NETPortal Administration and Configuration Guide

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REVISION HISTORY

RELEASE	DESCRIPTION	DATE
0.1	Initial draft for FCS release	August 2012
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1. About This Guide

1.1. Purpose and Scope

The purpose of this guide is to provide application administrators with an understanding of the various parameters used in NETPortal. The main modules described in this guide include the Administration, Security, and Configuration modules. For more information on other modules available in NETPortal, please refer to the ***NETPortal User Guide – Inventory Management***.

1.2. Assumptions

Users should be familiar with UNIX operating system commands and basic XML (for some configuration screens and customization packages).

1.3. Related Information

This guide is designed as a stand-alone document for configuring NETPortal parameters and custom application extensions.

1.4. Technical Assistance / Support Services

TierOne OSS Technologies Inc.

Toll-free: 1-888-677-4228

1.5. Using This Guide

The ***NETPortal Administration and Configuration Guide*** begins with a general product description, followed by a section on how to navigate the screens. The remainder of the Guide is organized into sections reflecting system settings and configuration of application extensions. Each section provides descriptions of the screens and commands for that module and presents steps for inputting information. Depending on your license agreement, not all features or menu options may be available to you as they are described in this manual. If you have any questions about product installation or configuration, please contact OSS Support Services.

1.6. Conventions

This guide uses certain conventions and symbols as described in the following tables:

TYPOGRAPHICAL CONVENTIONS	
DESCRIPTION	EXAMPLE
User interface actions appear in this **typeface.**	On the Status bar, click **Start**.
Buttons or switches that you press on a unit appear in this **TYPEFACE**.	Press the **ON** switch.
Code and output messages appear in this `typeface`.	`All results okay`
Text you must type exactly as shown appears in this **`typeface.`**	Type: **`a:/set.exe`** in the dialog box

Variables appear in this **`typeface.`**	Type the new **`hostname`**.
A "**#**" is used to indicate the Unix shell command prompt for the **root** user.	# cat /etc/system
A "**$**" is used to indicate the Unix shell command prompt for a **non-root** user.	$ ./startWebLogic.sh
Book references appear in this ***typeface***.	Refer to ***Newton's Telecom Dictionary***
A vertical bar that looks like | means "or." When shown with several options in a command, only one option should be used.	platform [a|b|e]
Square brackets [ ] indicate an optional argument.	**login [platform name]**
Slanted brackets < > group required arguments.	**<password>**

Table 1 Typographical conventions

KEYBOARD & MENU CONVENTIONS	
DESCRIPTION	**EXAMPLE**
A plus sign + indicates simultaneous keystrokes.	Press **Ctrl+s**
A comma indicates sequential keystrokes.	Press **Alt+f,s**
An angled bracket or right arrow indicates choosing a submenu from a higher-level menu item.	On the menu bar, click **Start** → **Program Files**.

Table 2 Keyboard and menu conventions

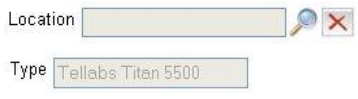
CONVENTIONS FOR DESCRIBING OBJECT FIELDS	
DESCRIPTION	**EXAMPLE**
Bolded text in tables indicates a mandatory object field.	**Location Code**
Drop-down menu options. The default option is shown bolded.	**Disabled**, Enabled
Read-only fields populated from a lookup table. These fields appear shaded in the display and cannot be edited.	

Table 3 Conventions for describing object fields

NOTE: This highlighted line represents a note indicating related information or a tip.

2. Product Description

2.1 Overview

For telecommunications service providers, **TIERONE**'s NETPortal™ is a comprehensive software solution that provides access, provisioning, service-fulfillment and service-assurance capabilities. The modular nature of the application permits its utilization in all aspects of the network, from core to access environments.

NETPortal maps customers to their services and network devices, thereby enabling proactive customer engagement and improved customer service. By design, network- and service-facing resources are separated, allowing flexibility in dealing with new services, network devices, and technologies. This approach provides quick business transformation wins with minimal customization or data migration, resulting in low total cost of ownership.

Provisioning of multiple vendor products and network technologies is supported with minimal training investment. Automated and predictable flow-through provisioning of services from planning to implementation is delivered in one solution.

TIERONE NETPortal™ is architected as an open-standards-based, extensible and scalable three-tier software platform. Depending on your license agreement, you may not be able to access all the modules and features described in this manual, but modules can be added on later as needed if licensing requirements change. Please contact OSS Support Services for more information.

The diagram below illustrates NETPortal components:

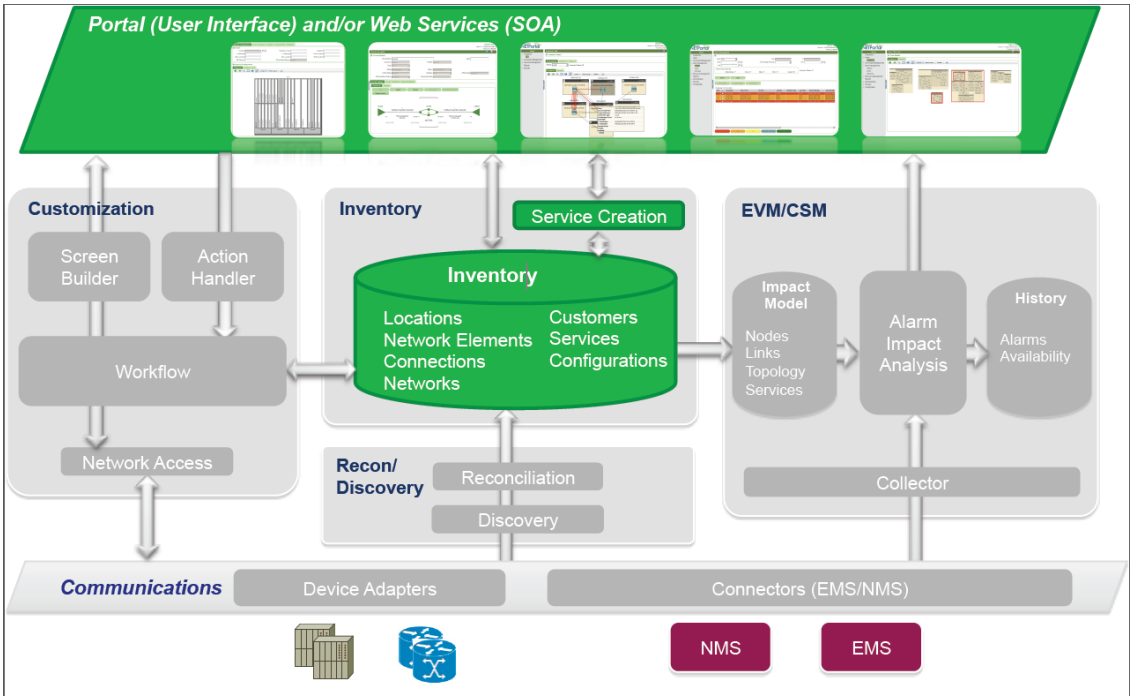


Figure 1 NETPortal components

A full installation of **TIERONE** NETPortal™ comprises the following modules:

- **Dashboard**
  - Provides an overview of the reconciliation status of Nodes and Links stored in the NETPortal database.
  - For more information, please refer to the ***NETPortal User Guide – Inventory Management***.
- **Access Management**
  - Configure controlled user access to Network Elements and related systems.

  Access Management is beyond the scope of this Guide.
- **Customers**
  - Define Customer entities with multiple Locations and Services.
  - For more information, please refer to the ***NETPortal User Guide – Inventory Management***.
- **Views**
  - Facilitate grouping of Links, Nodes, Networks or any combination of these elements for organizational purposes.
  - Views may be created as Public or Private to control access by other users.
  - Edit mode allows participating elements and/or queries to be set up for Views.
  - Read-only screen displays the contents of a selected View.
  - Views can be nested within other Views.
  - For more information, please refer to the ***NETPortal User Guide – Inventory Management***.
- **Connection Management**
  - Create Circuits, Facilities, Networks, and Services using Network Elements defined in Resource Management.
  - Allow Circuits to share channels – the system ensures that only one Circuit can be active on a given channel at any particular point in time.
  - Create multiple design versions for Layer 1, 2 and 3 Services.
  - Configure Ethernet Services over Ethernet Networks and MPLS Networks.
  - Configure VRF, route targets and route distinguishers for IP VPN Services.
    - Configure protocol and routing configurations of underlying IP Links.
  - For more information, please refer to the ***NETPortal User Guide – Inventory Management***.
- **Alarm Management**
  - Real-time alarm display, color-coded by severity.
  - Generate listings of historical and active alarms.
  - View affected Nodes, Facilities, Circuits, Links or Services.

  Alarm Management is beyond the scope of this Guide.

- **Resource Management**
  - Define site Locations and reference them to Customers.
  - Define and configure Network Elements based on Adapters.
  - Create Service Provider entities.
  - Configure connectivity to external Element Managers in the live network.
  - Support for TMUX functionality.
  - IP address and VLAN Number Pool definition and management.
  - For more information, please refer to the ***NETPortal User Guide – Inventory Management***.
- **Reports**
  - Generate Reports using Report Definitions provided with NETPortal.
  - For more information on generating Reports, please refer to the ***NETPortal User Guide – Inventory Management***.
  - For more information on creating custom Report Definitions, please refer to section 6.7.2 of this Guide.
- **Administration**
  - Monitor the status of Jobs executed by the NETPortal application.
  - Create and modify Schedules for performing upload, provisioning, and reconciliation operations.
  - View and/or simulate uploaded equipment configurations in the Upload Stage.
  - Generate or view an Audit trail of selected operations.
  - View a log of System Events that occur while NETPortal is running.
  - For more information, please refer to section 0 of this Guide.
- **Security**
  - Configure and manage Users and User Groups.
  - Assign Users to Customer-specific User Groups so that their view of the network is restricted.
  - Create Domains to facilitate grouping of Network Elements.
  - Define Privilege levels for accessing NETPortal features.
  - For more information, please refer to section 5 of this Guide.
- **Configuration**
  - Define Bandwidth Profiles, Classes of Service, Capacity Management, Provisioning Enumerations for circuit provisioning states, and Rules for Service in NETPortal.
  - Use the NE Configuration tool to install and configure Access Adapters for use with NETPortal, upload and assign custom icons to represent defined Network Elements, and define connection pool settings for Network Elements.
  - Modify color configurations for alarms, VLAN paths, link availability, circuits, upload states, etc.

- Define custom enumerations for NETPortal selection fields, such as report categories, location types, connection capacity, etc.
- Configure system parameters, multilingual support, authentication settings, user-interface styles and more.
- Support for Provisioner COM Servers, Server Groups, and Connectors.
- Create and modify custom Report Definitions as well as custom Access Adapters and custom screen Packages with the Workbench.
- Manage custom screen Packages using the Customization submodule.
- For more information, please refer to section 6 of this Guide.

NETPortal supports service and design capabilities for the following technologies:

- Physical (L1) network and service design
  - DWDM
  - SONET/SDH
  - TDM/PDH (including Fractional T1)
  - VCAT (FICON, Ethernet, Fast Ethernet, GigE, 10 GigE)
  - Ethernet
  - ROADM
  - OTN
- Ethernet (L2) network and service design with support for
  - Unimplemented Ethernet Links
  - Ethernet Links over Layer 1 Circuits
  - Ethernet Networks
  - Ethernet Services, e.g. ELINE (point-to-point), ELAN (multipoint-to-multipoint)
  - VLAN and QinQ Service configurations
  - VPLS and VPWS Service configurations over MPLS
  - Redundancy configuration, e.g. using HSRP
  - Traffic conditioning
  - Link capacity management
- IP (L3) network and service design with support for
  - IP links (configured for OSPF, IS-IS, BGP, RIP, or static protocols)
  - L3 VPN (VRF, Route Distinguishers and Route Targets)
  - OSPF, IS-IS and BGP Networks

The Number Pools feature provides management and automated assignment of numbers for Autonomous Systems, IPv4 Addresses, VLAN numbers, VPLS VPN ID’s and VPWS VC ID’s.

Access Adapters are used for secure, centralized interaction with large-scale managed Network Elements.

Provisioning Adapters handle NETPortal functionality for communication with physical Network Elements in a live network. These Adapters are modules developed by **TIERONE** and are modeled on actual Network Elements.

For integration capability with external applications, NETPortal™ has a web-services interface through which data is exchanged via XML-formatted transmissions over HTTP.

Reports on devices and services configured in NETPortal may be generated from predefined templates. The reports are created as HTML or Adobe PDF files which display automatically in a separate browser tab or window*.

NOTE: If you are using the Internet Explorer browser and are having issues viewing reports in a new browser tab or window, please refer to "Appendix A: Exporting Files."

Users who have acquired a license for Discovery features benefit from additional functionality which allows NETPortal to upload and reconcile configuration information from the service provider's live network to the network modeled in NETPortal.

Discovery/Upload operates on physical Network Elements and some logical properties of Network Elements in one of three modes:

- ***Report*** – This mode reports on differences between the live network and the model.
- ***Create*** – This mode populates empty slots in the model; for slots already populated with cards, the system checks whether the card was created by a user or by the NETPortal system during a previous Upload operation. If the card was created by a user, no changes are made to the card. If the card was created by the system during a previous Upload operation, NETPortal will modify the card if no connections exist on it. If the card cannot be modified because it was created by the user, the Manufacturer ID of the discovered card is shown in the <Discovered Card Manufacturer ID> field and the card is marked 'Out of Sync.'
- ***Update*** – This mode populates empty slots in the model, modifies populated slots ONLY if no connections exist (regardless of whether a card was user-created or system-created), and reports on all actions.

Reconciliation operates on connectivity and services in one of three modes:

- ***Report*** – This mode reports on differences between the live network and the model.
- ***Create*** – This mode creates new connections and services in the model. For existing connections or services, it only updates system-created circuits with a status of 'In Service' or 'Partially Defined.' User-created circuits that are assigned to a Customer will not be modified.
- ***Update*** – This mode creates new connections and services in the model, updates existing connections and services in the model depending on whether there are dependencies (Circuits riding on Facilities, a service riding on another service, etc.), and reports on all actions.

For Reconciliation operations, the software uses actual network configurations, not legacy data, as the basis of all functions, thus reducing errors and costly rework.

2.2 NETPortal Implementation

NETPortal™ is designed for deployment on a web server such as BEA WebLogic or JBOSS. Users can access the application via the Mozilla Firefox ® or Microsoft Internet Explorer® web browser. This method of implementation requires minimal support since no client software installation is needed and all environment configurations are performed at the server location.

Data for the NETPortal™ application is stored in an Oracle or PostgreSQL database. For demonstration purposes, the database software and supporting applications may be installed on a single machine, provided adequate system resources are available. In a multi-user networked production environment, Oracle or PostgreSQL should be installed on a separate database server.

LDAP or Microsoft Active Directory® servers are typically used to centralize user account management and enhance security in large organizations. NETPortal™ supports multiple LDAP server connections and container authentication which handles user authentication at the web-server level instead of the application level. This facilitates deployment of the application in a single sign-on environment.

User Group membership and Privileges for the application are defined in the NETPortal™ database.

NOTE: NETPortal™ is currently certified for Internet Explorer 9 and Firefox 14.

A complete NETPortal implementation consists of several modules that interact to provide a full-featured OSS product.

Inventory

The core of NETPortal is the Inventory module. This module stores all Network Element and Connectivity information and provides GUI access for users to define Network Elements, Connectivity, Networks and Services. The Inventory module does not connect directly to a live network.

For more information, please refer to the ***NETPortal User Guide – Inventory Management***.

Discovery

The Discovery module performs Upload and Reconciliation operations to upload configuration data from a live Network Element or other system to NETPortal and maintain the synchronization between the network and NETPortal.

Uploads may be initiated manually or may be scheduled. Three operational modes are supported:

- Create
- Update
- Report

For Layer 1 equipment, Facilities or Links between equipment must be created manually. The Reconciliation Engine can then be used to create Circuits.

Reconciliation in Layer 2 equipment automatically creates Links and Services based on information retrieved in the Upload mode.

Discovery tasks and operations are described in section 4.3 of this Guide.

Activation

The Activation module allows service configuration data created in NETPortal to be transferred to the target Network Elements in the live network to implement the service.

The Activation module is beyond the scope of this User Guide.

Access Management

Access Management provides controlled access to live Network Elements or systems. Actions performed through this module are logged for audit purposes.

The Access Management module is beyond the scope of this User Guide.

EVM and Alarm Management

EVM is a separate NETPortal application used to collect and process alarm data. EVM processes alarms, maps the alarms to devices, determines service impact and calculates service availability. All alarm and impact information is displayed in the NETPortal GUI.

The EVM and Alarm Management module is beyond the scope of this User Guide.

2.3 NETPortal Security Object Model

Access to all NETPortal objects and modules are controlled through the use of User Groups and Privileges.

The following diagram illustrates Security-related NETPortal objects and their relationships to each other.

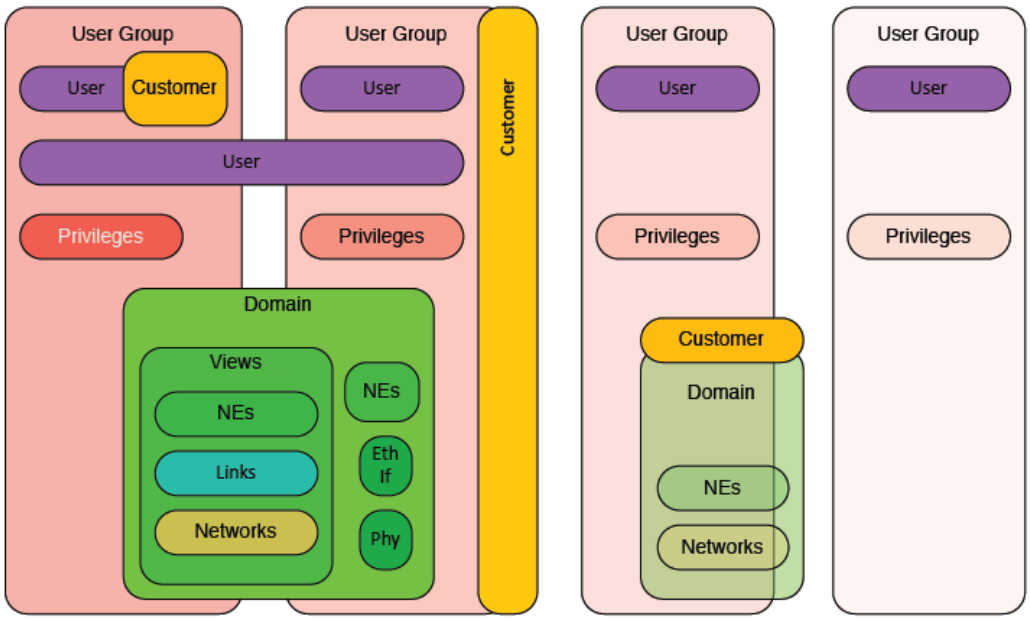


Figure 2 NETPortal security object model

For more information on Security objects, please refer to section 5.

3. NETPortal Basics

3.1. Overview

A NETPortal Administrator is responsible for assigning users a Username and Password with appropriate privileges for access to the application. Since the application utilizes a web client, the NETPortal Administrator must also provide a Uniform Resource Locator (URL) and port number for users to access the Login screen.

For more information on user administration, please refer to section 5.3.

For more information on privileges, please refer to section 5.6.

NETPortal has been tested with Mozilla Firefox 14 and Microsoft Internet Explorer 9.

Figure 3 NETPortal login screen

3.2. Logging in

1. Open a web browser window with the designated URL and port number to bring up the NETPortal login screen.
2. Enter the assigned Username and Password.
3. Click on the **Login** button or press Enter on your keyboard to access the system.

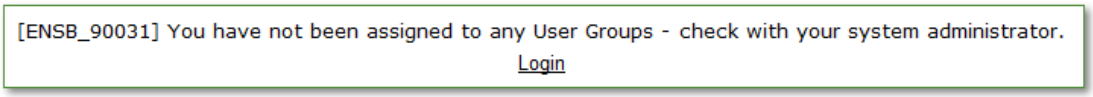
Passwords are mandatory, so when the password field is left blank or an incorrect password is entered, an error message will be displayed as in Figure 4. If there are problems with the Username, a message as depicted in Figure 5 will be displayed. If the problem persists, contact your LDAP administrator.

Figure 4 NETPortal login: missing or incorrect password

Figure 5 NETPortal login: incorrect User ID

A User must be assigned to a User Group and Privileges must be configured for that User Group before the User can access NETPortal modules.

If the User is not assigned to any User Group, the following error message will appear when that User attempts to log in:



To resolve this error, assign the User to a User Group. Please refer to section 5.3.3.1 for more information.

If a User is authenticated during login and belongs to a User Group, but the User Group has no Privileges assigned to it, the User will only be able to access the 'User Configuration' screen. There they can change their current language setting or password, but otherwise have no access to other NETPortal modules. To resolve this issue, assign Privileges to the User Group to which the User belongs. Refer to section 5.4.2.2 for more information.

For more information on how to configure User Groups, Users and Privileges, please refer to section 5.

3.3. Logging out

Once a user is logged into the system, a logout hyperlink is created at the top right corner of the screen, as shown in Figure 6. This link can be triggered from any screen within the application. When activated, the user is immediately returned to the NETPortal login screen.

Figure 6 NETPortal logout link

NOTE: Clicking on the browser's "Back" button as shown in Figure 7 automatically logs the user out and returns them to the login screen.

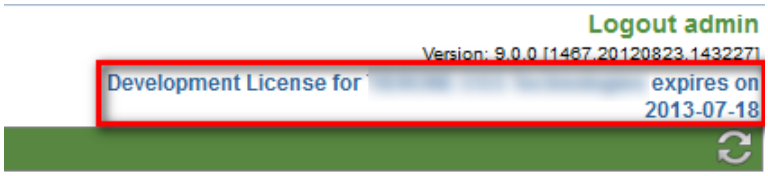
Figure 7 Example of IE browser's "Back" button

When a user logs out, data that has been entered into the application but has not been saved will be lost. Activation or upload functions that have been queued will continue to completion as background processes.

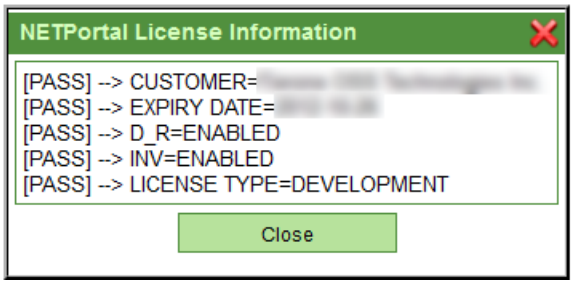
3.4. License information

NETPortal will not run without a valid license.

To view information about your NETPortal license, click on the '**License**' label in the top right corner of the screen. The actual label will vary depending on the type of license received for installation.



Based on the license agreement, the **NETPortal License Information** window will show the customer, license expiry date (if applicable), enabled application modules and license type. Simply click the **Close** button to close the window.

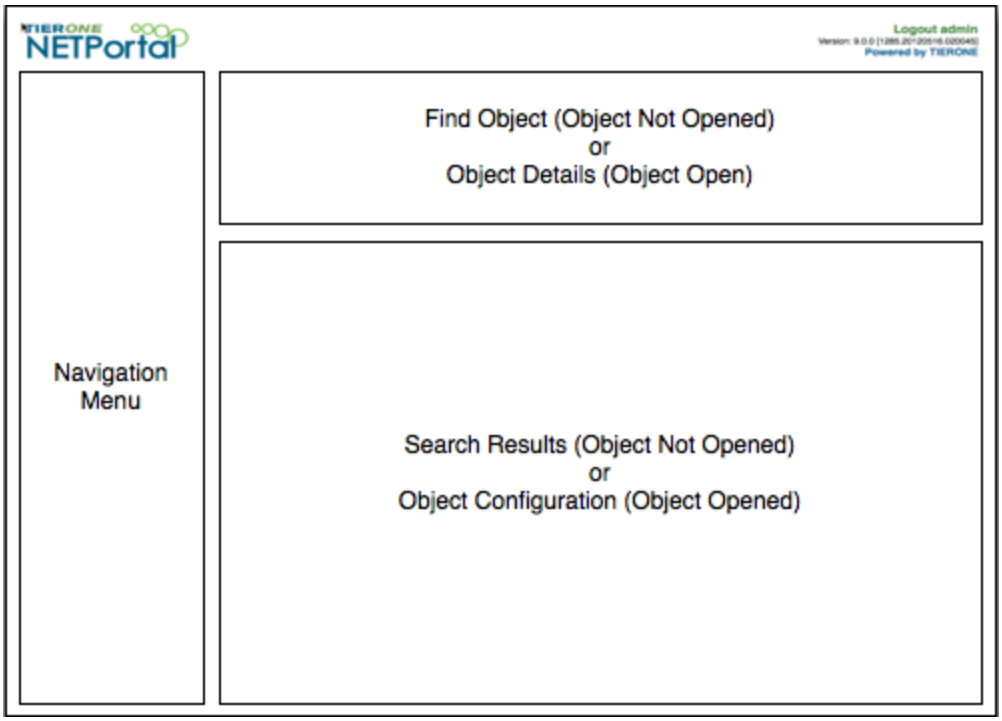


If any license error messages appear, please contact OSS Support Services.

For more information on licenses, please contact OSS Support Services.

3.5. Navigating the user interface

To navigate to any screen in NETPortal, just click on an item in the main navigation menu on the left-hand side of the screen. To the right of the navigation menu, the screen is usually divided into two panels: the 'Find Object' panel near the top of the screen will display a group of search filters that can be used to find an object in NETPortal. The 'Search Results' panel underneath will display the results of the search performed. Once an object is opened, the 'Find Object' panel will show Object Details and the 'Search Results' panel will show the Object's Configuration.



Depending on which modules were installed and configured during product installation, the navigation menu lists available options for the specific user based on the license agreement as well as the user privileges configured by the NETPortal Administrator. Consequently, some menu items may not be visible to all users as they appear in this Guide.

In the main navigation menu, the menu items are grouped into categories, most of which can be expanded into subcategories by clicking on the + symbol next to an item. A Hide/Show tab (shown in the figure below) allows the user to minimize the menu panel to provide a larger work area.

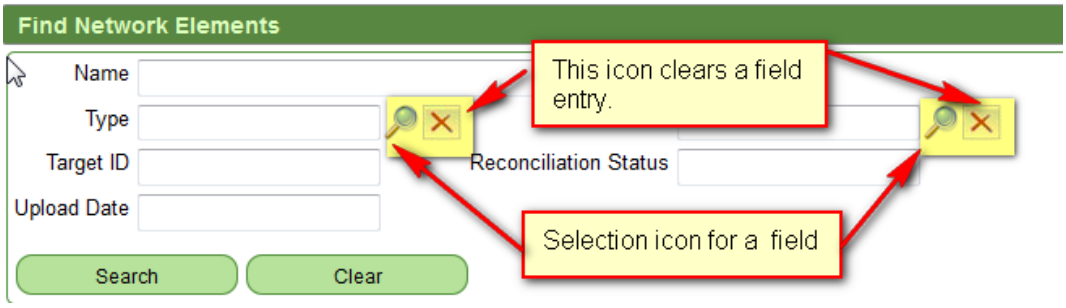
For a user who has a license to use all application modules, the main categories are:

- Dashboard
- Access Management
- Customers
- Views
- Connection Management
- Alarm Management
- Resource Management
- Reports
- Administration
- Security
- Configuration

Figure 8 Navigation menu

By clicking on an object category in the main navigation menu, the 'Find Object' screen for that category opens to the right of the menu. Search fields are provided near the top of the screen where criteria can be specified to filter the output.

In the 'Find Object' panel, the following button functions are available:



This icon opens a new selection window and generates a listing of available object types for the current search field. If a field has this icon next to it and the user wishes to use that field as a search parameter, the user must click the  icon in order to search for and select a particular object to use as a filter. In the other search fields, the wildcard character '*' can be used to substitute for one or more characters.

When used next to search fields, this button clears the search criteria.

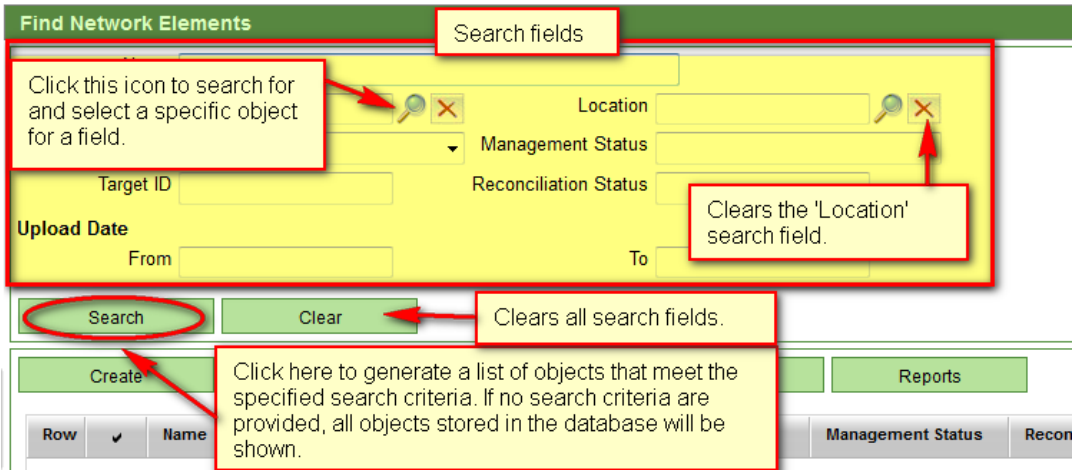


Figure 9 Example of a search screen for a NETPortal object

Search fields can be cleared or reset to their default values by clicking on the  button beside the search field or by clicking the **Clear** button located below the search fields.

Clicking the **Search** button without entering any search criteria generates a list of ALL existing object records which are displayed underneath the search fields.

NOTE: Searches are case-sensitive.

In general, NETPortal objects share a common set of operations that can be performed on them: **Search**, **Clear** (which clears search parameters), **Create**, **Open**, and **Delete**. For some objects, additional operations can be performed, such as **Copy** or **Reports**. To perform operations on an existing object, search for the object by entering any search parameters, if necessary, and click on the **Search** button. Then select the object from the list of records displayed and click on the appropriate button. Please refer to the figures below.

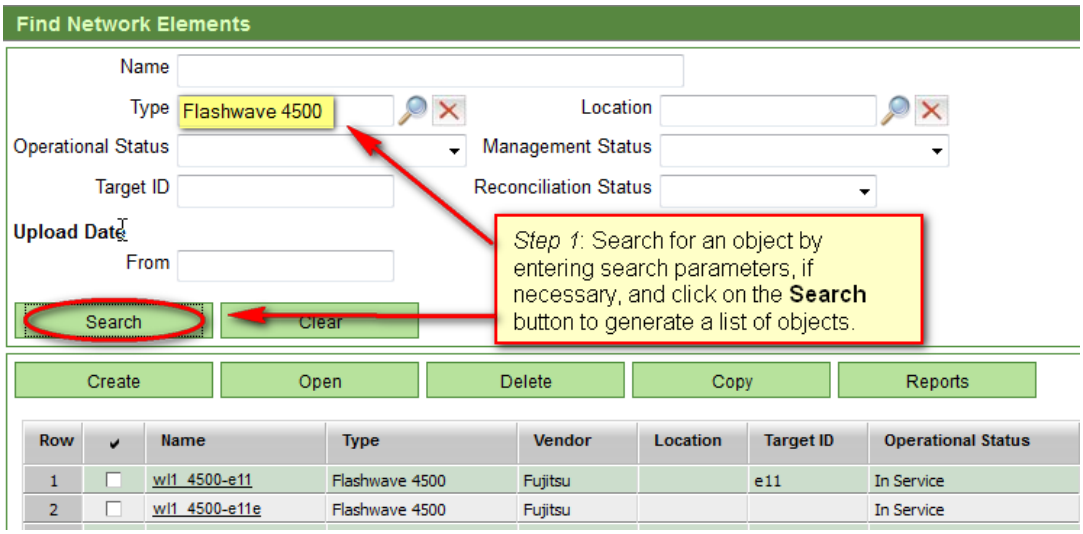


Figure 10 Example of how to search for an object

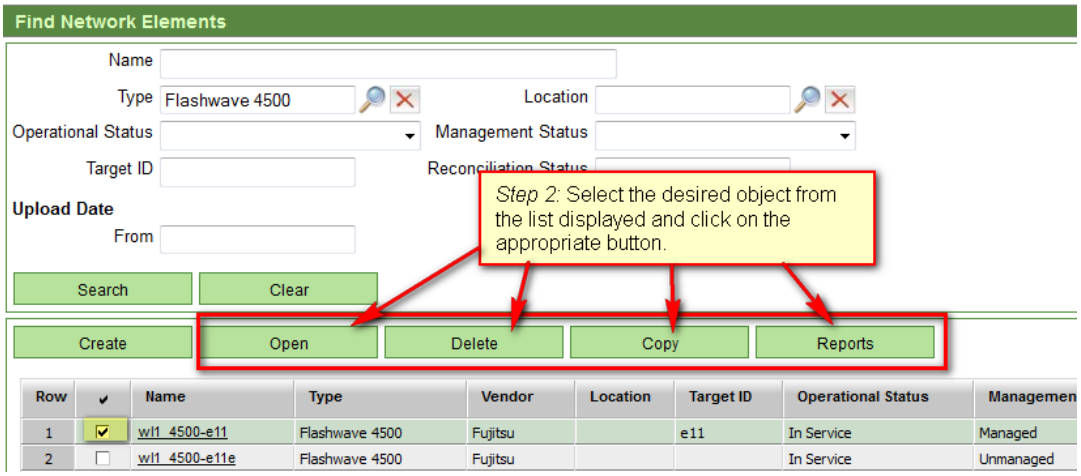


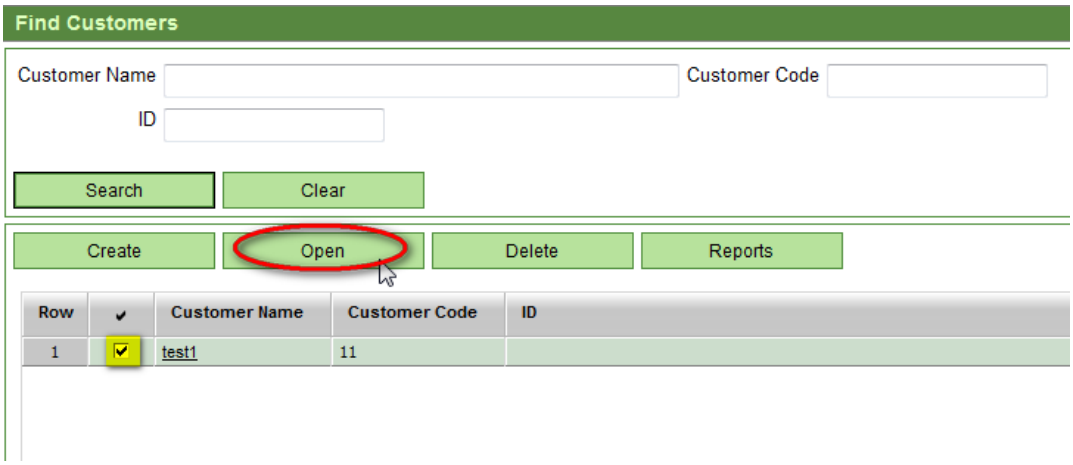
Figure 11 Example of how to perform an operation on an object

NOTE: In some cases, a user may not be able to delete an object if the user does not have the appropriate privileges or if the object is being referenced by other objects in the application. A corresponding error message will appear.

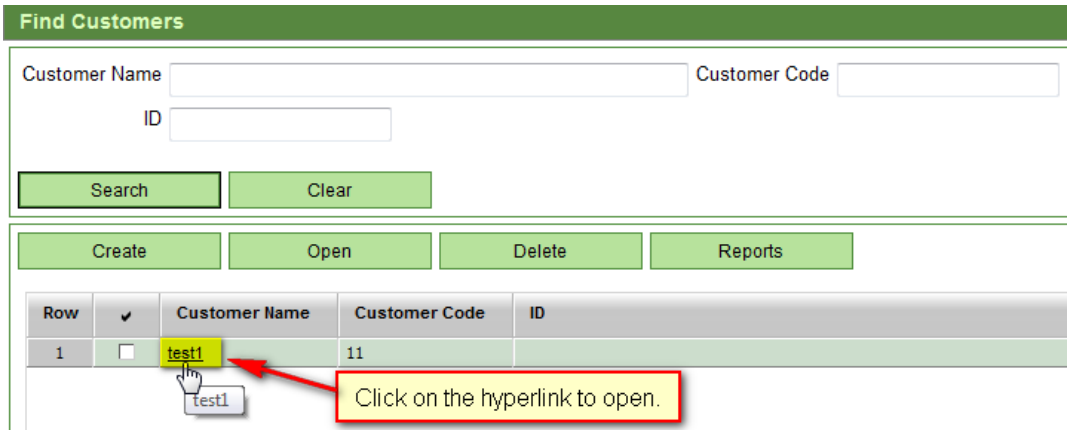
3.5.1. Opening and Working with Objects

NETPortal objects can be opened in one of two ways:

Option 1: Select the object from the grid and click on the **Open** button. In some cases (for example: Network Elements, Circuits, and Services), multiple objects up to a maximum number of 10 may be selected and opened simultaneously. If more than 10 objects are selected, only the first ten objects are opened and a corresponding error message is displayed for the remainder.



Option 2: Simply click on the hyperlink in the object's 'Name' column.



Either method will open the 'Object Details/Configuration' screen for the selected object.

In the 'Object Details/Configuration' screen, the following button functions are available:

	Clicking this button displays a drop-down list of menu items (other than 'Save/Close') that can be performed on a particular screen. The menu options are context-sensitive. In this guide, the drop-down list of menu items is referred to as the 'action menu.'
	This button deletes the currently open object.
	This button refreshes the currently open object. If changes have been made to the object without being saved, a warning message may appear that changes will be lost if the object is refreshed. This icon should be used whenever changes are made to a related object in a different screen and the user wishes to return to the first object's Details/Configuration screen. For example, when a user creates a Circuit terminating on two Network Elements and then makes changes to one of the Network Elements, the user should refresh the open Circuit object before making further changes to the Circuit.
	This button saves the current settings for a particular object.
	This button closes the current Object Details/Configuration screen.

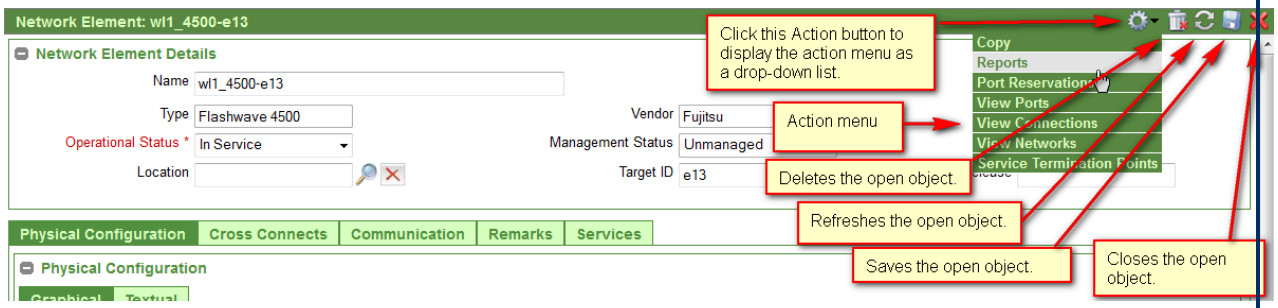


Figure 12 Example of a Details/Configuration screen for a Network Element

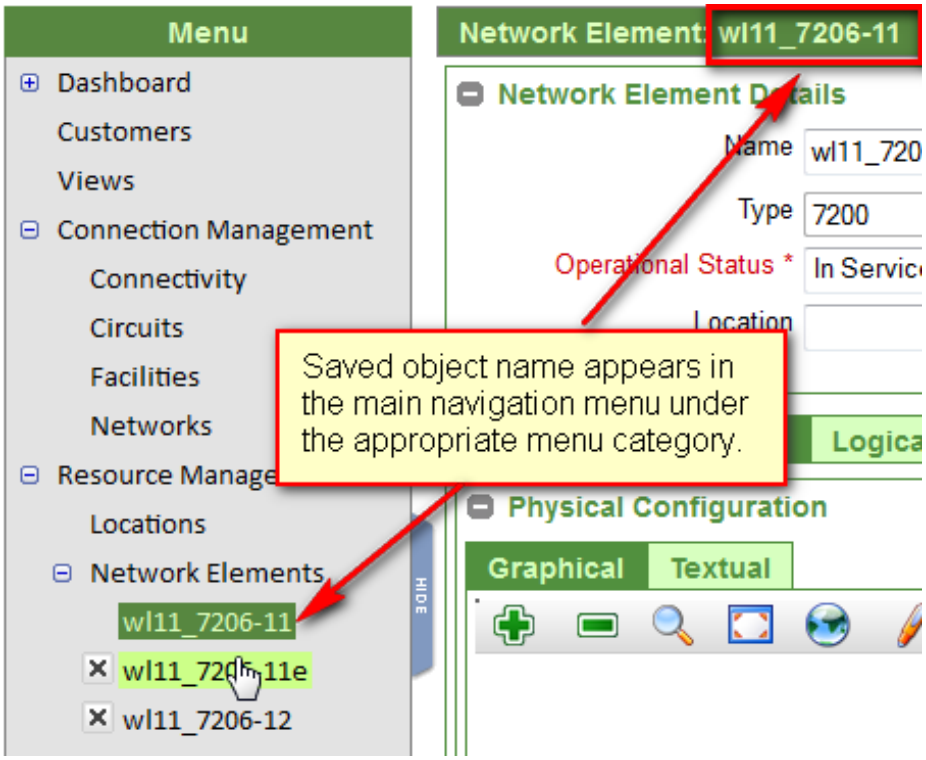
Fields shown in red with an asterisk (*) indicate that it is a mandatory field for the object.

NOTE: Refreshing the browser (for example, by clicking a browser 'Refresh' button as shown in Figure 13 below) while working in NETPortal IMMEDIATELY returns the user to the initial NETPortal screen after login. All unsaved information is discarded. To refresh the data in a NETPortal screen, click the Refresh icon, as applicable.

Figure 13 Example of the Internet Explorer browser's 'Refresh' button

3.5.1.1. Modifying Objects

On many screens, opening an object in NETPortal allows the object to be modified if the User has the appropriate privileges. After the desired changes have been made, the information should be saved by clicking on the Save icon in the top right corner of the screen. The object's name will appear in the main navigation menu under the appropriate menu category. This makes it easy to locate the object again later until the object is closed.

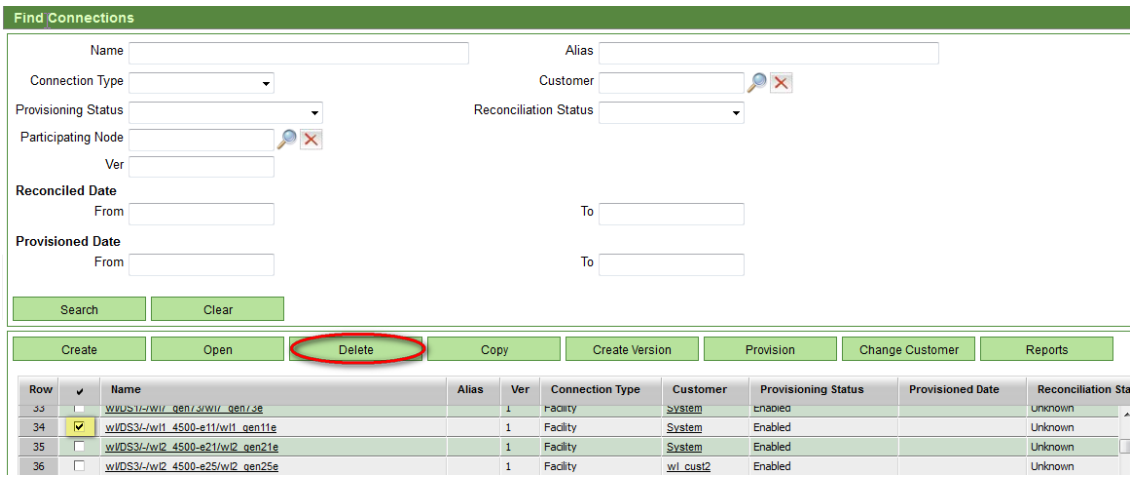


NOTE: To modify an existing Circuit object in NETPortal, the Circuit MUST be deactivated before changes can be performed.

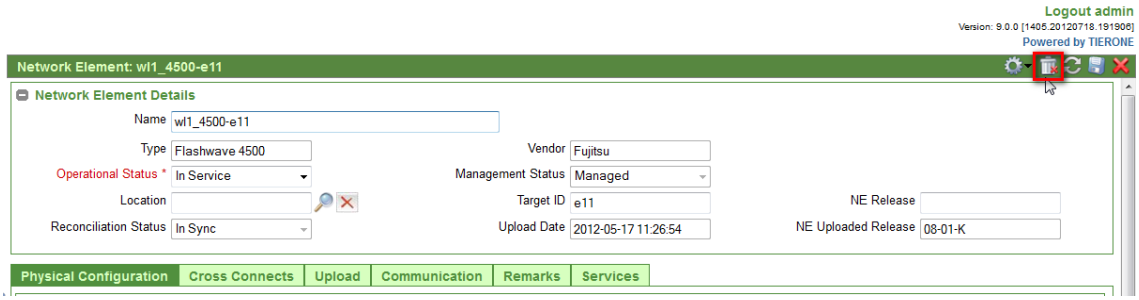
3.5.2. *Deleting Objects*

If a User has the appropriate privileges, a NETPortal object can be deleted in one of two ways:

- From the 'Find Object/Search Results' screen, select an object and click the **Delete** button.



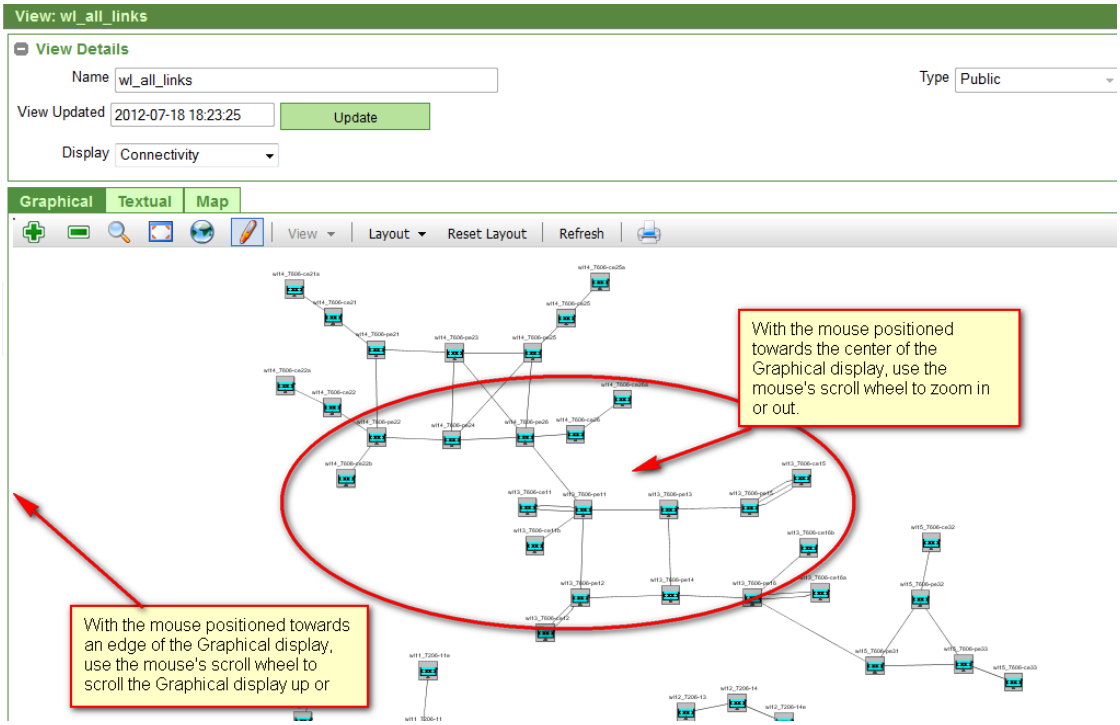
- From the 'Object Details/Configuration' screen, click on the  Delete icon in the top right-hand corner.



NOTE: If a dependency exists between two different objects, it may not be possible to delete an object unless the dependency is removed or the other object is deleted also. For example, a Customer object cannot be deleted if it is associated with a User Group. A corresponding error message will appear if an object cannot be deleted due to a dependency.

3.5.3. *Graphical displays*

For some NETPortal objects (such as Views, Network Elements, and Services), the 'Object Configuration' panel includes a Graphical tab showing a visual representation of the object. Depending on where the user's mouse is positioned on the Graphical display, the mouse's scroll wheel performs different functions.



Using the scroll wheel while your mouse is positioned towards the center of the Graphical display will function as a zoom-in or zoom-out feature. Using the scroll wheel towards the outside edges of the Graphical display will scroll the webpage up or down.

4. Administration

4.1. Overview

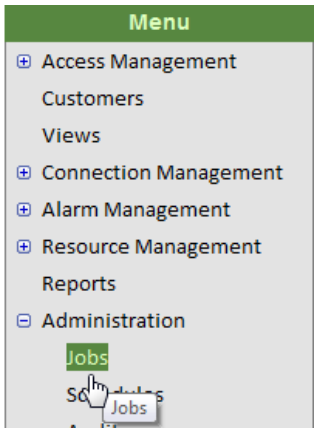
The **Administration** module provides NETPortal users with tools to create and schedule tasks and operations to be executed, as well as information regarding tasks executed by NETPortal on objects in a live network.

These tasks are queued and performed as background processes. The **Jobs** submodule provides information about tasks that are executed in NETPortal, while the **Schedules** submodule provides options to create Schedules for recurring operations. System activities, logged for specifically configured Network Elements, can be reviewed in the **Audit Logs** submodule.

If the EVM and Alarm Management module is included in your NETPortal license agreement, status information from Network Elements is processed by the EVM server and forwarded to NETPortal as System Events which can be viewed in the **System Events** submodule.

4.2. Jobs

4.2.1. Overview



The **Jobs** feature allows users to monitor and manage tasks initiated from the **Schedules** submodule or from other modules in NETPortal. When multiple commands are issued to a specific Network Element, the Job engine manages access to that device to maximize the connection success rate.

Task requests may be issued from different modules in NETPortal. Jobs cannot be explicitly created from the Jobs screen.

On receiving a task request, NETPortal's Job Controller assigns a Job ID and the task is entered into a queue. Requests are processed on a first-come, first-served basis, but the application can be configured to execute a certain number of tasks simultaneously by adjusting the Job Controller settings on the Scheduling tab of the **Configuration → System** submodule (for more information, please refer to section 6.6.1.6). A single Job entry may contain actions on multiple Network Elements or objects.

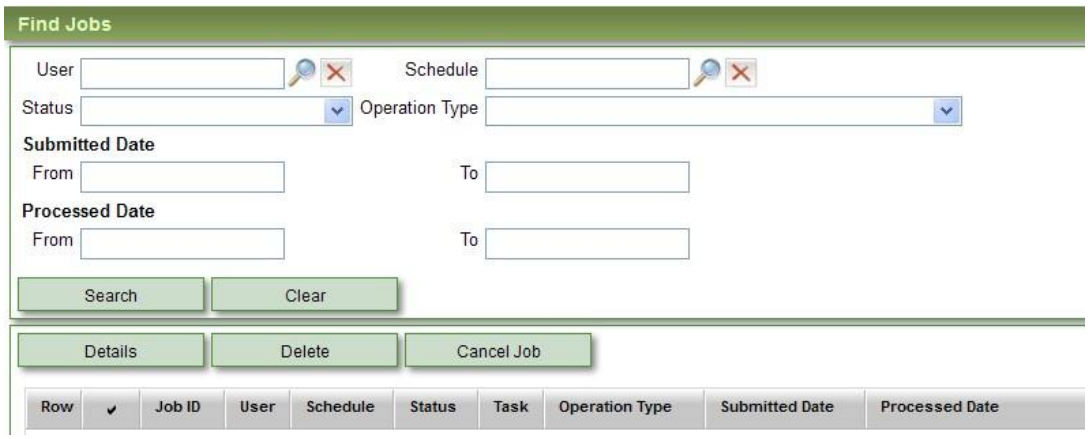


Figure 14 Administration module: Find Jobs screen

Depending on which privilege is assigned to a user's User Group, a user's view of the Jobs listed on the **Find Jobs** screen can be restricted to:

a) his or her own Jobs only ('Job – View By User' privilege)

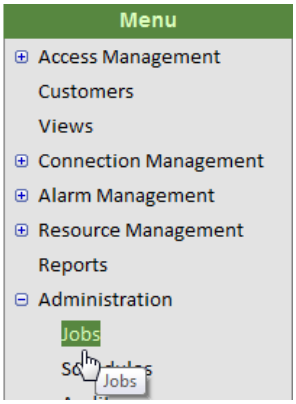
b) the user's own Jobs and those Jobs performed by users belonging to the same User Group(s) ('Job – Restricted by User Groups' privilege)

c) Unrestricted view of all Jobs executed by all users ('Job – Unrestricted' privilege).

For more information on Privileges, please refer to section 5.6.

To view requests in the Jobs queue:

1. Click on **Administration → Jobs** in NETPortal's main menu on the left side of the screen.



2. In the **Find Jobs** screen to the right of the menu, enter search criteria if desired and click the **Search** button.

NOTE: A Job must have a status of 'Success,' 'Failed,' 'Cancelled,' 'Partial Failed,' or 'Completed' before it can be deleted.

NOTE: A Job must have a status of 'Processing,' 'Resumed,' or 'Suspended' before it can be canceled. Once a Job has been canceled, it cannot be reactivated. If one of the subtasks for the Job is being executed at the time the Job is canceled, that process will run until it reaches a cancellation point which is dependent on that task's implementation. All other pending items for that Job will be cancelled. If the task was not running at this point, then it will not be executed.

The table below summarizes the fields used to define and filter Jobs in NETPortal.

LABEL	DESCRIPTION
User	Name of the user who created the Job.
Status	Status of the Job request. See Table 5 for more details.
Schedule	The name of the Schedule in which the Job is included. Schedules are created, modified and managed in the **Administration → Schedules** submodule. For more information, please refer to section 4.3.
Operation Type	Operation Type of the Job, based on the Task and Operation that were selected when the Schedule was created. Options are: • NE Upload and Reconciliation (Deprecated) • Circuit Activation • Circuit Deactivation • Circuit Verify • Circuit Reconciliation • Service Group Activation • Service Group Deactivation • Service Group Verify • Facility Enable • Facility Disable • Facility Define • Facility Undefine • Facility Verify • Unreserve Ports • Purge Jobs • Connectivity Reconciliation • Outer VLAN Reconciliation • Inner VLAN Reconciliation • IP LINK Reconciliation • VPN Reconciliation • NE Discovery

	• NE Purge • IP Address Assignment • Activate Version • NE Upload • NE Reconciliation • NE Upload Data Purge For more information on Operations, please refer to section 4.3.2.
Submitted Date From - To	A date or date range during which a specific Job request was sent to the queue to be processed. Click on the **From** or **To** fields and use the pop-up calendar to enter dates.
Processed Date From - To	A Date or date range during which a specific Job completed processing. Click on the **From** or **To** fields and use the pop-up calendar to enter dates.

Table 4 Administration module: Jobs search fields

A Job will result in one of several conditions during execution. Table 5 describes the various conditions:

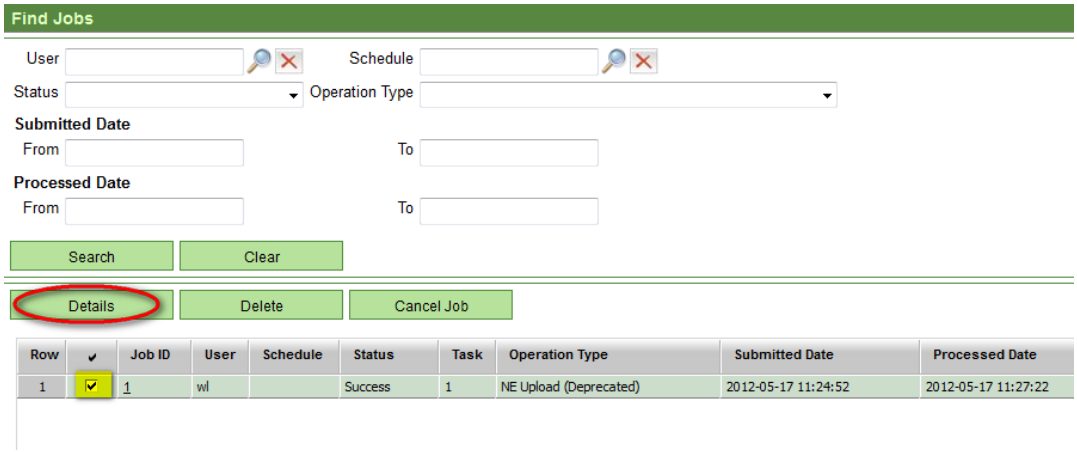
STATUS	DESCRIPTION
New	A Job has been added to the queue, but no commands have been executed.
Processing	The commands for this Job are currently being processed.
Success	All commands have completed successfully.
Failed	The Job commands have failed.
Partial Failed	Some of the commands for this Job have failed.
Cancelled	The execution of this Job has been cancelled.
Suspended	Used primarily for Upload operations. If the task is set to operate in a specific Time Frame and is unable to complete, it will be placed in Suspended mode until the next Time Frame is available.
Suspend Requested	When a task is awaiting completion of a process thread before entering Suspended mode, it will display this status.
Resumed	Indicates that the task was previously suspended and has now become active again.
Inactive	This is an internal status generated by the system when a task is waiting for a preceding task as well as any dependencies to complete before it is executed.
Completed	The task has been completed.

Table 5 Administration module: Jobs status options

Jobs with a Status of 'Cancelled', 'Success', 'Failed,' 'Partial Failed,' or 'Completed' can be deleted from the Jobs list after processing has completed. When a Job is deleted, historical information about the Job is also deleted.

An Upload-related Job that does not use the Upload Stage can be cancelled with the **Cancel Job** button. Only Upload Jobs that are processing, suspended or resumed can be canceled. When this button is selected, NETPortal waits for any running processes to be completed and aborts any remaining processes associated with the Job.

To view additional information about a Job, select the Job object in the grid and click on the **Details** button to open the Details/Configuration screen for the Job.



