector availability; `connectorIndex` is the 1-based position in the static APDS `connectors[]`.	0..*	Structure (members below)	
	connectors.connectorIndex	Connector index	The 1-based position of the connector in the static APDS `connectors[]` (Part 23 §23.1). †	1..1	Integer	
	connectors.connectorType	Connector type	Echo of the static APDS connector type, for consumers that do not hold the hierarchy.	0..1	EnergyInfrastructure.ConnectorTypeEnum	
	connectors.availability	Availability	The availability of the connector (Part 23 §23.1). †	1..1	ChargingPointStatus.connectors.availability (enumeration)	
	connectors.currentPowerKw	Current power kw	The power currently delivered through the connector, in kilowatts. †	0..1	Decimal	
	lastCommunication	Last communication	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	stateChangedTime	State changed time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
ChargingSession	id	Id	Unique identifier of the record (Part 4).	1..1	Uuid	read-only
	version	Version	Version number of the record; increases by one on each change (Part 4).	1..1	Integer	read-only
	connectorIndex	Connector index	1-based position in the point's static APDS `connectors[]`.	0..1	Integer	
	evseId	Evse id	Opaque EVSE identifier (ISO 15118 / eMI3 form).	0..1	String	
	vehicle	Vehicle	Minimized (Part 9 §9.6); plate values only under `apx.charging:read/:manage`.	0..1	Structure (members below)	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	vehicle.credentialType	Credential type	* barcode : barcode or QR digital print pattern, held on any physical media. * bluetooth : specific bluetooth or BLE identification chip used to associate a BLE receiver to a specific user. Used for both one time and permit uses. * eticket : digital equivalent of a paper ticket, often presentable via smartphone or similar device for control. * hangtag : visible, often removable, credential indicator, with visible markings * licensePlate : fixed plate, in a defined format, used to identify a specific vehicle- Normally a permanent fixture. * permit : issued credential, often in the form of an adhesive label, often placed on the windscreen, credential indicator, with visible markings * qrCode : quick Reference (QR) code * rfid : specific RF identification associated to an RFID-related account. Used for permit uses. * ticket : typically issued paper with printed details, often with magnetic strips; typically single use disposable. * electronicID : an identifier transmitted by electronic means * ticketcoupon : a visible printed or written paper-based ticket or coupon carrying an identifiable credential. * vehicleplate : a fixed identifier (registration plate) visible and fixed to a vehicle.	0..1	Right.CredentialTypeEnum	
	vehicle.credentialIdentification	Credential identification	The vehicle's plate or other credential value, returned only under `apx.charging:read` or `:manage` (Part 9 §9.6). †	0..1	String	
	vehicle.jurisdiction	Jurisdiction	Issuing jurisdiction of the plate (state, province or country).	0..1	String	
	vehicle.make	Make	Vehicle make.	0..1	String	
	vehicle.model	Model	Vehicle model.	0..1	String	
	authorization	Authorization	How the charge was authorized and who is on the hook for it.	0..1	Structure (members below)	
	authorization.method	Method	The APDS authentication/identification method (`rfid`, `apps`, `overTheAir` for ISO 15118 Plug & Charge, `creditCard`, `unlimitedAccess` for free-vend inside a controlled garage…).	0..1	EnergyInfrastructure.AuthenticationAndIdentificationEnum	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	authorization.methodDetail	Method detail	Free text for methods the APDS list does not name (e.g. plate linked by LPR at entry).	0..1	String	
	authorization.contractId	Contract id	The e-mobility contract id (EMAID) or roaming token, masked/opaque — never a raw payment credential.	0..1	String	
	authorization.authorizedTime	Authorized time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	authorization.authorizedBy	Authorized by	Opaque principal (bridge id, attendant, customer).	0..1	String	
	chargingStatus	Charging status	Mapping to OCPP 2.0.1 `chargingState`: `pluggedIn` = EVConnected; `charging` = Charging; `suspended` = SuspendedEV | SuspendedEVSE (see `suspendedBy`); `complete` and `idle` = EVConnected after energy delivery ended; `unplugged` = Idle (no EV).	1..1	ChargingSession.chargingStatus (enumeration)	read-only
	suspendedBy	Suspended by	While `suspended`: whether the vehicle or the charger paused delivery.	0..1	ChargingSession.suspendedBy (enumeration)	
	timeline	Timeline	The time of each step of the charge, from authorization to closure. †	0..1	Structure (members below)	read-only
	timeline.authorizedTime	Authorized time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	timeline.pluggedInTime	Plugged in time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	timeline.chargingStartedTime	Charging started time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	timeline.chargingEndedTime	Charging ended time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	timeline.idleStartedTime	Idle started time	When the grace period elapsed and idle began (server-set).	0..1	PkCommon.DateTime	
	timeline.unpluggedTime	Unplugged time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	timeline.closedTime	Closed time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	energy	Energy	Energy in kilowatt-hours (APDS DeliveryUnitEnum `kWh`); meter readings in watt-hours as chargers report them.	0..1	Structure (members below)	
	energy.meterStartWh	Meter start wh	The charger's cumulative meter reading at the start of the charge, in watt-hours. †	0..1	Decimal	
	energy.meterStopWh	Meter stop wh	The charger's cumulative meter reading when energy delivery ended, in watt-hours (Part 23 §23.4). †	0..1	Decimal	
	energy.deliveredKwh	Delivered kwh	Energy delivered so far (final after `chargingEndedTime`).	0..1	Decimal	
	energy.currentPowerKw	Current power kw	The power currently being delivered, in kilowatts. †	0..1	Decimal	
	energy.peakPowerKw	Peak power kw	The highest power delivered during the charge, in kilowatts. †	0..1	Decimal	
	energy.stateOfChargePercent	State of charge percent	Vehicle state of charge when the vehicle reports it (ISO 15118).	0..1	Decimal	
	energy.targetStateOfChargePercent	Target state of charge percent	The customer's or valet's requested target; delivery ends when reached where the charger supports it.	0..1	Decimal	
	energy.lastMeterTime	Last meter time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	stopReason	Stop reason	Why energy delivery ended (OCPP 2.0.1 stopped-reason subset plus `targetReached`).	0..1	ChargingSession.stopReason (enumeration)	
	idlePolicy	Idle policy	The idle rule applied to THIS session, snapshotted at authorization so the customer read can say "10 minutes grace, then $0.40/min" and so a later policy change never re-prices a past session.	0..1	Structure (members below)	
	idlePolicy.graceMinutes	Grace minutes	Minutes after `complete` before `idle` begins.	0..1	Integer	
	idlePolicy.idleRatePer	Idle rate per	The unit of time the idle rate is charged per. †	0..1	ChargingSession.idlePolicy.idleRatePer (enumeration)	
	idlePolicy.maxIdleMinutes	Max idle minutes	After this much idle the session is eligible for enforcement (Part 19) — `apx.charging.idle.started.v1` consumers act on it.	0..1	Integer	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	idlePolicy.appliesToSettlement	Applies to settlement	Whether idle charges are billed by this operator (true) or by the charging network (false).	0..1	Boolean	
	cost	Cost	Cost as the parking system knows it; absent components are unknown, not zero. Money is APDS AmountInCurrency.	0..1	Structure (members below)	
	cost.tariffReference	Tariff reference	Opaque id of the charging network's tariff in force.	0..1	String	
	cost.pricedAt	Priced at	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	settlement	Settlement	How the cost is collected (Part 23 §23.5).	0..1	Structure (members below)	
	settlement.mode	Mode	`parkingSession` — the cost becomes a line on the APDS Session and is paid with the parking (one bill at exit); `directPayment` — settled by a Part 13 payment referenced in `payment`; `chargingNetwork` — billed by the charging network or roaming partner; the parking side records energy and idle but not money.	0..1	ChargingSession.settlement.mode (enumeration)	
	settlement.settledTime	Settled time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	0..1	PkCommon.DateTime	
	settlement.externalReference	External reference	The charging network's charge detail record id (OCPI CDR) once issued — opaque.	0..1	String	
	network	Network	The charging network behind the point, and its identifiers for this charge — opaque bridge fields, never interpreted by APX.	0..1	Structure (members below)	
	network.partyId	Party id	Roaming party id (country code + party id form).	0..1	String	
	network.ocppTransactionId	Ocpp transaction id	The OCPP transaction identifier the charging network uses for this charge, carried opaquely. †	0..1	String	
	network.ocpiSessionId	Ocpi session id	The OCPI session identifier the charging network uses for this charge, carried opaquely. †	0..1	String	
	statusHistory	Status history	Immutable, append-only lifecycle audit (Part 4 §4.2).	0..*	Structure (members below)	
	statusHistory.state	State	The charging status entered at this point in the lifecycle. †	1..1	String	

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Class name	Attribute name	Designation	Definition	Multiplicity	Type	Notes
	statusHistory.time	Time	ISO-8601 format definition of a date and time - format YYYY-MM-DDTHH:MM:SSZ.	1..1	PkCommon.DateTime	
	statusHistory.actor	Actor	The person or system that performed the action.	1..1	String	
	statusHistory.detail	Detail	Further detail, in free text.	0..1	String	

A.2 Data dictionary of datatypes for "APX"

APX uses the APDS 4.1 datatypes where a member carries APDS content. The types below are how this dictionary names the JSON types of APX members.

Table A.61 -- Datatypes

Datatype	Definition	Nearest APDS 4.1 datatype
String	A sequence of characters.	String
Integer	A whole number.	Integer
Decimal	A decimal number.	Decimal / Real
Boolean	true or false.	Boolean
DateTime	An instant, written per RFC 3339 with a UTC offset.	DateTime
Date	A calendar date, written per RFC 3339 (full-date).	Date
Uuid	A universally unique identifier per RFC 9562, used as a record id (Part 4).	String (identifier)
Url	A URI per RFC 3986.	Url
Email	An e-mail address.	Email
Map of T	A JSON object whose keys are free text and whose values are of type T.	—
Structure	An unnamed group of members. Its members are listed under the owning class as owner.member.	—
Object	Any JSON object; its content is set by the referenced specification or by an extension.	—

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A.3 Data dictionary of <> for "APX"

A.3.1 The <> "AccessEvent.direction"

Values of direction on AccessEvent.

Defined inline on `AccessEvent`; the API names it by its owner and attribute.

Table A.62 -- Values contained in the enumeration "AccessEvent.direction"

Enumerated value name	Designation	Definition
entry	entry	The attempt was to enter. †
exit	exit	The attempt was to leave. †

A.3.2 The <> "AccessEvent.outcome"

Values of outcome on AccessEvent.

Defined inline on `AccessEvent`; the API names it by its owner and attribute.

Table A.63 -- Values contained in the enumeration "AccessEvent.outcome"

Enumerated value name	Designation	Definition
granted	granted	Access was granted. †
denied	denied	Access was refused. †

A.3.3 The <> "Account.accountStatus"

Values of accountStatus on Account.

Defined inline on `Account`; the API names it by its owner and attribute.

Table A.64 -- Values contained in the enumeration "Account.accountStatus"

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Enumerated value name	Designation	Definition
enabled	enabled	The account may be used. †
disabled	disabled	The account may not be used. †

A.3.4 The <> "Alert.severity"

Values of severity on Alert.

Defined inline on `Alert`; the API names it by its owner and attribute.

Table A.65 -- Values contained in the enumeration "Alert.severity"

Enumerated value name	Designation	Definition
info	info	For information; no action is expected. †
warning	warning	A condition that may need action if it continues. †
minor	minor	A condition that needs action but does not affect service. †
major	major	A condition that affects service and needs prompt action. †
critical	critical	A condition that stops service or affects safety and needs immediate action. †

A.3.5 The <> "Alert.status"

Lifecycle: raised → acknowledged → resolved | expired.

Defined inline on `Alert`; the API names it by its owner and attribute.

Table A.66 -- Values contained in the enumeration "Alert.status"

Enumerated value name	Designation	Definition
raised	raised	The condition has been reported and no one has yet acknowledged it. †
acknowledged	acknowledged	Someone has taken responsibility for the condition. †
resolved	resolved	The condition has been dealt with; this is final (Part 7 §7.3). †
expired	expired	The alert lapsed at its expiry time without being resolved; this is final (Part 7 §7.3). †

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A.3.6 The <> "AllowedAction.execution.type"

Values of execution.type on AllowedAction.

Defined inline on `AllowedAction`; the API names it by its owner and attribute.

Table A.67 -- Values contained in the enumeration "AllowedAction.execution.type"

Enumerated value name	Designation	Definition
control	control	The action is executed as a Part 6 control command, named in command. †
domain	domain	The action is executed as a domain API operation, named in operationId. †
ui	ui	Execute by opening the named vendor surface for the agent (Part 25 §25.5); surface is required, subject optional. †

A.3.7 The <> "ApprovalDecision.outcome"

Values of outcome on ApprovalDecision.

Defined inline on `ApprovalDecision`; the API names it by its owner and attribute.

Table A.68 -- Values contained in the enumeration "ApprovalDecision.outcome"

Enumerated value name	Designation	Definition
approved	approved	The action may proceed; the decision is the approval evidence. †
denied	denied	The action may not proceed. †

A.3.8 The <> "ApprovalRequest.agentType"

Values of agentType on ApprovalRequest.

Defined inline on `ApprovalRequest`; the API names it by its owner and attribute.

Table A.69 -- Values contained in the enumeration "ApprovalRequest.agentType"

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Enumerated value name	Designation	Definition
human	human	A person asked for the approval. †
ai	ai	An AI agent asked for the approval. †

A.3.9 The <> "ApprovalRequest.status"

Values of status on ApprovalRequest.

Defined inline on `ApprovalRequest`; the API names it by its owner and attribute.

Table A.70 -- Values contained in the enumeration "ApprovalRequest.status"

Enumerated value name	Designation	Definition
pending	pending	Waiting for the named role to decide (Part 17 §17.3a). †
approved	approved	The role approved the action; the decision carries who and when. †
denied	denied	The role refused the action; this is final. †
expired	expired	No decision arrived before expiresAt; the request can no longer be decided. †

A.3.10 The <> "ApxEventSubscription.status"

`active` delivers; `paused` holds matching events for up to 24 hours and delivers them in order on resume (Part 8 §8.1); `failed` is server-assigned when the retry schedule is exhausted (a client setting it is 400 `invalid-request`). PATCH `status: active` to resume a paused or failed subscription.

Defined inline on `ApxEventSubscription`; the API names it by its owner and attribute.

Table A.71 -- Values contained in the enumeration "ApxEventSubscription.status"

Enumerated value name	Designation	Definition
active	active	The subscription delivers matching events. †
paused	paused	The client has paused delivery; matching events are held for up to 24 hours and delivered in order on resume (Part 8 §8.1). †
failed	failed	The retry schedule was exhausted; the server set this state and delivery stops until the client resumes the subscription (Part 8 §8.1). †

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A.3.11 The <> "ApxEventSubscription.transport"

Values of transport on ApxEventSubscription.

Defined inline on `ApxEventSubscription`; the API names it by its owner and attribute.

Table A.72 -- Values contained in the enumeration "ApxEventSubscription.transport"

Enumerated value name	Designation	Definition
webhook	webhook	Events are delivered by HTTP POST to the subscription's endpoint (Part 8). †
sse	sse	Events are read from the subscription's server-sent events stream (Part 8 §8.4). †

A.3.12 The <> "ApxEventSubscriptionPatch.status"

`active` or `paused` — the client-settable states. `failed` is server-assigned; a PATCH setting it is 400 `invalid-request`.

Defined inline on `ApxEventSubscriptionPatch`; the API names it by its owner and attribute.

Table A.73 -- Values contained in the enumeration "ApxEventSubscriptionPatch.status"

Enumerated value name	Designation	Definition
active	active	Resumes delivery of a paused or failed subscription (Part 8 §8.1). †
paused	paused	the client-settable states
failed	failed	Server-assigned when the retry schedule is exhausted; a PATCH setting it is refused (Part 8 §8.1). †

A.3.13 The <> "ApxEventSubscriptionPatch.transport"

Values of transport on ApxEventSubscriptionPatch.

Defined inline on `ApxEventSubscriptionPatch`; the API names it by its owner and attribute.

Table A.74 -- Values contained in the enumeration "ApxEventSubscriptionPatch.transport"

Enumerated value name	Designation	Definition
webhook	webhook	Events are delivered by HTTP POST to the subscription's endpoint (Part 8). †

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Enumerated value name	Designation	Definition
sse	sse	Events are read from the subscription's server-sent events stream (Part 8 §8.4). †

A.3.14 The <> "CameraDetail.faces"

For lanes, plazas and ramps, relative to the facility (Part 13 §13.3a).

Defined inline on `CameraDetail`; the API names it by its owner and attribute.

Table A.75 -- Values contained in the enumeration "CameraDetail.faces"

Enumerated value name	Designation	Definition
inward	inward	Looking into the facility, the way entering traffic travels (Part 13 §13.3a(5)). †
outward	outward	Looking out of the facility, the way exiting traffic travels. †

A.3.15 The <> "CameraDetail.mounting"

When `builtIn`, EquipmentDetail `builtInto` names the host, for example a pay station's driver camera.

Defined inline on `CameraDetail`; the API names it by its owner and attribute.

Table A.76 -- Values contained in the enumeration "CameraDetail.mounting"

Enumerated value name	Designation	Definition
builtIn	built in	Inside another item of equipment, named by the equipment detail's builtInto (Part 26 §26.3). †
overhead	overhead	Above the vehicle or the lane, looking down. †
pole	pole	On a pole or an island. †
wall	wall	On a wall or a column. †
ceiling	ceiling	On a ceiling, as in lobbies and stairwells. †
other	other	Mounted in another way. †

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A.3.16 The <> "CameraDetail.streams.protocol"

Values of streams.protocol on CameraDetail.

Defined inline on `CameraDetail`; the API names it by its owner and attribute.

