



Entitlement Server

Multi-SIM, VoLTE, VoWiFi, and 5G entitlement for mobile devices

Elitnet's **Entitlement Server** (ES) provides communications service providers with a wide range of service entitlement capabilities, allowing only authorized subscribers to use specific services. The product features Multi-SIM support as well as Voice over LTE (VoLTE), Voice over WiFi (VoWiFi) / WiFi Calling, and 5G service entitlement.

Entitlement Server is fully compliant with specifications related to primary and companion device provisioning and entitlement of various services, including specifications provided by major mobile device manufacturers and GSMA.



VoLTE Entitlement

Entitlement Server ensures correct entitlement of VoLTE subscriptions, allowing only authenticated and authorized devices to use the service.



VoWiFi Entitlement

The product ensures correct entitlement of VoWiFi / Wi-Fi Calling subscriptions, allowing authenticated and authorized devices to use the service.



5G Entitlement

The product ensures correct entitlement of 5G network subscriptions, only allowing authenticated and authorized devices to use the service.



Primary Device Provisioning

Entitlement Server handles provisioning of eSIMs to the subscribers' primary devices by facilitating the download of eSIM without using QR codes or visiting the CSP's office.



Companion Device Provisioning

ES facilitates the download of eSIMs to Apple Watches, Samsung Gear smartwatches, and other companion devices for authorized subscribers.



eSIM Transfer

Entitlement Server ensures correct transfer of eSIMs between subscriber devices. This use case may be applied for both primary and companion devices.



Websheet Integration

Entitlement Server can be bundled with a Websheet server, which provides websheet functionality for CSP's terms and conditions, additional authentication procedures, etc.

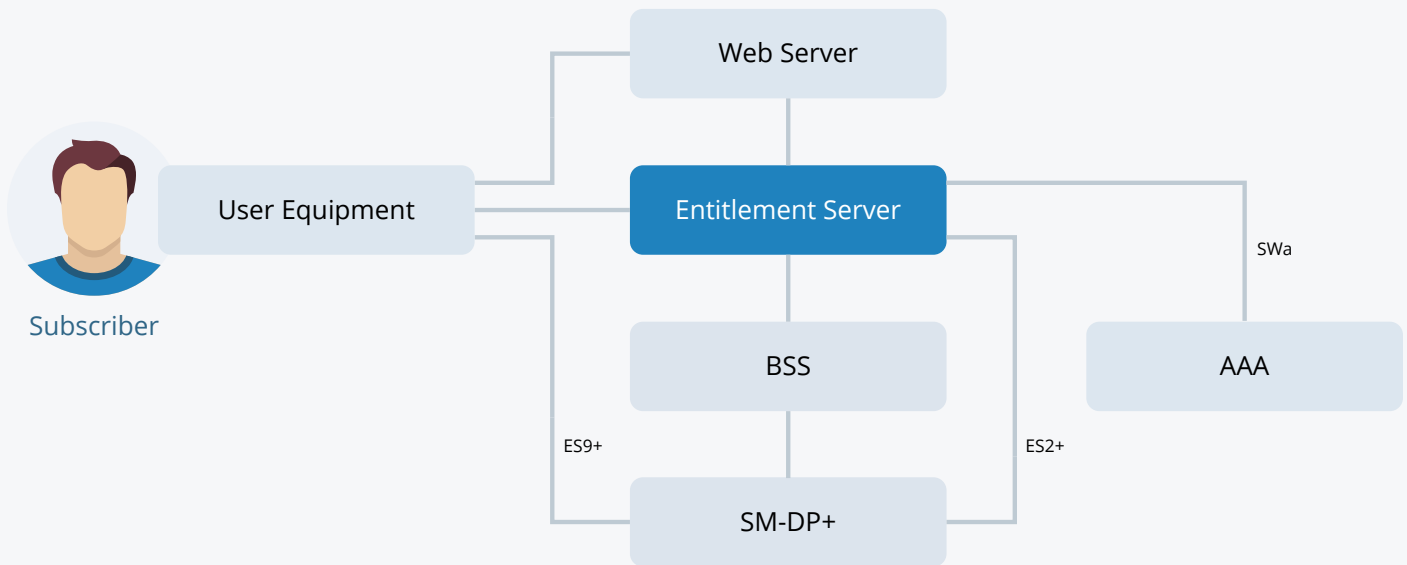


Notification Handling

ES may be integrated with APNs (Apple) and FCM (Samsung) to request and send asynchronous notifications related to certain services from and to subscriber devices.

