

HPSP VPN Technology Extension

User's Guide

Release v7.0



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In This Guide

This document describes how to interact with the HPSP VPN TE solution in order to provision and manage the customer VPN services.

Audience

The primary audience of this guide are the users in charge of the service provisioning process in the organization of the CSP. Two types of users are distinguished:

- Customer agents, who enter orders on behalf of end customers and monitor and manage their subscriptions. They are assumed to understand the CSP's business, in particular the VPN services. No technical skills are required.
- Technical operators, in charge of low level design tasks and technical monitoring of the tool. They are assumed to have knowledge of the VPN service from a technical and network perspective, and have skills on the different solutions integrated by this tool (HP Service Provisioner, HP Trueview, HPSA VPN) in order to monitor the service.

Conventions

The following typographical conventions are used in this guide.

Font	What the Font Represents	Example
Italic	Book or manual titles, and man page names	Refer to the <i>HP Subscription Repository</i> and the <i>Javadocs</i> man page for more information.
	Provides emphasis	You <i>must</i> follow these steps.
	Specifies a variable that you must supply when entering a command	Run the command: <code>javac <sourceFiles></code>
	Parameters to a method	The <i>assigned_criteria</i> parameter returns an ACSE response.
Bold	New terms	The distinguishing attribute of this class...
Computer	Text and items on the computer screen	The system replies: <code>Press Enter</code>
	Command names	Use the <code>javac</code> command ...
	Method names	The <code>get_all_replies()</code> method does the following...
	File and directory names	Edit the file <code>\$Installation_dir/config/conf.xml</code>
	Process names	Check to see if <code>system</code> is running.
	Window/dialog box names	In the <code>Test and Track</code> dialog...

Font	What the Font Represents	Example
	XML tag references	Use the <DBTable> tag to...
Computer Bold	Text that you must type	At the prompt, type: 1s -1
Keycap	Keyboard keys	Press Return .
[Button]	Buttons on the user interface	Click [Delete]. Click the [Apply] button.
Menu Items	A menu name followed by a colon (:.) means that you select the menu, then the item. When the item is followed by an arrow (->), a cascading menu follows	Select Locate:Objects->by Comment.

Abbreviations

HPSP: HP Service Provisioner

HPSP VPN TE: HP Service Provisioner Technology Extension

HP TV: HP Trueview resource inventory

HPSA VPN: HPSA VPN activation solution

HP SR: HP Subscription Repository

CFS: Customer Facing Service

RFS: Resource Facing Service

EWI: Engineering order

1 Introduction

1.1 L3 VPN Services

The current version of the HPSP VPN TE covers the L3 VPN Services. An L3 VPN is an IP based network delivering private network services over the CSP infrastructure.



Figure 1: High level view

Internally, it uses layer 3 VRF (VPN/virtual routing and forwarding) to segment routing tables for each "customer" using the service. Protocol BGP is required in the CSP core network.

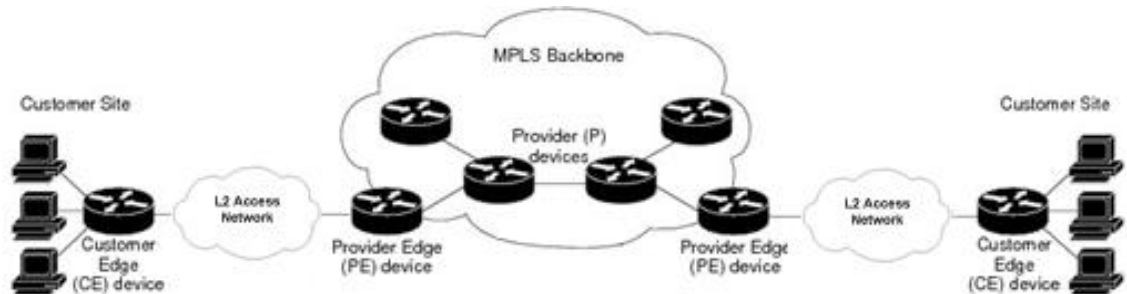


Figure 2: Technical view

1.2 The HPSP VPN TE Solution

HPSP Technology Extensions provide, on top of the HPSP, the modules needed to cover the provisioning process for a concrete technology/business domain, in this case, the L3 VPNs.

1.2.1 Functionality covered

The functionality covered by the solution is:

- Management of L3 VPN services, including:
 - Selection of the VPN topology to apply:

- Full Mesh
- Hub & Spoke
- Selection of the Class of Service to apply and rate limit available per site
- Configuration of the connectivity between the CE and correspondent PE, including the following protocols:
 - RIP
 - BGP
 - OSPF
 - Static Routes
- Configuration and provisioning of the L2 access network (vlan path between the CE and the PE), including:
 - L2 direct connections
 - L2 ring networks
 - L2 star networks
- Provisioning of the PE including the VRF configuration.
- Monitoring the installation of CE equipments
- Remote configuration of CE equipments
- The available models of equipments that can be managed by the solution are the ones covered by the HPSA VPN solution.

1.2.2 Architecture

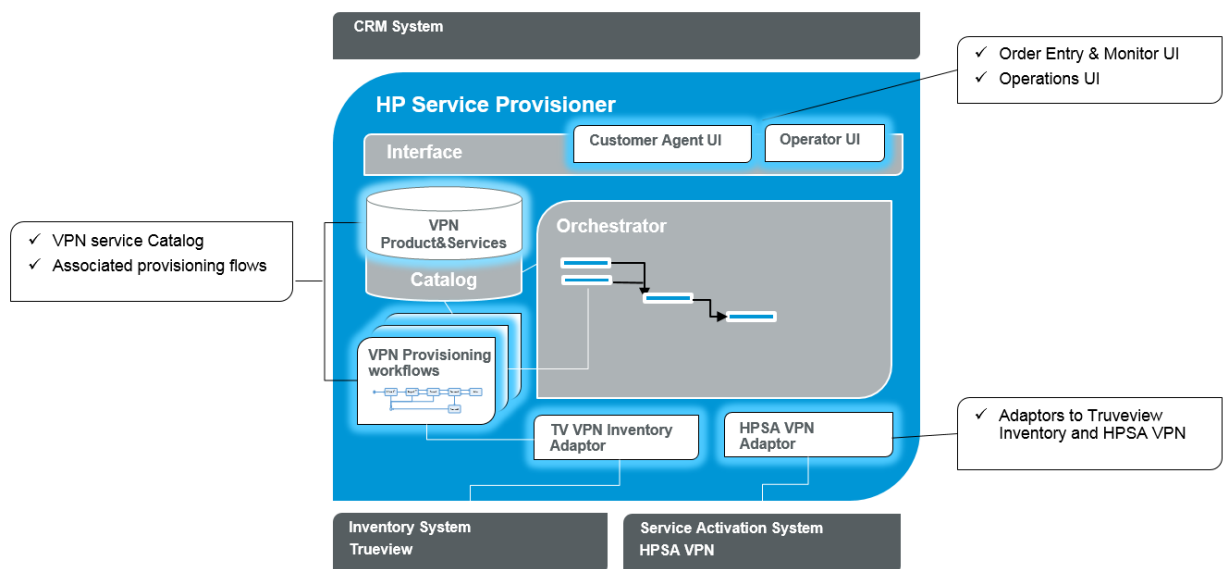


Figure 3: HPSP VPN TE Architecture

Modules included in the solution:

Module	Description
VPN Service Catalog	Product and Service Catalog for the L3 VPN services, including the decomposition of the customer services in technical services.
Associated provisioning workflows	Workflows in charge of managing the provisioning process, associated to the technical services in the catalog.
TV VPN Inventory Adaptor	Out-of-the-box adaptor to interact with HP TV, in charge of the network resource inventory.
HPSA VPN Adaptor	Out-of-the-box adaptor to interact with HPSA VPN, in charge of the service activation.
Customer Agent UI	Order entry and service monitor functionality. Integrated into the HP OSS Console platform.
Operator UI	Task management and technical monitoring functionality. Integrated into the HPSP default UI.