Table A.77 -- Values contained in the enumeration "CameraDetail.streams.protocol"

Enumerated value name	Designation	Definition
webrtc	webrtc	WebRTC, for low-latency live viewing in a browser. †
hls	hls	HTTP Live Streaming segments. †
rtsp	rtsp	RTSP, as an on-site gateway or recorder consumes it. †
mjpeg	mjpeg	Motion JPEG over HTTP. †
snapshot	snapshot	A single still image on request. †

A.3.17 The <> "CameraDetail.view"

Values of view on CameraDetail.

Defined inline on `CameraDetail`; the API names it by its owner and attribute.

Table A.78 -- Values contained in the enumeration "CameraDetail.view"

Enumerated value name	Designation	Definition
plate	plate	Reads licence plates. †
vehicle	vehicle	An overview of the vehicle in the lane. †
driver	driver	The driver's face at a pay station or lane device. †
equipmentInteraction	equipment interaction	Hands, ticket and card at the machine. †
pedestrians	pedestrians	People at a door, in a lobby or on a stairwell. †
areaOverview	area overview	General surveillance of a ramp, a level or the perimeter. †
other	other	Another view. †

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A.3.18 The <> "CameraView.kind"

Values of kind on CameraView.

Defined inline on `CameraView`; the API names it by its owner and attribute.

Table A.79 -- Values contained in the enumeration "CameraView.kind"

Enumerated value name	Designation	Definition
live	live	The link plays a live view. †
snapshot	snapshot	The link returns a single still. †
playback	playback	The link plays the recorded range asked for. †

A.3.19 The <> "CameraView.protocol"

What the link serves (`snapshot` is an image).

Defined inline on `CameraView`; the API names it by its owner and attribute.

Table A.80 -- Values contained in the enumeration "CameraView.protocol"

Enumerated value name	Designation	Definition
webrtc	webrtc	The link is a WebRTC session. †
hls	hls	The link is an HLS playlist. †
rtsp	rtsp	The link is an RTSP URL served by a gateway. †
mjpeg	mjpeg	The link is a Motion JPEG stream. †
snapshot	snapshot	The link returns an image. †

A.3.20 The <> "CameraViewRequest.agentType"

Values of agentType on CameraViewRequest.

Defined inline on `CameraViewRequest`; the API names it by its owner and attribute.

Table A.81 -- Values contained in the enumeration "CameraViewRequest.agentType"

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Enumerated value name	Designation	Definition
human	human	A person will view the camera. †
ai	ai	An AI agent will view the camera. †

A.3.21 The <> "CameraViewRequest.kind"

Values of kind on CameraViewRequest.

Defined inline on `CameraViewRequest`; the API names it by its owner and attribute.

Table A.82 -- Values contained in the enumeration "CameraViewRequest.kind"

Enumerated value name	Designation	Definition
live	live	A live view; feature cameraViews (Part 26 §26.3). †
snapshot	snapshot	A single still taken now. †
playback	playback	Recorded video between from and to; feature cameraPlayback. †

A.3.22 The <> "ChargingBayPresence.presence"

`empty` — nothing in the bay; `vehiclePluggedIn` — a vehicle is present and the charger reports a connected cable; `vehicleNotPluggedIn` — a vehicle is present and no cable is connected (ICE-ing, or an EV not charging); `blocked` — the bay is obstructed by something other than a parked vehicle (cones, debris, a vehicle straddling); `unknown`.

Defined inline on `ChargingBayPresence`; the API names it by its owner and attribute.

Table A.83 -- Values contained in the enumeration "ChargingBayPresence.presence"

Enumerated value name	Designation	Definition
empty	empty	nothing in the bay
vehiclePluggedIn	vehicle plugged in	a vehicle is
vehicleNotPluggedIn	vehicle not plugged in	a vehicle is present and no cable is
blocked	blocked	the bay is
unknown	unknown	What the bay contains is not known. †

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A.3.23 The <> "ChargingBayPresence.source"

The evidence source this presence state was derived from (the strongest one, when fused).

Defined inline on `ChargingBayPresence`; the API names it by its owner and attribute.

Table A.84 -- Values contained in the enumeration "ChargingBayPresence.source"

Enumerated value name	Designation	Definition
overheadCamera	overhead camera	A camera viewing the bay. †
groundSensor	ground sensor	A sensor in or on the bay surface. †
charger	charger	The charger's own connector state. †
attendant	attendant	A member of staff on site. †
inferred	inferred	Derived from other data without a direct observation of the bay. †

A.3.24 The <> "ChargingEvent.eventType"

Values of eventType on ChargingEvent.

Defined inline on `ChargingEvent`; the API names it by its owner and attribute.

Table A.85 -- Values contained in the enumeration "ChargingEvent.eventType"

Enumerated value name	Designation	Definition
pluggedIn	plugged in	A vehicle was connected to the charger. †
chargingStarted	charging started	Energy began to flow. †
meterValue	meter value	A meter reading that updates energy without a change of state (Part 23 §23.2). †
suspended	suspended	Energy delivery was paused by the vehicle or the charger. †
resumed	resumed	Energy delivery resumed after a suspension. †
chargingEnded	charging ended	Energy delivery ended, for the reason given in stopReason. †
unplugged	unplugged	The vehicle was disconnected. †
fault	fault	The charger reported a fault. †
cancelled	cancelled	The authorization was cancelled before a vehicle was plugged in (Part 23 §23.2). †

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A.3.25 The <> "ChargingEvent.stopReason"

With `chargingEnded`.

Defined inline on `ChargingEvent`; the API names it by its owner and attribute.

Table A.86 -- Values contained in the enumeration "ChargingEvent.stopReason"

Enumerated value name	Designation	Definition
evDisconnected	ev disconnected	The vehicle was disconnected. †
evFull	ev full	The vehicle reported a full battery. †
targetReached	target reached	The requested target state of charge was reached. †
energyLimitReached	energy limit reached	An energy limit set for the charge was reached. †
timeLimitReached	time limit reached	A time limit set for the charge was reached. †
remote	remote	The charge was stopped remotely by an operator or system. †
local	local	The charge was stopped at the charger by the driver or staff. †
deauthorized	deauthorized	The authorization was withdrawn. †
emergencyStop	emergency stop	An emergency stop was used. †
powerLoss	power loss	Power to the charger was lost. †
other	other	Some other reason. †

A.3.26 The <> "ChargingEvent.suspendedBy"

With `suspended`.

Defined inline on `ChargingEvent`; the API names it by its owner and attribute.

Table A.87 -- Values contained in the enumeration "ChargingEvent.suspendedBy"

Enumerated value name	Designation	Definition
ev	ev	The vehicle paused energy delivery. †
evse	evse	The charger paused energy delivery. †

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A.3.27 The <> "ChargingPointStatus.availability"

Point-level availability (the busiest connector wins): `available`; `occupied` — a cable is connected but no energy is flowing (plugged in, suspended, complete, or idle); `charging`; `reserved` (Part 14 AssignedRight in force); `blocked` — the bay is occupied or obstructed without a connected cable (from `bay.presence`); `inoperative` (planned: maintenance, closed hours); `outOfOrder` (fault); `unknown`. Aligned with the OCPI EVSE status vocabulary.

Defined inline on `ChargingPointStatus`; the API names it by its owner and attribute.

Table A.88 -- Values contained in the enumeration "ChargingPointStatus.availability"

Enumerated value name	Designation	Definition
available	available	The point is free for a vehicle to charge. †
occupied	occupied	a cable is connected but no energy is flowing
charging	charging	Energy is flowing on the point (Part 23 §23.1). †
reserved	reserved	Part 14 AssignedRight in force
blocked	blocked	the bay is occupied
inoperative	inoperative	planned: maintenance, closed hours
outOfOrder	out of order	fault
unknown	unknown	The point's state is not known. †

A.3.28 The <> "ChargingPointStatus.connectors.availability"

Values of connectors.availability on ChargingPointStatus.

Defined inline on `ChargingPointStatus`; the API names it by its owner and attribute.

Table A.89 -- Values contained in the enumeration "ChargingPointStatus.connectors.availability"

Enumerated value name	Designation	Definition
available	available	The connector is free for a vehicle to charge. †
occupied	occupied	A cable is connected but no energy is flowing (Part 23 §23.1). †
charging	charging	Energy is flowing through the connector. †
reserved	reserved	The connector is held for an AssignedRight in force (Part 14). †

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Enumerated value name	Designation	Definition
blocked	blocked	The bay holds a vehicle that is not plugged in, or is obstructed (Part 23 §23.3). †
inoperative	inoperative	The connector is out of use for a planned reason, such as maintenance or closed hours. †
outOfOrder	out of order	The connector is out of use because of a fault. †
unknown	unknown	The connector's state is not known. †

A.3.29 The <> "ChargingSession.chargingStatus"

Mapping to OCPP 2.0.1 `chargingState`: `pluggedIn` = EVConnected; `charging` = Charging; `suspended` = SuspendedEV | SuspendedEVSE (see `suspendedBy`); `complete` and `idle` = EVConnected after energy delivery ended; `unplugged` = Idle (no EV).

Defined inline on `ChargingSession`; the API names it by its owner and attribute.

Table A.90 -- Values contained in the enumeration "ChargingSession.chargingStatus"

Enumerated value name	Designation	Definition
authorized	authorized	The charge has been authorized but no vehicle is connected yet. †
pluggedIn	plugged in	EVConnected
charging	charging	Charging
suspended	suspended	SuspendedEV | SuspendedEVSE
complete	complete	Energy delivery has ended and the vehicle is still connected, within any grace period. †
idle	idle	EVConnected after
unplugged	unplugged	Idle (no EV).
closed	closed	The charge has been settled and is final (Part 23 §23.2). †
cancelled	cancelled	The authorization was never used (Part 23 §23.2). †
faulted	faulted	A fault interrupted the charge (Part 23 §23.2). †

A.3.30 The <> "ChargingSession.idlePolicy.idleRatePer"

Values of idlePolicy.idleRatePer on ChargingSession.

Defined inline on `ChargingSession`; the API names it by its owner and attribute.

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Table A.91 -- Values contained in the enumeration "ChargingSession.idlePolicy.idleRatePer"

Enumerated value name	Designation	Definition
minute	minute	The idle rate is charged per started minute (Part 23 §23.5). †
hour	hour	The idle rate is charged per started hour (Part 23 §23.5). †

A.3.31 The <> "ChargingSession.settlement.mode"

`parkingSession` — the cost becomes a line on the APDS Session and is paid with the parking (one bill at exit); `directPayment` — settled by a Part 13 payment referenced in `payment`; `chargingNetwork` — billed by the charging network or roaming partner; the parking side records energy and idle but not money.

Defined inline on `ChargingSession`; the API names it by its owner and attribute.

Table A.92 -- Values contained in the enumeration "ChargingSession.settlement.mode"

Enumerated value name	Designation	Definition
parkingSession	parking session	the cost becomes a line on the APDS Session
directPayment	direct payment	settled by a Part 13 payment referenced in
chargingNetwork	charging network	billed by the charging network

A.3.32 The <> "ChargingSession.stopReason"

Why energy delivery ended (OCPP 2.0.1 stopped-reason subset plus `targetReached`).

Defined inline on `ChargingSession`; the API names it by its owner and attribute.

Table A.93 -- Values contained in the enumeration "ChargingSession.stopReason"

Enumerated value name	Designation	Definition
evDisconnected	ev disconnected	The vehicle was disconnected. †
evFull	ev full	The vehicle reported a full battery. †
targetReached	target reached	The requested target state of charge was reached. †
energyLimitReached	energy limit reached	An energy limit set for the charge was reached. †

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Enumerated value name	Designation	Definition
timeLimitReached	time limit reached	A time limit set for the charge was reached. †
remote	remote	The charge was stopped remotely by an operator or system. †
local	local	The charge was stopped at the charger by the driver or staff. †
deauthorized	deauthorized	The authorization was withdrawn. †
emergencyStop	emergency stop	An emergency stop was used. †
powerLoss	power loss	Power to the charger was lost. †
other	other	Some other reason. †

A.3.33 The <> "ChargingSession.suspendedBy"

While `suspended`: whether the vehicle or the charger paused delivery.

Defined inline on `ChargingSession`; the API names it by its owner and attribute.

Table A.94 -- Values contained in the enumeration "ChargingSession.suspendedBy"

Enumerated value name	Designation	Definition
ev	ev	The vehicle paused energy delivery. †
evse	evse	The charger paused energy delivery. †

A.3.34 The <> "Command.agentType"

Whether `agent` is a person or an AI agent (mirrors SupportInteraction.agentType).

Defined inline on `Command`; the API names it by its owner and attribute.

Table A.95 -- Values contained in the enumeration "Command.agentType"

Enumerated value name	Designation	Definition
human	human	A person initiated the command. †
ai	ai	An AI agent initiated the command. †

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A.3.35 The <> "Command.confirmationLevel"

How far success is actually confirmed (Part 6 §6.1): the command was accepted; the device acknowledged it; or the physical outcome was verified (e.g. gate-state sensor). Consumers — AI agents especially — MUST NOT claim a physical outcome ("the gate is open") beyond this level ("the open command was accepted").

Defined inline on `Command`; the API names it by its owner and attribute.

Table A.96 -- Values contained in the enumeration "Command.confirmationLevel"

Enumerated value name	Designation	Definition
accepted	accepted	The command was taken by the server; no device outcome is confirmed. †
deviceAcknowledged	device acknowledged	The device acknowledged the command. †
physicallyConfirmed	physically confirmed	The physical outcome was verified, for example by a gate-state sensor (Part 6 §6.1). †

A.3.36 The <> "Command.priority"

Values of priority on Command.

Defined inline on `Command`; the API names it by its owner and attribute.

Table A.97 -- Values contained in the enumeration "Command.priority"

Enumerated value name	Designation	Definition
normal	normal	—
high	high	—

A.3.37 The <> "Command.status"

Values of status on Command.

Defined inline on `Command`; the API names it by its owner and attribute.

Table A.98 -- Values contained in the enumeration "Command.status"

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Enumerated value name	Designation	Definition
received	received	The server has received the command. †
accepted	accepted	The server has accepted the command for dispatch. †
rejected	rejected	The server refused the command; it is not dispatched. †
dispatched	dispatched	The command has been sent to the target device. †
executing	executing	The device is carrying out the command. †
succeeded	succeeded	The command completed; how far success is confirmed is given by confirmationLevel (Part 6 §6.1). †
failed	failed	The device reported that the command could not be carried out. †
expired	expired	The command's expiry time passed before dispatch, so it was never carried out (Part 6 §6.1). †
cancelled	cancelled	The command was cancelled before it was dispatched (Part 6 §6.1). †

A.3.38 The <> "ConditionReport.damage.severity"

Values of damage.severity on ConditionReport.

Defined inline on `ConditionReport`; the API names it by its owner and attribute.

Table A.99 -- Values contained in the enumeration "ConditionReport.damage.severity"

Enumerated value name	Designation	Definition
minor	minor	Cosmetic damage. †
moderate	moderate	Damage needing repair. †
major	major	Serious damage. †

A.3.39 The <> "CredentialAccessEvent.direction"

Values of direction on CredentialAccessEvent.

Defined inline on `CredentialAccessEvent`; the API names it by its owner and attribute.

Table A.100 -- Values contained in the enumeration "CredentialAccessEvent.direction"

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Enumerated value name	Designation	Definition
entry	entry	The attempt was to enter. †
exit	exit	The attempt was to leave. †

A.3.40 The <> "CredentialAccessEvent.outcome"

Values of outcome on CredentialAccessEvent.

Defined inline on `CredentialAccessEvent`; the API names it by its owner and attribute.

Table A.101 -- Values contained in the enumeration "CredentialAccessEvent.outcome"

Enumerated value name	Designation	Definition
granted	granted	Access was granted. †
denied	denied	Access was refused. †

A.3.41 The <> "CredentialDigest.alg"

Values of alg on CredentialDigest.

Defined inline on `CredentialDigest`; the API names it by its owner and attribute.

Table A.102 -- Values contained in the enumeration "CredentialDigest.alg"

Enumerated value name	Designation	Definition
HS256	hs256	HMAC with SHA-256, keyed by the digest key named in keyId (Part 9 §9.6). †

A.3.42 The <> "CredentialRecord.credentialAssignedType"

APDS CredentialAssignedTypeEnum — what the credential identifies.

Defined inline on `CredentialRecord`; the API names it by its owner and attribute.

Table A.103 -- Values contained in the enumeration "CredentialRecord.credentialAssignedType"

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Enumerated value name	Designation	Definition
vehicle	vehicle	The credential identifies a vehicle. †
customer	customer	The credential identifies a customer. †
other	other	The credential identifies something other than a vehicle or a customer. †

A.3.43 The <> "CredentialRecord.credentialStatus"

Values of credentialStatus on CredentialRecord.

Defined inline on `CredentialRecord`; the API names it by its owner and attribute.

Table A.104 -- Values contained in the enumeration "CredentialRecord.credentialStatus"

Enumerated value name	Designation	Definition
issued	issued	The credential has been issued but is not yet active. †
active	active	The credential may be used. †
suspended	suspended	The credential is temporarily not usable and may be resumed. †
lost	lost	The credential has been reported lost or stolen and is not usable; it may still be replaced or revoked (Part 21 §21.1). †
revoked	revoked	The credential has been withdrawn permanently. †
expired	expired	The credential's validity period has ended. †
replaced	replaced	The credential has been succeeded by another credential (Part 21 §21.1). †

A.3.44 The <> "CredentialRecord.media.depositStatus"

Values of media.depositStatus on CredentialRecord.

Defined inline on `CredentialRecord`; the API names it by its owner and attribute.

Table A.105 -- Values contained in the enumeration "CredentialRecord.media.depositStatus"

Enumerated value name	Designation	Definition
held	held	The deposit is held by the issuer. †

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Enumerated value name	Designation	Definition
refunded	refunded	The deposit has been returned to the holder. †
forfeited	forfeited	The deposit has been kept by the issuer. †

A.3.45 The <> "CredentialRecord.media.form"

Values of media.form on CredentialRecord.

Defined inline on `CredentialRecord`; the API names it by its owner and attribute.

