

UltraViolet Retailer Implementation Guide

UltraViolet Integration Basics

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This summary document is provided for convenience as a high-level overview of ecosystem features and functions. It is not intended to be authoritative. Refer to DECE Technical Specifications and License Agreements for definitive information. Any statement herein may be subject to restrictions, limitations, and exceptions as set forth in the definitive documents.

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1 Introduction

This implementation guide introduces the key requirements for integrating a retail service with UltraViolet. It will help you focus on the specific parts of the UltraViolet specifications that are most important for Retailers. (Section 3 indicates which portions to ignore.)

1.1 The Basics

The primary UltraViolet *roles* are Retailer and Content Provider. (See Essential UltraViolet for more information about UltraViolet roles.) A Content Provider publishes assets (movies, TV episodes, etc.) into the ecosystem, and a Retailer creates rights tokens that reference assets. Retailers and Content Providers implement *Nodes* that communicate via a REST API with the UltraViolet Coordinator, using XML-based resources.

To communicate with the Coordinator, a licensee must be *onboarded* to get a TLS certificate and a Node ID for each of the Coordinator environments (test and production). Onboarding is done by filling out the Node Activation Request Form, which includes submitting a CSR (certificate signing request) for the TLS certificate and submitting a certificate for SAML signing. (See separate onboarding docs and Node Activation Forms for details.) A Retailer will additionally need to provision a Locker Access Streaming Provider (LASP) Node if a Content Provider requires it to report streams.

The Node and the Coordinator mutually authenticate using TLS when the Node calls Coordinator APIs. (I.e., the Node must use a client-side TLS cert and verify a signature from the Coordinator). Most APIs are related to a user (e.g., link to a user's Library, get a list of rights tokens in a user's UltraViolet Library), in which case the Node may be required to wield the *delegation security token* (DST) it obtained when the user was authenticated. (See the Security Mechanisms spec for details.)

Retailers are responsible for creating UltraViolet rights via transactions that may include electronic sell-through (EST), disc code redemption, and disc-to-digital conversion. Retailers typically provide streaming and download fulfillment for rights they sold and for rights sold by other Retailers.

1.2 Additional Sources of Information

After reading this document, review the following documents, available at www.uvcentral.com/public. Keep in mind that some of these documents may contain old roles and requirements that no longer apply (see 3).

- Essential UltraViolet – introduction
- System Specification [DSystem] – ecosystem overview
- Coordinator API Specification [DCoord] (available on request from DECE)
- Message Security Mechanisms Specification [DSecMech] – SAML authentication
- Implementation Requirements – part of the UltraViolet License Agreement

2 Retailer Functions

2.1 Core Retailer Functions

Retailers provide four core functions in the Ecosystem:

- Linking a user account in the Retailer system to an UltraViolet Library
- Displaying a user's UltraViolet Library (usually including content that was not sold by that Retailer)
- Creating rights in the user's UltraViolet Library
- Fulfilling rights (streaming and downloading content to users)

2.1.1 Link to UltraViolet Users

A Retailer connects with an UltraViolet user in one of four ways:

- 1) **Create a new UltraViolet Library** for a user and link to it. This can be an option at the same time the user signs up for a Retailer account, or an option for users who already have a Retailer account. In either case, if the Retailer has first name, last name, and email address for the user, it can create an UltraViolet Library for the user with a single action from the user to accept the UltraViolet terms of use and privacy policy.
Before attempting to create a new UltraViolet Library, the Retailer should query the Coordinator with the user's email address to determine if it is already in use. If so, the Retailer should prompt to user to link to their existing UltraViolet Library instead of creating a new one.
- 2) **Authenticate** an existing UltraViolet user by requesting that the Coordinator present the UltraViolet HTML authentication UI, where the user signs in with their UltraViolet credentials. This can be accomplished with browser redirects, embedded iframes, <div> floating presentations, HTML agents embedded in an app, etc.
- 3) **"Instalink"** to an existing UltraViolet user by getting the user's permission to submit a verified email address to the Coordinator.
- 4) **Email-response link** to an existing UltraViolet user by requesting that the Coordinator send an email message with an embedded link request. If the recipient follows the URL in the email message, a link is established.