1.2.3 Product and Service Catalog

The current version of the HPSP VPN TE includes the following products and services in the Catalog:

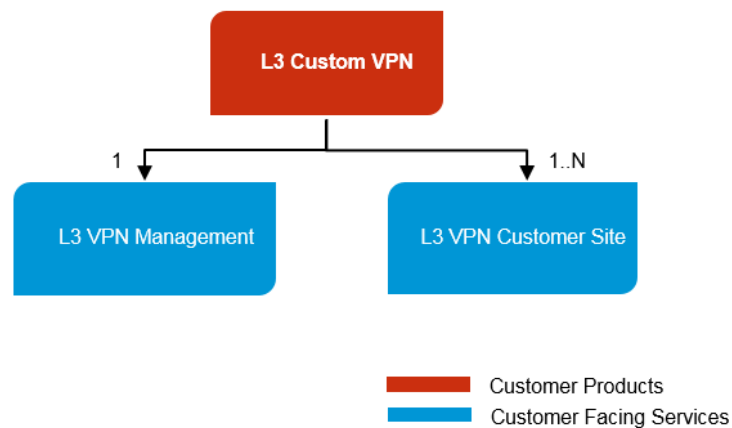


Figure 4: Product and Customer Service Catalog

Products included in the solution:

Product	Description
L3 Custom VPN	Main product provided by the solution. It represents a customer L3 VPN, containing a

	collection of customer sites.
--	-------------------------------

Customer services included in the solution:

Customer Facing Services	Description
L3 VPN Management	It represents the management of the customer L3 VPN. It's an administrative service, which maintains and manages the common information for the VPN.
L3 VPN Customer Site	It represents a L3 VPN customer site, including information about the location, rate limit and class of service to apply, and optional connectivity params. It includes all the technical services required to provision the customer access.

1.2.4 Solution roles

Two main roles will interact with the HPSP VPN TE solution:

- Customer agents: enter orders on behalf of end customers and monitor and manage their subscriptions.
- Technical operator: in charge of managing the technical tasks and technical monitoring of the tool.

2 Customer Agent UI

The functionality covered by this UI is:

- Customer management
- Order entry process
- Customer service monitor

The Customer Agent UI is deployed on top of the HP OSS Console solution, in order to be integrated with the rest of HP OSS Solutions and offer the final user an end-to-end perspective of the customer services. For concrete information about the OSS Console platform, please, consult the documentation.

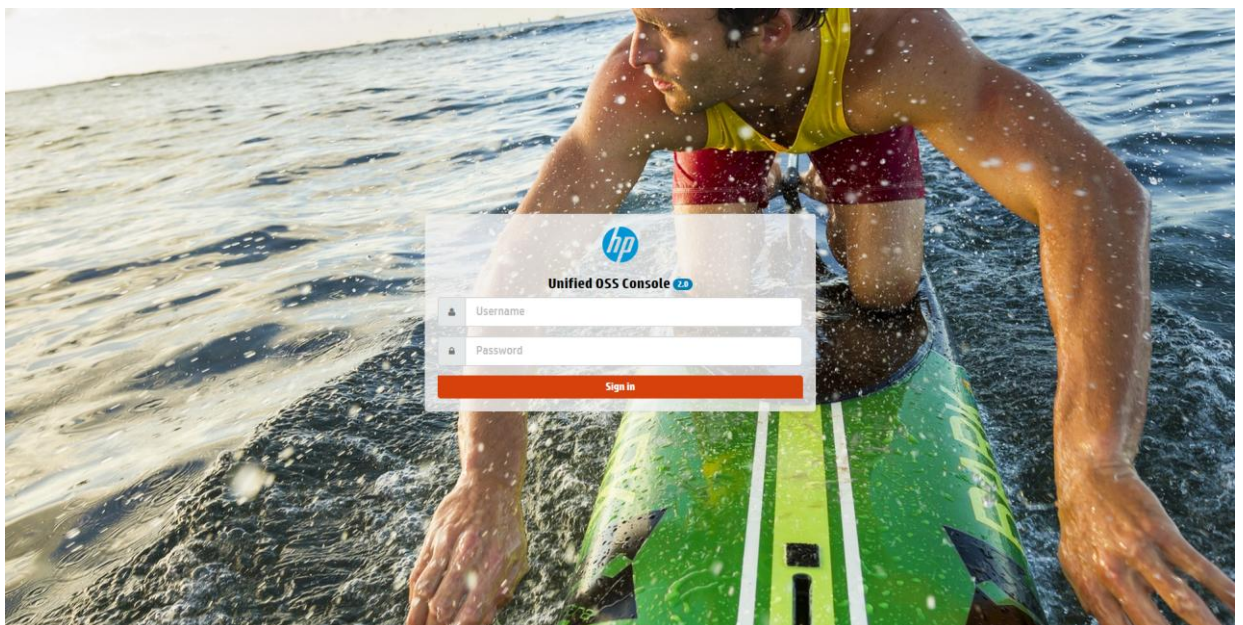
2.1 Login

The user interface requires an Internet browser with network access to the system server. The URL to access the system is:

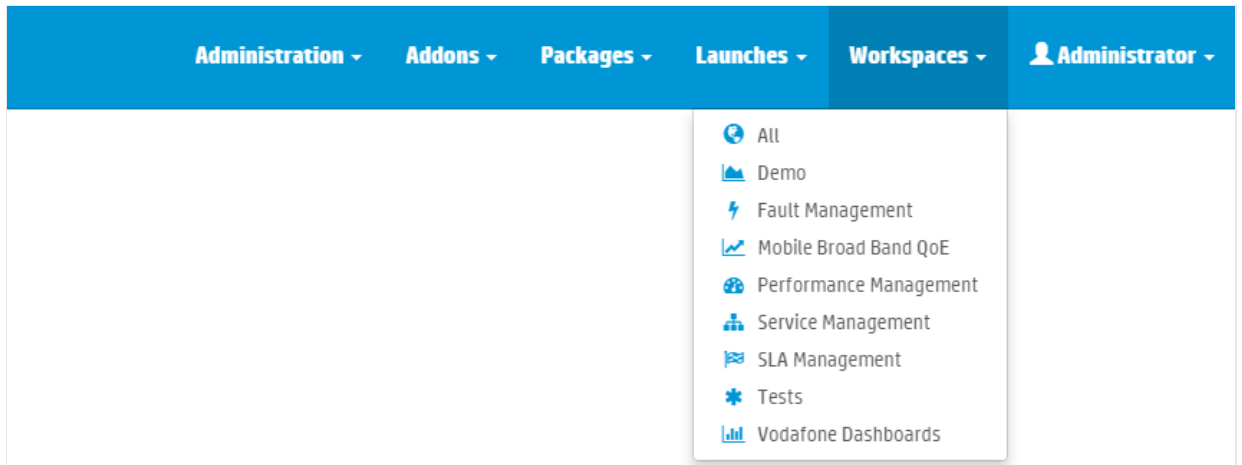
`http://<hostname>:<port>`

where <hostname> must be replaced with the hostname or IP address of the server, and <port> must be replaced with the number of the port on the server where the application exposes its web services, typically it is 3000. These data must be obtained from the system administrator.

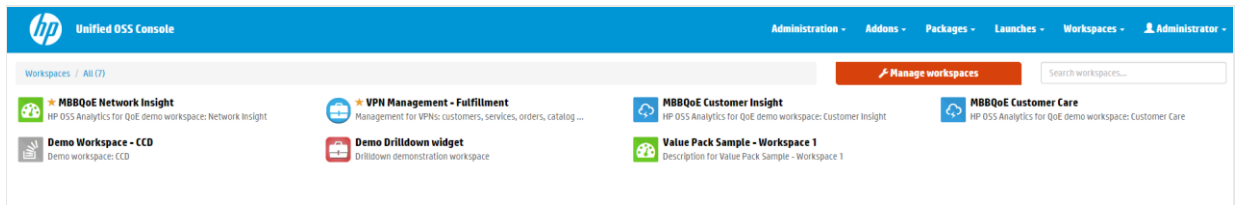
The system will respond with the login screen. An account identified by username and password is needed to access the system. User accounts must be managed with proper privileges reflecting user roles; this must be done and credentials distributed by the system administrator of the OSS Console:



When the credentials have been authenticated, the main screen is presented. Select the option Workspaces -> All on the main menu to display the list of available workspaces:



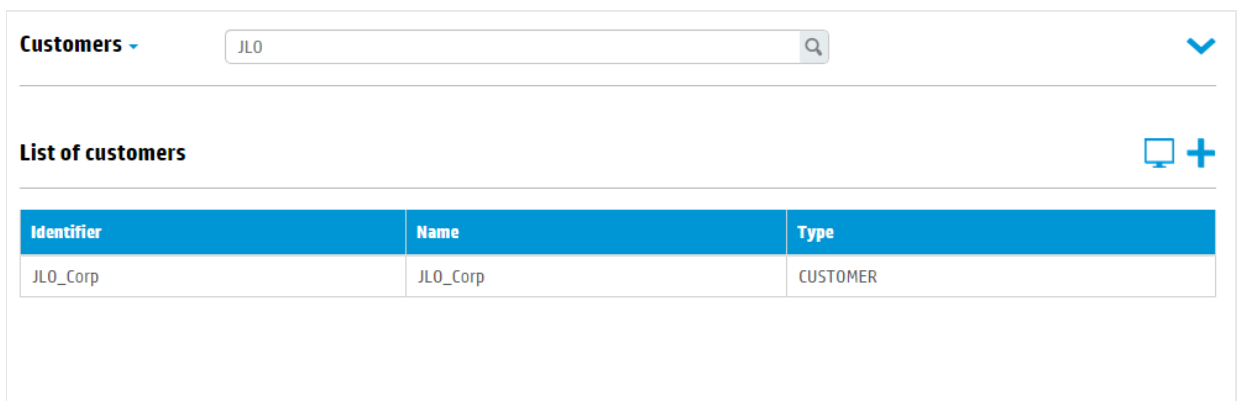
The list of workspaces is presented:



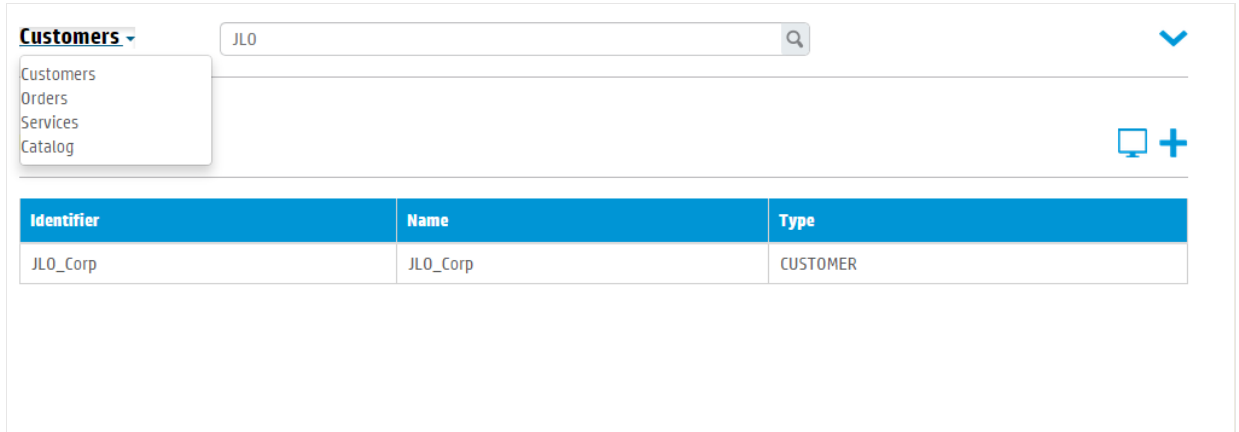
Select the 'VPN Management – Fulfillment' workspace.

2.2 Search Functionality

The first screen presented once the 'VPN Management – Fulfillment' workspace has been selected is the search view, from which the user can search and locate the different resources of the solution:




By default, the customer resource is selected. To choose any other resource, expand the drop-down menu close to the search field:



The resources managed by the solution are:

Solution resource	Description
Customers	Represents a customer of the CSP. Customers can be residential (individuals) or corporate (companies).
Services	Represent customer subscriptions to a concrete product.
Orders	Represent customer requests to manage subscriptions (create/update/delete)
Catalog	Represent the products in the catalog

By default, the full text search is used, and the user can enter the text there. But an advanced search is also available, just expanding the  icon, which includes specific fields that the user can set in order to filter the search:

Catalog ↕

Product Name

ProductVersion





State

Catalog

Name	Version	Status	Description
Custom_L3_VPN	1	AVAILABLE	L3 VPN product. Customization per site.

After click on the search button, the resulting list is presented.

The following icons appear associated with the results (some of them can be presented or not, depending on the type of resource):

Icon	Result
	Add a new resource
	Modify the resource (for update/delete). A resource has to be selected before selecting this option.
	Monitor the resource. A resource has to be selected before selecting this option.
	Delete the resource

2.3 Customer Management

Go to the search screen and select the resource Customer.

2.3.1 Create a new customer

Click on the 'new' icon. The customer entry form appears:

Customer edition

Name

Code

Email
Email will be used for the customer.

Address

City

State

Zip

Country

Latitude

Longitude

The customer resource contains the following fields:



Field	Description
Name	Name of the customer
Code	Code to identify the customer
Email	Contact email
Address	Main address of the customer
City	Main city of the customer
State	Main state/province of the customer

Zip	Main postal code of the customer
Country	Main country of the customer
Latitude	Exact latitude of the customer location
Longitude	Exact longitude of the customer location

Enter the customer values and click on the save button.

2.3.2 Update a customer

Select a concrete customer from the resulting list, click on the 'monitor' icon, and once the information is displayed, click on the 'edit' icon. The customer update form is presented:

Customer edition  

Name
 ✓

Code
 ✓

Email
 ✓
Email will be used for the customer.

Address
 ✓

City
 ✓

State
 ✓

Zip
 ✓

Country
 ✓

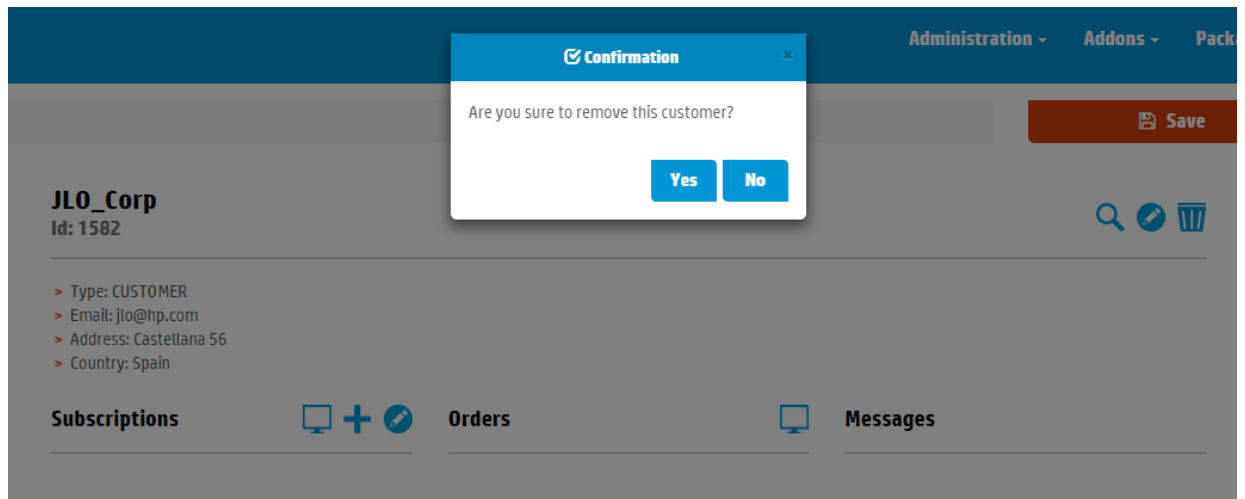
Latitude

Longitude

Enter the customer values and click on the save button.

2.3.3 Delete a customer

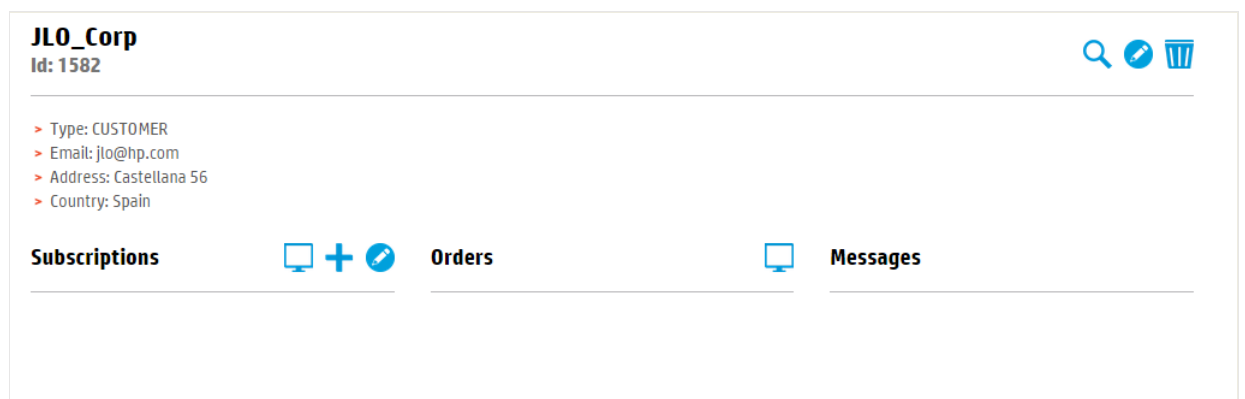
Select a concrete customer from the resulting list and click on the 'remove' icon. A confirmation message appears:



Confirm the action to delete the customer.