Table A.106 -- Values contained in the enumeration "CredentialRecord.media.form"

Enumerated value name	Designation	Definition
physicalCard	physical card	A plastic or paper card. †
fob	fob	A key fob. †
transponder	transponder	A vehicle-mounted transponder or tag. †
hangtag	hangtag	A tag displayed in the vehicle. †
mobile	mobile	A credential held on a mobile device. †
plate	plate	The vehicle's licence plate used as the credential. †
ticket	ticket	A ticket issued for the stay. †
virtual	virtual	A credential with no physical item, such as an account number. †

A.3.46 The <> "CredentialReplaceRequest.media.form"

Values of media.form on CredentialReplaceRequest.

Defined inline on `CredentialReplaceRequest`; the API names it by its owner and attribute.

Table A.107 -- Values contained in the enumeration "CredentialReplaceRequest.media.form"

Enumerated value name	Designation	Definition
physicalCard	physical card	A plastic or paper card. †
fob	fob	A key fob. †

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Enumerated value name	Designation	Definition
transponder	transponder	A vehicle-mounted transponder or tag. †
hangtag	hangtag	A tag displayed in the vehicle. †
mobile	mobile	A credential held on a mobile device. †
plate	plate	The vehicle's licence plate used as the credential. †
ticket	ticket	A ticket issued for the stay. †
virtual	virtual	A credential with no physical item, such as an account number. †

A.3.47 The <> "CredentialReplaceRequest.oldDepositStatus"

What happens to the old record's deposit.

Defined inline on `CredentialReplaceRequest`; the API names it by its owner and attribute.

Table A.108 -- Values contained in the enumeration "CredentialReplaceRequest.oldDepositStatus"

Enumerated value name	Designation	Definition
held	held	The old item's deposit stays held by the issuer. †
refunded	refunded	The old item's deposit is returned to the holder. †
forfeited	forfeited	The old item's deposit is kept by the issuer. †

A.3.48 The <> "DeliveryRecord.status"

Values of status on DeliveryRecord.

Defined inline on `DeliveryRecord`; the API names it by its owner and attribute.

Table A.109 -- Values contained in the enumeration "DeliveryRecord.status"

Enumerated value name	Designation	Definition
delivered	delivered	The event was delivered to the receiver. †
retrying	retrying	Delivery has not yet succeeded and further attempts are scheduled (Part 8 §8.3). †

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Enumerated value name	Designation	Definition
failed	failed	Every attempt in the retry schedule failed (Part 8 §8.3). †

A.3.49 The <> "DeviceStatus.consumables.kind"

Values of consumables.kind on DeviceStatus.

Defined inline on `DeviceStatus`; the API names it by its owner and attribute.

Table A.110 -- Values contained in the enumeration "DeviceStatus.consumables.kind"

Enumerated value name	Designation	Definition
tickets	tickets	Blank ticket stock in a dispenser or verifier (Part 6 §6.4). †
receiptPaper	receipt paper	Receipt paper in a pay station or terminal. †
cash	cash	Notes held for change in a pay station. †
coins	coins	Coins held for change in a pay station. †

A.3.50 The <> "DeviceStatus.consumables.level"

Values of consumables.level on DeviceStatus.

Defined inline on `DeviceStatus`; the API names it by its owner and attribute.

Table A.111 -- Values contained in the enumeration "DeviceStatus.consumables.level"

Enumerated value name	Designation	Definition
ok	ok	Enough of the consumable for normal operation. †
low	low	The consumable needs replenishing soon; service continues. †
empty	empty	The consumable has run out; the function that needs it has stopped. †
unknown	unknown	The device does not report the level. †

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A.3.51 The <> "DiscoveryDocument.replication.authority"

Values of replication.authority on DiscoveryDocument.

Defined inline on `DiscoveryDocument`; the API names it by its owner and attribute.

Table A.112 -- Values contained in the enumeration "DiscoveryDocument.replication.authority"

Enumerated value name	Designation	Definition
site	site	The site implementation is authoritative for the class at the place (Part 18 §18.6). †
aggregator	aggregator	The aggregating implementation is authoritative for the class at the place (Part 18 §18.6). †

A.3.52 The <> "DisplayProof.acknowledgedBy"

Values of acknowledgedBy on DisplayProof.

Defined inline on `DisplayProof`; the API names it by its owner and attribute.

Table A.113 -- Values contained in the enumeration "DisplayProof.acknowledgedBy"

Enumerated value name	Designation	Definition
player	player	—
operator	operator	—
none	none	—

A.3.53 The <> "EligibilityResult.basis.status"

Why this basis does or does not entitle the vehicle here, now.

Defined inline on `EligibilityResult`; the API names it by its owner and attribute.

Table A.114 -- Values contained in the enumeration "EligibilityResult.basis.status"

Enumerated value name	Designation	Definition
valid	valid	The right or session covers the vehicle at this place now. †

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Enumerated value name	Designation	Definition
expired	expired	The right or session has ended. †
notYetValid	not yet valid	The right exists but its validity has not started. †
wrongPlace	wrong place	The right is bound to a sibling or a different subtree of the place hierarchy (Part 19 §19.3). †
consumed	consumed	The right has already been used by another session. †
suspended	suspended	The right is suspended. †

A.3.54 The <> "EnforcementPolicy.deliveryRules.detectionModes"

Values of deliveryRules.detectionModes on EnforcementPolicy.

Defined inline on `EnforcementPolicy`; the API names it by its owner and attribute.

Table A.115 -- Values contained in the enumeration "EnforcementPolicy.deliveryRules.detectionModes"

Enumerated value name	Designation	Definition
automated	automated	A camera or sensor system found the violation with no person involved. †
guided	guided	A system proposed the violation and an officer confirmed it on site. †
manual	manual	An officer found the violation directly. †

A.3.55 The <> "EnforcementPolicy.penaltyCap.onExceed"

`refuse` → 422 `penalty-exceeds-cap`; `clamp` → issue at the cap and record `reason: cap` in amountHistory.

Defined inline on `EnforcementPolicy`; the API names it by its owner and attribute.

Table A.116 -- Values contained in the enumeration "EnforcementPolicy.penaltyCap.onExceed"

Enumerated value name	Designation	Definition
refuse	refuse	An issue whose amount exceeds the cap is refused (Part 19 §19.10). †
clamp	clamp	An issue whose amount exceeds the cap is issued at the cap (Part 19 §19.10). †

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A.3.56 The <> "EnforcementPolicy.policyStatus"

Values of policyStatus on EnforcementPolicy.

Defined inline on `EnforcementPolicy`; the API names it by its owner and attribute.

Table A.117 -- Values contained in the enumeration "EnforcementPolicy.policyStatus"

Enumerated value name	Designation	Definition
active	active	The policy is in force at its place and subtree within its effective window (Part 19 §19.10). †
superseded	superseded	Replaced by a newer policy that now applies. †
retired	retired	Withdrawn from use without a replacement. †

A.3.57 The <> "LaneCameras.cameras.faces"

`inward` — looking into the facility, the way entering traffic travels (reads the rear plates of entering vehicles); `outward` — looking out of it, the way exiting traffic travels (reads the rear plates of exiting vehicles).

Defined inline on `LaneCameras`; the API names it by its owner and attribute.

Table A.118 -- Values contained in the enumeration "LaneCameras.cameras.faces"

Enumerated value name	Designation	Definition
inward	inward	looking into the facility, the way entering
outward	outward	looking out of it, the way exiting

A.3.58 The <> "LprRead.laneTravel"

DEPRECATED since 0.12.0, removed at 1.0. APX no longer derives direction; use `detail.accessEvent` (entry | exit), which the LPR system reports (Part 13 §13.3a(4)). Servers SHOULD return `unknown`.

Defined inline on `LprRead`; the API names it by its owner and attribute.

Table A.119 -- Values contained in the enumeration "LprRead.laneTravel"

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Enumerated value name	Designation	Definition
withLane	with lane	The vehicle travelled the way the lane's configured purpose directs (deprecated since 0.12.0). †
againstLane	against lane	The vehicle travelled against the lane's configured purpose, such as entering on an exit lane (deprecated since 0.12.0). †
unknown	unknown	The direction of travel relative to the lane is not determined; the value servers return since 0.12.0. †

A.3.59 The <> "LprReadDetail.accessEvent"

Whether this read was a vehicle entering or leaving the facility, as reported by the LPR system — not the lane's configured purpose (the lane's APDS `accessType`), and never inferred by the APX server. Absent means `unknown`. The LPR system MAY revise it through `PUT /v1/lpr/reads/{observation}/access-event` (Part 13 §13.3a(4)).

Defined inline on `LprReadDetail`; the API names it by its owner and attribute.

Table A.120 -- Values contained in the enumeration "LprReadDetail.accessEvent"

Enumerated value name	Designation	Definition
entry	entry	The LPR system reports the read as a vehicle entering the facility. †
exit	exit	The LPR system reports the read as a vehicle leaving the facility. †
unknown	unknown	Whether the vehicle was entering or leaving is not reported. †

A.3.60 The <> "LprReadDetail.movement"

The vehicle's motion relative to the camera: toward it, away from it, or stopped. A camera fact, not a statement about the facility. `approaching` and `receding` are deprecated synonyms of `toward` and `away` — accepted until 1.0; writers SHOULD send the new values (Part 13 §13.3a(3)).

Defined inline on `LprReadDetail`; the API names it by its owner and attribute.

Table A.121 -- Values contained in the enumeration "LprReadDetail.movement"

Enumerated value name	Designation	Definition
toward	toward	The vehicle moved toward the camera. †
away	away	accepted until 1.0; writers SHOULD send the new values

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Enumerated value name	Designation	Definition
stopped	stopped	The vehicle was stationary. †
unknown	unknown	The vehicle's motion could not be determined. †
approaching	approaching	Deprecated synonym of toward, accepted until 1.0 (Part 13 §13.3a(3)). †
receding	receding	Deprecated synonym of away, accepted until 1.0 (Part 13 §13.3a(3)). †

A.3.61 The <> "LprReadDetail.plateFace"

Which plate of the vehicle was read, for engines that can tell.

Defined inline on `LprReadDetail`; the API names it by its owner and attribute.

Table A.122 -- Values contained in the enumeration "LprReadDetail.plateFace"

Enumerated value name	Designation	Definition
front	front	The front plate was read. †
rear	rear	The rear plate was read. †
unknown	unknown	The engine cannot tell which plate was read. †

A.3.62 The <> "LprReadDetail.review.state"

Values of review.state on LprReadDetail.

Defined inline on `LprReadDetail`; the API names it by its owner and attribute.

Table A.123 -- Values contained in the enumeration "LprReadDetail.review.state"

Enumerated value name	Designation	Definition
pending	pending	The read is waiting for a reviewer. †
confirmed	confirmed	A reviewer confirmed the engine's values. †
corrected	corrected	A reviewer replaced the engine's values with corrected ones. †
rejected	rejected	A reviewer rejected the read as unusable for pairing and enforcement. †

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Enumerated value name	Designation	Definition
notRequired	not required	No rule sent the read to review. †

A.3.63 The <> "MatchCandidate.matchedBy"

How this candidate was found: the lane's LPR read against the entry read (plateRead); a credential presented at the lane (credential); the account registry by plate or phone (account); a checked-in reservation carrying the plate (reservation).

Defined inline on `MatchCandidate`; the API names it by its owner and attribute.

Table A.124 -- Values contained in the enumeration "MatchCandidate.matchedBy"

Enumerated value name	Designation	Definition
plateRead	plate read	The lane's plate read matched the session's entry read. †
credential	credential	A credential presented at the lane matched the session. †
account	account	The account registry linked the session by plate or phone. †
reservation	reservation	A checked-in reservation carrying the plate linked the session. †

A.3.64 The <> "MatchEvidence.decidedBy"

Whether software or a person made the link. A `matchTicket` that binds a lane-inquiry candidate SHOULD be recorded as `person` (Part 5 §5.8 rule 5).

Defined inline on `MatchEvidence`; the API names it by its owner and attribute.

Table A.125 -- Values contained in the enumeration "MatchEvidence.decidedBy"

Enumerated value name	Designation	Definition
system	system	Software made the link. †
person	person	Part 5 §5.8 rule 5).

A.3.65 The <> "MatchEvidence.matchType"

The kind of link: `right` — an AssignedRight covers the stay; `valet` — a ValetTicket's stay; `violation` — a Violation's stay; `list` — a plate-list entry matched the vehicle (Part 24); `exitPairing` — an exit read paired to the Session's entry; `sweep` — the vehicle seen during an inventory or patrol sweep tied to the Session;

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`other` — anything else.

Defined inline on `MatchEvidence`; the API names it by its owner and attribute.

Table A.126 -- Values contained in the enumeration "MatchEvidence.matchType"

Enumerated value name	Designation	Definition
right	right	an AssignedRight covers the stay
valet	valet	a ValetTicket's stay
violation	violation	a Violation's stay
list	list	a plate-list entry matched the vehicle (Part 24
exitPairing	exit pairing	an exit read paired to the Session's entry
sweep	sweep	the vehicle seen during an inventory or patrol sweep tied
other	other	anything else.

A.3.66 The <> "MatchEvidence.plate.jurisdiction"

Values of plate.jurisdiction on MatchEvidence.

Defined inline on `MatchEvidence`; the API names it by its owner and attribute.

Table A.127 -- Values contained in the enumeration "MatchEvidence.plate.jurisdiction"

Enumerated value name	Designation	Definition
agrees	agrees	The plate's issuing jurisdiction is the same on both sides of the match. †
differs	differs	The plate's issuing jurisdiction differs between the two sides of the match. †
unknown	unknown	Whether the issuing jurisdiction agrees is not known. †

A.3.67 The <> "MatchEvidence.plate.method"

`exact` — the same characters; `alias` — a plate the right or account lists for the same vehicle; `fold` — equal after folding look-alike characters (O/0, I/1, B/8); `fuzzy` — within the implementation's edit-cost threshold; `lenient` — accepted under a relaxed rule that may excuse a stay but never accuse one; `reviewer` — a person judged the plates to match where no automatic method did.

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Defined inline on `MatchEvidence`; the API names it by its owner and attribute.

Table A.128 -- Values contained in the enumeration "MatchEvidence.plate.method"

Enumerated value name	Designation	Definition
exact	exact	the same characters
alias	alias	a plate the right or
fold	fold	equal after
fuzzy	fuzzy	within
lenient	lenient	accepted
reviewer	reviewer	a person judged the plates to match where no

A.3.68 The <> "MatchEvidence.vehicle.level"

`unknown` — not compared; `mismatch` — the attributes contradict the match; `inconclusive` — compared, no signal; `weak`, `good`, `strong` — increasing support.

Defined inline on `MatchEvidence`; the API names it by its owner and attribute.

Table A.129 -- Values contained in the enumeration "MatchEvidence.vehicle.level"

Enumerated value name	Designation	Definition
unknown	unknown	not compared
mismatch	mismatch	the attributes contradict
inconclusive	inconclusive	compared, no signal
weak	weak	The vehicle attributes give weak support to the match. †
good	good	The vehicle attributes give good support to the match. †
strong	strong	increasing support.

A.3.69 The <> "OverrideRecord.agentType"

Copied from the summarized Command's `agentType`.

Defined inline on `OverrideRecord`; the API names it by its owner and attribute.

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Table A.130 -- Values contained in the enumeration "OverrideRecord.agentType"

Enumerated value name	Designation	Definition
human	human	A person initiated the summarized command. †
ai	ai	An AI agent initiated the summarized command. †

A.3.70 The <> "PassbackStatus.expectedPresence"

Values of expectedPresence on PassbackStatus.

Defined inline on `PassbackStatus`; the API names it by its owner and attribute.

Table A.131 -- Values contained in the enumeration "PassbackStatus.expectedPresence"

Enumerated value name	Designation	Definition
inside	inside	The credential is expected to be inside the facility, as when presented at an exit lane. †
outside	outside	The credential is expected to be outside the facility, as when presented at an entry lane. †
unknown	unknown	Where the credential is expected to be is not known. †

A.3.71 The <> "PassbackStatus.lastAccess.direction"

Values of lastAccess.direction on PassbackStatus.

Defined inline on `PassbackStatus`; the API names it by its owner and attribute.

Table A.132 -- Values contained in the enumeration "PassbackStatus.lastAccess.direction"

Enumerated value name	Designation	Definition
entry	entry	The last access was an entry. †
exit	exit	The last access was an exit. †

A.3.72 The <> "PassbackStatus.recordedPresence"

Values of recordedPresence on PassbackStatus.

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Defined inline on `PassbackStatus`; the API names it by its owner and attribute.

Table A.133 -- Values contained in the enumeration "PassbackStatus.recordedPresence"

Enumerated value name	Designation	Definition
inside	inside	The anti-passback record places the credential inside the facility. †
outside	outside	The anti-passback record places the credential outside the facility. †
unknown	unknown	The anti-passback record does not place the credential. †

A.3.73 The <> "PassbackStatus.state"

Values of state on PassbackStatus.

Defined inline on `PassbackStatus`; the API names it by its owner and attribute.

Table A.134 -- Values contained in the enumeration "PassbackStatus.state"

Enumerated value name	Designation	Definition
normal	normal	The recorded presence agrees with the expected presence. †
violation	violation	The recorded presence contradicts the expected presence, so anti-passback refuses the credential. †
unknown	unknown	The implementation does not track passback for this credential (Part 17 §17.8). †

A.3.74 The <> "PaymentDetail.rateSold.class"

Values of rateSold.class on PaymentDetail.

Defined inline on `PaymentDetail`; the API names it by its owner and attribute.

Table A.135 -- Values contained in the enumeration "PaymentDetail.rateSold.class"

Enumerated value name	Designation	Definition
standard	standard	The published price. †
validation	validation	The price after a merchant validation. †

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Enumerated value name	Designation	Definition
discount	discount	The price after a discount other than a validation. †
zeroed	zeroed	The charge was reduced to zero. †
other	other	Some other pricing. †

A.3.75 The <> "PaymentDetail.rateSold.product"

Values of rateSold.product on PaymentDetail.

Defined inline on `PaymentDetail`; the API names it by its owner and attribute.

