Chapter 16

Configuring Dynamic Interfaces Using Bulk Configuration

This chapter explains dynamic interfaces and describes the procedures for configuring them on E-series routers.

This chapter contains the following sections:

Overview

Before you begin configuring dynamic interfaces in bulk, review the concepts described in this section.

Like upper-layer dynamic interfaces, bulk-configured dynamic interfaces are created automatically and transparently through the receipt of data over a lower-layer link, such as an ATM virtual circuit (VC) or a virtual LAN (VLAN) using autodetection. The layers of a dynamic interface are created based on the packets received on the link and can be configured through any one of the following:

- RADIUS authentication (through PPP or ATM 1483)
- Profiles
- A combination of RADIUS authentication and profiles

You create and configure each layer of a static interface manually through an existing configuration mechanism such as the command-line interface (CLI) or Simple Network Management Protocol (SNMP).

For more information about dynamic interfaces, autodetection, and RADIUS, see *Overview* in *Chapter 15, Configuring Dynamic Interfaces*.

Bulk Dynamic Interface Configurations

E-series routers support dynamic interfaces on two types of static interfaces: ATM and VLAN. This chapter provides configuration information for ATM and then for VLANs.

E-series routers support dynamic ATM 1483 subinterfaces over static ATM interfaces.

E-series routers support the following types of dynamic interfaces over VLAN major interfaces:

- Dynamic VLAN subinterface over static VLAN major interface
- IP over dynamic VLAN subinterface
- IP over PPPoE over dynamic VLAN subinterface

Internet Protocol version 4 (IPv4) is supported for all bulk-configured dynamic interface columns over dynamic ATM 1483 subinterfaces and over dynamic VLAN subinterfaces.

Currently, Internet Protocol version 6 (IPv6) is supported only when PPP or MLPPP is the layer immediately below the IPv6 layer in the interface column. IPv6 is *not* supported directly over dynamic ATM 1483, dynamic bridged Ethernet, or dynamic VLANs. Bulk-configured dynamic interface columns that support IPv6 include the following:

- Dynamic IPv6 over dynamic PPP over dynamic ATM 1483
- Dynamic IPv6 over dynamic MLPPP over dynamic ATM 1483
- Dynamic IPv6 over dynamic PPP over dynamic PPPoE over dynamic ATM 1483
- Dynamic IPv6 over dynamic MLPPP over dynamic PPPoE over dynamic ATM 1483
- Dynamic IPv6 over dynamic PPP over dynamic PPPoE over dynamic VLAN
- Dynamic IPv6 over dynamic MLPPP over dynamic PPPoE over dynamic VLAN

For more information about IPv4, see *JUNOSe IP, IPv6, and IGP Configuration Guide, Chapter 1, Configuring IP*. For more information about IPv6, see *JUNOSe IP, IPv6, and IGP Configuration Guide, Chapter 2, Configuring IPv6*.

Profiles

You can use profiles to configure dynamic interfaces over ATM and VLAN interfaces. A *profile* is a set of characteristics that can be dynamically assigned to interfaces. By using a profile, you reduce the management of a large number of interfaces by applying a set of characteristics to multiple interfaces.

When you are configuring a large number of interfaces with the same attributes at the higher layers, you can use a profile to factor out all the common attributes of each layer into one place. This action affects one or more dynamic layers of the interface column. After you define the static lower layers, you assign a profile to the highest static layer of the interface column.

When a dynamic interface is configured, the configuration data received from the RADIUS authentication server typically overrides configuration data obtained from a profile.

The **atm atm1483 auto-configure** command specifies the types of dynamic upper-interface encapsulations that are accepted or detected by a dynamic ATM 1483 subinterface. For flexibility, the router provides the ability to configure an ATM 1483 subinterface with distinct profile assignments for each encapsulation type supported by the **atm atm1483 auto-configure** command. For more information about using this command, see **atm atm1483 auto-configure** on page 552.

In contrast to dynamic ATM 1483 subinterfaces, dynamic VLAN subinterfaces support recognition and creation of simultaneous IP and PPPoE upper dynamic interface types. The **vlan auto-configure** command identifies the encapsulation type. For flexibility, the router provides the ability to configure a VLAN subinterface with distinct profile assignments for each encapsulation type supported by the **vlan auto-configure** command. For more information about using this command, see **vlan auto-configure** on page 589.

For more information about configuring profiles, see *Configuring a Dynamic Interface from a Profile* in *Chapter 15, Configuring Dynamic Interfaces*.

ATM Oversubscription for Bulk-Configured VC Ranges

You can take advantage of oversubscription of bulk-configured ATM VCs. The router supports oversubscription of bulk-configured VC ranges when you create a bulk-configured VC range on a static ATM AAL5 interface for use by a dynamic ATM 1483 subinterface.

Oversubscription of bulk-configured VC ranges works in a similar, but not identical, manner to oversubscription of static ATM 1483 subinterfaces that support dynamic upper-layer encapsulation types. For more information, see *ATM Oversubscription for Dynamic Interfaces* in *Chapter 15, Configuring Dynamic Interfaces*.