At the end of any of the steps above, the Retailer receives a delegation security token (DST). The Retailer presents the DST to the Coordinator to perform actions on behalf of the user. The DST typically lasts one year and can be renewed by the Retailer without user intervention. DECE recommends that Retailers implement a background process that renews DSTs with an expiration date less than a month away. If the DST expires, or if the user unlinks at the UltraViolet Web Portal or elsewhere, the user will have to relink using option 2 or 3 above before the Retailer can perform an action on behalf of the user. Retailers should check for an "unauthorized" response after every API call and prompt the user to relink if needed.

2.1.1.1 Link Landing Page

To help users find and use UltraViolet services, the myuv.com Web Portal presents a list of Retailers and a “link” option for each one. Each Retailer should implement a link landing page that does the following:

- Allows the user to log in to their existing Retailer account (or automatically logs the user in via an active browser session) or create a new Retailer account
- Links the user’s Retailer account to the UltraViolet Library using step 2 (Authenticate) or step 3 (Instalink) described above

Note: The link landing page must not offer to create a new UltraViolet Library, since the arriving user already has one. The UI for this page can be very minimal – there is no need for a “link” option since the user just chose to link from the Web Portal. Once the user is authenticated to their Retailer account it’s sufficient to simply present the UltraViolet authentication UI in an iframe or present the Instalink option.

2.1.1.2 API Details

Email check: ResourcePropertyQuery.

Library creation: AccountUserCreate with embedded TermsOfUse and UserLinkConsent policy requests, followed by security token service (STS) call to retrieve the Delegation Security Token (DST). Email address can be repeated for the username. (Username is required to be unique, email address is not). Password can be blank, in which case the Coordinator will generate a random password for the user and provide it in the “Welcome to UltraViolet” email. Surname can be repeated for Account DisplayName. If you operate in only one country, set Country accordingly. Otherwise, you can associate the User with the country you determine or you can let the user choose a country. If you omit Languages, the Coordinator will set the value to the default from the Geographies spec. Omit DateOfBirth, LegalGuardian, UserRecoveryTokens, and other optional elements.

Authentication: AuthnRequest. (See DSecMech.) If you support languages other than English, it’s strongly recommended to use the language extension to ensure that the login UI language matches the language in your own UI (see DSecMech 5.9.2.2). Note that UserLinkConsent is now implicit, so the policy request extension no longer needs to be included.

Instalink: UserValidationTokenCreate(DelegationTokenRequest: VerifiedEmail)

(Email response link: UserValidationTokenCreate(DelegationTokenRequest:VerifiedEmail)

All the above may be followed by a ManageUserConsent policy create call to provide access to additional user data such as email address and UltraViolet username.

DST renewal: SecurityTokenExchange, aka STS. (See DSecMech 8.1.)

2.1.2 Display Library

The Retailer is expected to maintain a local cached copy of data for each linked user. There are essentially three categories of data:

- 1) User information (user ID, account ID, security token, etc.)
- 2) Library entitlement information (rights tokens)
- 3) Content metadata (title, cover art, genre, etc.)

Note: the Retailer may choose to use metadata from other sources, but should be aware that UltraViolet contains content that it probably does not have a license to and therefore may not be aware of. Coordinator metadata ensures that a Retailer can show basic title information for all available content. It is recommended that Retailers create an ancillary metadata store by locally caching Coordinator metadata for content not in their own catalog.

The Retailer initially retrieves a full list of Rights Tokens from the Coordinator after a user links their account. The Retailer then uses API calls with ETag and last-modified-date to find out if anything has changed since the previous update and only retrieve Rights Tokens that have been added or modified (or deleted) since the last check.

The Coordinator provides a push notification service, using the Google Pub/Sub service, that will notify the Retailer when a change is made to a user's Library. Upon receiving notification, the Retailer can query the Coordinator using the update mechanism above to get the changed information.

2.1.2.1 API Details

Rights Token list: RightsLockerDataGet

- For initial Library load, call RightsLockerDataGet (response = reference or token) for a full list of Rights Tokens
- For subsequent cache sync, typically in response to a push notification, call RightsLockerDataGet with response = reference and an OnOrAfter date for a list of Rights Tokens added/changed/deleted since date, then iterate through Rights Token IDs, calling RightsTokenGet as needed
- Note: Libraries with more than 1000 Rights Tokens are paged into chunks. Retailers should always check the FilterMoreAvailable and FilterOffset values in the response to manage page.
- Note: Use gzip compression (set Accept-Encoding HTTP header) for faster response.

