

NetReg Outlet Procedures

1. Scope

This document addresses procedures for manipulating outlets in NetReg. Substantial changes were deployed in April, 2004 that substantially modify the user interface and procedures for performing these operations. These procedures are designed to be used by DataComm Technicians and NetReg administrators. These individuals will have access to the following NetReg screens:

- Activation Queue
- Buildings
- Outlet Information
- Subnets
- Trunk Sets
- VLANs

2. Definitions and Relationships

It is important to understand the terminology used by NetReg and how objects and items interrelate. New terms were introduced in April 2004 that are important to understand; namely that of a “Trunk Set”.

VLANs in NetReg are simple representations of VLANs as configured on network equipment. Thus, a VLAN is essence a grouping of physical outlets in a common broadcast domain. A **Trunk** is used when there is a need to connect 2 or more VLANs between 2 or more switches. A trunk link between two switches is a single physical connection carrying more than one VLAN.

Trunk Sets associate VLANs that must be configured on one or more trunks. Trunk Sets are further associated with particular buildings and devices. **Devices** are simply machine records that, by virtue of being a member of a trunk set, are capable of being used as the connection of an outlet.

Subnets are a network-layer concept implying IP addressing of particular machines. Subnets can be associated with one or more VLAN, implying the IP addresses should be used on the particular VLANs. More than one subnet can be associated with a single VLAN, in which case it is implied that the subnets are running in parallel.

Figure 1 shows the relationship diagram between NetReg objects.

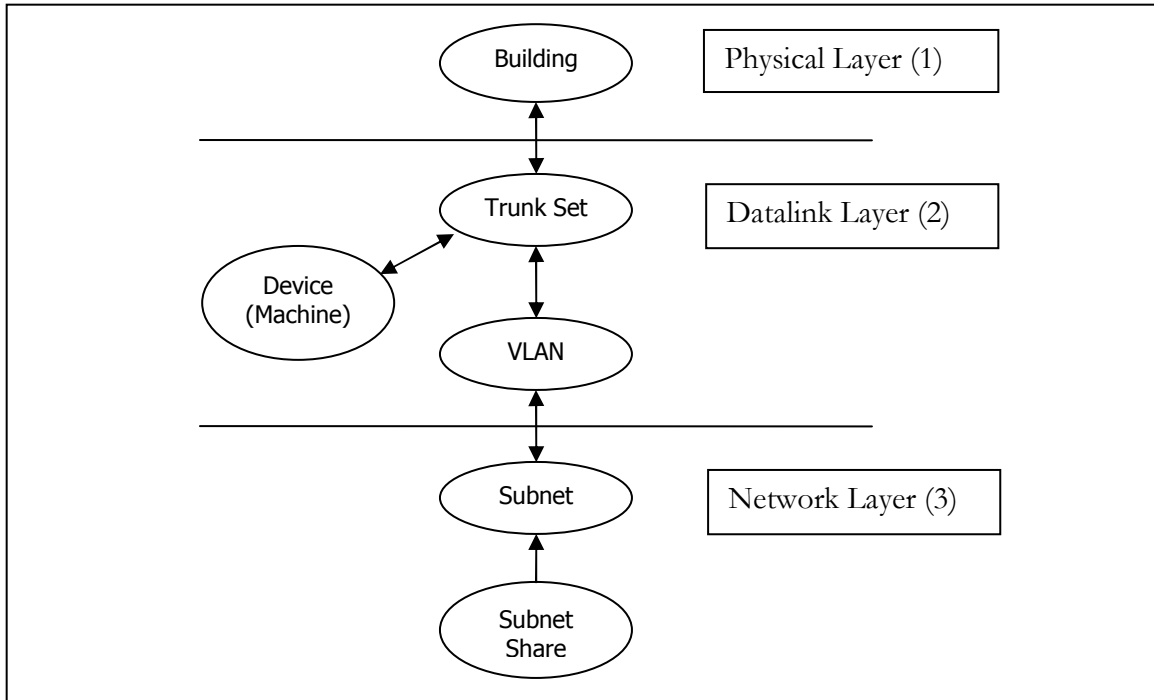


Figure 1: NetReg Object Relationships

In Figure 1, bidirectional arrows indicate a “many-to-many” relationship. For example, there is a many-to-many relationship between VLANs and Subnets. This means that a VLAN can be associated with one or more subnets, and a subnet can be associated with one or more VLANs. In contrast, a single arrow indicates a “one to many” relationship. In Figure 1, a subnet can be a member of a single subnet share, though a subnet share contains many subnets.