4.2.2. Jobs Details/Configuration Screen

The Details/Configuration screen for a Job is divided into three panels: Job Details, Job Participating Items, and Messages. The panels are described in the following sections.

4.2.2.1. Job Details Panel

The 'Job Details' panel presents information on the selected Job in read-only fields.

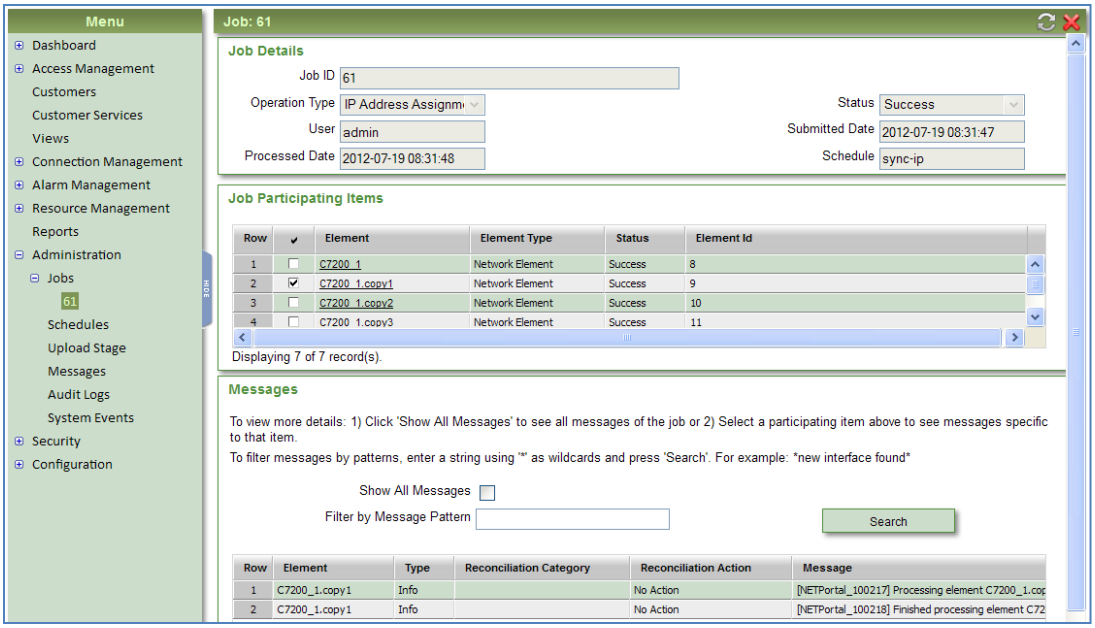


Figure 15 Administration module: Job Details screen

The table below summarizes the fields used to describe the Job in more detail.

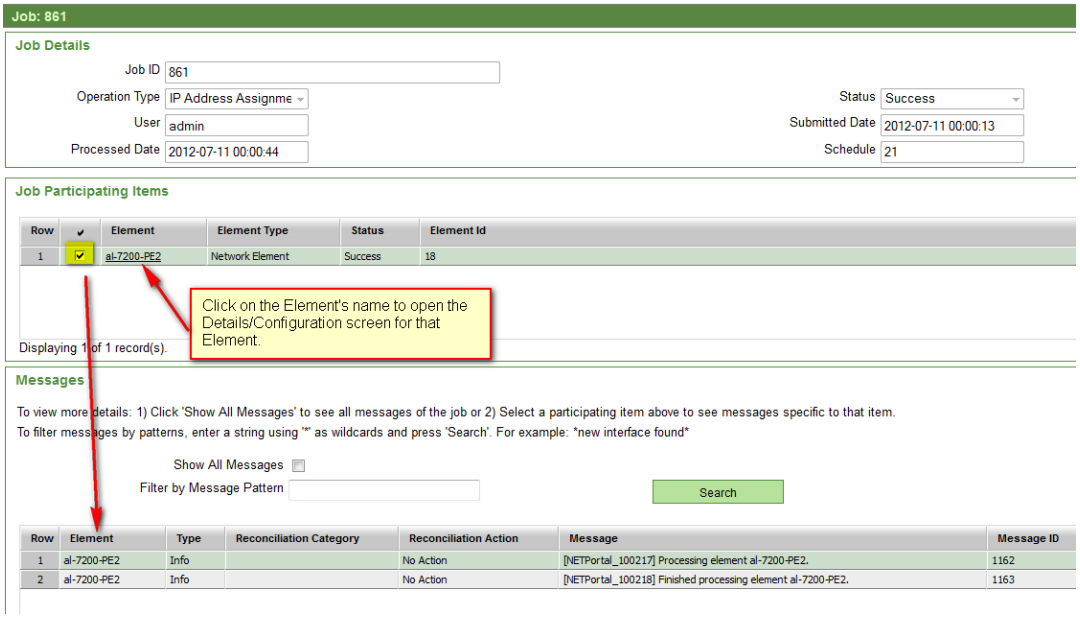
LABEL	DESCRIPTION
Job ID	ID Assigned by the Job Controller when the Job request is submitted.
Operation Type	Operation performed on the participating objects in this Job.
Status	Status of the Job. Please refer to Table 5 for more information.
User	ID of the system user who initiated the Job.
Submitted Date	Date and time the Job was submitted to the queue.
Processed Date	Date and time the Job was competed.
Schedule	Name of the Schedule with which the Job is associated, created through the **Administration →Schedules** submodule.

Table 6 Administration module: Jobs – Job Details listing

4.2.2.2. Job Participating Items Panel

The 'Job Participating Items' panel displays a list of NETPortal objects that are involved in or affected by the Job. Placing a checkmark beside the participating item in the grid displays Job Messages specific to that item being displayed in the 'Messages' panel further down on the screen.

Clicking on the hyperlinked name of the item opens the Details/Configuration screen for that item.



The table below summarizes the fields included in the 'Job Participating Items' grid:

LABEL	DESCRIPTION
Element	The name of the Element that participated in the Job.
Element Type	Type of Element that participated in the Job, such as Network Element.
Status	The Status of the action performed on the Element. Please refer to Table 5 for more information.
Element Id	Unique ID assigned to the Element when it was created in NETPortal.

Table 7 Administration module: Jobs – Job Details Particpating Items

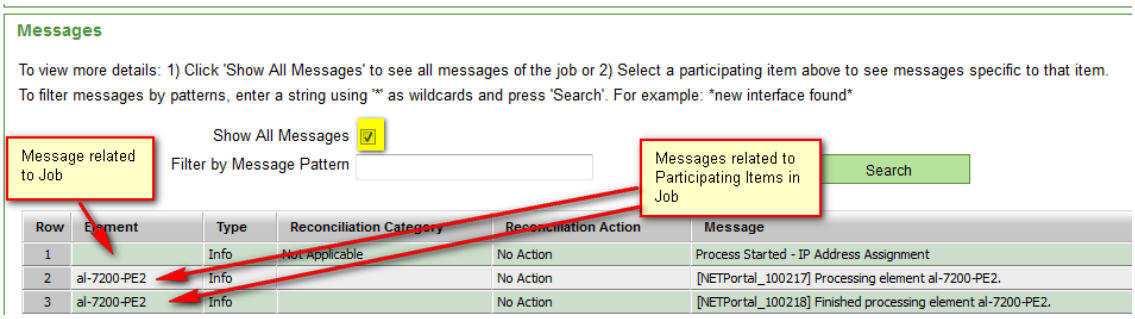
4.2.2.3. Messages Panel

Messages are generated while a Job is executed; in a sense, they represent a transaction log of events that occurred during the Job's execution. Two types of Messages can be displayed in this panel: Messages that are specific to the Job, and Messages that are specific to the Participating Items involved in the job.

There are two ways to display Job-related Messages:

1. ***Show all Messages***

   When the 'Show All Messages' checkbox is checked in the 'Messages' panel, all Messages related to the Job as well as the Participating Items involved in the Job are displayed in the grid.

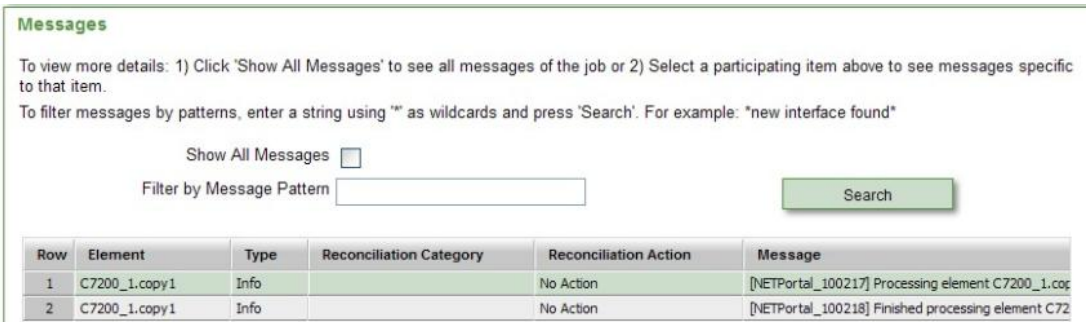


2. ***Messages filtered by Participating Item***

   By checking the checkbox next to an Element in the 'Job Participating Items' panel, only the Messages related to that Element will be displayed. Please refer to section 4.2.2.2 for more information.

The list can be filtered by message pattern by entering part of a message in the 'Search by Message Pattern' text field and clicking on the **Search** button, as shown in the figure below. The wildcard character '*' can be used to substitute for one or more characters in the message pattern.

NOTE: Searches are case-sensitive.



The Messages displayed include the following information:

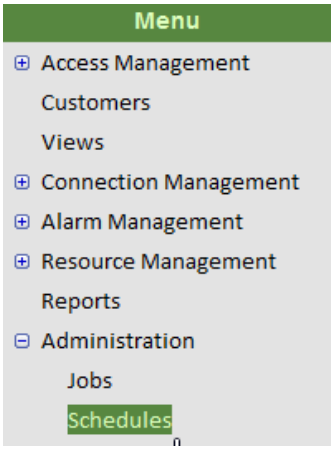
LABEL	DESCRIPTION
Element	The name assigned to the Element when it was created in NETPortal. If a Message is not specifically related to any Element, this field will remain blank.

Type	Type of information reported for the selected task: • Info • Reconciliation • Error •
Reconciliation Category	General outcome of the reconciliation operation performed on the object specified in the selected Job (if applicable). • Not Applicable • New – new object found • Out of Sync • Not Found – object is not found
Reconciliation Action	The reconciliation action performed on the element. Possible descriptions are: • No Action • Created – a new object was created • Updated – an existing object was updated • Removed – an object was removed • Replaced – an existing object was replaced with a new object
Message	Log message. This message may contain additional details about the object and results of the Job execution.
Message ID	Unique identifier for the message.

Table 8 Administration module: Jobs – Job Details Messages

4.3. Schedules

4.3.1. Overview



Schedules provide users with powerful tools for automating tasks to be performed in NETPortal. Scheduled events are created in the **Schedules** screen and submitted to the **Jobs** submodule for automatic processing by the system.

Tasks may be created for one-time execution or for repeated occurrences at user-defined intervals. For each operation, NETPortal objects of the appropriate type may be selected for inclusion in the scheduled task. Operations to be performed are selected from a drop-down list based on the type of task selected.

Once a task has been created and submitted to the queue, its processing status can be monitored from the Job Details/Configuration screen in the **Jobs** submodule. Tasks are assigned to the Job Controller and are executed by the Job engine as they are activated (or unlocked) from Schedules.

Table 9 below summarizes the fields used for filtering the list of Schedules:

LABEL	DESCRIPTION
Name	Name assigned to the scheduled task.
Start Date	Date that the scheduled task will start execution. By placing your cursor in this field, a popup calendar appears. Selecting a date from the calendar automatically enters the date information in the field.
End Date	Date that the scheduled task will stop execution. By placing your cursor in this field, a popup calendar appears. Selecting a date from the calendar automatically enters the date information in the field.
Task	Type of task to be performed by the Schedule. The task selected determines what kind of operations can be performed.
Operation	Operation that the Schedule controls, based on the Task selected in the adjacent 'Task' field.
Frequency	Frequency with which the task will be performed: ONETIME, DAILY, WEEKLY, MONTHLY
Interval (# of occurrences)	The number of occurrences in which the task was performed.
Enabled	Status of the selected Schedule item. Drop-down menu options: No/Yes. A Schedule must be enabled before it can be unlocked for activation. For more information on how to run a Schedule, please refer to section 4.3.5.
Locked	Indicates whether the Schedules is locked from activation or not: No/Yes A Schedule should be locked if it requires modifications; otherwise, it may

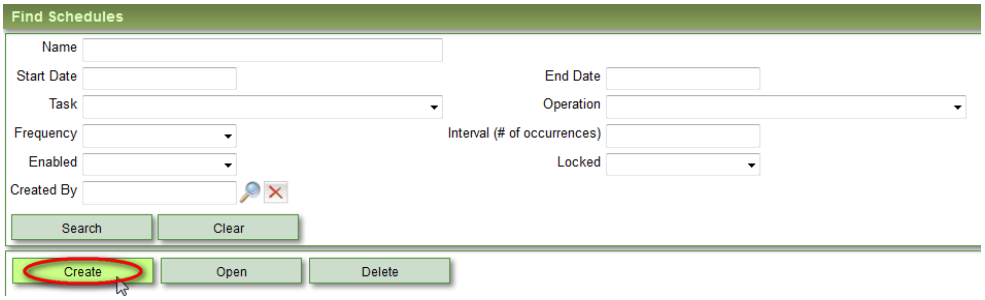
	be executed by the system. For more information on how to lock a Schedule, please refer to section 4.3.6.
Created By	The name of the user who created the Schedule.

Table 9 Administration module: Schedules search fields

4.3.2. Create a Schedule

To create a new Schedule:

1. In the **Find Schedules** screen, click on the **Create** button located below the search fields.



2. Enter the details for the new Schedule. Table 10 below summarizes the fields used to define a Schedule.

LABEL	DESCRIPTION
Name	Name assigned to the Schedule.
Enabled	Enabled status of the selected Schedule: No, Yes
Task	Type of task to be performed by the Jobs Scheduler. This field determines what Operations can be performed. Refer to Table 11 for more information. Depending on which Task and Operation are selected, various tabs and sub-panels will appear to allow configuration of specific parameters as required for the Task and Operation.
Operation	Operation that the Jobs Scheduler controls. Menu items are dependent on the Task selected. Depending on which Task and Operation are selected, various tabs and sub-panels will appear to allow configuration of specific parameters as required for the Task and Operation.

Table 10 Administration Module: Schedule Details

3. Configure the timing, frequency and participating items for the scheduled task by using the tabs provided in the Schedule's configuration panel. Refer to sections 4.3.2.1 - 4.3.2.4 below for additional information.

4. Click on the  **Save** button in the top right corner of the screen.
5. To run the Schedule, please refer to section 4.3.5.

All Schedules are 'locked' by default when they are created so that they cannot be executed by NETPortal until the user has activated them. For more information on how to activate or unlock a Schedule, please refer to section 4.3.5.

Table 11 below summarizes the Tasks and Operations that are possible with NETPortal's Inventory module.

TASK	OPERATION	DESCRIPTION
IP Address Assignment	IP Address Assignment	This process uses Nodes as Participating Items, goes through all the IP Addresses on the Nodes, and marks each IP Address as 'Used' by the appropriate Interface on the Node. If a value found is already taken, the existing assignment is left alone and a message is logged that the value has already been assigned.
Layer 1 - Circuit Reconciliation	Circuit Reconciliation	Depending on the selected Participating Items and Configuration parameters for this task, all Cross Connects in selected Network Elements are processed in order to reconcile Circuit objects in the NETPortal database with Cross Connect data retrieved from live equipment. The operation can be executed in one of three modes: • REPORT • CREATE • UPDATE In CREATE or UPDATE mode, NETPortal will only modify or delete Circuits that are 'In Service' or 'Partially Defined.' For more information on Reconciliation Modes, please refer to section 2.1 or to the ***NETPortal User Guide – Inventory Management***.
Layer 2 - Connectivity Reconciliation	Connectivity Reconciliation	This process uses Nodes as Participating Items to synchronize Ethernet Links in the NETPortal database with the live network. The process uses the "neighbor" configuration reported by the CDP protocol that is discovered during the upload of Network Elements.

		The operation can be executed in one of three modes: • REPORT • CREATE • UPDATE Based on the neighbor configuration and the reconciliation mode, the process either creates, updates or deletes Ethernet Links. If a Customer is configured as the "Default Customer" parameter, then the Customer is assigned to any newly created Ethernet Links. If the "VLAN Update" parameter is configured as YES, then the allowed VLANs for the Ethernet Links will be updated as per the configuration on the terminating Interfaces.
Layer 2 – Inner VLAN Reconciliation	Inner VLAN Reconciliation	This process uses Nodes as Participating Items to synchronize QinQ Ethernet Services (e.g. ELANs, ELINEs) in the NETPortal database with the live network. The operation can be executed in one of three modes: • REPORT • CREATE • UPDATE Based on the reconciliation mode and whether tunneling/encapsulation is enabled on the Interfaces, the process creates, updates or deletes Ethernet Services. If a Customer is configured as the "Default Customer" parameter, then the Customer is assigned to any newly created Ethernet Services. If the "Service Parameter Update" parameter is set to 'Yes,' key configuration data such as IP Addresses will be updated on the Interfaces regardless of the reconciliation mode.
Layer 2 – Outer VLAN Reconciliation	Outer VLAN Reconciliation	This process uses Ethernet Networks as Participating Items to synchronize Ethernet Services (e.g. ELANs, ELINEs) in the NETPortal database with the live network. The process examines the Interfaces of all the Ethernet Links assigned to the Ethernet Network to capture the allowed VLAN configuration(s) and determine the Services that are traversing the Network in context.

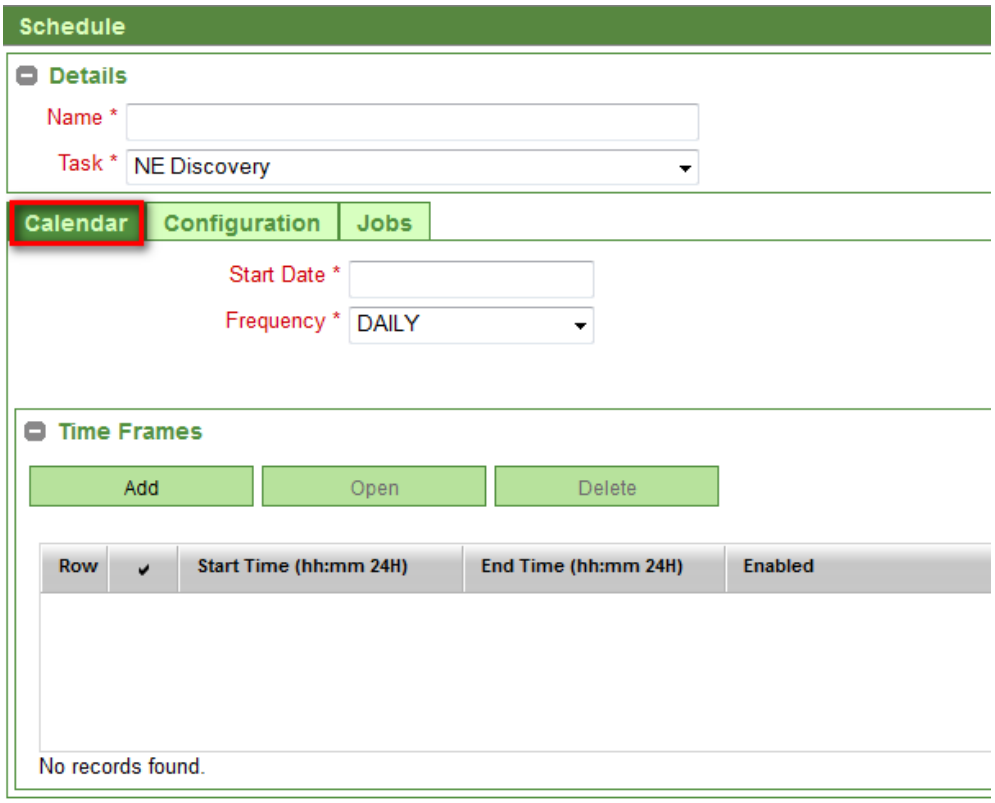
		The operation can be executed in one of three modes: • REPORT • CREATE • UPDATE Based on the reconciliation mode and the switchport mode configuration on the Network Elements of the Ethernet Network, the process creates, updates, or deletes Ethernet Services. If a Customer is configured as the "Default Customer" parameter, then the Customer is assigned to any newly created Ethernet Services. If the "Service Parameter Update" parameter is set to 'Yes,' key configuration data such as IP Addresses will be updated on the Interfaces regardless of the reconciliation mode.
Layer 3 – IP Link Reconciliation	IP LINK Reconciliation	This process uses Nodes as Participating Items to synchronize IP links in the NETPortal database with the live network. The process uses the "neighbor" configuration reported by the OSPF or IS-IS protocol that is discovered during the upload of Network Elements. The operation can be executed in one of three modes: • REPORT • CREATE • UPDATE Based on the neighbor configuration and the reconciliation mode, the process either creates, updates, or deletes IP Links. If a Customer is configured as the "Default Customer" parameter, then the Customer is assigned to any newly created IP Links. If a list of AS numbers are specified for the "AS Number Parameter", then only PE routers matching one or more of the AS numbers will be considered for reconciliation.
Layer 3 – VPN Reconciliation	VPN Reconciliation	This process synchronizes IP VPN Services in the NETPortal database with the live network. The process considers all the BGP Networks in the system. The operation can be executed in one of three

		modes: • REPORT • CREATE • UPDATE Depending on the reconciliation mode, the uploaded Route Target configurations on the PE Routers of each Network are correlated in order to create, update or delete IP VPN Services. If a Customer is configured as the "Default Customer" parameter, then the customer is assigned to any newly created IP VPN Services.
NE Discovery	NE Discovery	This process captures XML equipment configurations from live equipment and creates new Network Elements in the NETPortal database (e.g. in conjunction with an HPNA Connector).
NE Purge	NE Purge	This operation purges Network Elements that have not been uploaded/reconciled within a specified retention period from the NETPortal database.
NE Reconciliation	NE Reconciliation	This operation reads data from the Upload Stage, identifies Nodes that correspond to that data and reconciles the Nodes in the NETPortal database with that data. The operation can be executed in one of three modes: • REPORT • CREATE • UPDATE For more information on Reconciliation modes, please refer to section 2.1 or to the ***NETPortal User Guide – Inventory Management***.
NE Upload	NE Upload	This process captures XML equipment configurations known as Payloads from live equipment and stores them in an Upload Stage. The data stored in the Upload Stage can then be used to reconcile NETPortal Network Element objects later during an NE Reconciliation operation. This operation is recommended when multiple NETPortal servers are used for clustered environments.
NE Upload (Deprecated)	NE Upload and Reconciliation (Deprecated)	This process captures XML equipment configurations from live equipment and directly reconciles the information with Network Elements already stored in the NETPortal database during the same operation.

		The process can be executed in one of three modes: • REPORT • CREATE • UPDATE This operation can also be executed using the **Upload/Reconcile** button on the Upload tab of a Network Element's Details/Configuration screen. For more information on Upload modes or Network Elements, please refer to section 2.1 or to the ***NETPortal User Guide – Inventory Management***. **NOTE:** This Task and Operation will soon be replaced by the 'NE Upload' process (using the Upload Stage) in a future release.
NE Upload Data Purge	NE Upload Data Purge	This process allows a user to purge data that is no longer needed for reconciliation purposes. All data is purged from the Upload Stage except for the last reconciled set of Payload data, the last completed set of Payload data, or if not completed, the last Payload with an upload start date that is more recent than the last completed set of Payload data. For more information on Payloads or the Upload Stage, please refer to section 4.4.
Port Reservations	Unreserve Ports	This process is used for making reserved Ports that were not used by their Reservation Expiry Date available to any Customer again. The Participating Items are Network Elements. For more information on Port Reservation, please refer to the ***NETPortal User Guide – Inventory Management.***
Purge Jobs	Purge Jobs	This operation purges Jobs from the **Administration → Jobs** (**Find Jobs** screen). It is recommended to periodically run this Schedule in order to clean up the database and manage the number of Jobs shown on the **Find Jobs** screen. For more information, please refer to section 4.2.1.

Table 11 Administration Module: Schedule Tasks and Related Operations

4.3.2.1. Calendar tab



The Calendar is required for all Schedules. In this tab, the overall time frame and frequency of execution is defined.

LABEL	DESCRIPTION
Start Date	Date when the task should begin execution.
End Date	If the task is recurring, this field will determine the last date it should be executed.
Frequency	Frequency with which the task will be performed: ONETIME, DAILY, WEEKLY, MONTHLY.
Interval	Repetition Rate – the value of this field acts as a multiplier for the Frequency setting. This field has a default value of '1' and is disabled if the Frequency setting is 'ONETIME'. Example: If Frequency is Daily and Interval is 3, the scheduled task will execute every 3 days.

Table 12 Administration Module: Schedule timing information

The Calendar tab also provides a 'Times Frames' subpanel, described in the following section.

4.3.2.1.1. Calendar tab: Time Frames subpanel

The 'Time Frames' subpanel allows a user to have a greater degree of control over task execution. Each Time Frame defines a specific period during which the task may be executed, and may be enabled or disabled as required.

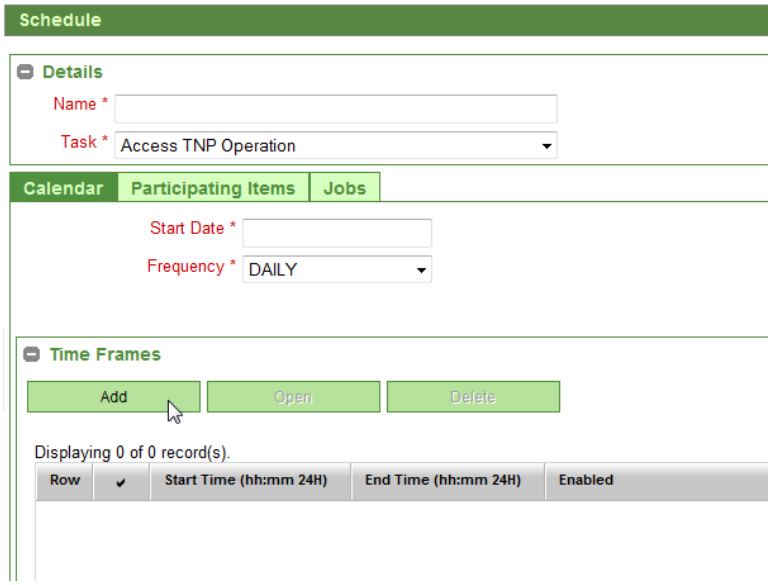
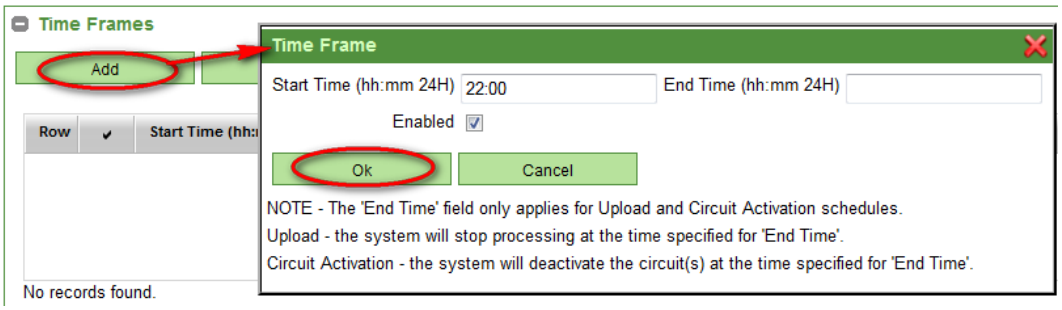


Figure 16 Administration module: Schedule Details screen, Time Frames subpanel

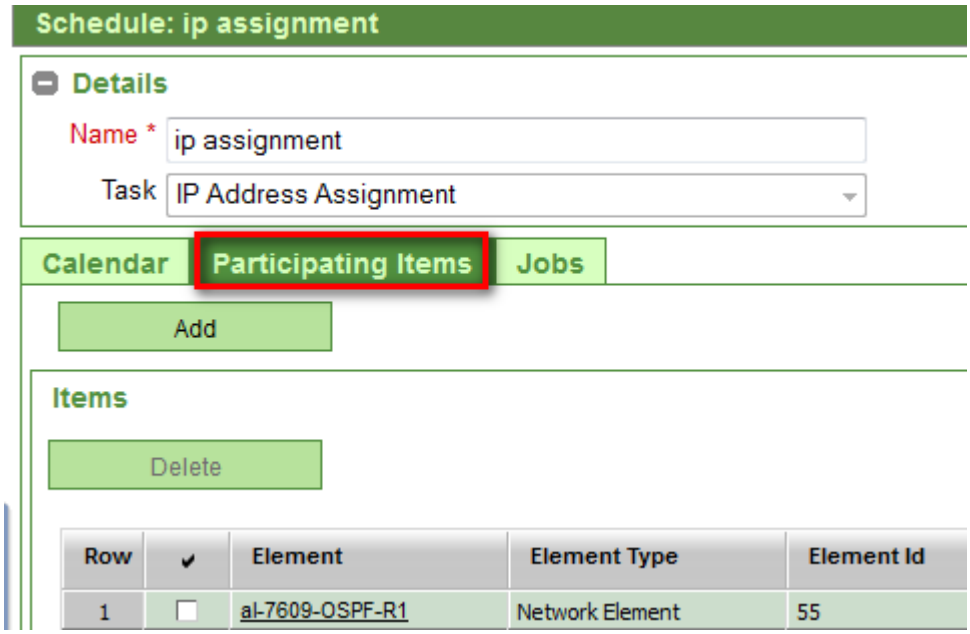
A new Time Frame can be created by clicking on the **Add** button in the 'Time Frames' subpanel and entering the desired parameters.



- Start Time (hh:mm 24H)
- End Time (hh:mm 24H)
- Enabled

NOTE: The 'End Time' field only applies for Upload and Circuit Activation Schedules. For Upload, the system will stop processing at the time specified for 'End Time.' For Circuit Activation, the system will deactivate the circuit(s) at the time specified for 'End Time.'

4.3.2.2. Participating Items tab

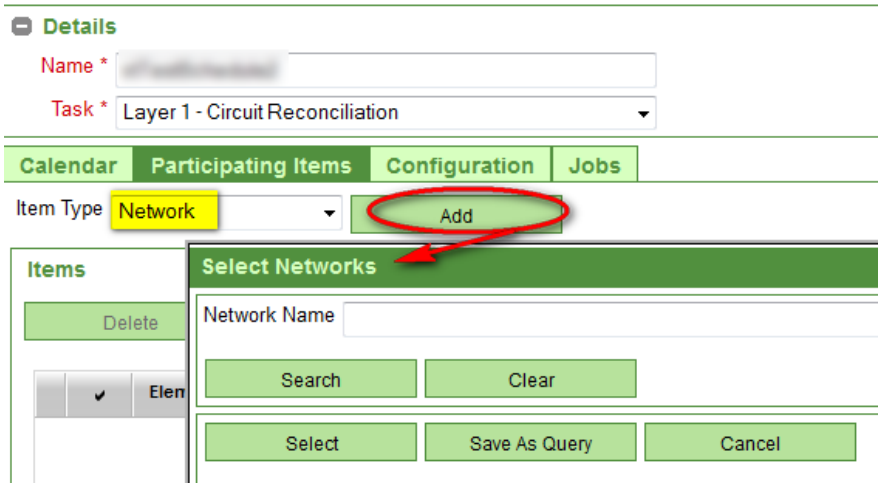


The **Participating Items** tab appears for all tasks in which specific NETPortal objects can be selected for involvement in the Task. Please refer to Table 13 for more details.

To add Participating Items to the Schedule:

1. Click on the **Add** button on the 'Participating Items' tab.

   A selection window will open for the appropriate Item Type as defined in Table 13.



TASK	PARTICIPATING ITEMS
IP Address Assignment	Network Elements
Layer 1 - Circuit Reconciliation	Link

	Network Network Element View
Layer 2 - Connectivity Reconciliation	Network Elements
Layer 2 – Inner VLAN Reconciliation	Network Elements
Layer 2 – Outer VLAN Reconciliation	Ethernet Networks
Layer 2 – Service Reconciliation	Networks
Layer 3 – IP Link Reconciliation	Network Elements
Layer 3 – VPN Reconciliation	*No selectable items*
NE Discovery	*No selectable items*
NE Purge	*No selectable items*
NE Reconciliation	*No selectable items*
NE Upload	Network Elements
NE Upload (Deprecated)	Network Elements
NE Upload Data Purge	*No selectable items*
Port Reservations	Network Elements
Purge Jobs	*No selectable items*

Table 13 Administration Module: Schedule Participating Items

2. In the selection window, use the search fields if necessary to filter the objects listed.

   Frequently used search parameters can be saved as a Query, if desired. Queries are described in section 4.3.2.2.1 below.

   Select the desired Item(s) and click the **Select** button to add them to the grid displayed in the 'Items' subpanel. Listed objects may be sorted in ascending or descending order by clicking on the desired column header in the grid.

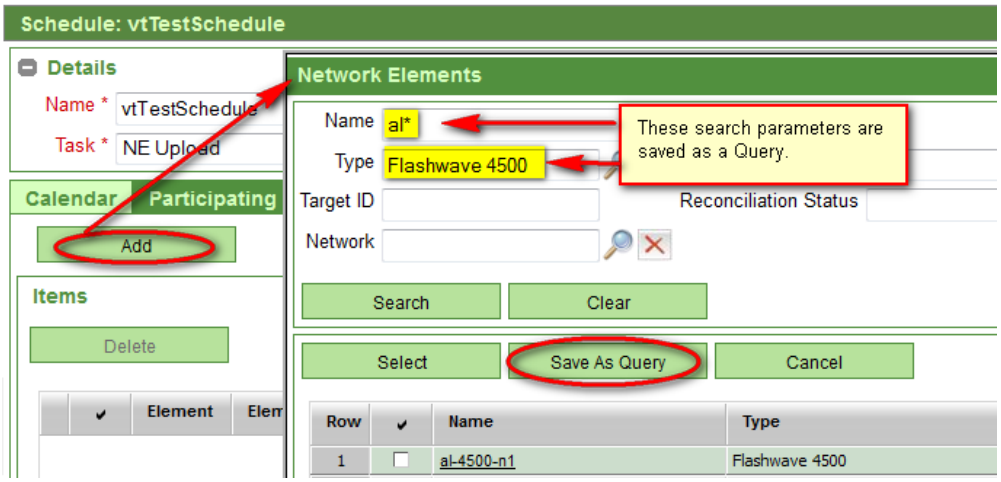
4.3.2.2.1. Participating Items: Queries Subpanel

When searching for Participating Items to add to a Schedule, the search parameters can be saved as a Query. The benefit of this feature is that it enables users to save a frequently-used search query so that it does not need to be reentered repeatedly. Another benefit of this feature is that Queries are automatically updated with any newly created object that meets the Query criteria.

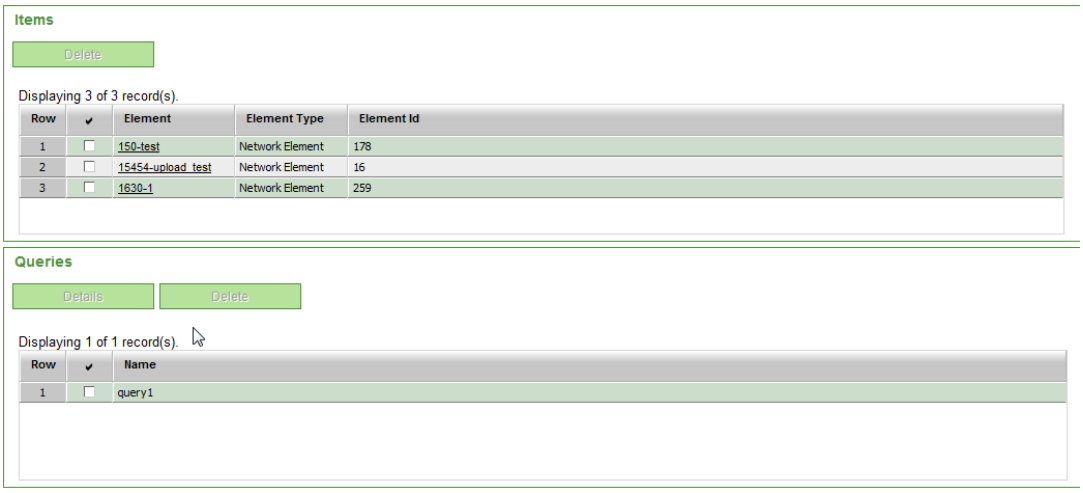
To save search parameters as a Query:

1. Go to the **Participating Items** tab of a Schedule. Please refer to section 4.3.2.2, if necessary.
2. Click on the **Add** button to open a selection window for the appropriate object type. In the example below, a selection window for Network Elements is opened.

Type search criteria into the search fields. To verify which objects meet the search criteria, click on the **Search** button. If you are satisfied with the results and wish to save the search filters as a Query, click on the **Save As Query** button.

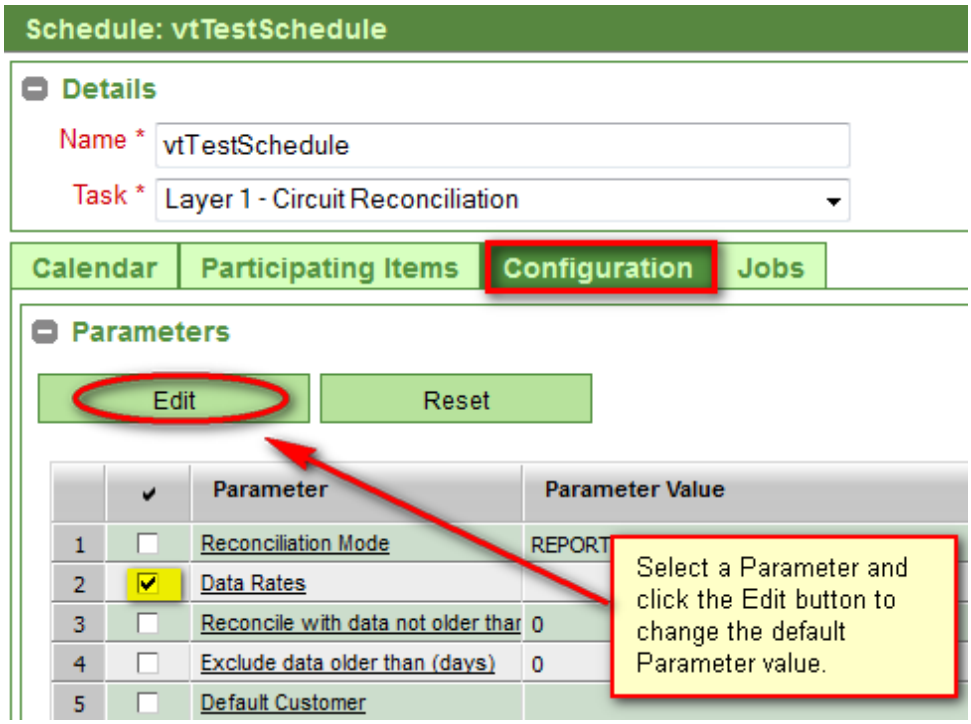


3. Provide a name for the Query and click the **Save** button. After a name has been provided, the Query will appear in the 'Queries' subpanel on the 'Participating Items' tab of the Schedule.



To modify the Query, select the Query in the grid and click on the **Details** button. This will open the selection window prepopulated with the saved parameters for the selected Query. The Query may be modified and saved with the original Query name, or as a new Query.

4.3.2.3. Configuration tab



Some Tasks require additional parameters to be defined. For example, the Task 'Layer 1 – Circuit Reconciliation' requires additional parameters to be defined specifying Reconciliation Mode, Data Rates, age of data, etc..

Consequently, the **Configuration** tab is only shown when Tasks of this nature are selected for a Schedule. Parameter Names and their default Values will automatically appear in the 'Parameters' subpanel.

The Parameter Value may be modified by selecting the appropriate Parameter and clicking on the **Edit** button.

The **Reset** button overwrites the defined value for a selected parameter with the default value for that parameter.

Table 14 lists the Tasks which require configuration with the Parameter Name and allowed Values. Default values are shown in bold.

TASK	PARAMETER NAMES	PARAMETER VALUES
Layer 1 - Circuit Reconciliation	Reconciliation Mode	**REPORT**
	Data Rates	The user can select from a list of all available data rates. More than one data rate can be selected.
	Reconcile with data not older than (days)	**0**
	Exclude data older than (days)	**0**
	Default Customer	The user can select from a list of all available Customers. Only one Customer can be selected. If no

		Customer is selected, all Circuits will be reconciled.
Layer 2 – Connectivity Reconciliation	Reconciliation Mode	**REPORT**
	VLAN Update	**NO**
	Reconcile with data not older than (days)	**0**
	Exclude data older than (days)	**0**
	Default Customer	The user can select from a list of all available Customers. Only one Customer can be selected.
Layer 2 – Inner VLAN Reconciliation	Reconciliation Mode	**REPORT**
	Service Parameter Update	**NO**
	Reconcile with data not older than (days)	**0**
	Exclude data older than (days)	**0**
	Default Customer	The user can select from a list of all available Customers. Only one Customer can be selected.
Layer 2 – Outer VLAN Reconciliation	Reconciliation Mode	**REPORT**
	Service Parameter Update	**NO**
	Reconcile with data not older than (days)	**0**
	Exclude data older than (days)	**0**
	Default Customer	The user can select from a list of all available Customers. Only one Customer can be selected.
Layer 2 – Service Reconciliation	Reconciliation Mode	**REPORT**
	Service Parameter Update	**NO**
	Reconcile with data not older than (days)	**0**
	Exclude data older than (days)	**0**

	Default Customer	The user can select from a list of all available Customers. Only one Customer can be selected.
Layer 3 – IP Link Reconciliation	Reconciliation Mode	**REPORT**
	Reconcile with data not older than (days)	**0**
	Exclude data older than (days)	**0**
	AS Number(s)	**0**
	Default Customer	The user can select from a list of all available Customers. Only one Customer can be selected.
Layer 3 –VPN Reconciliation	Reconciliation Mode	**REPORT**
	Reconcile with data not older than (days)	**0**
	Exclude data older than (days)	**0**
	Default Customer	The user can select from a list of all available Customers. Only one Customer can be selected
NE Discovery	Connector	The Connector to use for discovering new nodes in a live Network. Connectors are defined in the **Configuration → Connectors** submodule. For more information, please refer to section 6.6.2.
	ne.equipmentName	This allows a user to select Nodes having a specified node naming pattern.
	ne.nodeType	Here the user should enter the numeric Network Element Node Type as specified in the **Configuration → Resources → NE Configuration** submodule (Adapters tab). For more information, please refer to section 6.3.1.1.
	ne.locationCode	This parameter is currently not implemented.
	ne.targetId	This parameter is currently not implemented.

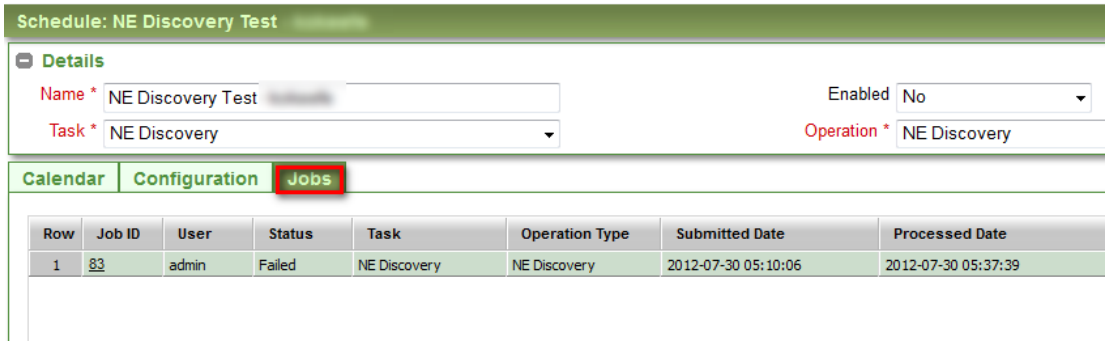
NE Purge	ne.equipmentName	This allows a user to select Nodes having a specified node naming pattern.
	ne.nodeType	Here the user should enter the numeric Network Element Node Type as specified in the **Configuration → Resources → NE Configuration** submodule (Adapters tab). For more information, please refer to section 6.3.1.1.
	ne.locationCode	This parameter is currently not implemented.
	ne.targetId	This parameter is currently not implemented.
	Retention Period (days)	**14**
NE Reconciliation	Reconciliation Mode	**REPORT**
	Reconcile stage data created in the last (x) days	The user can enter any number for x in order to filter which upload data (in a certain time frame) should be used for the operation.
	Node name patterns	The user can enter node name patterns in order to filter which Nodes are reconciled (for example, all nodes with a prefix of “xl”).
	Node types	Here the user should enter the numeric Network Element Node Type as specified in the **Configuration → Resources → NE Configuration** submodule (Adapters tab). For more information, please refer to section 6.3.1.1.
	Stage data source patterns	The user can enter name patterns to filter which upload source (usually a server ID) should be used for the NE Reconciliation operation (for example, all upload data from a source having the name pattern “toronto-”).
NE Upload (Deprecated)	Upload Mode	**REPORT**

Purge Jobs	Expiration Days	**30**

Table 14 Administration Module: Schedule – Configuration parameters

4.3.2.4. Jobs tab

The Jobs tab is shown for all scheduled Tasks and lists all executed occurrences of the Task with status information.



The Jobs listed include the following information:

LABEL	DESCRIPTION
Job ID	ID number assigned to the Job by NETPortal.
User	User who submitted the Job request.
Status	Status of the operation.
Task	Specific task related to the operation requested.
Operation Type	Type of operation requested.
Submitted Date	Date Job request was submitted.
Processed Date	Date Job request was processed.

Table 15 Administration Module: Schedule – Jobs list

4.3.3. Modify an Existing Schedule

Schedules that have been unlocked (i.e. activated in the system) can no longer be modified while they are unlocked. To modify a Schedule, it must be locked to prevent the system from executing the Schedule's Task before the Schedule is fully configured.

For more information on how to lock a Schedule, please refer to section 4.3.6.

For more information on how to activate or unlock a Schedule, please refer to section 4.3.5.

For more information on how to modify a Schedule, please refer to section 3.5 on navigating the user interface.

4.3.4. Action Menu Options

When a Schedule is open, the action menu at the top right corner of the screen provides the following functions:

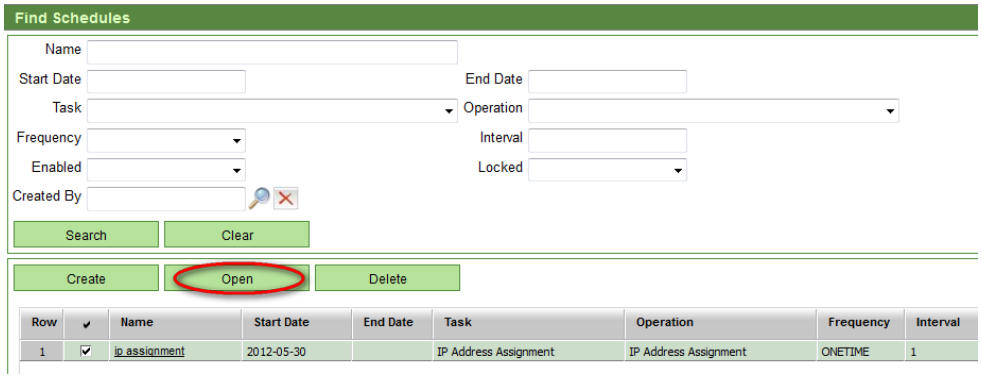
COMMAND	DESCRIPTION
Run Now	Automatically sets the 'Enabled' property of a Schedule to 'Yes' and unlocks the Schedule to be executed at the specified Start Date. Please refer to section 4.3.5 for more information.
Unlock/Lock	Activates/deactivates the Schedule for execution. The 'Unlock' option appears when the Schedule's 'Enabled' attribute is set to 'Yes.' Unlocking a Schedule allows the Schedule to be executed at the scheduled Start Date as long as the Schedule is enabled. Locking a Schedule allows the Schedule to be modified. For more information on unlocking a Schedule, refer to section 4.3.5. For more information on locking a Schedule, refer to section 4.3.6
Events	Opens the **Scheduler Events** window where all planned occurrences of the current Schedule are listed

4.3.5. Activate/Unlock/Run a Schedule

After a Schedule has been created or modified, it remains in 'locked' mode until it is unlocked for processing by NETPortal.

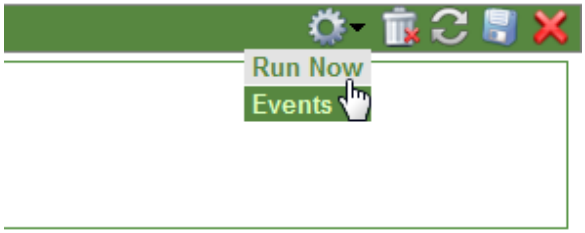
To activate or unlock a Schedule:

1. From the **Find Schedules** screen, use the search fields if necessary to select the desired Schedule and open it by clicking the **Open** button, or simply click on the Schedule's Name.



2. In the Details/Configuration screen of the selected Schedule, click on the Action menu in the top right corner of the screen and select **Run Now**.

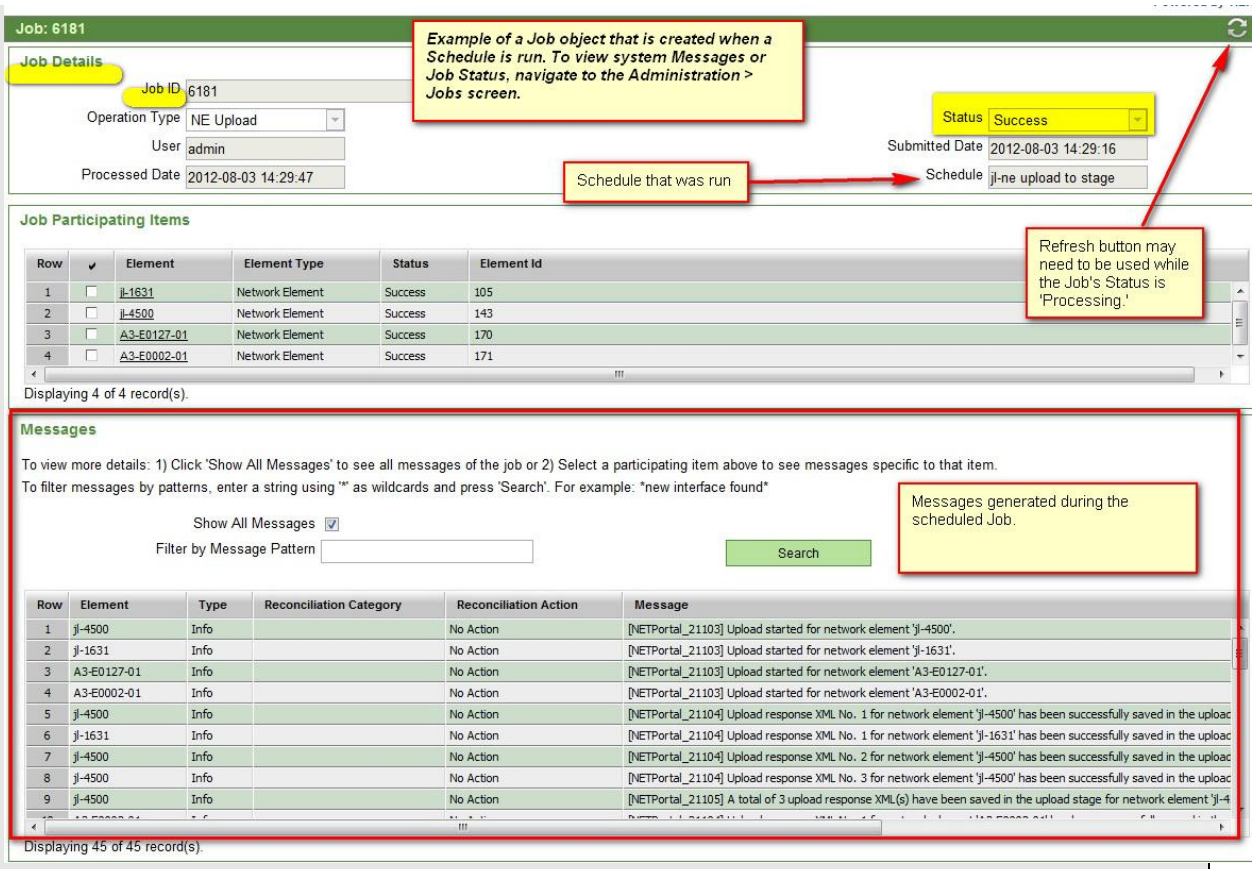
   Run Now will automatically enable and unlock the Schedule to be executed at the specified Start Date.



NOTE: If the Schedule is already enabled, the **Unlock** option will also run the Schedule at the selected Start Date. If the Schedule is not already enabled, the **Run Now** option will automatically enable and unlock the Schedule in one step.

3. Save the Schedule again by clicking on  .

NOTE: While a scheduled Operation is running, the task status can be checked by navigating to the **Administration → Jobs** screen and viewing the Job record that is associated with the Schedule. To view system Messages that are generated during the Operation, select the Job ID or open the Details/Configuration screen for the Job. While the Job is in progress (with a status of 'Processing'), the screen may need to be periodically refreshed until the task is completed in order to see all Messages as well as the final status.



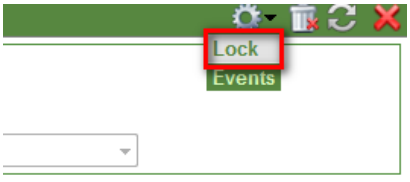
For more information, please refer to section 4.2.

4.3.6. Lock a Schedule

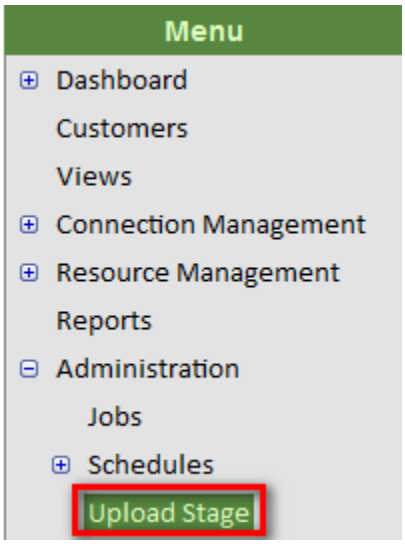
An active Schedule must be locked before it can be modified. This prevents the system from executing the Schedule's Task while the Schedule is still being configured.

To lock a Schedule:

1. Open the Details/Configuration screen of the Schedule. Please refer to section 4.3.5, if necessary.
2. Click on the Action menu in the top right corner of the screen and select **Lock**.



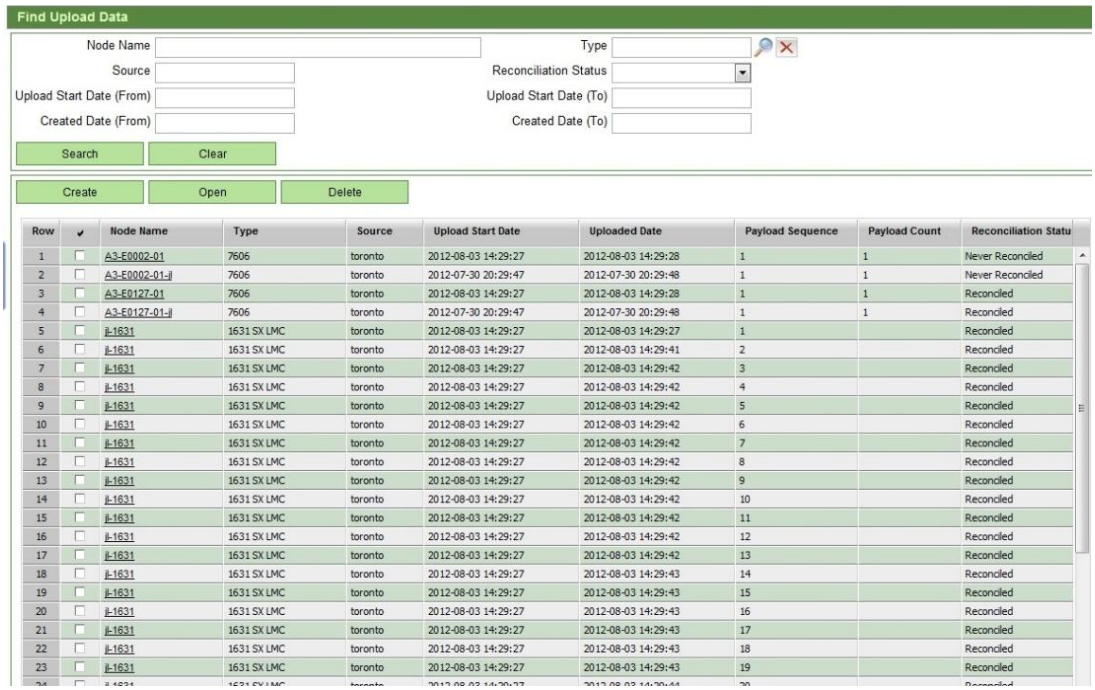
4.4. Upload Stage



4.4.1. Overview

The Upload Stage is used to store uploaded equipment configurations across different geographic locations, using local or remote servers. One Upload Stage is used per clustered NETPortal environment. The uploaded XML equipment configurations are retrieved when the 'NE Upload' Schedule is run from the Administration module. The configurations are referred to as 'Upload Data' or 'Payloads.' They are then used to reconcile NETPortal objects in the system database when the 'NE Reconciliation' Schedule is performed. For more information on Schedules, please refer to section 4.3.

4.4.2. Find Upload Data



The **Find Upload Data** screen shows all Upload Data records retrieved from equipment when an 'NE Upload' Schedule is run. The records shown on this screen may be useful for monitoring and debugging issues that may arise during an 'NE Reconciliation' operation.

The Upload Data records listed on the **Find Upload Data** screen include the following information:

Node Name	Name of the Node associated with the Upload Data.
Type	Type of Node associated with the Upload Data.
Source	Source of the Upload Data (usually a server ID).
Upload Start Date	Indicates the day and time when the NE Upload process was started.
Uploaded Date	Indicates the day and time when the Upload Data (Payload) was gathered.
Payload Sequence	Indicates the sequence number of the Payload when multiple Payloads are received from the same equipment during a single NE Upload operation.
Payload Count	Indicates the total number of Payloads received from a piece of equipment during a single NE Upload operation.
Reconciliation Status	This field indicates if the Payload has been processed by a reconciliation operation.