2.3.4 Monitor the customer

Select a concrete customer from the resulting list and click on the 'monitor' icon. The customer monitor screen is presented:



The customer monitor screen presents the main information related with the customer, including the list of customer subscriptions and customer orders.

2.4 Subscription Management

Go to the customer monitor screen.

2.4.1 Create a new customer subscription

Click on the 'new' icon of the customer subscription list. The new subscription process starts. The new screen presents information about the selected customer, the sequence of steps to follow and the work area to interact with the solution.

Step 1: Product selection

The user has to select one of the available products coming from the Catalog. In this case, select the L3 Custom VPN (click on the order button):

The screenshot shows a user interface for a customer named JLO_Corp (Id: 1582). At the top right, there are icons for search, edit, and delete. Below the customer name, a list of details is shown: Type: CUSTOMER, Email: jlo@hp.com, Address: Castellana 56, and Country: Spain. An 'Order process' section features a progress bar with four steps: Product Selection (active), Complete Order, Confirm Order, and Order Process. Below this is a 'Catalog' section displaying a product card for 'Custom L3 VPN'. The card includes the description 'L3 VPN product. Customization per site.' and two bullet points: 'Number_of_sites: unlimited' and 'Class_of_Service: customized per site'. A blue 'Order' button is located at the bottom of the product card.

Step 2: Order completion

Once the product has been selected, an entry form is presented asking for the required information:

Order process <

Product Selection Complete Order Confirm Order Order Process

Detail

VPN Information

Name
 ✓

Description
 ✓

Topology
 ▼

Sites

Copenhagen1
+ New

Basic
Advanced

Location name
 ✓

Description
 ✓

Country
 ✓

Province
 ✓

City
 ✓

Fields of the L3 VPN entry form:

Field	Description
Name	Name of the Customer VPN
Description	Description of the Customer VPN
Topology	Topology to apply (Full-Mesh or Hub & Spoke)

Fields of the L3 VPN Site tab (for each customer site to be provisioned):

Field	Description
Name	Name of the VPN customer site

Description	Description of the VPN customer site
Country	Country where the customer site is located
State	State/Province where the customer site is located
City	City where the customer site is located
Postal code	Postal code where the customer site is located
Address	Address where the customer site is located
Class of Service	Class of Service to apply to the customer site (initially available: Platinum, Gold, Silver, Bronze)
Rate limit	Rate limit to apply to the customer site (Initially available: 1M, 10M, 100M)
Connectivity Type	Only available for VPNs of type Hub & Spoke. To choose between Hub and Spoke.

Advanced fields of the L3 VPN Site tab*:

Field	Description
IP Pool	Name of the IP pool used to obtain the IPs. Default value Simple-VPN-Pool (defined by default in the configuration)
Routing protocol	Routing protocol to apply between the customer site and the core network (RIP, BGP, OSPF, Static Routes). Default value RIP.
ASN	Only available if BGP is selected as the protocol to apply
Routing Area	Only available if OSPF is selected as the protocol to apply
Static Route	Only available if Static Routes is selected as the protocol to apply (format: IP/mask)

**These fields don't have to be specified, the system can apply default values (RIP, Simple-VPN-Pool) in case there are not specific requirements.*

Once all the fields has been introduced, click on save.

Step 3: Order confirmation

The product information is presented for a final confirmation:

Order process

Product Selection Complete Order Confirm Order Order Process

Detail

VPN Information

Name
VPN_Denmark

Description
VPN_Denmark

Topology
Full-Mesh

Sites

Copenhagen1 Basic Advanced

Location name
Copenhagen1

Description
Copenhagen1

Country
Denmark

Province
Copenhagen

City
Copenhagen

Click on the 'OK' button to start processing the order.

Step 4: Order process

Once the order is confirmed, the provisioning process starts:

Order process

Product Selection Complete Order Confirm Order Order Process

Detail

VPN Information

Name

Description

Topology

Sites

 Basic **Advanced**

Location name

Description

Country

Province

City


Click on the 'monitor' icon to open the order monitor screen:


Custom_L3_VPN

Customer: JLO_Corp

> Order: 1422189226795
> ServiceId: 226

Order process





Checked **Designed** Reserved Active

Detail

VPN Information

Name

Description

Topology

Sites

Copenhagen1
Basic
Advanced

Location name

Description

This screen presents the main information of the order, the progress bar with the current state and the information about the subscription in process.

States for the L3 VPN:

Field	Description
Checking	The availability of the service is checked.
Design	Network connectivity services are designed, including the path to connect the customer site to the core network
Reserve	The network resources are reserved in the inventory system
Activation	Services are activated in the network

During the provisioning process, for each new customer site, two manual actions will be required by default:

- Selection of the access switch for the customer site (during the design phase)
- Installation of the CE in the customer premises (connected to the previous access switch) and completion of the information about the new installed equipment (during the reservation phase).

These manual tasks will be generated automatically by the solution and assigned to the operators, who are in charge of manage these tasks, as explained in the section 'Operator UI'. The order will remain in waiting state (indicated by the yellow icon 🟡) until these tasks are completed.

Once the last state is reached, the subscription becomes active:

Order process

Checked — Designed — Reserved — Active

Detail

VPN Information

Name
VPN_Denmark

Description
VPN_Denmark

Topology
Full-Mesh

Sites

Copenhagen1 | Basic | Advanced

Location name
Copenhagen1

Description
Copenhagen1

Country
Denmark

Province
Copenhagen





City
Copenhagen

2.4.2 Monitor the customer subscription

Go to the Customer Monitor screen. The new subscription will appear in the subscription list:

JLO_Corp
Id: 1582

> Type: CUSTOMER
> Email: jlo@hp.com
> Address: Castellana 56
> Country: Spain

Subscriptions    **Orders**  **Messages**

Custom_L3_VPN
> Subscription: 226
> State: Active

1422189226795
> Subscription: 226
> Product Name: Custom_L3_VPN
> State: Active

Select on the subscription and then click on the 'monitor' icon, the detailed subscription information is presented:

Custom_L3_VPN
Customer: JLO_Corp

> Service: 226
> State: Active

Detail

VPN Information

Name
VPN_Denmark

Description
VPN_Denmark

Topology
Full-Mesh

Sites

Copenhagen1 Basic **Advanced**

Location name
Copenhagen1

The screen presents the main subscription information and detailed information about the customer services.

2.4.3 Modify a customer subscription

Select one subscription and then click on the 'edit' icon. The modify subscription process starts. The new screen presents information about the selected customer, the sequence of steps to follow and the work area to interact with the solution.

Step 1: product selection

This step is skipped in the current version. Later versions will include the possibility to automatically migrate between products when selecting a new one.

Step 2: Order completion

The entry form appears with the values prepopulated. The modifications allowed are:

- Create new sites
- Retire existing sites
- Modify the Class of Service and bandwidth of an existing site

JLO_Corp
Id: 1582

> Type: CUSTOMER
> Email: jlo@hp.com
> Address: Castellana 56
> Country: Spain

Order process

Product Selection Complete Order Confirm Order Order Process

Detail

VPN Information

Name
VPN_Denmark

Description
VPN_Denmark

Topology
Full-Mesh

Sites

Copenhagen1 Basic Advanced

Silkeborg1

+ New

Location name
Silkeborg1 ✓

Description
Silkeborg1 ✓

Once the information has been updated, click on save.

Step 3: Order confirmation

The product information is presented for a final confirmation:

JLO_Corp
Id: 1582

> Type: CUSTOMER
> Email: jlo@hp.com
> Address: Castellana 56
> Country: Spain

Order process

Product Selection Complete Order Confirm Order Order Process

Detail

VPN Information

Name
VPN_Denmark

Description
VPN_Denmark

Topology
Full-Mesh

Sites

Copenhagen1 Basic Advanced

Silkeborg1 Location name
Copenhagen1

Click on the 'OK' button to start processing the order.