Bulk-Configured VC Ranges

An active bulk-configured VC range is associated with a dynamic ATM 1483 subinterface that supports a dynamic upper-layer encapsulation type. For ATM line modules that support VC oversubscription, the maximum number of active bulk-configured VCs per line module is less than the maximum number of individual VCs created from the total number of bulk-configured VC ranges that the line module supports. For information about configuring dynamic ATM 1483 subinterfaces with bulk-configured VC ranges, see *Configuring ATM 1483 Dynamic Subinterfaces* on page 541.

When the maximum number of active bulk-configured VCs has been reached, the router prevents all additional subscribers associated with the remaining inactive bulk-configured VCs from connecting to the line module until one of the following conditions occurs:

- At least one currently active subscriber logs out, which causes the router to tear down the dynamic interface column for that subscriber. Although the dynamic ATM 1483 subinterface and its associated VC remain configured on the router, the subinterface becomes inactive and can be replaced by one of the bulk-configured VCs waiting to become active.

- The router tears down at least one dynamic interface column in its entirety, which involves administratively shutting down the associated dynamic ATM 1483 subinterface.

When either of these conditions occurs, the router enables the first inactive bulk-configured VC that receives traffic to connect to the router as a replacement for the subscriber that logged out.

Example

Consider an ATM line module that supports a maximum of 32,000 individual VCs created from bulk-configured VC ranges, of which only 8000 VCs can be active at any one time. If all 32,000 bulk-configured VCs attempt to connect to the router, only the first 8000 VCs to receive traffic are able to log in, generate dynamic subinterface columns, and become active. When a subscriber connected through one of these active VCs logs out, the router enables the first of the remaining 24,000 inactive bulk-configured VCs that receives traffic to connect. The router replaces the inactive dynamic ATM 1483 subinterface and associated VC that remain after the subscriber logout with a new dynamic ATM 1483 subinterface and its newly activated circuit.

Combination of Static ATM 1483 Subinterfaces and Bulk-Configured VC Ranges

ATM line modules are sometimes configured with a combination of static ATM 1483 subinterfaces and bulk-configured VC ranges. In these configurations, both the static ATM 1483 subinterfaces and bulk-configured VC ranges can support active subinterfaces. The combined total of active static ATM 1483 subinterfaces, and active dynamic ATM 1483 subinterfaces created from bulk-configured VC ranges, cannot exceed the maximum number of active subinterfaces supported by the line module.

The number of active dynamic subinterfaces created from the bulk-configured VC ranges is limited by both of the following:

- The number of static ATM subinterfaces that exist on the line module, which cannot exceed the maximum number of configured ATM 1483 subinterfaces supported on the line module.
- The number of static ATM subinterfaces that are active on the line module, which cannot exceed the maximum number of active ATM 1483 subinterfaces supported on the line module.

Example

Consider an ATM line module that supports a maximum of 8000 active ATM 1483 subinterfaces. The module has 4000 static ATM 1483 subinterfaces configured, all of which are active, and 8000 individual VCs created from bulk-configured VC ranges. Because the 4000 static ATM 1483 subinterfaces are already active, the router enables only 4000 of the bulk-configured VCs to create dynamic ATM 1483 subinterface columns and become active, yielding a combined total of 8000 active subinterfaces on the line module. The router prevents the remaining 4000 inactive bulk-configured VCs from connecting and becoming active until at least one subscriber connected through an active ATM subinterface logs out, thereby making the associated subinterface inactive and eligible for replacement.

Platform Considerations

You can configure dynamic interfaces on the following E-series routers:

- E120 router
- E320 router
- ERX-1440 router
- ERX-1410 router
- ERX-710 router
- ERX-705 router
- ERX-310 router

Module Requirements

For information about the modules that support dynamic interfaces on ERX-14xx models, ERX-7xx models, and the ERX-310 router:

- See *ERX Module Guide, Table 1, Module Combinations* for detailed module specifications.
- See *ERX Module Guide, Appendix A, Module Protocol Support* for information about the modules that support dynamic interfaces.

For information about the modules that support dynamic interfaces on the E120 router and the E320 router:

- See *E120 and E320 Module Guide, Table 1, Modules and IOAs* for detailed module specifications.
- See *E120 and E320 Module Guide, Appendix A, IOA Protocol Support* for information about the modules that support dynamic interfaces.

Interface Specifiers

The configuration task examples in this chapter use the *slot*/*port*[.*subinterface*] format to specify the physical interface that you want to configure to support dynamic interfaces. However, the interface specifier format that you use depends on the router that you are using.

For ERX-7xx models, ERX-14xx models, and ERX-310 routers, use the *slot*/*port*[.*subinterface*] format. For example, the following command specifies ATM 1483 subinterface 10 on slot 0, port 1 of an ERX-7xx model, ERX-14xx model, or ERX-310 router.

```
host1(config)#interface atm 0/1.10
```

For E120 and E320 routers, use the *slot*/*adapter*/*port*[.*subinterface*] format, which includes an identifier for the bay in which the I/O adapter (IOA) resides. In the software, adapter 0 identifies the right IOA bay (E120 router) and the upper IOA bay (E320 router); adapter 1 identifies the left IOA bay (E120 router) and the lower IOA bay (E320 router). For example, the following command specifies ATM 1483 subinterface 20 on slot 5, adapter 0, port 0 of an E320 router.

```
host1(config)#interface atm 5/0/0.20
```

For more information about supported interface types and specifiers on E-series routers, see *Interface Types and Specifiers* in *JUNOSe Command Reference Guide, About This Guide*.