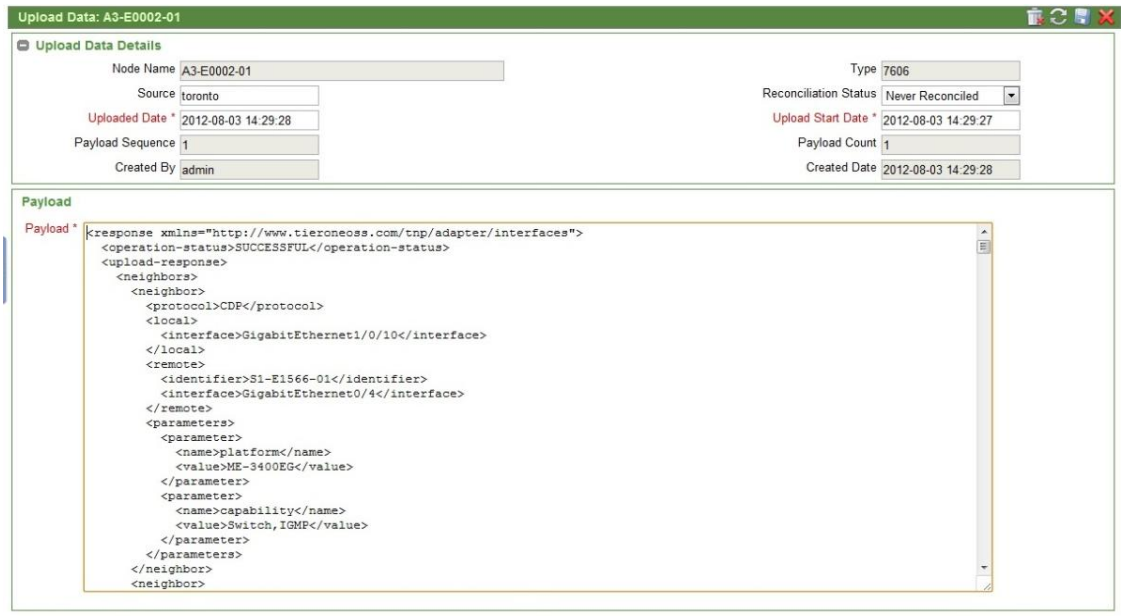
Table 16 Find Upload Data screen: Payload fields

4.4.1. Upload Data Details/Configuration

To view the Details/Configuration screen of an Upload Data record:

1. On the **Find Upload Data** screen, select an Upload Data record and click the **Open** button, or simply click on the Node Name.

   The 'Upload Data Details' panel provides the information summarized in Table 17 in read-only format, while the 'Payload' panel displays the actual XML configuration retrieved from the equipment during the NE Upload operation.



Node Name	Name of the Node associated with the Upload Data.
Type	Type of Node associated with the Upload Data.
Source	Source of the Upload Data (usually a server ID).
Reconciliation Status	This field indicates if the Payload has been processed by a reconciliation operation.
Uploaded Date	Indicates the day and time when the Upload Data (Payload) was gathered.
Upload Start Date	Indicates the day and time when the NE Upload process was started.
Payload Sequence	Indicates the sequence number of the Payload when multiple Payloads are received from the same piece of equipment during a single NE Upload operation.
Payload Count	Indicates the total number of Payloads received from a piece of equipment during a single NE Upload operation.
Created By	The ID of the user who performed the NE Upload operation which retrieved the Payload.

Created Date	The day and time when the Upload Data is stored on the current database.

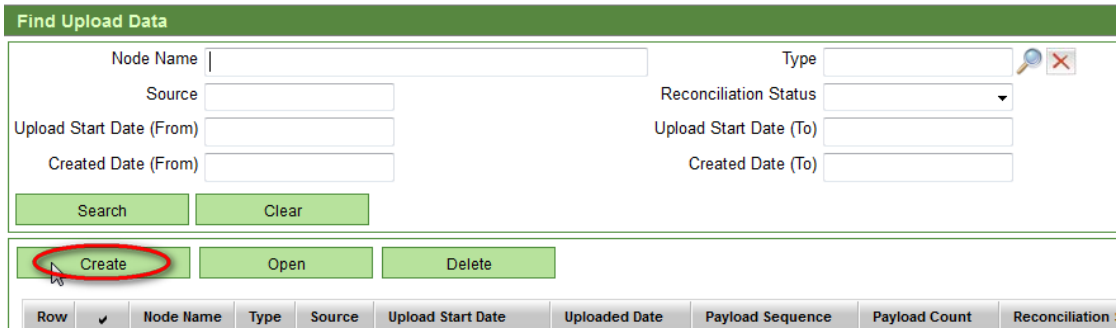
Table 17 Upload Data Details fields

4.4.2. Create Upload Data

For testing purposes, Upload Data can be created in order to simulate live equipment configurations.

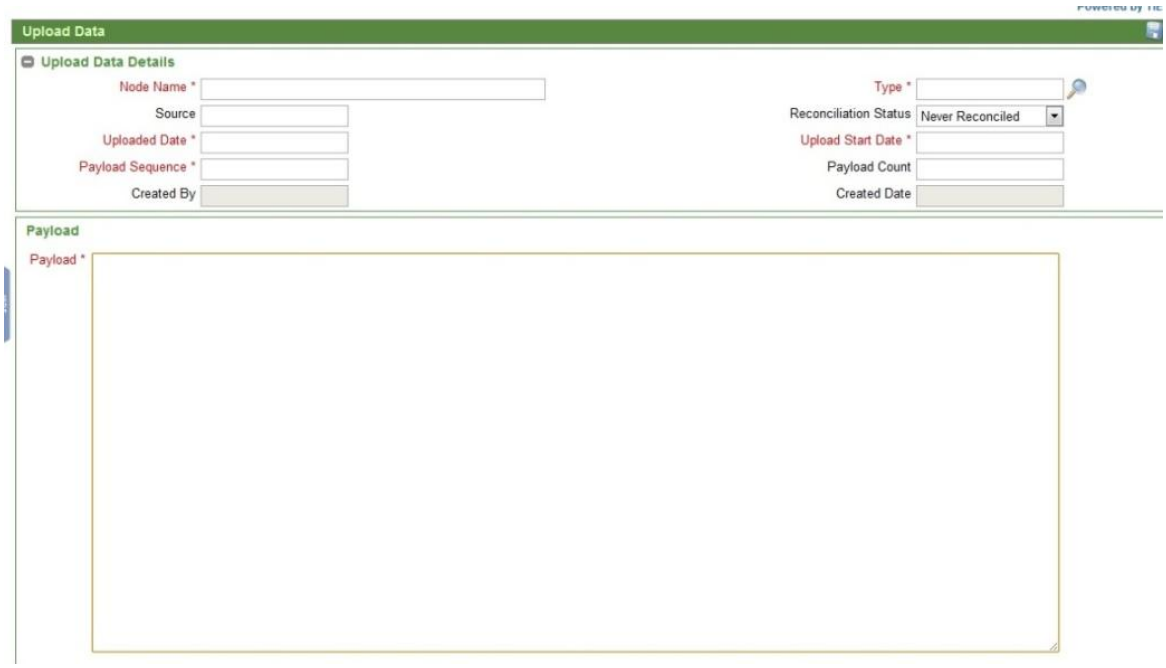
To create Upload Data:

1. On the **Find Upload Data** screen, click on the **Create** button.



2. In the Upload Data Details/Configuration screen, enter the required information. The fields are summarized in Table 17 above. Enter the upload configuration in the 'Payload' field.

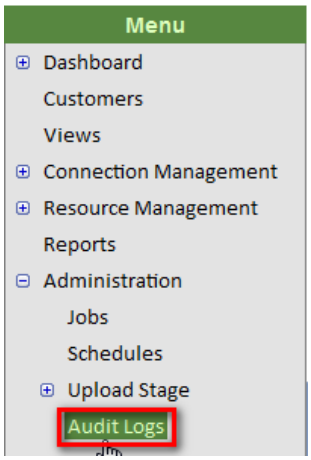
NOTE: For more information on how to structure the XML contents of the Payload, please refer to the response.xsd file included in the api\xsd directory of the received installation files. This XML structure is essential for reconciling the Network Elements in the NETPortal database with the live equipment when the 'NE Reconciliation' operation is performed.



3. Save the object by clicking on  in the top right corner of the screen. NETPortal will automatically populate the 'Created By' and 'Created Date' fields. Navigate to the **Find Upload Data** screen and use the **Search** button to see the newly created Upload Data added to the list displayed.

4.5. Audit Logs

4.5.1. Overview



All communication between NETPortal and live Network Elements are logged for audit purposes and can be viewed in the Audit Logs submodule. For example, NETPortal communicates with live Network Elements during Upload, Discovery, Activation/ Deactivation and Facility Provisioning processes, as well as when commands are executed in the **Access Management** module. The commands executed during these operations are captured in the Audit Logs.

Depending on which privilege is assigned to a user's User Group, a user's view of the Audit Logs screen can be restricted to:

d) his or her own activities only

e) the user's own activities and those activities performed by users belonging to the same User Group(s)

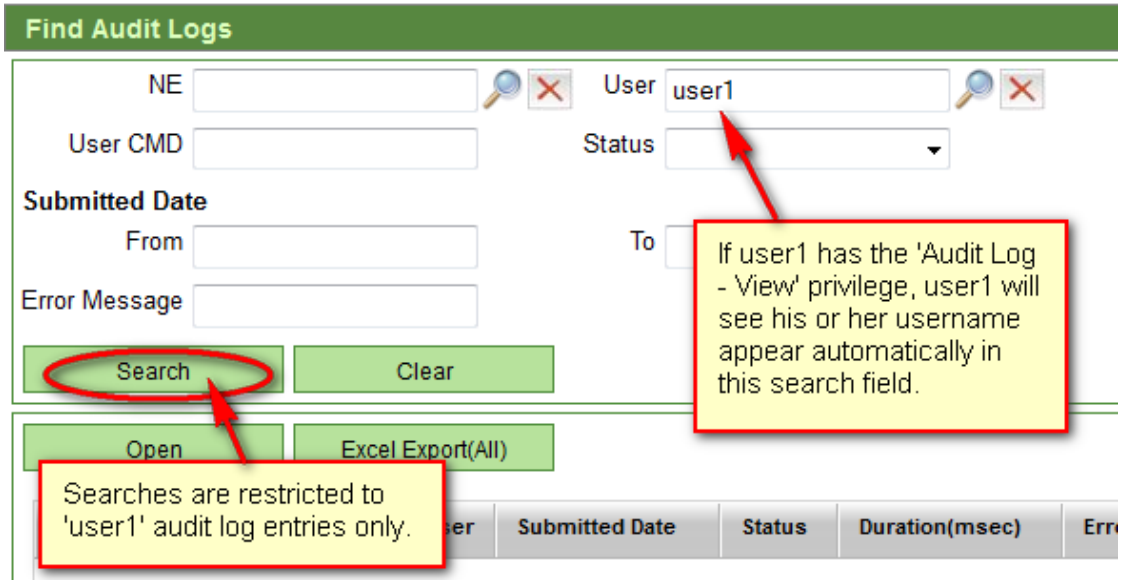
f) Unrestricted view of all commands executed by all users.

Please refer to section 4.5.1 for more information.

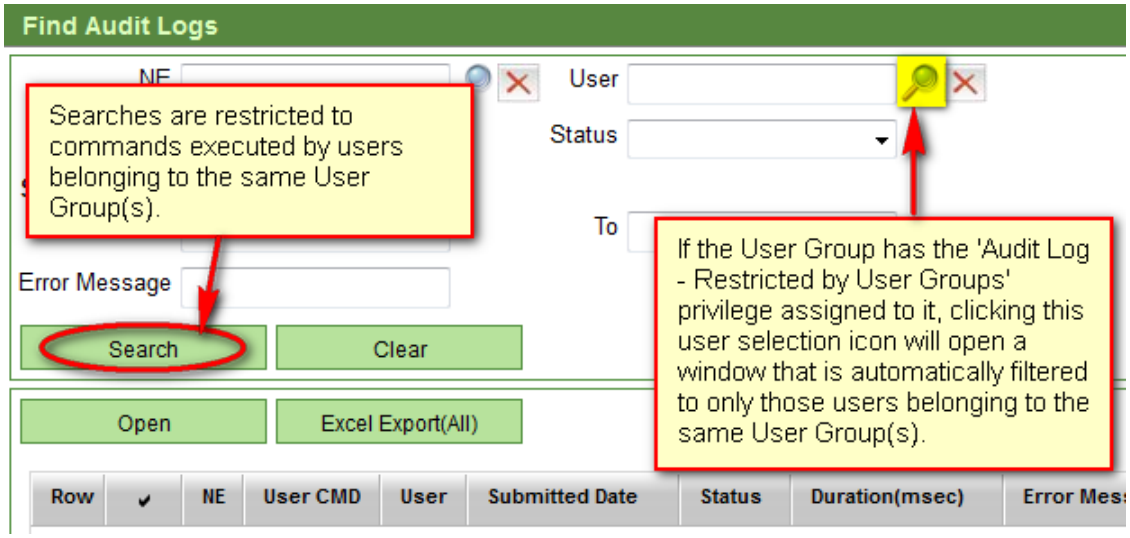
NOTE: A user's view of Jobs can be restricted in the same manner. Please refer to section 4.2.1 for more information.

4.5.1. Find Audit Logs

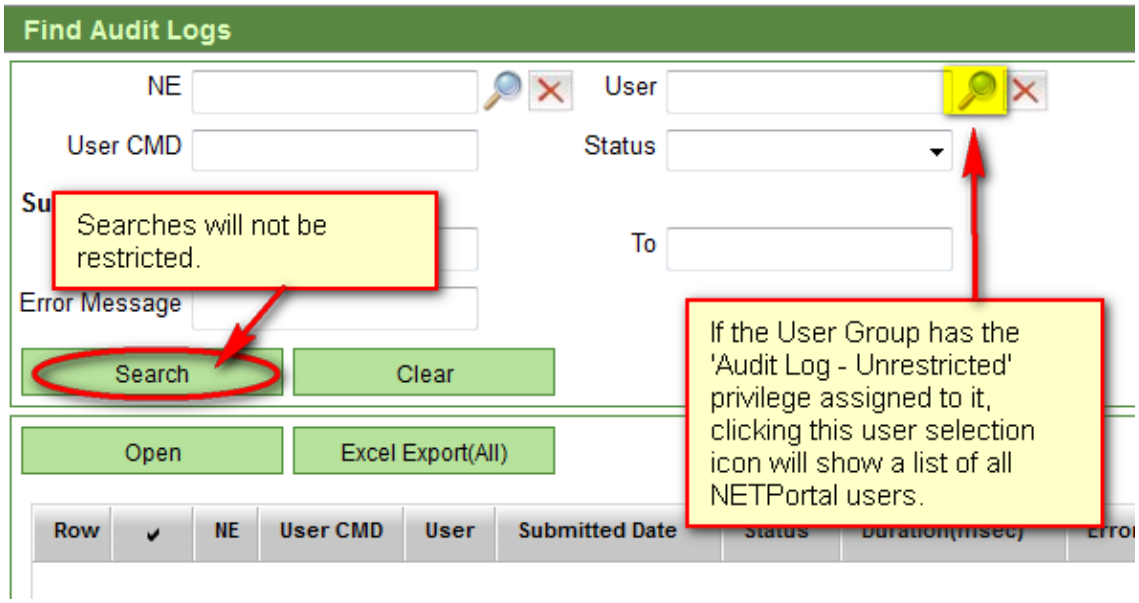
Depending on which privilege is assigned to his or her User Group, a user's view of the **Administration → Audit Logs** screen will be restricted accordingly. If the User Group has the 'Audit Log – View' privilege assigned to it, the user's username will automatically appear in the User search field, and all searches will be restricted to the user's own commands.



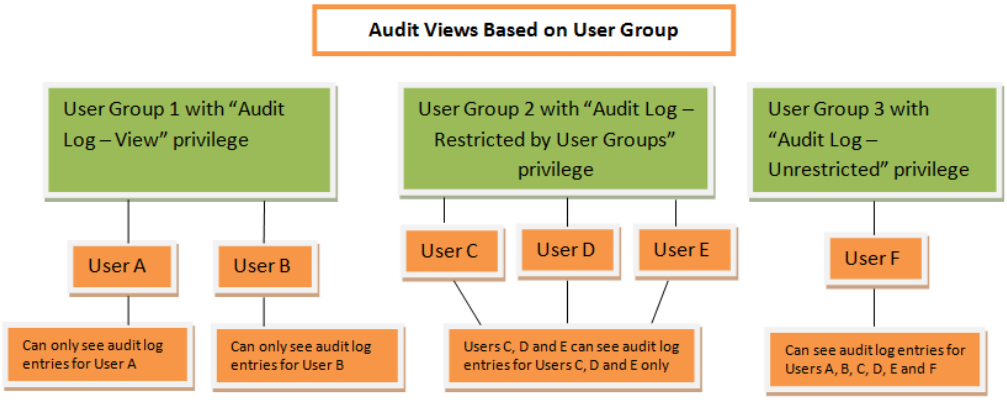
If the user's User Group has the 'Audit Log – Restricted by User Groups' privilege assigned to it, the User selection window (the window that appears when you click on the icon beside the 'User' field) will be automatically filtered to display only those users belonging to the same User Group(s). All searches will be restricted to the commands executed by users sharing the same User Group(s).



If the user's User Group has the 'Audit Log – Unrestricted' privilege assigned to it, the User selection field will display all NETPortal users, regardless of User Group(s). Searches will not be restricted.



The diagram below illustrates the concept of access to the Audit Logs based on User Group privileges:



For more information on User Groups and Privileges, please refer to section 5.4.2.2.

In addition, the search fields described in Table 18 below may be used to further filter the list generated based on the user's Audit privileges.

LABEL	DESCRIPTION
NE	The selection icon allows the user to choose from all the Network Elements created from Access adapters.
User	If a user has the 'Audit Log – View' privilege, this field will be automatically pre-populated with the ID of the user currently logged in. If a user has the 'Audit Log – Restricted by User Groups' privilege, the selection icon will allow the current user to select from a list of all users belonging to the same User Group(s) as him- or herself. If a user has the 'Audit Log – Unrestricted' privilege, the selection icon will allow the current user to select from a list of all users, regardless of User Group.
User CMD	Command to be examined. A partial command entry is acceptable. All commands containing the sequence of characters entered in the field anywhere in the command string will be listed.
Status	A drop-down menu showing the possible outcomes of the command execution: • Completed • Failed
Submitted Date: From and To	Period to be included in the list of audit logs. By default, the 'To' field is set to the system date and time when the **Search** button is clicked.
Error Message	Error description if the command failed to execute.

Table 18 Administration module: Audit search fields

The Audit Logs shown in the grid contain the following information:

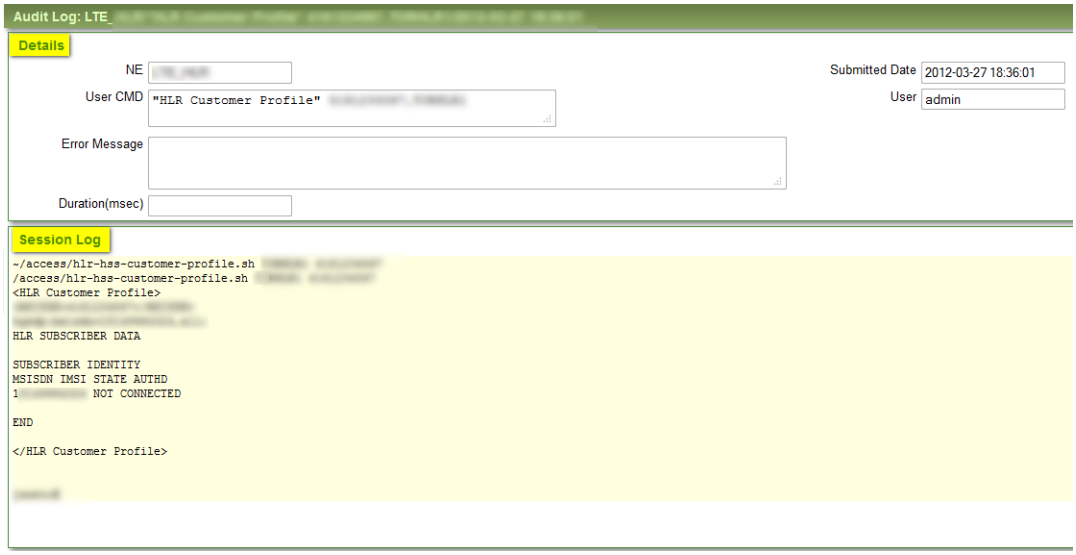
LABEL	DESCRIPTION
NE	The Access Network Element used to issue the command being audited.
User CMD	The command string issued.
User	The system ID of the user that issued the command.
Submitted Date	Date that the request(s) were sent. A range can be specified if dates for both From and To are added.
Status	The result of the command execution.
Duration (msec)	Duration of communication with a live Network Element.
Error Message	Error description if the command failed to execute.

Table 19 Administration module: Audit Logs fields

To view more detailed information about a specific command listed on the **Find Audit Logs** screen, select the command object in the grid and open it. Please refer to section 4.5.2 for more information.

4.5.2. Audit Log Details

The Details/Configuration screen of an Audit Log object consists of two panels: a 'Details' panel and a 'Session Log' panel.

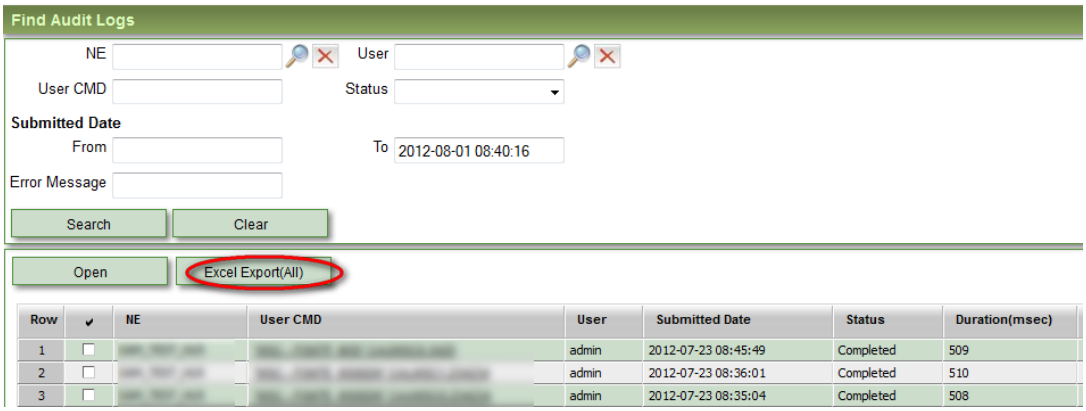


The 'Details' panel displays the fields summarized in Table 19 in read-only format.

The 'Session Log' panel displays the results of the command execution, provided that the 'Session Logging' option was enabled when the Access Adapter Command was created in the Configuration module's Adapter Workbench. For more information on the Adapter Workbench, please refer to section 6.7.1.1.

4.5.3. Export Audit Logs to Excel

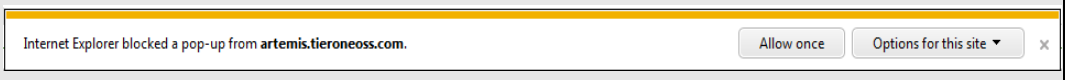
If desired, Audit Log search results may be exported to an Excel file for further analysis. Use the search fields on the **Find Audit Logs** screen, if necessary, to filter the list. Then click the **Excel Export (All)** button.



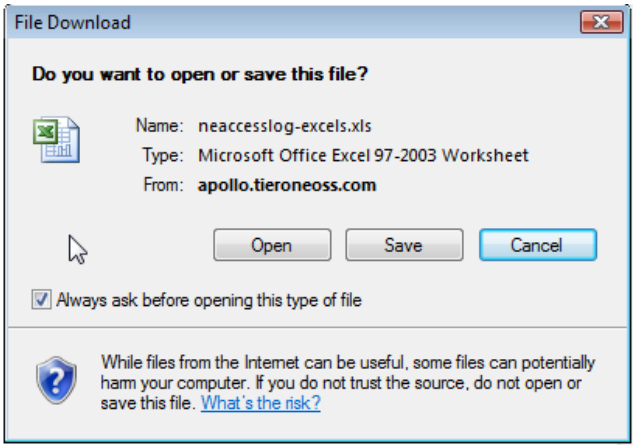
This action creates the file "neaccesslog-excels.xls", which the user can open or save. Session Log information is included in the spreadsheet, provided that the 'Session Logging' option was enabled when an Access Adapter Command was created in the Configuration module's Adapter Workbench.

For more information on the Adapter Workbench, please refer to section 6.7.1.1.

NOTE: Some browsers may block pop-ups and display an alert instead of showing a File Download window.



Users may need to enable or allow pop-ups in their browser in order to see the window shown below.



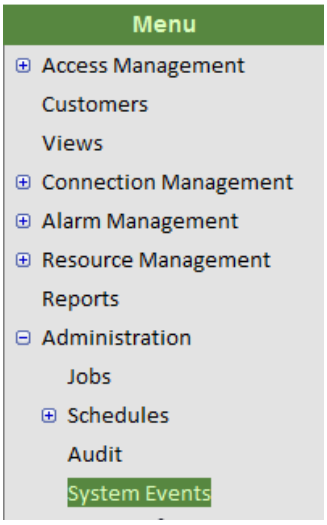
Once opened, the Audit Log Report should look similar to the figure below.

Audit Log Report

August 01, 2012

Network	User Command	User	Submitted Date	Status	Session Log	Error Message
[illegible]	[illegible]	admin	2012-07-23 06:	Failed		Error processing request: null, error: End of stream reached, no match found
[illegible]	[illegible]	admin	2012-07-23 05:	Failed		Error processing request: null, error: End of stream reached, no match found
[illegible]	[illegible]	admin	2012-07-23 05:	Failed		Error processing request: null, error: End of stream reached, no match found
[illegible]	[illegible]	admin	2012-07-19 10:	Failed		[illegible]

4.6. System Events



NOTE: This menu option is only visible if the EVM and Alarm Management (EVM) module was included in your license agreement.

4.6.1. Overview

Using a stand-alone application server, Event Manager (EVM) collects and analyzes data for Network Elements. Collectors are used to transfer status information from the Network Elements to the EVM server, which processes the information and forwards it to NETPortal as System Events, listed on the **Administration → System Events** screen.

Use the search fields to filter the list, if desired, to a specific date range.

Figure 17 Administration module: System Events screen

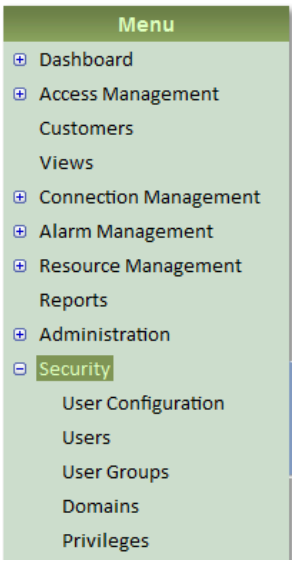
The information shown in the displayed list includes:

LABEL	DESCRIPTION
Type	Short description of the event type.
Time	Timestamp when the event occurred.
Node	Network Element, if any, associated with the event.
Collector	Name of the Collector issuing the event information.
Description	Description of the event.

Table 20 Administration module: System Events labels

5. Security

5.1. Overview



The **Security** module provides user management functionality and network partitioning capabilities for NETPortal.

If Language Packs are configured through NETPortal's Configuration module, different users can choose to work with NETPortal in different languages. User-based language settings are controlled through the **User Configuration** screen. Administrative language settings are controlled through the **Configuration → System** screen (Languages tab).

User accounts can be imported from corporate LDAP or Active Directory™ servers, or created locally. The accounts are authenticated in one of two ways: either through NETPortal's own 'managed' security mechanisms, or through an external ('unmanaged') authentication system that communicates with NETPortal to map users to a User Group based on the user's role within the external system. The type of method used by NETPortal is determined by the Authentication Level specified in the **Configuration → System** submodule. For more information, please refer to section 6.6.1.5.

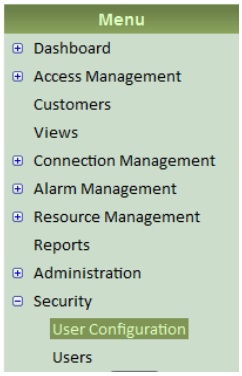
Every user must belong to at least one User Group in order to use the NETPortal application; the User Group is the basis of a user's application privileges.

To control access to NETPortal modules, User Groups can be created and privileges applied to the User Groups. User Groups can also be associated with a Customer so that members of a Customer-related User Group can only see Network Elements or other users that are related to the same Customer. For more information on Customers, please refer to the ***NETPortal User Guide – Inventory Management***.

In a typical operational environment, Domains may be created to subdivide the overall network into areas of responsibility as determined by organizational structure. User Groups, Network Elements, Physical Ports, Logical Interfaces and Customers can be associated with these Domains to restrict a user's view of Network Elements even further.

5.2. User Configuration

5.2.1. Overview



The **User Configuration** screen presents two tabs which allow users to configure their language settings and change their password.

NETPortal supports up to three languages in addition to English. Language Packs are configured through NETPortal's Configuration module.

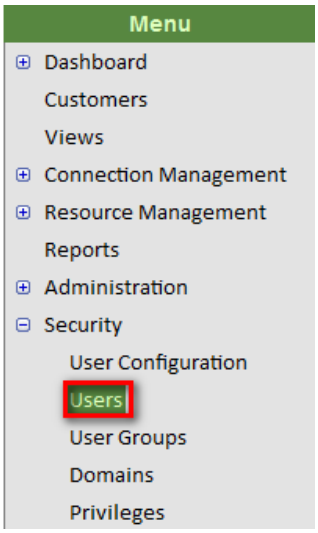
For more information on how users can change a password or language setting, please refer to the ***NETPortal User Guide – Inventory Management***.

For more information on how to reset a password for a user who can no longer log in to NETPortal, please refer to section 5.3.4.

For more information on how to configure Language Packs for NETPortal, please refer to section 6.6.1.9.

5.3. Users

5.3.1. Overview



When NETPortal is installed, a default user account with the username of 'admin' is provided with all application privileges granted to this user account. Privileges for this account are locked and cannot be edited.

Other user accounts created on corporate LDAP or Active Directory™ servers are imported into NETPortal to allow access to the application. User accounts may be managed or unmanaged. Managed users are users who are imported via LDAP or Active Directory servers or are created explicitly in NETPortal. Unmanaged users are those who are authenticated through an external Single Sign On (SSO) mechanism.

Since NETPortal is designed to interact with corporate authentication servers, user accounts from the corporate LDAP or Active Directory™ servers may be imported into NETPortal for assignment to appropriate User Groups. Access privileges for the various modules of the application are granted at the User Group level. A user account will not provide any functionality until it is assigned to a User Group.

Once a user account is assigned to a User Group, the user's visibility of NETPortal objects can be further restricted, if necessary, to provide additional security and prevent unwanted visibility of certain equipment or services. This is done by associating User accounts with Customer objects or Domain objects, as well as enabling or disabling appropriate privileges for a User Group.

NOTE: All user authentications are performed by the designated LDAP or Active Directory™ servers.

If a user receives a NETPortal authentication error upon login, please verify that the authentication configuration in NETPortal has the correct settings based on the Security Realms configuration in the WebLogic administrative console. For more information on authentication in NETPortal, please refer to section 6.6.1.5. For more information on Security Realms in WebLogic, please refer to the relevant WebLogic documentation.

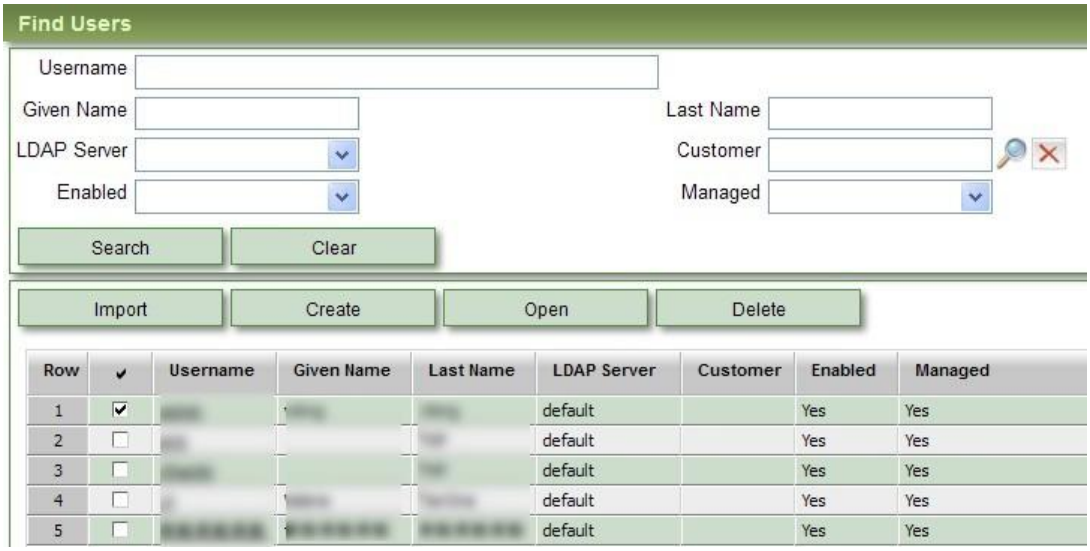


Figure 18 Security module: Search fields and list of Users

The table below summarizes the search fields that are used to filter user records on the **Find Users** screen:

LABEL	DESCRIPTION
Username	Account name assigned to the user – login ID.
Given Name	User first name.
Last Name	User surname.
LDAP Server	LDAP server where this user account is authenticated.
Customer	Customer with which the user is associated (optional field). The Customer assignment can be used to restrict a user's view of the network, equipment, access privileges, etc. to only those NETPortal objects which are associated with the same Customer.
Enabled	Indicates whether the account is Enabled or Disabled for use with NETPortal.
Managed	Indicates whether a user account was explicitly created or imported into NETPortal or authenticated through an

	external (single sign-on) authentication system. The value **'Yes'** indicates that the user account was either explicitly created in NETPortal or imported via an LDAP or Active Directory™ server . The value 'No' indicates that the user account exists in an external (single sign-on) authentication system.

Table 21 Security module: fields included in User records

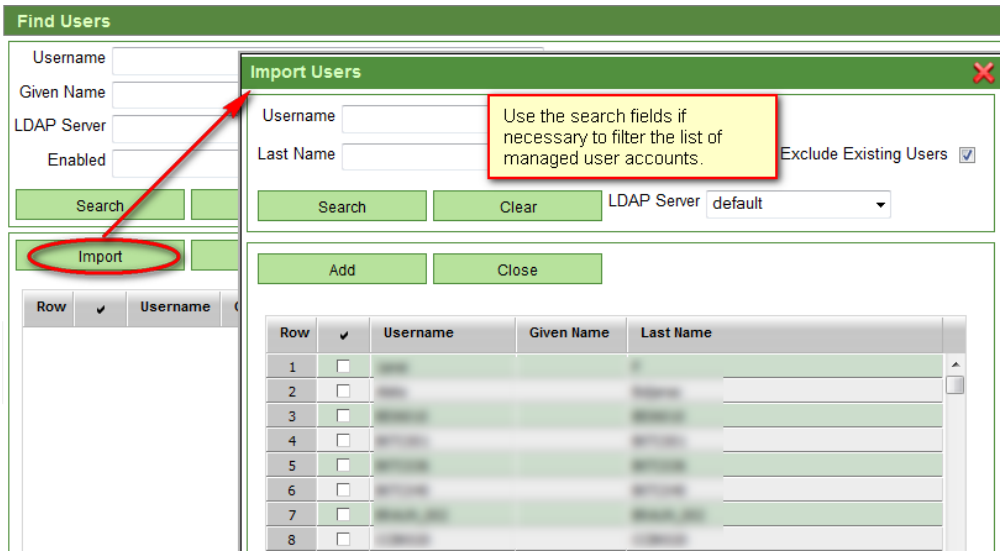
5.3.2. Import User Account

User accounts created on corporate LDAP or Active Directory™ servers can be imported into NETPortal as 'Managed' accounts to allow access to the application.

If a user is a NETPortal Administrator or has the 'User – Import' privilege assigned to his or her User Group, a list of all usernames in the selected LDAP or Active Directory™ server is generated when the **Import** button is clicked on the **Find Users** screen.

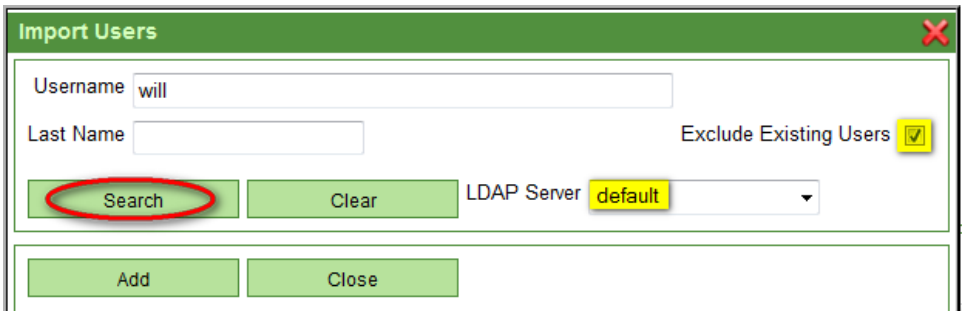
To import a managed account from a corporate LDAP or Active Directory™ server:

1. In the **Find Users** screen, click on the **Import** button. This opens the **Import Users** window with search fields near the top of the screen to help filter the range of managed user accounts returned from the LDAP server. (In some cases, restrictions may be placed on an LDAP server to return only a certain number of records; consequently, errors may result if no search filters are applied and the number of queried records exceeds the maximum number of records that the LDAP server is configured to return.)



2. In the **Import Users** window, use the 'Username' field to filter the range of user records returned in a search. The 'Exclude Existing Users' checkbox is checked by default to exclude already existing users from the import operation. Select the desired LDAP server from the LDAP Server drop-down list. If only one LDAP Server is configured for

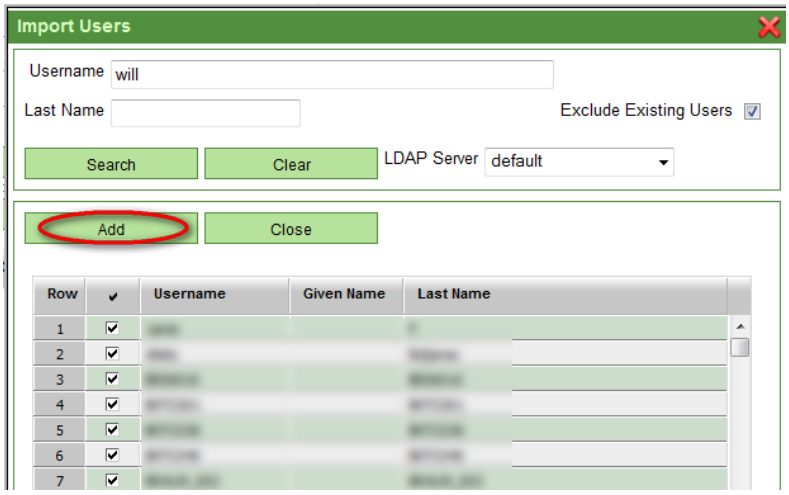
authentication, then "default" will automatically appear in the 'LDAP Server' field. Click the **Search** button to generate a list of available User ID's.



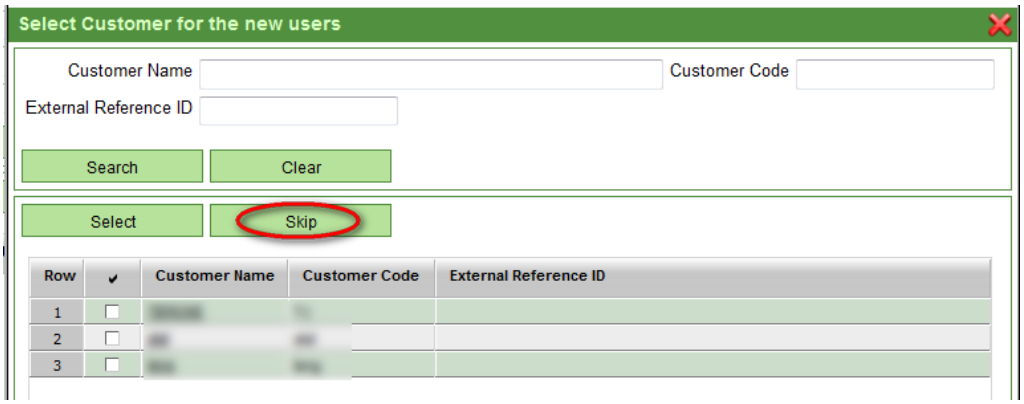
NOTE: An LDAP server **MUST** be configured before performing the search operation.

NOTE: Searches conducted on the 'Username' field in the **Import Users** window may not be case-sensitive because the Active Directory authentication provider allows for case-insensitive searches. Other authentication providers may or may not support case-insensitive searches.

3. Select the desired managed user account(s) from the list of LDAP records and then click the **Add** button. Multiple accounts may be selected.

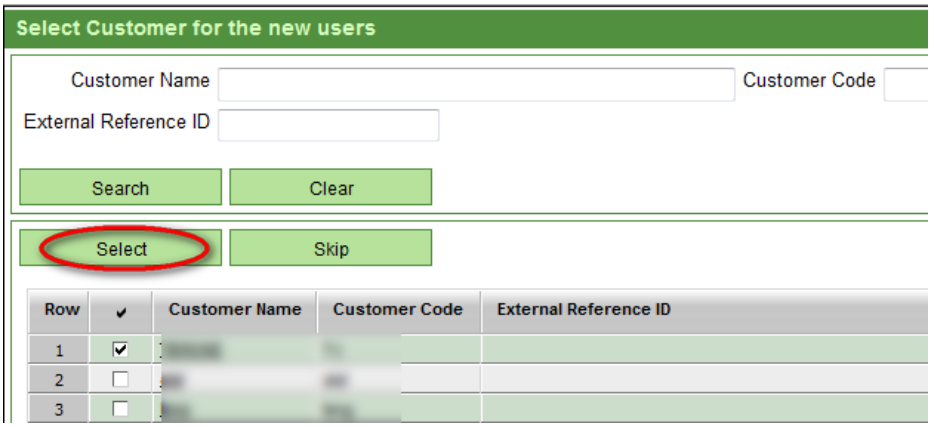


4. If the Customers module is enabled and Customer objects exist in NETPortal, a new window labeled **Select Customer for the new users** will open so that the newly imported users can be associated with a Customer, if desired. This is an optional step that can be done in order to restrict the users' view of NETPortal objects to only those objects associated with the same Customer. If this step is not required, simply click the **Skip** button.



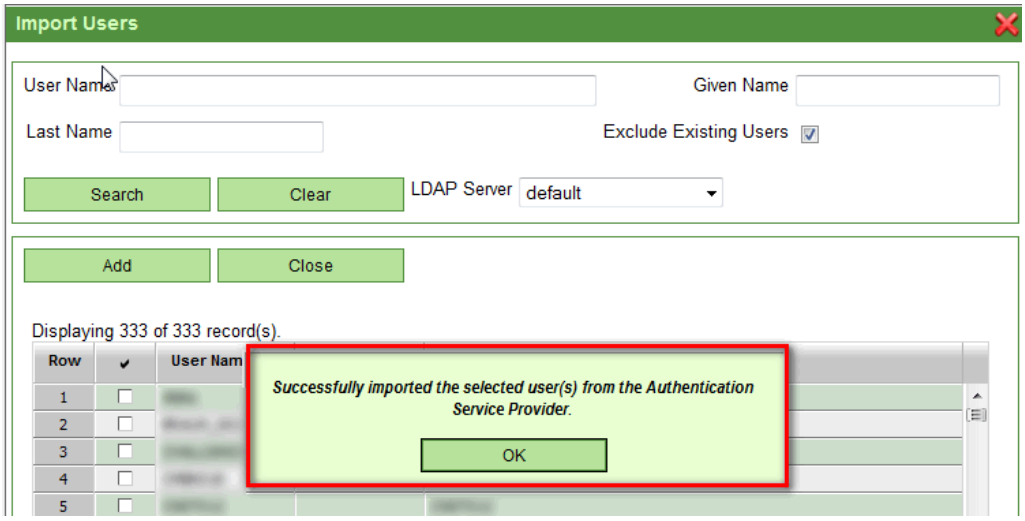
If this step is desired:

- Use the search fields near the top of the screen, if necessary, and click the **Search** button to generate a list of available Customers.
- Choose the desired Customer and click **Select**. Only one Customer can be selected.



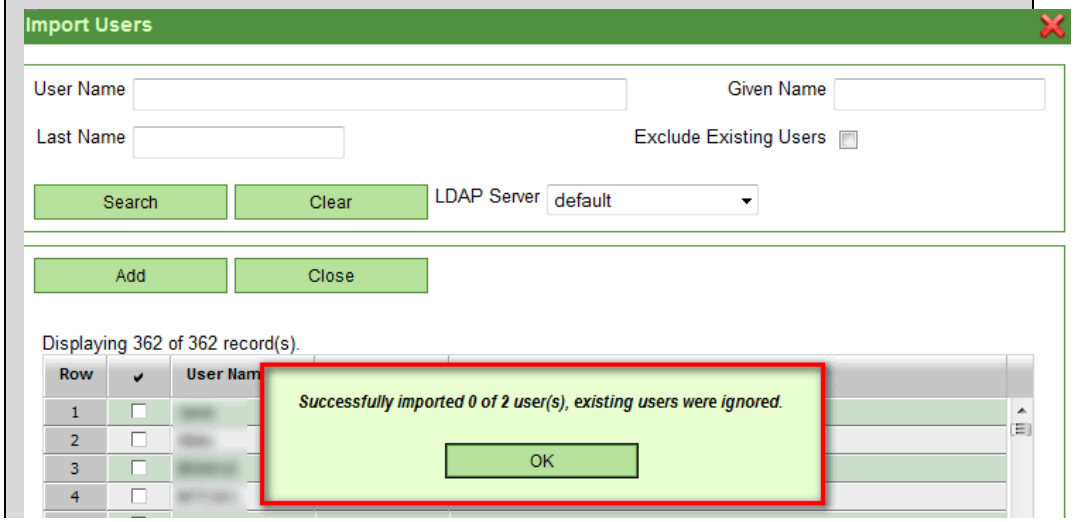
NOTE: For more information on Customer objects, please refer to the ***NETPortal User Guide – Inventory Management***.

5. A message will appear confirming successful import.



The system will display a status message with the result of the operation.

NOTE: If the 'Exclude Existing Users' checkbox is unchecked and you attempt to import managed Users who already exist in the system, the system will ignore those user accounts. A message will appear confirming how many records were imported while ignoring existing users.

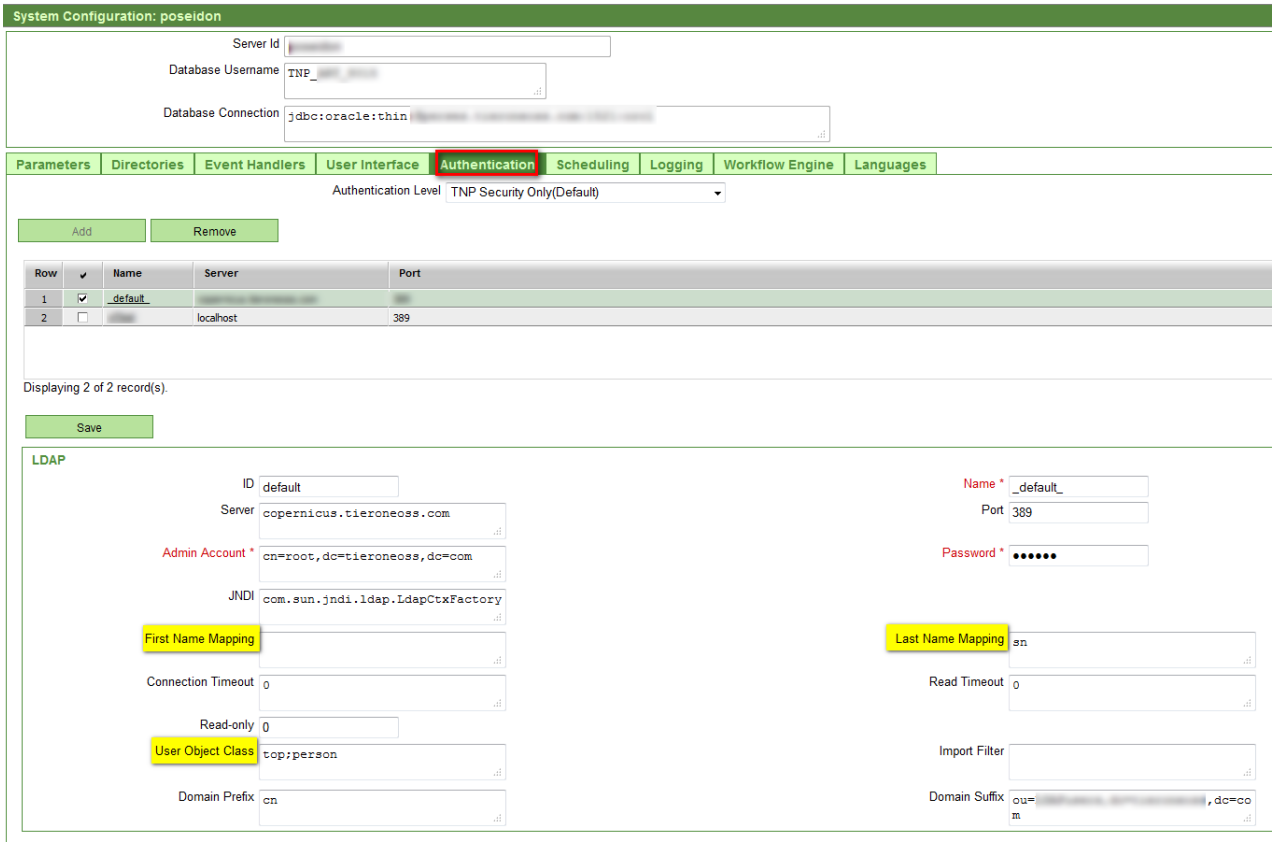


5.3.3. Create User Account

If no corporate LDAP server or directory is available for importing user accounts, NETPortal allows users to be created locally if the following conditions are met:

- An open-source LDAP Server is correctly configured in the **Configuration → System** submodule (Authentication tab). Please refer to section 6.6.1.5 for more information.

- For the specified LDAP server, the fields mapped to 'First Name Mapping' and 'Last Name Mapping' should be the only mandatory fields in the LDAP schema for the object classes defined for 'User Object Class.'



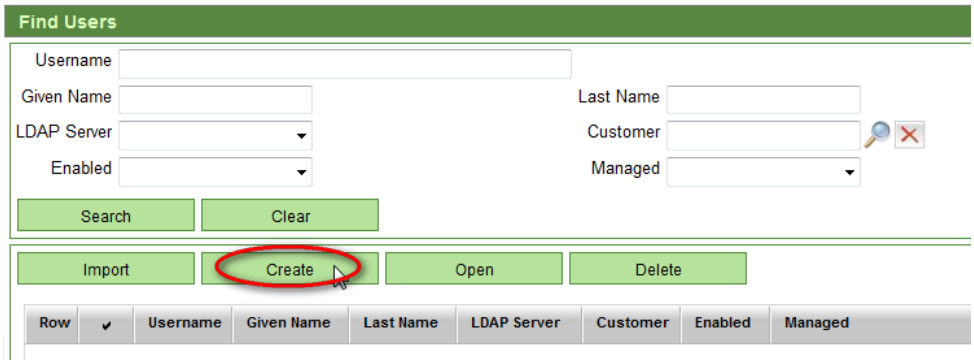
- The person creating the new users is a NETPortal Administrator or belongs to a User Group with the 'User – Create' privilege enabled in the Security module.

NOTE: If additional fields are marked as mandatory in the LDAP schema, then it will not be possible to create users through NETPortal; Users will have to be created through an external LDAP client and then imported into NETPortal through the import process as described in section 5.3.2.

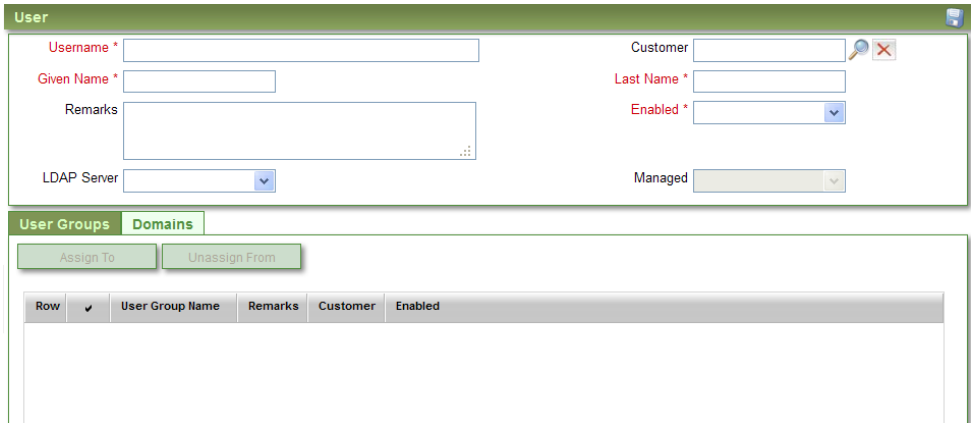
NOTE: For more information on LDAP schemas, please refer to the relevant documentation for your chosen LDAP application.

To create a local user:

1. In the **Find Users** screen, click on the **Create** button.



2. In the Details/Configuration screen that opens, enter the User information as required. The 'Customer' field can be used to associate the user with a Customer and restrict their view of NETPortal objects to only those objects associated with the same Customer.



3. Click on the **Save** button in the top right corner of the screen.
4. On the **User Groups** tab of the User Details/Configuration screen, assign the new User account to a User Group. The User Group determines which application privileges the user will have while using NETPortal. Please refer to section 5.3.3.1 below for further information.
5. If required, assign the new user's User Group to a Domain. Domains can be used to limit the view a user has of certain NETPortal objects. Please refer to section 5.4.2.3 below for further information.
6. Click on the **Save** button.

The new User account is created and assigned as a member of the selected User Group.

NOTE: After the user account is created, click the **Search** button on the **Find Users** screen to refresh the list of User objects shown.

NOTE: The User account **MUST** be enabled before the User can sign in to NETPortal. The user must also be assigned to a User Group in order to access NETPortal application modules.

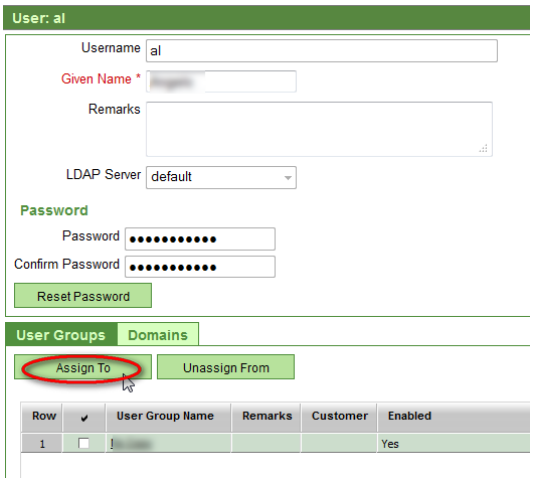
5.3.3.1. User Groups tab

All users must be assigned to a User Group in order to have application privileges. An individual user can be assigned to a User Group using the **User Groups** tab on the User Details/Configuration screen.

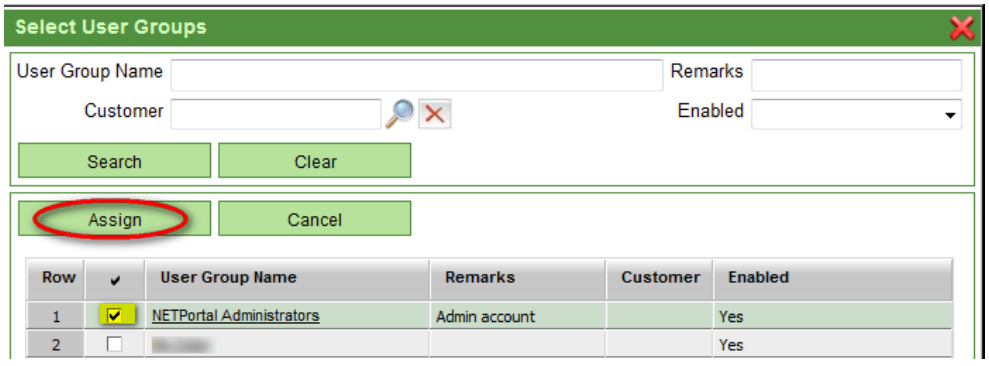
If a large number of users need to be added to the same User Group simultaneously, however, a more convenient way to do this would be to add users through the **Security → User Groups** screen (please refer to 5.4.2.1 for more information).

To assign a managed user to a User Group from the User Details/Configuration screen:

1. Open the Details/Configuration screen of the managed User you wish to assign to a User Group.
2. On the **User Groups** tab, click the **Assign To** button.



3. The **Select User Groups** window opens. Use the search fields, if necessary, near the top of the screen to filter the range of User Groups available. Click the **Search** button to generate a list of available User Groups. Unless the person performing the user-group assignment is a NETPortal Administrator, he or she will only see those User Groups that have the same privileges or privilege subset as his or her own User Group(s). NETPortal Administrators will be able to see all User Groups regardless of their assigned privileges.
4. Select the desired User Group from the list and click the **Assign** button to assign the User Group to the User.

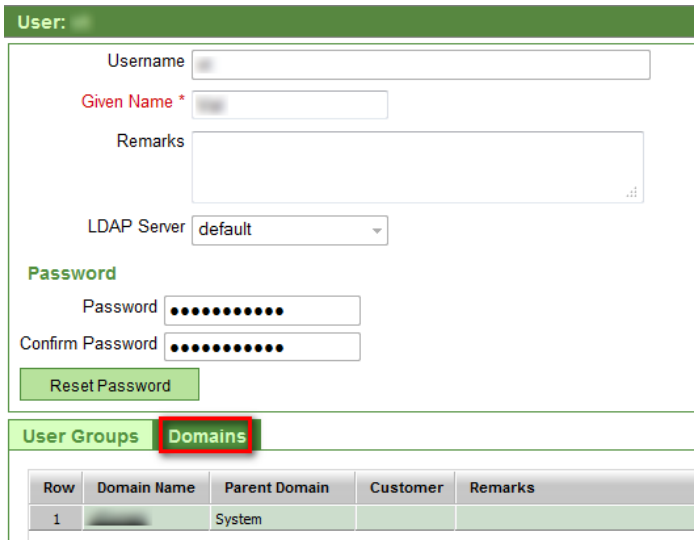


5. Click on the  **Save** button in the top right corner of the screen. The assigned User Group will now appear under the **User Groups** tab of the User information screen.