3. Procedure

The following are procedures that should be followed to correctly register and activate outlets in NetReg. There are two such procedures:

- 1) In the case that a user has requested registration of a particular outlet.
- 2) In the case that DataComm or other NetReg administrator is performing an outlet registration directly.

Additionally, there are procedures for registering and configuring the Trunk Sets and VLANs appropriately.

Procedures for Activating Outlets Registered by Users

Prerequisite

- The user has used the ‘Outlet Registration’ page to register a new outlet
- While registering an outlet, the user has selected one of the listed ‘Network Segment’ (a mandatory field).
- The ‘Network Segment’s offered to the user are derived from the VLANs in the Trunk Sets associated with the building that the outlet is in.
- A screen shot of the user registration page is in Figure 2 below.

- After the user has registered the outlet, the request for activation appears in the appropriate activation queue.
- Once the outlet has been physically connected to a network device, the activation queue screen can be visited to enable the port and configure the appropriate VLAN information.

This procedure is also applicable when the user has requested a change in the Network Segment/VLAN for a registered and activated outlet.

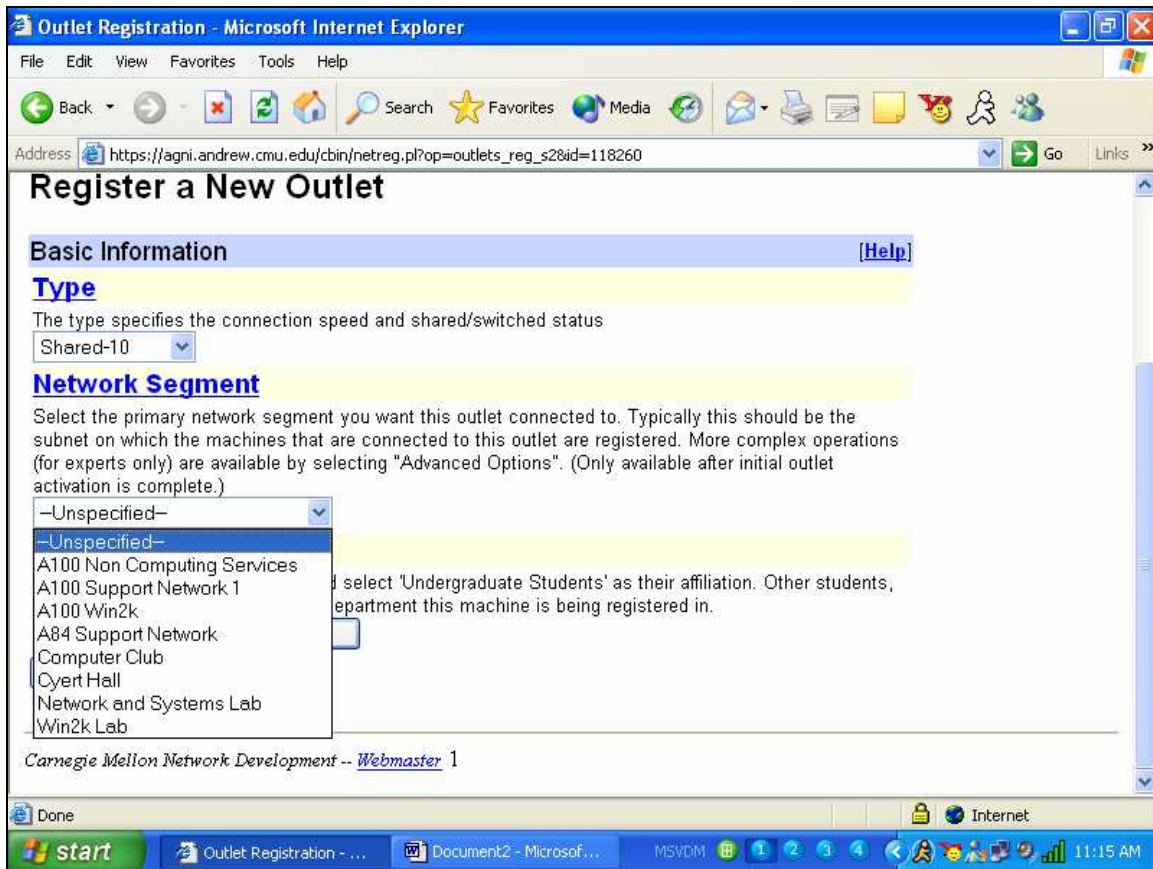


Figure 2: User Outlet Registration View

Procedure – New Registrations

1. The device menu will be populated with a list of devices available in the VLAN requested by the user. Because no device has been previously selected, the default value will be “[Device Selection Required]”, indicating that a device must be selected to activate the outlet.
2. The DataComm technician can select a device from a drop down menu. If the appropriate device is not available, the device will need to be added to one or more Trunk Sets including the requested VLAN¹.
3. Once the device has been selected, the port number must be entered. Also, there is a error checking applied to the port number. If another outlet is already

¹ See the procedure regarding configuration of Trunk Sets.

activated with the same device and port, then you will receive the following error message: *Trying to bind more than one outlet to same device and port.*

4. Select the checkbox next to the “On” indicator for the appropriate outlet.
5. Select “Update” to activate each selected outlet.