High Level Architecture

To ensure correct service entitlement for the CSP's subscribers, Entitlement Server is integrated with several components in the CSP's network.



Entitlement Server has a direct connection with the subscriber's User Equipment to notify the device whether the network allows the particular subscriber to use a certain service.

Entitlement Server communicates with a carrier bundle on the device provided by the device manufacturer. The carrier bundle and the list of allowed services may be different for each CSP depending on their agreement with any particular device manufacturers.

Other network components which are integrated with Entitlement Server include the Authentication, Authorization, and Accounting (AAA) server for subscriber authentication purposes, the network's Business Support Systems (BSS) / Provisioning to determine whether particular subscribers are allowed to use certain services, the SM-DP+ component for eSIM provisioning, and a Web Server for Websheet functionality as well as other additional features and functionalities.

Key Features and Functionalities

Elitnet's Entitlement Server encompasses the following main features and functionalities:

VoLTE Entitlement. Entitlement Server allows VoLTE-capable Apple and Samsung devices to check whether the subscriber is allowed to use the VoLTE service. When a VoLTE entitlement request is received, Entitlement Server queries the operator's Provisioning and notifies the device whether the VoLTE service may be switched on.

VoWiFi Entitlement. WiFi Calling / Voice over WiFi entitlement uses the same principles as VoLTE entitlement. When a VoWiFi entitlement request is received by ES from a device, ES queries Provisioning whether that subscriber is allowed to use the service.

5G Entitlement. 5G entitlement uses the same principles as VoLTE entitlement. When an entitlement request to use the 5G network is received by ES from a device, ES queries Provisioning whether that subscriber is allowed to use the service.

Multi-SIM Entitlement. Entitlement Server authenticates devices, checks whether they are allowed to use the service, and facilitates the download of eSIMs to primary devices as well as secondary devices such as Apple Watches, Samsung Gear smartwatches, etc. With ES, the subscriber does not have to scan a QR code or visit's the MNO's office to provision an eSIM.

eSIM Transfer. ES supports the eSIM transfer use case, allowing the subscriber to automatically transfer a currently active eSIM from old primary or secondary device to a new one.

Device Authentication. Authentication is typically carried out via the AAA server which provides standard-based access for the Entitlement Server via the SWa interface.

Websheet Authentication. For Apple devices, Entitlement Server uses the websheet authentication enhancement with TrustFlag to authenticate devices and avoid double authentication.

OpenID Authentication. Entitlement Server allows Samsung/Android devices without a SIM to use the OpenID authentication method. In this case, the device has to provide a username and password instead of the SIM card.

Two-step Authentication via SMS. An optional connection with SMSC may be established for sending confirmation codes used for two-step authentication via SMS.

Carrier Bundle Integration. Entitlement Server communicates with the carrier bundle on the subscriber's phone provided by either Apple or Samsung to the carrier. Carrier bundle allows applications to work via the Entitlement Server.

SM-DP+ Integration. Entitlement Server is integrated with the SM-DP+ component. Supported and authorized devices can download eSIMs from the provided SM-DP+ endpoint.

Websheet Integration. ES may be bundled with a Websheet server which provides operator-specific websheets for terms and conditions, additional authentication procedures, etc.

Notification Handling. Entitlement Server can be used to request and send notifications to devices. For example, it may be used to notify a device to make the next request only when a notification is received instead of sending requests constantly.

To be able to send asynchronous notifications, Entitlement Server is integrated with Apple Push Notification service (APNs) and Firebase Cloud Messaging (FCM) servers, necessary for Apple and Android devices respectively.

Management GUI. Entitlement Server is provided with a management and administration graphical user interface which allows the operator's administrators to configure the product.

Statistics and Reporting. ES can be provided with a powerful statistics and reporting engine which gathers and displays service usage statistics, displays it on flexible dashboards in a dedicated GUI, and allows to generate and export fully customizable reports.

Multitenancy Support. ES supports multitenancy, allowing CSPs to provide the full range of entitlement functionalities and use cases to virtual operators.

Compliance with Specifications. ES is fully compliant with specifications related to device provisioning and service entitlement, including specifications provided by major device manufacturers and GSMA.