Table A.136 -- Values contained in the enumeration "PaymentDetail.rateSold.product"

Enumerated value name	Designation	Definition
standard	standard	A single stay. †
pass	pass	A pass covering more than one stay or a period. †
other	other	Some other product. †

A.3.76 The <> "PaymentLink.status"

Values of status on PaymentLink.

Defined inline on `PaymentLink`; the API names it by its owner and attribute.

Table A.137 -- Values contained in the enumeration "PaymentLink.status"

Enumerated value name	Designation	Definition
sent	sent	The link has been sent to the customer and not yet opened. †
opened	opened	The customer has opened the link but not yet paid. †
paid	paid	The customer paid through the link; the payment is referenced (Part 13 §13.1a). †
expired	expired	The link lapsed without payment. †
cancelled	cancelled	The link was cancelled and the hosted page no longer accepts payment (Part 13 §13.1a). †

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A.3.77 The <> "PaymentRecord.captureStatus"

Whether an approved payment's funds have been collected (Part 13 §13.1a). `authorized` = a hold: the payment layer approved an authorization-only request (`captureLater: true`), funds are held, nothing is collected yet; settled by `POST /v1/payments/{id}/capture` or released by `…/void`. `captured` = collected. Absent = `captured` (a sale). A hold is returned to the caller that created it, but is not listed by `GET /v1/payments` unless asked for, is not published on `apx.accounts.payment.recorded.v1`, and is not materialized as an APDS Payment until captured.

Defined inline on `PaymentRecord`; the API names it by its owner and attribute.

Table A.138 -- Values contained in the enumeration "PaymentRecord.captureStatus"

Enumerated value name	Designation	Definition
authorized	authorized	a hold: the payment layer approved an
captured	captured	collected

A.3.78 The <> "PaymentRecord.channel"

Where the payment was captured. `lane` = a lane device; `payStation` = a pay-on-foot or pay station; `agent` = a person on the implementer's own PCI-scoped terminal; `autoAttendant` = a PCI-compliant IVR that captures the card out of band; `online` = web or mobile app. APX never carries PANs, whichever channel is used.

Defined inline on `PaymentRecord`; the API names it by its owner and attribute.

Table A.139 -- Values contained in the enumeration "PaymentRecord.channel"

Enumerated value name	Designation	Definition
lane	lane	a lane device
payStation	pay station	a pay-on-foot or pay station
agent	agent	a person on the implementer's
autoAttendant	auto attendant	a PCI-compliant IVR that
online	online	web or mobile app
other	other	The payment was captured through a channel not otherwise listed. †

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A.3.79 The <> "PaymentRecord.paymentStatus"

The payment layer's answer. `approved` = approved (for a hold, see `captureStatus`); `declined` = refused by the payment layer; `reversed` = a hold voided, or a payment refunded in full. Transitions per Part 13 §13.1a.

Defined inline on `PaymentRecord`; the API names it by its owner and attribute.

Table A.140 -- Values contained in the enumeration "PaymentRecord.paymentStatus"

Enumerated value name	Designation	Definition
approved	approved	approved (for a hold, see
declined	declined	refused by the payment layer
reversed	reversed	a hold voided, or a payment refunded in full

A.3.80 The <> "PaymentSearch.captureStatus"

Values of captureStatus on PaymentSearch.

Defined inline on `PaymentSearch`; the API names it by its owner and attribute.

Table A.141 -- Values contained in the enumeration "PaymentSearch.captureStatus"

Enumerated value name	Designation	Definition
authorized	authorized	Return only holds, whose funds are authorized but not yet collected (Part 13 §13.2). †
captured	captured	Return only payments whose funds have been collected (Part 13 §13.2). †

A.3.81 The <> "PermitExtension.overageBilling.mode"

`rack` — the place's transient rate deck; `dayRate` — the flat `dayRate`; `none` — recorded, not billed.

Defined inline on `PermitExtension`; the API names it by its owner and attribute.

Table A.142 -- Values contained in the enumeration "PermitExtension.overageBilling.mode"

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Enumerated value name	Designation	Definition
rack	rack	the place's transient rate deck
dayRate	day rate	An overage is charged the flat dayRate (Part 14 §14.2d). †
none	none	recorded, not billed.

A.3.82 The <> "PlateCorrection.decision"

Values of decision on PlateCorrection.

Defined inline on `PlateCorrection`; the API names it by its owner and attribute.

Table A.143 -- Values contained in the enumeration "PlateCorrection.decision"

Enumerated value name	Designation	Definition
confirmed	confirmed	The reviewer keeps the engine's values. †
corrected	corrected	The reviewer replaces the engine's values with the ones given. †
rejected	rejected	The reviewer marks the read unusable for pairing and enforcement (Part 13 §13.3a(4a)). †

A.3.83 The <> "PlateList.status"

Values of status on PlateList.

Defined inline on `PlateList`; the API names it by its owner and attribute.

Table A.144 -- Values contained in the enumeration "PlateList.status"

Enumerated value name	Designation	Definition
active	active	The list applies at its places. †
suspended	suspended	The list is temporarily not applied anywhere; its entries remain readable (Part 24 §24.1). †
retired	retired	The list is withdrawn and applies nowhere; its entries remain readable for audit (Part 24 §24.1). †

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A.3.84 The <> "ReceiptDelivery.channel"

Values of channel on ReceiptDelivery.

Defined inline on `ReceiptDelivery`; the API names it by its owner and attribute.

Table A.145 -- Values contained in the enumeration "ReceiptDelivery.channel"

Enumerated value name	Designation	Definition
email	email	The receipt was sent, or queued, by e-mail. †
sms	sms	The receipt was sent, or queued, by text message. †
print	print	The receipt was printed at the device. †
link	link	The receipt is available at the returned link. †

A.3.85 The <> "ReceiptDelivery.status"

Values of status on ReceiptDelivery.

Defined inline on `ReceiptDelivery`; the API names it by its owner and attribute.

Table A.146 -- Values contained in the enumeration "ReceiptDelivery.status"

Enumerated value name	Designation	Definition
queued	queued	Accepted for delivery; not yet sent. †
sent	sent	Delivered to the channel. †
failed	failed	Delivery failed; the destination or the channel did not accept it. †

A.3.86 The <> "ReceiptRequest.channel"

`print` re-prints at the device the payment was taken on; `link` returns a short-lived URL for the agent to read out or forward.

Defined inline on `ReceiptRequest`; the API names it by its owner and attribute.

Table A.147 -- Values contained in the enumeration "ReceiptRequest.channel"

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Enumerated value name	Designation	Definition
email	email	Send the receipt by e-mail to the destination address (Part 13 §13.1a). †
sms	sms	Send the receipt by text message to the destination number. †
print	print	Print the receipt at the device that took the payment. †
link	link	Return a link from which the receipt can be fetched; no destination is needed. †

A.3.87 The <> "ReservationExtension.reservationState"

Values of reservationState on ReservationExtension.

Defined inline on `ReservationExtension`; the API names it by its owner and attribute.

Table A.148 -- Values contained in the enumeration "ReservationExtension.reservationState"

Enumerated value name	Designation	Definition
confirmed	confirmed	The reservation is booked and awaiting use. †
amended	amended	The reservation has been changed and is awaiting use. †
cancelled	cancelled	The reservation was cancelled before use. †
checkedIn	checked in	A Session has used the reservation. †
noShow	no show	The reservation was not used before its no-show time (Part 14 §14.1). †

A.3.88 The <> "ReservationSummary.reservationState"

Values of reservationState on ReservationSummary.

Defined inline on `ReservationSummary`; the API names it by its owner and attribute.

Table A.149 -- Values contained in the enumeration "ReservationSummary.reservationState"

Enumerated value name	Designation	Definition
confirmed	confirmed	The reservation is booked and awaiting use. †
amended	amended	The reservation has been changed and is awaiting use. †
cancelled	cancelled	The reservation was cancelled before use. †

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Enumerated value name	Designation	Definition
checkedIn	checked in	A Session has used the reservation. †
noShow	no show	The reservation was not used before its no-show time (Part 14 §14.1). †

A.3.89 The <> "ResolutionContext.accessDecision.status"

Values of accessDecision.status on ResolutionContext.

Defined inline on `ResolutionContext`; the API names it by its owner and attribute.

Table A.150 -- Values contained in the enumeration "ResolutionContext.accessDecision.status"

Enumerated value name	Designation	Definition
granted	granted	Access was granted. †
denied	denied	Access was refused. †
pending	pending	The access decision has not yet been made. †
unknown	unknown	The access decision is not known. †

A.3.90 The <> "ResolutionContext.status"

partial = at least one source has not answered yet; re-read to refresh.

Defined inline on `ResolutionContext`; the API names it by its owner and attribute.

Table A.151 -- Values contained in the enumeration "ResolutionContext.status"

Enumerated value name	Designation	Definition
full	full	Every source has answered. †
partial	partial	At least one source has not answered yet; re-read to refresh (Part 17 §17.2). †

A.3.91 The <> "ResolutionResolveRequest.guestReference.kind"

Values of guestReference.kind on ResolutionResolveRequest.

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Defined inline on `ResolutionResolveRequest`; the API names it by its owner and attribute.

Table A.152 -- Values contained in the enumeration "ResolutionResolveRequest.guestReference.kind"

Enumerated value name	Designation	Definition
hotelRoom	hotel room	A hotel room number, for a guest parking under a hotel arrangement (Part 17 §17.1). †
company	company	A company or merchant name the parker claims to visit or work for. †
tenant	tenant	A tenant of the building the place serves, for a tenant's employee or visitor. †
event	event	An event name or booking, for an attendee. †
other	other	Another kind of reference, as the operator and the call platform agree. †

A.3.92 The <> "SessionDetail.lifecycle"

`open` — a vehicle is in the facility, no `actualEnd` yet; `ended` — closed, may still be revised; `final` — no further revision expected; `disputed` — under review. Every state but `open` requires `actualEnd`, and `open` forbids it (422 `request-unprocessable` otherwise). `final` is the writer's statement, never a lock: a server MUST NOT refuse a later revision on that ground.

Defined inline on `SessionDetail`; the API names it by its owner and attribute.

Table A.153 -- Values contained in the enumeration "SessionDetail.lifecycle"

Enumerated value name	Designation	Definition
open	open	The vehicle is in the facility and the Session has no end time (Part 5 §5.8). †
ended	ended	closed, may still be revised
final	final	no further revision
disputed	disputed	under review

A.3.93 The <> "SessionReadBinding.role"

`entry` and `exit` are the passages that opened and closed the visit; `duplicate` is the same passage seen by another camera or frame; `activity` is the vehicle seen inside (a sweep, a bay camera).

Defined inline on `SessionReadBinding`; the API names it by its owner and attribute.

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Table A.154 -- Values contained in the enumeration "SessionReadBinding.role"

Enumerated value name	Designation	Definition
entry	entry	The passage that opened the visit. †
exit	exit	The passage that closed the visit. †
duplicate	duplicate	The same passage seen by another camera or in another frame. †
activity	activity	The vehicle seen inside the facility, for example during a sweep or by a bay camera. †

A.3.94 The <> "Signage.signageStatus"

Values of signageStatus on Signage.

Defined inline on `Signage`; the API names it by its owner and attribute.

Table A.155 -- Values contained in the enumeration "Signage.signageStatus"

Enumerated value name	Designation	Definition
active	active	The sign is posted and in force. †
superseded	superseded	Replaced by a newer sign record or version (Part 19 §19.11). †
removed	removed	The sign has been taken down without a replacement. †

A.3.95 The <> "StayCompliance.family"

The family of the status. For a registry status it MUST be the family the registry gives (422 `request-unprocessable`). `compliant` — rights or an exemption covered the stay `violation` — the stay was not covered as the policy requires `withheld` — not scored, or held back for review `other` — an outcome none of the other families fits, for example paid after exit

Defined inline on `StayCompliance`; the API names it by its owner and attribute.

Table A.156 -- Values contained in the enumeration "StayCompliance.family"

Enumerated value name	Designation	Definition
compliant	compliant	rights or an exemption covered the stay

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Enumerated value name	Designation	Definition
violation	violation	the stay was not covered as the policy requires
withheld	withheld	not scored, or held back for review
other	other	an outcome none of the other families fits, for example paid after exit

A.3.96 The <> "SubscriptionFilters.severityFloor"

For alert topics — minimum severity delivered.

Defined inline on `SubscriptionFilters`; the API names it by its owner and attribute.

Table A.157 -- Values contained in the enumeration "SubscriptionFilters.severityFloor"

Enumerated value name	Designation	Definition
info	info	Alerts of every severity are delivered. †
warning	warning	Alerts of warning severity and above are delivered. †
minor	minor	Alerts of minor severity and above are delivered. †
major	major	Alerts of major severity and above are delivered. †
critical	critical	Only critical alerts are delivered. †

A.3.97 The <> "SupportInteraction.agentType"

Values of agentType on SupportInteraction.

Defined inline on `SupportInteraction`; the API names it by its owner and attribute.

Table A.158 -- Values contained in the enumeration "SupportInteraction.agentType"

Enumerated value name	Designation	Definition
human	human	A person handled the interaction. †
ai	ai	An AI agent handled the interaction. †

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A.3.98 The <> "TollTransaction.transactionStatus"

Values of transactionStatus on TollTransaction.

Defined inline on `TollTransaction`; the API names it by its owner and attribute.

Table A.159 -- Values contained in the enumeration "TollTransaction.transactionStatus"

Enumerated value name	Designation	Definition
created	created	Assembled from observations, not yet priced. †
priced	priced	Priced and awaiting payment. †
paid	paid	Settled by a payment. †
disputed	disputed	Under dispute. †
resolved	resolved	A dispute has been resolved. †
voided	voided	Cancelled by the operator. †

A.3.99 The <> "UiActionRecord.outcome"

Values of outcome on UiActionRecord.

Defined inline on `UiActionRecord`; the API names it by its owner and attribute.

Table A.160 -- Values contained in the enumeration "UiActionRecord.outcome"

Enumerated value name	Designation	Definition
completed	completed	The action was carried out on the surface. †
failed	failed	The action was attempted on the surface and did not succeed. †
noAction	no action	The agent took no action; recorded so that the launch is accounted for. †

A.3.100 The <> "UiActionRecord.unavailable.reason"

Values of unavailable.reason on UiActionRecord.

Defined inline on `UiActionRecord`; the API names it by its owner and attribute.

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Table A.161 -- Values contained in the enumeration "UiActionRecord.unavailable.reason"

Enumerated value name	Designation	Definition
notSupported	not supported	The surface never knows this value (Part 25 §25.4). †
notApplicable	not applicable	The value does not apply to this action. †

A.3.101 The <> "UiLaunch.status"

`issued` → `opened` on first use of the url or token (single use) → `closed` when the screen reports it is done, or `expired` when `expiresAt` passes unused. An opened launch not closed within the implementation's limit (RECOMMENDED 1 h) also becomes `expired` (Part 25 §25.3).

Defined inline on `UiLaunch`; the API names it by its owner and attribute.

Table A.162 -- Values contained in the enumeration "UiLaunch.status"

Enumerated value name	Designation	Definition
issued	issued	Created; the URL or token has not yet been used (Part 25 §25.3). †
opened	opened	The URL or token was used once and the surface is open for the agent. †
closed	closed	The surface reported the end of the session, or the implementation observed it; final. †
expired	expired	Part 25 §25.3).

A.3.102 The <> "UiLaunchRequest.agentType"

Values of agentType on UiLaunchRequest.

Defined inline on `UiLaunchRequest`; the API names it by its owner and attribute.

Table A.163 -- Values contained in the enumeration "UiLaunchRequest.agentType"

Enumerated value name	Designation	Definition
human	human	A person will use the surface. †
ai	ai	An AI agent will use the surface. †

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A.3.103 The <> "UiLaunchRequest.displayMode"

Values of displayMode on UiLaunchRequest.

Defined inline on `UiLaunchRequest`; the API names it by its owner and attribute.

Table A.164 -- Values contained in the enumeration "UiLaunchRequest.displayMode"

Enumerated value name	Designation	Definition
embed	embed	Show the surface inside the host's page. †
popup	popup	Show the surface in a pop-up window. †
tab	tab	Show the surface in a new browser tab. †

A.3.104 The <> "UiSurface.displayModes"

Values of displayModes on UiSurface.

Defined inline on `UiSurface`; the API names it by its owner and attribute.

Table A.165 -- Values contained in the enumeration "UiSurface.displayModes"

Enumerated value name	Designation	Definition
embed	embed	The surface may be shown inside the host's page (the host's origin must be registered; Part 25 §25.6). †
popup	popup	The surface may be shown in a pop-up window. †
tab	tab	The surface may be shown in a new browser tab. †

A.3.105 The <> "UiSurface.launchModes"

Values of launchModes on UiSurface.

Defined inline on `UiSurface`; the API names it by its owner and attribute.

Table A.166 -- Values contained in the enumeration "UiSurface.launchModes"

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Enumerated value name	Designation	Definition
handshake	handshake	The host posts a launch request with its APX token and opens the single-use URL returned (Part 25 §25.2). †
signedToken	signed token	The host signs a launch token and sends it to the surface's launch URL by form post or URL fragment (Part 25 §25.2). †

A.3.106 The <> "ValetHandbackRequest.verificationMethod"

Values of verificationMethod on ValetHandbackRequest.

Defined inline on `ValetHandbackRequest`; the API names it by its owner and attribute.

Table A.167 -- Values contained in the enumeration "ValetHandbackRequest.verificationMethod"

Enumerated value name	Designation	Definition
ticket	ticket	The claim ticket was presented. †
phone	phone	The customer's phone or application was verified. †
code	code	A one-time code was given. †
id	id	An identity document was checked. †
attendant	attendant	An attendant recognised the customer. †

A.3.107 The <> "ValetRetrievalRequest.channel"

Values of channel on ValetRetrievalRequest.

Defined inline on `ValetRetrievalRequest`; the API names it by its owner and attribute.