Procedure – Existing Registrations with VLAN Change

1. The device menu will be populated with a list of devices available in the new VLAN requested by the user.
2. The current device will be displayed encased in brackets. Unless the new VLAN is also available on the current device, the bracketed device will be an invalid selection for activating the outlet.
3. The outlet will need to be moved to a new device supporting the requested (new) VLAN, unless the existing device supports the VLAN.
4. The new device, if any, should be selected from the drop-down menu. If the appropriate device is not available, the device will need to be added to one or more Trunk Sets including the requested VLAN².
5. Once the device has been selected, the port number must be entered. Also, there is a error checking applied to the port number. If another outlet is already activated with the same device and port, then you will receive the following error message: *Trying to bind more than one outlet to same device and port.*
6. Select the checkbox next to the “On” indicator for the appropriate outlet.
7. Select “Update” to update each selected outlet.

Figure 3 is a sample activation queue screen, highlighting the drop-down list of devices available for a specific outlet.

² See the procedure regarding configuration of Trunk Sets.

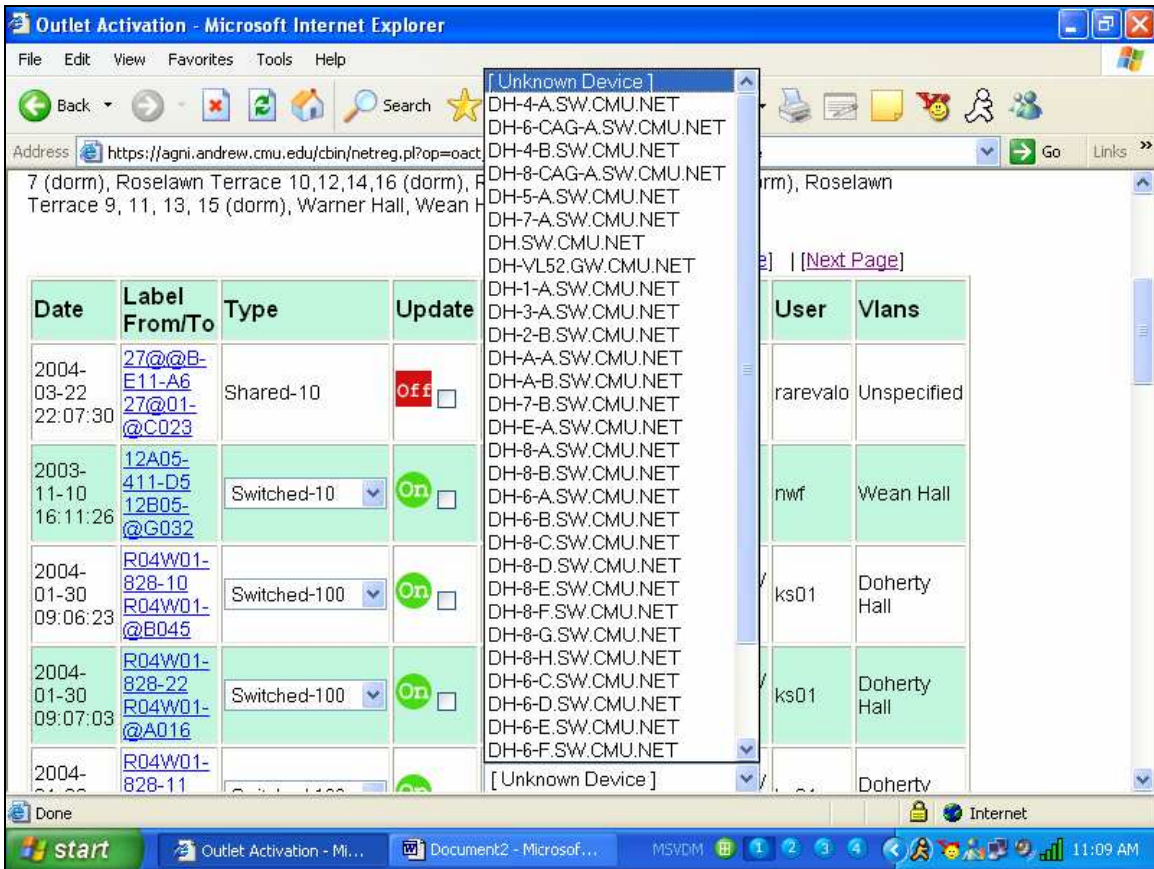


Figure 3: Activation Queue Screen

Procedure for Administrative Outlet Activation

Prerequisites

This procedure should be followed when an outlet has been connected to a device without a specific user registration in NetReg. In this case, the administrator should register the outlet directly using these procedures.