Single Rights Token: RightsTokenGet

2.1.2.2 Episodic and other Hierarchical Content

Rights exist at an atomic level of one rights token per "program". For example, a movie corresponds to a single rights token, and each episode of a TV series has its own rights token. Grouping season-level rights tokens into a series is accomplished via metadata (from the Coordinator or from some other source). When a Retailer sells a TV season, it must create a rights token for each individual episode. When displaying a Library, it is recommended that Retailers collapse episodes into a season (when the user owns more than one episode), providing users the option to expand the view to see all episodes. Retailers may wish to also collapse seasons within a series. A similar approach should be taken with supplemental (bonus) content.

Although rights should not exist at the season or series level, mistakes by Retailers and Content Providers have resulted in season-level asset IDs (ALIDs) and corresponding rights tokens. Therefore, every Retailer should ensure they are able to display rights at both the season level and episode level. Note that season-level and series-level content IDs (CIDs) in the metadata are required regardless.

2.1.2.3 Missing Profiles

Earlier versions of the Coordinator allowed Rights Tokens to

2.1.3 Create Rights Tokens

The Retailer creates a Rights Token by passing a CID (content ID, referencing information about a title) and an ALID (asset logical ID, referencing a specific instance of a title, similar to a SKU) along with information about the right such as Media Profile (SD, HD, UHD, etc.). A Rights Token represents an atomic right, such as a movie or a single TV episode. When creating rights for a TV season, the Retailer should create one Rights Token for each episode.

Often a Retailer licenses dual content rights from a Content Provider – one right for the Retailer’s own service and one UltraViolet right. After unlinking, the Retailer retains its own right in the user’s Retailer account, and the UltraViolet right remains in the user’s UltraViolet Library, available for use with other UltraViolet services. Some Content Providers don’t provide dual rights for UltraViolet-specific acquisitions such as disc code redemption and disc-to-digital. In this case the right exists only in the user’s UltraViolet Library and becomes unavailable via the Retailer if the user unlinks.

Retailers should never delete Rights Tokens, except for user returns and correcting mistaken entries.

There are no conditional elements with Rights Tokens such as expiration date or country codes. Content Providers have the option to include asset restrictions (holdbacks) for certain time periods and countries, but few use this option.

2.1.3.1 API Details

RightsTokenCreate()

- PurchaseInfo/ALID – asset ID from Content Provider (usually an EIDR prefixed by “urn:dece:alid:eidr” or “urn:dece:alid:eidr-s:”)
- PurchaseInfo/CID – metadata ID from Content Provider (usually an EIDR prefixed by “urn:dece:cid:eidr” or “urn:dece:cid:eidr-s:”)
- PurchaseInfo/PurchaseTime
- PurchaseInfo/TransactionType – see *Implementation Requirements* Appendix B (“Mandatory Transaction Types”)
- PurchaseInfo/RetailerTransaction (optional) – for Retailer’s own use to record an ID corresponding to Retailer’s transaction database
- PurchaseProfile/@MediaProfile – “SD”, “HD” (if so, must also include an “SD” profile), “UHD”
- PurchaseProfile/@<profile parameter> - additional quality parameters for HD or UHD profile (HighDynamicRange, HighFrameRate, WideColorGamut, NextGenAudio, ThreeD)
- PurchaseProfile/CanDownload – “true”
- PurchaseProfile/CanStream – “true”
- RightsTokenInfo/StreamWebLoc – URL from which user can stream and/or download this content; should be a title-specific landing page at the Retailer website; must not be a link to a home page

2.1.3.2 Transaction Type and Discrete Media Rights

Rights tokens result from three basic types of transactions:

- 1) Electronic sell-through (EST)
- 2) Code redemption (CR)
- 3) Disc-to-digital conversion (D2D)

Variations of these transaction types include promotions (e.g., “Link your MoviesBeUs account to your UltraViolet Library and get 5 free movies”) and prior purchase history conversions, where a user’s prior EST or physical purchases result in a one-time creation of UltraViolet rights tokens when the user first links their UltraViolet Library, or where a purchase that formerly had no UltraViolet rights becomes available in UltraViolet and a rights token is automatically added to the user’s UltraViolet Library. (Availability of any transaction is subject to bilateral agreements with Content Providers.)