Table A.168 -- Values contained in the enumeration "ValetRetrievalRequest.channel"

Enumerated value name	Designation	Definition
sms	sms	The customer asked by text message. †
app	app	The customer asked in a mobile application. †
web	web	The customer asked on a web page. †

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Enumerated value name	Designation	Definition
voiceBot	voice bot	The customer asked through an automated voice service. †
kiosk	kiosk	The customer asked at a self-service kiosk. †
attendant	attendant	An attendant raised the request at the stand. †
callCenter	call center	An agent at a contact centre raised the request. †

A.3.108 The <> "ValetTicket.customer.contactChannel.type"

Values of customer.contactChannel.type on ValetTicket.

Defined inline on `ValetTicket`; the API names it by its owner and attribute.

Table A.169 -- Values contained in the enumeration "ValetTicket.customer.contactChannel.type"

Enumerated value name	Designation	Definition
sms	sms	The customer is reached by text message. †
app	app	The customer is reached through a mobile application. †
web	web	The customer is reached through a web page. †
voice	voice	The customer is reached by voice call. †
email	email	The customer is reached by email. †
none	none	The customer has given no channel to be reached on. †

A.3.109 The <> "ValetTicket.handback.verificationMethod"

Values of handback.verificationMethod on ValetTicket.

Defined inline on `ValetTicket`; the API names it by its owner and attribute.

Table A.170 -- Values contained in the enumeration "ValetTicket.handback.verificationMethod"

Enumerated value name	Designation	Definition
ticket	ticket	The claim ticket was presented. †
phone	phone	The customer's phone or application was verified. †

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Enumerated value name	Designation	Definition
code	code	A one-time code was given. †
id	id	An identity document was checked. †
attendant	attendant	An attendant recognised the customer. †

A.3.110 The <> "ValetTicket.retrieval.channel"

Values of retrieval.channel on ValetTicket.

Defined inline on `ValetTicket`; the API names it by its owner and attribute.

Table A.171 -- Values contained in the enumeration "ValetTicket.retrieval.channel"

Enumerated value name	Designation	Definition
sms	sms	The customer asked by text message. †
app	app	The customer asked in a mobile application. †
web	web	The customer asked on a web page. †
voiceBot	voice bot	The customer asked through an automated voice service. †
kiosk	kiosk	The customer asked at a self-service kiosk. †
attendant	attendant	An attendant raised the request at the stand. †
callCenter	call center	An agent at a contact centre raised the request. †

A.3.111 The <> "ValetTicket.valetStatus"

Values of valetStatus on ValetTicket.

Defined inline on `ValetTicket`; the API names it by its owner and attribute.

Table A.172 -- Values contained in the enumeration "ValetTicket.valetStatus"

Enumerated value name	Designation	Definition
dropped	dropped	Custody taken; the vehicle has not yet been parked. †
parked	parked	The vehicle is parked. †

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Enumerated value name	Designation	Definition
requested	requested	The customer has asked for the vehicle. †
retrieving	retrieving	An attendant is fetching the vehicle. †
staged	staged	The vehicle is waiting at the pickup point. †
handedBack	handed back	The vehicle has been handed back. †
closed	closed	The stay is settled (Part 22 §22.1). †
cancelled	cancelled	The ticket was cancelled before custody was taken; this is final (Part 22 §22.1). †

A.3.112 The <> "ValidationInstrument.instrumentStatus"

Values of instrumentStatus on ValidationInstrument.

Defined inline on `ValidationInstrument`; the API names it by its owner and attribute.

Table A.173 -- Values contained in the enumeration "ValidationInstrument.instrumentStatus"

Enumerated value name	Designation	Definition
valid	valid	The instrument may be redeemed. †
redeemed	redeemed	The instrument has been applied to a ticket or session. †
void	void	The instrument has been withdrawn. †
expired	expired	The instrument is past its validTo time (Part 20 §20.2). †

A.3.113 The <> "ValidationIssuance.issuanceStatus"

`void` after `POST …/issuances/{issuanceId}/void` (Part 20 §20.2 rule 5).

Defined inline on `ValidationIssuance`; the API names it by its owner and attribute.

Table A.174 -- Values contained in the enumeration "ValidationIssuance.issuanceStatus"

Enumerated value name	Designation	Definition
issued	issued	The batch is in force. †

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Enumerated value name	Designation	Definition
void	void	The batch has been withdrawn; unredeemed instruments may not be used (Part 20 §20.2). †

A.3.114 The <> "ValidationIssuance.method"

Values of method on ValidationIssuance.

Defined inline on `ValidationIssuance`; the API names it by its owner and attribute.

Table A.175 -- Values contained in the enumeration "ValidationIssuance.method"

Enumerated value name	Designation	Definition
code	code	A printed or displayed alphanumeric code. †
qrCode	qr code	A QR code. †
stamp	stamp	A stamp applied to a ticket, with no individual code. †
digital	digital	A digital token held in an application. †
api	api	Redemptions recorded directly by a merchant system, with no per-instrument code (Part 20 §20.2). †

A.3.115 The <> "ValidationIssuanceRequest.issuanceStatus"

Values of issuanceStatus on ValidationIssuanceRequest.

Defined inline on `ValidationIssuanceRequest`; the API names it by its owner and attribute.

Table A.176 -- Values contained in the enumeration "ValidationIssuanceRequest.issuanceStatus"

Enumerated value name	Designation	Definition
issued	issued	The batch is in force. †
void	void	The batch has been withdrawn; unredeemed instruments may not be used (Part 20 §20.2). †

A.3.116 The <> "ValidationIssuanceRequest.method"

Values of method on ValidationIssuanceRequest.

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Defined inline on `ValidationIssuanceRequest`; the API names it by its owner and attribute.

Table A.177 -- Values contained in the enumeration "ValidationIssuanceRequest.method"

Enumerated value name	Designation	Definition
code	code	A printed or displayed alphanumeric code. †
qrCode	qr code	A QR code. †
stamp	stamp	A stamp applied to a ticket, with no individual code. †
digital	digital	A digital token held in an application. †
api	api	Redemptions recorded directly by a merchant system, with no per-instrument code (Part 20 §20.2). †

A.3.117 The <> "ValidationProgram.billing.billingCycle"

Values of billing.billingCycle on ValidationProgram.

Defined inline on `ValidationProgram`; the API names it by its owner and attribute.

Table A.178 -- Values contained in the enumeration "ValidationProgram.billing.billingCycle"

Enumerated value name	Designation	Definition
monthly	monthly	Billed once a month. †
weekly	weekly	Billed once a week. †
perRedemption	per redemption	Billed for each redemption as it is applied. †

A.3.118 The <> "ValidationProgram.billing.model"

Values of billing.model on ValidationProgram.

Defined inline on `ValidationProgram`; the API names it by its owner and attribute.

Table A.179 -- Values contained in the enumeration "ValidationProgram.billing.model"

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Enumerated value name	Designation	Definition
merchantPays	merchant pays	The merchant pays for each redemption (Part 20 §20.6). †
operatorAbsorbs	operator absorbs	The operator bears the cost and nothing is billable (Part 20 §20.6). †
split	split	The merchant pays a share of the amount reduced (Part 20 §20.6). †

A.3.119 The <> "ValidationProgram.issuanceMethods"

Values of issuanceMethods on ValidationProgram.

Defined inline on `ValidationProgram`; the API names it by its owner and attribute.

Table A.180 -- Values contained in the enumeration "ValidationProgram.issuanceMethods"

Enumerated value name	Designation	Definition
code	code	A printed or displayed alphanumeric code. †
qrCode	qr code	A QR code. †
stamp	stamp	A stamp applied to a ticket, with no individual code. †
digital	digital	A digital token held in an application. †
api	api	Redemptions recorded directly by a merchant system, with no per-instrument code (Part 20 §20.2). †

A.3.120 The <> "ValidationProgram.programStatus"

Values of programStatus on ValidationProgram.

Defined inline on `ValidationProgram`; the API names it by its owner and attribute.

Table A.181 -- Values contained in the enumeration "ValidationProgram.programStatus"

Enumerated value name	Designation	Definition
active	active	The program is in force and its validations may be redeemed. †
suspended	suspended	The program is temporarily stopped and redemptions are refused; it may be resumed (Part 20 §20.1). †
ended	ended	The program has ended; this is final (Part 20 §20.1). †

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A.3.121 The <> "ValidationRedemption.channel"

Values of channel on ValidationRedemption.

Defined inline on `ValidationRedemption`; the API names it by its owner and attribute.

Table A.182 -- Values contained in the enumeration "ValidationRedemption.channel"

Enumerated value name	Designation	Definition
lane	lane	Applied by equipment in a lane. †
payStation	pay station	Applied at a pay station. †
merchantApp	merchant app	Applied in a merchant's application. †
callCenter	call center	Applied by an agent through the applyValidation command (Part 20 §20.3). †
api	api	Recorded directly by a connected system. †

A.3.122 The <> "ValidationRedemption.redemptionStatus"

Values of redemptionStatus on ValidationRedemption.

Defined inline on `ValidationRedemption`; the API names it by its owner and attribute.

Table A.183 -- Values contained in the enumeration "ValidationRedemption.redemptionStatus"

Enumerated value name	Designation	Definition
applied	applied	The validation is applied to the ticket or session. †
reversed	reversed	The validation was reversed (Part 20 §20.4). †

A.3.123 The <> "ValidationStatement.billingModel"

Values of billingModel on ValidationStatement.

Defined inline on `ValidationStatement`; the API names it by its owner and attribute.

Table A.184 -- Values contained in the enumeration "ValidationStatement.billingModel"

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Enumerated value name	Designation	Definition
merchantPays	merchant pays	The merchant pays for each redemption (Part 20 §20.6). †
operatorAbsorbs	operator absorbs	The operator bears the cost and nothing is billable (Part 20 §20.6). †
split	split	The merchant pays a share of the amount reduced (Part 20 §20.6). †

A.3.124 The <> "ValidationStatement.lines.lineKind"

`redemption` (default when absent) — a redemption applied in the period. `credit` — a redemption billed on an earlier closed statement and reversed since; `billable` is negative.

Defined inline on `ValidationStatement`; the API names it by its owner and attribute.

Table A.185 -- Values contained in the enumeration "ValidationStatement.lines.lineKind"

Enumerated value name	Designation	Definition
redemption	redemption	default when absent) — a redemption applied in
credit	credit	a redemption billed on an earlier

A.3.125 The <> "ValidationStatement.statementStatus"

Values of statementStatus on ValidationStatement.

Defined inline on `ValidationStatement`; the API names it by its owner and attribute.

Table A.186 -- Values contained in the enumeration "ValidationStatement.statementStatus"

Enumerated value name	Designation	Definition
preview	preview	A computed preview for a period, with no identifier (Part 20 §20.6). †
closed	closed	An immutable statement for a closed period that the operator invoices from (Part 20 §20.6). †

A.3.126 The <> "Violation.amountHistory.reason"

Values of amountHistory.reason on Violation.

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Defined inline on `Violation`; the API names it by its owner and attribute.

Table A.187 -- Values contained in the enumeration "Violation.amountHistory.reason"

Enumerated value name	Designation	Definition
issued	issued	The amount set when the notice was issued. †
escalation	escalation	A server-applied escalation step increased the amount (Part 19 §19.10). †
appealReduced	appeal reduced	An appeal resolved as reduced lowered the amount. †
cap	cap	The amount asked for at issue exceeded the penalty cap and was clamped to it (Part 19 §19.10). †

A.3.127 The <> "Violation.appeal.openedFrom"

The state the appeal was opened from; `paid` is a pay-then-appeal (Part 19 §19.6). `upheld` and `reduced` return the violation to this state.

Defined inline on `Violation`; the API names it by its owner and attribute.

Table A.188 -- Values contained in the enumeration "Violation.appeal.openedFrom"

Enumerated value name	Designation	Definition
issued	issued	The appeal was opened while the violation was issued and unpaid. †
paid	paid	The appeal was opened after payment, a pay-then-appeal (Part 19 §19.6). †

A.3.128 The <> "Violation.violationStatus"

Current lifecycle state (see schema description for transitions).

Defined inline on `Violation`; the API names it by its owner and attribute.

Table A.189 -- Values contained in the enumeration "Violation.violationStatus"

Enumerated value name	Designation	Definition
detected	detected	The violation has been found and is awaiting review. †
confirmed	confirmed	A reviewer has confirmed the violation and a notice may be issued. †

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Enumerated value name	Designation	Definition
dismissed	dismissed	A reviewer has rejected the violation; this is final. †
issued	issued	A notice has been issued and payment is outstanding. †
paid	paid	The amount has been paid in full. †
appealed	appealed	An appeal is open. †
closed	closed	The violation is finished, after payment or a successful appeal; this is final. †
voided	voided	The violation was withdrawn, for example as issued in error or a duplicate; this is final (Part 19 §19.1). †

A.3.129 The <> "ViolationDetection.mode"

`automated` — a camera/sensor pipeline created the violation with no human in the loop. `guided` — the system surfaced a candidate (typically to a handheld) and an officer confirms on site. `manual` — an officer created the violation directly.

Defined inline on `ViolationDetection`; the API names it by its owner and attribute.

Table A.190 -- Values contained in the enumeration "ViolationDetection.mode"

Enumerated value name	Designation	Definition
automated	automated	a camera/sensor pipeline created the violation with
guided	guided	the system surfaced a candidate
manual	manual	an officer created the violation directly.

A.3.130 The <> "ViolationImport.violationStatus"

The APX state the source's status maps to. `paid` requires `amountPaid` at least `amount`; a part-paid violation is `issued` (Part 19 §19.6a). The source's own wording goes in the decoration's `sourceStatus`.

Defined inline on `ViolationImport`; the API names it by its owner and attribute.

Table A.191 -- Values contained in the enumeration "ViolationImport.violationStatus"

Enumerated value name	Designation	Definition
detected	detected	The source reports the violation as found and awaiting review. †

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Enumerated value name	Designation	Definition
confirmed	confirmed	The source reports the violation as confirmed by a reviewer, with no notice yet. †
dismissed	dismissed	The source reports the violation as rejected by a reviewer; this is final. †
issued	issued	Part 19 §19.6a
paid	paid	The source reports the amount as paid in full (Part 19 §19.6a). †
appealed	appealed	The source reports an open appeal. †
closed	closed	The source reports the violation as finished; this is final. †
voided	voided	The source reports the violation as withdrawn; this is final. †

A.3.131 The <> "ViolationReview.decision"

Values of decision on ViolationReview.

Defined inline on `ViolationReview`; the API names it by its owner and attribute.

Table A.192 -- Values contained in the enumeration "ViolationReview.decision"

Enumerated value name	Designation	Definition
confirm	confirm	The reviewer confirms the detected candidate as a violation. †
dismiss	dismiss	The reviewer dismisses the detected candidate. †

A.4 External code lists for "APX"

These lists extend APX string members without changing the schema, in the same way as the APDS user-defined code lists (APDS Use Case Document, Annex D). Implementers may publish further values (Part 11).

A.4.1 External code list "apx-access-denial-reasons"

Used by: `LaneStatus.monthlyCredential.denialReason`, `CredentialAccessEvent.denialReason`, `AccessEvent.denialReason`. Seeds the APDS proposal AccessDenialReasonEnum (Tier 1). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-access-denial-reasons.json` (Part 11).

Table A.193 -- Entries in the code list "apx-access-denial-reasons"

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definedValue	Description
credentialSuspended	The presented credential matched a CredentialRecord that is suspended.
credentialLost	The presented credential matched a CredentialRecord reported lost.
credentialRevoked	The presented credential matched a CredentialRecord that is revoked.
credentialReplaced	The presented credential matched a CredentialRecord that has been replaced by another.
credentialExpired	The presented credential matched a CredentialRecord that has expired.
unknownCredential	The presented value matched no CredentialRecord; the event carries what the reader read.
passback	Denied by anti-passback state (the credential is already in, or already out); corrected through the Part 17 passback commands.
accountBalance	Denied because of the holder's outstanding balance or account status.
outsidePlace	The credential is valid, but not at this place.
outsideValidity	The credential is valid at this place, but not at this time.
credentialNotYetActive	The presented credential matched a CredentialRecord that is issued but not yet active (its validity has not started, or it awaits activation). Distinct from outsideValidity, which is an active credential presented outside its permitted times.

A.4.2 External code list "apx-alert-types"

Used by: `SubscriptionFilters.alertTypes`. Seeds the APDS proposal AlertTypeEnum (Tier 2). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-alert-types.json` (Part 11).

Table A.194 -- Entries in the code list "apx-alert-types"

definedValue	Description
noCheckOut	Vehicle/right shows no check-out for a completed stay (APDS Use Case C.2.2 transaction exception).
wrongSpace	Vehicle occupies a different space than reserved/checked-in (C.2.2 transaction exception).
occupiedWithoutCheckIn	Space occupied with no matching check-in/session (C.2.2 space status).
iceInEvSpace	Non-EV vehicle occupying an EV charging space (C.2.2 transaction exception).
overstay	Session exceeds its right's validity or maximum stay.
deviceFault	A device reports a fault state.
deviceOffline	A device stopped communicating (lastCommunication exceeded threshold).
laneBlocked	A lane is blocked (vehicle stuck, barrier obstruction).