References

For more information about RADIUS, consult the following resources:

- DSL Forum Technical Report (TR)-101—Migration to Ethernet-Based DSL Aggregation (April 2006)
- RFC 2865—Remote Authentication Dial In User Service (RADIUS) (June 2000)
- RFC 2866—RADIUS Accounting (June 2000)
- RFC 3046—DHCP Relay Agent Information Option (January 2001)

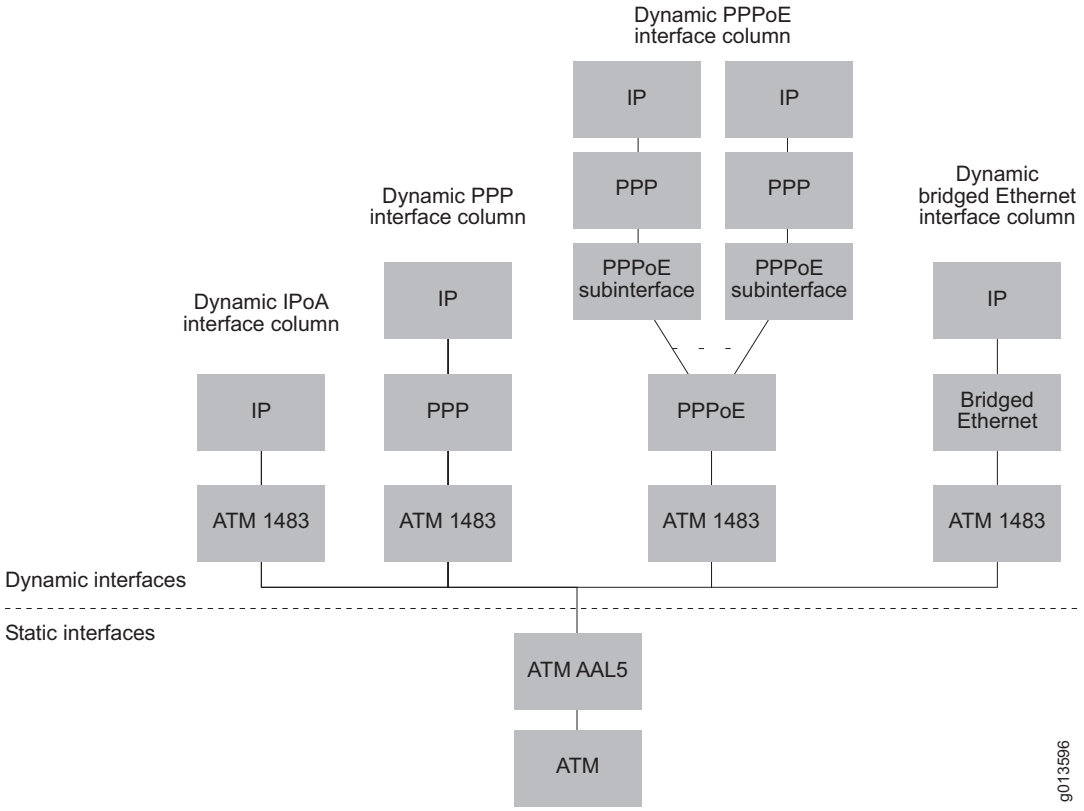
Configuring ATM 1483 Dynamic Subinterfaces

E-series routers support configuration of dynamic ATM 1483 subinterfaces over static ATM AAL5 interfaces over ATM. The dynamic ATM 1483 subinterface can perform autodetection and dynamic creation of the following upper-layer encapsulation types:

- Bridged Ethernet
- IP
- PPP
- PPPoE

Figure 50 shows the dynamic upper-interface columns supported by dynamic ATM 1483 subinterfaces, and indicates which layers in the columns are static and dynamic.

Figure 50: Dynamic Interface Columns over Dynamic ATM 1483 Subinterfaces



About Configuring Dynamic ATM 1483 Subinterfaces

This section introduces important concepts that you need to understand before you configure dynamic ATM 1483 subinterfaces.

Overview and Benefits

When you use dynamic interfaces over static ATM 1483 subinterfaces, you must configure the ATM interface and each ATM 1483 subinterface, including the ATM PVC and the attributes of the subinterface. Subinterface attributes include profile assignments, autoconfiguration settings, and subscriber configurations.

By contrast, when you use dynamic ATM 1483 subinterfaces over static ATM AAL5 interfaces, you use a process called *bulk configuration* to configure a range of ATM PVCs that support dynamic interfaces. On receipt of an incoming packet on the virtual circuit, the router dynamically creates the ATM 1483 subinterface. As part of the configuration process, you create an ATM 1483 base profile, which can optionally include nested profile assignments, to define the attributes required to configure the dynamic ATM 1483 subinterface and the dynamic upper-layer encapsulation types built over it.