Every rights token includes a TransactionType element identifying the associated transaction. (See the list in the *Implementation Requirements* doc.) It was formerly required for Retailers to create and then consume a Discrete Media Right for Rights Tokens associated with code redemption and disc-to-digital transactions, enabling DECE to track these transaction types, but when the correct Transaction Type is provided in the Rights Token, a Discrete Media Right does not need to be created unless otherwise required by the Content Provider.

2.1.3.3 Resolution and Profile Parameters

The resolution (SD, HD, UHD, etc.) of a rights token is stored in the purchase profile. If a user has rights to both SD and HD resolution, for example, create one Rights Token with two purchase profiles. Set additional parameters such as high dynamic range (HDR) or high frame rate (HFR) as attributes of the purchase profile(s). If the user is upgrading from SD to HD, and the Retailer created the original rights token, the Retailer can add a purchase profile rather than create another rights token.

2.1.3.4 SoldAs and Bundles

In general do not use the SoldAs or Bundle constructions when creating Rights Tokens. Reach out to DECE if you have any questions as to the proper use of SoldAs or Bundle constructs.

2.1.3.5 ALIDs and CIDs

The ALID is the basic asset identifier. Typically, an ALID represents one title. **Some titles have multiple ALIDs** (such as when an old non-EIDR ALID was later superseded with an EIDR ALID), and **some titles are represented by multiple CIDs**. (A single ALID can never map to more than one CID). Usually each title in a Retailer’s catalog corresponds with a single ALID/CID pair, but the Retailer must be able to accommodate scenarios where a single title in the Retailer’s catalog (and the Retailer’s assets for streaming and downloading) corresponds to one or more ALIDs and CIDs.

CIDs are primarily for metadata but must be included in the Rights Token with the ALID. The Content Provider may supply ALID/CID pairs, or they may only supply ALIDs and expect the Retailer to look up the CIDs from the Coordinator (see sections 6.5.1, 6.5.2.2, and 6.2.2 of the spec; Retailers can ignore the details related to APIDs and just use AssetMapALIDtoAPIDGet() to get individual ALID-CID mappings or LogicalAssetList() to get all ALID-CID mappings).

Content Providers should supply ALIDs and CIDs in their UltraViolet avails to Retailer. A primary ALID and CID should be indicated for transactions, and any additional ALIDs and CIDs that represent the same title should also be listed so that the Retailer is able to recognize all associated rights tokens.

Examples:

Title	ALID	CID
The Big Bang Theory, Season 7,	urn:dece:alid:eidr-s:9D36-A1B0-625E-C0F9-112A-S	urn:dece:cid:eidr-s:9D36-A1B0-625E-C0F9-112A-S

Title	ALID	CID
The Discovery Dissipation		
Venom	urn:dece:alid:org:lionsgate:2490454-206461	urn:dece:cid:org:lionsgate:2490454-206461
Harry Potter and the Sorcerer's Stone	urn:dece:alid:org:WB:2004653x6000000370xDC, urn:dece:alid:org:WB:2004653x6000000370xEST, urn:dece:alid:org:WB:2004653x6000000370xLDC	urn:dece:cid:org:WB:2004653x6000000370

2.1.3.6 EIDRs

About half of the ALIDs and CIDs in the Coordinator are EIDRs. The remaining half are Content Provider-specific. It is up to the Content Provider whether or not to use EIDRs.

DECE's SPEIDR (systemic plan for EIDRs) initiative is registering all non-EIDR ALIDs and CIDs as alternative IDs in the EIDR registry. A retailer is then able to use EIDR to map any UltraViolet title to its own catalog. Note that this doesn't work in the other direction – i.e., a Retailer can't look up an EIDR and use the DECE ALID/CID alternate ID entries to create a rights token, since there may be multiple alternate ID entries.

2.1.4 Fulfill Content (Download and Stream)

The Retailer can use any Content Provider-approved technology for download and playback of content, once it has verified that a Rights Token exists.

Unless exempted in bilateral agreements with Content Providers, the Retailer must have a LASP Node ID to request stream permission from the Coordinator (shortly before or after starting the stream) and must not stream (or must stop a stream that has already started) if the Coordinator responds that the simultaneous stream limit has been exceeded for the user's Library. A Content Provider may allow a Retailer to report streams after the fact, in non-realtime mode.