Step 4: Order process

Once the order is confirmed, the provisioning process starts:

JLO_Corp

Id: 1582

> Type: CUSTOMER
> Email: jlo@hp.com
> Address: Castellana 56
> Country: Spain

Order process

Product Selection Complete Order Confirm Order Order Process

Detail

VPN Information

Name
VPN_Denmark

Description
VPN_Denmark

Topology
Full-Mesh

Sites

Copenhagen1 Basic Advanced

Silkeborg1

Location name
Copenhagen1

Click on the 'monitor' icon to open the order monitor screen:

Custom_L3_VPN

Customer: JLO_Corp

> Order: 1422201025304
> ServiceId: 226

Order process

Order process progress bar showing four steps: Checked, Designed, Reserved, and Active, all marked with checkmarks.

Detail

VPN Information

Name
VPN_Denmark

Description
VPN_Denmark

Topology
Full-Mesh

Sites

Copenhagen1 Basic Advanced

Silkeborg1

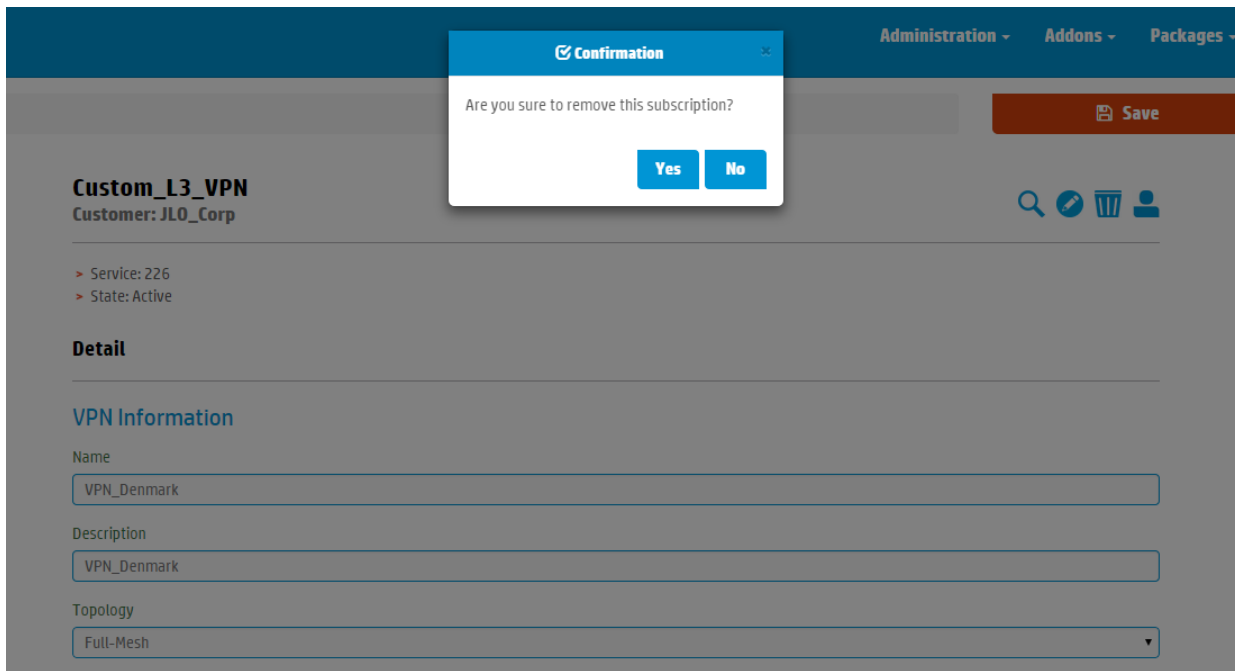
Location name
Copenhagen1

Description

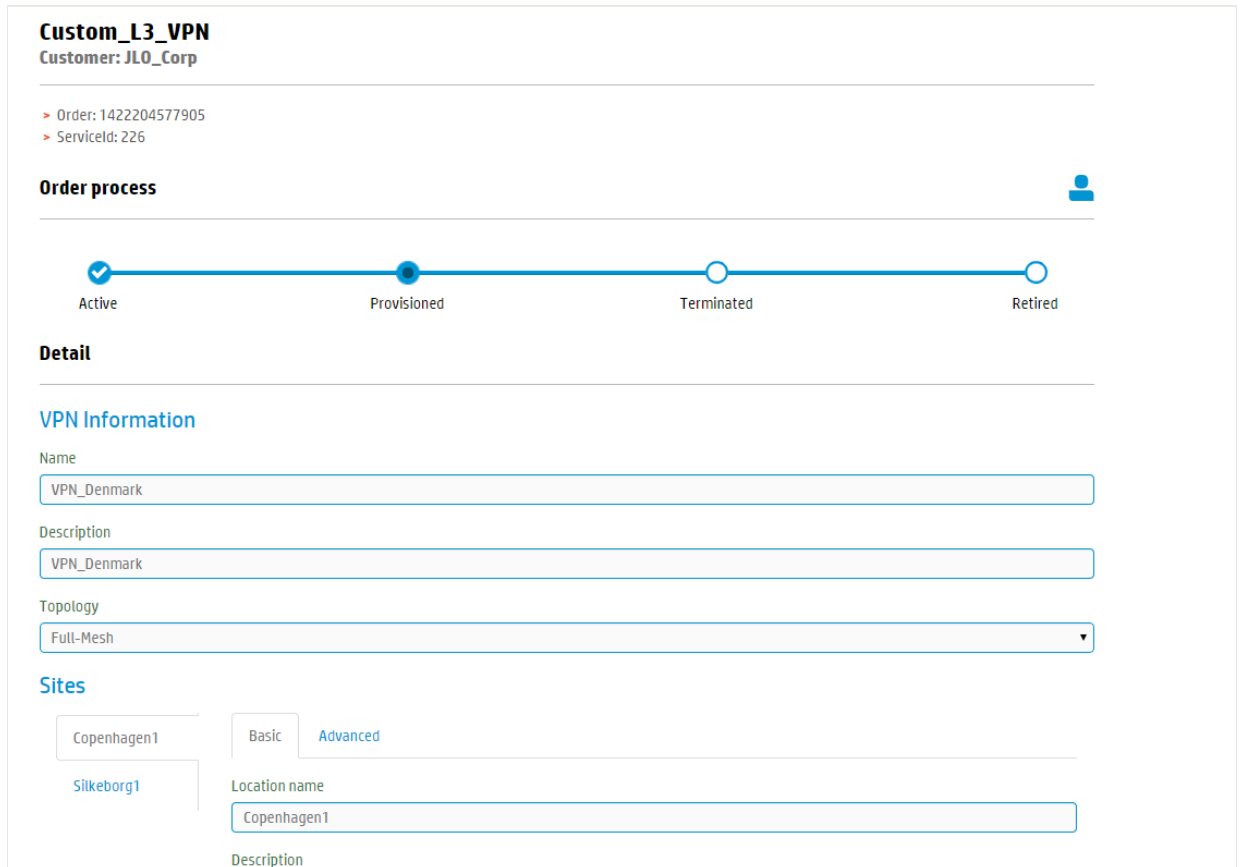
This screen presents the main information of the order, the progress bar with the current state and the information about the subscription in process. Once the last state is reached, the modifications of the customer subscription become active.

2.4.4 Retire a customer subscription

Open the subscription monitor screen and select the 'remove' icon. A confirmation message appears:



Confirm the action to start the retirement process. The new order appears in the customer monitor screen. Click on the 'monitor' icon to follow the progress:



Once the last state is reached, the subscription is retired:

Custom_L3_VPN

Customer: JLO_Corp

> Order: 1422204577905
> ServiceId: 226

Order process

Active Provisioned Terminated Retired

Detail

VPN Information

Name

Description

Topology

Sites




Site Basic **Advanced**

Location name





Description

The subscription is removed from the customer monitor screen:

JLO_Corp
Id: 1582

> Type: CUSTOMER
> Email: jlo@hp.com
> Address: Castellana 56
> Country: Spain

Subscriptions    **Orders**  **Messages**

1422204577905
> Subscription: 226
> Product Name: Custom_L3_VPN
> State: Retired

1422201025304
> Subscription: 226
> Product Name: Custom_L3_VPN
> State: Active

3 Operator UI

The objective of this UI is:

- Completion of required manual tasks
- Technical monitoring

Manual tasks and technical monitoring are managed inside the HPSP standard UI.