If the user's access should be restricted to a particular Domain of Network Elements, this can be done by associating the user's User Group with the Domain (please refer to section 5.4.2.3 below for further information).

NOTE: Privileges are cumulative, meaning that a user will have all the privileges assigned to the various User Group(s) to which he or she belongs. For example, if a user belongs to one User Group having no 'Circuit – Create' privileges as well as another User Group having 'Circuit – Create' privileges, the user will have the 'Circuit – Create' privilege as well as any other privileges associated with either User Group. Therefore, care should be taken when adding Users to User Groups to ensure that access restrictions are satisfied.

5.3.3.2. Domains tab



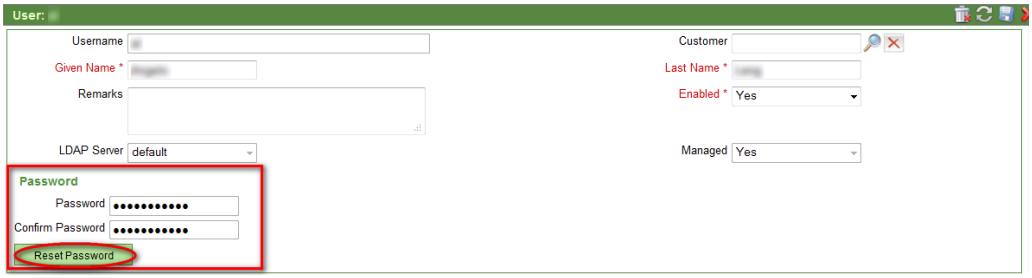
In the User Details/Configuration screen, the **Domains** tab shows a read-only list of Domains to which the user has been assigned through his or her User Group. Domains are used to partition networks by organizational or operational segments; by assigning a user's User Group to a Domain, the user's view of NETPortal objects can be further restricted. For more information on how to assign a User Group to a Domain, please refer to section 5.4.2.3.

5.3.4. *Reset User Account Password*

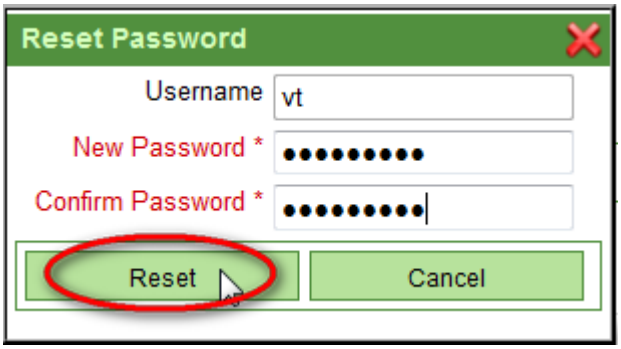
NETPortal Administrators or users with the 'User – Reset Password (Admin Only)' privilege can reset passwords for users who can no longer remember their passwords or cannot log in to NETPortal.

To reset a user account password:

1. Open the Details/Configuration screen of the user whose password is to be reset.
2. Click the **Reset Password** button.



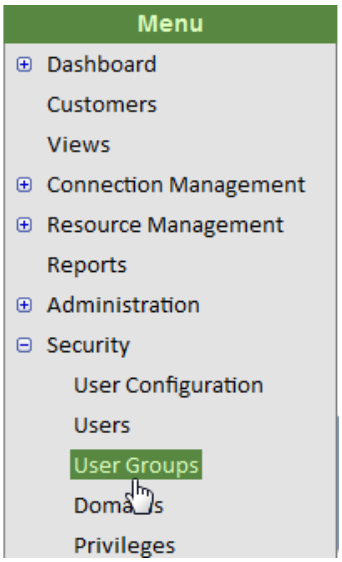
3. In the **Reset Password** window, fill out the 'New Password' and 'Confirm Password' fields and then click **Reset**.



A confirmation message will be shown that the password has been successfully reset.

5.4. User Groups

5.4.1. Overview



'Roles' or User Groups with predefined privileges simplify account administration. In order for users to access NETPortal, each user must be assigned to one or more User Groups. If a user does not belong to any User Group with Privileges assigned to it, the User will still be able to access the 'User Configuration' screen in order to change their current language setting or password, but no other screens will be accessible.

NOTE: If a user receives a NETPortal authentication error upon login, please verify that the authentication configuration in NETPortal has the correct settings based on the Security Realms configuration in the WebLogic administrative console. For more information on authentication in NETPortal, please refer to section 6.6.1.5. For more information on Security Realms in WebLogic, please refer to the relevant WebLogic documentation.

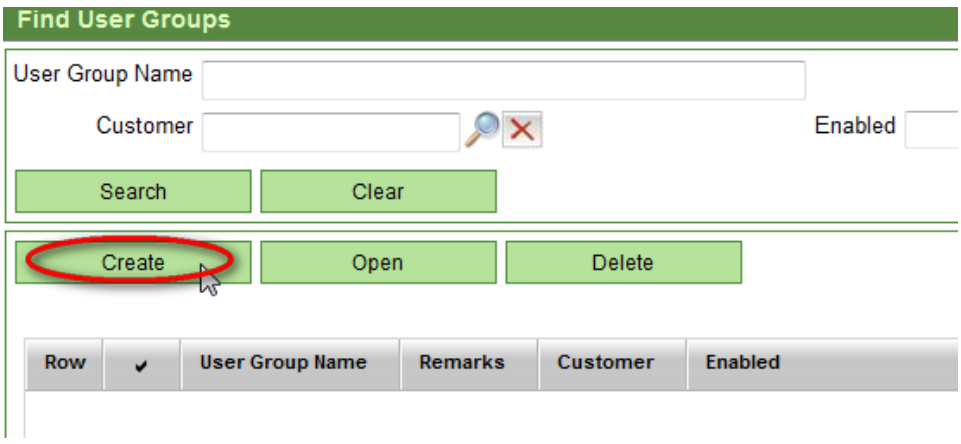
The 'NETPortal Administrators' User Group is created during system installation. It is automatically granted all privileges in NETPortal. Privilege settings for this group are locked and cannot be edited.

New User Groups may be created to satisfy various operational roles with selected privileges. Each application module has an associated list of privileges. The system administrator selects items from these lists as required to create specific roles. User Groups may be associated with Customers and Domains to further reduce the scope of access in NETPortal.

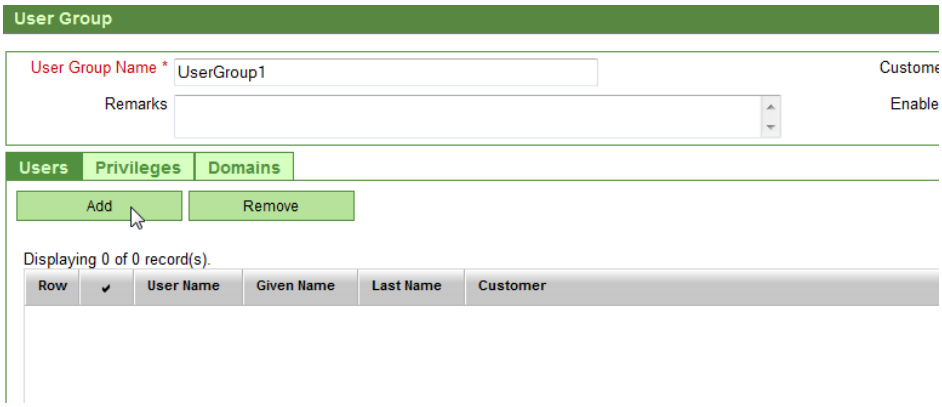
5.4.2. Create a User Group

To create a new User Group:

1. On the **Find User Groups** screen, click on the **Create** button.



2. In the User Group Details/Configuration screen, enter the required information.
3. On the **Users** tab, click the **Add** button to add Users to the new group. Multiple Users may be selected. Please refer to section 5.4.2.1 for more information.



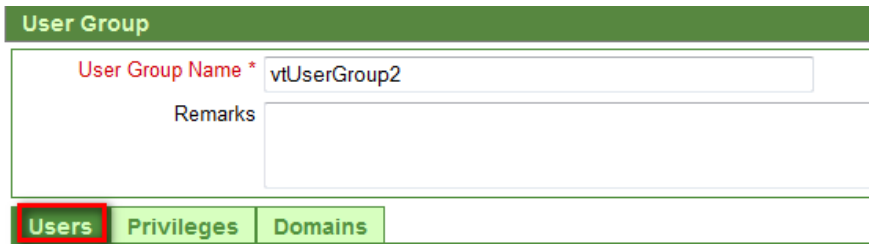
4. On the **Privileges** tab, place a check next to the Privileges to be granted to members of this User Group. Please refer to section 5.4.2.2 for more information.
5. On the **Domains** tab, select the Domains to be accessed by members of this User Group. Please refer to section 5.4.2.3 for more information.
6. Click on the **Save** button in the top right corner of the screen.

The new User Group will be created.

7. Click the **Search** button to refresh the list of User Groups displayed on the **Find User Groups** screen.

For more information on how to modify or delete User Groups, please refer to section 3.5 on navigating the user interface.

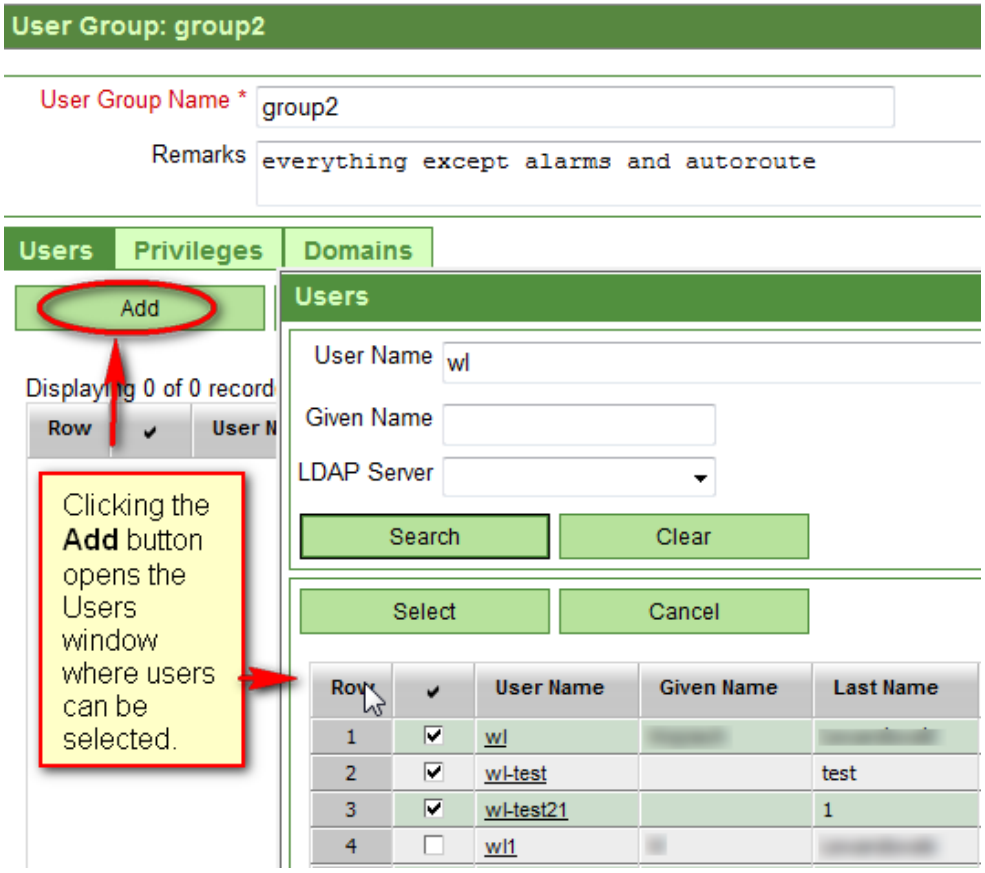
5.4.2.1. Users tab



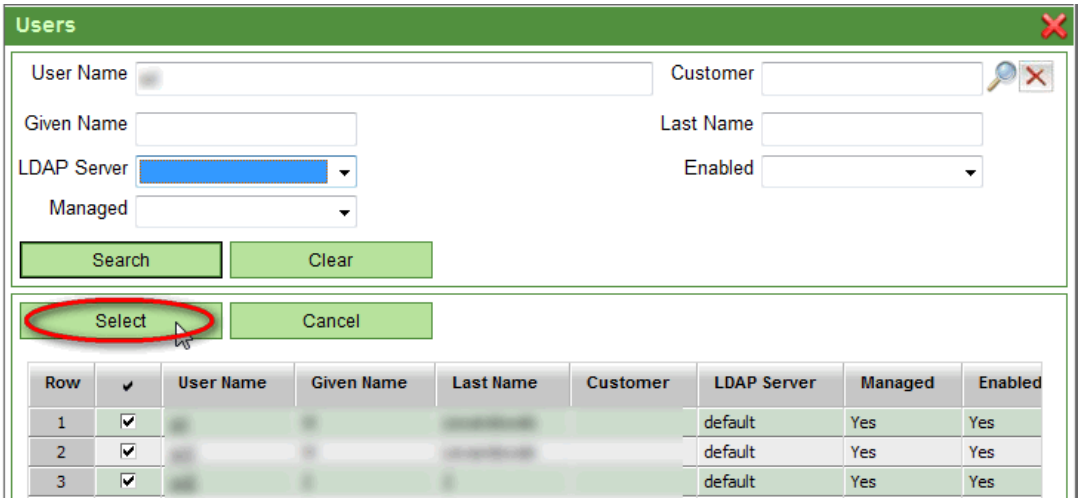
When a User Group's Details/Configuration screen is opened from the **Find User Groups** screen, the **Users** tab is shown by default. Users assigned to the current User Group are automatically listed. Unless the person performing the user assignment is a NETPortal Administrator or has the 'User – Import' privilege, he or she may not be able to open all User records on this tab, but they will be able to see Users who belong to the same User Group. A NETPortal Administrator or someone with the 'User – Import' privilege will be able to view and open any of the User records to see further details.

To assign multiple users to a User Group:

1. On the **Users** tab, click the **Add** button. The **Users** window opens. Use the search fields near the top of the screen and click the **Search** button to generate a list of available Users based on the search parameters. Unless the person performing the user assignment is a NETPortal Administrator or has the 'User – Import' privilege, he or she will see a list of Users belonging to the same User Group(s) as him- or herself. NETPortal Administrators and those who have the 'User – Import' privilege will see a list of all Users regardless of User Group.



2. Select the desired Users from the list displayed and click the **Select** button to assign them to the User Group. Multiple records may be selected.

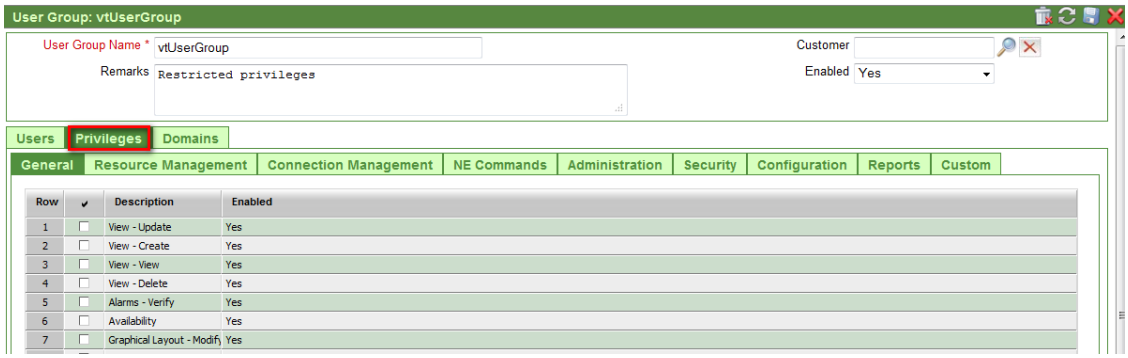


3. The assigned Users will now appear under the **Users** tab of the User Group Details/Configuration screen.

To remove Users from a User Group:

1. On the **Users** tab, select the User(s) to be deleted and click on the **Remove** button. Multiple Users can be selected for removal.

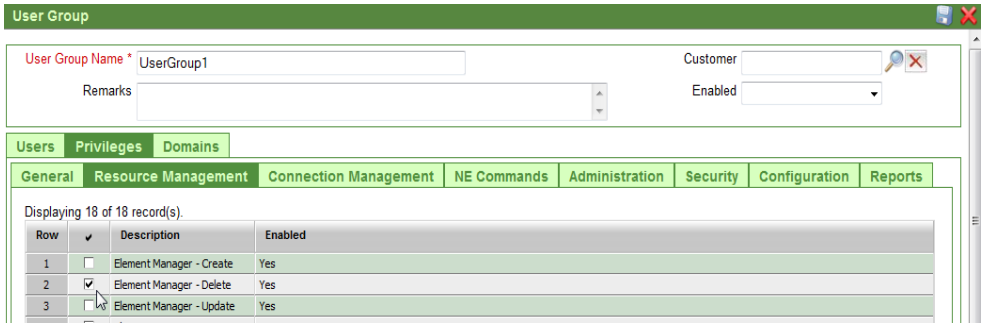
5.4.2.2. Privileges tab



Privileges are used to control user access to objects and commands in NETPortal. Each NETPortal module has a number of defined privileges specific to that module.

To enable or disable access to a specific function or object for the current User Group:

1. Select the appropriate tab for the module having privileges.
2. Place a checkmark next to the desired privilege to enable access.



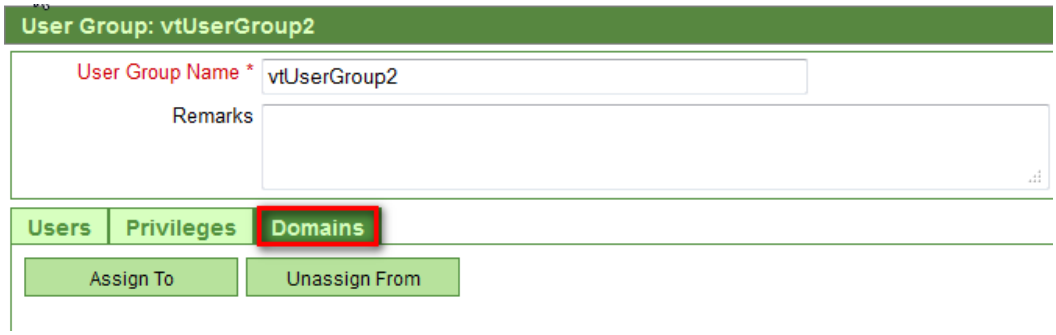
Or

3. Remove the checkmark from the selected privilege to remove access.

This operation should be repeated for each module to be edited.

4. Click on the **Save** icon in the upper right corner of the User Group Details/Configuration screen.

5.4.2.3. Domains tab



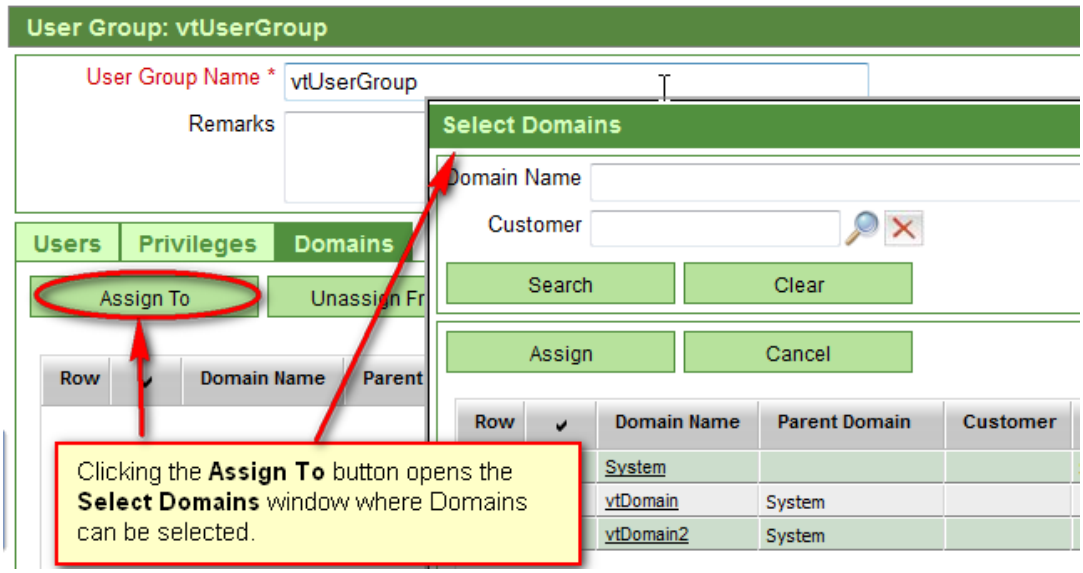
Domains are created to partition the network by organizational or operational segments. This tab utilizes Domains that have been created through the **Security →Domains** submodule. For more information on how to create Domains, please refer to section 5.5.

Members of a User Group will have access, as defined by Privileges, to all objects contained in a Domain when that Domain is assigned to the User Group. Domains that are associated with a Customer can also be assigned so that a user's view of the network is restricted to only those objects that belong to the Customer Domain and to the User Group of which he or she is a member.

To assign a User Group to a Domain:

1. Open the Details/Configuration screen of the User Group to be assigned to a Domain.
2. Click on the **Assign To** button. The **Select Domains** window will open.

   Existing Domains may be listed by clicking on the **Search** button. The list may be filtered by using the search fields in the search panel. Multiple rows may be selected from the results and added to the list with the **Assign** button.

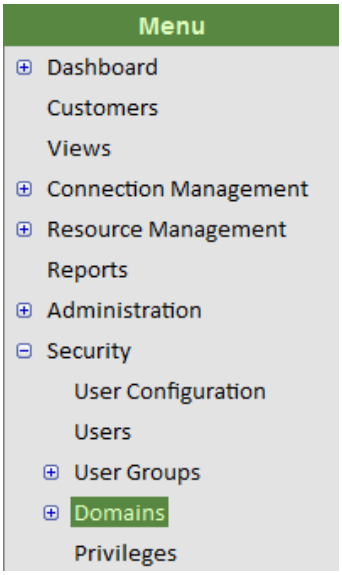


3. Use the search fields, if necessary, and click the **Search** button to list existing Domains. Multiple records may be selected from the list. Select the desired Domain object(s) and click the **Assign** button to add the Domains to the User Group.

To unassign Domains from a User Group:

1. On the **Domains** tab, select the Domain(s) to be removed and click on the **Unassign From** button. Multiple Domains can be selected for removal.

5.5. Domains



A Domain is a collection of physical and logical network resources or network objects in a network partition. The partition can include other child or sub-domains and can be created based on geographic, regional, administrative or other organizational divisions, to provide a basis for managing and controlling user access and visibility of the overall network. The top level or default Domain is System, which is created when the application is installed.

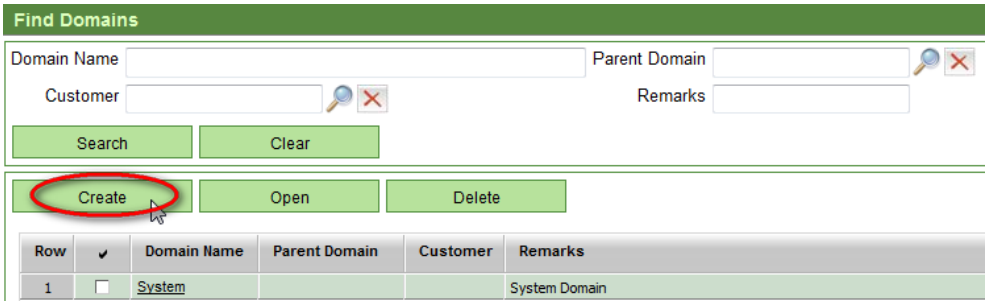
User Groups, Views, Network Elements, Physical Ports, Logical Interfaces, and Customers may be associated with or removed from existing network Domains. Visibility and access to the components of a Domain are controlled by the privileges assigned to a User through the related User Group. More than one User Group can be associated with a Domain.

Each Domain created must have a parent Domain and must be assigned a unique name. Only objects defined in a 'parent' domain can be assigned to a child domain.

5.5.1. Create a Domain

To create a new Domain:

1. On the **Find Domains** screen, click the **Create** button.



2. In the Details/Configuration screen of the new Domain, enter the required details. Refer to Table 22 below for more information. To associate User Groups, Views, Network Elements, etc. with the Domain, please refer to section 5.5.2 below.

3. Click on the **Save** button in the top right corner of the screen.

LABEL	DESCRIPTION
Domain Name	Name assigned to the new Domain.
Parent Domain	Name of the Parent Domain. The top level or default Domain is System.
Remarks	General comments or description for this Domain.
Customer	Customer object with which the Domain is associated. Customers are created through the **Customers** module. For more information, please refer to the ***NETPortal User Guide – Inventory Management***.

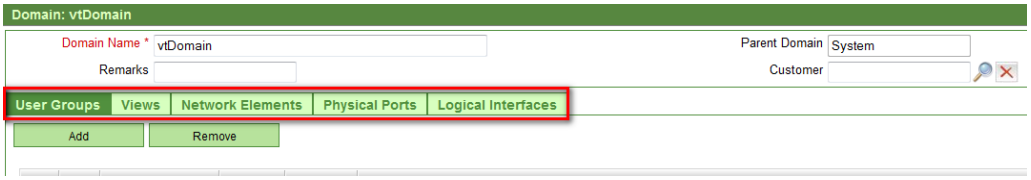
Table 22 Security module: Domain fields

5.5.2. Manage Objects in a Domain

User Groups, Views, Network Elements, Physical Ports and Logical Interfaces can be added to or removed from a Domain. A tab is shown for each allowed object type, with **Add** and **Remove** buttons that open a selection window for that object type. The **Add** and **Remove** buttons are enabled after the new Domain object has been saved by clicking in the top right corner of the screen.

Visibility and access to the components of the Domain are controlled by the privileges assigned to a User through the related User Group. More than one User Group can be assigned to a Domain.

1. In the Domain Details/Configuration screen, select the appropriate tab for the object type to be added to the Domain.



2. Click on the **Add** button. This will open a selection window for the object type.
3. Use the search fields, if necessary, and click the **Search** button to list available objects of the desired type.
4. Place a checkmark next to the desired object(s) and click the **Select** button to add them to the Domain.
5. Save the new configuration by clicking the Save icon in the top right corner of the screen.
6. Repeat for each object type to be added to the Domain.

To remove objects from a Domain, select the object from the list and click the **Remove** button.

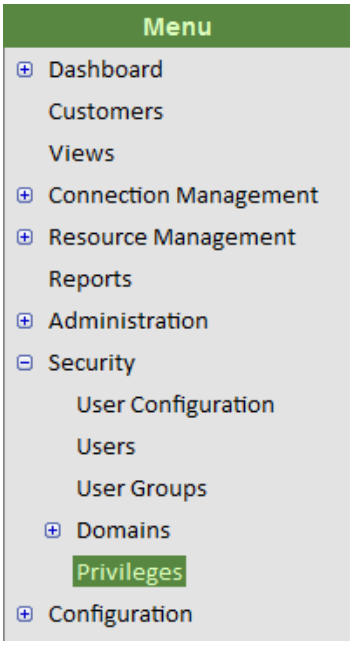
5.5.3. *Delete a Domain*

NOTE: Child Domains will automatically be deleted when the parent Domain is deleted.

NOTE: All NETPortal network objects are assigned to the System Domain when created. When an object is assigned to a user-created Domain, a reference is created in the Domain to refer to the object. Deleting a Domain deletes the reference to the object but does not affect the object itself.

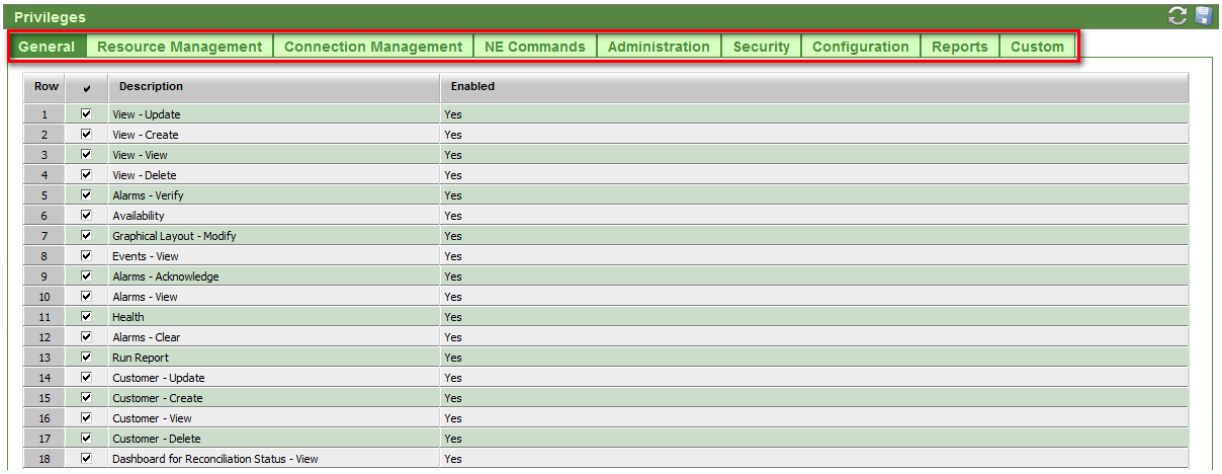
For more information on how to delete a Domain, please refer to section 3.5 on navigating the user interface.

5.6. Privileges



In NETPortal, privileges are assigned to modules, based on areas of functionality within the application. Privileges are granted to User Groups by the NETPortal Administrator. Depending on which modules were configured during NETPortal's installation, the tabs displayed may include:

- General
- Resource Management
- Connection Management
- NE Commands
- Administration
- Security
- Configuration
- Reports
- Custom



Row	✔	Description	Enabled
1	☑	View - Update	Yes
2	☑	View - Create	Yes
3	☑	View - View	Yes
4	☑	View - Delete	Yes
5	☑	Alarms - Verify	Yes
6	☑	Availability	Yes
7	☑	Graphical Layout - Modify	Yes
8	☑	Events - View	Yes
9	☑	Alarms - Acknowledge	Yes
10	☑	Alarms - View	Yes
11	☑	Health	Yes
12	☑	Alarms - Clear	Yes
13	☑	Run Report	Yes
14	☑	Customer - Update	Yes
15	☑	Customer - Create	Yes
16	☑	Customer - View	Yes
17	☑	Customer - Delete	Yes
18	☑	Dashboard for Reconciliation Status - View	Yes

Figure 19 Security module: Privileges for modules in NETPortal

Within each module, most NETPortal objects have four basic types of privileges defined. These are:

PRIVILEGE TYPE	DESCRIPTION
CREATE	User is allowed to create an object of that type. This privilege should be granted together with the 'Update' privilege so that the user can also edit any objects he or she creates. **NOTE:** 'Create' and 'Update' privileges should be granted for Connection objects if a user has the 'Create New Version' privilege for those objects (Circuits, Layer 2, and IP VPN Services) because multiple versions involve the creation and update of objects.
DELETE	User is allowed to delete an object of that type.
UPDATE	User is allowed to update or modify an object of that type. This privilege should be granted together with the 'Create' privilege since it is necessary to create objects first. **NOTE:** 'Activate, Virtual Activate, Virtual Enable, De-activate, Virtual De-activate and Virtual Disable' privileges also exist for Connection objects. These privileges work in conjunction with the 'Update' privilege since a Connection object's Provisioning Status is updated as a result of these operations. Consequently, if these privileges are required, they should be granted together with the 'Update' privilege for those same objects.

		NOTE: 'Create' and 'Update' privileges should be granted for Connection objects if a user has the 'Create New Version' privilege for those objects (Circuits, Layer 2, and IP VPN Services) because multiple versions involve the creation and update of objects.
VIEW		This is the most basic privilege for any NETPortal object and must be granted to allow users to see that type of object.

Consequently, most privileges listed follow the format of <NETPortal object> - <Privilege type>.

It is up to the NETPortal Administrator to determine which privileges are appropriate to assign to a given User Group.

Each Access adapter has a number of commands associated with it. A system-level privilege is defined for each command and can be enabled or disabled on the **NE Commands** tab of the **Privileges** submodule, provided that the Access Management module has been installed and configured with NETPortal. When an adapter is installed through the **Configuration** module, the commands associated with the adapter are automatically added to the **Security →Privileges** submodule, where they can be enabled or disabled as required for specific User Groups. Privileges for access commands shown on the **NE Commands** tab generally follow the format of <node type>/<command> - <command description>.

If the Access Management module is not installed or configured with NETPortal, the **NE Commands** tab will not be visible.

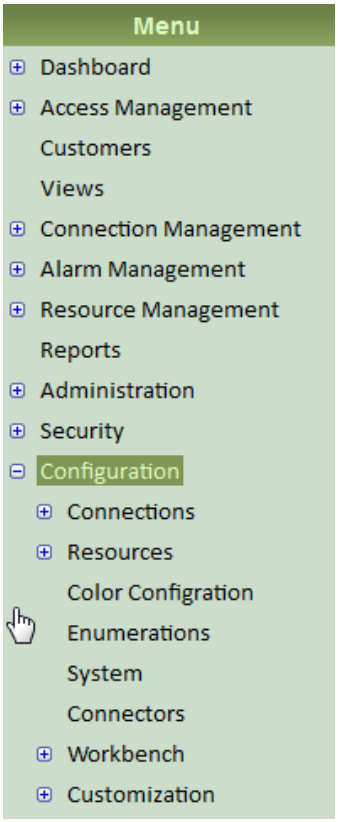
Privileges listed on the **Custom** tab refer to privileges defined in Customization Packages. Please refer to section 6.7.3.2.2 for more information.

NOTE: The 'View' privilege **MUST** be allowed for all entities that will be accessed in the application. It is a minimum requirement for visibility of the related screens. If a user has 'View' privileges only, no information can be saved to the database.

NOTE: The  '**Save**' button **MUST** be selected for changes to be applied.

6. Configuration

6.1. Overview



The **Configuration** module provides facilities for installing and configuring resources to be used with NETPortal. System parameters may be adjusted, rules can be enabled or disabled, and additional customized functionality can be integrated into NETPortal through the use of Customization Packages. The Workbench section allows creation and modification of Report Templates, Access Adapters, and Customization Packages.

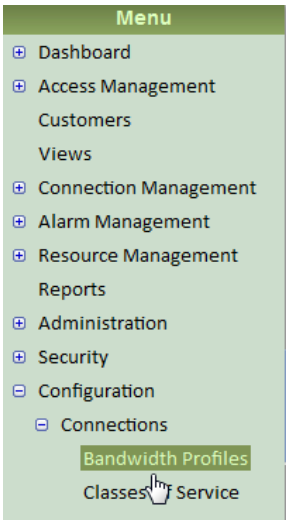
6.2. Connections

6.2.1. Overview

The **Configuration →Connections** submodule allows users to configure Bandwidth Profiles, Classes Of Service, Capacity Management Defaults, custom Provisioning Enumerations and Rules for Service objects in NETPortal.

6.2.2. Bandwidth Profiles

6.2.2.1. Overview



The **Bandwidth Profiles** submodule allows users to configure Bandwidth Profiles in order to monitor the capacity of Service-carrying Links, provided that Link Capacity Management has been enabled through the **Configuration → Connections → Capacity** screen.

In NETPortal, Bandwidth Profiles are assigned to Class of Service objects which represent performance assurances for a Service. When the Class Of Service object is assigned to an Ethernet Service (e.g. ELAN, ELINE) in NETPortal, the Bandwidth Profiles are used to calculate the capacity of the Service-carrying Links or of traffic-conditioning Nodes and to determine whether the service expectations have been met.

In NETPortal, Bandwidth Profiles can be applied at the Service level or at the Node level, depending on a Provider's needs, but not at both levels.

For more information on how to assign Bandwidth Profiles or Class Of Service objects to Ethernet Services, please refer to the ***NETPortal User Guide – Inventory Management***.

For more information on how to enable Link Capacity Management, please refer to section 6.2.4.

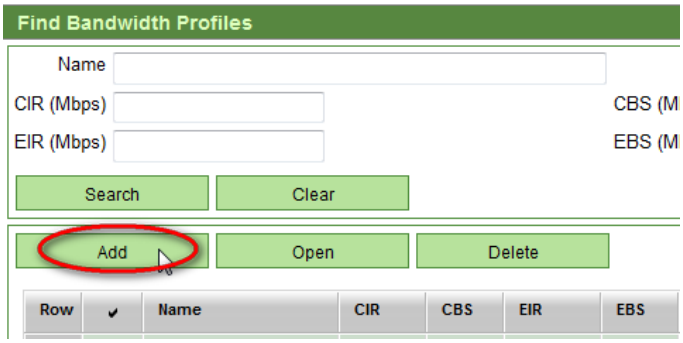
For more information on how to create Bandwidth Profiles, please refer to section 6.2.2.2 below.

For more information on how to assign Bandwidth Profiles to a Class Of Service, please refer to section 6.2.3.2.3.

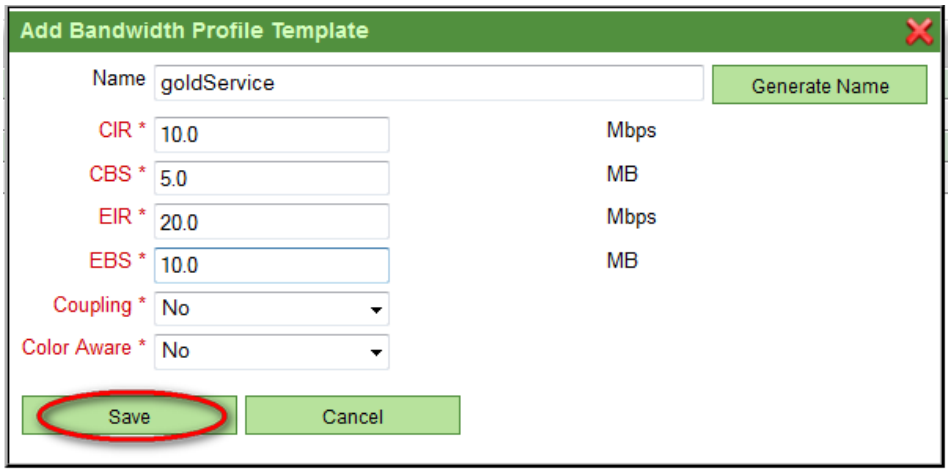
6.2.2.2. Create a Bandwidth Profile

To create a Bandwidth Profile:

1. In the **Find Bandwidth Profiles** screen, click on the **Add** button.



2. In the **Add Bandwidth Profile Template** window, enter the desired parameters and click the **Save** button.
In NETPortal, the Bandwidth Profile Template captures the parameters specified by the Metro Ethernet Forum, summarized in Table 23 below.



LABEL	DESCRIPTION
Name	Name assigned to the Bandwidth Profile.
CIR	Committed Information Rate, in Mbps: the average rate up to which services frames are delivered as per service performance objectives.
CBS	Committed Burst Size, in MB: the maximum number of bytes allowed for incoming service frames to still be CIR-conformant.
EIR	Excess Information Rate, in Mbps: the average rate up to which excess service frames are still admitted into the provider's network.
EBS	Excess Burst Size, in MB: the maximum number of bytes allowed for incoming service frames to be EIR-conformant.
Coupling	Yes/No. When UNIs are Color Aware, the 'Coupling' parameter allows the choice between two modes of operations of the rate enforcement algorithm and has the effect of controlling the volume of yellow service frames admitted to the network.
Color Aware	Yes/No. Indicates whether the UNI (PE Port) is operating in 'Color Aware' mode, recognizing color indications in service frames in order to make rate enforcement decisions.

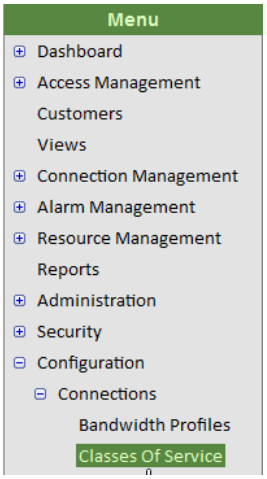
Table 23 Configuration module: Connections → Bandwidth Profile list labels

3. Assign the newly created Bandwidth Profile to a Class Of Service. For more information, please refer to section 6.2.3.2.3.

For information on how to edit or delete a Bandwidth Profile, refer to section 3.5 on navigating the user interface.

6.2.3. *Classes Of Service*

6.2.3.1. Overview



In NETPortal, a Class Of Service object represents performance assurances. The Bandwidth Profiles assigned to the Class Of Service are used to calculate the capacity of Service-carrying Links in a NETPortal Service. In order to apply a Class Of Service to a Service, Link Capacity Management must be enabled through the **Configuration → Connections → Capacity** screen.

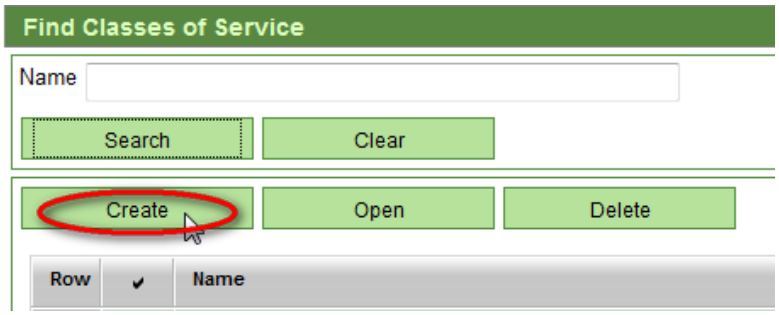
For more information on how to assign Bandwidth Profiles or Class Of Service objects to Ethernet Services, please refer to the ***NETPortal User Guide – Inventory Management***.

For more information on how to enable Link Capacity Management, please refer to section 6.2.4.

For more information on how to create Bandwidth Profiles, please refer to section 6.2.2.2.

6.2.3.2. Create a Class of Service

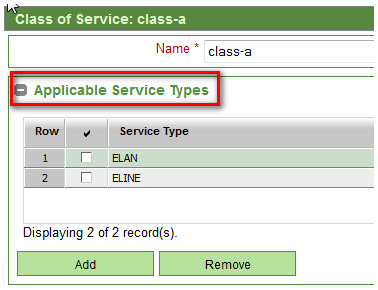
1. On the **Find Classes of Service** screen, click on the **Create** button.



2. Enter the Name for the Class Of Service and click on the Save icon in the top right corner of the screen. This enables the three subpanels ('Applicable Service Types', 'Class Of Service Attributes', and 'Bandwidth Profile Templates') to be configured.
3. Configure the desired parameters using the three subpanels. Each subpanel is explained in the following sections.

For information on how to edit or delete a Class Of Service, refer to section 3.5 on navigating the user interface.

6.2.3.2.1. Applicable Service Types panel

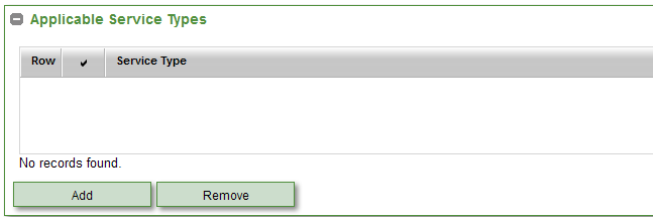


This panel lists the types of Services to which the Class Of Service can be applied. In NETPortal, possible Service Types include ELINE, ELAN or ETREE.

> **NOTE:** At this time, ETREE is currently not supported.

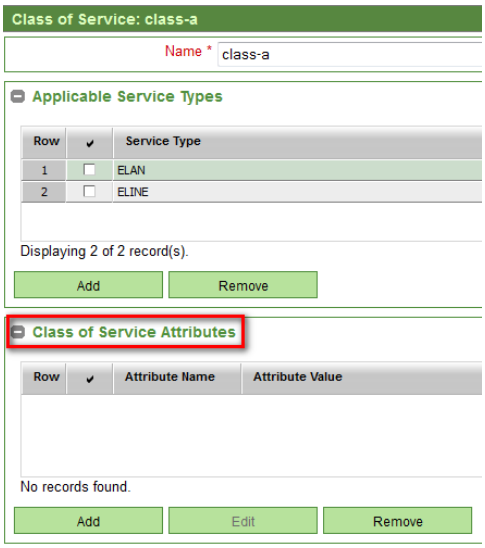
To specify the Service Types to which the Class Of Service can be assigned:

1. Click on the **Add** button in the 'Applicable Service Types' panel.



2. In the **Select Service Type** window, place a check next to the desired Service Types. More than one type can be selected. Then click **OK**.

6.2.3.2.2. Class of Service Attributes panel

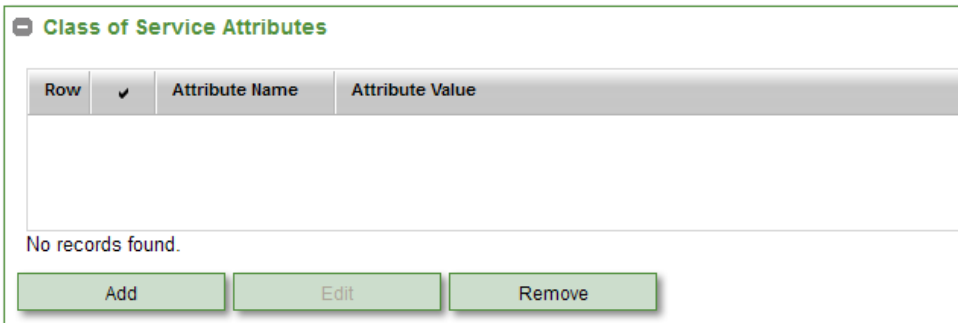


This panel allows additional attributes (such as jitter or delays) to be applied to a Class Of Service based on an Enumeration that has been created through the **Configuration → Enumerations** submodule. The attributes can be used for informational purposes, if desired.

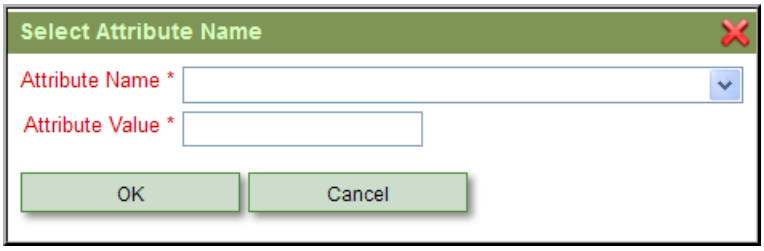
For more information on how to create an Enumeration, please refer to section 6.5.

To specify a Class of Service attribute:

1. Click on the **Add** button in the 'Class of Service Attributes' panel.

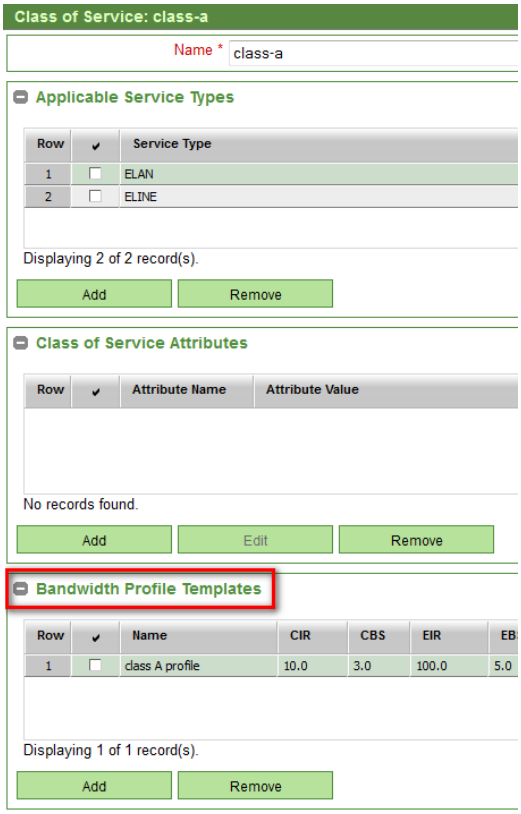


2. In the **Select Attribute Name** window, select the desired value from the 'Attribute Name' drown-down list and enter the Attribute Value. Then click **OK**.



NOTE: If no value appears in the 'Attribute Name' drop-down list, an Enumeration must be created (select 'COS Attribute Name' for the Enumeration's Name). For more information, please refer to section 6.5.

6.2.3.2.3. Bandwidth Profile Templates panel



Bandwidth Profiles are assigned to the Class Of Service object using this panel. Bandwidth Profiles must first be created through the **Configuration → Bandwidth Profiles** submodule. Multiple Bandwidth Profiles can be added to a Class Of Service. When the Class Of Service is later applied to an ELINE or ELAN Service, one of the Bandwidth Profiles can be selected as the Ingress Bandwidth Profile while the other serves as the Egress Bandwidth Profile.

For more information on how to create a Bandwidth Profile, please refer to section 6.2.2.2.

For more information on how to apply a Class Of Service to a Service object in NETPortal, please refer to the ***NETPortal User Guide – Inventory Management***.

To add a Bandwidth Profile Template:

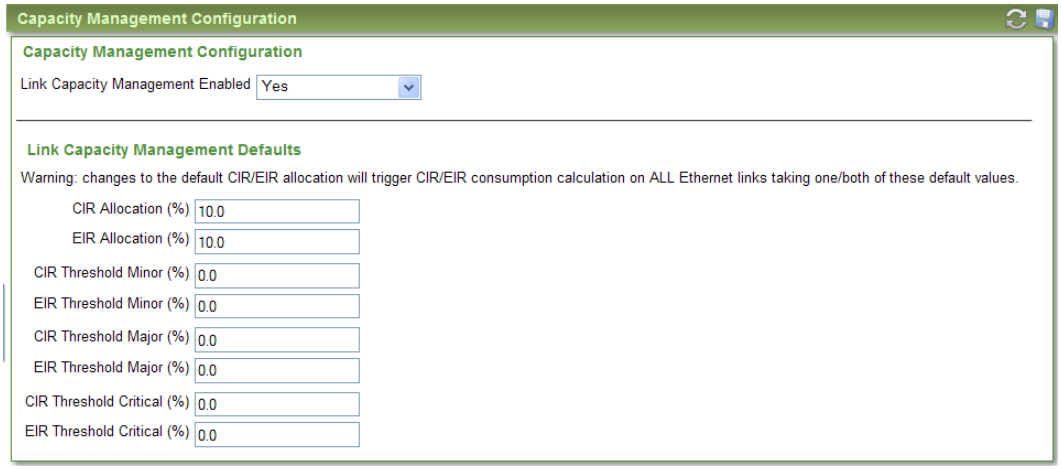
1. Click on the **Add** button in the 'Bandwidth Profile Templates' panel.

2. In the **Select Bandwidth Profile Template** window, select the desired Bandwidth Profile(s) from the list of available templates. More than one template can be selected. Then click **OK**.

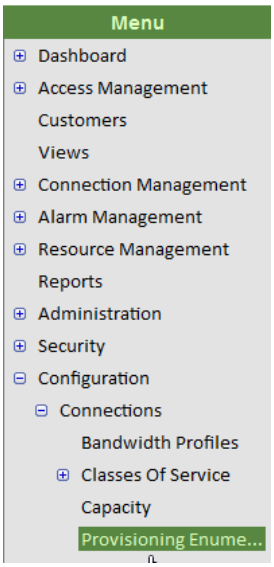
6.2.4. Capacity

This screen allows Link Capacity Management to be enabled in NETPortal so that Class Of Service objects can be applied to Service objects such as ELINEs and ELANs in NETPortal. Setting the 'Link Capacity Management Enabled' field to 'Yes' enables additional tabs and fields to appear for Ethernet Links and Ethernet Services so that CIR and EIR Thresholds can be calculated based on Link Capacity as well as the Bandwidth Profiles configured for the Class Of Service.

The 'Link Capacity Management Defaults' panel specifies the default CIR & EIR allocations as well as CIR & EIR Thresholds for all Ethernet Links in NETPortal. These default values can be manually overridden by changing the values on the **Capacity Management** tab of an individual Ethernet Link. For more information, please refer to the ***NETPortal User Guide – Inventory Management***.



6.2.5. Provisioning Enumerations

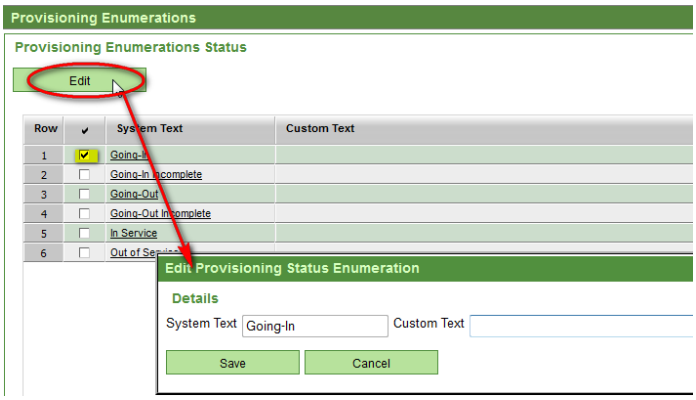


In the course of Circuit Provisioning, one of six status levels can be assigned. NETPortal issues default status messages for each of these levels. Please refer to the ***NETPortal User Guide – Inventory Management*** for more information on Circuit Provisioning states.

The **Provisioning Enumerations** submodule allows each internal NETPortal status message used in the Circuit Provisioning cycle to be mapped to a user-defined status message.

To edit a Provisioning Enumeration:

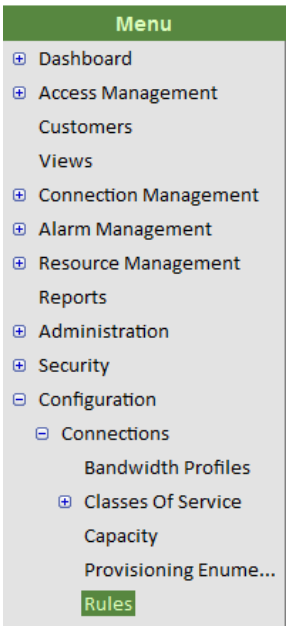
1. On the Provisioning Enumerations screen, select the row with the System Text to be edited and click on the **Edit** button, or simply click on the link in the 'System Text' column.



2. In the **Edit Provisioning Status Enumeration** window, enter the desired Custom Text and click **Save**.

NOTE: Custom text may be removed by following the above steps, deleting the custom text, and clicking **Save**.

6.2.6. Rules

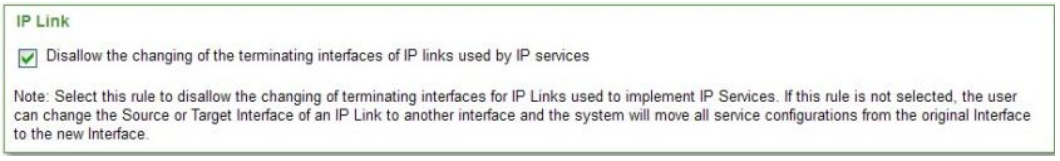


This screen provides options for enabling or disabling certain Rules which impact the way NETPortal behaves with Service objects. To enable a Rule, select the checkbox for that particular rule and click on the Save icon in the top right corner of the screen.

6.2.6.1. Ethernet Link

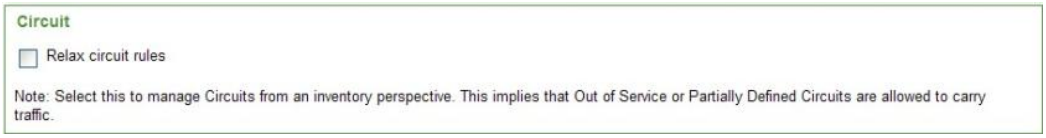
6.2.6.2. Ethernet Networks

6.2.6.3. IP Links

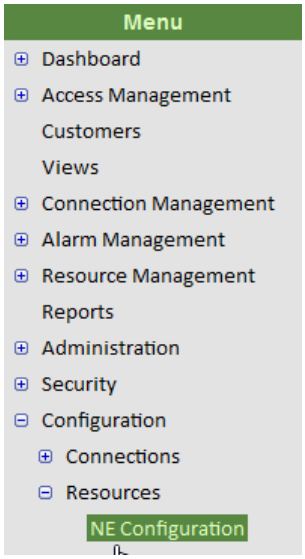


6.2.6.4. IP Network

6.2.6.5. Circuit



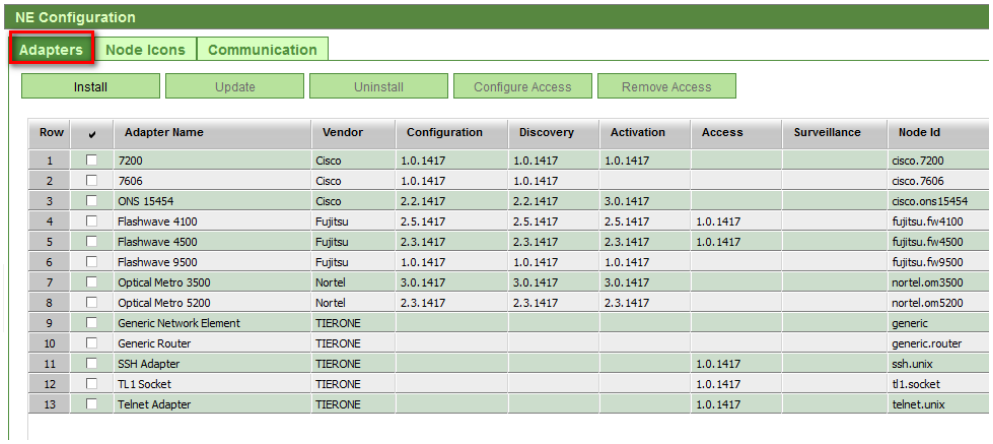
6.3. Resources → NE Configuration



The **Configuration → Resources → NE Configuration** submodule allows system administrators to install and configure Adapters for use with NETPortal, configure custom Node Icons for Network Elements, and configure system-wide connection pool settings.

Three tabs are provided on the NE Configuration screen. These tabs are explained in the following sections.