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definedValue	Description
occupancyThresholdExceeded	Occupancy demand crossed a configured threshold for a place element.
paymentException	A payment failed, was reversed, or requires attention.
intercomRequest	A customer requested assistance at a lane/device intercom.
webhookDeliveryFailed	A subscription exhausted its delivery retry schedule and was marked failed (self-referential alert).
wrongWayTravel	An operator-defined alert that a vehicle travelled against a lane's configured purpose (e.g. entered on an exit lane). APX does not raise it or define when it applies: LPR reads carry only the vehicle's accessEvent, and the lane used does not change it (Part 13 §13.3a(6)).
evBayNotCharging	A vehicle has occupied an EV charging bay without connecting beyond the place's grace — the EV counterpart of iceInEvSpace, derived from the Part 23 §23.3 bay-presence fusion; the camera Observation is the evidence.
evBayBlocked	An EV charging bay is obstructed by something other than a parked vehicle (cones, debris, a straddling vehicle), derived from the Part 23 §23.3 bay-presence fusion; the camera Observation is the evidence.
watchListArrival	A credential on a watch plate list (Part 24) was read at a place where the list has alertOnArrival; relatedEntity is the PlateListEntry, the read is the evidence.
scofflawArrival	A credential on a scofflaw plate list (Part 24) was read at a place where the list has alertOnArrival; relatedEntity is the PlateListEntry.
refusedServiceArrival	A credential on a plate list with refuseService arrived at a lane and service was refused (the refused-service sign shown, the gate not vended); relatedEntity is the PlateListEntry, the displayMessage command's result.display is the proof of display.
consumableLow	A device reports a supply at low or empty (tickets, receipt paper, cash, coins; DeviceStatus.consumables, Part 6 §6.4a); relatedEntity is the SupplementalEquipment.
receiptRequested	A customer asked for a receipt that could not be sent during the interaction; relatedEntity is the PaymentRecord, supportInteraction the call.
refundRequested	A customer asked for a refund that needs review or approval; relatedEntity is the PaymentRecord, supportInteraction the call.
citationInquiry	A customer asked about a citation or notice the agent could not resolve; relatedEntity is the Violation when known.
damageReported	A vehicle was reported damaged, broken into or towed at the place; relatedEntity is the Session when known, supportInteraction the call.
customerCallbackRequested	A customer asked to be called back by the site or operator; supportInteraction is the call, which holds the contact details under its own scope.

A.4.3 External code list "apx-area-types"

Used by: Not referenced by a schema description. Seeds the APDS proposal AreaTypeEnum (Tier 2). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-area-types.json` (Part 11).

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Table A.195 -- Entries in the code list "apx-area-types"

definedValue	Description
lane	Vehicle area: an entry or exit lane.
entryPlaza	Vehicle area: the approach to the entry lanes.
exitPlaza	Vehicle area: the approach to the exit lanes.
ramp	Vehicle area: a ramp between levels.
parkingLevel	Vehicle area: a drive aisle or parking area on a level.
roof	Vehicle area: an open roof level.
evChargingArea	Vehicle area: the EV charging bays.
loadingDock	Vehicle area: a loading or service area.
perimeter	Vehicle area: outside the facility, its fence line or the street.
elevator	Pedestrian area: inside an elevator car.
elevatorLobby	Pedestrian area: an elevator lobby.
lobby	Pedestrian area: the main or pedestrian lobby.
stairwell	Pedestrian area: a stairwell.
pedestrianEntrance	Pedestrian area: a street door or access door.
paymentArea	Pedestrian area: where the pay-on-foot stations are.
cashierBooth	Staff area: a cashier booth.
office	Staff area: an office or attendant room.
equipmentRoom	Staff area: a server or electrical room.
other	An area none of the other codes fit. A code, not free text.

A.4.4 External code list "apx-command-types"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-command-types.json` (Part 11).

Table A.196 -- Entries in the code list "apx-command-types"

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definedValue	Description
vendGate	Open (vend) a gate/barrier at the target lane once for one vehicle.
holdGateOpen	Hold the gate/barrier at the target lane open until released by a subsequent setDeviceState or closeLane command.
closeLane	Close the target lane to further entries/exits.
lostTicket	Issue a lost-ticket transaction at the target lane using the lost-ticket method given in parameters.
pushRate	Apply the RateTable referenced in parameters to the target lane or place.
applyValidation	Apply a validation from the given validation provider to the ticket/session referenced in parameters.
setDeviceState	Request the target device transition to the state given in parameters.
displayMessage	Display the message given in parameters on the target device (VMS, lane display).
restartDevice	Restart (reboot) the target device.
resetPassback	Reset the anti-passback state of the credential referenced in parameters to normal.
forceIn	Force the credential referenced in parameters to recorded presence 'inside' (passback correction).
forceOut	Force the credential referenced in parameters to recorded presence 'outside' (passback correction).
courtesyExit	Vend the gate at the target lane as a tracked courtesy exit for the account/holder referenced in parameters — counted against courtesy policy.
pushNegotiatedRate	Apply a negotiated rate to the CURRENT ticket at the target lane only, never to the lane's deck: a negotiable RateTable in parameters.rateTable, or (negotiatedAmounts feature) any amount in parameters.amount with a reason. The command's agent is who set it.
matchTicket	Bind the current transaction at the target lane to the open Session referenced in parameters (ticket matching), pricing the exit from that session's true entry time; the command's agent is who made the match.
startCharging	Remote-start charging on the target ElectricChargingEquipment for a plugged-in vehicle whose own authorization failed; parameters connectorIndex and chargingSession (Reference), or an authorization object for the server to open one (Part 23 §23.9).
stopCharging	Remote-stop charging on the target ElectricChargingEquipment; parameters connectorIndex and chargingSession; the bridge reports chargingEnded with stopReason remote (Part 23 §23.9).
unlockConnector	Release a cable the target ElectricChargingEquipment will not let go of; parameter connectorIndex; physicallyConfirmed only when the charger reported the connector unlocked or the bay camera saw the cable move (Part 23 §23.9).
ejectTicket	Return the ticket or card held by the target device (a ticket stuck on cancel, a card the reader kept) to the customer (Part 6 §6.1).
cancelTransaction	Abandon the transaction in progress at the target device and return it to idle, releasing any media it holds (Part 6 §6.1).
reprintReceipt	Print the receipt of the last, or the referenced, payment again at the target device; parameter payment (Part 6 §6.1, Part 13 §13.1b).

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A.4.5 External code list "apx-comms-point-types"

Used by: Not referenced by a schema description. Seeds the APDS proposal CommsPointTypeEnum (Tier 3). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-comms-point-types.json` (Part 11).

Table A.197 -- Entries in the code list "apx-comms-point-types"

definedValue	Description
intercom	A help button with two-way audio and/or video on a lane, a door or a pay station; the call platform knows it by its device id or caller id.
analogDialer	A help button on a phone line; known by the line's caller id.
postedNumber	A phone number on a sign that the parker dials from their own phone; known by the dialled number, and resolves to the place only unless the sign is for one lane.
kiosk	A help function on a kiosk or pay station screen.
qrCode	A printed code that opens a help page or chat for the place or lane it was printed for.
app	A help function in the operator's or vendor's app.
other	A way of reaching help none of the other codes fit. A code, not free text.

A.4.6 External code list "apx-conformance-classes"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-conformance-classes.json` (Part 11).

Table A.198 -- Entries in the code list "apx-conformance-classes"

definedValue	Description
apx-data	Implements APDS 4.1 native data routes with the APX data profile (Full/Change, tombstones, cursor change feed).
apx-events	Implements the APX delivery fabric over APDS /webhooks with HMAC signing and the normative retry schedule.
apx-events-sse	Implements the SSE event stream with Last-Event-ID resume.
apx-control	Implements the command plane, lane inquiry, validations, and device status.
apx-alerts	Implements the alert resource and lifecycle.
apx-discovery	Implements credential-scoped capability discovery.
apx-accounts	Implements account lookup, take-payment, and accounting write-back.
apx-payment-history	Implements payment history lookup by ticket.

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definedValue	Description
apx-lpr	Implements LPR plate/ticket cross-lookup over APDS Observations.
apx-reservations	Implements the reservations profile over APDS quotes and assigned rights.
apx-permits	Implements the permits profile over RightSpecification, RightPool, and Credential.
apx-tolling	Implements TollTransaction and its dispute lifecycle.
apx-mtls	Optional hardening: mutual TLS on all APX endpoints.
apx-resolution	Implements Customer Service & Resolution: resolution contexts, policy-decided allowed actions, passback status, plate candidates, and support-interaction history.
apx-violations	Implements enforcement: the Violation lifecycle (automated and guided detection, review, issuance, settlement, appeals, void) and the eligibility check.
apx-validations	Implements validation program management: merchant enrolment, instrument issuance, the redemption ledger, and closable billing statements; the Part 6 provider list derives from active programs.
apx-credentials	Implements credential lifecycle: issue, activate, suspend, resume, report lost, revoke, replace, access-event history; active records materialized as APDS CredentialAssigned on the holder's AssignedRights.
apx-valet	Implements valet custody: drop-off with condition evidence, parked position and keys, the retrieval queue with ETA, staging, verified handback, and the customer request scope.
apx-charging	Implements the parking-side view of EV charging: live charging-point status with bay-presence fusion, the ChargingSession referencing the APDS Session, idle after complete, three settlement modes, and the customer status scope. Requires the base classes; the charger-control commands (Part 23 §23.9) require apx-control.
apx-plate-lists	Implements plate lists: watch, scofflaw, allow, and enforcement-vehicle lists with per-place flags, their entries, the change feed on both, and the apx.platelists.changed.v1 topic. Requires the base classes.
apx-ui-launch	Implements UI launch (Part 25): the handshake launch with single-use urls, the signed-token launch, the UiLaunch record and lifecycle, the loopback rule (native resource or UiActionRecord carrying the correlationId), discovery uiSurfaces, and the apx.ui.launch.changed.v1 and apx.ui.action.recorded.v1 topics. Requires the base classes and apx-discovery.
apx-site-config	Implements site configuration (Part 26): the equipment-detail, camera, external-ids and place-operations decorations, the equipment and comms-point routes with their change feeds, identifier resolution, camera views by short-lived link, and the apx.equipment.changed.v1 and apx.commspoints.changed.v1 topics. Requires the base classes.

A.4.7 External code list "apx-device-states"

Used by: Not referenced by a schema description. Seeds the APDS proposal EquipmentStatusEnum (Tier 1). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-device-states.json` (Part 11).

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Table A.199 -- Entries in the code list "apx-device-states"

definedValue	Description
available	Device is operational and idle/ready (in the style of APDS RefillPointStatusEnum).
occupied	Device is operational and currently serving a vehicle/transaction.
inoperative	Device is not operating (planned: maintenance window, closed hours).
outOfService	Device removed from service by operator action.
fault	Device reports an error condition requiring attention.
unknown	Device state cannot be determined (e.g. communication lost).

A.4.8 External code list "apx-display-message-kinds"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-display-message-kinds.json` (Part 11).

Table A.200 -- Entries in the code list "apx-display-message-kinds"

definedValue	Description
transientEntrance	Entrance sign: welcome for a vehicle with no standing right, which pays for its stay (Part 26 §26.9).
monthlyEntrance	Entrance sign: welcome for a vehicle a permit or monthly right covers.
entranceRefused	Entrance sign: service refused, the vend withheld (a plate list with refuseService, Part 24 §24.4). The record is the proof of display.
transientExitPaid	Exit sign: the stay is paid; thank you.
transientExitUnpaid	Exit sign: no payment found for the stay. Also shown for an overstay or a late start until kinds for those are added.
monthlyExit	Exit sign: goodbye for a vehicle a permit or monthly right covers.
monthlyExitBalanceDue	Exit sign: a permit or monthly holder with a balance due on the account.
idle	Either sign: the resting message shown when no vehicle is being served.
fallback	Either sign: the message shown when the system that drives the sign cannot decide which message applies (no read, no rights data).

A.4.9 External code list "apx-equipment-roles"

Used by: Not referenced by a schema description. Seeds the APDS proposal EquipmentRoleEnum (Tier 2). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-equipment-roles.json` (Part 11).

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Table A.201 -- Entries in the code list "apx-equipment-roles"

definedValue	Description
gate	Vehicle barrier: a barrier arm.
overheadDoor	Vehicle barrier: a rolling or overhead door.
bollard	Vehicle barrier: a retractable bollard.
trafficSpikes	Vehicle barrier: one-way tyre spikes.
accessDoor	Pedestrian barrier: a door a parker authenticates at to enter the facility, for example after hours to reach their car. Place-level equipment with no lane.
turnstile	Pedestrian barrier: a turnstile at a pedestrian entrance.
ticketDispenser	Ticketing: the entry station that issues a ticket or token.
exitVerifier	Ticketing: the exit station that reads the ticket or credential and opens the gate.
exitPayStation	Payment: a pay-in-lane station at the exit (APDS type paymentMachine).
payOnFoot	Payment: a central pay station away from the lanes (APDS type paymentMachine).
cashierBooth	Payment: a staffed booth.
validationTerminal	Payment: a merchant validator.
paymentTerminal	Payment: a standalone card or tap terminal.
cardReader	Credential reader: an access or proximity card reader.
tagReader	Credential reader: an RFID, transponder or AVI tag reader.
barcodeReader	Credential reader: a QR or barcode reader for reservations and mobile passes.
loopDetector	Vehicle detection: an in-ground loop.
presenceSensor	Vehicle detection: a non-loop vehicle sensor (radar, ultrasonic, magnetic).
camera	A camera anywhere on the site; what it looks at, how it is mounted and how it is viewed are in the apds-ext:apx:camera@1.0 decoration (Part 26 §26.3).
intercom	Communications: a help button with two-way audio and/or video.
analogDialer	Communications: a help button on a phone line.
emergencyPhone	Communications: a dedicated emergency call box.
laneDisplay	Signs and displays: a message screen at the lane.
laneSignal	Signs and displays: an open/closed light or traffic light.

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definedValue	Description
countSign	Signs and displays: a spaces-available sign.
laneController	On-site infrastructure: a lane computer or controller.
facilityServer	On-site infrastructure: the on-site PARCS server.
videoRecorder	On-site infrastructure: a DVR or NVR; a camera's recorder points here.
videoGateway	On-site infrastructure: the gateway that issues short-lived camera links (Part 26 §26.4).
other	Hardware none of the other codes fit. A code, not free text; propose a new code rather than describing the item in prose.

A.4.10 External code list "apx-escalation-roles"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-escalation-roles.json` (Part 11).

Table A.202 -- Entries in the code list "apx-escalation-roles"

definedValue	Description
siteManager	The manager responsible for the place.
attendant	Staff on site at the time.
security	The place's security desk or patrol.
operatorOnCall	The operator's on-call duty manager or supervisor.
maintenance	The maintenance or service provider for the equipment.
other	A role none of the other codes fit. A code, not free text.

A.4.11 External code list "apx-features"

Used by: `DiscoveryDocument.features`, `ApxConfiguration.features`. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-features.json` (Part 11).

Table A.203 -- Entries in the code list "apx-features"

definedValue	Description
negotiatedRates	apx-control optional feature: agents may offer negotiated rate tables with pushNegotiatedRate (Part 6 §6.6; Annex A APX-CTL-09 and 10).

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definedValue	Description
ticketMatching	apx-control optional feature: advisory match candidates at the lane and the matchTicket command (Part 6 §6.7; Annex A APX-CTL-11 and 12).
negotiatedAmounts	apx-control optional feature, offered only with negotiatedRates: pushNegotiatedRate may state any amount for the current ticket, with agent and reason required (Part 6 §6.6; Annex A APX-CTL-16).
cameraViews	apx-site-config optional feature: POST /v1/cameras/{id}/views issues short-lived live and snapshot links bound to the agent (Part 26 §26.4).
cameraPlayback	apx-site-config optional feature, offered only with cameraViews: a view of kind playback over a from/to range within the camera's retention (Part 26 §26.4).

A.4.12 External code list "apx-interaction-outcomes"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-interaction-outcomes.json` (Part 11).

Table A.204 -- Entries in the code list "apx-interaction-outcomes"

definedValue	Description
resolved	The issue was resolved during the interaction, by an action or an answer.
vended	The gate or door was opened for the customer as the resolution.
transferred	The interaction was handed to another agent or system.
escalated	A manager, attendant or other role took over or was asked to act (see escalationContacts and ApprovalRequest).
noActionNeeded	The customer needed no assistance by the time the agent answered.
abandoned	The customer left or the contact ended before a resolution.
callbackScheduled	The customer will be called back; raises customerCallbackRequested when the site must do it.

A.4.13 External code list "apx-issue-types"

Used by: Not referenced by a schema description. Seeds the APDS proposal SupportIssueTypeEnum (Tier 3). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-issue-types.json` (Part 11).

Table A.205 -- Entries in the code list "apx-issue-types"

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definedValue	Description
gateVendFailed	Customer paid or is entitled to exit but the gate did not open.
paymentDeclined	The customer's payment was declined or failed at the lane/pay station.
validationMissing	An expected validation/discount is not applied to the session.
rateDispute	The amount due does not match the expected rate calculation.
lostTicket	The customer cannot present the entry ticket.
passbackViolation	A credential was denied because of anti-passback state.
accountBalanceDenied	A monthly/account holder was denied because of an outstanding balance or account status.
reservationMismatch	A prepaid reservation exists but is not linked to the current session (wrong or unread plate, unscanned code).
plateUnresolved	The session has no plate or a low-confidence/incorrect plate association.
equipmentFault	A lane device (payment terminal, ticket reader, gate, intercom, camera) is offline or faulted.
unknown	The issue could not be classified from available signals.
noResponse	The help button was pressed or the number dialled, but nobody answered the agent.
callDropped	The contact ended before the issue was stated or resolved.
audioFault	The agent cannot hear the parker or the parker cannot hear the agent; a fault in the lane's call equipment.
generalInquiry	A question about rates, hours, directions or the facility, with no transaction problem.
wrongLocation	The parker is at the wrong garage, dialled the wrong number, or the vehicle does not fit.
facilityFull	No space is available for the arriving vehicle.
ticketUnreadable	The entry ticket is present but the device cannot read it (damaged, demagnetized, faded).
ticketNotAccepted	The device refuses or will not return a readable ticket, including a ticket stuck on cancel.
noTicketIssued	The entry station issued no ticket, typically because it is out of tickets (see DeviceStatus.consumables).
paidCannotExit	The ticket is paid, but the exit does not open; a payment-status lookup is the first step.
cardNotReading	The card reader does not read the payment card at all, as distinct from a decline.
paymentMethodUnavailable	The parker cannot pay with what they have (card-only device, no money, needs change).
mediaJam	A ticket, bill or card is jammed or stuck in the device.
gateStuckOpen	The barrier is stuck open and vehicles pass without a transaction.
credentialForgotten	A holder arrived without their card, transponder or fob.
credentialDisabled	The holder's credential is present but disabled or deactivated.