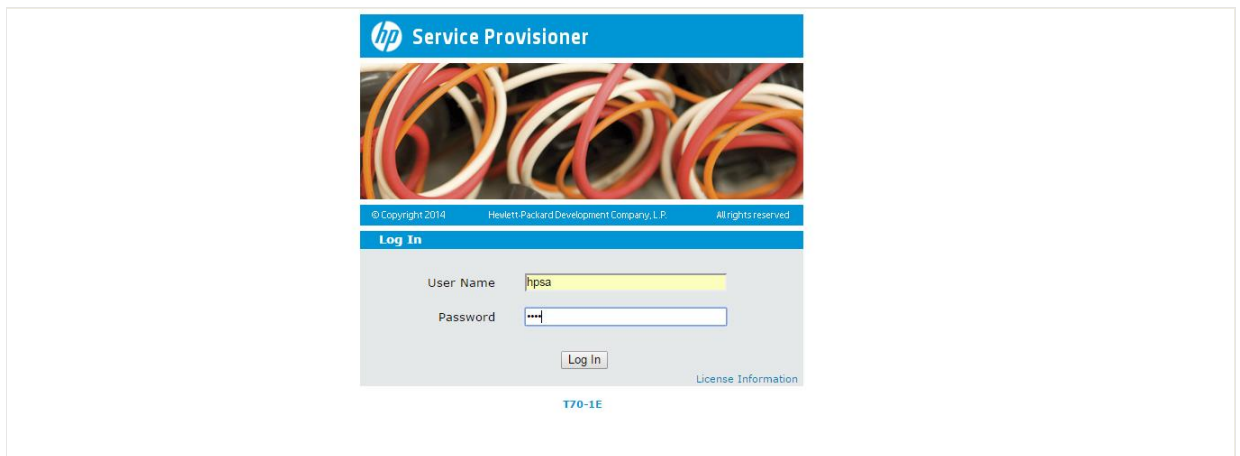
3.1 Login

The user interface requires an Internet browser with network access to the system server. The URL to access the system is:

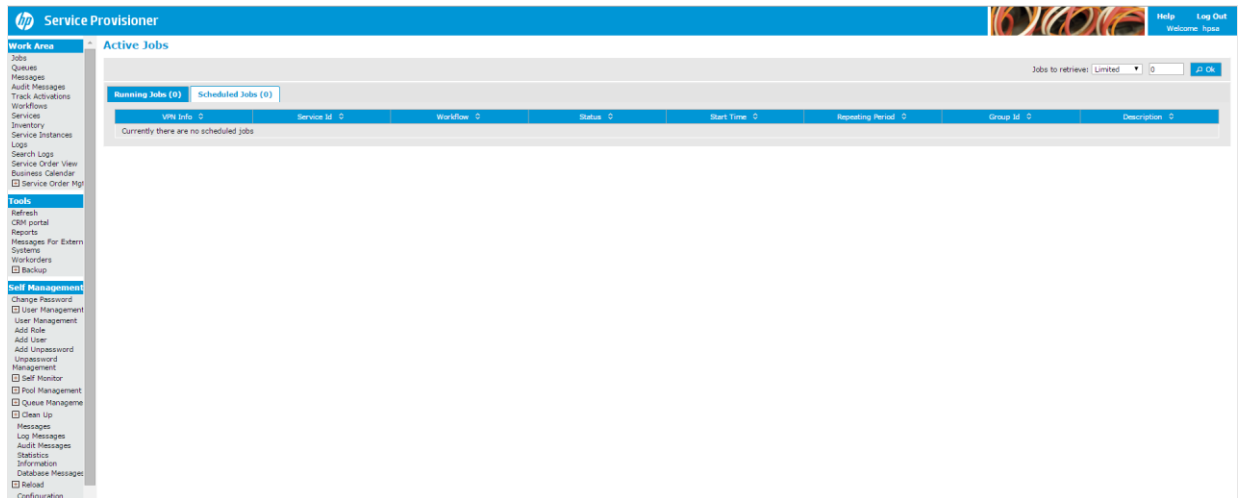
```
http://<hostname>:<port>/activator/jsp/login.jsp?id=som
```

where <hostname> must be replaced with the hostname or IP address of the server, and <port> must be replaced with the number of the port on the server where the application exposes its web services, typically it is 8080. These data must be obtained from the system administrator.

The system will respond with the login screen. An account identified by username and password is needed to access the system. User accounts must be managed with proper privileges reflecting user roles; this must be done and credentials distributed by the system administrator of the HPSP:



When the credentials have been authenticated, the HPSP main screen is displayed:



3.2 Manual Task completion

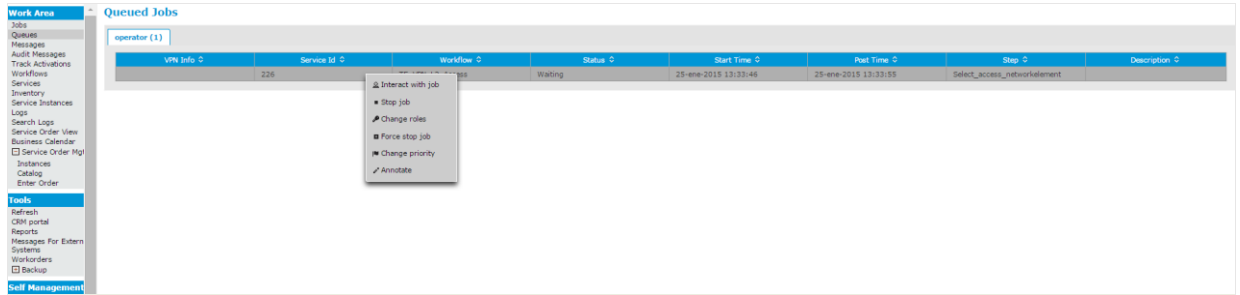
VPN Services include two kind of manual tasks:

Manual Task	Description
Selection of the access switch for the customer site (network design)	Automatically generated during the design phase of the VPN Customer Site provisioning process. The operator has to select the access switch (and access connectivity params) to which the customer equipment is going to be connected
Installation of the CE equipment in the customer premises and connect it to the previous access switch (engineering order)	Automatically generated during the reservation phase of the VPN Customer Site provisioning process. The operator/engineer has to complete the information once the installation has been done.

Go to the option 'Queues' in order to see the VPN pending tasks.

3.2.1 Selection of the access switch

These tasks are included under the tab 'Operator'. To open the operator form, select one of the entries, right click and select interact:



The operator form is presented:

Design Task

Service Details

Customer	JLO_Corp
Customer Service	CFS L3 VPN Customer Site
Technical Service	RFS L2 Access Link
Service transition	Design

Location Information

Country	Denmark
Province/State	Copenhagen
City	Copenhagen
Postal Code	2100
Address	Jagtvej 10

Access Switch

Select the access switch:

Access Switch	<input type="text" value="__WebTestA5__ACC1"/>
Access Interface	<input type="text" value="Interface0/1"/>
Encapsulation Type	<input type="text" value="Dot1Q"/>
VLAN	<input type="text" value="802"/>

Submit
Reset

Fill values and press submit

The form presents the information about the current service in execution (L2 Access Service), the parent customer service, and a section to select the access switch and L2 connectivity parameters.

Form params:

Field	Description
Access switch	Select the access switch to which the customer will be connected.
Access switch interface	Select the access switch interface to which the customer will be connected.
Encapsulation	Type of encapsulation to apply.

VLAN	Vlan number to use to transport the customer traffic to the core network
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Introduce the information and click on save. This will make the provisioning process to continue.

3.2.2 CE Installation

These tasks are included under the tab 'CE Conf'. To open the task form, select one of the entries, right click and select interact:



The form presents the information about the current task in execution (CE Install & Config), the instructions, and a section to be completed once the engineering task has been done:

Engineering Task

Task Details

Customer: JLO_Corp
Engineering task: VPN CE Install & Config

Task Instructions

Instructions: install the CE equipment in the customer site, connect it to the access switch, provide the serial number and indicate the selected physical interface

Location

Country: Denmark
Province/State: Copenhagen
City: Copenhagen
Postal code: 2100
Address: Jagtvej 10

Access Switch Equipment Information

Access Switch ID: __WebTestA5__ACC1
Access Switch Interface ID: Interface0/1
Encapsulation: Dot1Q
VLAN: 802
Circuit ID: __WebTestA5__Circuit1

CE Equipment Information

Insert Installed CE Serial Number:

Installed CE SN: Search

CE Interface:

Submit Reset

Fill values and press submit

Form params:

Field	Description
CE SN	Serial number of the installed CE equipment.
CE Interface	CE equipment interface used to connect the equipment to the access switch

Introduce the information and click on save. This will make the provisioning process to continue.