6.3.1. Adapters tab



Row	✔	Adapter Name	Vendor	Configuration	Discovery	Activation	Access	Surveillance	Node Id
1	☐	7200	Cisco	1.0.1417	1.0.1417	1.0.1417			cisco.7200
2	☐	7606	Cisco	1.0.1417	1.0.1417				cisco.7606
3	☐	ONS 15454	Cisco	2.2.1417	2.2.1417	3.0.1417			cisco.ons15454
4	☐	Flashwave 4100	Fujitsu	2.5.1417	2.5.1417	2.5.1417	1.0.1417		fujitsu.fw4100
5	☐	Flashwave 4500	Fujitsu	2.3.1417	2.3.1417	2.3.1417	1.0.1417		fujitsu.fw4500
6	☐	Flashwave 9500	Fujitsu	1.0.1417	1.0.1417	1.0.1417			fujitsu.fw9500
7	☐	Optical Metro 3500	Nortel	3.0.1417	3.0.1417	3.0.1417			nortel.om3500
8	☐	Optical Metro 5200	Nortel	2.3.1417	2.3.1417	2.3.1417			nortel.om5200
9	☐	Generic Network Element	TIERONE						generic
10	☐	Generic Router	TIERONE						generic.router
11	☐	SSH Adapter	TIERONE				1.0.1417		ssh.unix
12	☐	TL1 Socket	TIERONE				1.0.1417		tl1.socket
13	☐	Telnet Adapter	TIERONE				1.0.1417		telnet.unix

In NETPortal, Adapters are the means by which the NETPortal system communicates with live equipment; Adapters determine which operations can be performed with certain Network Elements.

NETPortal provides Adapters as separate files for Configuration, Activation, Upload (Discovery), Surveillance and Access functionality. The table below summarizes the different types of Adapters that can be installed for a given Network Element, depending on which functions are required and which modules are installed with NETPortal.

FUNCTIONAL CATEGORY	ADAPTER TYPE	DESCRIPTION
Configuration	Template	Basic Network Element configuration file; must be loaded before any other file for this adapter. Provides local functionality such as Design and Assign.

Activation/ Provisioning	Activation	Provides Activation or Provisioning functionality so that service configuration data created in NETPortal can be transferred to Network Elements in a live network, thereby implementing the service.
Discovery	Upload	Provides Upload and Reconciliation functionality so that Network Elements in a live network can be discovered and synchronized with objects in NETPortal.
Surveillance	Surveillance	Provides Surveillance functionality so that alarms on a network can be detected and processed. This file can only be loaded if EVM is configured.
Access	Access	Provides Access functionality so that commands can be executed on a Network Element.

Table 24 Configuration module: Resources NE Config - Adapter types and categories

Selecting the **Adapters** tab displays a list of Adapters currently installed in NETPortal.

Initially, only the **Install** button is enabled, but additional buttons are enabled or disabled once an Adapter is selected from the list.

To view additional details about a Network Element's Communication Configuration, select the row of the desired Adapter. The 'Network Element Communication Configuration' panel will appear further down on the screen. Please refer to section 6.3.1.1 for more information.

Table 25 below summarizes the functions provided by the buttons on the Adapters tab.

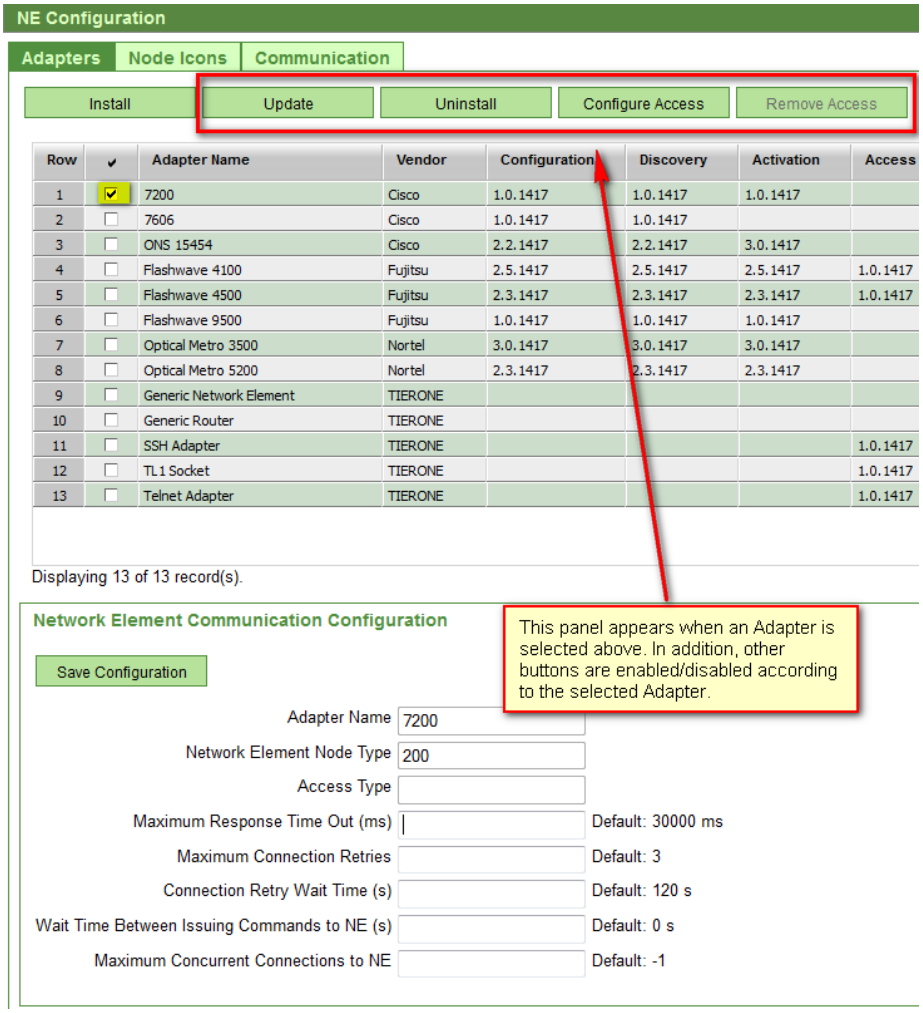
LABEL	DESCRIPTION
Install	Installs an Adapter for use with NETPortal. Opens the **Select File** window and displays available Adapters. Please refer to section 6.3.1.2 for more information.
Update	This button is activated once an Adapter is selected. It loads all currently installed Adapter files located in the 'Adapter Home Directory' into NETPortal memory, provided that Adapter Names have not changed. For more information on the Adapter Home Directory,

	please refer to section 6.6.1.2. NOTE: If, during the course of a NETPortal upgrade, Adapter files have been renamed, the old Adapters will not be updated and the new Adapters will need to be installed. Please refer to the ***NETPortal Installation Guide***, Release Notes, or other relevant documentation received for your upgrade.
Uninstall	Removes the selected Adapter from NETPortal. If Network Elements were created using the Adapter, a warning message will appear asking the user to confirm whether the Adapter should be uninstalled.
Configure Access	Configures access parameters for the selected Adapter if access capability is not already built into the Adapter. Opens the **Select Adapter** window and displays available Adapters for access. Please refer to section 6.3.1.3 for more information.
Remove Access	Resets the access parameters for the selected Adapter. Please refer to section 6.3.1.3 for more information.

Table 25 Configuration module: Resources – NE Config Adapter buttons

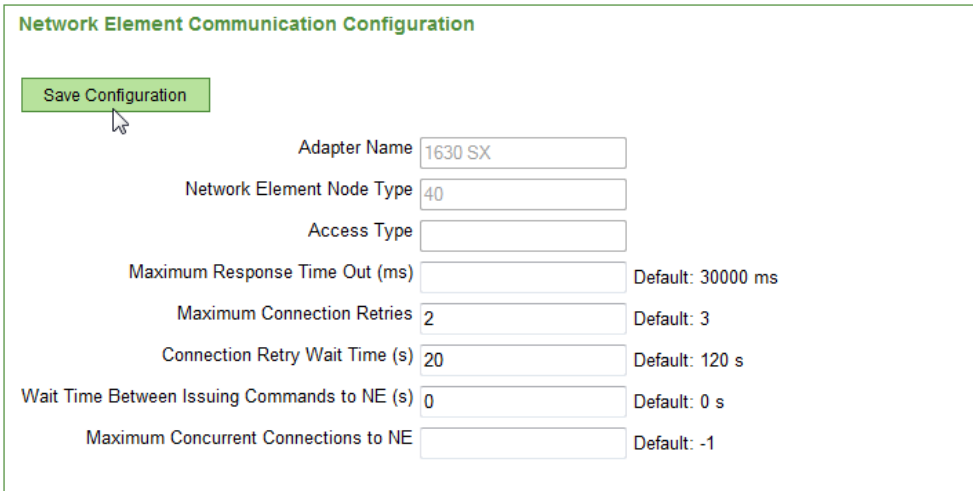
6.3.1.1. Network Element Communication Configuration panel

Selecting an Adapter on the **Adapters** tab displays the 'Network Element Communication Configuration' panel and also enables other buttons provided on the tab, depending on the type of Adapter selected.



Row	✔	Adapter Name	Vendor	Configuration	Discovery	Activation	Access
1	☑	7200	Cisco	1.0.1417	1.0.1417	1.0.1417	
2	☐	7606	Cisco	1.0.1417	1.0.1417		
3	☐	ONS 15454	Cisco	2.2.1417	2.2.1417	3.0.1417	
4	☐	Flashwave 4100	Fujitsu	2.5.1417	2.5.1417	2.5.1417	1.0.1417
5	☐	Flashwave 4500	Fujitsu	2.3.1417	2.3.1417	2.3.1417	1.0.1417
6	☐	Flashwave 9500	Fujitsu	1.0.1417	1.0.1417	1.0.1417	
7	☐	Optical Metro 3500	Nortel	3.0.1417	3.0.1417	3.0.1417	
8	☐	Optical Metro 5200	Nortel	2.3.1417	2.3.1417	2.3.1417	
9	☐	Generic Network Element	TIERONE				
10	☐	Generic Router	TIERONE				
11	☐	SSH Adapter	TIERONE				1.0.1417
12	☐	TL1 Socket	TIERONE				1.0.1417
13	☐	Telnet Adapter	TIERONE				1.0.1417

Default values for communication with equipment may be changed in the panel by entering the desired values in the appropriate fields and clicking on the **Save Configuration** button.



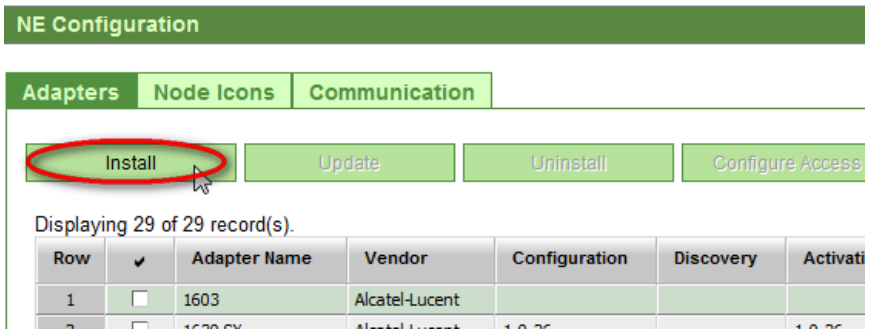
ATTRIBUTE	DESCRIPTION
Adapter Name (read-only)	Name shown in the Adapters listing.
Network Element Node Type (read-only)	Internal NETPortal type code for the selected adapter. This numeric value is used by some Schedules to determine which node type to perform operations on. For more information, please refer to Table 14 in section 4.3.2.3.
Access Type (read-only)	Type of Access Adapter selected to provide Access functionality. This field is populated by NETPortal when Access is configured.
Maximum Response Time Out (ms) Default is 30000 ms	Maximum time the Adapter will wait for a response from the network.
Maximum Connection Retries Default is 3	Maximum number of times the Adapter will try to establish a connection with a live Network Element.
Connection Retry Wait Time (s) Default is 120 s	The delay between connection retries.
Wait Time Between Issuing Commands to NE (s) Default is 0 s	The delay between successive commands sent to a live Network Element.
Maximum Concurrent Connections to NE Default is -1	The maximum number of concurrent connections allowed to the live Network Element. The default allows unlimited connections.

Table 26 Configuration module → Resources → NE Configuration: Adapters tab, Network Element Communication Configuration subpanel

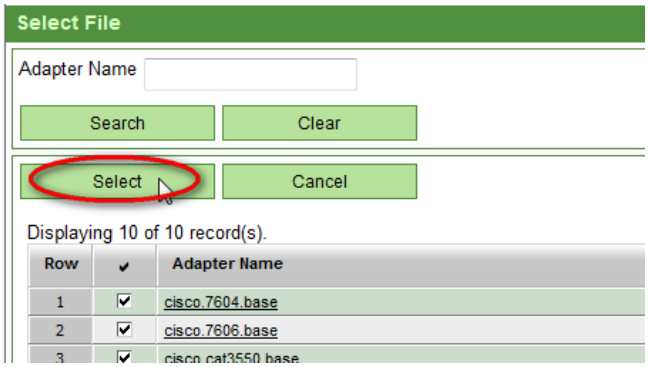
6.3.1.2. Install an Adapter

To install an Adapter:

1. Click on **Configuration → Resources → NE Configuration** in NETPortal's main menu on the left side of the screen.
2. In the **NE Configuration** screen to the right of the menu, verify that the **Adapters** tab is selected.
3. Click on the **Install** button.



4. The **Select File** window opens with a list of all Adapters not already installed. Multiple Adapters may be selected for a Network Element to configure multiple areas of functionality (for example: upload, activation, and surveillance functions). Surveillance Adapters cannot be installed if EVM is not configured. Choose the desired Adapter(s) and click the **Select** button to install them.



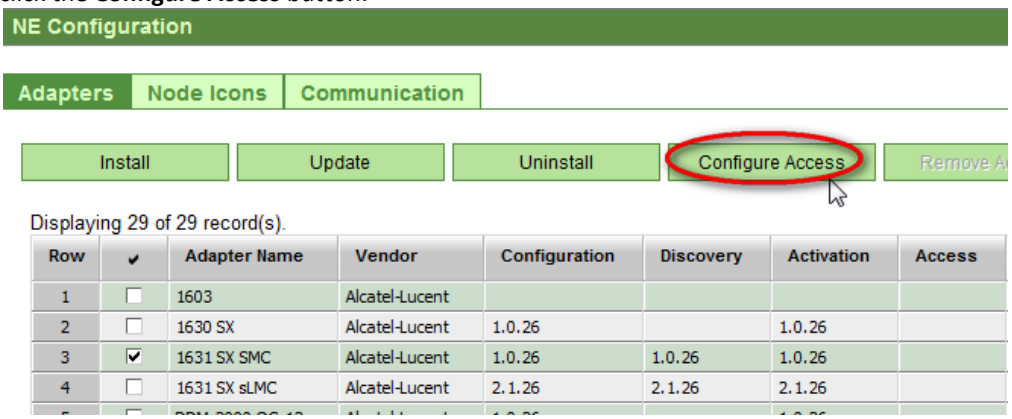
NOTE: After installing a Network Element adapter with Access functionality, the command privileges for the Adapter are automatically added to the **Security → Privileges** submodule and can be viewed on the **NE Commands** tab. The privileges are NOT automatically configured for User Groups, however. For User Groups to have access to the new NE command privileges, they can be enabled or disabled as required on the **Privileges** tab of each User Group in the **Security → User Groups** submodule. Please refer to section 5.4.2.2 for more information.

6.3.1.3. Configure Access for an Adapter

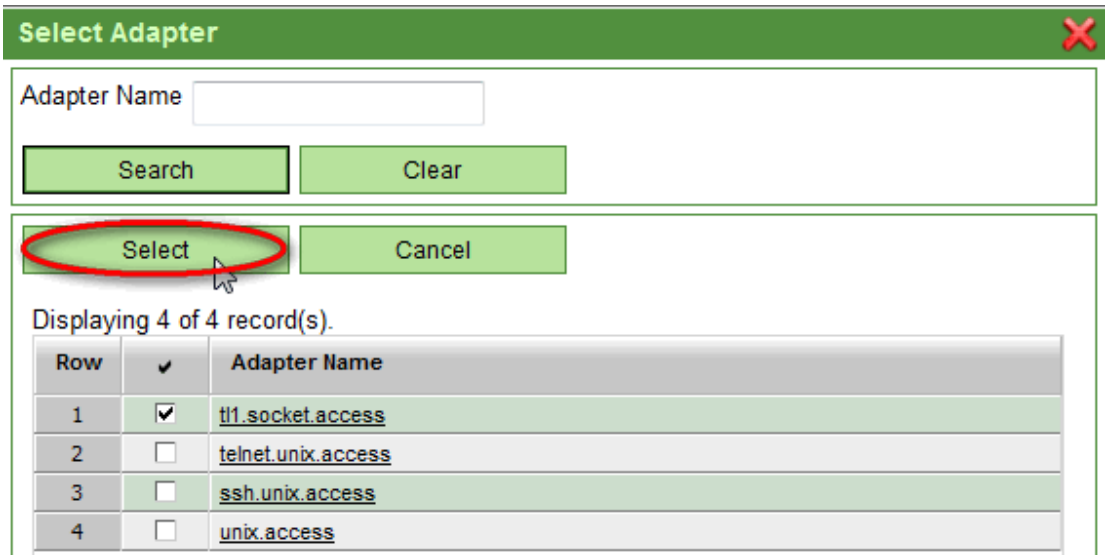
Some Network Element Adapters may or may not include Access functionality. If a Network Element Adapter already includes Access functionality, access does not need to be configured separately for that Network Element. However, if Access capability is *not* already built into the Network Element Adapter, an Access Adapter can be configured for it separately.

To configure Access functionality for a Network Element adapter that does not have access capability built in:

1. Select the desired Network Element from the list of records displayed on the **Adapters** tab, and click the **Configure Access** button.

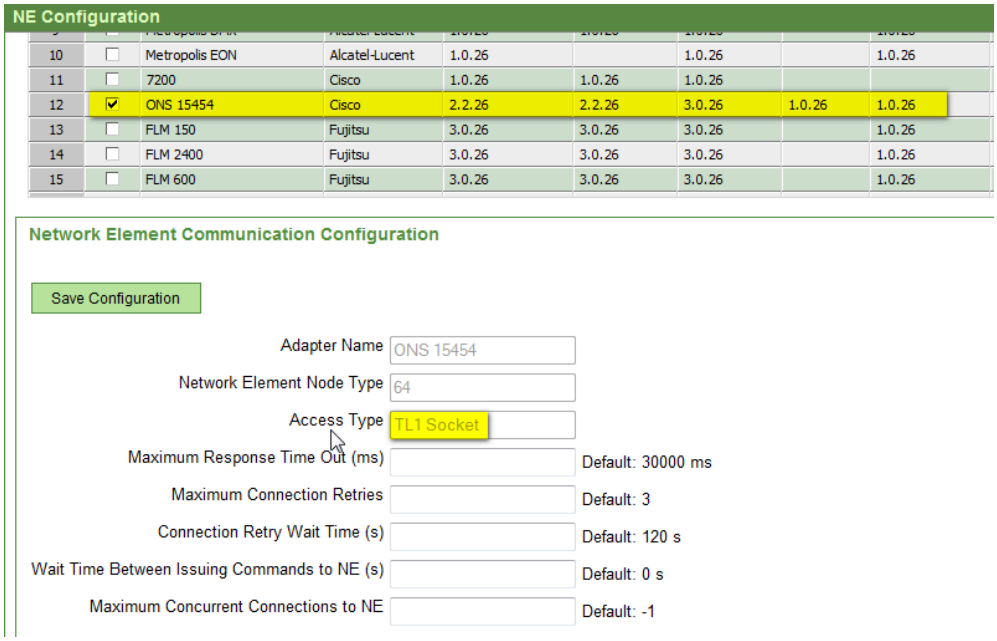


This opens the **Select Adapter** window with a list of available Access Adapters.



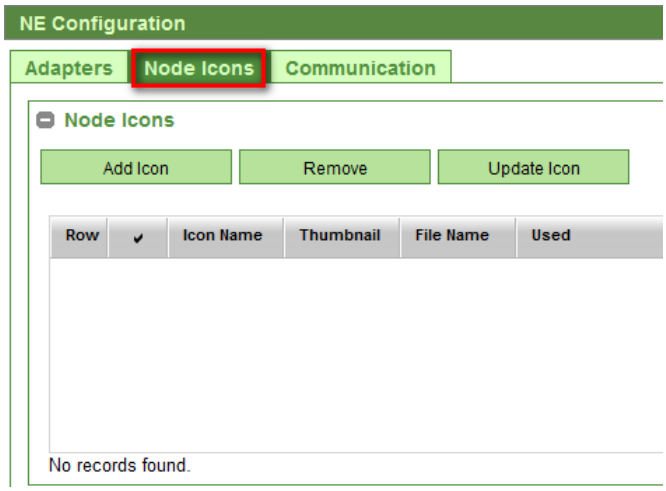
2. Check the box next to the Access Adapter and click the **Select** button in the **Select Adapter** window to assign the Access Adapter to the Network Element Adapter.

The name of the Access Adapter selected from this window will automatically be inserted into the 'Access Type' field of the 'Network Element Communication Configuration' panel, as shown in the figure below.



To remove Access functionality from a Network Element Adapter, select the desired Adapter from the list of Adapters displayed and click on the **Remove Access** button.

6.3.2. *Node Icons tab*



Using the 'Node Icons' panel on this tab, custom icons may be defined and uploaded to NETPortal to replace the ones shipped with the application. Once uploaded, the icons may be assigned to specific Network Element types using the 'Node Icon Assignments' panel. Both panels are explained in further detail in the following sections.

NOTE: Icon files **MUST** be a well-formatted SVG document with the extension '.svg'.

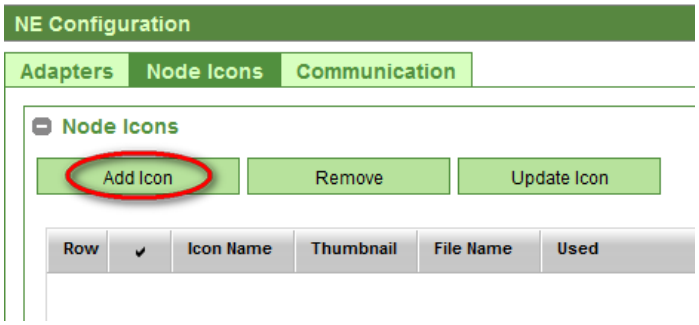
6.3.2.1. Node Icons panel

The 'Node Icons' panel allows custom icons for Network Elements to be added, removed or updated.

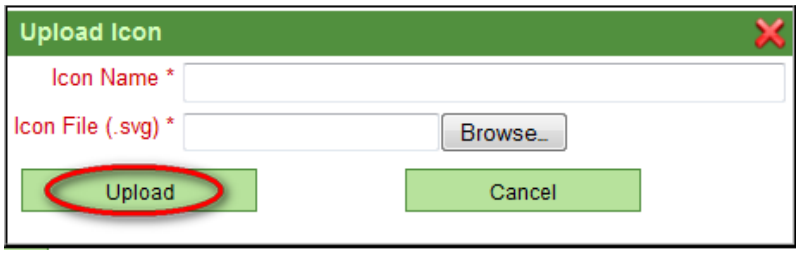
6.3.2.1.1. Add a Custom Icon

To add a custom icon:

1. In the 'Node Icons' panel of the **Node Icons** tab, click on the **Add Icon** button.



2. In the **Upload Icon** window, enter a name for the new icon.
3. Use the **Browse** button, if necessary, to locate the file for the desired icon and click on the **Upload** button to copy the file to NETPortal.



The new icon file should appear in the list with a thumbnail image generated by NETPortal. The 'Used' column should be blank to indicate that the icon has not yet been assigned to a Node Type.

Table 27 below summarizes the information provided by the records listed in the 'Node Icons' panel.

LABEL	DESCRIPTION
Icon Name	Name to be assigned to the icon.
Thumbnail	A thumbnail image of the icon.
File Name	Name of the SVG file to be used.
Used	Indicates that this icon has been assigned to a node type.

Table 27 Configuration module → Resources → NE Configuration – Node Icon list

For more information on how to remove or update a Node Icon, please refer to section 3.5 on navigating the user interface.

NOTE: If a Node Icon is marked as 'Used' and you attempt to remove it, a window will open with a warning message, requesting confirmation to proceed or abort the command. The selected Node Icon **AND** any related assignments will be deleted if the command is allowed to proceed. An unused Node Icon will simply be deleted.

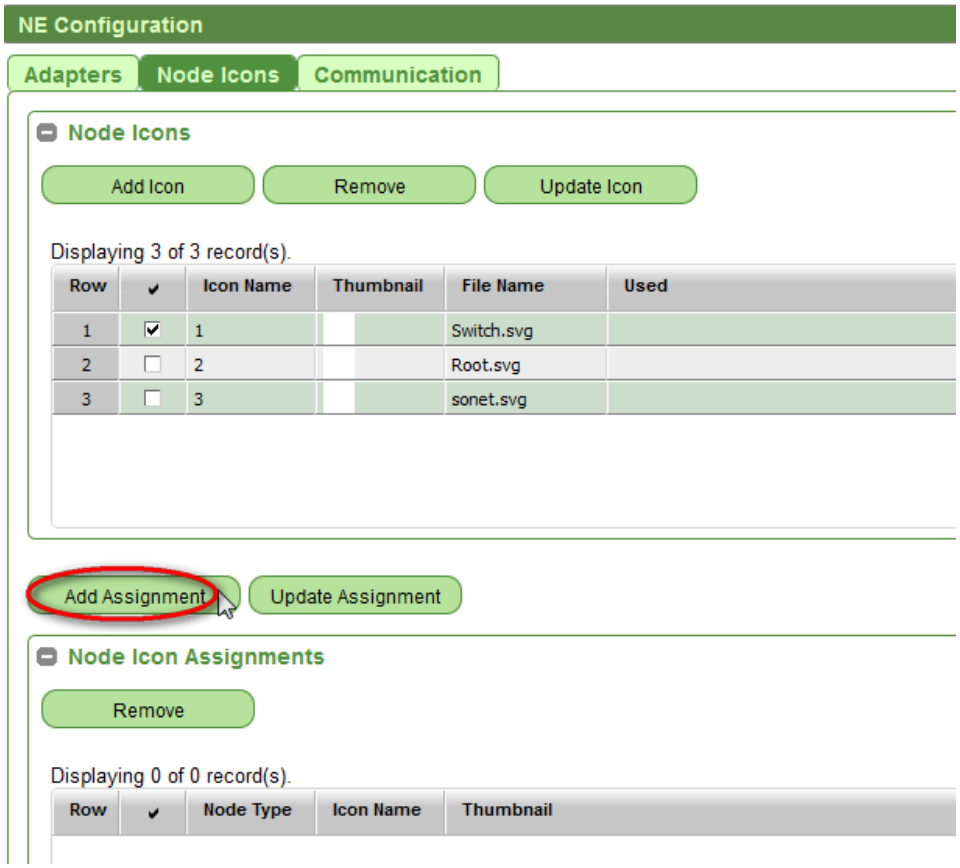
6.3.2.1. Node Icon Assignments panel

The 'Node Icon Assignments' panel allows custom icons to be assigned to specific Node Types.

6.3.2.1.1. Assign an Icon to a Node Type

To assign a custom icon to a Node Type:

1. In the 'Node Icons' panel of the **Node Icons** tab, select an unused icon from the list and click on the **Add Assignment** button.



2. In the **Add Assignment** window, select the Node Type from the drop-down menu.
3. Click the **Add** button.

The new assignment will appear in the 'Node Icon Assignments' panel. At the same time, the icon in the 'Node Icons' subpanel will be marked as 'Used'. All Network Elements created with the specified adapter will now display the new custom icon in NETPortal.

NOTE: Node Icons are assigned based on a Node Type, and each Node Type corresponds to an Adapter Name. If an Adapter Name changes for a particular Node Type and a Node Icon is assigned to that Node Type, the Node Icon will not be displayed for that Node Type. To resolve this issue, ensure that the Node Type selected in the Node Icon Assignment matches the Adapter Name exactly.

For information on how to remove a Node Icon Assignment, please refer to section 3.5 on navigating the user interface.

NOTE: NETPortal reverts to the default system icon when a Node Icon Assignment is removed.

For information on how to update a Node Icon Assignment, please refer to section 6.3.2.1.2 below.

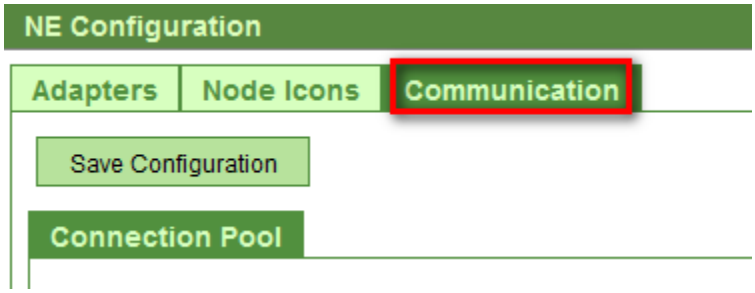
6.3.2.1.2. Update a Node Icon Assignment

An existing Node Icon Assignment may be updated with a new Node Icon file:

1. In the 'Node Icons' panel of the **Node Icons** tab, select an icon from the list of records.
2. In the 'Node Icon Assignments' panel, select the record of the Node Type to which the icon is to be reassigned.
3. Click on the **Update Assignment** button.

NOTE: Both the new icon and the assignment **MUST** be selected before performing the update operation.

6.3.3. Communication tab

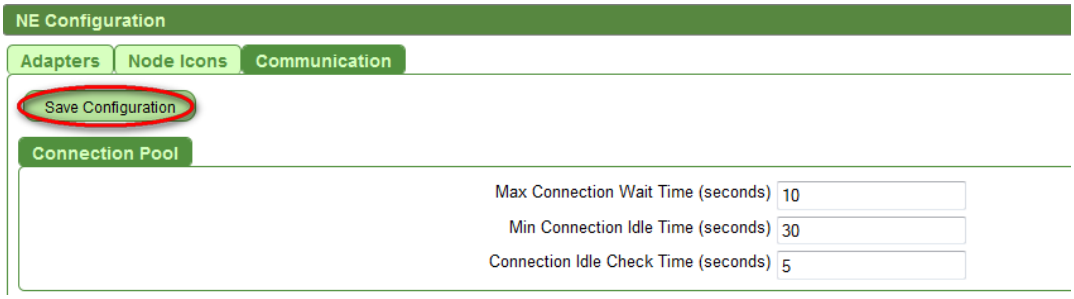


The Communication tab displays system-wide settings for the Connection Pool. These settings can affect NETPortal's performance because they determine how often and how long the application tries to connect to Network Elements. The table below summarizes the parameters and their default values.

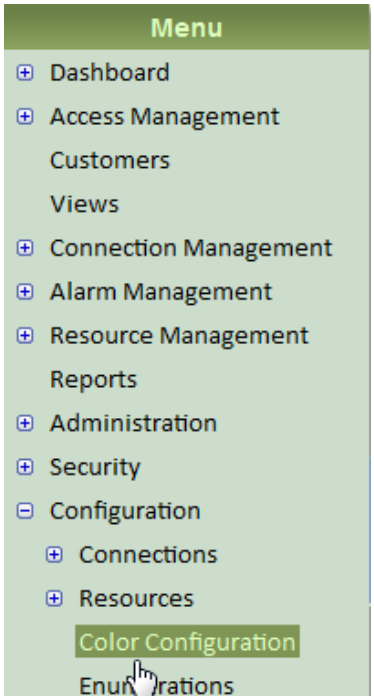
PARAMETER	DEFAULT
Max. Connection Wait Time (seconds)	10
Min. Connection Idle Time (seconds)	30
Connection Idle Check Time (seconds)	5

Table 28 Configuration module: Resources – Communication Pool settings

The parameters may be modified by typing in the new values and clicking on the **Save Configuration** button to update the values in the database.



6.4. Color Configuration



NETPortal uses colors in text and objects to highlight various operational states. If enabled in NETPortal, the **Color Configuration** submodule allows the default colors to be changed by using a palette provided with the application. The colors are selected from a drop-down menu for each object that allows color configuration.

NOTE: The menus are not inter-connected to automate palette selections. Care must be taken to ensure that selected colors allow objects to be clearly viewed.

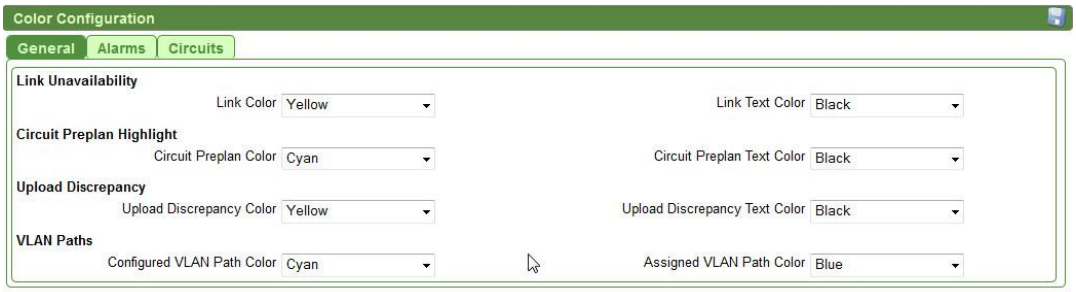
Colors available in the palette are:

- White
- Silver
- Gray
- Black
- Red
- Maroon
- Yellow
- Orange
- Lime
- Green
- Cyan
- Teal
- Blue
- Navy
- Magenta
- Purple

Configurable objects are grouped by functionality on different tabs: General, Alarms and Circuits.

To modify colors:

1. Select **Configuration → Colors** from NETPortal's main menu on the left side of the screen.
2. In the **Color Configuration** screen to the right of the menu, select a tab.
3. Use the drop-down boxes to modify colors as desired.
4. Repeat as necessary on the other tabs.
5. Save the changes by clicking on  in the top right corner of the screen.



In the following descriptions, colors listed are the default colors set by NETPortal.

6.4.1. General tab

OBJECT	ATTRIBUTE	COLOR
Link Unavailability	Link	Yellow
	Link Text	Black
Circuit Preplan Highlight	Circuit Preplan	Cyan
	Circuit Preplan Text	Black
Upload Discrepancy	Upload Discrepancy	Yellow
	Upload Discrepancy Text	Black
VLAN Paths	Configured VLAN Path	Cyan
	Assigned VLAN Path	Blue

Table 29 Configuration module: Colors – General

6.4.2. Alarms tab

OBJECT	ATTRIBUTE	COLOR
Threatening Alarms	Alarm	Magenta
	Alarm Text	White
Critical Alarms	Alarm	Red
	Alarm Text	White

Major Alarms	Alarm	Orange
	Alarm Text	Black
Minor Alarms	Alarm	Yellow
	Alarm Text	Black
Indeterminate Alarms	Alarm	Blue
	Alarm Text	White
Cleared Alarms	Alarm	Green
	Alarm Text	White

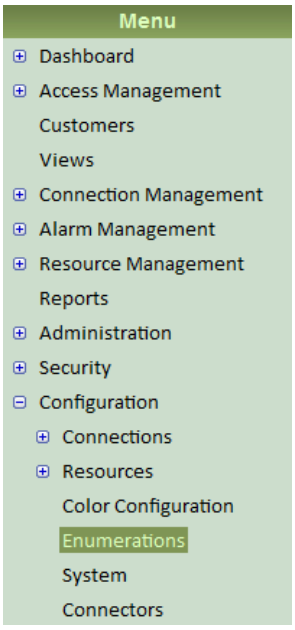
Table 30 Configuration module: Colors – Alarms

6.4.3. Circuits tab

OBJECT	ATTRIBUTE	COLOR
Working Path	Working Path	Green
Protection Path	Protection Path	Blue

Table 31 Configuration module: Colors – Circuits

6.5. Enumerations



In the context of NETPortal, an Enumeration is a list of choices used in drop-down boxes in various NETPortal modules. The Enumerations screen allows value pairs (in the form of “code : description”) to be created for custom Enumerations used in NETPortal.

The Enumeration’s “Code” is a unique value for each Enumeration item. The “Description” is the label used to describe the code’s value in a drop-down box on the NETPortal screen.

Table 32 below summarizes the information provided in the list shown on the **Find Enumerations** screen.

LABEL	DESCRIPTION
Name	The name assigned to a collection of Enumeration items. It generally reflects the category or type of object that the Enumeration items represent.
Code	The value assigned to the current Enumeration item.
Description	The description of the current Enumeration item. This description is displayed in drop-down boxes that allow users to select one of several items.
Disabled	Drop-down menu: Yes, No.
System Enumeration	Indicates whether the Enumeration is a System Master Enumeration: Yes/No. A value of 'No' signifies that the Enumeration is custom. System Enumerations cannot be deleted.

Table 32 Configuration module: Enumeration fields

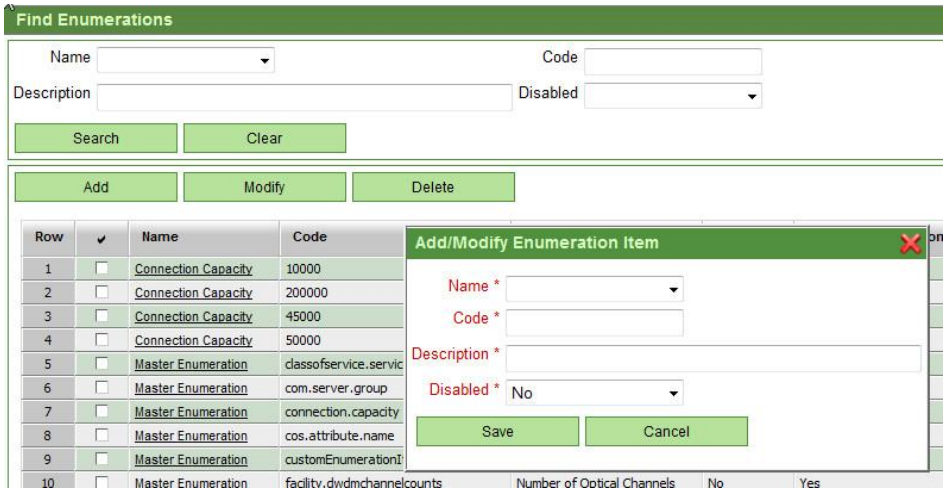


Figure 20 Configuration module: Enumerations list

Table 33 below provides a summary of the available system enumerations and their descriptions in NETPortal:

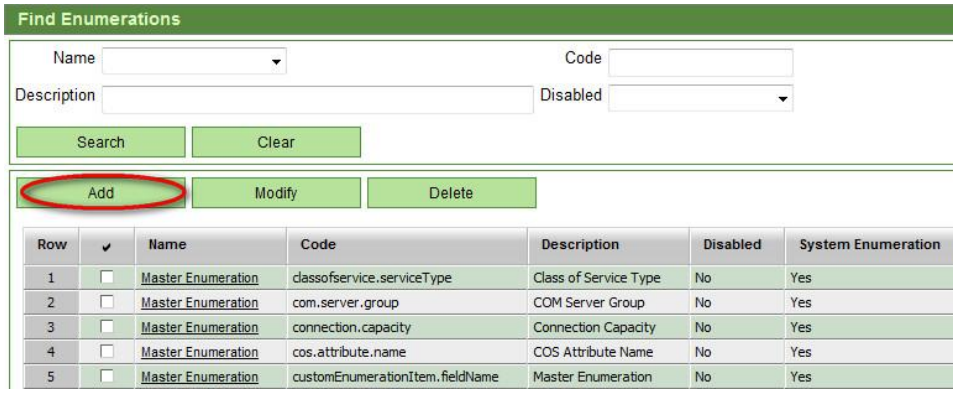
ENUMERATION NAME	ENUMERATION CODE	DESCRIPTION
Master Enumeration	classofservice.serviceType	Class of Service Type
Master Enumeration	com.server.group	COM Server Group
Master Enumeration	connection.capacity	Connection Capacity
Master Enumeration	cos.attribute.name	COS Attribute Name
Master Enumeration	customEnumerationItem.fieldName	Master Enumeration
Master Enumeration	Facility.dwdmchannelcounts	Number of Optical Channels
Master Enumeration	location.locationType	Location Type
Master Enumeration	report.category	Report Category: a category within NETPortal that a report will address. Report Categories may be defined for any area of the application where data may be collected and analyzed.

Table 33 List of default system enumerations and their descriptions

6.5.1. Add an Enumeration

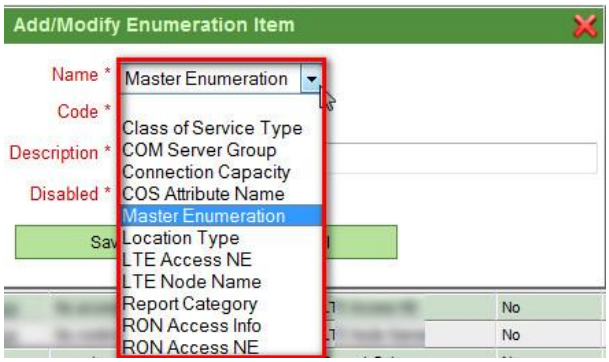
To add a new Enumeration:

1. In the **Find Enumerations** screen, click on the **Add** button.



2. In the **Add/Modify Enumeration Item** window, use the drop-down list next to the 'Name' field to select the Enumeration type.

   An Enumeration's Name defines the type of Enumeration it represents within NETPortal. The drop-down list allows selection of available Enumeration types.



3. Enter the Enumeration Code and Description. The Code is the value of the Enumeration used in NETPortal processing, while the Description is the label that appears in a drop-down box in NETPortal.*

4. Click on the **Save** button.

5. Close the window.

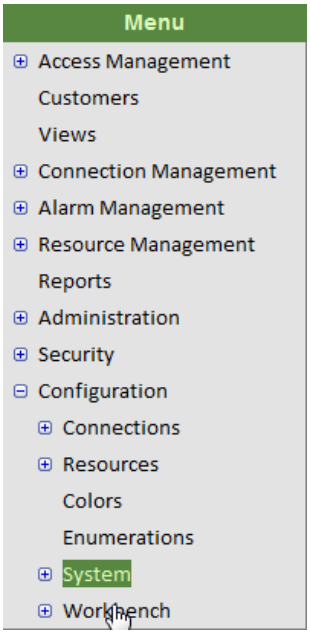
NOTE: Users must logout and login after Enumerations are defined for changes to take effect.

For information on how to modify or delete a custom Enumeration, please refer to section 3.5 on navigating the user interface.

NOTE: System Enumerations cannot be deleted.

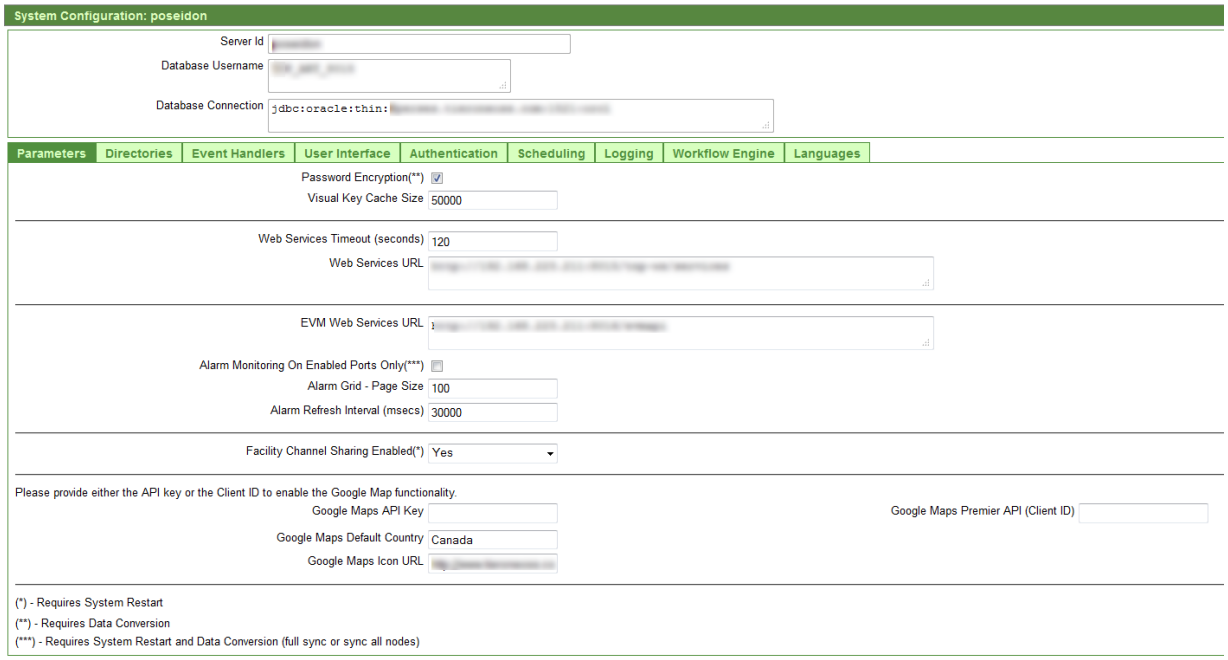
NOTE: Once a Custom Enumeration is saved, only the 'Description' and 'Disabled' fields can be modified. If the Enumeration's 'Code' requires modification, delete the custom Enumeration and create a new one with the desired Code.

6.6. System



6.6.1. Overview

The **Configuration → System** menu option provides access to system-level configuration parameters and allows administrative users to configure home directories for system components, event handlers for various objects in NETPortal, user-interface settings, authentication information, Job scheduling, logging, workflow engine settings and language settings. The system-level configuration parameters are grouped on various tabs.



6.6.1.1. Parameters tab

This tab of the **Configuration → System** submodule allows the user to configure settings for password encryption, visual key cache size, web services, EVM web services, facility channel sharing and Google Maps functionality. To change the settings, fill out the fields as required and click on the **Save** button in the top right corner of the screen.

PARAMETER	DESCRIPTION
Password encryption	Indicates whether password encryption is enabled or not.
Visual key cache size	When displaying data in grids, the visual key cache size determines how much data is retrieved from direct database lookups and how much is retrieved from the memory cache. The cache is built up from previous database lookups and therefore results in a faster display of data grids. The 'visual key cache size' determines the maximum number of visual keys to be kept in memory before clearing the cache and building it up again. Although a larger size helps to speed up performance, it may not always reflect the latest updates made to the database. The default value is 50000. This may be tuned depending on the volume of the data being processed, as well as whether NETPortal is being used in a clustered environment.
Web Service Timeout (seconds)	This is the amount of time before a function call to NETPortal's ESI Web Service times out.

Web Services URL	This is the URL for executing function calls to NETPortal's ESI Web Service. The standard value is: <NETPortal server host:port>/tnp-ws
EVM Web Services URL	This is the URL to which NETPortal will direct web service requests to gather alarm data. The format for this value is: <EVM server host:port>/evmapi
Alarm Monitoring On Enabled Ports Only (***)	If this box is checked, NETPortal will only notify the EVM server of enabled Ports – consequently, EVM will only collect alarm data for the enabled Ports. Alarm data for all other Ports will be discarded by EVM. As Facilities are enabled/disabled in NETPortal, the Status of the Ports changes, so NETPortal notifies EVM whether to collect or discard the alarm data for those particular Ports.
Alarm Grid – Page Size	Specifies the number of rows per page for the data grid shown on the **Alarm Management →Alarms** screen. Recommended value (default) is 100.
Alarm Refresh Interval (msecs)	Specifies the number of milliseconds between alarm refresh displays. Recommended value (default) is 30,000 (30 seconds). Applicable on all screens with automatic refresh of alarms (**Alarm Management →Alarms, Alarm Management → Links, Alarm Management →Services, Customers →** Connectivity tab (Health Display), and **Views** (Health Display). The feature is not used on **Customers → Connectivity** tab (Availability Display) or **Views** (Availability Display).
Facility Channel Sharing Enabled	This setting allows Facility Channels to be shared. If this checkbox is checked (enabled), Circuits can share Facility Channels, but the system ensures that only one Circuit can be active on a given Channel at any particular point in time. With this setting enabled, Circuit objects can be copied so that the copied Circuit has the same Channel as the original Circuit. If the setting is disabled, however, Circuits can be copied, but the copied Circuit will need to be manually or automatically assigned to a different Facility Channel.
Google Maps API Key	Specifies the API key obtained from Google. A Google Maps API Key can be obtained by going to https://code.google.com/apis/console and logging in to your Google account. Create a project. From the Services tab, choose **Google Maps API v2**.
Google Maps Premier API (Client	This is an alternative to the Google Maps API Key listed above. It uses a Client ID as well as authorized URLs to provide access to the Google

ID)	Maps API for Business. See: https://developers.google.com/maps/documentation/business/guide
Google Maps Default Country	Specifies which country's map to display first when Google Maps is loaded on the relevant Map screens in NETPortal.
Google Maps Icon URL	Specifies the URL of the icon to use for the Google Maps Location pin.

6.6.1.2. Directories tab

This tab allows the user to configure the application configuration directory where system components can be found on the WebLogic server. Only the 'Application Config Directory' field can be modified; the remaining fields are pre-configured based on the value of the 'Application Config Directory' field.

If the 'Application Config Directory' field is changed, save the new value by clicking on the  **Save** button and then click on the  **Refresh** button in the top right corner of the screen to update the remaining pre-configured fields. A server restart will be required for the changes to take effect.

6.6.1.3. Event Handlers tab

This tab allows the user to configure custom event-handler scripts for system components. The scripts are injected into certain points of an object's life cycle. Custom handlers can be defined for the following five object types: Network Elements, Facilities, Circuits, Links, and Multipoints (ELAN and IP VPN Services). Examples of functions that custom scripts could execute would be to generate the name of an object based on other values entered, or to validate fields before an object is saved.

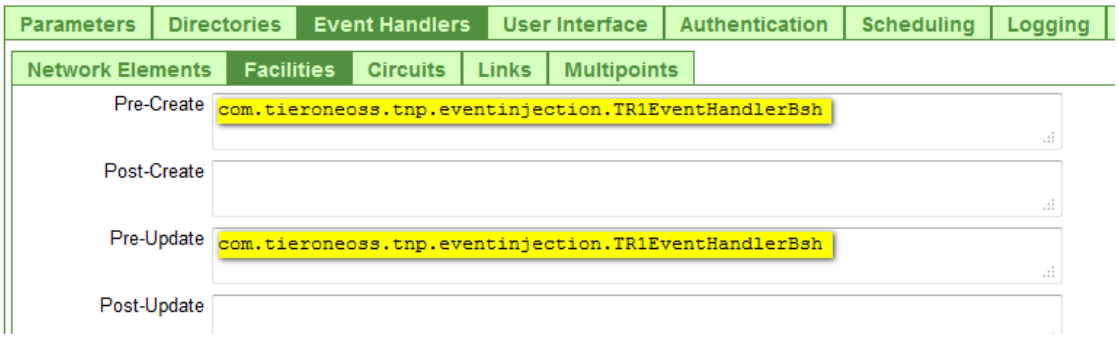
Scripts should be written in the BeanShell scripting language and must be written in a file named with the following convention:

- <ObjectType>EventHandler.bsh where <ObjectType> is one of the allowed objects listed above

For each object type, one file should be used to handle all events (Pre-Create, Pre-Update, etc.) to which custom scripts should be applied. The file should be stored in the eventhandling directory of the release files received for installation.

On the **Event Handlers** tab of the **Configuration → System** screen, enter the following fully qualified class name into the text box associated with the event type(s) you wish to handle. This class handles the execution of the script(s).

- com.tieroneoss.tnp.eventinjection.TR1EventHandlerBsh



Then click on the **Save** button in the top right corner of the screen to save the settings.

6.6.1.4. User Interface tab

This tab allows the user to configure the user interface style, login logo, and header logo for NETPortal.

There are several built-in User Interface Styles:

- Original
- Green
- Blue
- Purple
- Red

To change a built-in User Interface Style:

1. Select the desired value from the 'User Interface Style' drop-down list.
2. Save the configuration by clicking on the **Save** button in the top right corner of the screen.
3. Log out, clear the browser cache and refresh the browser. Then log back in to see the new User Interface Style.

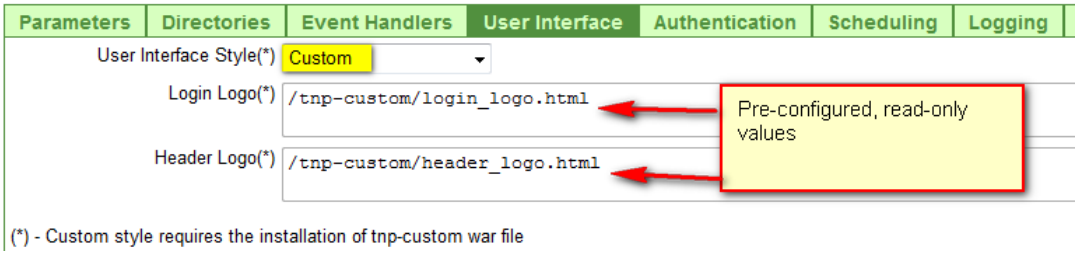
When a different logo is required, or a color not included in the built-in styles, it is necessary to create a custom skin consisting of a login logo, header logo, custom .css file for styles and a favorite icon to be displayed by the browser.

If 'Custom' is selected from the 'User Interface Style' drop-down list, NETPortal will automatically look for the following files in the received installation files:

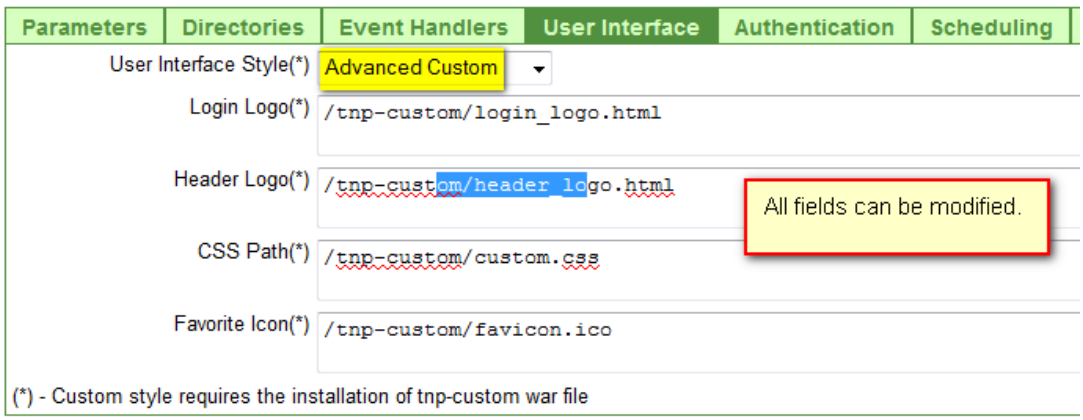
- /tnp-custom/login_logo.html
- /tnp-custom/header_logo.html
- /tnp-custom/custom.css
- /tnp-custom/favicon.ico

Consequently, a .war file ('tnp-custom.war') that contains these files must be deployed on the NETPortal server in the relevant custom directory to make use of this option. Please refer to the ***NETPortal Installation Guide*** or ***NETPortal Release Notes*** for more information.

If 'Custom' is selected, the 'Login Logo' and 'Header Logo' fields cannot be modified on the **User Interface** tab because these values are already pre-configured.



In contrast, if 'Advanced Custom' is selected from the 'User Interface Style' drop-down list, the path and file-name conventions used by the 'Custom' option do not necessarily need to be used. This option is recommended, for example, if it is not possible to deploy a 'tnp-custom.war' file. The 'Login Logo,' 'Header Logo,' 'CSS Path' and 'Favorite Icon' fields can be modified on the **User Interface** tab to make use of custom skin files which may be located in different directories.

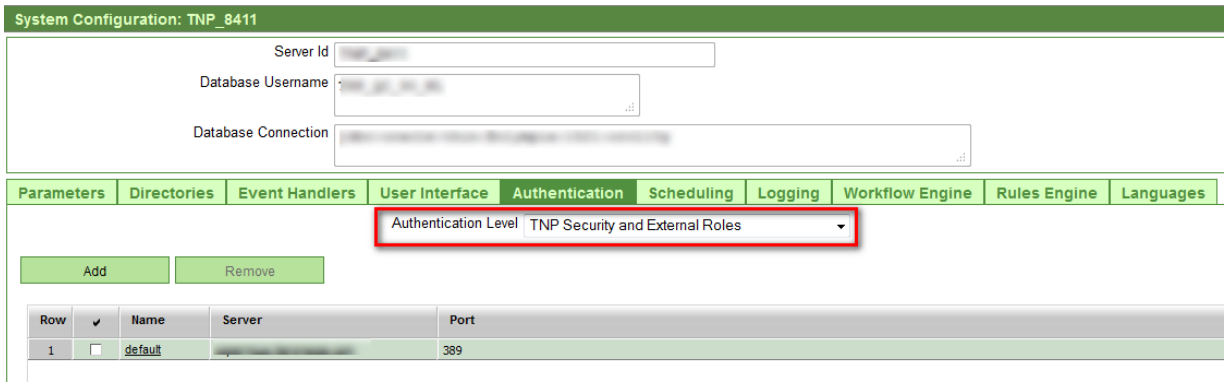


6.6.1.5. Authentication tab

This tab allows the user to configure the Authentication Level, server and port used for LDAP authentication.

The Authentication Level determines whether TNP authenticates users based on LDAP and internal security mechanisms only, or whether external role-based systems are included in the authentication process. The default option is 'TNP Security Only (Default)' and indicates that an LDAP will be used to verify user accounts. The 'TNP Security and External Roles' option should be selected if there is a possibility that some users will not to be explicitly created in NETPortal and will be primarily authenticated using an external role-based system.

To view additional information about an LDAP server specified on this tab, click on the server's Name in the record. An LDAP panel appears further down on the screen where details can be modified as required. Click the **Save** button to save the new settings.



NOTE: Please ensure that the Authentication Level and server settings configured on this screen are aligned with the Security Realm and Authenticator settings configured in WebLogic. Otherwise, users may receive authentication error messages when they attempt to login and be denied access to the application. For more information on Security Realms in WebLogic, please refer to the relevant WebLogic documentation.

6.6.1.6. Scheduling tab

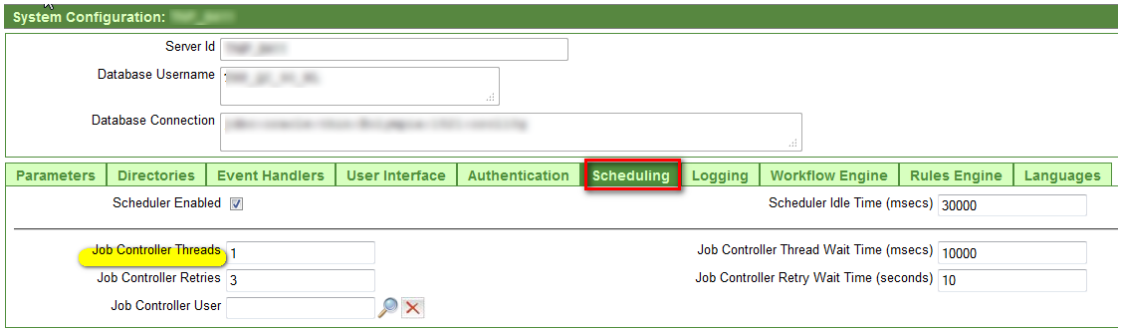
This tab allows the user to configure settings for NETPortal's Job Controller and Scheduler. The 'Job Controller Threads' field determines how many tasks the Job Controller can process simultaneously in NETPortal's **Administration** module.