Procedure

Once the outlet has been selected, the Outlet Registration screen is displayed.

1. The Network Segment value corresponding to the desired VLAN should be selected on this screen. Selection of this field is mandatory.
2. From the Device drop down menu, the device to which the outlet is connected should be selected. The menu will be populated with every valid device in the building, which may include devices not compatible with the specified Network Segment/VLAN. If the device does not contain the requested VLAN, an error message will be displayed when attempting to register the outlet: *Device is not present in selected Network Segment.*
3. If the device to which the outlet is connected is not listed, or there is an error resulting from the device not being capable of supporting the VLAN,

configuration changes to the Trunk Sets may be necessary to enable this selection³.

Figure 4 contains a snapshot of the Outlet Registration page as presented to administrators.

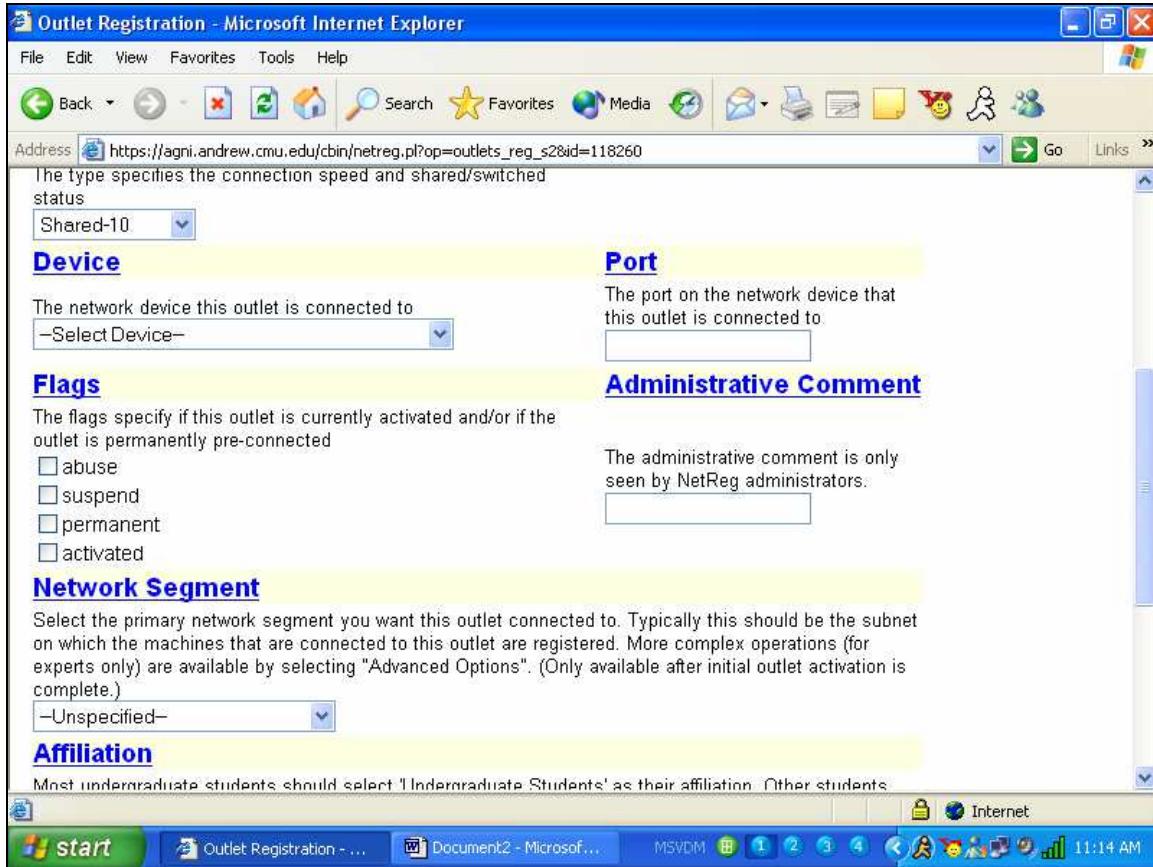


Figure 4: Administrative Outlet Registration

Procedure for Identifying Valid Devices of a VLAN

As noted above, if there is a mismatch between the 'Network Segment' and 'Device' for a particular outlet, then an error will be shown and the selections will not be saved. There is an easy method through which one can determine the valid devices for a particular Network Segment. If any changes to the Trunk Set configuration are required, refer to the procedure for changing this configuration.