3.3 Technical Monitoring

The technical monitoring requires knowledge of the different tools installed as part of the solution:

- HP Service Provisioner skills: check the catalog status and technical information about instances in the service inventory (consult also the 'Consult the catalog configuration' chapter for details on the VPN technical catalog).
- HPSA VPN: check the activation process in low level detail.
- HP Trueview: check the network and network services, in concrete, L3 VPN Services (consult also the 'Check the VPN Configuration in TV' chapter for an initial overview).

Please, consult the documentation for each product in order to get more information about the technical monitoring.

4 Appendix I: Consult the catalog configuration

To see the details of the VPN Catalog (including the technical decomposition and associated workflows), please access the HPSP UI:

<http://<hostname>:<port>/activator/jsp/login.jsp?id=som>

where <hostname>:<port> are the host and port on which the HPSP has been deployed.

Go to Service Order Mgt -> Catalog. The VPN services, including a complete description of the fields is presented:

The screenshot displays the 'Catalog Management' interface. On the left is a navigation menu with categories like 'Work Area', 'Tools', 'Self Management', and 'User Management'. The main content area shows 'Product Specification Custom_L3_VPN_1' with the following details:

- Administrative State: available
- Description: L3 VPN product. Customization per site.
- Resource: false
- Life Cycle Profile: Default
- Pre-Workflow:
- Post-Workflow:
- Solution:
- Queue:

Below the product details are three tables:

Templates		
Name	Version	Default Template
No records found.		

Profile Characteristics						
Name	Value	Annotation	Scope	Description	Type	Restriction
No records found.						

Characteristics						
Name	Value	Annotation	Scope	Description	Type	Restriction
Bandwidth	customized per site	set-once	visible	customized per site	string	-
Class_of_Service	customized per site	set-once	visible	customized per site	string	-
Internal_Id		set-once	internal	Identifier of the VPN Service. Auto-generated by the solution	string	-
Internal_Name		set-once	internal	Name of the customer VPN	string	-
Number_of_sites	unlimited	set-once	visible	unlimited	string	-

Below the characteristics table is a 'Characteristic Mappings' section with two sub-tables:

Input Mappings		Output Mappings	
Characteristic Name	Child Characteristic Name	Child Characteristic Name	Characteristic Name
L3_VPN_Management_1	-	L3_VPN_Management_1	Internal_Id
L3_VPN_Site_1	-	L3_VPN_Site_1	Internal_Name
Internal_Id	VPN_Id	-	-
Internal_Name	Name	-	-

Service instances can also be displayed accessing the option Service Order Mgt -> Instances:

The screenshot displays the 'Instance Management' interface. It features a search filter with the following fields:

- Name: []
- Version: []
- Service Id: []
- Creation Time: From [] To []
- State: Any state
- Failed: []
- Page size: 10
- Customer Name: []
- Order Id: []
- Request Id: []
- Modification Time: From [] To []
- Display Label: []
- Scheduled: []
- Buttons: Search, Reset

Below the search filter, there is a 'Found Instances' section with a 'Processing (0)' button and a 'Static (0)' button. A message below states: 'No matches; please modify search criteria and click [Search]'.

Please, consult the HPSP documentation for more information.

5 Appendix II: Technical decomposition in detail

Customer services are decomposed by the HPSP into the technical services required to fulfil the service. These are the technical services included in the VPN Catalog:

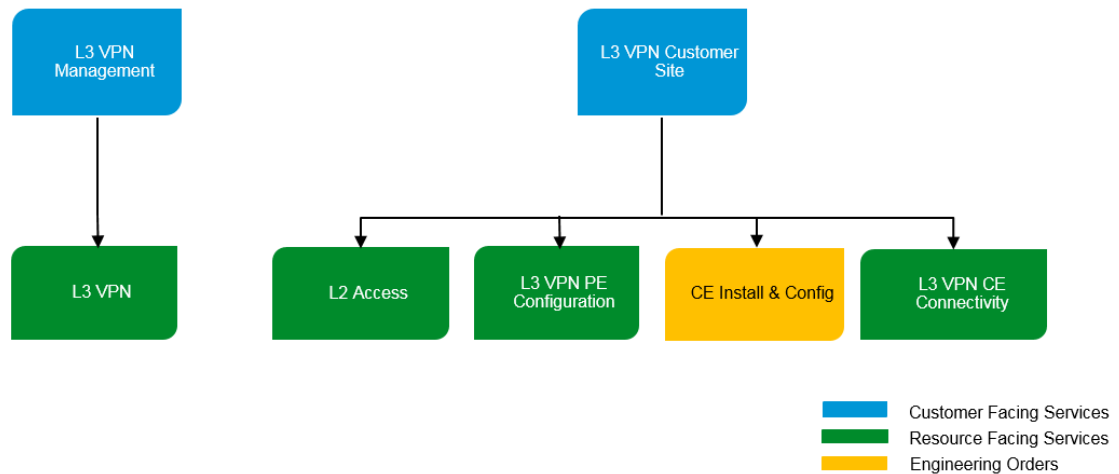


Figure 5: Technical Catalog

Technical services included in the solution:

Resource Facing Services	Description
RFS L3 VPN	Configuration of the VPN in the Inventory System
RFS L2 Access	Configures the L2 access (vlan path) between the access switch and the PE equipment. It requires a manual task to select the access switch to which the customer will be connected.
RFS L3 VPN PE Configuration	Configures the L3 VPN service in the PE equipment, including the VRF.
RFS L3 CE Connectivity	Configures the L3 Connectivity to the PE.

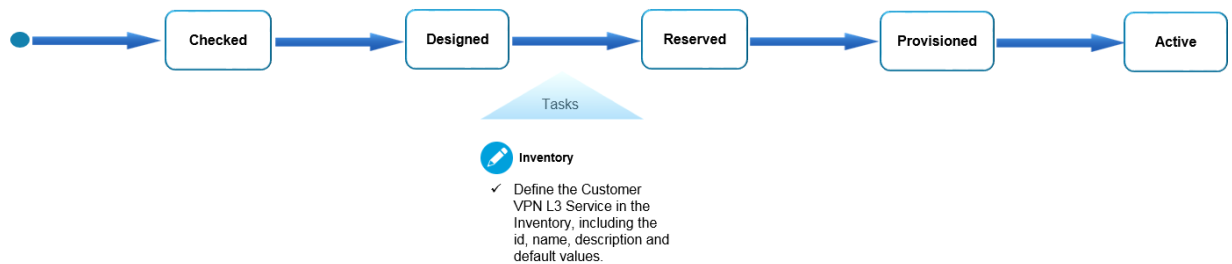
Engineering orders included in the solution:

Engineer order	Description
CE Install & Config	Engineering order to install the CE equipment. It requires a manual task to introduce the information about the installed equipment.

In the HPSP, all the RFSs have associated workflows that will implement the provisioning process. The workflows are defined in the Catalog as part of the RFS configuration. This is the technical description of the workflows in charge of managing the provisioning process of each RFS:

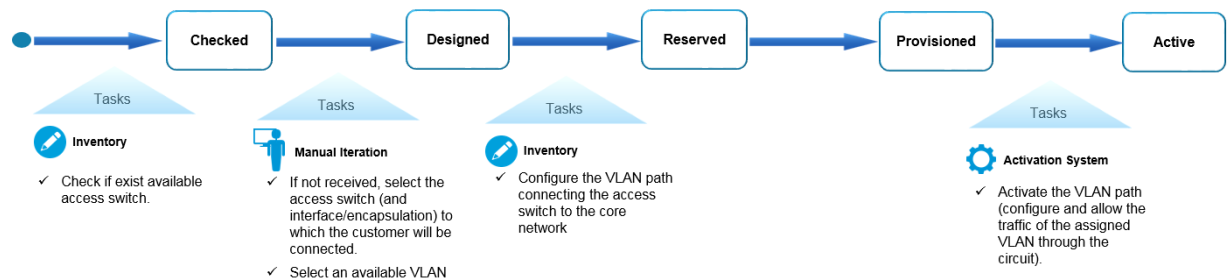
RFS L3 VPN

Administrative task to include the VPN information in the inventory.