The number of retries, idle time, and wait times can also be configured on this tab.

In an environment where multiple NETPortal servers are used, the 'Job Controller User' field can be used to partition Jobs among servers. The field specifies the user ID of a User who has privileges to run Jobs on objects assigned to a specific Domain. Based on the value of this field, the NETPortal server where the Job Controller is running will only execute those Jobs that the Job Controller User has privileges for. If no value is specified for this field, the server will execute Jobs regardless of the user who initiated the Job. For more information on User Privileges, please refer to section 5.4.2.2.

For more information on Domains, Users and Privileges, please refer to section 5.5.

To change the settings, fill out the fields as required and click on the **Save** button in the top right corner of the screen.



6.6.1.7. Logging tab

The 'Browser Log Level' field on the Logging tab is used for browser debugging purposes. For more information, please contact OSS Support.

6.6.1.8. Workflow Engine tab

The 'Workflow Engine Type' field allows a NETPortal Administrator to select which Workflow Engine is used by Customization Packages. The default value is 'Activiti.'

The 'Workflow Engine Threads' field on this tab determines how many asynchronous service tasks can be run simultaneously in the Workflow Engine. In addition, the 'Workflow Engine Retry Time' and 'Workflow Engine Maximum Retries' can also be set on this screen.

To change the settings, fill out the fields as required and click on the  **Save** button in the top right corner of the screen.

NOTE: If the 'Workflow Engine Type' is changed, the system must be restarted for the change to take effect.

6.6.1.9. Languages tab

In addition to English, NETPortal can accommodate up to three Unicode-supported (UTF-8) languages written from left to right.

Depending on your license agreement, two Language Pack files and a separate stand-alone tool may be provided during deployment to assist you in loading Language Packs into NETPortal:

- LangImp.exe: this application loads a completed Language Pack spreadsheet (.xls) into NETPortal. For more information, please refer to section 6.6.1.9.1.
- LangPack_Dict.xls: this is a pre-formatted spreadsheet representing a 'Dictionary' Language Pack. 'Dictionary' Language Packs provide translations related to the NETPortal GUI (i.e. form labels, drop-down lists, menu items, etc.). Up to three additional columns for multiple left-to-right language translations are provided in the spreadsheet. They can then be filled out by a translation service provider; subsequently, the spreadsheet can be loaded into NETPortal using the LangImp tool.
- LangPack_Msg.xls: this is a pre-formatted spreadsheet representing a 'Message' Language Pack. 'Message' Language Packs provide translations related to error messages and exceptions. Up to three additional columns for multiple left-to-right language translations are provided in the spreadsheet. They can then be filled out by a translation service provider; subsequently, the spreadsheet can be loaded into NETPortal using the LangImp tool.

NOTE: Both Language Pack files and the LangImp tool can be found under the release/utils/langpack directory of the distribution files received for installation.

Once Language Packs are loaded and configured, users can select their desired language setting through the **Languages** tab of the **Security → User Configuration** submodule. For more information on the User Configuration submodule, please refer to section 5.2.1.

For more information on how to load a Language Pack into NETPortal, please refer to section 6.6.1.9.1.

For more information on how to configure default language and supported languages for NETPortal, please refer to section 6.6.1.9.2.

NOTE: At this time, no right-to-left languages are supported.

NOTE: If English is the only required language for NETPortal, no Language Packs need to generated or loaded.

6.6.1.9.1. Load a Language Pack with the LangImp Tool

The LangImp tool (short for 'Language Import') is used to load Language Packs quickly into NETPortal. Language Packs are provided in the form of .xls spreadsheets. They can then be translated by translation service providers. The LangImp tool is used to load either type of Language Pack into NETPortal. If multiple .xls Language Packs are loaded at the same time, the second .xls file updates the first .xls file.

Note: Due to the caching properties of NETPortal's translation engine, Language Packs should be loaded when the NETPortal server is offline. If Language Packs are loaded while the system is running, please restart the application after the loading procedure has completed.

Note: NETPortal's translation engine uses the Language Packs to translate screen elements such as labels, buttons, and error messages only. Data entered into the system is not translated; this data is stored in the NETPortal database in whichever language was used to input it.

Note: Due to LDAP authentication properties at this time, usernames and passwords must be entered into the system in English.

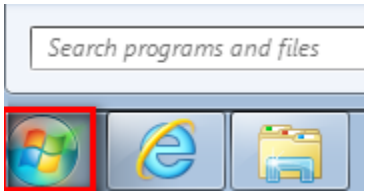
Note: Excel spreadsheets with an .xls extension are currently the only supported file type for loading a Language Pack.

Installation

LangImp is designed to run on a Windows platform (Windows XP, Vista, and Windows 7). The LangImp application may be installed to any directory by simply unzipping the file "LangImp.zip". Once unzipped, a new directory called "LangImp" will be created. Within this directory will reside the application – entitled "LangImp.exe".

To execute the LangImp application:

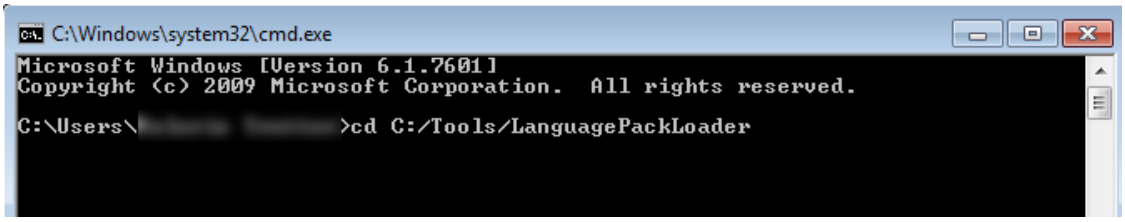
1. Using a computer with the Windows Vista or Windows 7 operating system, click on the Windows button  and type 'cmd' into the field labeled 'Search programs and files.'



2. In the command-prompt window, use the 'cd' command to navigate to the directory where the LangImp.exe application is located.

   For example: assuming that the LangImp.exe application is located in a folder entitled 'LanguagePackLoader' on your C:/ hard drive, type:

   `cd C:/Tools/LanguagePackLoader`



3. Then execute the application by typing its name and using the command-line switches described below.

   For example:

   `LangImp.exe -dict -ip myoracle.db.com -port 1521 -oracleSID orcl -uid MyID -passwd MyPasswd -xlsfiles C:\LangPack_Dict.xls`

4. Once the Language Pack is loaded, configure the default and supported languages for NETPortal through the Languages tab of the System Configuration screen. Refer to section 6.6.1.9.2 for more information.

Command Line Switches

The runtime behavior of the LangImp application is controlled by command-line switches. The following supported switches provide the indicated behavior:

-dict | -msg	Specifies the translation mode which is to be used (i.e. either 'Dictionary' or 'Message'). Specifying '-dict' (Dictionary mode) tells the application that only the Dictionary Translation table(s) should be loaded, whereas specifying '-msg' (Message mode) tells the application that only the Message Translation table(s) should be loaded.
-ip	Specifies the IP Address or host name of the database server.

-port	Specifies the port which is listening for incoming connections to the database server.
-oracleSID | -postgresqlSID	Specifies which database (Oracle or Postgresql) is to be connected to, as well as the SID.
-uid	Specifies the User ID when making a connection to the database server.
-passwd	Specifies the password for the User ID when making a connection to the database server.
-trunc	An optional parameter which specifies that data in the existing Translation table(s) should be purged before loading any new translations. The exact tables which are purged are dependent upon the translation mode which has been selected (i.e. -dict or -msg).
-xlsfiles	Specifies the path(s) and file name(s) of all .xls files which are to be parsed and loaded into the database server. The .xls files which are specified should match the translation mode which has been selected (i.e. -dict or -msg).
-v	Displays version information for the application.

Note: If a command-line switch value contains white space, it will be parsed as multiple switch options. To include whitespace within a single switch option, be sure to enclose the option in double quotation marks.

Additional Examples

1. Executes the LangImp application in Dictionary Mode for an Oracle database server. The Dictionary-based .xls file which is loaded is "C:\LangPack_Dict.xls".

```
LangImp.exe -dict -ip myoracle.db.com -port 1521 -oracleSID orcl
-uid MyID -passwd MyPasswd -xlsfiles C:\LangPack_Dict.xls
```

2. Executes the LangImp application in Message Mode for a Postgresql DB Server. The Message-based .xls file which is loaded is "C:\LangPack_Msg.xls". All data in the Message Translation table(s) is truncated before loading any translations from the file "C:\LangPack_Msg.xls".

```
LangImp.exe -msg -ip mypostgresql.db.com -port 5432
-postgresqlSID postgresql -uid MyID -passwd MyPasswd -trunc
-xlsfiles C:\LangPack_Msg.xls
```

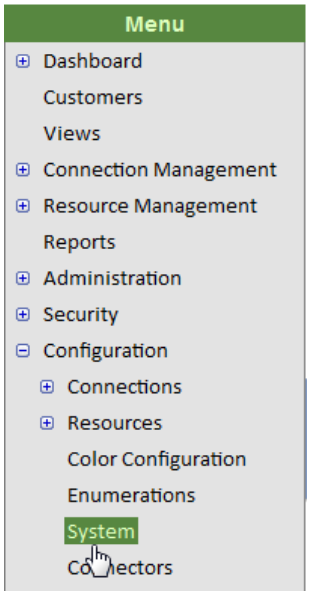
Note: After a Language Pack is loaded, system performance may slow down slightly as NETPortal's translation engine 'learns' the translations provided by the Language Packs. This temporary delay in performance will disappear with increased use of NETPortal.

NOTE: If language translations need to be added or updated at a later date (e.g. due to a NETPortal upgrade with new labels or messages, etc.), have the translations added to the appropriate Language Pack spreadsheet(s) and load them again with the LangImp tool as described in section 6.6.1.9.1. The -trunc parameter should be used if significant changes were made to existing translations. If new translations were simply added to the Language Pack spreadsheet(s) without changing any existing terms, the -trunc parameter is not necessary.

6.6.1.9.2. Configure default and supported languages

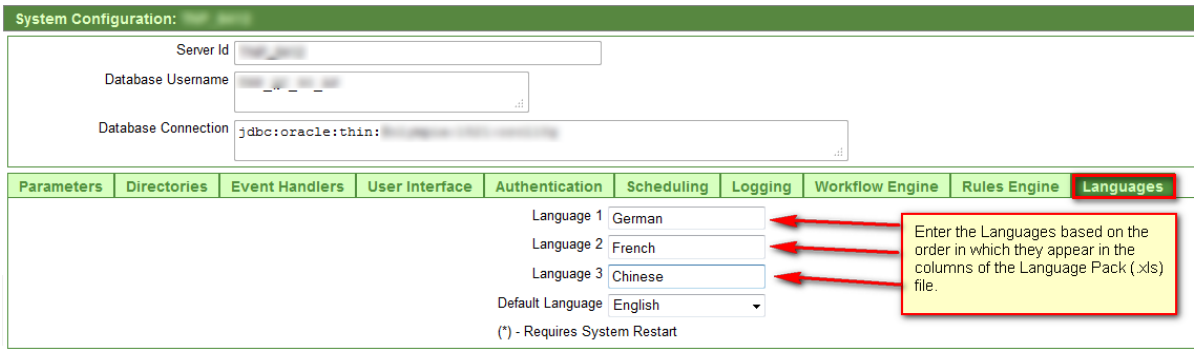
After loading a Language Pack with the LangImp tool described in section 6.6.1.9.1, the next step is to configure NETPortal's default and supported languages by using the Languages tab on the System Configuration screen:

1. Click on **Configuration → System** in the main navigation menu.

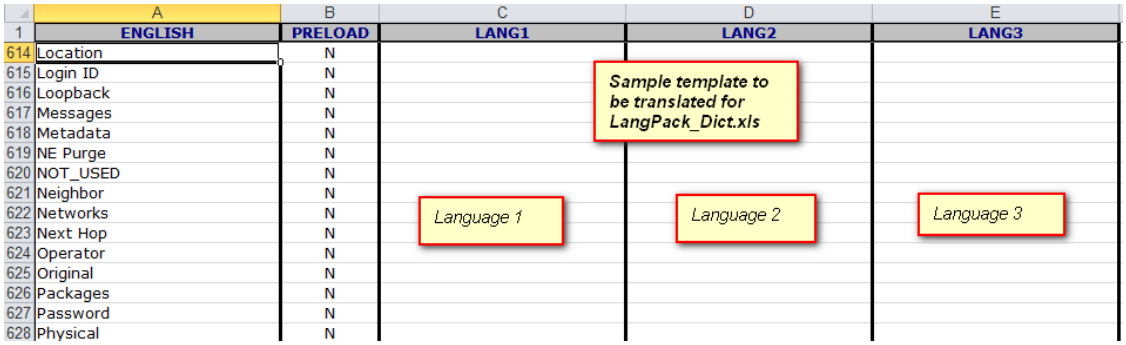


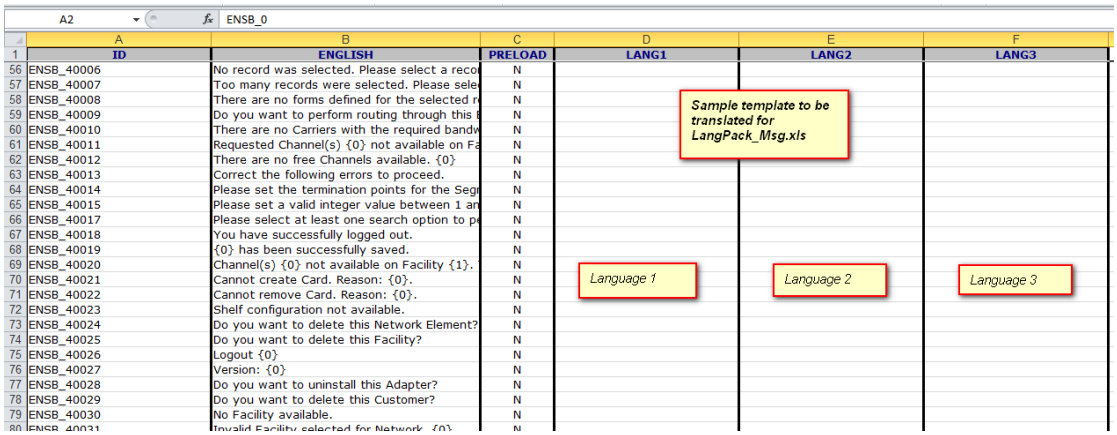
2. Select the **Languages** tab on the System Configuration screen.
3. Based on the order of the translated columns in the Language Pack (.xls) file that was loaded into NETPortal, type in the desired Languages in the Language 1, 2 and 3 fields.

   In the NETPortal screen:



In the Language Pack spreadsheets:



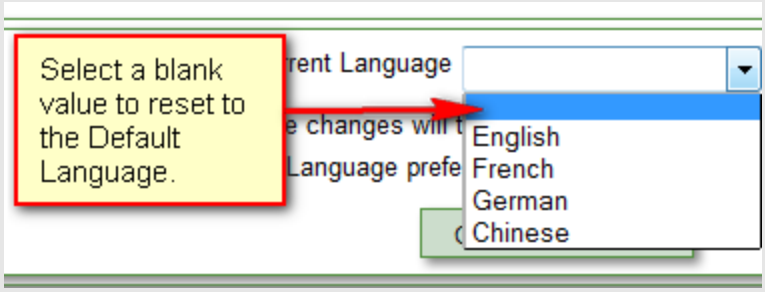


For more information on loading a Language Pack, please refer to section 6.6.1.9.1.

4. Save the configuration by clicking on the Save icon in the top right-hand corner.
5. If desired, change the Default Language by selecting the appropriate value from the drop-down list in the Default Language field.

Note: If a user accidentally changes their Language setting in the **Security →User Configuration** screen and can no longer read the screens or reset their Language, instruct the user to navigate back

to the Languages tab of the **Security → User Configuration** screen and set the Current Language to a blank value before logging out.

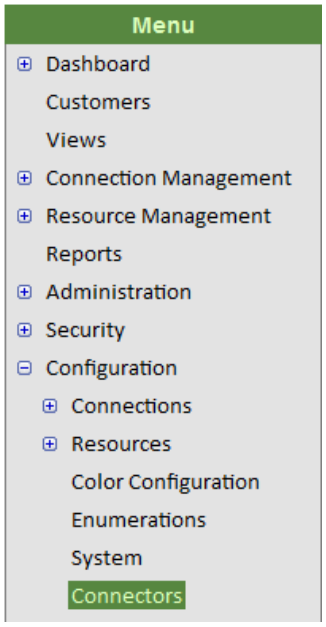


This will change the Language setting to the Default Language when the user logs in again.

NOTE: If language translations need to be added or updated at a later date (e.g. due to a NETPortal upgrade with new labels or messages, etc.), have the translations added to the appropriate Language Pack spreadsheet(s) and load them again with the LangImp tool as described in section 6.6.1.9.1. The -trunc parameter should be used if significant changes were made to existing translations. If new translations were simply added to the Language Pack spreadsheet(s) without changing any existing terms, the -trunc parameter is not necessary.

6.6.2. *Configuration → Connectors*

NETPortal can be configured to communicate with live Network Elements through COM servers and Connectors.



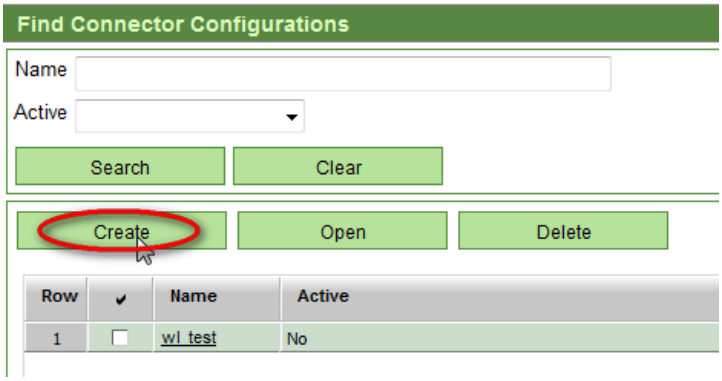
NETPortal supports a 'Multiple COM' feature that allows servers to be grouped geographically in order to guarantee a shorter path to the Network Element. This feature is achieved with a Connector Configuration file that is loaded when the NETPortal server is started. Multiple Connector Configuration files can be created, but only one Configuration can be active at any given time. A Connector Configuration must be marked Active, and the NETPortal server must be restarted for changes to take effect.

The **Find Connectors Configurations** screen displays a list of existing Connector Configurations for COM Server Groups and Connectors. If a large number of configuration files have been created, the list may be filtered by specifying all or part of the Name assigned to the file as well as by its 'Active' status.

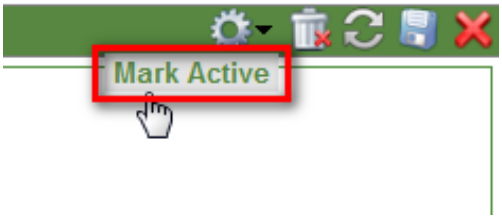
6.6.2.1. Create a Connector Configuration

To create a new Connector Configuration:

1. In the **Find Connector Configurations** screen, click on the **Create** button.



2. In the **Connector Configuration** window, enter the Configuration information as required. Suggested XML content is provided below as an example.
3. Click on the **Save** icon in the upper right corner of the screen. The Connector Configuration must be marked as Active, and the NETPortal server must be restarted for the changes to take effect.
4. To mark the Connector Configuration as Active, click on the action menu in the top right corner of the screen and select **Mark Active**. Please refer to section 6.6.2.2 for more information.



5. Restart the NETPortal server for the changes to take effect.

NOTE: The complete XML specification for the configuration file must be entered in the XML Content panel.

NOTE: For more information on how to structure the XML Content, please refer to the tnp-xml-config.xsd file included in the api\xsd directory of the received installation files.

For more information on how to modify or delete a Connector Configuration, please refer to section 3.5 on navigating the user interface.

NOTE: Once a Connector Configuration is modified, the NETPortal server must be restarted for the changes to take effect. The NETPortal server loads the currently active Connector

Configuration file and ignores all inactive Connector Configuration files during the restart process.

6.6.2.1.1. Suggested XML Content for Connector Configuration

NETPortal's Connector Configuration file can define COM server group names as well as a list of COM servers available for a given server group. The advantage of this feature is that COM servers can be grouped geographically in order to guarantee a shorter path to connect to a Network Element. If the routingEnabled attribute of the COMServerConfiguration tag is set to false, NETPortal retrieves a list of COM servers from Provisioner's configuration file. If the routingEnabled attribute is true, NETPortal's COM Connector retrieves a list of COM servers from NETPortal's own configuration file and connects to the first server available in the list.

When routing is disabled:

```
<?xml version="1.0" encoding="UTF-8"?>
<TNPConfiguration>
        <COMServerConfiguration routingEnabled="false">
                <COMServerGroups>
                        <COMServerGroup name="WEST" />
                        <COMServerGroup name="EAST" />
                </COMServerGroups>
        </COMServerConfiguration>
</TNPConfiguration>
```

When routing is enabled:

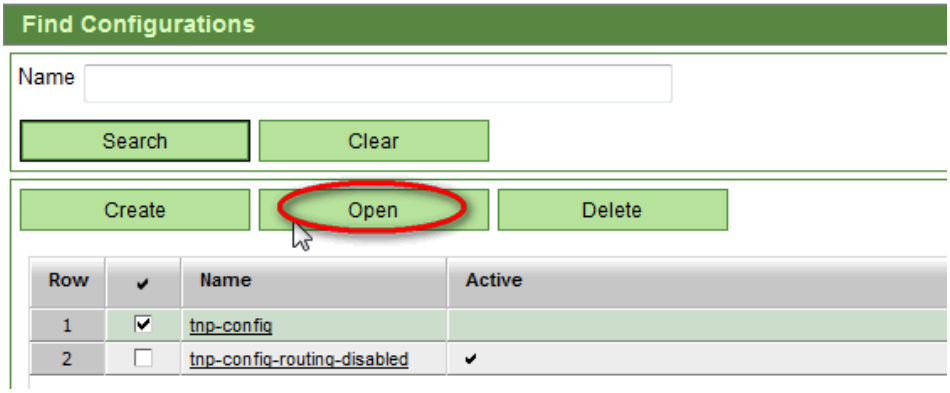
```
<?xml version="1.0" encoding="UTF-8"?>
<TNPConfiguration>
        <COMServerConfiguration routingEnabled="true">
                <sessionRetryCount>5</sessionRetryCount>
                <sessionRetryInterval>15</sessionRetryInterval>
                <receiveTimeout>120</receiveTimeout>
                <sendTimeout>185</sendTimeout>
                <COMServerGroups>
                        <COMServerGroup name="WEST">
                                <COMServers>
                                        <COMServer>

        <hostname>111.111.1.11</hostname>
                                                <port>7001</port>
                                        </COMServer>
                                        <COMServer>

        <hostname>111.111.1.11</hostname>
```

```
                                        <port>7002</port>
                                    </COMServer>
                                    <COMServer>
                <hostname>111.111.1.11</hostname>
                                        <port>7001</port>
                                    </COMServer>
                                </COMServers>
                            </COMServerGroup>
                            <COMServerGroup name="EAST">
                                <COMServers>
                                    <COMServer>
                <hostname>111.111.1.11</hostname>
                                        <port>7001</port>
                                    </COMServer>
                                    <COMServer>
                <hostname>111.111.1.11</hostname>
                                        <port>7002</port>
                                    </COMServer>
                                    <COMServer>
                <hostname>111.111.1.11</hostname>
                                        <port>7001</port>
                                    </COMServer>
                                </COMServers>
                            </COMServerGroup>
                        </COMServerGroups>
                    </COMServerConfiguration>
                </TNPConfiguration>
```

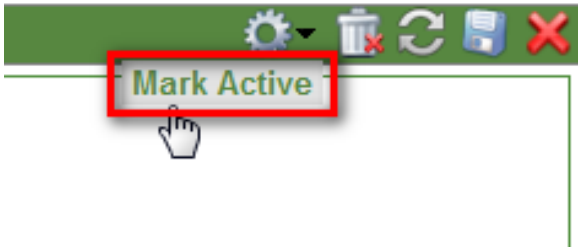
6.6.2.2. Activate a Connector Configuration

After a Connector Configuration has been created or edited and saved, it must be marked as 'Active' to be loaded and processed by NETPortal. To mark a Connector Configuration as Active:

1. On the **Find Connector Configurations** screen, select the Connector Configuration to activate and click on the **Open** button, or simply click on the XML Configuration's Name in the record.



2. Select **Mark Active** from the action menu in the top right corner of the screen.



3. Save the Connector Configuration by clicking on the **Save** icon in the upper right corner of the screen.

The selected Connector Configuration will be loaded after the server is restarted.

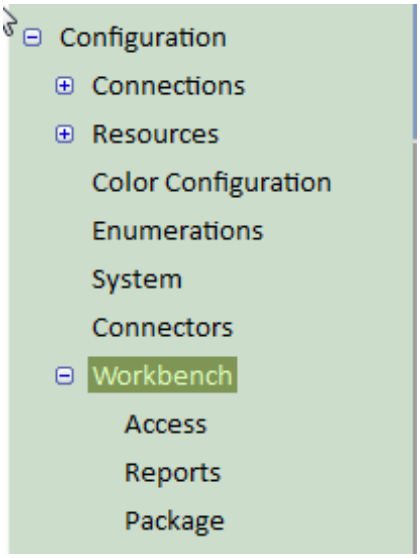
6.6.2.3. Action Menu Options

When a Connector Configuration object is open, the action menu becomes active.

COMMAND	DESCRIPTION
Mark Active	This option is visible when a Connector Configuration is currently inactive. It marks the Connector Configuration file as the active one so that the configuration will be loaded when the server is restarted. Please refer to section 6.6.2.2 for more information.
Mark Inactive	This option is visible when a Connector Configuration is currently active. It marks the Connector Configuration file as inactive so that the configuration will be ignored when the server is restarted. Please refer to section 6.6.2.2 for more information.

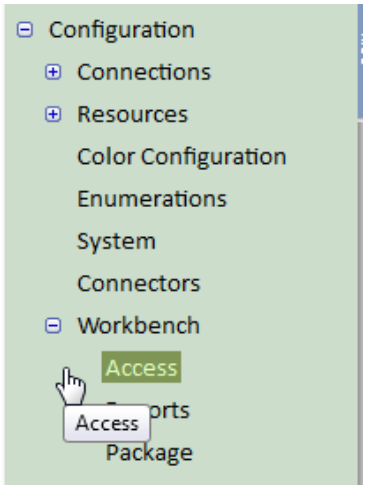
Table 34 Configuration module: Connector Configuration action menu

6.7. Workbench



The Configuration module's Workbench provides utilities for extending the capabilities of NETPortal in specific areas. For example, the Access area of the Workbench can be used to create, copy, install, test or delete Access adapters. The Report area of the Workbench can be used to create, modify and delete NETPortal Report Definitions from templates provided with the system. The Package area of the Workbench allows users to create, copy and install customized screen Packages with user-defined functionality. Import and Export buttons are provided to facilitate the transfer of Packages between development, testing, and production environments.

6.7.1. Access



The Access Workbench is used to create new Access Adapters or make changes to existing ones. After an Access Adapter has been created in the Workbench, it must be installed in NETPortal before it can be used for creating Network Elements.

When an Access Adapter is installed, new commands with new privilege entries will be automatically added to NETPortal's **Security →Privileges** submodule, but the privileges will not be enabled, and the new commands cannot be utilized until a NETPortal Administrator grants the privileges to the appropriate User Group(s). Privileges for non-existent commands will be removed when an Access Adapter is installed from the Workbench.

For more information on how to assign privileges to User Groups, please refer to section 5.4.2.2.

LABEL	DESCRIPTION
Create	Creates a new Access Adapter.
Copy	Creates a copy of a selected Access Adapter in the Workbench.
Install	Installs a selected Adapter from the list displayed in the Workbench. Disabled until an Adapter has been created.
Delete	Removes the selected Adapter from the Workbench. Disabled until an Adapter is selected.

Table 35 Configuration: Adapter Workbench buttons

NETPortal is shipped with templates to facilitate creating new Access Adapters. Existing Adapters may be copied and edited to allow variations in functionality. NETPortal assigns and maintains an internal parameter for each adapter created.

The initial **Adapter Workbench** screen displays a list of Adapters created in the Workbench, but not yet installed in NETPortal. When an Adapter is installed, it is removed from the list on the Adapter Workbench screen and appears in the **Configuration →Resources →NE Configuration** screen, which lists Adapters available for use in NETPortal.

Figure 21 provides an overview of the process for creating an Access adapter.

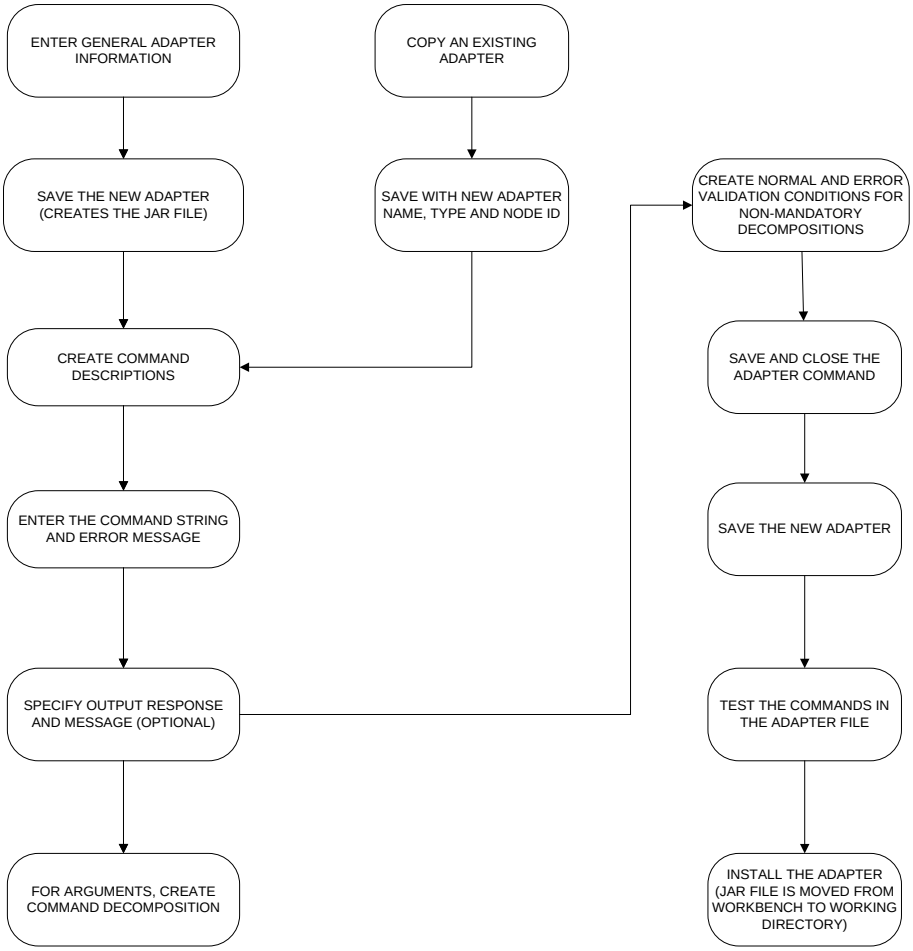


Figure 21 Configuration: Access Workbench flowchart

The Access Adapters displayed on the **Adapter Workbench** screen include the following information:

LABEL	DESCRIPTION
Adapter Name	Name assigned to the adapter's .jar file (specified at creation).
Type	Type of adapter (specified at creation).
Vendor	Creator of the adapter.
Version	Version number.

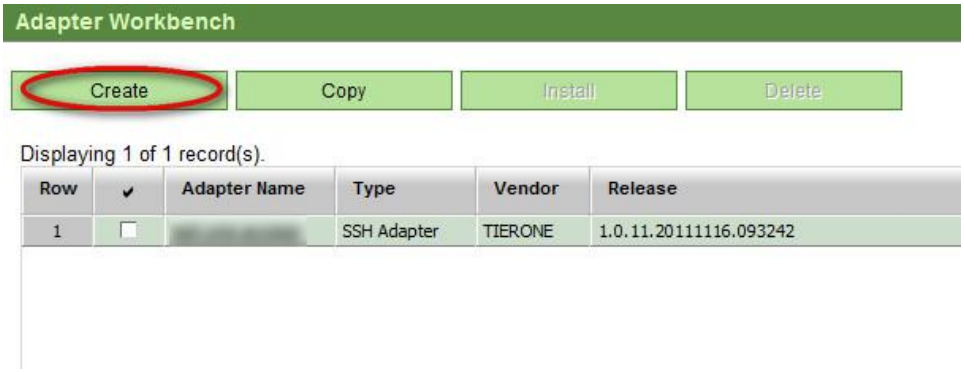
Table 36 Configuration: Adapter definition in Workbench

6.7.1.1. Create an Access Adapter

New Access Adapters may be created using the Adapter Workbench.

1. Select **Configuration →Workbench → Access** in NETPortal's main navigation menu.

2. On the **Adapter Workbench** screen, click on the **Create** button.



3. Enter the Adapter parameters as defined in Table 37 below.
4. Save the new Adapter settings by clicking on the Save icon in the top right corner of the screen. A 'Commands' panel will now appear in the Adapter Details/Configuration screen.
5. Configure Commands for the Adapter as described in section 6.7.1.2 below.

LABEL	DESCRIPTION
Adapter Name	Name that will be assigned to the JAR file created for this adapter.
Type	Product name, similar to vendor and model. This is defined by the Adaptor creator.
Node ID	This ID is used by web services internally. It is not visible to system users.
Node Type	Internal node ID – automatically assigned by the system. The system automatically assigns every Adapter a unique node type number, used to define the association between Network Elements and Adapters, when it is created.
Label	Label assigned to the Adapter.
Connection Type	Defines method of communication for the adapter. ▪ ANY – can use any supported connection type – choice is made when the Network Element is created. ▪ SSH Connection – strictly SSH communication. ▪ Telnet Connection – strictly telnet communication. ▪ TCP Connection – uses TCP communication. ▪ Web Service Connection – allows the adapter to connect to any web service and make web-service calls. ▪ LDAP Connection – allows the adapter to connect to an LDAP authentication server. ▪ JDBC Connection – allows the adapter to connect to an Oracle or PostgreSQL database.

Vendor	Vendor name – used for version tracking.
Author	Name of the developer or author– used for version tracking.
Version	Version information – used for version tracking.
Release	Release information – used for version tracking.

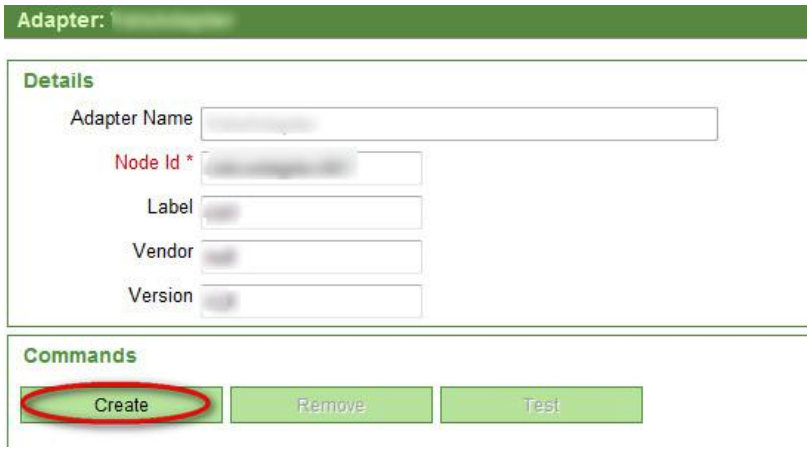
Table 37 Configuration: Adapter Details

6.7.1.2. Create a Command for an Access Adapter

In the Adapter Details/Configuration screen, the 'Commands' panel allows users to configure Input requests as well as Output responses and to translate them between the live Network Element and the NETPortal application. It is up to the user designing the Access Adapter to decide whether 'raw responses' from live equipment are suitable for display purposes, or whether the raw responses should be further processed and displayed in a more user-friendly manner.

To create a Command:

1. In the 'Commands' panel of the Adapter Details/Configuration screen, click on the **Create** button.

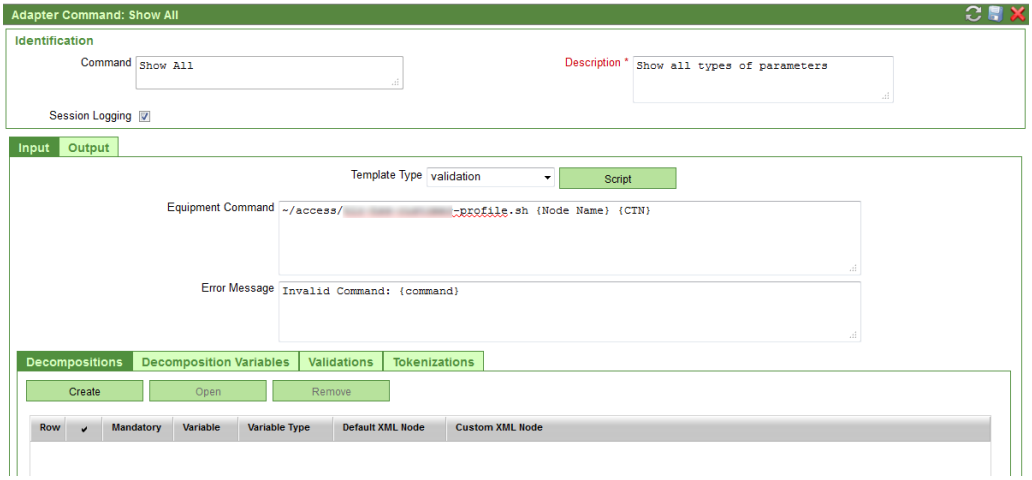


An **Adapter Command** window appears with fields provided for a Command name and a Description.

NOTE: These fields are for entries in plain English. Actual command syntax is defined later.

2. Enter the Command name in plain English.
3. Enter the Description.
4. Indicate whether Session Logging should be enabled. If this is checked, detailed session information will be captured in NETPortal's **Administration → Audit Logs** submodule whenever the command is executed. Please refer to section 4.5 for more information on Audit Logs.
5. Save the new Command by clicking on the Save icon in the top right corner.

6. Another panel will appear with **Input** and **Output** tabs for configuring how input requests and output responses are translated between the live Network Element and NETPortal. Configure the desired Input and Output attributes based on the Template Type. Use the **Decompositions, Decomposition Variables, Validations**, and **Tokenizations** subtabs to define parameters and conditions for the Command's Input or Output. Please refer to section 6.7.1.2.1 below for more information.



7. Save the Command by clicking on the Save icon in the top right corner of the Adapter Details/Configuration screen.

NOTE: Saving a Command in the Adapter Command screen saves the Command in the Access Workbench's temporary memory but does not permanently save the Command to the Adapter Workbench. To permanently save a Command to the Workbench, save the entire Adapter by clicking on the Save icon in the top right corner of the Adapter Details/Configuration screen. If the Adapter is not saved, changes made to Commands may be lost if the user logs out or times out of his or her NETPortal session.

8. Test the Command by clicking on the **Test** button in the 'Commands' panel of the Adapter Details/Configuration screen. Please refer to section 6.7.1.3 for more information.

NOTE: When the Access Adapter is later installed, its Commands will be automatically added to NETPortal's **Security →Privileges** submodule (NE Commands tab) in the form of <node type>/<command> - <command description>. However, the privileges will not be enabled, and the new commands cannot be utilized until a NETPortal Administrator grants the privileges to the appropriate User Group(s). Privileges for non-existent commands will be removed when an Access Adapter is installed from the Workbench.

For more information on how to assign privileges to User Groups, please refer to section 5.4.2.2.

6.7.1.2.1. Input & Output tabs

The layout of the Input and Output tabs are identical; only the context of how the data is used is different. The data on the **Input** tab is used to define a translation of the command sent to the Network Element. The data on the **Output** tab is used to define a translation of the response back to the user.

Table 38 below summarizes the fields used to define the Input or Output for the Adapter Command:

LABEL	DESCRIPTION
Template Type	This field determines the template used to translate the Command's Input or Output. Options are 'validation' or 'tokenization.' • The validation template derives its information from the 'Validations' subtab and allows you to enter commands in the 'Equipment Command' or 'Equipment Response' field directly. • The tokenization template derives its information from the 'Tokenizations' subtab; therefore, the 'Equipment Command' and 'Equipment Response' fields are read-only for this type and can only be modified by changing the definition on the 'Tokenizations' subtab.
Equipment Command (on Input tab) / Equipment Response (on Output tab)	Actual command issued to the target system (for Input) or response to be processed (Output). The following system variables can also be used: • {$userid} – can be used to pass the login ID of the user currently logged in. • {$ap_userid} – can be used with adapters communicating with web services to pass the Access Login ID configured in the Network Element's Access Profile. Please refer to the ***NETPortal User Guide – Inventory Management*** for more information. • {$ap_password} – can be used with adapters communicating with web services to pass the Access Password configured in the Network Element's Access Profile. Please refer to the ***NETPortal User Guide – Inventory Management*** for more

	information.
Error Message	Message to be displayed for error conditions.

Table 38 Configuration → Access Adapter Workbench, Command Input fields

To configure the Input or Output for a Command:

1. Select the Template Type: 'validation' or 'tokenization.' This field determines whether the Validations or Tokenizations subtab should be used for processing the Command. Refer to section 6.7.1.2.4 or 6.7.1.2.5 for more information.
2. If 'validation' is selected as the Template Type, enter the Equipment Command for the Input or Equipment Response for the Output, as appropriate. If desired, enter an Error Message to be displayed in the event that the Command does not execute successfully.
3. Configure Decompositions and Decomposition Variables for the Command, as required. Refer to sections 6.7.1.2.2 and 6.7.1.2.3 for more information.
4. If 'validation' is selected as the Template Type, configure the Validations subtab. Refer to section 6.7.1.2.4 for more information.

   OR

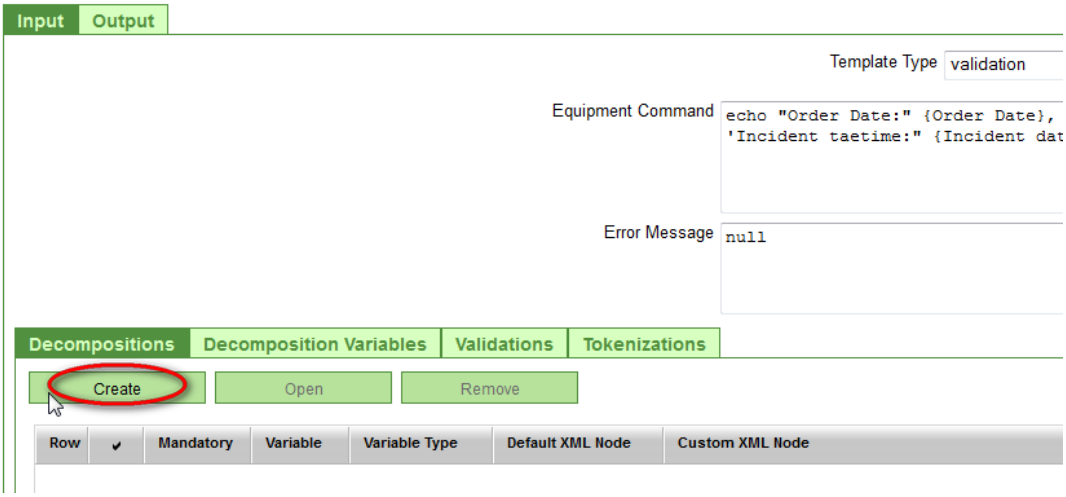
   If 'tokenization' is selected as the Template Type, configure the Tokenizations subtab. Refer to section 6.7.1.2.5 for more information.
5. Once the Input and Output tabs have been fully configured to meet Access Command requirements, navigate to the Adapter Details/Configuration screen and click on the Save icon in the top right corner to save all Command details.

6.7.1.2.2. Decompositions subtab

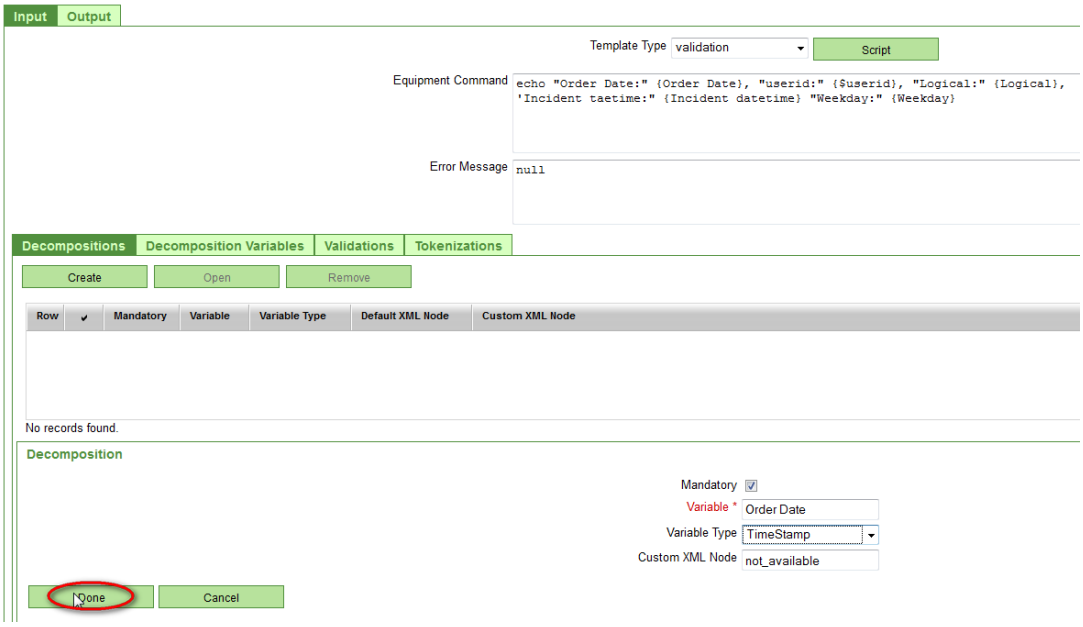
Decompositions define a set of parameters that a command requires.

To create a Decomposition:

1. On the Decompositions subtab, click on the **Create** button.



2. A new panel labeled 'Decomposition' will appear. Fill out the fields as required. Table 39 below provides a summary of the fields used to define a Decomposition.



LABEL	DESCRIPTION
Mandatory	If checked, this field requires the parameter to be provided by users in order for the Command to be executed in the **Access Management** module.
Variable	This field defines the name of the parameter. It should be specified in concise English words.
Variable Type	Indicates the data type of the parameter to be processed: String, Date, TimeStamp or Boolean. If 'String' is selected, additional options can be configured once the parameter has been added to the Decomposition list. The Variable Type selected determines the field-object type that appears for providing a command argument from the **Access Management** module. Details are provided in Table 40 below.

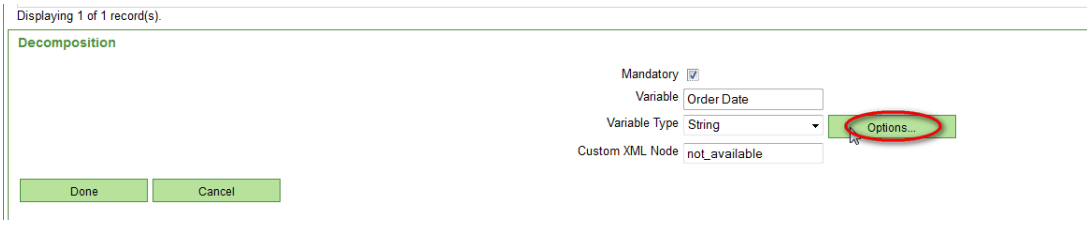
Custom XML Node	This field can be used to define custom parameter values that do not need to be entered via the **Access Management** module.

Table 39 Decomposition fields for Access Command

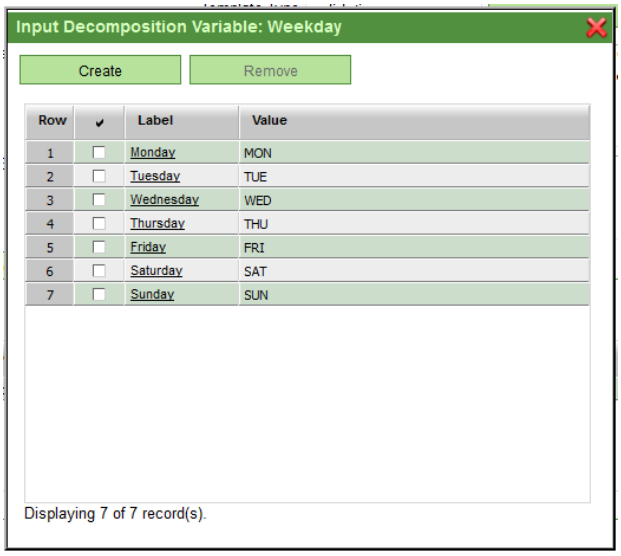
VARIABLE TYPE	FIELD-OBJECT TYPE
String	Argument can be provided via a drop-down list. The list can be populated with a static list or a dynamic query.
Boolean	Argument can be provided via a checkbox. Represents a true/false value.
Date	Argument can be provided via a calendar field: the date is captured without the time.
Timestamp	Argument can be provided via a calendar field: date and time are captured.

Table 40 Variable Types and field-object types

3. Click on the **Done** button. The variable will now be listed on the Decompositions subtab. If the selected Variable Type was 'String,' valid values can be additionally defined for the parameter by selecting or opening the variable. An **Options…** button will appear next to the 'Variable Type' field.
4. If you wish to specify valid values for the string variable, click on the **Options…** button.



In the **Input Decomposition Variable** window, click on the **Create** button. An 'Option' panel will appear where you can enter Labels and Values for valid String values to be processed by the Command. The Label is displayed to users, but the Value is processed by the Command. Enter a Label and Value, and then click the **Done** button to add the Option. Repeat for all desired Options.



Close the window by clicking on  in the top right corner.

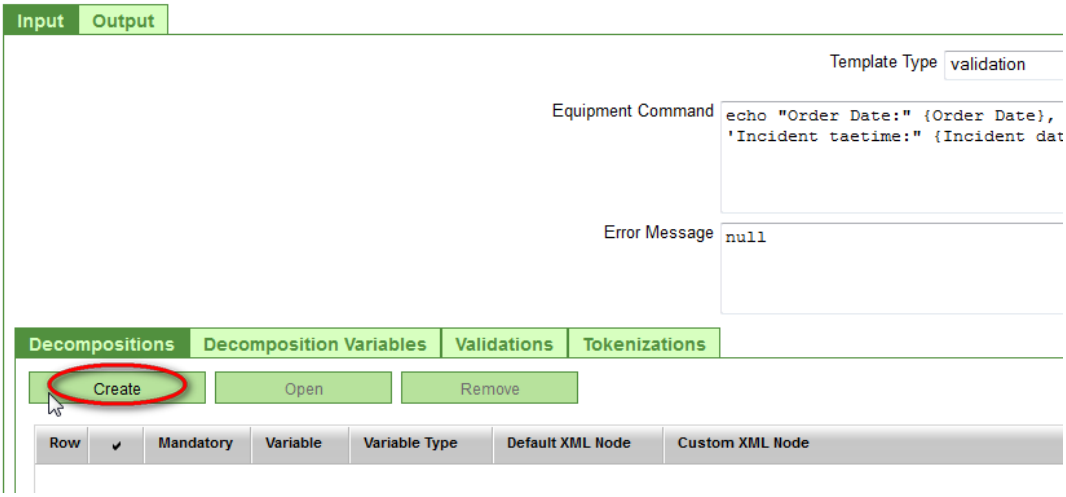
5. When you have finished configuring the Decompositions, navigate to the Adapter Details/Configuration screen and click on the  Save icon in the top right corner.

6.7.1.2.3. Decomposition Variables subtab

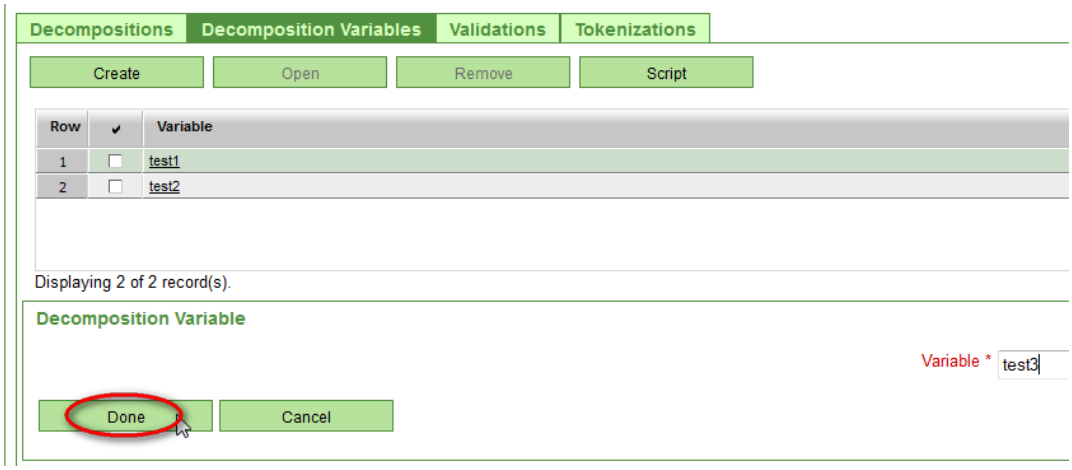
Decomposition Variables define internal variables used while translating the Command. Their purpose is similar to that of local variables defined inside a function. If any Decomposition Variables are defined, a Decomposition Variable Script MUST be provided in order for the Command to successfully execute later. The purpose of the Decomposition Variable Script is to perform calculations to set values in these Decomposition Variables.

To create a Decomposition Variable:

1. On the Decomposition Variables subtab, click on the **Create** button.

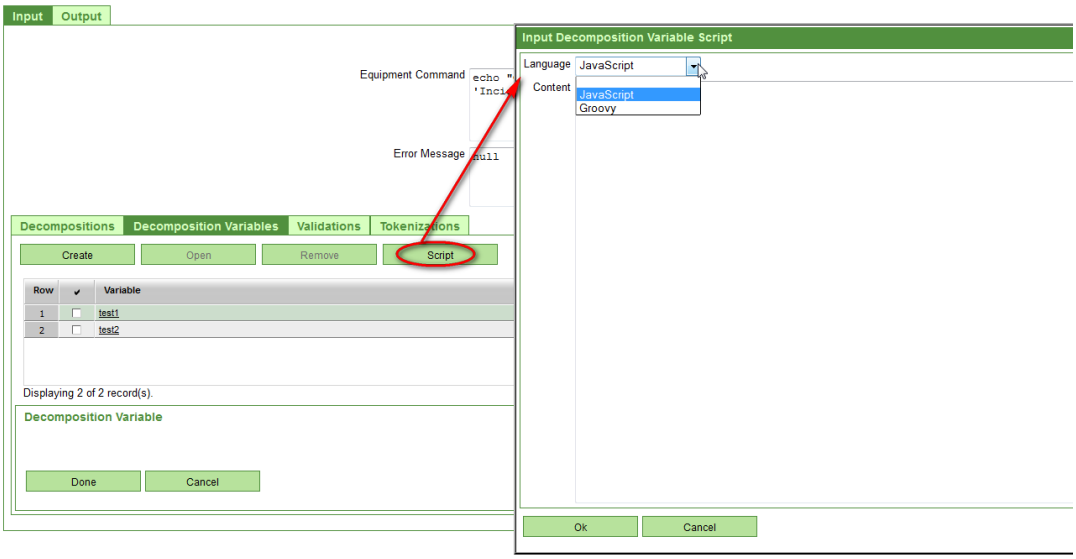


2. A new panel labeled 'Decomposition Variable' will appear. Enter a name in the 'Variable' field and click **Done**. The Decomposition Variable will now be listed on the Decomposition Variables subtab.



3. Repeat for any additional Decomposition Variables that may be required.

4. Then click on the **Script** button on the Decomposition Variables subtab.



5. In the Input Decomposition Variable Script window, select the desired script Language (JavaScript and Groovy are supported). In the 'Content' field, enter the Script that will process the Decomposition Variables and click **Ok** to close the window.

> **NOTE:** Any Script provided on the Decomposition Variables subtab will be executed before the actual Equipment Command is executed.

6. When you have finished configuring the Decomposition Variables, navigate to the Adapter Details/Configuration screen and click on the Save icon in the top right corner.

6.7.1.2.4. Validations subtab

The information on the Validations subtab is used to determine whether the values in the Decompositions are valid or not. Two subsections are provided:

- Normal Validation – its purpose is to validate whether the values in the Decompositions are correct. This type of validation is performed first; if successful, Error Validation is not necessary.
- Error Validation – its purpose is to invalidate values in the Decompositions. This type of validation is performed if Normal Validation fails.

The operations that can be performed in either validation scenario are:

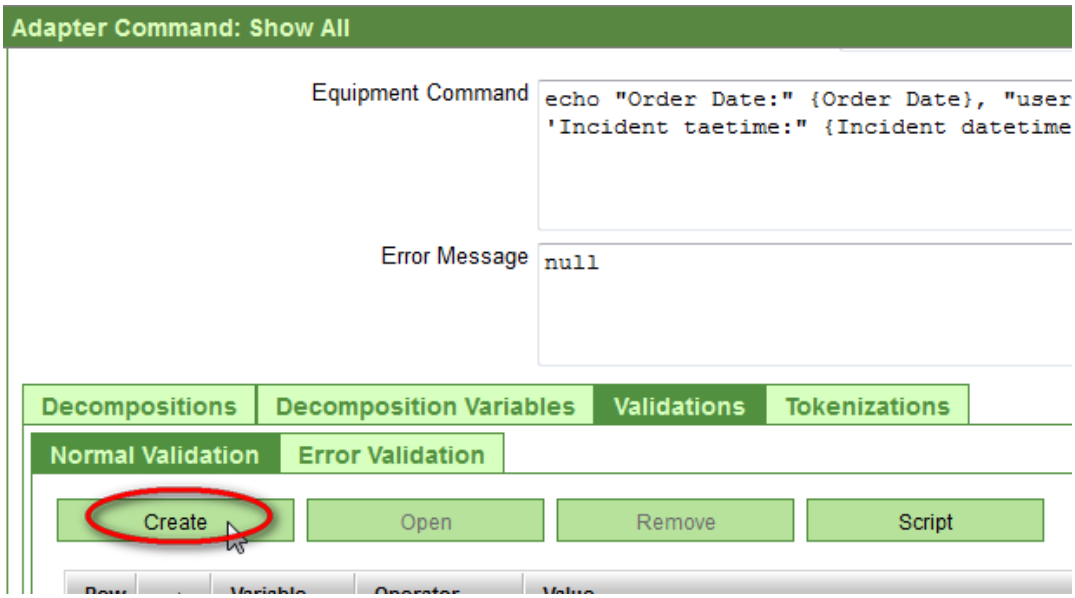
- Equal
- Not Equal
- Match

To perform more advanced validation, the **Script** button can be used to input a validation script to be performed.