1. Select the "VLAN" link from the main selection bar.
2. From the VLAN List, select the desired Network Segment / VLAN.
3. From the VLAN Information screen, select each Trunk Set under "Trunk Set Membership" in succession.
4. On each Trunk Set Information screen, the list of devices under "Device in Trunk Set" contains each valid device in the trunk set.

³ See the procedure regarding configuration of Trunk Sets.

5. The union of all devices of all trunk sets associated with the VLAN comprises the list of valid devices for the VLAN.

Procedure for Configuring Trunk Set

Prerequisites

This procedure is followed when there is a need to add, remove or modify a Trunk Set. This includes changes to buildings, VLANs, or device entries in a Trunk Set. Only NetReg Administrators will be able to perform this operation.

Procedure – Add New Trunk Set

Once the 'Trunk Set' link on the main page is selected, the list of Trunk Set will be displayed and with that one more link named 'Add Trunk Set' will be displayed.

1. Click on 'Add Trunk Set' link. The resulting screen has entries for 4 parameters needed to create a new Trunk Set.
2. Enter the name of the 'Trunk Set'. The name must be unique.
3. Complete the Abbreviation and Description fields appropriately. These fields are not mandatory.
4. Select the 'Native VLAN' from the drop down menu. This is the primary VLAN associated with this Trunk Set and should not usually be a user VLAN. This field is not mandatory.

Procedure – Managing Trunk Set

Once new Trunk Set has been added by following the procedure above, one can add and remove buildings, devices and VLANs associated with this Trunk Set.

1. To add a device in this Trunk Set, enter the fully qualified machine name in the text field. The device must be registered as a machine. Select 'Add Device', which will add a device in this Trunk Set if there is no error.
2. To delete a device from Trunk Set, select the Delete link beside the appropriate device. If there is no port active on this device, deletion will successfully be completed. An error will be presented if any port is still active on this device.
3. To add a VLAN in this Trunk Set, select the VLAN from the drop down menu and then select 'Add VLAN'.
4. To delete a VLAN from Trunk Set, select the Delete link adjacent the appropriate VLAN.
5. To add a building in this Trunk Set, select a building from the drop down menu and then select 'Add Building'.
6. To delete a building from Trunk Set, select the Delete link adjacent the appropriate building.

Procedure for Configuring VLAN

Prerequisites

This procedure is followed when there is a need to add, remove or modify a VLAN. This procedure is also appropriate while adding Trunk Set or Subnet entries to the VLAN. Only NetReg Administrators will be able to perform this operation.

Procedure – Add New VLAN

Once the 'VLAN' tab on the main page is selected, the list of VLANs will be displayed along with the 'Add VLAN' link.

1. Select the 'Add VLAN' link. The Add VLAN screen has 4 parameters that can be completed to create a new VLAN.
2. Enter the name of the 'VLAN'. The name must be unique -- if there is another VLAN with the same name, then you will get an error.
3. Fill out the Abbreviation and Description fields as appropriate. These fields are not mandatory.
4. While creating a new VLAN, one must enter the VLAN number. This is the number of the VLAN as configured on switches.

Procedure – Managing VLAN

Once a new VLAN has been added by following above procedure, one can add and remove Trunk Sets and Subnets associated with this VLAN.

1. To add a Trunk Set in this VLAN, select a Trunk Set from the drop down menu and then select 'Add Trunk Set'. When visiting the Trunk Set page, you will note the VLAN will also appear on this screen.
2. To delete a 'Trunk Set' from VLAN, select the Delete link adjacent the appropriate Trunk Set.
3. To add a Subnet in this VLAN, select the appropriate Subnet from the drop down menu and then select 'Add Subnet'. When visiting the Subnet page, you will note the VLAN will also appear on this screen.
4. To delete a Subnet from VLAN, select the Delete link adjacent the appropriate Subnet.

4. Revision History

Revision: 1	Date: 4/15/04	Author: Kunal Trivedi
Revision: 2	Date: 4/21/04	Author: Kevin Miller
Changes: Reworded and reformatted		
Revision: 3	Date: 4/23/04	Author: Kunal Trivedi
Changes: Configuring and Managing Trunk Set and VLAN		
Revision: 4	Date: 4/23/04	Author: Kevin Miller
Changes: Cleanup and corrections		