If required by a Content Provider, a Retailer can report download playback licenses.

2.1.4.1 API Details

Rights Verification: RightsTokenGet or RightsLockerDataGet to check Rights Token if Retailer cache hasn't been updated in 72 hours

Download: DownloadPlaybackLicenseReporting

Stream (real-time): StreamCreate() at beginning of stream, StreamDelete() at end of stream.

Note: Retailers are expected to implement their own heartbeat mechanism to tell when a streaming client has disconnected. The Coordinator only needs to be notified at the beginning and end of a streaming session.

Stream (non-real-time): StreamCreate() at the b-host endpoint.

2.2 Optional Retailer Functions

2.2.1 Disc Code Redemption

The DECE Common Code Redemption system (CRS) provides a single back-end interface for retailers to verify and redeem codes across many Content Providers. The CRS receives requests and checks its central database as well as distributing requests out to Content Provider's own code redemption systems.

There is also a user-facing Common Redemption Landing Page (CLP) that many Content Providers reference in their disc inserts (myuv.com/redeem). The CLP provides a consistent place for users to redeem codes, regardless of which studio released the disc. After the user enters a code they see a list of Retailers who are able to redeem the code (supplied to the CRS by the Content Provider, based on title and user's country). When the user selects a Retailer they are directed to the Retailer's redemption landing page (with the redemption code embedded in the URL) to redeem the code. If the user has an active browser session that's logged in at the Retailer, and the Retailer immediately redeems the code and creates a rights token, code redemption can be as simple as two clicks (one to enter code, one to select retailer).

Redemption codes go beyond discs. They can be used for gift cards and promotions, can be emailed to users who purchase a movie from a hotel or in-flight system, can be printed by kiosks, and so on.

2.2.2 Disc-to-Digital

Studios may allow you to “convert” prior physical purchases such as DVD or Blu-ray Disc to UltraViolet rights. This doesn't involve an actual copying or conversion process— the disc is simply used as a proof of purchase to support the transaction. Customers can bring discs into a physical location or can use a disc-recognition feature at home. DECE doesn't require a specific disc recognition technology — any approach can be taken, including inserting the disc into a computer drive for fingerprinting, scanning a store receipt, or taking a picture of the disc.

2.2.3 Prior Purchase Conversion

Studios may recommend or require that you create UltraViolet rights for content that users previously purchased. There are two scenarios:

- 1) When one of your users first links their UltraViolet Library, you automatically add all prior purchases with UltraViolet rights to their UltraViolet Library. This can apply to EST as well as DVD, Blu-ray, and other purchases.
- 2) When a studio makes older content available in UltraViolet, you automatically add it to the UltraViolet Libraries of all your users who acquired the content from you before it was available in UltraViolet.

Both scenarios can be easily handled by a process that scans each title in the user's account with your service, checks to see if corresponding UltraViolet content is not already in the user's linked UltraViolet Library, and if so, creates UltraViolet rights tokens. This process can be run when a user first links (to cover scenario 1) and periodically in the background or whenever new UltraViolet avails are added to your catalog (to cover scenario 2).

You must perform conversion only once, to prevent users from repeatedly filling different UltraViolet Libraries from one of your accounts.

3 Summary of Simplifications

During the end of 2014 and the beginning of 2015, DECE significantly simplified the UltraViolet ecosystem. As a result, some former roles and requirements no longer apply, even though they may still be referenced in the specifications. The changes are described here for those who may have been implementing or evaluating the UltraViolet Ecosystem prior to simplification.

3.1 No CFF and DRM Obligations

Retailers are no longer required to support DECE-approved DRMs and are no longer required to support downloads using the Common File Format (CFF).

A Retailer can use any download and streaming technologies, and any content protection methods, as long as they are approved by their UltraViolet Content Providers.

3.2 No DSP

Retailers are no longer required to use (or be) a Download Service Provider (DSP) to implement download and DRM licensing functions.

3.3 No Device Requirements

The DECE Device role is under review. DECE recommends that Retailers use CFF for download and streaming in their apps and playback clients, but Retailers with existing apps and playback clients can ignore the Device role.