NOTE: Validation conditions are automatically generated if a Decomposition is marked as mandatory in order to ensure that the required Variable is not null. They will not be visible on the Validations subtab, however, until the Adapter has been saved in the Adapter Details/Configuration screen. Then close the Adapter and re-open it in the Workbench.

To create a Validation:

1. Select the Normal Validation or Error Validation subtab, as appropriate for the Command.
2. Click on the **Create** button.

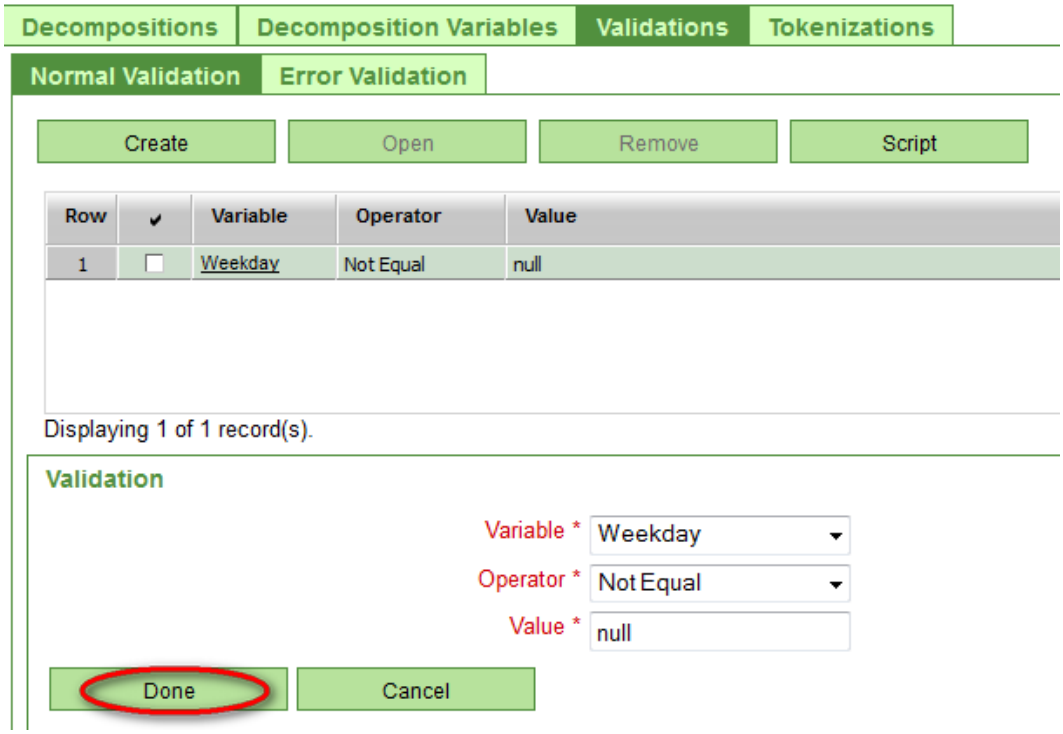


3. A new panel labeled 'Validation' will appear. Fill out the fields as required. Table 44 below provides a summary of the fields used to define a Validation.

LABEL	DESCRIPTION
Variable	A drop-down list of possible variables to validate. Default options are: • command – internal variable • protocol – internal variable • any parameters defined in the Decompositions subtab
Operator	Indicates the type of operation to perform on the selected Variable: • Equal • Not Equal • Match 'Equal' and 'Not Equal' are used for string comparisons, while 'Match' is used for regular expression evaluation.
Value	The value to which the selected Variable is compared in the Validation. For example, Variable 'Weekday' is Not Equal to null.

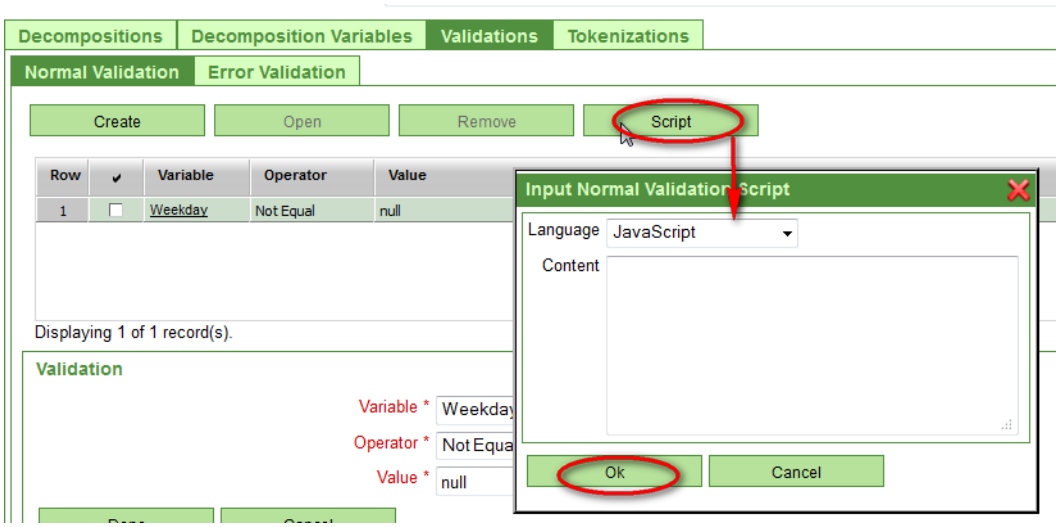
Table 41 Validation fields for Access Command

4. Click on the **Done** button.



The Validation will now be listed on the Validations subtab in the appropriate subsection.

5. Repeat the above steps for any additional validation operations to be performed on other variables.
6. If more advanced validation operations are desired, click on the **Script** button. Select the desired script Language and input the script commands to execute on the Variables in the 'Content' field. Click **Ok** to close the window.



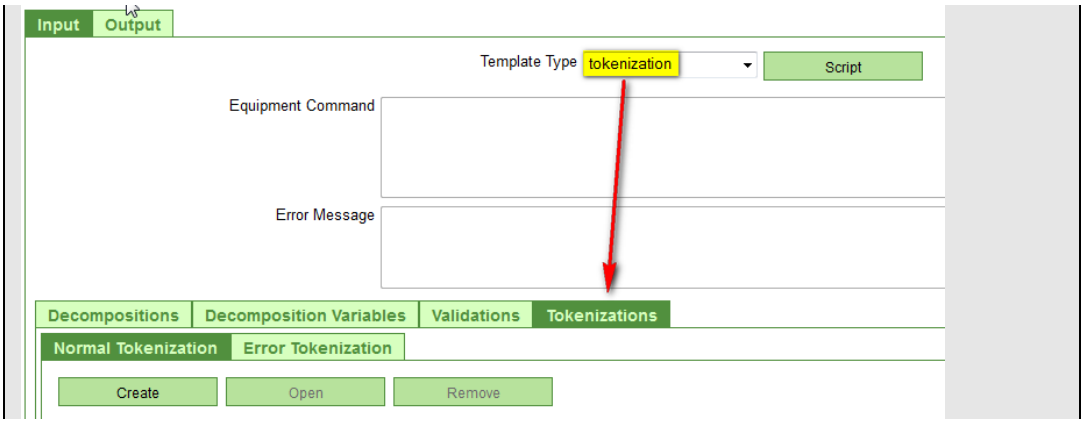
NOTE: Any Script provided on the Validations subtab will be executed before the actual Equipment Command is executed.

7. When you have finished configuring the Validations, navigate to the Adapter Details/Configuration screen and click on the Save icon in the top right corner.

6.7.1.2.5. Tokenizations subtab

Tokenization is the process of decomposing a text string into individual tokens that match a particular pattern. It is used for Commands where the desired result can be generated based on various portions of the Equipment Command or Response. The parsed tokens can then be combined to formulate the desired output to the user.

NOTE: Before configuring Tokenizations for a Command, verify that the 'tokenization' Template Type has been selected on the Command's Input or Output tab, as appropriate.

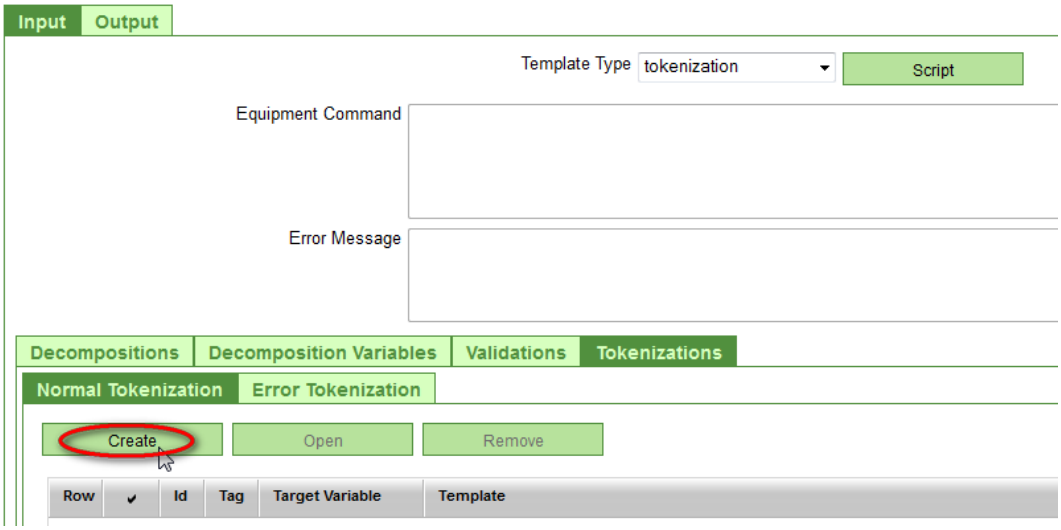


Two subsections are provided:

- Normal Tokenization – this is the process of parsing the Equipment Command or Response, looking for specific tokens. This is performed if no errors are found during Error Tokenization.
- Error Tokenization – this is the process of looking for error-related data. It is performed first; if unsuccessful, Normal Tokenization is then performed.

To create a Tokenization:

1. Select the Normal Tokenization or Error Tokenization subtab, as appropriate for the Command.
2. Click on the **Create** button.



3. A new panel labeled 'Tokenization' will appear. Fill out the fields as required. Table 44 below provides a summary of the fields used to define a Tokenization.

LABEL	DESCRIPTION
Id	Unique identifier for a Tokenization.

Tag	Indicates an XML tag name for the Tokenization. It is used to generate an XML tag to wrap around the token value.
Target Variable	This field refers to the Decomposition or Decomposition Variable to be examined for tokens.
Template	This field defines the XML template for generating a result string. It should contain the tokens from the current Tokenization as well as any Decomposition or Decomposition Variables. Tokens and variables are encoded within the template by enclosing them within {} brackets.

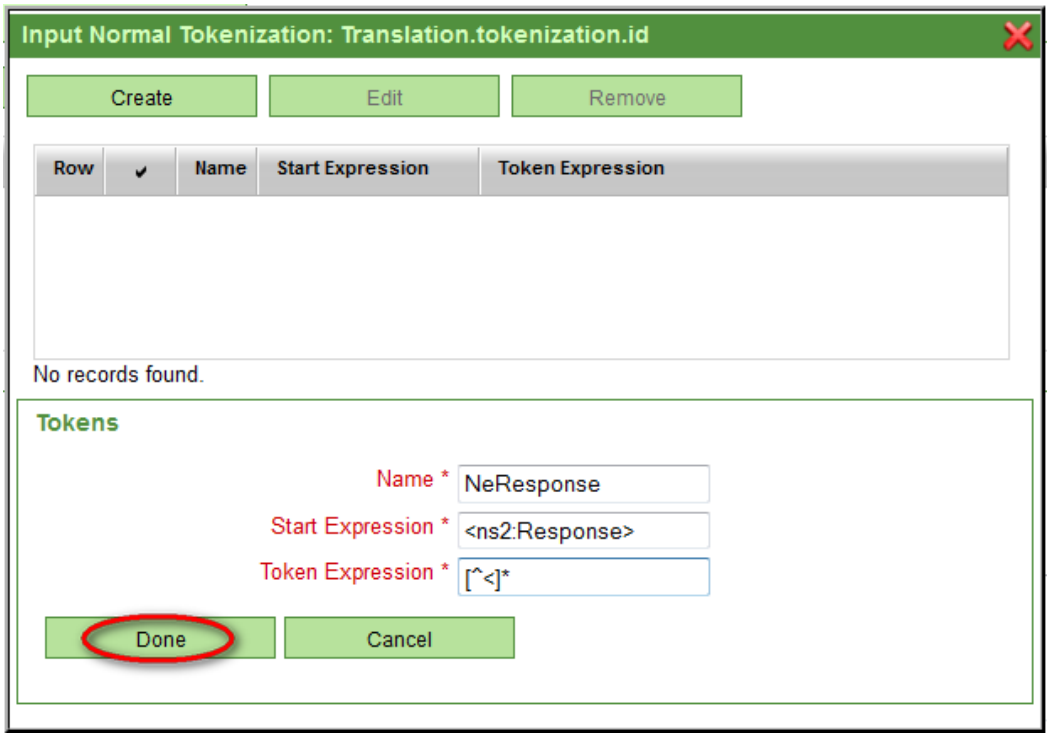
Table 42 Tokenization fields for Access Command

4. Click on the **Tokens…** button beside the Target Variable field to define which tokens to parse for.
5. In the Input Tokenization window, click on the **Create** button. A panel labeled 'Tokens' will appear. Fill out the fields as required. Table 43 below provides a summary of the fields used to define a Token.

LABEL	DESCRIPTION
Name	Unique name for the Token.
Start Expression	Indicates the starting regular expression to locate the characters that immediately precede the target token value.
Token Expression	Indicates the regular expression to capture the characters that constitute the Token.

Table 43 Token fields for Access Command

5. Click on the **Done** button.



The Tokenization will now be listed on the Tokenizations subtab in the appropriate subsection.

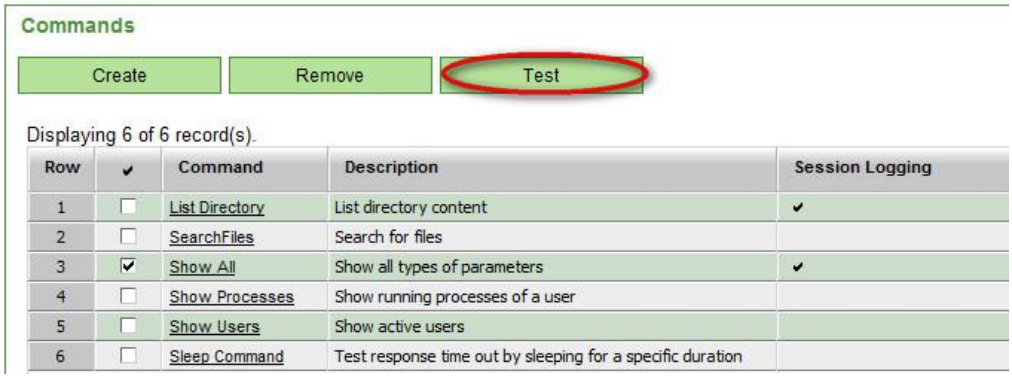
6. Repeat the above steps for any additional Tokenizations to be performed on other variables.
7. When you have finished configuring the Tokenizations, navigate to the Adapter Details/Configuration screen and click on the Save icon in the top right corner.

6.7.1.3. Test an Access Adapter Command

Once an Access Adapter has been configured with Commands, the Commands should be tested for proper operation before the Access Adapter is installed in the application.

To test an Access Adapter Command:

1. Open the Details/Configuration screen of the Access Adapter to be tested. In the 'Commands' panel, select the Command and click the **Test** button.



2. The **Test Adapter Command** window will open. For the 'Network Element' field, use the selection icon to select an existing Network Element from NETPortal.
3. Specify the Host and Port for command execution.
4. Click on the **Execute** button to test the command. Device responses will be displayed in the 'Dialog' panel.

   If an Adapter performs all Commands as expected, it can be installed for use in NETPortal. Please refer to section 6.7.1.4 for more information.

6.7.1.4. Install an Access Adapter

When an Access Adapter is installed, it is removed from the list on the Adapter Workbench screen and appears in the **Configuration →Resources →NE Configuration** screen, which lists Adapters available for use in NETPortal.

NOTE: When an Access Adapter is installed, its Commands will be automatically added to NETPortal's **Security →Privileges** submodule (NE Commands tab) in the form of <node type>/<command> - <command description>. However, the privileges will not be enabled, and the new Commands cannot be utilized until a NETPortal Administrator grants the privileges to the appropriate User Group(s). Privileges for non-existent commands will be removed when an Access Adapter is installed from the Workbench.

For more information on how to assign privileges to User Groups, please refer to section 5.4.2.2.

To install an Access Adapter from the Workbench:

1. In the **Adapter Workbench** window, check the row of the adapter you wish to install.
2. Click on the **Install** button.

3. A confirmation message will appear if installation was successful.

6.7.1.5. Copy an existing Access Adapter

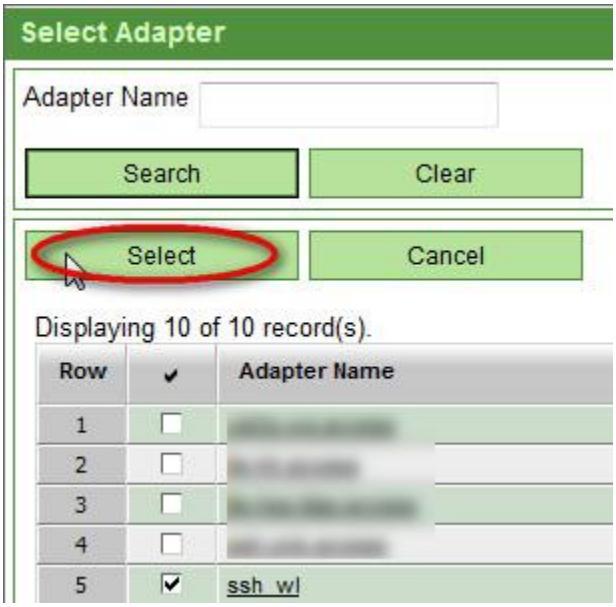
Existing Access adapters can be copied and modified to provide new functionality. When the **Copy** button is selected, the **Select Adapter** window opens with a list of adapters already installed in

NETPortal. The selected adapter information is displayed in a new window to allow changes to the Name, Type and ID before it is saved in the Workbench. The adapter can be saved in the Workbench with the same name or with a new name.

Access adapter file names and versioning information should be defined with sufficient information to allow differentiation between similar adapters.

1. Select **Configuration → Workbench → Access** from NETPortal's main menu on the left side of the screen.
2. Click on the **Copy** button. The **Select Adapter** window will open with a list of adapters already installed in NETPortal.

3. Choose the desired adapter to copy and click **Select**.



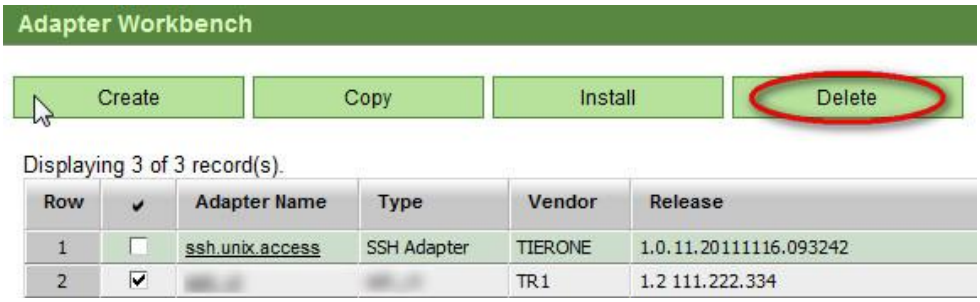
4. A 'Save As' window appears where the Adapter Name and Node ID parameters can be modified.
5. Click on **OK**. A confirmation window will appear indicating that the adapter was successfully copied.

The copied adapter can then be configured in the same manner as a new adapter. For more information, please refer to section 6.7.1.1.

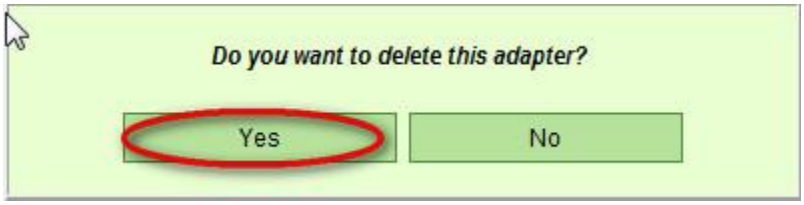
6.7.1.6. Delete an Access adapter

The **Delete** button can be used to remove an adapter from the Workbench before it has been installed in NETPortal. Any changes made to the adapter will be permanently lost. A confirmation dialog is presented to prevent accidental deletion of adapters from the Workbench.

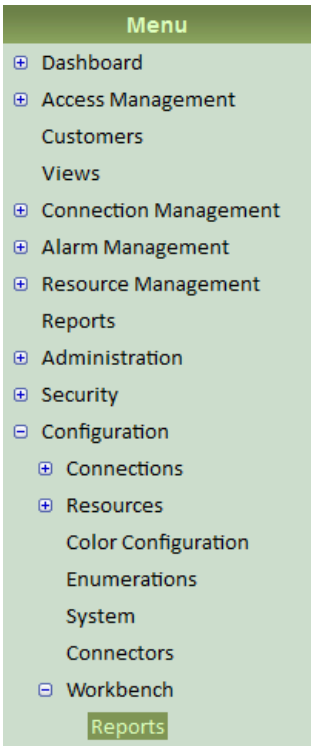
1. Select **Configuration → Workbench → Access** from NETPortal's main menu on the left side of the screen.
2. Check the row of the adapter you wish to delete and click the **Delete** button.



3. Confirm deletion by clicking **Yes**.



6.7.2. Reports



The Reports area of the Workbench can be used to create, modify and delete NETPortal Report Definitions from templates provided with the system.

A Report Definition defines the content of a report in terms of information retrieved from and reported in NETPortal. The Report Definition uses templates generated with the open-source Jaspersoft iReport tool to lay out report contents based on NETPortal objects.

For more information on how to install and use Jaspersoft iReport, please refer to the Jasper website at http://jasperforge.org/projects/ireport.

One or more reports can be created from a single Report Definition by applying the Report Definition against different NETPortal objects (for example: one Availability Report for Facilities and one Availability Report for Circuits).

Report output cannot be generated from a Report Definition without a set of objects to report on.

When multiple reports refer to the same Report Definition, the design and layout will be similar. For example, a Network Element Report Definition may be used to create different reports based on Location. The reports will share the same format and layout but will contain data appropriate to the Location selected.

For every custom Report Definition created, a default report with the same name as the Report Definition is automatically created on the **Reports** tab of the Report Definition's Details/Configuration screen. This feature allows report designers to quickly test and debug the Report Definition.

NOTE: Built-in reports cannot be created, modified or deleted. However, their templates can be downloaded and modified to create custom Report Definitions. Built-in reports can also be disabled to prevent users from running unauthorized reports.

To access existing Report Definitions in NETPortal, click on **Configuration → Workbench → Reports** in NETPortal's main menu on the left side of the screen. The **Find Reports** screen lists current Report Definitions for use with NETPortal.

6.7.2.1. Create a Report Definition

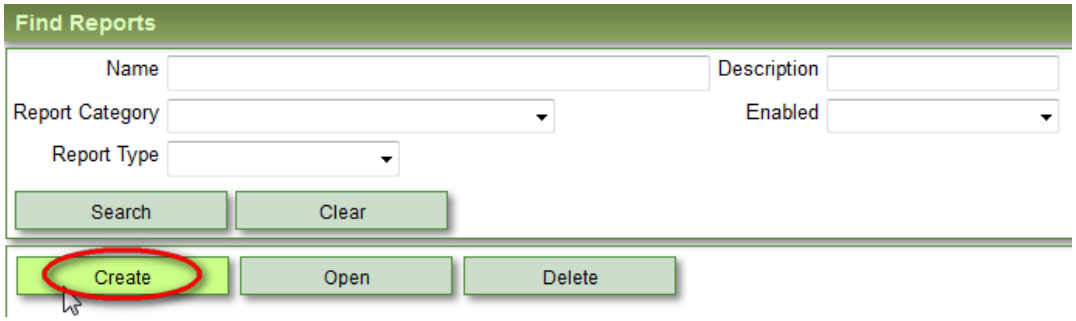
Report Definitions are created from one or more templates designed with the Jaspersoft iReport software. Existing templates in NETPortal may be downloaded and then modified with Jaspersoft iReport to develop a customized layout. After the templates have been successfully previewed in iReport, they must be uploaded and registered in NETPortal.

The Reports Workbench supports the concept of sub-reports that can be called from master reports. This is necessary in order to report data in sub-grouping hierarchies. As a result, multiple templates may be included for a single Report Definition.

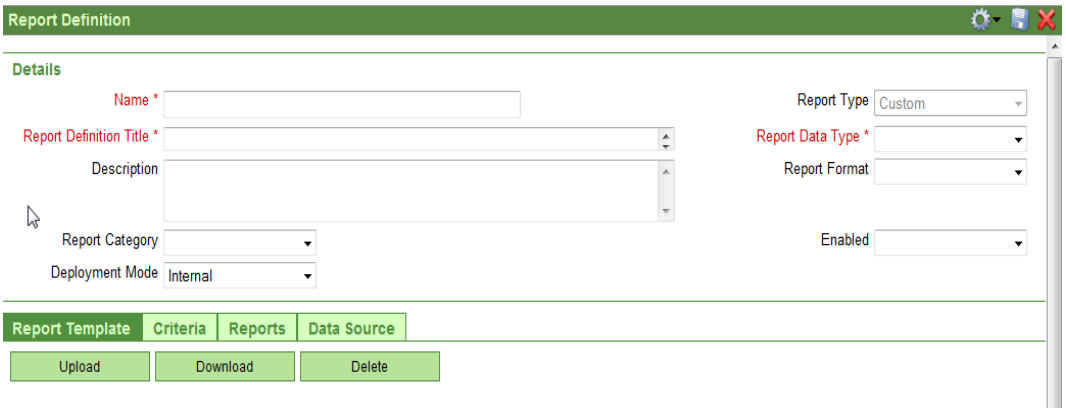
NOTE: When creating a new Report Definition, the master Report Template **MUST** have the same name as the Report Definition.

To create a new Report Definition:

1. In the **Find Reports** screen, click on the **Create** button.



2. In the **Report Definition** screen, fill out the required fields in the Details panel.



3. Use the **Report Template**, **Criteria**, **Reports** and **Data Source** tabs to configure the Report Definition in more detail. Please refer to sections 6.7.2.1.1- 0 below for more information.

4. Ensure that the Privilege for the new Report is enabled for the relevant User Group(s) who will be running the Report. Please refer to section 5.4.2.2 for more information on User Group privileges. For more information on how to run a Report, please refer to the ***NETPortal User Guide – Inventory Management***.

NOTE: NETPortal automatically creates a Privilege for each new Report in the **Security → Privileges** submodule. Once the Privilege is assigned to a User Group, users may need to log out and log in again for the new Privilege to take effect.

Table 44 below summarizes the fields provided in the 'Details' panel.

LABEL	DESCRIPTION
Name	The name applied to the Report Definition in NETPortal.
Report Type	'Built-in' or 'Custom' (*read-only*). This field is automatically populated by NETPortal. Only custom reports can be created, modified, or deleted in NETPortal.
Report Definition Title	The title to be printed at the head of the report.
Report Data Type	The type of data that will be handled in this report. The value selected for this field determines which criteria are available for filtering the Report data. For more information on report criteria, please refer to section 6.7.2.1.2. Report Data Type options include: • AS Number Pools • Audit Log • Availability • Circuits • Customers • ELANs • ELINEs • ETREEs • Facilities • IP Address Pools • Links • Locations • Multipoints • Network Elements • Networks • Number Pools • Route Distinguisher Pools • Route Target Pools • VLAN Pools • VPNs
Description	A brief description of the purpose of the report.
Report Format	The format in which the report will be created: • PDF • HTML • EXCEL
Report Category	This drop-down list is generated from the 'report.category' Enumeration defined in the **Configuration → Enumerations** submodule. Default entries are:

	• Access • Connectivity • Capacity • Reconciliation For more information on Enumerations, please refer to section 6.5.
Enabled	This flag controls the status of the Report Definition and execution of the related default report. • No • Yes This field can be set to 'No' to prevent users from running built-in reports that are no longer required, if desired.
Deployment Mode	The deployment mode determines whether the report is executed internally within the NETPortal server or externally through a report server. • **Internal** • External The External mode should be used if data is being processed by another system for the report. If an Internal report is using NETPortal's ESI Web Service API, please refer to the NOTE below for more information.

Table 44 Report Workbench Details panel

NOTE: If an Internal report is using NETPortal's ESI Web Service API to make web-service calls, the following conditions should be met:

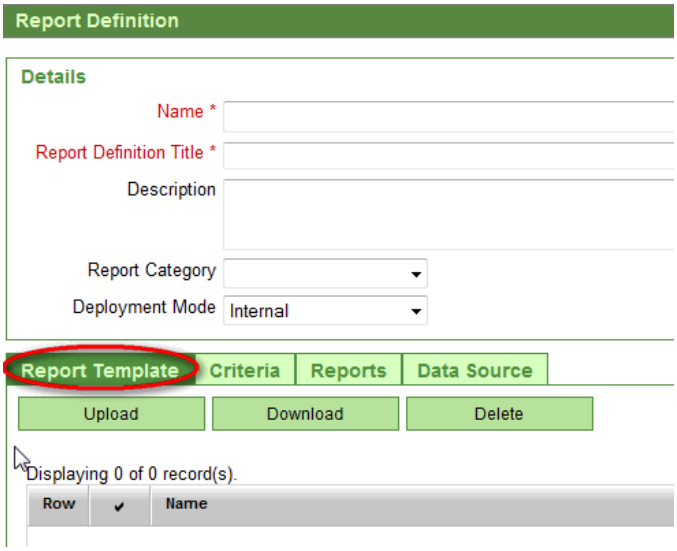
- The Jaspersoft iReport designer must be configured to use the following .jar files received with the NETPortal installation files: reports/TNPReportBridge.jar
- lib/tnp.interface.jar

The above .jar files must be specified in the Classpath tab under the Tools → Options menu of the iReport tool. Please refer to the relevant iReport documentation for more information.

- The Jaspersoft iReport designer must be configured to use the following Report parameters in order to make use of NETPortal's ESI API:
  - WS_HOLDER – Object class: javax.xml.ws.Holder
  - TNPNML – Object class: com.tieroneoss.tnpnml.TnpNML

For more information on how to configure Report parameters in iReport, please refer to the relevant iReport documentation.

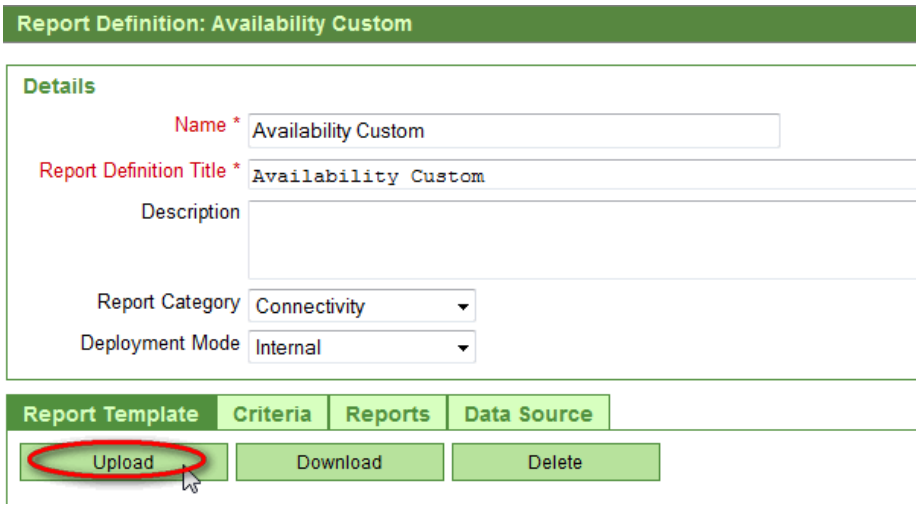
6.7.2.1.1. Report Template tab



New Report Definitions may be created using Report Templates created with the iReport tool from Jaspersoft, or from modified copies of existing templates you have already downloaded to a directory on your computer. Existing Report Templates can be modified with the help of code generated in the **Data Source** tab. Please refer to section 0 for more information.

NOTE: At this time, Jaspersoft iReport is the only supported software tool for creating or modifying Report Templates.

Use the **Upload** button on the Report Template tab to upload a Jaspersoft iReport file from your computer to NETPortal.



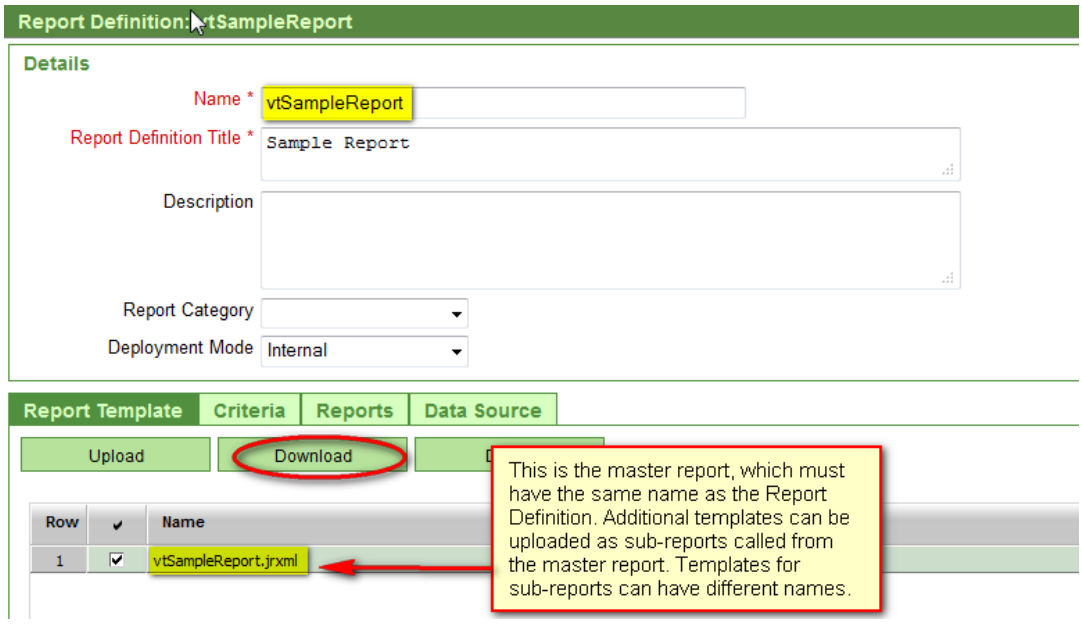
LABEL	DESCRIPTION
Upload	Uploads a custom Report Template file from a source directory. Report Templates cannot be uploaded for built-in reports.
Download	Downloads one or more Report Template files to a target directory for editing with Jasper iReports. Multiple templates are combined into a ZIP file.
Delete	Deletes the selected custom Report Template from the current Report Definition. Built-in Report Templates cannot be uploaded or deleted.

Table 45 Report Templates buttons

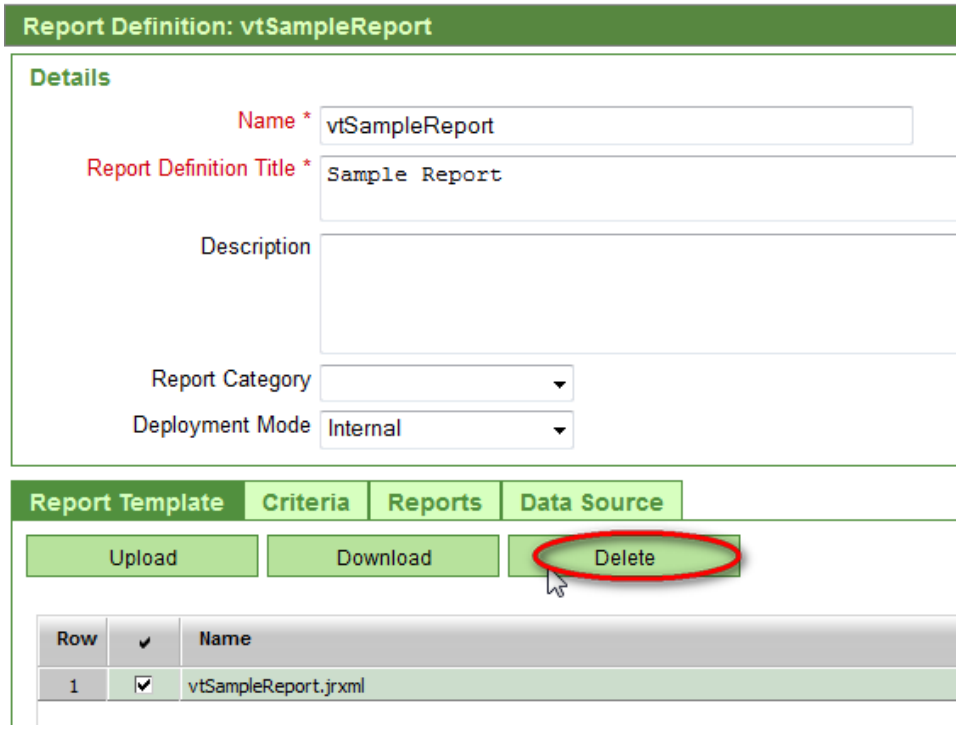
More than one Report Template can be uploaded to the **Report Template** tab in order to create master-detail reports or sub-reports. Templates are listed by name in the panel.

After a custom Report Template has been uploaded, it can be downloaded later on and modified for use in defining other Reports. Select a Report Template and click the **Download** button to download and modify a Report Template on your computer.

NOTE: If a master Report Template is modified, it **MUST** have the same name as the Report Definition when it is later uploaded to the Report Definition. Sub-reports that are called from the master report do not need to have the same name as the Report Definition.

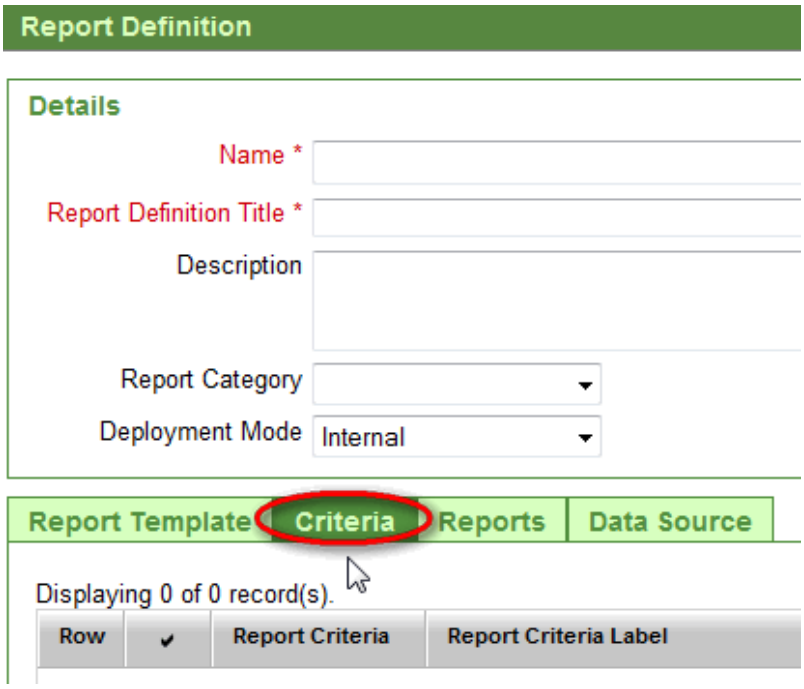


When a custom Report Template is no longer required, it may be removed from the system by selecting the Report Template from the list and clicking on the **Delete** button.



NOTE: The **Delete** button only applies to custom reports. Built-in Report Definitions cannot be deleted from the application.

6.7.2.1.2. **Criteria tab**



When a Report Definition is created, parameters relating to the report objects are listed in the Criteria tab. The options listed on the Criteria tab depend on the value selected from the 'Report Data Type' drop-down list in the Report Definition's 'Details' panel.

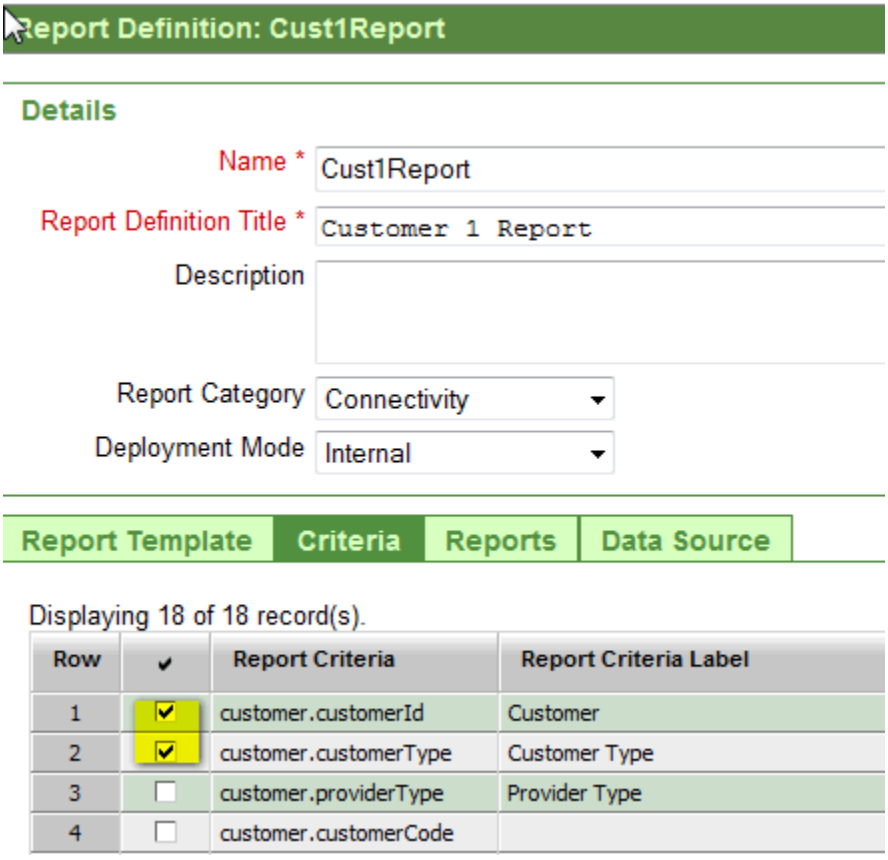
The criteria are used as search fields in the object selection window when the report is run. For example, when a user selects and runs a report from NETPortal's **Reports** module, a selection window opens where the user can specify criteria, select objects, and then execute the report. The criteria that are used in the selection window while running a report can be customized by selecting values on the **Criteria** tab of the Report Definition.

LABEL	DESCRIPTION
Report Criteria	Criteria defined for this type of report.
Report Criteria Label	Label displayed in the report for this selection.

Table 46 Report Workbench Criteria

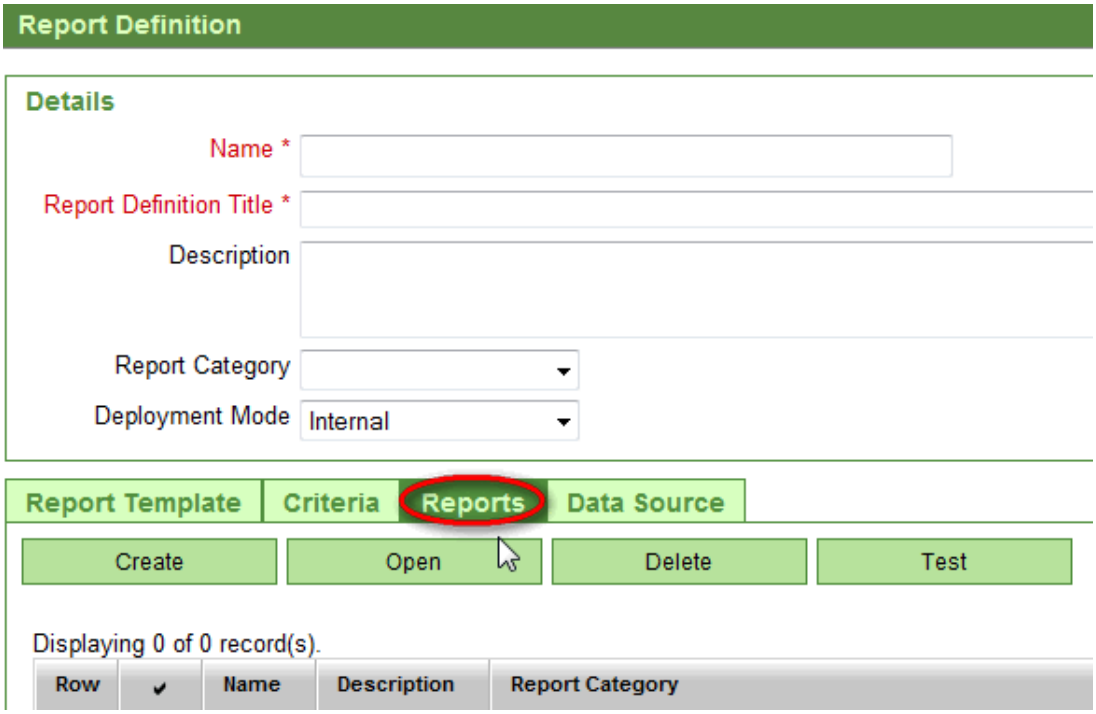
To select criteria to be used as report parameters:

1. On the **Criteria** tab of the open Report Definition, select the desired report criteria. More than one selection is possible.



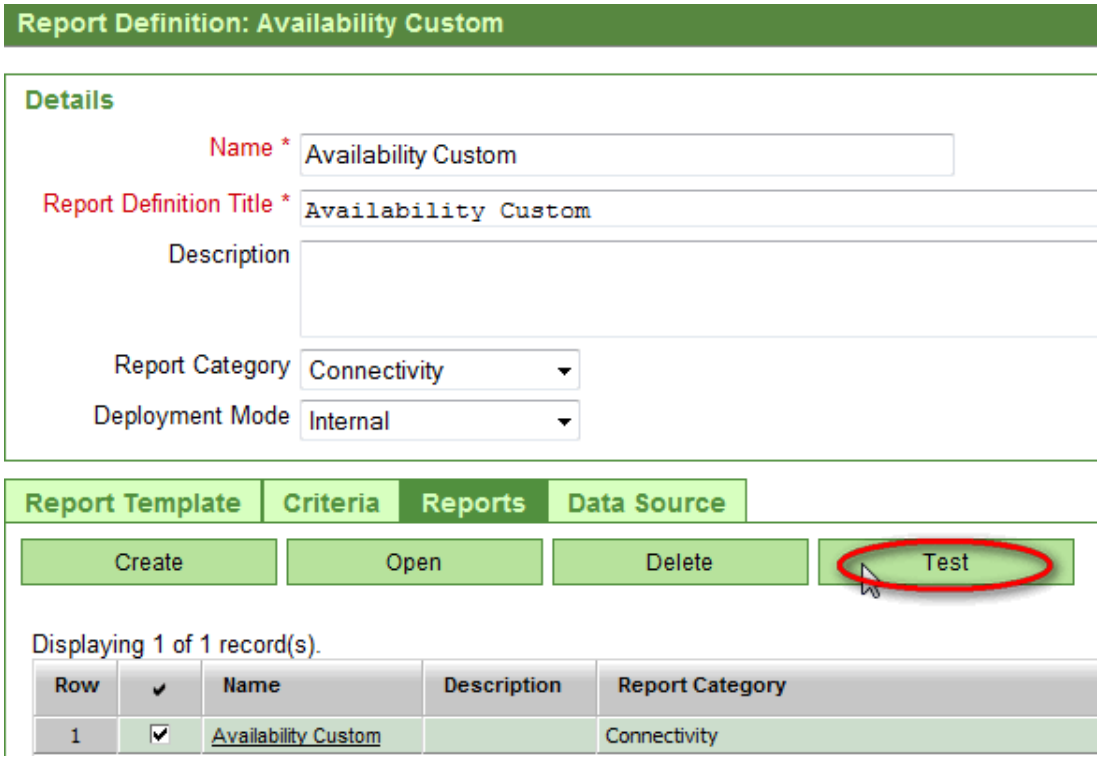
2. Click on the **Save** icon in the upper right corner of the screen.

6.7.2.1.3. **Reports tab**



When a Report Definition is created, a default report having the same name as the Report Definition is automatically added to the **Reports** tab. Its layout is determined by the template(s) defined on the **Report Template** tab.

New reports based on the current Report Definition may be created, or existing reports can be modified or deleted by using the appropriate buttons on this tab. After changes have been completed and saved, a new report may be tested by selecting the report in the grid and clicking on the **Test** button.



LABEL	DESCRIPTION
Create	Creates a report based on the current Report Template(s) specified on the **Report Template** tab.
Open	Opens the selected report for editing.
Delete	Deletes the selected report, provided that it is not the default report for a Report Definition.
Test	Executes the selected report based on the defined template(s) and criteria.

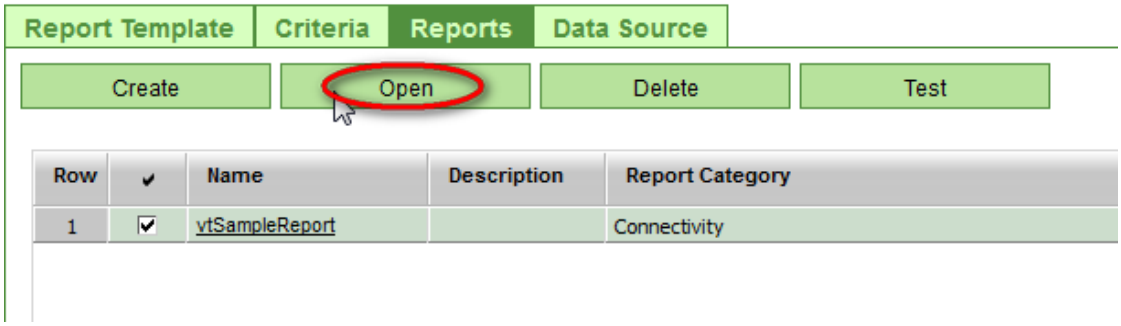
Table 47 Report Workbench: Report panel buttons

All reports based on the current Report Definition are listed on this tab.

LABEL	DESCRIPTION
Name	Name assigned to the report.
Description	Report description.
Report Category	Category selected when the Report Definition was created.

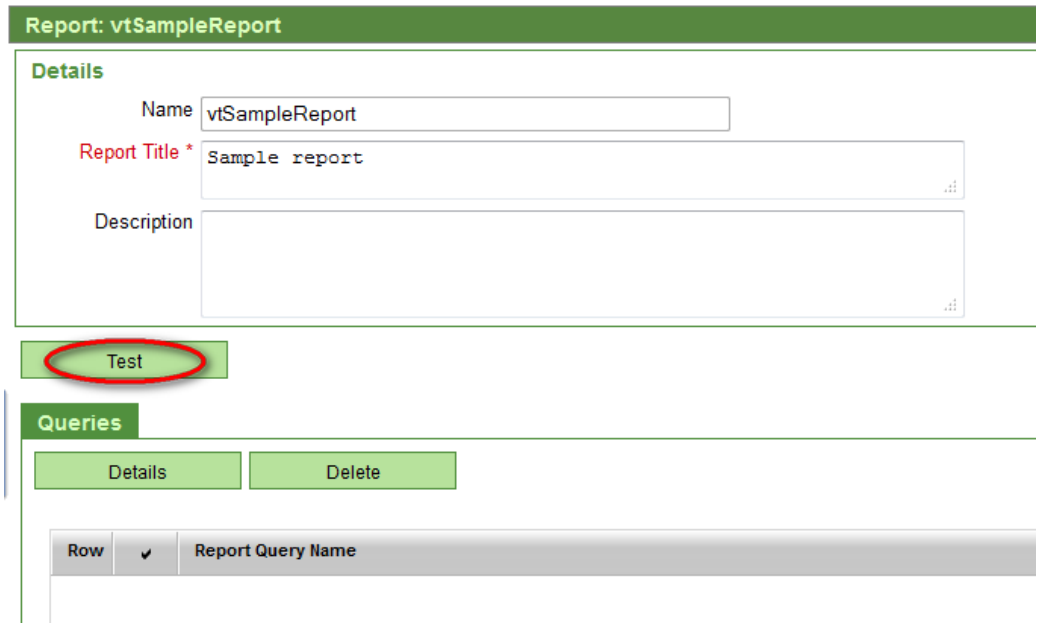
Table 48 Report Workbench: report list

An individual report can also be opened from this tab by selecting the report and clicking on the **Open** button, or by simply clicking on the report's Name.

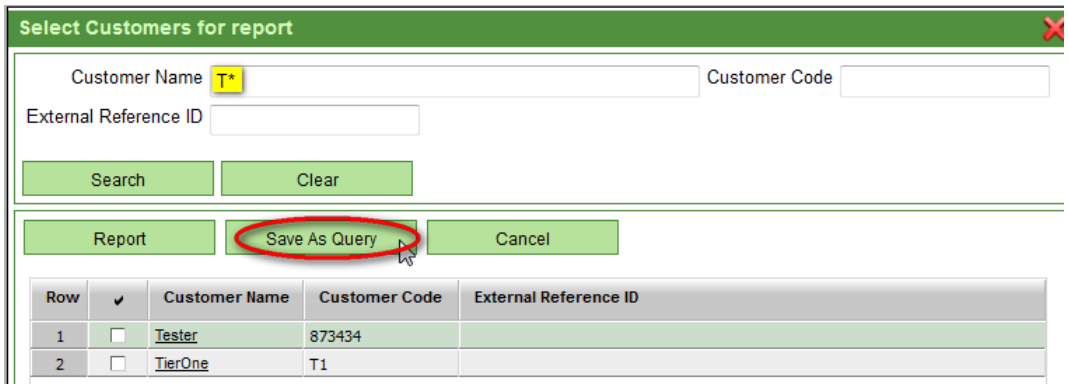


From this screen, Queries can be created and saved for the report to make use of frequently used search queries. To test a report with a query:

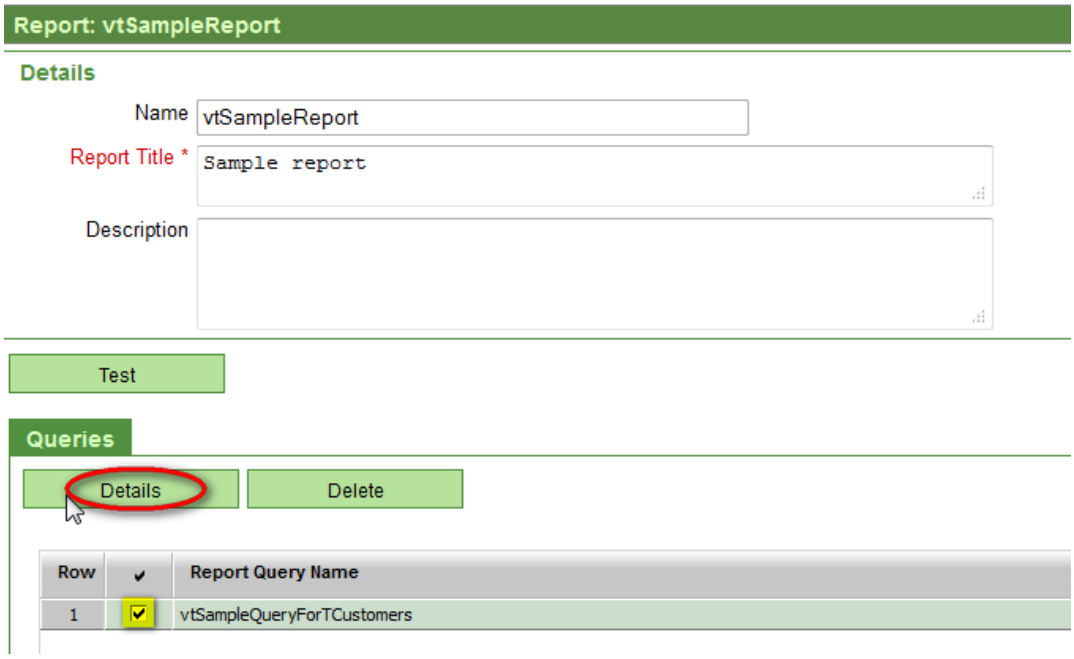
1. Click on the **Test** button.



2. In the object selection window, enter the desired query for the report criteria and click on the **Save As Query** button.



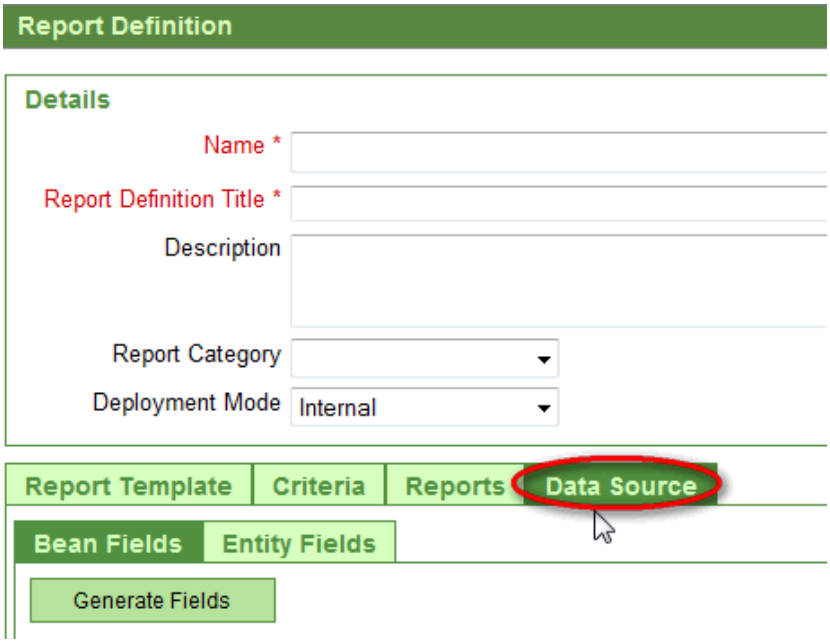
3. Enter a name for the report query and click the **Save** button. The query will be listed in the 'Queries' panel of the open report.
4. To test-run the report with the saved query, select the query from the 'Queries' tab and click on the **Details** button.