Bulk configuration provides an efficient and timesaving way to specify a range of ATM PVCs for dynamic ATM 1483 subinterfaces. Because bulk configuration requires significantly less configuration of the router, it results in reduced output when you issue the **show configuration** command to display the current router configuration.

Dynamic ATM 1483 subinterfaces function identically to static ATM 1483 subinterfaces, except for the manner in which they are created and configured. The creation of dynamic upper-layer encapsulation types is essentially the same regardless of whether they are configured over static ATM 1483 subinterfaces or dynamic ATM 1483 subinterfaces.

ATM 1483 Base Profiles

To configure a dynamic ATM 1483 subinterface over a static ATM AAL5 interface, you must create a base profile. The base profile includes one or more of the following attributes for the ATM 1483 subinterface, listed alphabetically:

- advisory-rx-speed—Sets an advisory receive speed for ATM 1483 subinterfaces that are created with this base profile. For information, see **atm atm1483 advisory-rx-speed** on page 552.
- atm pvc—Applies encapsulation, traffic-shaping, and OAM parameters to the range of ATM PVCs configured on the ATM AAL5 interface for use by the dynamic ATM 1483 subinterface. For information, see **atm pvc** on page 556.
- auto-configure—Specifies the types of upper-interface encapsulations that are accepted or detected by the dynamic ATM 1483 subinterface. For information, see **atm atm1483 auto-configure** on page 552.
- atm class-vc—Specifies the VC class assigned to the bulk-configured VC ranges created on the dynamic ATM 1483 subinterfaces associated with this base profile. For information, see **atm class-vc** on page 556.

- description—Assigns a description to ATM 1483 subinterfaces that are created with this base profile. For information, see **atm atm1483 description** on page 553. You can then set up the router to send this description to AAA by using the **atm atm1483 export-subinterface-description** command, as described in *Sending Interface Descriptions to AAA* in *Chapter 1, Configuring ATM*.

- profile—Adds a nested profile assignment, which references another profile that dynamically configures an upper-interface encapsulation type over the ATM 1483 subinterface. For information, see **atm atm1483 profile** on page 553.

- subscriber—Configures a local subscriber for a dynamic upper-interface encapsulation type. For information, see **atm atm1483 subscriber** on page 553.

You can override the base profile assignment for a single ATM PVC that exists within a bulk-configured VC subrange with a profile that includes debugging attributes. This feature is useful for troubleshooting problems with the ATM 1483 dynamic subinterface columns created on the specified PVC. For more information, see *Overriding Base Profile Assignments* on page 546.

Nested Profile Assignments

The configuration for each dynamic upper-interface encapsulation type might differ, depending on the column type built by the router. To manage these differences, you can include one or more nested profile assignments within the ATM 1483 base profile. A nested profile assignment references another profile that configures attributes for a dynamic upper-interface encapsulation type. You can create different profiles for each upper-interface encapsulation type, or you can create a single profile that includes attributes for multiple encapsulation types.

For example, the following commands create a base profile named atm1483BaseProfile with two nested profile assignments. The first nested profile assignment references an IP profile named atm1483ProfileIp, and the second nested profile assignment references a PPP profile named atm1483ProfilePpp.

```
host1(config)#profile atm1483BaseProfile
host1(config-profile)#atm atm1483 profile ip atm1483ProfileIp
host1(config-profile)#atm atm1483 profile ppp atm1483ProfilePpp
```

In this example, atm1483ProfileIp and atm1483ProfilePpp have different IP configurations depending on the dynamic interface column constructed. For an IP over ATM (IPoA) dynamic interface column, the router uses the IP attributes in atm1483ProfileIp. For an IP over PPP over ATM dynamic interface column, the router uses the IP attributes in atm1483ProfilePpp.

The concepts that apply to profiles created for upper-interface encapsulation types configured over static ATM 1483 subinterfaces also apply to profiles created for upper-interface encapsulation configured over dynamic ATM 1483 subinterfaces. For information about creating profiles for upper-interface encapsulation types, see *Chapter 15, Configuring Dynamic Interfaces*.

Additional Profile Characteristics for Upper Interfaces

In addition to ATM 1483 attributes and nested profile assignments, the base profile for a dynamic ATM 1483 subinterface can also include individual characteristics for several upper-interface encapsulation types, provided that no nested profile assignment for the specified encapsulation type is in the base profile. If, on the other hand, a nested profile assignment for this encapsulation type exists in the base profile, the router obtains all characteristics for that encapsulation type from the nested profile and not from the base profile.

For lists of the characteristics for each supported upper-interface encapsulation type, see *Profile Characteristics* in *Chapter 15, Configuring Dynamic Interfaces*.

Bulk Configuration of VC Ranges

When you create a static ATM 1483 subinterface, you must configure a permanent virtual circuit (PVC), also known as a virtual circuit (VC). The ATM protocol requires one or more VCs over which data traffic is transmitted to higher layers in the protocol stack.