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definedValue	Description
gracePeriod	A dispute about the grace period, for example a fee charged just after it ended.
validationExpired	A validation was applied but has expired, so an amount is due.
authorizedVisitor	A hotel guest, vendor, employee, police officer or security staff needing entry under the place's guest arrangements (resolve with guestReference).
receiptRequest	The customer needs a receipt sent or printed again (Part 13 receipt re-send).
refundRequest	The customer asks for a refund or credit (reason from apx-refund-reasons).
vehicleIncident	A vehicle was damaged, broken into or towed at the place; raises a damageReported alert.
equipmentTest	A technician testing the equipment, not a customer; excluded from service figures.

A.4.14 External code list "apx-payment-line-codes"

Used by: `PaymentDetail.lines`. Seeds the APDS proposal PaymentTypeEnum (Tier 2). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-payment-line-codes.json` (Part 11).

Table A.206 -- Entries in the code list "apx-payment-line-codes"

definedValue	Description
base	The parking charge before fees, taxes, and discounts; when a validation covers part of it, the part paid in money (the validation line carries the rest). A paymentType payment line (Part 13 §13.6a).
convenienceFee	A per-transaction fee the payment channel adds (an app, a text-to-pay vendor). A paymentType payment line.
serviceFee	A service fee the operator adds (valet, reservation). A paymentType payment line.
tax	Tax on the charge, when itemized. A paymentType payment line.
discount	A reduction other than a validation (a promotion, a negotiated rate): a paymentType payment line with a negative value.
validation	A validation applied to the ticket (Part 20): a paymentType validation line whose value is the amount the validation offset, outside the money collected (Part 13 §13.6a).
idle	An EV charging idle charge (Part 23 §23.5). A paymentType payment line.
energy	An EV charging energy charge (Part 23 §23.5). A paymentType payment line.

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A.4.15 External code list "apx-plate-list-categories"

Used by: `PlateList.category`. Seeds the APDS proposal PlateListCategoryEnum (Tier 2). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-plate-list-categories.json` (Part 11).

Table A.207 -- Entries in the code list "apx-plate-list-categories"

definedValue	Description
allow	Credentials entitled at the listed places without a right of their own (service vehicles, exempt plates); a match counts as compliant where enforced.
watch	Credentials whose arrival the operator wants to know about; a match raises watchListArrival where alertOnArrival.
scofflaw	Credentials with unpaid notices or a standing refusal from the list owner; a match raises scofflawArrival and, where refuseService, refuses service at the lane.
enforcementVehicle	The list owner's own enforcement and service vehicles, whose visits are recorded but never enforced or screened.

A.4.16 External code list "apx-read-review-reasons"

Used by: `LprReadDetail.review.reasons`. Seeds the APDS proposal ReadReviewReasonEnum (Tier 2). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-read-review-reasons.json` (Part 11).

Table A.208 -- Entries in the code list "apx-read-review-reasons"

definedValue	Description
lowConfidence	The read's overall or plate confidence is below the place's review threshold.
noConfidence	The engine reported no confidence for the read.
jurisdictionRequiresReview	The jurisdiction requires a human to confirm a plate before enforcement.
ambiguousCharacters	The engine's alternate reads differ only in characters it commonly confuses (0/O, 1/I, 5/S, 8/B).
enforcementHandoff	The read is about to be handed to an enforcement system that requires reviewed evidence.
conflictingReads	Reads of the same passage (one captureGroup) disagree on the plate, country, or state/province.

A.4.17 External code list "apx-refund-reasons"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-refund-reasons.json` (Part 11).

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Table A.209 -- Entries in the code list "apx-refund-reasons"

definedValue	Description
changeNotDispensed	The device kept money it should have returned.
doubleCharge	The customer was charged twice for one stay.
overcharge	The amount taken exceeded what the rate or validation said was due.
serviceFailure	The customer paid for something the facility did not deliver (a reservation not honoured, a stay cut short by a fault).
courtesy	A goodwill refund with no fault found.

A.4.18 External code list "apx-session-end-reasons"

Used by: `SessionClosure.endReason`. Seeds the APDS proposal SessionEndReasonEnum (Tier 1). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-session-end-reasons.json` (Part 11).

Table A.210 -- Entries in the code list "apx-session-end-reasons"

definedValue	Description
exitRead	An exit read of the vehicle closed the Session.
reentry	The same plate entered again; the earlier Session was closed at the new entry.
stale	Closed by rule after no observation for the place's maximum stay; closure.rule names the rule and endInferred is true.
parentExit	An area Session closed because its parent visit ended.
areaLeft	An area Session closed because the vehicle was seen leaving the area.
inventorySweep	A sweep of the facility found the vehicle gone.
valetHandback	The valet handed the vehicle back (Part 22).
exitOnly	An exit with no observed entry; actualStart is synthetic and closure.startObserved is false.
operator	A person closed the Session.
review	A reviewer paired the exit read that closed the Session.

A.4.19 External code list "apx-stay-compliance-flags"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-stay-compliance-flags.json` (Part 11).

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Table A.211 -- Entries in the code list "apx-stay-compliance-flags"

definedValue	Description
paidAfterExit	A payment for the stay arrived after the vehicle left.
matchedFuzzy	A right or payment was matched to the stay on an inexact plate match (Part 5 §5.8 rule 5).
endInferred	The stay's end was set by a rule, not observed (Part 5 §5.8 rule 3).
onList	The plate was on a plate list at the place during the stay (Part 24).
paid	A payment covered part of the stay; set beside a status such as lateStart whose coverage began too late.

A.4.20 External code list "apx-stay-compliance-statuses"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-stay-compliance-statuses.json` (Part 11).

Table A.212 -- Entries in the code list "apx-stay-compliance-statuses"

definedValue	Description
unscored	Family: withheld. No evaluation has run for the stay yet.
stale	Family: withheld. An open stay with no further read, closed with an inferred end; left out of compliance rates.
fromList	Family: compliant. Exempt by a plate list entry (Part 24) that covered the entry time.
permit	Family: compliant. Covered by rights, and a permit contributed to the coverage.
reservation	Family: compliant. Covered by rights, and a reservation contributed to the coverage (no permit did).
paid	Family: compliant. Covered by payments only.
grace	Family: compliant. Nothing paid, and the whole stay fell within the grace (Part 19 §19.10 rule 7).
valet	Family: compliant. The stay was in a valet area that is not enforced.
earlyArrival	Family: violation. Arrived before a reservation's start, beyond its early grace, and the time before the start was not otherwise covered.
reservationOverstay	Family: violation. Stayed past a reservation's end by more than the grace, and the time after it was not otherwise covered.
unpaid	Family: violation. Closed, nothing paid, and the stay was longer than the grace.
lateStart	Family: violation. Coverage began more than the entry grace after entry, or, while the stay is open, has not begun at all.
overstay	Family: violation. Coverage began in time, but the stay outlasted it by more than the exit grace.

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definedValue	Description
policyOverstay	Family: violation. Longer than the place's maximum stay. Never overrides fromList.
reviewRequired	Family: withheld. Would be a violation, but a person must look first; pendingStatus names which (Part 5 §5.9 rule 2).
paidLate	Family: other. Paid after exit, settling the amount: paid, but not compliant.

A.4.21 External code list "apx-toll-dispute-reasons"

Used by: `TollTransaction.dispute.reason`, `TollDisputeOpen.reason`. Seeds the APDS proposal TollDisputeReasonEnum (Tier 2). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-toll-dispute-reasons.json` (Part 11).

Table A.213 -- Entries in the code list "apx-toll-dispute-reasons"

definedValue	Description
wrongVehicle	The charged vehicle is not the disputing party's (misread or cloned plate).
duplicateCharge	The same passage was charged more than once.
wrongClass	The vehicle class used for pricing is wrong.
notLiable	The party is not liable for the passage (exempt vehicle, sold or stolen vehicle, rental transfer).
other	Any other reason; the dispute `detail` explains it.

A.4.22 External code list "apx-toll-dispute-resolutions"

Used by: `TollTransaction.dispute.resolution`, `TollDisputeResolution.resolution`. Seeds the APDS proposal TollDisputeResolutionEnum (Tier 2). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-toll-dispute-resolutions.json` (Part 11).

Table A.214 -- Entries in the code list "apx-toll-dispute-resolutions"

definedValue	Description
upheld	The charge stands as priced.
refunded	The money is returned; the transaction is settled by the refund (Part 13 §13.1a).
adjusted	A new amount is owed; the resolution carries `adjustedPricing` and the original is kept in `dispute.originalPricing`.
withdrawn	The disputing party abandoned the dispute; the charge stands.

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A.4.23 External code list "apx-topics"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-topics.json` (Part 11).

Table A.215 -- Entries in the code list "apx-topics"

definedValue	Description
apx.control.command.status.v1	A command transitioned lifecycle state (data: Command).
apx.control.device.state.v1	A device changed state (data: DeviceStatus).
apx.alert.raised.v1	An alert was raised (data: Alert).
apx.alert.status.v1	An alert changed lifecycle state (data: Alert).
apx.reservation.noshow.v1	A reservation reached its no-show condition (data: ReservationSummary; subject: the AssignedRight).
apx.tolling.transaction.created.v1	A toll transaction was created (data: TollTransaction).
apx.tolling.transaction.status.v1	A toll transaction changed status, including disputes (data: TollTransaction).
apx.subscription.failed.v1	A subscription exhausted its retry schedule and was marked failed (data: SubscriptionFailure; subject: the subscription, className ApxEventSubscription).
apx.data.occupancy.v1	Occupancy changed materially for a place element — threshold crossing or publisher-defined delta (data: OccupancySnapshot).
apx.accounts.payment.recorded.v1	A payment was recorded — taken via /v1/payments or ingested from a lane device (data: PaymentRecord). Fills the financial-analytics gap: APDS EventTypeEnum has no payment events.
apx.data.observation.created.v1	A new Observation was ingested — LPR read, RFID hit, sensor event (data: the APDS ObservationElement, one event per element; subject references it; elementIds carries the lane or place). Fills the sensor-analytics gap: APDS EventTypeEnum has no Observation events.
apx.resolution.context.created.v1	A resolution context was created or materially recomputed (data: ResolutionContext) — enables event-driven preloading so agent consoles pop before the call is answered.
apx.support.interaction.recorded.v1	A support interaction was recorded or updated (data: SupportInteraction).
apx.violations.detected.v1	A violation candidate was recorded from automated, guided, or manual detection (data: Violation) — drives guided-enforcement handheld queues.
apx.violations.issued.v1	A notice, warning, or citation was issued on a violation (data: Violation).
apx.violations.status.v1	A violation changed lifecycle state — review, payment, appeal open/resolve, void (data: Violation).
apx.validations.redeemed.v1	A validation was applied to a ticket/session from any channel, or reversed (data: ValidationRedemption).
apx.validations.program.status.v1	A validation program was enrolled, suspended, resumed, or ended (data: ValidationProgram).
apx.validations.statement.closed.v1	A merchant billing period was closed into an immutable statement (data: ValidationStatement).

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definedValue	Description
apx.credentials.status.v1	A credential was issued, activated, suspended, resumed, reported lost, revoked, expired, or replaced (data: CredentialRecord).
apx.credentials.access.v1	A credential was presented at a lane and access was granted or denied (data: AccessEvent; a CredentialAccessEvent whenever a record matched, Part 21 §21.4). Fills the gap: APDS EventTypeEnum has no access events.
apx.valet.ticket.status.v1	A valet ticket changed lifecycle state — dropped, parked, retrieving, staged, handed back, closed, cancelled (data: ValetTicket).
apx.valet.retrieval.requested.v1	A customer or attendant requested a valeted vehicle; carries channel, ETA, and promised time (data: ValetTicket) — drives runner boards and customer notifications.
apx.permits.pool.availability.v1	A permit pool's issued count or capacity changed (data: PoolAvailability; subject: the RightSpecification). Optional for apx-permits (Part 14 §14.2c).
apx.data.observation.updated.v1	An ingested Observation was replaced through native PUT /observations/{id} — e.g. the LPR system revised accessEvent (data: the APDS ObservationElement as it now stands; subject and elementIds place binding as for apx.data.observation.created.v1; consumers keep the highest version). Required for apx-lpr (Part 13 §13.4).
apx.charging.session.status.v1	A ChargingSession transitioned lifecycle state — authorized, pluggedIn, charging, suspended, complete, idle, unplugged, closed, cancelled, faulted (data: ChargingSession; place-bound on ChargingSession.place). Required for apx-charging (Part 23 §23.12).
apx.charging.idle.started.v1	A ChargingSession entered idle after its idlePolicy grace elapsed with the cable still connected; carries the idle policy and the minimized vehicle summary (data: ChargingSession) — drives the customer's move-your-car notification and the Part 19 enforcement hook. Required for apx-charging (Part 23 §23.2, §23.10).
apx.charging.point.status.v1	A charging point's availability or bay presence changed (data: ChargingPointStatus; place-bound on ChargingPointStatus.place). Required for apx-charging (Part 23 §23.1, §23.3).
apx.platelists.changed.v1	A plate list or one of its entries was created, changed, or removed (data: PlateList with entryCount; subject: the list). Consumers resync entries through the Part 5 feed on /v1/plate-lists/{id}/entries. Required for apx-plate-lists (Part 24 §24.3).
apx.ui.launch.changed.v1	A UI launch was issued, opened, closed, or expired (data: UiLaunch without url; subject: the launch; place-bound on UiLaunch.place). Required for apx-ui-launch (Part 25 §25.3).
apx.ui.action.recorded.v1	An action done in a launched vendor screen was recorded as a UiActionRecord because no native resource could express it (data: UiActionRecord; subject: the launch; carries the launch's correlationId). Required for apx-ui-launch (Part 25 §25.4).
apx.equipment.changed.v1	A piece of equipment or its APX decorations (equipment-detail, camera, external-ids) was added, changed, or removed (data: EquipmentRecord; subject: the SupplementalEquipment; place-bound). Lets other systems stay in sync without re-reading the place. Required for apx-site-config (Part 26 §26.7).
apx.commspoints.changed.v1	A comms point was added, changed, or removed (data: CommsPoint; subject: the comms point; place-bound). Required for apx-site-config (Part 26 §26.7).
apx.approvals.changed.v1	An approval request was created, decided, or expired (data: ApprovalRequest; subject: the request; place-bound). An approver's system subscribes to it for its queue. Required for apx-resolution when approvals are offered (Part 17 §17.8).
apx.displays.shown.v1	A sign showed a message and the system that drove it recorded it (data: DisplayRecord; subject: the display; place-bound on its place). Carries no message text and no plate. Required for apx-site-config (Part 26 §26.9).

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A.4.24 External code list "apx-ui-surfaces"

Used by: Not referenced by a schema description. Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-ui-surfaces.json` (Part 11).

Table A.216 -- Entries in the code list "apx-ui-surfaces"

definedValue	Description
lane.console	The vendor's lane console: the transaction in the machine, the devices, and the actions an agent takes at a lane. Subject: VehicularAccess.
session.detail	One parking session, its reads, payments and validations. Subject: Session.
reservation.detail	One reservation, with redeem, amend and cancel. Subject: AssignedRight (the reservation).
reservation.search	Find a reservation by code, plate, name or time. General surface, no subject.
lpr.read.review	Review and correct one plate read. Subject: Observation.
violation.detail	One violation, its evidence and status. Subject: Violation.
violation.appeal	Open or decide an appeal on a violation. Subject: Violation.
validation.redeem	Apply a validation to the current session or ticket. Subject: Session.
credential.detail	One credential and its holder, with suspend, resume and replace. Subject: CredentialRecord.
toll.transaction	One toll transaction and its payment. Subject: TollTransaction.
toll.dispute	Open or resolve a dispute on a toll transaction. Subject: TollTransaction.
valet.ticket	One valet ticket: position, keys, retrieval and handback. Subject: ValetTicket.
charging.session	One charging session and its charger. Subject: ChargingSession.
place.console	The vendor's console for one place: lanes, devices, counts. Subject: HierarchyElement (the place).
module.home	The vendor's home screen for a module, with no subject. General surface.

A.4.25 External code list "apx-violation-types"

Used by: `Violation.violationType`, `EligibilityResult.suggestedViolationType`, `ViolationSource.violationCode`, `ViolationImport.violationType`. Seeds the APDS proposal ViolationTypeEnum (Tier 1). Published as an APDS `UserDefinedCodeList` at `spec/registries/apx-violation-types.json` (Part 11).

Table A.217 -- Entries in the code list "apx-violation-types"

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definedValue	Description
noValidRight	No AssignedRight or paid Session covers the vehicle at the place at the observed time.
expiredRight	The nearest AssignedRight or Session covering the vehicle has ended (overstay past the paid/permitted time).
notYetValidRight	The vehicle's right exists but its validity has not started (early arrival on a reservation or future-dated permit).
wrongPlace	The vehicle holds a right for a different HierarchyElement (wrong zone, level, lot, or space).
maximumStayExceeded	The stay exceeds the place's maximum-stay operating restriction regardless of payment.
restrictedSpace	The vehicle occupies a space it is not eligible for (accessible, EV charging, loading, reserved, permit-only).
permitMisuse	A permit or credential is presented by a vehicle it was not issued to, or is suspended, cloned, or otherwise invalid.
noParkingPeriod	The vehicle is parked during a period when the place is closed to parking (street cleaning, event closure, tow-away window).
obstruction	The vehicle obstructs a lane, access, exit, hydrant, or another space.
other	A violation class not otherwise listed; the notice text carries the specifics.
chargingBayIdle	A vehicle remained connected in an EV charging bay after charging completed beyond the posted idle limit (Part 23 §23.10); evidenced by the ChargingSession and the bay Observation.

Annex B (informative) APDS 4.1 classes used by APX

APX carries 204 classes, datatypes and enumerations from the APDS 4.1 API document unchanged in meaning. Their definitions are in the APDS 4.1 Data Dictionary and are not repeated here. Where the APX overlay changes the published schema, the change is named. Additions are optional extension points (Part 10). Corrections work around the errata in 06, Part A.