3.4 No Fulfillment Obligations

Retailers and LASPs are no longer required to fulfill content in any specific form or for any period of time. Bilateral agreements with Content Providers may impose fulfillment obligations, such as the requirement that if a Retailer has a license to sell an UltraViolet title, it must provide streaming and/or download of that title for any UltraViolet user, even if the Rights Token was created by another Retailer.

3.5 De-emphasis of “Physical” Metadata

Because standard delivery using CFF is no longer required, there is little need for the Coordinator to hold information about “physical assets,” also called “digital assets,” i.e., the files delivered to users. Asset physical IDs (APIDs) and related Digital Asset Metadata are supported for backward compatibility but are no longer needed.

3.6 Retailer-centric Library Sharing

To provide more flexibility for Retailers and Content Providers to define Library sharing models appropriate to Retailer services, the centralized mechanism for adding users to UltraViolet accounts is deprecated. Retailers should not use the UserCreate API call, and instead should simply link multiple accounts or multi-user accounts in their own service to a single UltraViolet user account (subject to agreements with Content providers).

3.7 Elimination of Child Users and Date of Birth Collection

Retailers should no longer provide date of birth when creating a new UltraViolet Library.

3.8 No Short-term Access

Users are no longer shown the “Link my UltraViolet Library with <org> ...” checkbox in the s-host authentication UI (FormAuth). This consent is now incorporated in the general authentication and access consent. The UserLinkConsent policy is automatically set whenever a user authenticates from a Retailer to the Coordinator via any method. The Coordinator rarely issues short-lived (6-hour) delegation security tokens (DSTs). DSTs typically last one year and can be renewed indefinitely before expiration.

Historical note: The original intent of allowing users to grant *access* to a Retailer without *linking* was for scenarios where a user might want to briefly connect to make a one-time purchase or watch a stream, such as in an internet café. In practice this rarely happens, so to simplify the user experience and streamline the authentication process for Retailers, linking is being made an automatic result of authentication. Users still have the option to unlink at any time from the Web Portal or the Retailer.

3.9 No Authenticated Link Required for Account Management

Account management (as defined in Implementation Requirements) is recommend but no longer mandatory, so Retailers are not required to provide an authenticated link to the Web Portal. (I.e., Security Mechanisms section 7.2, aka RSAML, is optional.)

3.10 No Checkbox LASP

The AssentStreamAllowed flag and associated AssentStreamLoc URL were intended to allow a standalone LASP to stream from flagged Rights Tokens without a license from the Content Provider. In practice there have been no standalone LASPs and few Rights Tokens with AssentStreamAllowed, so this feature has been mothballed.

4 Summary of APIs for Retailers

4.1.1 Required APIs

AuthnRequest	User authentication and link. (See Security Mechanisms Specification.)
RightsTokenCreate	Create rights token(s). Indicate profiles (SD, HD, UHD), transaction types, etc.
RightsLockerDataGet(response=reference) (followed by RightsTokenGet for each rights token)	Copy user's Library info to Retailer cache (first time).
RightsLockerDataGet(response=reference; viewfilter:lastmodifieddate; OnOrAfter=<date>) (followed by RightsTokenGet for each rights token)	Refresh Retailer's copy of user's Library. Setting the viewfilter to lastmodifieddate returns results sorted in chronological order, and setting OnOrAfter returns only Rights tokens changed since the previous date.
RightsTokenGet	Retrieve data for rights tokens

4.1.2 Recommended APIs

ResourcePropertyQuery(email)	Check if an UltraViolet Library exists, associated with a specific email. (One Library can have many email addresses associated, and an email address may be associated with more than one Library.)
UserValidationTokenCreate(DelegationTokenRequest: VerifiedEmail)	Immediately link to a user, without requiring UltraViolet username and password, when Retailer has a verified email address (aka Instalink). Note: this API requires pre-approval.
AccountUserCreate	Create new Library (and user)
UserGet	UserGet as a header-only request is useful for checking if a DST is still valid. It can also provide email address, first/last name, and username for showing a user basic information about their linked Library (if ManageUserConsent policy is set)
PolicyCreate(Get/Update/Delete)	PolicyCreate(ManageUserConsent) should be called after AuthnRequest and AccountUserCreate to provide full access to user data. (Note, there is no longer a requirement to get direct consent from the user for this policy.) PolicyDelete(UserLinkConsent) can be used to unlink a user. Retailer must call PolicyList first to get the policy resource(s).