Similarly, dynamic creation of ATM 1483 subinterfaces requires you to configure a range of ATM PVCs on the ATM AAL5 interface and assign a name to this range. Each VC range consists of one or more nonoverlapping VC subranges. A VC subrange is a group of VCs that resides within the virtual path identifier (VPI) and virtual circuit identifier (VCI) ranges you specify.

The process of configuring a VC range for a dynamic ATM 1483 subinterface is referred to as *bulk configuration*. You create a bulk configuration by issuing the **atm bulk-config** command. For example, the following commands create an ATM 1483 bulk configuration named myBulkConfig on the specified ATM AAL5 interface.

```
host1(config)#interface atm 2/0
host1(config-if)#atm bulk-config myBulkConfig vc-range 0 3 101 1100
vc-range 4 7 201 700
```

In this example, the **atm bulk-config** command configures a VC range made up of two VC subranges. The first subrange, with VPIs 0–3 and VCIs 101–1100, configures 1000 VCs on each of four VPIs, for a total of 4000 VCs. The second subrange, with VPIs 4–7 and VCIs 201–700, configures 500 VCs on each of four VPIs, for a total of 2000 VCs. The entire myBulkConfig VC range configures a combined total of 6000 VCs.

NOTE: For information about the maximum number of ATM 1483 bulk configurations supported per router, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

After you issue the **atm bulk-config** command, the router provisions all circuits in the specified VC range at the same time. This provisioning can take several seconds, depending on the number of VCs being created. The router does not dynamically create the ATM 1483 subinterface for the circuit until it receives incoming data traffic on the circuit.

After you create a named VC range, you cannot remove the underlying ATM AAL5 interface until you issue the **no atm bulk-config** command to remove the VC range from that interface.

NOTE: For information about the maximum number of VCs (sum of the VPI/VCI addresses within all VC subranges) that you can configure with the **atm bulk-config** command per line module and per chassis, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

NOTE: Do not use any reserved VCI values when configuring VCs with the **atm bulk-config** command. For information about reserved VCIs, see *Configuring F4 OAM* in *Chapter 1, Configuring ATM*.

Bulk Configuration and VC Classes

You can assign a previously configured VC class to a bulk-configured VC range. A *VC class* is a set of attributes for virtual circuits that can include the service category, encapsulation method, F5 OAM options, and Inverse ARP. Using VC classes to configure VC attributes provides the following benefits:

- VC classes enable you to classify and group VCs based on the OAM and traffic requirements of their associated subscribers.
- When subscriber requirements change, a VC class is easier and less time-consuming to modify than individual PVC attributes.

To assign a VC class to a bulk-configured VC range, you use the **atm class-vc** command from Profile Configuration mode to associate the VC class to a base profile. Issuing this command applies the set of attributes in the specified VC class to all bulk-configured VC ranges that are dynamically created from this base profile.

For details about configuring and using VC classes, including information about how precedence levels affect how the router determines attributes values for dynamically created circuits, see *Configuring ATM VC Classes* in *Chapter 1, Configuring ATM*. For information about how to use the **atm vc-class** command to assign a VC class to a base profile, see **atm class-vc** on page 556.

NOTE: Using the **atm class-vc** command inside a nested profile that is referenced in a base profile has no effect on the bulk-configured VC ranges associated with the base profile. The router accepts only those VC class assignments that are configured in a base profile and ignores any VC class assignments made in a nested profile.

Bulk Configuration and CAC

You cannot create a bulk-configured VC range on an ATM interface on which you have configured connection admission control (CAC). Conversely, you cannot configure CAC on an ATM interface on which you have created a bulk-configured VC range.

If you are upgrading to the current JUNOSe software release from a lower-numbered release, configurations that use CAC and bulk configuration on the same ATM interface continue to work. However, we recommend that you disable CAC on these ATM interfaces to ensure continued compatibility with future JUNOSe releases.

For information about how to use the **atm cac** command to configure CAC, see *Setting Optional Parameters* in *Chapter 1, Configuring ATM*.

Dynamic Interface Creation

After you configure the ATM 1483 base profile and create the range of VCs on the ATM AAL5 interface, you associate these two components by assigning the base profile to the VC range with the **profile atm1483 bulk-config-name** command.

As a final step, you must issue the **auto-configure atm1483** command. This command configures the ATM AAL5 interface to support autodetection of the ATM 1483 dynamic encapsulation type.

When the router receives an incoming data packet on a circuit, it dynamically creates the ATM 1483 subinterface, using the attributes specified in the base profile. After examining the contents of the data packet, the router dynamically creates the required interface columns above the ATM 1483 subinterface, using the configuration attributes contained in the nested profiles, if specified, or in the base profile itself.

Overriding Base Profile Assignments

You can use the **profile atm1483 bulk-config-name pvc** command to assign an overriding profile to a single ATM PVC that exists within a bulk-configured VC subrange. The VC subrange that encompasses the PVC must have been previously configured with the **atm bulk-config** command for use by a dynamic ATM 1483 subinterface. After you assign the overriding profile, the router uses the information in this profile instead of the information in the previously assigned base profile to create any subsequent ATM 1483 dynamic subinterface columns on the specified PVC.