APDS name	APDS domain	How APX uses it
AccessAndEgress	PkCommon	Used as published
AccessAndEgressPeriods	PkCommon	Used as published
AccessAndEgressTypeEnum	PkCommon	Used as published
AccessAndEgressValidity	PkCommon	Used as published
AccessibilityTypeEnum	Place	Used as published
Address	Place	Used as published
AddressLine	Place	Used as published
AddressLineTypeEnum	Place	Used as published

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APDS name	APDS domain	How APX uses it
AmountInCurrency	Rates	Used as published
AreaDimension	Place	Used as published
AssignRightTime	Rates	Used as published
AssignedRight	Right	APX overlay adds `extensions`
AssignedRightHolder	Right	Used as published
AssignedRightList	Right	Used as published
AssignedRightTimeRelative	Rates	Used as published
AuthenticationAndIdentificationEnum	EnergyInfrastructure	Used as published
BrandsAcceptedCodeList	Rates	Used as published
BrandsAcceptedText	Rates	Used as published
CalculationTypeEnum	Occupancy	Used as published
Campus	Place	Used as published
CharacterConfidence	Observation	Used as published
ComparisonOperatorEnum	PkCommon	Used as published
Confidence	Observation	Used as published
ConnectorTypeEnum	EnergyInfrastructure	Used as published
Contact	PkCommon	Used as published
ContactByReference	PkCommon	Used as published
ContactDetails	PkCommon	Used as published
ContactPoint	PkCommon	APX overlay adds `extensions`
ContactPointTypeEnum	PkCommon	Used as published
ContactTypeEnum	PkCommon	Used as published
CountryCode	PkCommon	Used as published
CoveredTypeEnum	Place	Used as published
Credential	Right	Used as published
CredentialAssigned	Right	Used as published
CredentialAssignedTypeEnum	Right	Used as published

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APDS name	APDS domain	How APX uses it
CredentialTypeEnum	Right	Used as published
CurrencyCode	PkCommon	Used as published
CustomerCredential	Right	Used as published
DateTime	PkCommon	Used as published
DayEnum	PkCommon	Used as published
DayWeekMonth	PkCommon	Used as published
DeletedReference	PkCommon	Used as published
DeliveryUnitEnum	EnergyInfrastructure	Used as published
DemandSpaceType	Occupancy	Used as published
DemandTable	Occupancy	Used as published
DemandType	Occupancy	Used as published
Duration	PkCommon	Used as published
EMail	PkCommon	Used as published
EMailCommonData	PkCommon	Used as published
Eligibility	Rates	Used as published
EmailTypeEnum	PkCommon	Used as published
Emissions	Rates	Used as published
EntranceOpenTime	PkCommon	Used as published
EquipmentTypeEnum	EnergyInfrastructure	Used as published
EventData	PkCommon	Used as published
EventTypeEnum	PkCommon	Used as published
ExitOpenTime	PkCommon	Used as published
FinancialQuote	Quote	Used as published
FuelTypeEnum	Rates	Used as published
GeoJsonObject	PkCommon	APX overlay adds `coordinates`
GrossWeightCharacteristic	Rates	Used as published
HeightCharacteristic	Rates	Used as published

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APDS name	APDS domain	How APX uses it
HierarchyElement	Place	APX overlay adds `extensions`
HierarchyElementList	Place	Used as published
HierarchyElementRecord	Place	Used as published
HierarchyElementReference	Place	Used as published
HierarchyElementTypeEnum	Place	Used as published
IdentifiedArea	Place	Corrected by the APX overlay (see 06, Part A)
Identifiers	Quote	APX overlay adds `rateTableId`
Image	Observation	Used as published
ImageAlbum	PkCommon	Used as published
ImageTypeEnum	Observation	Used as published
IssueMethodTypeEnum	Right	Used as published
LanguageCode	PkCommon	Used as published
LengthCharacteristic	Rates	Used as published
LinearDimension	Place	Used as published
LinkedRightSpecification	Rates	Used as published
Location	Observation	Corrected by the APX overlay (see 06, Part A)
LowEmissionLevelEnum	Rates	Used as published
Marketing	PkCommon	Used as published
MaximumDimensions	Place	Used as published
MeansOfPaymentEnum	Rates	Used as published
MonetaryValue	Rates	Used as published
MonthEnum	PkCommon	Used as published
MultilingualString	PkCommon	Used as published
ObservationDataType	Observation	Used as published
ObservationElement	Observation	APX overlay adds `extensions`
ObservationSet	Observation	APX overlay adds `extensions`
ObservationTypeEnum	Observation	Used as published

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APDS name	APDS domain	How APX uses it
OccupancyLevel	Occupancy	Used as published
OperatingModeTypeEnum	Place	Used as published
OperatingRestrictionTypeEnum	Place	Used as published
OperatingRestrictions	Place	Used as published
OperatingTime	PkCommon	Used as published
Option	Quote	Used as published
OtherCredential	Right	Used as published
OtherSpecialDay	PkCommon	Used as published
OverallPeriod	PkCommon	Used as published
OverpaymentPolicyTypeEnum	Right	Used as published
PaginatedList	PkCommon	Used as published
PaginatedListMeta	PkCommon	Used as published
ParkingSpaceOccupancyDetectionEnum	Occupancy	Used as published
Payment	Rates	APX overlay adds `extensions`
PaymentLine	Rates	Used as published
PaymentMethod	Rates	Used as published
PaymentTimingEnum	Rates	Used as published
PaymentTypeEnum	Rates	Used as published
Period	PkCommon	Used as published
PeriodsAlias	PkCommon	Used as published
PeriodsOrValidity	PkCommon	Used as published
PeriodsOrValidityTypeEnum	PkCommon	Used as published
Place	Place	Corrected by the APX overlay (see 06, Part A)
PlaceCharacteristics	Place	Used as published
PlaceInformation	Place	Used as published
PlannedUse	Right	Used as published
PublicHoliday	PkCommon	Used as published

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APDS name	APDS domain	How APX uses it
Qualification	Rates	Used as published
QuoteExpiration	Quote	Used as published
QuoteRightRequest	Quote	Used as published
QuoteRightResponse	Quote	Used as published
QuoteRightResponseExtensionReasonEnum	Quote	Used as published
QuoteSessionExtensionRequest	Quote	Used as published
QuoteSessionExtensionResponse	Quote	Used as published
RGBColour	PkCommon	Used as published
RateAvailabilityTypeEnum	Rates	Used as published
RateDiscount	Rates	Used as published
RateEligibility	Rates	Used as published
RateLine	Rates	Used as published
RateLineCollection	Rates	Used as published
RateLineTax	Rates	Used as published
RateLineTypeEnum	Rates	Used as published
RateTable	Rates	APX overlay adds `extensions`
RateTableList	Rates	Used as published
RateTransition	Right	Used as published
RateTypeEnum	Rates	Used as published
RateUsageConditionsTypeEnum	Rates	Used as published
Reference	PkCommon	Used as published
ReferenceQuoteExtension	Quote	Used as published
ReferenceQuoteNew	Quote	Used as published
ReferenceToQuote	Quote	Used as published
ReferencedCodeListEntry	PkCommon	Used as published
ReferencedRightSpecification	Quote	Used as published
RefillPoint	EnergyInfrastructure	Used as published

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APDS name	APDS domain	How APX uses it
RelativeOffsets	PkCommon	Used as published
RelativeTimes	PkCommon	Used as published
ReservationTypeEnum	EnergyInfrastructure	Used as published
ResponseReasonEnum	Quote	Used as published
ResponseStatus	PkCommon	Used as published
ResponseStatusEnum	PkCommon	Used as published
ResponsibilityRoleAssignment	PkCommon	Used as published
RightPool	Right	Used as published
RightPoolRelativeValidity	Right	Used as published
RightSpecification	Right	APX overlay adds `extensions`
RightSpecificationList	Right	Used as published
RightSpecificationTypeEnum	Right	Used as published
SafetyStandardClassification	Place	Used as published
Segment	Session	Used as published
ServiceTypeEnum	EnergyInfrastructure	Used as published
Session	Session	APX overlay adds `extensions`
SessionList	Session	Used as published
Space	Place	Corrected by the APX overlay (see 06, Part A)
SpaceDimension	Place	Used as published
SpecialDay	PkCommon	Used as published
SpecialDayTypeEnum	PkCommon	Used as published
SpecificLanguageString	PkCommon	Used as published
StaffEnum	Place	Used as published
StructureGradeEnum	Place	Used as published
StructureTypeEnum	Place	Used as published
SupplementalEquipment	Place	Used as published
SupplementalFacility	Place	Used as published

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APDS name	APDS domain	How APX uses it
Supply	Occupancy	Used as published
SupplyViewTypeEnum	Occupancy	Used as published
TelephoneContact	PkCommon	Used as published
Time	PkCommon	Used as published
TimePeriodOfDay	PkCommon	Used as published
TimeUnitRelativeEnum	PkCommon	Used as published
Times	PkCommon	Used as published
TimesOfDay	PkCommon	Used as published
TriggerTypeEnum	Rates	Used as published
UnitOfMeasureAreaEnum	Place	Used as published
UnitOfMeasureDistanceEnum	Place	Used as published
UnitOfMeasureEnum	Rates	Used as published
UnitOfMeasureWeightEnum	Place	Used as published
UnitOfTimeEnum	PkCommon	Used as published
Units	PkCommon	Used as published
Url	PkCommon	Used as published
UserQualification	Rates	Used as published
UserTypeEnum	Place	Used as published
Validity	PkCommon	Used as published
ValidityAlias	PkCommon	Used as published
ValidityStatusEnum	PkCommon	Used as published
ValueRange	PkCommon	Used as published
ValueRangeBoundary	PkCommon	Used as published
ValueRangeClassEnum	Rates	Used as published
VehicleAncillaryIdentification	PkCommon	Used as published
VehicleCredential	Right	Used as published
VehicleLoadTypeEnum	Rates	Used as published

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APDS name	APDS domain	How APX uses it
VehicleTypeEnum	Rates	Used as published
VersionedIdentity	PkCommon	Used as published
VersionedReference	PkCommon	Used as published
WeekOfMonthEnum	PkCommon	Used as published
WeightDimension	Place	Used as published
WeightTypeEnum	Rates	Used as published
WidthCharacteristic	Rates	Used as published

Annex C (informative) APX elements proposed to APDS

Each row links an APX class to the APDS data element proposed from it. The full proposals, in APDS Data Dictionary format, are in `docs/apds-submission/03-data-dictionary.md`; 06 Requests to APDS summarizes them.

APX class	Proposed APDS element	Change	APDS domain	Tier
AccessEvent	AccessEvent	new class	Session	1
AccessEvent	AccessOutcomeEnum	new enumeration	Session	1
Account	RightHolder	extends APDS RightHolder	Right	2
Account	AccountStatusEnum	new enumeration	Right	2
Alert	Alert	new class	Operations	2
Alert	AlertSeverityEnum	new enumeration	Operations	2
Alert	AlertStatusEnum	new enumeration	Operations	2
AttributeRead	AttributeRead	new class	Observation	1
CameraDetail	Camera	new class	Place	2
CameraDetail	CameraMountingEnum	new enumeration	Place	2
CameraDetail	CameraViewEnum	new enumeration	Place	2
ChargingBayPresence	ChargingBayPresence	new class	EnergyInfrastructure	3
ChargingBayPresence	BayPresenceEnum	new enumeration	EnergyInfrastructure	3
ChargingBayPresence	BayPresenceSourceEnum	new enumeration	EnergyInfrastructure	3

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APX class	Proposed APDS element	Change	APDS domain	Tier
ChargingPointStatus	ChargingPointStatus	new class	EnergyInfrastructure	3
ChargingPointStatus	ConnectorStatus	new class	EnergyInfrastructure	3
ChargingSession	ChargingSession	new class	EnergyInfrastructure	3
ChargingSession	ChargingCost	new class	EnergyInfrastructure	3
ChargingSession	ChargingIdleTerms	new class	EnergyInfrastructure	3
ChargingSession	ChargingSessionStatusEnum	new enumeration	EnergyInfrastructure	3
ChargingSession	ChargingStopReasonEnum	new enumeration	EnergyInfrastructure	3
ChargingSession	ChargingSettlementModeEnum	new enumeration	EnergyInfrastructure	3
CommsPoint	CommsPoint	new class	Place	3
ConditionReport	ConditionReport	new class	Observation	2
ConditionReport	DamageItem	new class	Observation	2
ConditionReport	DamageSeverityEnum	new enumeration	Observation	2
CredentialRecord	CredentialAssigned	extends APDS CredentialAssigned	Right	1
CredentialRecord	CredentialMedia	new class	Right	1
CredentialRecord	CredentialSuspension	new class	Right	1
CredentialRecord	CredentialStatusEnum	new enumeration	Right	1
CredentialRecord	CredentialMediaFormEnum	new enumeration	Right	1
CredentialRecord	DepositStatusEnum	new enumeration	Right	1
DeviceStatus	EquipmentStatus	new class	Place	1
EnforcementPolicy	EnforcementPolicy	new class	Enforcement	2
EnforcementPolicy	NoticeDeliveryRule	new class	Enforcement	2
EnforcementPolicy	PenaltyLimit	new class	Enforcement	3
EnforcementPolicy	EscalationStep	new class	Enforcement	2
EquipmentDetail	SupplementalEquipment	extends APDS SupplementalEquipment	Place	2
LaneCameras	VehicularAccess	extends APDS VehicularAccess	Place	2
LaneCameras	LaneCamera	new class	Place	2
LaneCameras	CameraFacingEnum	new enumeration	Place	2

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APX class	Proposed APDS element	Change	APDS domain	Tier
LprRead	ImageTypeEnum	extends APDS ImageTypeEnum	Observation	2
LprReadDetail	ObservationElement	extends APDS ObservationElement	Observation	1
LprReadDetail	AlternateRead	new class	Observation	1
LprReadDetail	ReadReview	new class	Observation	2
LprReadDetail	Image	extends APDS Image	Observation	2
LprReadDetail	ImageRegion	new class	Observation	2
LprReadDetail	ReadAttributeEnum	new enumeration	Observation	1
LprReadDetail	VehicleMovementEnum	new enumeration	Observation	1
LprReadDetail	PlateFaceEnum	new enumeration	Observation	2
LprReadDetail	ReadReviewStateEnum	new enumeration	Observation	2
MatchEvidence	MatchEvidence	new class	Session	3
MatchEvidence	MatchTypeEnum	new enumeration	Session	3
MatchEvidence	MatchDecisionEnum	new enumeration	Session	3
OccupancyHistoryPage	DemandType	extends APDS DemandType	Occupancy	3
PaymentDetail	RateSold	new class	Right	3
PaymentDetail	RateProductEnum	new enumeration	Right	3
PaymentDetail	RateClassEnum	new enumeration	Right	3
PaymentRecord	Payment	extends APDS Payment	Right	2
PaymentRecord	PaymentStatusEnum	new enumeration	Right	2
PaymentRecord	CaptureStatusEnum	new enumeration	Right	2
PermitExtension	OverageBilling	new class	Right	2
PermitExtension	OverageBillingModeEnum	new enumeration	Right	2
PlateList	PlateList	new class	Right	2
PlateListEntry	PlateListEntry	new class	Right	2
PlateListPlaceFlags	PlateListPlaceFlags	new class	Right	2
PresentedCredential	PresentedCredential	new class	Right	1
RatePolicy	RateTable	extends APDS RateTable	Rates	2

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APX class	Proposed APDS element	Change	APDS domain	Tier
RecordInfo	RecordType	extends APDS RecordType	PkCommon	3
ReservationExtension	AssignedRight	extends APDS AssignedRight	Right	2
ReservationExtension	ReservationStateEnum	new enumeration	Right	2
SessionClosure	SessionClosure	new class	Session	1
SessionDetail	Session	extends APDS Session	Session	1
SessionDetail	SessionLifecycleEnum	new enumeration	Session	2
SessionReadBinding	SessionRead	new class	Session	1
SessionReadBinding	SessionReadRoleEnum	new enumeration	Session	1
Signage	Signage	new class	Place	2
Signage	SignTypeEnum	new enumeration	Place	2
SupportInteraction	SupportInteraction	new class	Operations	3
SupportInteraction	SupportAgentTypeEnum	new enumeration	Operations	3
TollTransaction	TollTransaction	new class	Observation	2
TollTransaction	TollDispute	new class	Observation	2
TollTransaction	TollTransactionStatusEnum	new enumeration	Observation	2
ValetTicket	RightTypeEnum	extends APDS RightTypeEnum	Right	2
ValetTicket	ValetTicket	new class	Session	2
ValetTicket	ValetStatusEnum	new enumeration	Session	2
ValetTicket	HandbackVerificationEnum	new enumeration	Session	2
ValidationBenefit	ValidationBenefit	new class	Rates	2
ValidationInstrument	ValidationInstrument	new class	Right	2
ValidationInstrument	ValidationInstrumentStatusEnum	new enumeration	Right	2
ValidationIssuance	ValidationIssuance	new class	Right	2
ValidationIssuance	ValidationIssuanceMethodEnum	new enumeration	Right	2
ValidationIssuance	ValidationIssuanceStatusEnum	new enumeration	Right	2
ValidationProgram	ValidationProgram	new class	Right	2
ValidationProgram	ValidationRules	new class	Right	2

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APX class	Proposed APDS element	Change	APDS domain	Tier
ValidationProgram	ValidationBilling	new class	Right	3
ValidationProgram	ValidationBillingModelEnum	new enumeration	Right	3
ValidationProgram	ValidationBillingCycleEnum	new enumeration	Right	3
ValidationRedemption	ValidationRedemption	new class	Session	1
ValidationRedemption	ValidationRedemptionStatusEnum	new enumeration	Session	1
Violation	Violation	new class	Enforcement	1
Violation	Notice	new class	Enforcement	1
Violation	Appeal	new class	Enforcement	2
Violation	ViolationStatusEnum	new enumeration	Enforcement	1
Violation	NoticeKindEnum	new enumeration	Enforcement	1
Violation	NoticeDeliveryMethodEnum	new enumeration	Enforcement	1
Violation	AppealReasonEnum	new enumeration	Enforcement	2
Violation	AppealResolutionEnum	new enumeration	Enforcement	2
ViolationDetection	ViolationDetection	new class	Enforcement	1
ViolationDetection	DetectionModeEnum	new enumeration	Enforcement	1

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