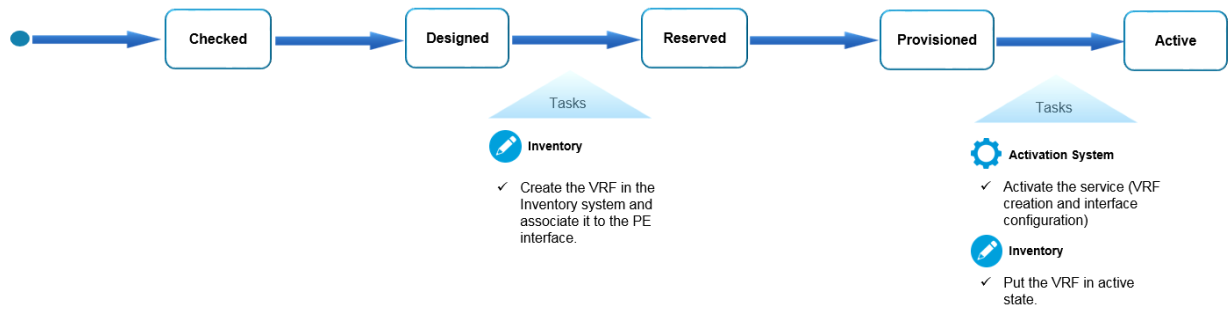
RFS L2 Access

Configure the vlan path (between the customer access switch and core network) through which the customer traffic will be transmitted.



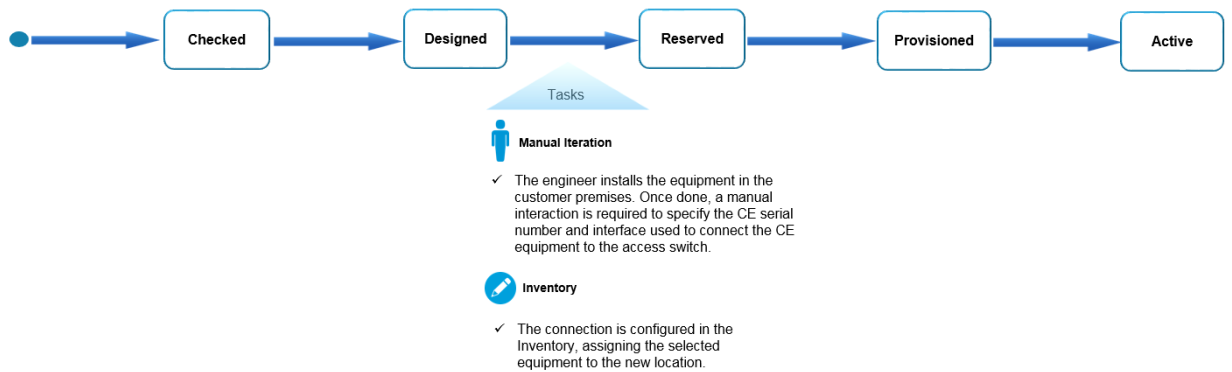
RFS L3 VPN PE Configuration

Configure the VRF in the PE and associate it to the customer facing interface.



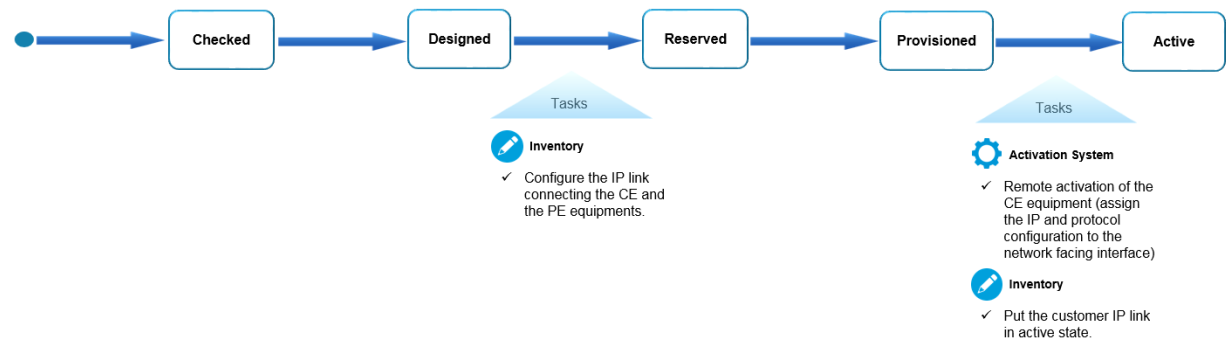
CE Install & Config

Install and configure the CE equipment.



RFS L3 VPN CE Connectivity

Establishes the IP connectivity between the CE and PE equipments.



6 Appendix III: Check the VPN service in TV Inventory

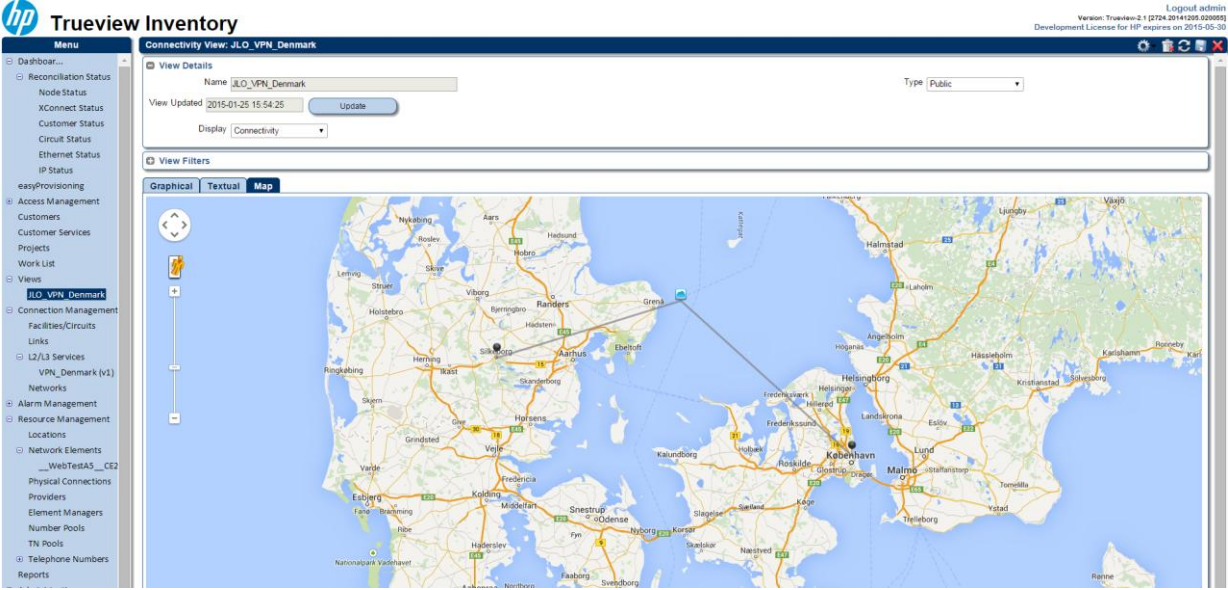
Network VPN Services are modeled in TV Inventory as part of the provisioning process. Please access the HP Trueview inventory UI:

`http://<hostname>:<port>/tnp`

where <hostname>:<port> are the host and port on which the TV Inventory has been deployed. Choose the option 'Connection Management -> L2/L3 Services' and search for the service to be displayed. The name of the service will be the VPN name provided during the order entry process:

The screenshot displays the HP Trueview Inventory web interface. The main content area shows the configuration details for an IP VPN service named 'VPN_Denmark'. The configuration includes fields for Name, Alias, Ver, Type (IP VPN), Customer (JLO_Corp), Reconciliation Status (Unknown), Class of Service (simple_100.0.0.0), and Topology Type (Mesh). The Provisioning Status is 'In Service', Source is empty, Availability is 'Available', and Reconciled Date is empty. Below the configuration fields, there are sections for 'Service Level Bandwidth Profiles' and 'Additional Details' (Multicast). The 'Layout Details' section is active, showing a graphical view of the network topology with nodes like '_WebTestA5_CE1', '_WebTestA5_PE1', and '_WebTestA5_BGPNetwork1' connected by lines.

You can also create a view containing the new VPN service, and select the map tab to see a graphical visualization of the service:



Please, consult the HP TV Documentation for more information about the VPN Services in TV.