Overriding the base profile assignment for an ATM PVC with a profile that includes debugging attributes enables you to troubleshoot problems with ATM 1483 dynamic subinterface columns created on the specified PVC. The overriding profile, like the original base profile, can include ATM 1483 attributes, nested profile assignments, and individual characteristics for dynamic upper-interface encapsulation types.

For configuration instructions and examples, see *Configuring Overriding Profile Assignments* on page 558.

NOTE: See *JUNOSe Release Notes*, *Appendix A*, *System Maximums* for information about the maximum number of overriding profile assignments currently supported per router.

Changing VC Subranges

You can add, remove, modify, merge, disable, and enable VC subranges within an existing bulk-configured VC range. Previously, changes to VC subranges were possible only if you removed the VC range and then configured it again with different subrange values. The ability to make changes to VC subranges without first having to remove the entire VC range avoids potentially disrupting all subscribers on existing dynamic ATM 1483 subinterfaces associated with the deleted VC range.

For configuration instructions and examples, see *Changing VC Subranges* on page 563.

Static ATM Interfaces Within VC Subranges

You can configure a static ATM interface with an ATM PVC whose VPI and VCI addresses fall within an existing bulk-configured VC subrange. Conversely, you can also create a bulk-configured VC subrange that includes the VPI and VCI addresses belonging to an existing ATM PVC on a static ATM interface. Previously, configurations that caused VPI/VCI address conflicts between a static ATM interface and a bulk-configured VC subrange were prohibited on the router.

In certain ATM network configurations, you might need to transparently forward traffic from selected circuits with unrelated addresses to another location in the network. The ability to create a static ATM interface on a circuit within a bulk-configured VPI/VCI address range is particularly useful when you use ATM layer 2 services over MPLS with Martini encapsulation to forward the traffic from the selected circuits. You must create the interface stack for ATM layer 2 statically and define the configuration parameters individually on a per-interface basis.

The following rules apply when you configure either a static ATM interface within an existing bulk-configured VC subrange, or a subrange that includes an existing static ATM interface:

- All of the following ATM configurations are supported on the static ATM interface: ATM layer 2 services over MPLS including local cross-connects, point-to-point connections, and nonbroadcast multiaccess (NBMA) connections.
- Static ATM interfaces and circuits defined within a bulk-configured VC subrange are stored in NVS and preserved after a reboot.
- The base profile associated with the VC subrange does not apply to any statically defined ATM interfaces that fall within the subrange.
- If a VC subrange includes a statically defined ATM interface, overriding profile assignments configured for the same VPI/VCI address as a statically defined ATM interface become inactive until the static ATM 1483 subinterface is removed. The overriding profile becomes active again when you remove the static ATM 1483 subinterface. You can display the current operational status (active or inactive) of overriding profile assignments by using the **show atm bulk-config** command.
- Operations that add, remove, modify, merge, disable, or enable VC subranges within a bulk-configured VC range do not affect any static ATM interfaces defined within the VC subrange.

- You cannot create a static ATM circuit if the VPI/VCI address conflicts with an existing ATM 1483 dynamic subinterface column. Such a configuration would disrupt subscribers already connected to the router via the dynamic subinterface.

- You cannot create a static ATM interface with a VPI/VCI address that falls within a range of circuits reserved for use by the MPLS downstream-on-demand label distribution method.

- You cannot configure CAC on a static ATM interface within an existing bulk-configured VC subrange. Conversely, you cannot create a bulk-configured VC subrange that includes a static ATM interface on which CAC is configured. (For information about how to use the **atm cac** command to configure CAC, see *Setting Optional Parameters* in *Chapter 1, Configuring ATM*.)

For configuration information and examples, see *Configuring Static ATM Interfaces Within VC Subranges* on page 568.

Terminating Stale PPPoA Subscribers and Restarting LCP Negotiations

In configurations of dynamic IP over dynamic PPP over a dynamic (bulk-configured) ATM 1483 subinterface, the router sends an LCP terminate request packet to a PPPoA CPE device in response to receipt of an IPv4-over-PPP data packet or an IPv6-over-PPP data packet when the dynamic ATM 1483 subinterface transitions to a dormant state due to an ungraceful subscriber logout. This action terminates stale PPPoA subscribers and causes the CPE to restart LCP negotiations. This behavior is always in effect on the router and does not require CLI or SNMP configuration.

The implementation of this feature for dynamic ATM 1483 subinterfaces is almost identical to the implementation for static ATM 1483 subinterfaces, with the following difference:

- For *static* ATM 1483 subinterfaces, the restart of LCP negotiations by the CPE causes the router to re-create the dynamic PPP and IP upper-layer interfaces above the static ATM 1483 subinterface.

- For *dynamic* ATM 1483 subinterfaces, the receipt of a PPP data packet from the CPE causes the router to re-create only the dynamic ATM 1483 subinterface to send the LCP terminate request packet, but not the dynamic PPP and IP upper-layer interfaces above the dynamic ATM 1483 subinterface. The router re-creates the dynamic PPP and IP upper-layer interfaces when the CPE restarts LCP negotiations.

For details about the operation and benefits of this feature, see *Terminating Stale PPPoA Subscribers and Restarting LCP Negotiations* in *Chapter 15, Configuring Dynamic Interfaces*, which describes the router behavior for static ATM 1483 subinterfaces.