5. Click the **Search** button to list all objects based on the saved query. Then select the desired objects and click the **Report** button.

NOTE: Both the report and the Report Definition must be enabled to test-run a report.

6.7.2.1.4. Data Source tab



NETPortal parameters that can be referenced in the report template are listed in the **Data Source** tab. This tab represents a helpful tool for generating XML fragments which can be copied into a Jasper iReport file before it is uploaded to the **Report Template** tab. NETPortal's report engine accesses data in NETPortal via the Java Bean API or from database tables and queries.

LABEL	DESCRIPTION
Bean Fields	Generated from Java APIs. One advantage of Bean Fields is that they are Java objects which allow more complex Field Types to be used.
Entity Fields	Generated from XML and Metadata files. One advantage of Entity Fields is that Field Labels are captured.

Table 49 Report Workbench Data Sources

LABEL	DESCRIPTION
Field Name	Name of the field.
Field Type	Java type.

Table 50 Report Workbench: Bean Fields

LABEL	DESCRIPTION
Field Name	Name of the field.

Field Label	Label displayed in the report.
Field Type	Type of field (integer, string, timestamp).
Field Length	Field length.

Table 51 Report Workbench: Entity Fields

The **Generate Fields** button, which is common to both tabs, creates a formatted listing of fields which can be conveniently copied into the Jasper iReport editor for use in a Report Template. For more information on Jasper iReport, please refer to the Jasper website at http://jasperforge.org/projects/ireport.

6.7.3. Package

6.7.3.1. Overview

The Package area of the Workbench is used to create, modify, copy and install customized screen Packages with user-defined functionality. A Package consists of four main components:

- Metadata content in XML format
- A set of custom Privileges
- A set of custom Workflows
- A set of Scripts

These components are developed using a combination of XML and Java code and help to define the graphical layout of the screen, as well as the related privileges and functions that make the screen accessible and interactive. For more information on each component, please refer to the following sections.

Once a Package is finished being developed, it can be installed for use with NETPortal, or copied and modified to facilitate the development of other Packages.

The **Package Workbench** screen lists Packages that have been created but not yet installed in NETPortal.

NOTE: To view a list of custom Packages currently installed in NETPortal, navigate to the **Configuration → Customization → Packages** screen. Refer to section 6.8 for more information.

Import and Export buttons are provided to facilitate the transfer of Packages between development, testing, and production environments.

6.7.3.2. Create a Package

1. In the **Package Workbench** screen, click on the **Create** button.

The **Customization Package** window will open.

2. Enter the required information in the Details/Configuration screen. Table 52 below summarizes the fields used to define a Customization Package.

NOTE: The value entered for the 'Identifier' field must start with an underscore (_).

LABEL	DESCRIPTION
Name	User-defined name for the custom Package.
Installed	Yes/No. Read-only field automatically populated by NETPortal to indicate whether the Package has already been installed for use with NETPortal.
Description	User-defined description for the Package, briefly explaining its use or purpose.
Identifier	This is a prefix intended to give a Package a unique namespace. It must start with an underscore (_). The prefix is added to all items in the Package Metadata that require uniqueness (such as menu items or actions). Multiple Packages may have the same identifier, but only one of them may be installed at one time.
Version	User-managed version of the Package.

Table 52 Configuration → Package Workbench → Customization Package fields

3. Click on the **Save** icon in the top right corner of the screen.
4. Metadata, Privileges, Workflows and Scripts can now be added to configure the custom screen's layout and functionality. Please refer to the following sections for more information.

   Once a Package is fully configured, it can be installed for use with NETPortal, or copied and modified to facilitate the development of other Packages. For more information on how to install a Package, please refer to section 6.7.3.3. For more information on copying a Package, refer to section 6.7.3.4.

NOTE: On the **Package Workbench** screen, the Refresh icon may need to be used to see the new Package listed.

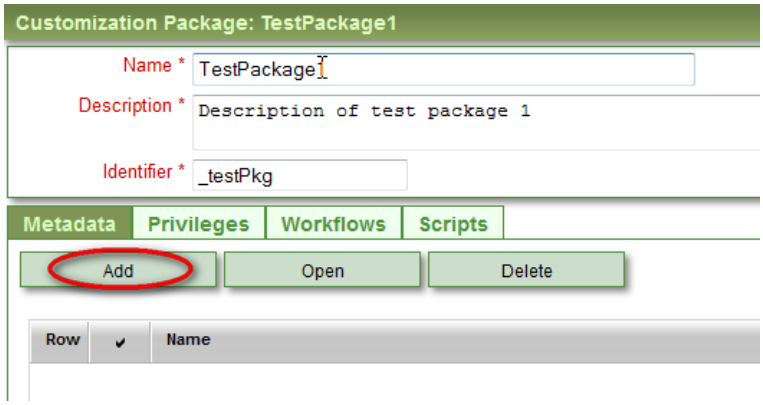
6.7.3.2.1. Metadata tab

A Package's Metadata describes the custom user interface or screen to be used in NETPortal.

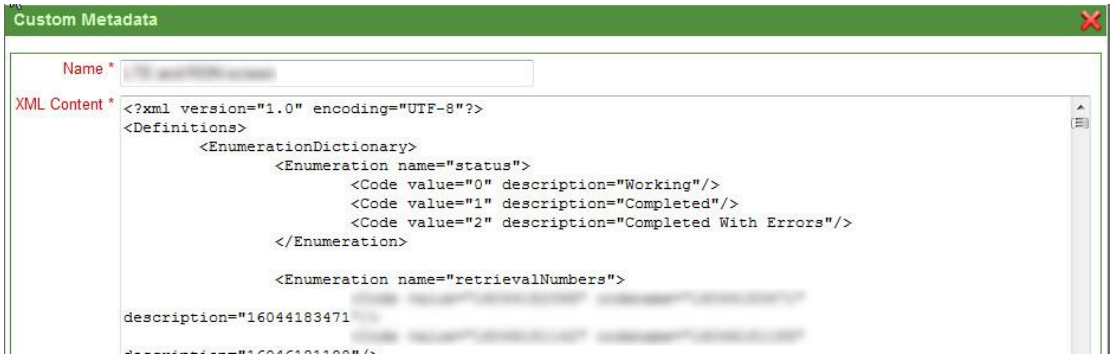
A Customization Package can consist of one or more custom screens. Each screen can have its own Metadata file. Alternatively, the XML content for multiple screens can be included in one Metadata file.

To add Metadata:

1. Click on the **Metadata** tab of an open Customization Package and select the **Add** button.



2. The **Custom Metadata** window opens where the Name and XML Content can be input.



NOTE: For more information on how to structure the XML Content, please refer to the customizationPackage-exportImport.xsd file included in the api\xsd directory of the received installation files or the ***NETPortal Custom Screens Development Guide***.

Some of the key information that should be included in the 'XML Content' field is listed below:

- ***Enumeration section***: contains values and descriptions for Enumerations used on the custom screen.
- ***Data Dictionary section***: describes the fields used on the custom screen in terms of their labels, data types, and names.
- ***Action Dictionary section***: describes the user-interface scripts that are referenced by buttons, fields and menu items on a custom form or screen.

- ***Menu Dictionary section***: adds a menu item to NETPortal's main navigation menu on the left side of the screen. The menu item is appended to the end of a module section in the navigation menu. The menu item can have a 'privileges' attribute assigned to it so that access to the custom screen can be restricted. If no privilege is defined, the menu item will always be visible.
- ***Record Dictionary***: represents a collection of data items that define the view of the custom screen.

3. After making the desired changes, click the **Ok** button.
4. Save the Customization Package by clicking on the **Save** icon in the top right corner of the screen.

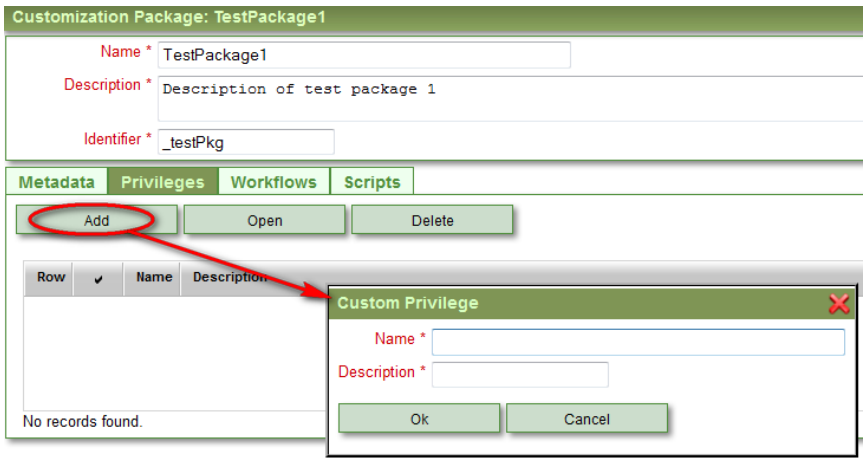
For information on how to modify or delete Metadata, please refer to section 3.5 on navigating the user interface.

6.7.3.2.2. Privileges tab

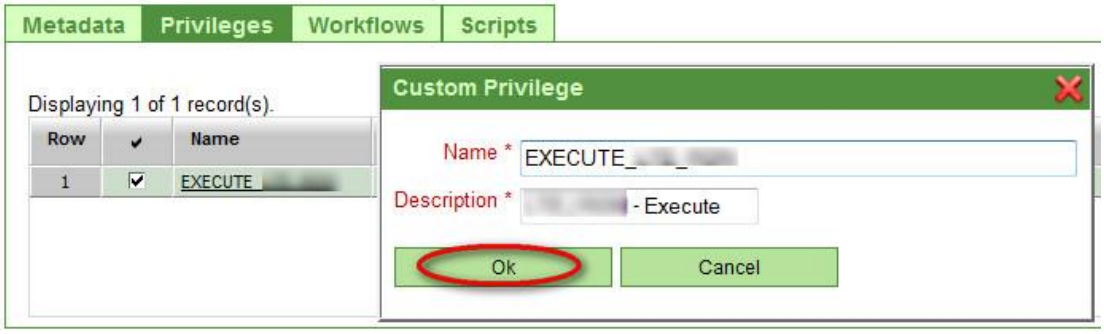
The **Privileges** tab is used to define custom privileges for a Customization Package so that access to the customized screen and its commands can be restricted, if necessary. The privileges defined on this tab are referenced in the Metadata XML file. Therefore, once the Name of a custom Privilege is saved, the Name field cannot be changed; otherwise, all references to the custom Privilege would have to be changed in the **Metadata** XML file as well. Once a Customization Package is installed, the Package's privileges are automatically added as options to the **Custom** tab of the **Security → Privileges** submodule as well as the **Custom** tab of a User Group's Privileges accessed through the **Security → User Groups** screen. The privileges are disabled, however, until a NETPortal Administrator assigns the custom privileges to the appropriate User Group(s).

To add a custom Privilege:

1. Click on the **Privileges** tab of an open Customization Package and select the **Add** button.



2. The **Custom Privilege** window opens where the Name and Description can be input. After making the desired changes, click the **Ok** button.



3. Save the Customization Package by clicking on the **Save** icon in the top right corner of the screen.

For information on how to modify or delete custom Privileges, please refer to section 3.5 on navigating the user interface.

6.7.3.2.3. Workflows tab

The user-interface scripts in the Metadata XML file of a Customization Package can invoke a custom Workflow that is defined on the **Workflows** tab. Workflows execute specific business processes as a user interacts with a customized screen.

NETPortal supports Activiti – a lightweight, flexible BPMN 2 process engine. Activiti comes with an Eclipse plugin, the Activiti Eclipse Designer, which can be used to graphically model, test and deploy BPMN 2.0 processes. The Workflows could specify service tasks to execute custom BeanShell or Groovy scripts. The custom scripts, in turn, could invoke functions in NETPortal's ESI Web Service. The custom scripts to be invoked by a Workflow should be provided on the **Scripts** tab of the Customization Package. Please refer to section 6.7.3.2.4 for more information on the **Scripts** tab.

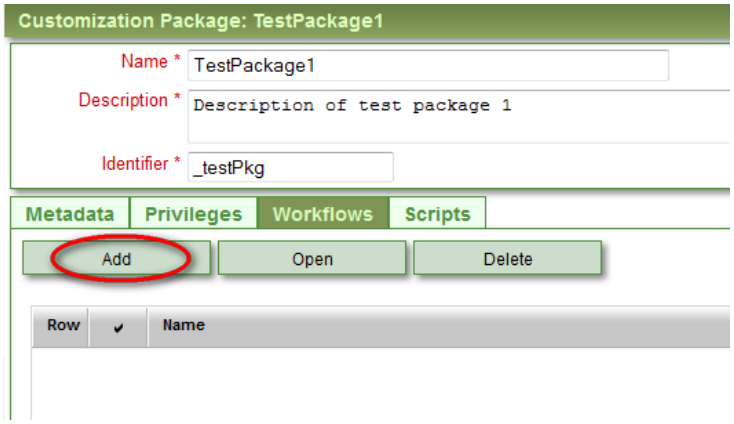
Using the Activiti Eclipse Designer, the BPMN 2 process could be built graphically, and the process definition XML could then be added to the Workflows tab of the Customization Package.

NOTE: For more information on Activiti, please refer to http://activiti.org/userguide/index.html.

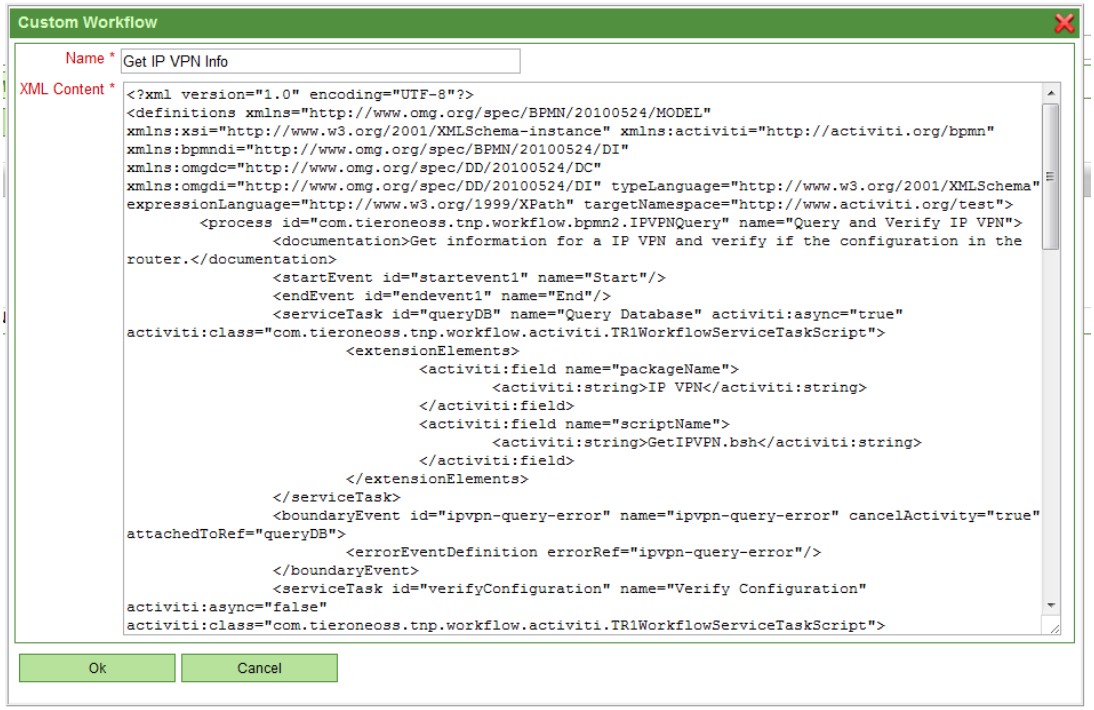
For documentation on Activiti Eclipse Designer, please refer to http://activiti.org/userguide/index.html#activitiDesigner.

To add a custom Workflow:

1. Click on the **Workflows** tab of an open Customization Package and select the **Add** button.



2. The **Custom Workflow** window opens where the Name and XML Content can be input or modified. The XML Content can be generated from the Activiti Eclipse Designer. After making the desired changes, click the **Ok** button.



4. Save the Customization Package by clicking on the **Save** icon in the top right corner of the screen.

NOTE: The Workflow XML file contains a <process> tag that specifies the ID of the process. When the workflow is invoked from the Metadata XML file, the process ID is used by NETPortal to determine which workflow to execute. Therefore, if the process ID is changed in the Workflow's XML content, the ID must also be modified in the Metadata's XML content to match.

NOTE: For more information on how to structure an example Workflow, please refer to the ***NETPortal Custom Screens Development Guide***.

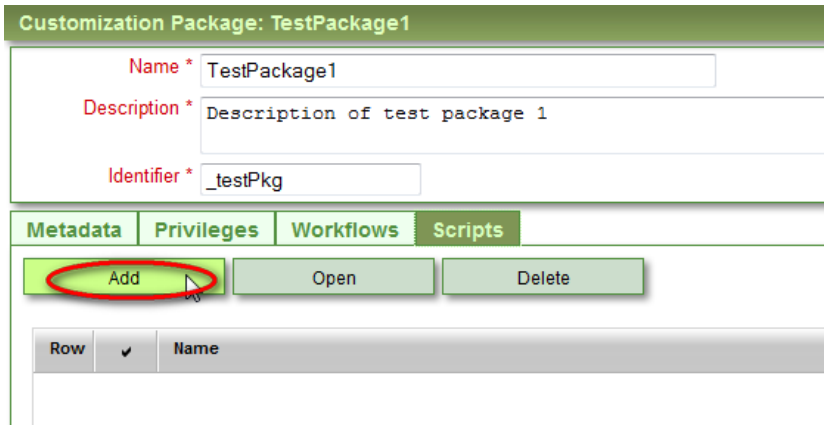
For information on how to modify or delete Workflows, please refer to section 3.5 on navigating the user interface.

6.7.3.2.4. Scripts tab

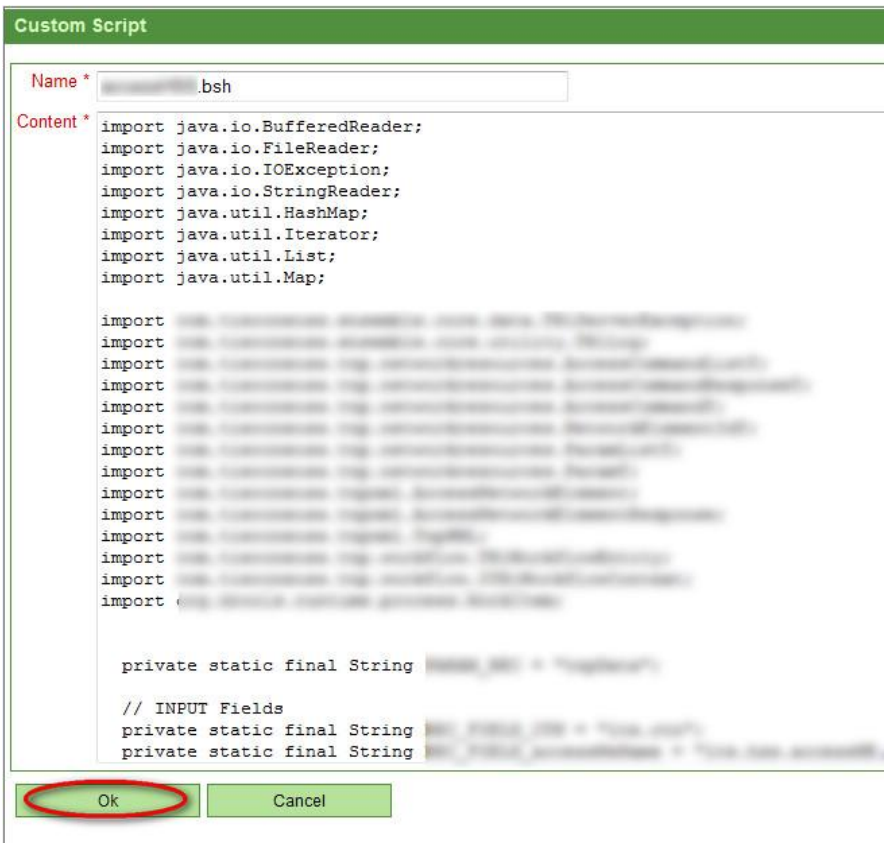
Workflows invoked by a customized screen could specify service tasks to execute custom BeanShell or Groovy scripts in a Customization Package. Each Script should be given a unique name and be saved with the Customization Package. Since the process definitions defined in the Workflow XML content call Scripts that are provided on the **Scripts** tab, please note that if the name of a Script is modified on the **Scripts** tab, references to that Script in the Workflow must also be modified to match.

To add a custom Script:

1. Click on the **Scripts** tab of an open Customization Package and select the **Add** button.



2. The **Custom Script** window opens where the Name and Content can be input. The Name is the name of the Script which must be unique among the Scripts within a Customization Package. The Content is the actual BeanShell or Groovy Script. After making the desired changes, click the **Ok** button.



3. Save the Customization Package by clicking on the **Save** icon in the top right corner of the screen.

NOTE: For more information on how to structure an example Script, please refer to the ***NETPortal Custom Screens Development Guide***.

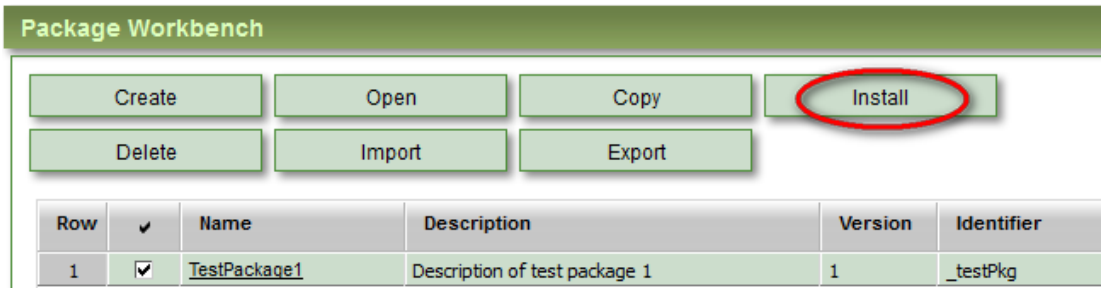
For information on how to modify or delete Scripts, please refer to section 3.5 on navigating the user interface.

6.7.3.3. Install a Package

Once a Customization Package is fully configured, it needs to be installed in order to have all Package components loaded into the NETPortal server(s) and to see the custom screens in action. No server restart is required. Once a Package is installed, it is no longer listed on the **Package Workbench** screen; instead, it will be listed on the **Installed Packages** screen of the **Customization → Packages** submodule.

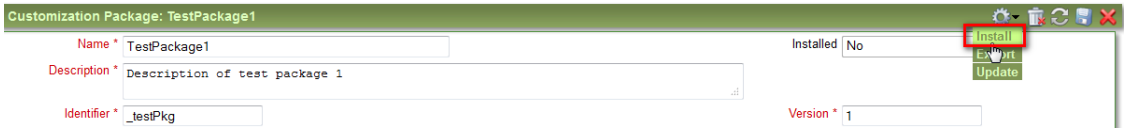
A Customization Package can be installed in one of two ways:

1. Select the Package object on the **Package Workbench** screen and click the **Install** button.



OR

2. Open the Details/Configuration screen of the Customization Package in the Package Workbench and select **Install** from the action menu in the top right corner.



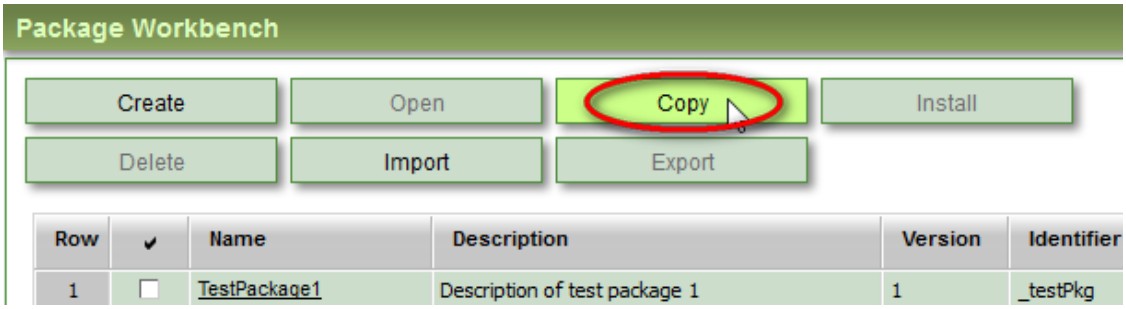
No server restart is required.

6.7.3.4. Copy a Package

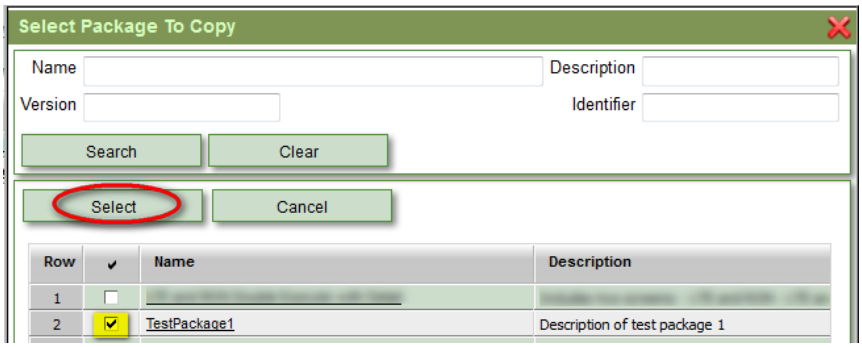
For convenience, Packages can be copied and modified to quickly create other Packages.

To copy a Package:

1. On the **Package Workbench** screen, click on the **Copy** button.



2. This opens the **Select Package To Copy** window. Use the search fields, if necessary, and click the **Search** button to list all Packages stored in the NETPortal database.
3. Choose the Package to copy and click the **Select** button.



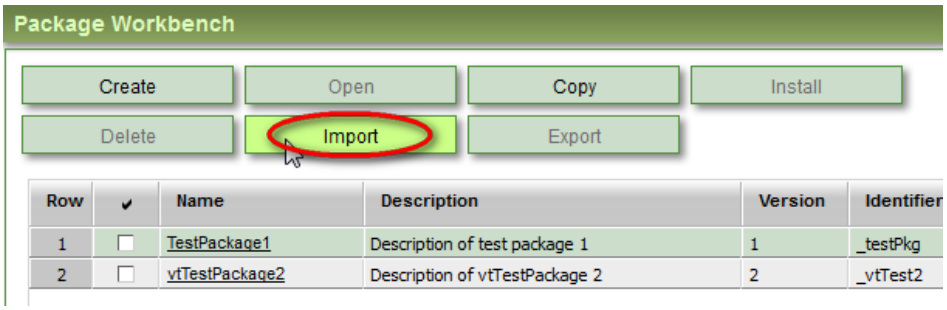
4. A copy of the selected Package will open in a new screen where the Details/Configuration can be modified and saved.

6.7.3.5. Import a Package

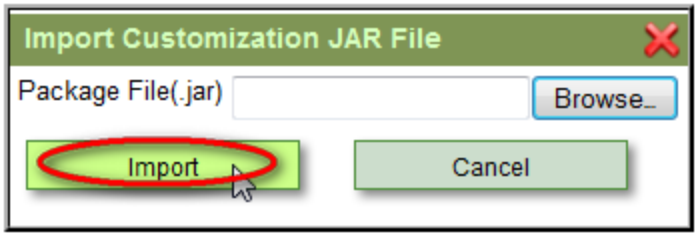
Packages can be conveniently imported from JAR files to assist in migrating custom screens from one environment to another.

To import a Package:

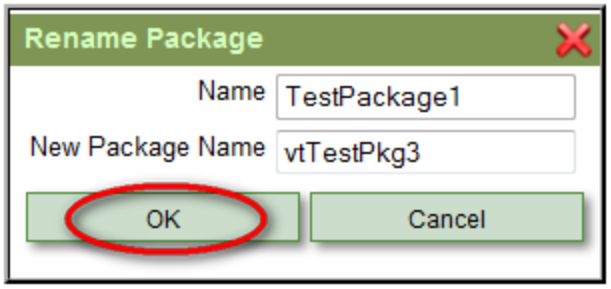
1. On the **Package Workbench** screen, click on the **Import** button.



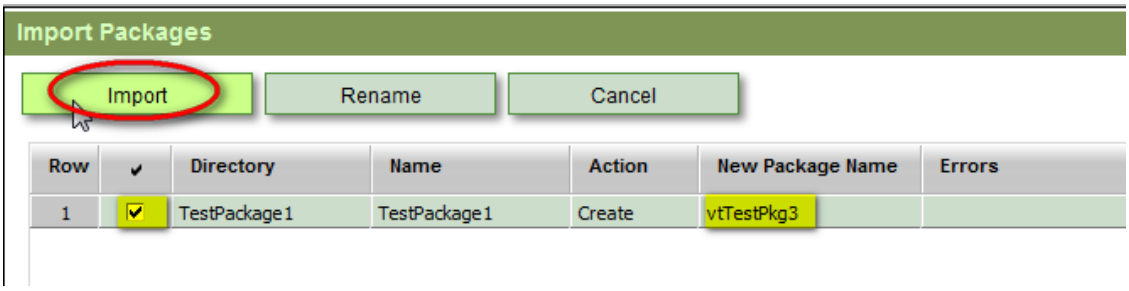
2. This opens the **Import Customization JAR File** pop-up window where the user can browse for and select a JAR file. Select the desired JAR file and click **Import**.



3. The **Import Packages** window will open, listing all Packages discovered inside the chosen JAR file. A Package can be renamed by selecting it and clicking the **Rename** button. Enter the New Package Name and click **OK**.



4. The **Import Packages** window will be updated to show the Package with the new Name. To import the renamed Package, select it and click **Import**.



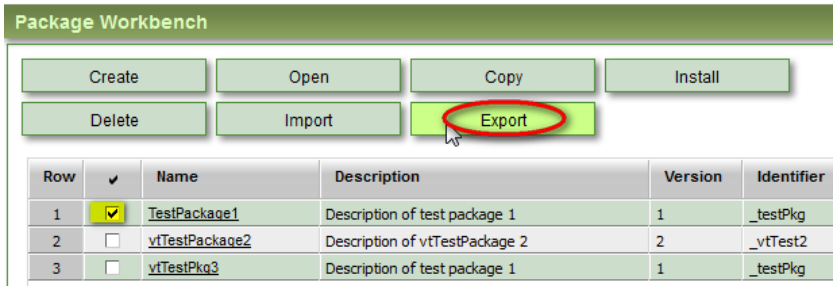
5. A confirmation message will appear and the imported Package will be listed on the **Package Workbench** screen.

6.7.3.6. Export a Package

Packages can be conveniently exported as JAR files to assist in migrating custom screens from one environment to another, e.g. for testing or production purposes.

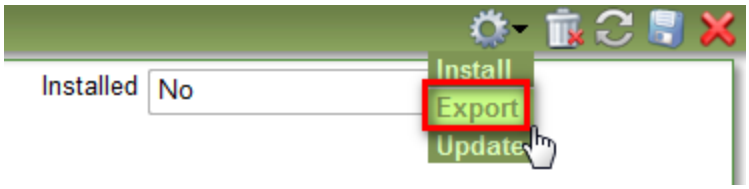
Packages can be exported in one of two ways:

1. Select the Package object on the **Package Workbench** screen and click the **Export** button.



OR

2. Open the Details/Configuration screen of the Customization Package in the Package Workbench and select **Export** from the action menu in the top right corner.

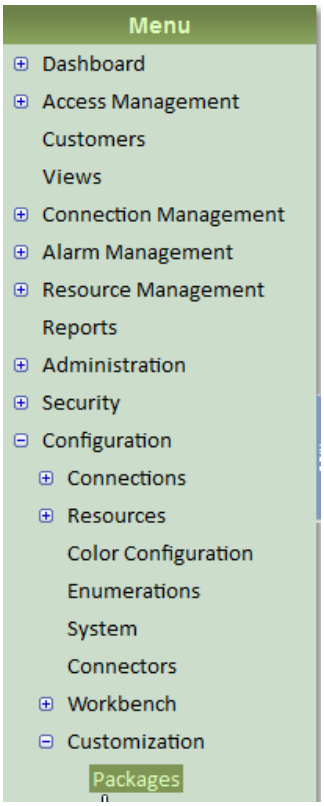


6.7.3.7. Action Menu Options

In the Customization Package Details/Configuration screen, the action menu becomes active with the following functions:

COMMAND	DESCRIPTION
Install/Uninstall	Loads or unloads the current Customization Package into or out of the main NETPortal server and propagates it to other servers as required. For more information, please refer to section 6.7.3.3.
Export	Creates a single JAR file containing all necessary Package components, which the user can save and later import into another environment, e.g. for testing or production purposes.
Update	Opens the **Import Customization JAR File** pop-up window where the user can browse for and select a JAR file with which to update the current Package. This feature is convenient in situations where a custom Package has been modified in one environment but not in another. The modified Package can be exported as a JAR file which can be used to update the Package in another environment. **NOTE:** The JAR file used for the update must contain only one Package. The name of the Package inside the JAR file does not need to match the name of the Package being updated. If the Package names are different, the updated Package will be renamed. **NOTE:** If the Package being updated is currently installed, the previous Package version will be uninstalled and the updated version will be installed. If the update includes changes to Metadata, the user may need to logout and login again to see the changes. If installation fails, the changes from the updated JAR file will be reverted.

6.8. Customization → Packages



6.8.1. Overview

The **Customization → Packages** submodule provides access to all custom Packages currently installed in NETPortal. Custom Packages are created and configured in the Package Workbench. For more information on the Package Workbench, please refer to section 6.7.3.

Once the custom Packages have been installed, they can be managed from the **Installed Packages** screen of the **Customization → Packages** submodule:

- Additional Packages can be installed.
- Currently installed Packages can be uninstalled, deleted, or exported as JAR files to migrate to other environments.

For information on how to install Packages, refer to section 6.8.3.

For more information on how to uninstall or export installed Packages, please refer to sections 6.8.4 and 6.8.5.

For more information on how to delete a Package, refer to section 3.5 on navigating the user interface.

6.8.2. Package Details/Configuration

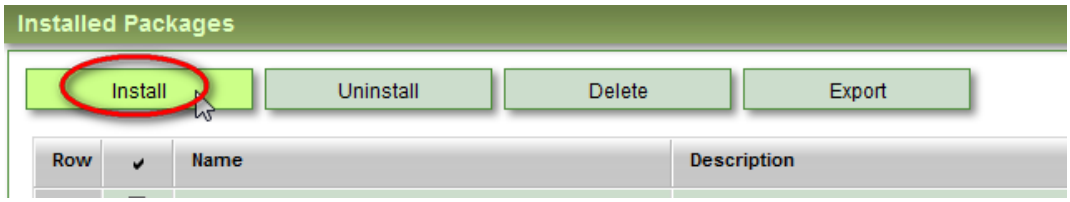
To view the Details/Configuration screen of an installed Package, simply click on the Package Name on the **Installed Packages** screen. This will open the Package in the **Workbench → Package** submodule.

To edit the Package, the Package must be uninstalled and then reinstalled when modifications have been finalized. For more information on how to uninstall a Package, please refer to section 6.8.4.

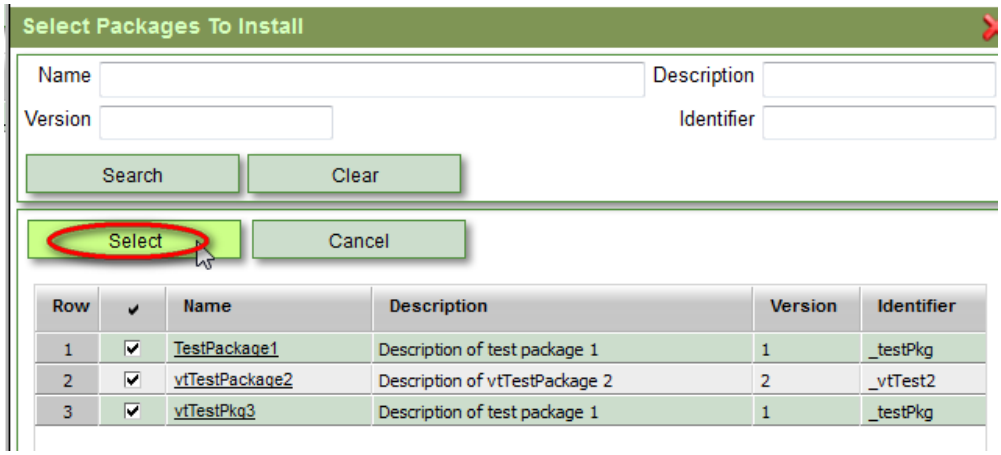
6.8.3. Install Additional Packages from Package Workbench

To install custom Package(s) from the Package Workbench:

1. On the **Installed Packages** screen, click on the **Install** button.



2. This opens the **Select Packages To Install** window. Use the search fields, if necessary, and click the **Search** button to list all Packages stored in the Package Workbench. Choose the desired Package(s) and click **Select** to install them.

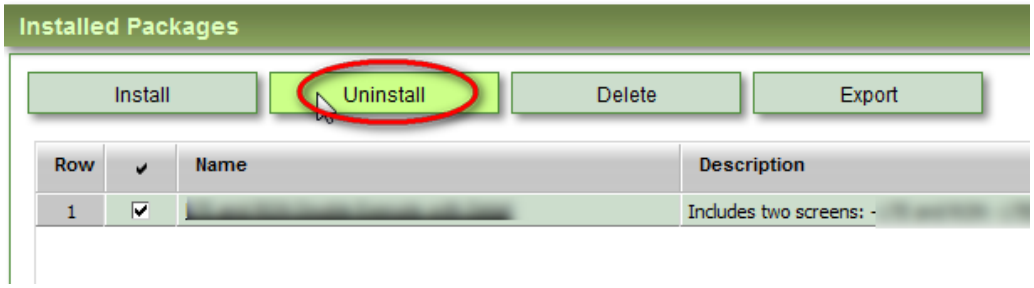


The Package(s) will be loaded into the NETPortal server and propagated to other servers as required. No server restart is required.

6.8.4. *Uninstall a Package*

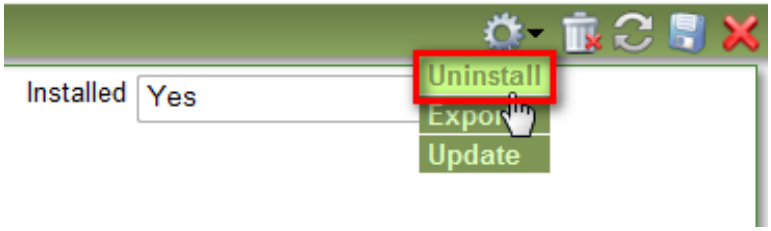
If customized screen Packages are no longer required or have been replaced, they can be uninstalled in one of two ways:

1. Select the Package object on the **Installed Packages** screen and click the **Uninstall** button.



OR

2. Open the Details/Configuration screen of the installed Package and select **Uninstall** from the action menu in the top right corner.



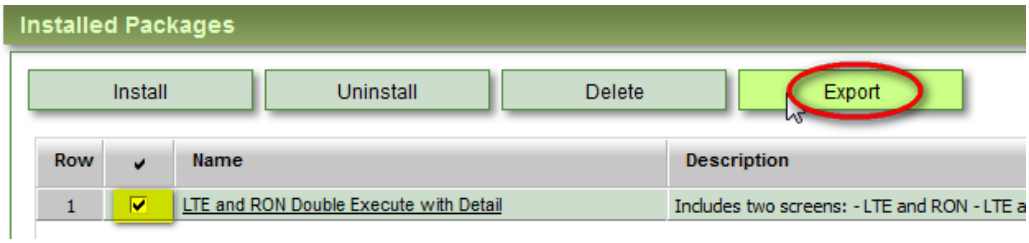
No server restart is required.

6.8.5. *Export an Installed Package*

Packages can be conveniently exported as JAR files to assist in migrating custom screens from one environment to another, e.g. for testing or production purposes.

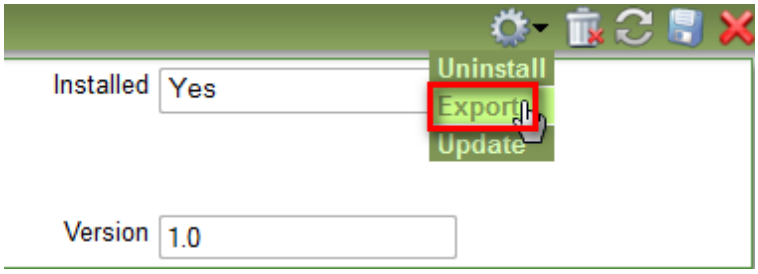
An installed Package can be exported in one of two ways:

1. Select the Package object on the **Installed Packages** screen and click the **Export** button.



OR

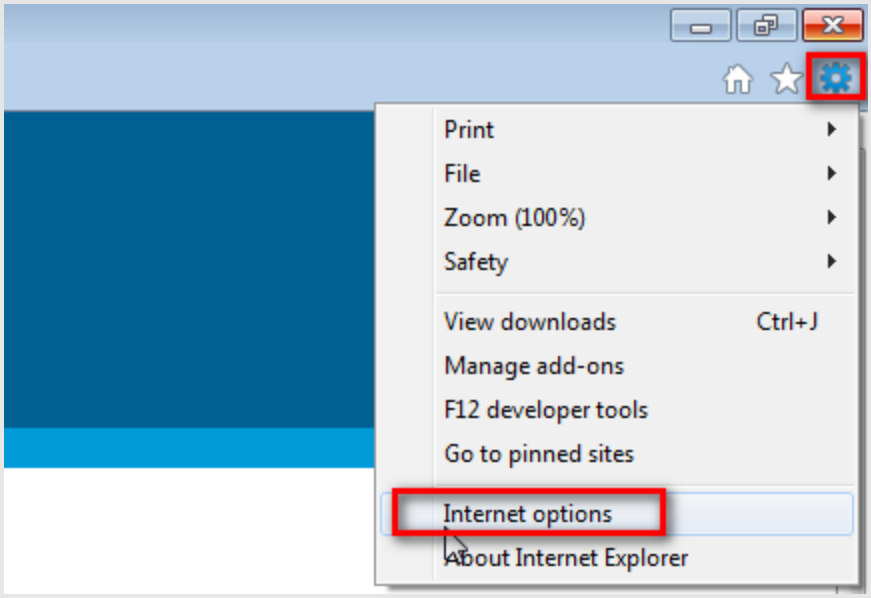
2. Open the Details/Configuration screen of the installed Package and select **Export** from the action menu in the top right corner.



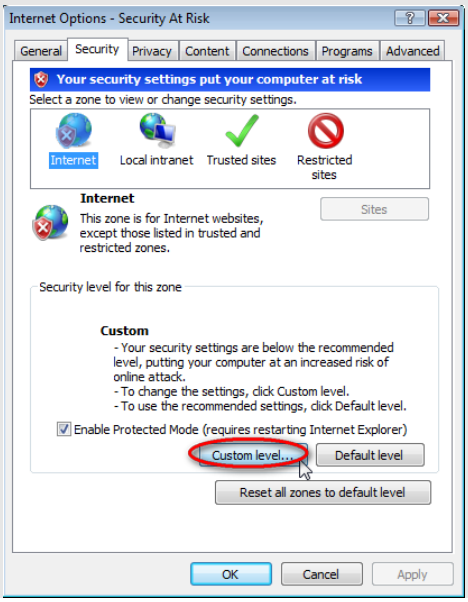
Appendix A: Exporting Files

NOTE: In some versions of Internet Explorer, exporting a file can result in a new browser window appearing briefly and then disappearing with no option to save the file. This is caused by certain browser settings. To resolve this issue: please follow these steps:

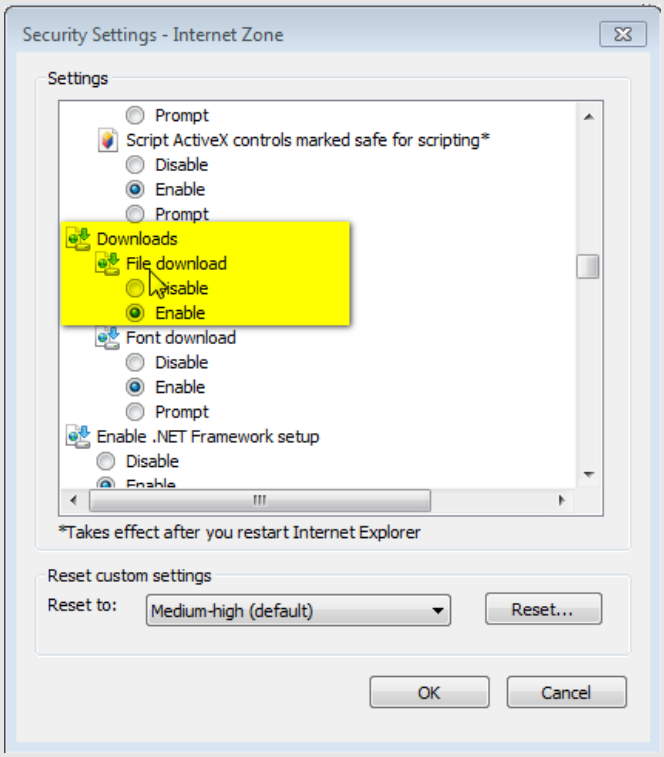
- In the Internet Explorer 9 menu bar, click on the Tools icon and select **Internet Options.**



- Click the **Security** tab.
- Of the four security-related web content zones shown, select the **Internet** zone.
- In the panel labeled “Security level for this zone”, click **Custom level…**.



- In the Security Settings window, look for **Downloads: File download**. Click **Enable** to verify that this setting is enabled.



- Click **OK** on the Security Settings window.
- Click **OK** again on the Internet Options window.

Glossary

AC	Attachment Circuit – used with MPLS
AID	TL1 Access Identifier
ALNP	Aggregated Line and Node Protection
AMI	Alternate Mark Inversion - a DS1, DS3 Coding type
APCP	Application Protection Constraint Policy
APS	Automatic Protection Switching
ASP	Application Service Provider
ATM	Asynchronous Transfer Mode
B3ZS	DS1, DS3 Coding type
B8ZS	DS1, DS3 Coding type
Back-up Path	The path that traffic takes if there is a failure on the primary path.
BGP	Border Gateway Protocol
BIP-8	Bit Interleaved Parity 8, is a method used for error monitoring in a SONET frame.
BLSR	Bi-directional Line Switched Ring
BPDU	Bridge Packet Data Unit
BSC	Base Station Controller
CAPEX	Capital Expenditure
Carrier Ethernet	High speed Ethernet for Metro Area Networks
C-Bits	A specific set of bits in a frame, used to determine where stuffing has occurred at the M12 and M23 levels, to resynchronize the data streams.
CBP	Coded Block Pattern - DS1, DS3 Framing type
CBS	Committed Burst Size
CDP	Cisco Discovery Protocol is a proprietary Data Link Layer network protocol developed by Cisco Systems. It is used to share information between directly connected Cisco equipment.
CE	Customer Edge (MPLS VPN context) / Customer Equipment (generic context)
CES	Circuit Emulation Services
CESR	Carrier Ethernet Switch Router
CIR	Committed Information Rate
CLEI	Common Language Equipment Identifier a 10 character (maximum) code used to identify a Network Element type.
CLFI	Common Language Facility Identifier - a five-part name containing the

	following values: • Designated name • Facility type • Channel or pair number and modifier • Location code for A and Z nodes
CLLI	Common Language Location Identifier – an 11 character name (maximum) used to identify the physical location of the equipment.
CO	Central Office
CoS	Class of Service
CPE	Customer Premise Equipment
CRC4	DS1, DS3 Coding type
CR-LDP	Constraint-based Routing over Label-Distribution Protocol.
CSP	Communications Service Provider
DMB	Digital Multipoint Bridge
DOD	Down Stream on Demand
DOU	Down Stream Unsolicited
DSCP	Differentiated Services Code Point
DSL	Digital Subscriber Line
DWDM	Dense Wavelength Division Multiplexing, an optical technology used to increase bandwidth over existing fiber optic backbones.
EBS	Excess Burst Size
EDGE	Enhanced Data rates for GSM Evolution. Sometimes referred to as Enhanced GPRS
EEPP	End-to-End Path Protection
EFM	Ethernet in the First Mile
EIR	Excess Information Rate
ELAN	Ethernet service type based on a multipoint-to-multipoint EVC
ELINE	Ethernet service type based on a point-to-point EVC
EMS	Element Management System
EoMPLS	Ethernet over MPLS
EoS	Ethernet over Serial or Ethernet over SONET/SDH
EPLn	Ethernet Private LAN (Service)
ESF	DS1, DS3 Framing type
ESFFDL	DS1, DS3 Framing type
ETREE	Ethernet service type based on a rooted multipoint EVC

EVC	Ethernet Virtual Circuit
EVPL	Ethernet Virtual Private Line (Service)
Explicit Route	A path across the Internet wherein all routers are specified. Packets must follow this route, and they cannot detour.
Fast ReRoute (FRR)	A protection plan in which a failure can be detected without a need for error notification or failure signaling (Cisco).
FC	Fibre Channel
FDX	Full Duplex
FEC	Forward Equivalence Class; also, Functional Equivalent Class
FICON	Fiber Connectivity - allows CSPs to offer SAN-based optical transport connectivity for those customers requiring direct data center network interconnections over SONET and DWDM.
FQDN	Fully Qualified Domain Name
FR	Frame Relay
Framed CAS	DS1, DS3 Framing type
Framed CCS	DS1, DS3 Framing type
GFP	Generic Framing Protocol
GigE	Gigabit Ethernet
GMPLS	Generalized Multi-Protocol Label Switching
GPON	Gigabit Passive Optical Network
GPRS	General Packet Radio Service – a packet oriented Mobile Data Service available to users of GSM
GSM	Global System for Mobile communications. Originally from Groupe Spécial Mobile, formed in 1982 by the Confederation of European Posts and Telecommunications (CEPT) to design a pan-European mobile technology.
GUI	Graphical User Interface
Hard State	A link, path, or call that will stay alive until it is specifically shut down.
HD	High Definition
HDB3	DS1, DS3 Coding type
HDX	Half Duplex
HLR	Home Location Register
HRAN	High RAN
HSPA	High-Speed Packet Access
HSRP	Hot Standby Router Protocol is a Cisco proprietary redundancy protocol for establishing a fault-tolerant default gateway.
IANA	Internet Assigned Numbers Authority

IEEE	Institution of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
IMSI	International Mobile Subscriber Identity – a unique number associated with all GSM and UMTS network mobile phone users.
IntServ	Integrated Service; allows traffic to be classified into three groups: guaranteed, controlled load, and best effort. IntServ works together with RSVP protocol.
IP	Internet Protocol
IPSec	IP security (a suite of protocols for securing IP)
IS	In Service
ISDN	Integrated Services Digital Network
IS-IS	Intermediate System to Intermediate System
ISP	Internet Service Provider
IWF	Interworking Functions
L2TP	Layer 2 Tunneling Protocol
L2VPN	Layer 2 VPN
LAN	Local Area Network
LCAS	Link Capacity Adjustment Scheme – allows CSPs to dynamically manage the reconfiguration of virtual concatenation groups without affecting any data that is being carried
LDAP	Lightweight Directory Access Protocol
LDP	Label Distribution Protocol
LER	Label Edge Router
LIB	Label Information Base
Link Protection	A backup method that replaces the entire link or path of a failure.
LMP	Link Management Protocol
LOS	Loss of Signal
LSP	Label Switched Paths
LSR	Label Switch Router
LTE	3GPP Long Term Evolution
M13	DS1, DS3 Framing type
M23	DS1, DS3 Framing type
MAC	Media Access Control
Make Before Break	A procedure in which the back-up path is switched in before the failed path is switched out. For a small period of time, both the primary and back-up paths

	carry the traffic.
MAN	Metropolitan Area Network
MBMS	Multimedia Broadcast/Multicast Service
MBS	Maximum Burst Size
MEF	Metro Ethernet Forum
MEN	Metro Ethernet Network
MIB	Management Information Base
MJU	Multi Junction Unit
MPλS	Multi-Protocol Lambda Switching, IP over light waves
MPLS	Multiple Protocol Label Switching; also, Multiple Protocol Lambda Switching
MSC	Mobile Switching Centre
MSISDN	Mobile Subscriber ISDN Number - a number uniquely identifying a subscription in a GSM or UMTS mobile network. Typically, the telephone number to the SIM card in a mobile/cellular phone.
MSPP	Multiservice Provisioning Platforms
MS-SPRing	Multiplex Section-Shared Protection Ring
MTOSI	Multi-Technology Operations System Interface
NE	Network Element
NEL	Network Element Layer
NG-SONET	Next-Generation SONET
NHLFE	Next Hop Label Forward Entry
NNI	Network-to-Network Interface
Node Protection	A backup procedure in which a node is replaced in a failure.
NTP	Network Time Protocol
OA&M	Operations, Administration and Maintenance
OAM&P	Operations, Administration, Management and Provisioning.
OCx	Optical Carrier level x (for example, OC3)
OOS	Out Of Service
OPEX	Operating Expense
OPS	Off-Premises Station
OSI	Open Systems Interconnection
OSS	Operations Support System
OSPF-TE	Open Shortest Path First with Traffic Engineering

OTN	Optical Transport Network
OTUk	Optical Channel Transport Unit of level k
O-UNI	Optical User Network Interface (O-UNI)
OWD	One Way Delay
PBB	Provider Backbone Bridge
PBB-TE	PBB Traffic Engineering
PDH	Plesiochronous Digital Hierarchy
PDU	Protocol Data Unit
PE	Service Provider Edge equipment
PIR	Peak Information Rate
PM	Performance Monitoring
POP	Internet Point of Presence
PoS	Packet over SONET/SDH
POTP	Packet Optical Transport Platform
POTS	Plain Old Telephone Service
Pre-provisioned Path	A path in the switching database on which traffic engineering has been performed in order to accommodate traffic in case of a failure.
Pre-qualified Path	A path that is tested prior to switchover that meets the quality of service (QoS) standards of the primary path.
Primary Path	The path through which the traffic would normally progress.
Protected Path	The alternative back-up path for a primary path.
PTP	Precision time protocol (IEEE 1588)
PVC	Permanent Virtual Circuit
PWE3	Pseudo Wire Emulation Edge-to-Edge
QoS	Quality of Service
RAN	Radio Access Network
Rapid ReRoute (RRR)	A protection plan in which a failure can be detected without a need for error notification or failure signaling (Generic).
RDBMS	Relational Database Management System
RDI	Remote Defect Indicator. SONET equipment detects events and alarms at each of SONET's three layers – section, line and path. Typically, a SONET device sends alarms both upstream and downstream in order to notify other devices of the problem condition. RDI alarms are always reported upstream from the detecting device.
ROADM	Reconfigurable Optical Add-Drop Multiplexer

Route Distinguisher	An 8-byte field prefixed to a customer's IPv4 address. It is an address qualifier used within a service provider's MPLS network to distinguish the distinct VPN routes of separate customers who connect to the provider.
RPR	Resilient Packet Ring
RSVP	ReSource reserVation Protocol
RSVP-TE	The Resource ReSerVation Protocol (RSVP), modified to handle MPLS traffic-engineering requirements.
SAN	Storage Area Network
SAToP	Structure-agnostic TDM over packet
SD	Standard Definition
SDH	Synchronous Digital Hierarchy
SDM	Space Division Multiplexing
SF	DS1, DS3 Framing type
SFN	Single Frequency Network
SLA	Service Level Agreement
SLS	Service Level Specification
SMS	Service Management System – Bellcore definition
SMS	Short Message Service. This communication service component of the GSM mobile communication system uses standardized communications protocols to allow the exchange of short text messages between mobile phone devices
SNCP	Sub-Network Connection Protection. A dedicated protection mechanism for SDH network spans which may be deployed in ring, point to point or mesh topologies. Functional equivalent in SONET is called UPSR
SoIP	Synchronization Over IP
SONET	Synchronous Optical Network
SRM	Sub Rate Multiplexer
SSH	Secure Shell - a network protocol that allows data to be exchanged over a secure channel between two computers.
SSP	Storage Service Provider
STM	Synchronous Transfer Module
STS	Synchronous Transfer Signal
TCO	Total Cost of Ownership
TDD	Time-Division Duplex
TDM	Time Division Multiplexing
TE	Traffic Engineering
TL1	A telecommunications management protocol widely used to manage optical

	(SONET) and broadband access infrastructure.
TMF	Tele-Management Forum
TMN	Telecommunications Management Network
UFN	User-friendly Facility Name - a free form name assigned to a facility
UML	Unified Modeling Language
UMTS	Universal Mobile Telecommunications System
Unframed	DS1, DS3 Framing type
UNI	User-Network Interface
UPSR	Unidirectional Path Switched Ring
VC	Virtual Channel
VCAT	Virtual Concatenation - allows CSPs to allocate SONET network bandwidth much more efficiently when transporting Carrier Ethernet (GigE, FE, Video) based services.
VFI	Virtual Forwarding Instance - a virtual Layer 2 forwarding entity that defines the VPLS domain membership and appears as a virtual switch on PE routers. The VFI learns remote MAC addresses and is responsible for proper forwarding of the customer traffic to the appropriate end nodes and for guaranteeing that each VPLS domain is loop free. Other functions managed include MAC address management, dynamic learning of MAC addresses on physical ports and VCs, aging of MAC addresses, MAC address withdrawal, flooding, and data forwarding.
VLAN	Virtual LAN
VoIP	Voice over IP
VPLS	Virtual Private LAN service. A VPLS domain consists of Ethernet interfaces or VLANs that belong to the same (virtual) LAN but are connected to multiple PE devices.
VPN	Virtual Private Network
VRF	Virtual Routing and Forwarding - a technology included in IP routers that allows multiple instances of a routing table to exist in a router and work simultaneously. It is the name for the combination of the VPN routing table, the VRF Cisco Express Forwarding (CEF) table, and the associated IP routing protocols on the PE router. A PE router has a VRF instance for each attached VPN.
VSI	Virtual Switching Instance or Virtual Forwarding Instance – see VFI
WAN	Wide Area Network
WCDMA	Wideband Code-Division Multiple Access
WDM	Wavelength Division Multiplexing
ZBTSI	DS1, DS3 Coding type
ZCS	DS1, DS3 Coding type

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