Authenticating Subscribers on Dynamic Bridged Ethernet over Dynamic ATM Interfaces

You can use either of the following methods to configure and manage RADIUS authentication for IP subscribers on dynamic bridged Ethernet over dynamic ATM 1483 subinterfaces:

- The **atm atm1483 subscriber** command
- The subscriber management application

The **atm atm1483 subscriber** command *does not support* running stateful SRP switchover (high availability) on the router. Therefore, the configuration method you choose depends on whether stateful SRP switchover is or is not running on your router.

Configuration Method Using atm atm1483 subscriber Command

When you use the **atm atm1483 subscriber** command, as described in **atm atm1483 subscriber** on page 553, to configure IP subscribers on dynamic bridged Ethernet over dynamic ATM 1483 subinterface columns to support RADIUS authentication, the **atm atm1483 subscriber** command provides the subscriber's authentication parameters. The dynamic ATM 1483 subinterface acts as the authenticating layer that establishes a session with RADIUS and passes the subscriber's locally configured username and password information to the RADIUS server.

However, if your router is running stateful SRP switchover (high availability), the use of the **atm atm1483 subscriber** command in this configuration might suspend stateful SRP switchover on the router or prevent stateful SRP switchover from becoming active. To bypass this limitation, you can use the subscriber management application to configure IP subscribers on dynamic bridged Ethernet interfaces.

Configuration Method Using Subscriber Management Application

You can use the JUNOSe subscriber management application to configure and manage IP subscribers associated with a dynamic bridged Ethernet interface column. The subscriber management application uses an IP service profile to manage and authenticate IP subscribers with RADIUS. An IP service profile contains user and password information, and is used in a route map for subscriber management and to authenticate subscribers with RADIUS.

In this configuration, the IP service profile provides the subscriber's authentication parameters, and the subscriber management application acts as the authenticating layer to obtain information from RADIUS for configuration of dynamic IP subscribers. To assign the IP service profile to the interface profile from which the dynamic bridged Ethernet interface is created, you use the **bridge1483 service-profile** command in Profile Configuration mode.

If stateful SRP switchover is disabled or not running on your router, you can continue to use the **atm atm1483 subscriber** command to configure IP subscribers on dynamic bridged Ethernet interfaces to support RADIUS authentication.

Alternatively, you can use the subscriber management application to create and configure dynamic IP interfaces regardless of whether stateful SRP switchover is running on the router. In addition, using subscriber management enables you to take advantage of several useful features such as the IP inactivity timer.

In the event that an interface profile for a dynamic bridged Ethernet interface includes the **atm atm1483 subscriber** command to configure a local subscriber as well as the **bridge1483 service-profile** command to reference an IP service profile, the values specified with the **atm atm1483 subscriber** command take precedence. The router ignores the values in the IP service profile in this case.

For details about using the subscriber management application to configure RADIUS authentication for IP subscribers on dynamic bridged Ethernet interfaces, see *Authenticating Subscribers on Dynamic Bridged Ethernet over Static ATM Interfaces* and *Configuring Subscriber Management for IP Subscribers on Dynamic Bridged Ethernet Interfaces* in *Chapter 15, Configuring Dynamic Interfaces*. The information in these sections, which explains how to use subscriber management to achieve the same functionality as the **subscriber** command without adversely affecting stateful SRP switchover, applies equally to the **atm atm1483 subscriber** command.

For more information about using the subscriber management application, see *JUNOSe Broadband Access Configuration Guide, Chapter 23, Configuring Subscriber Management*.

Configuring a Dynamic ATM 1483 Subinterface

To configure a dynamic ATM 1483 subinterface:

1. (Optional) Configure profiles containing characteristics for the dynamic upper-interface encapsulation types to be created over the dynamic ATM 1483 subinterface.

   These profiles are referenced in the base profile for the dynamic ATM subinterface as nested profile assignments. For detailed instructions on creating profiles, see *Configuring a Dynamic Interface from a Profile* in *Chapter 15, Configuring Dynamic Interfaces*.

2. Create the base profile for the dynamic ATM 1483 subinterface by assigning the profile a name.

   ```
   host1(config)#profile atm1483BaseProfile
   ```

   This command accesses Profile Configuration mode, which enables you to configure attributes in the base profile.

3. Define attributes for the ATM 1483 subinterface in the base profile.

   a. Apply traffic-shaping parameters to the VC range on the ATM AAL5 interface.

   b. Configure the ATM 1483 subinterface for autodetection of the PPP upper-interface encapsulation type.

c. Configure the ATM 1483 subinterface for autodetection of the IP upper-interface encapsulation type using a nondefault lockout time range of 3600–7200 seconds (1–2 hours).

d. Configure a subscriber for the IP upper-interface encapsulation type.

e. Configure a description for ATM 1483 subinterfaces that are created with this base profile.

f. Set an advisory speed for ATM subinterfaces that are created with this base profile.

g. Assign a VC class to the bulk-configured VC ranges created on the dynamic ATM 1483 subinterfaces associated with this base profile. You must issue the **exit** command from Profile Configuration mode for the VC class association to take effect.

```
host1(config-profile)#atm pvc aal5autoconfig cbr 10000
host1(config-profile)#atm atm1483 auto-configure ppp
host1(config-profile)#atm atm1483 auto-configure ip lockout-time 3600 7200
host1(config-profile)#atm atm1483 subscriber ip user-prefix joesmith
domain myisp password-prefix abc123
host1(config-profile)#atm atm1483 description VC_atm1
host1(config-profile)#atm atm1483 advisory-rx-speed 2000
host1(config-profile)#atm class-vc premium-subscriber-class
host1(config-profile)#exit
```

4. (Optional) In the base profile, create nested profile assignments for the upper-interface encapsulation types, and include additional profile characteristics for other encapsulation types as needed.

   For example, the following commands configure nested profile assignments for the PPP and IP upper-interface encapsulation types, and define additional attributes for the PPPoE upper-interface encapsulation type.

   ```
   host1(config-profile)#atm atm1483 profile ppp myPppProfile
   host1(config-profile)#atm atm1483 profile ip myIpProfile
   host1(config-profile)#pppoe duplicate-protection
   host1(config-profile)#pppoe sessions 3000
   ```

5. Exit Profile Configuration mode.

6. Configure the ATM and ATM AAL5 interface.

   ```
   host1(config)#interface atm 5/0
   ```

7. Configure a range of VCs on the static ATM AAL5 interface, and assign a name to this range. This operation can take several minutes to complete, depending on the number of VCs being configured.

NOTE: For information about the maximum number of ATM 1483 bulk configurations supported per chassis, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

For example, the following command creates a VC range named myBulkConfig made up of two VC subranges that configure a total of 5,000 virtual circuits.

host1(config-if)#**atm bulk-config myBulkConfig vc-range 0 2 101 1100 vc-range 3 6 201 700**

NOTE: For information about the maximum number of VCs (sum of the VPI/VCI addresses within all VC subranges) that you can configure with the **atm bulk-config** command per line module and per chassis, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

NOTE: Do not use any reserved VCI values when configuring VCs with the **atm bulk-config** command. For information about reserved VCIs, see *Configuring F4 OAM* in *Chapter 1, Configuring ATM*.

8. Assign the base profile configured for the ATM 1483 subinterface to the VC range configured on the ATM AAL5 interface.

   host1(config-if)#**profile atm1483 bulk-config-name myBulkConfig atm1483BaseProfile**

9. Configure the ATM AAL5 interface to support autodetection of the ATM 1483 dynamic encapsulation type.

   host1(config-if)#**auto-configure atm1483**

atm atm1483 advisory-rx-speed

- Use to set an advisory receive speed for ATM 1483 subinterfaces that are created with the profile that you are configuring. This setting has no effect on data forwarding. You can use it to indicate the speed of the client interface. When traffic is tunneled with L2TP, the advisory receive speed is sent from the LAC to the LNS. See *JUNOSe Broadband Access Configuration Guide, Chapter 12, Configuring an L2TP LAC* for additional information about the advisory receive speed.
- The range is 0–2147483647 kbps.
- Example

  host1(config-profile)#**atm atm1483 advisory-rx-speed 2000**

- Use the **no** version to restore the default behavior—the RX speed is not sent to the LNS.

atm atm1483 auto-configure

- Use to specify the types of dynamic upper-interface encapsulations that are accepted or detected by a dynamic ATM 1483 subinterface.
- Include this command in the base profile for a dynamic ATM 1483 subinterface.
- For the bridged Ethernet, IP, PPP, and PPPoE encapsulation types, you can optionally specify the lockout time range for the encapsulation type. For more information, see *Encapsulation Type Lockout* on page 449.

- Examples

  host1(config-profile)#**atm atm1483 auto-configure ip lockout-time 3600 7200**
  host1(config-profile)#**atm atm1483 auto-configure pppoe**

- Use the **no** version to terminate detection of the specified encapsulation type.

atm atm1483 description

- Use to assign a text description for ATM 1483 subinterfaces that are created with the profile that you are configuring.
- The description can be up to 255 characters.
- Example

  host1(config-profile)#**atm atm1483 description VC_atm1**

- Use the **no** version to remove the text description.

atm atm1483 profile

- Use to add a nested profile assignment to a base profile for a dynamic ATM 1483 subinterface.
- A nested profile assignment references another profile that configures attributes for a dynamic upper-interface type over the ATM 1483 subinterface.
- Example

  host1(config-profile)#**atm atm1483 profile pppoe atm1483ProfilePppoe**

- Use the **no** version to remove the profile assignment for the upper-interface encapsulation type.

atm atm1483 subscriber

- Use to configure a local subscriber for a dynamic upper-interface encapsulation type configured over a dynamic ATM 1483 subinterface. A subscriber supports authentication and configuration from the RADIUS server.
- Optionally, you can include this command in the base profile for a dynamic ATM 1483 subinterface.
- When you configure a subscriber, you must specify the following:
  - *upperInterfaceType*—Type of dynamic interface, **bridgedEthernet** or **ip**
  - *userNameUsage*—How the dynamic interface uses the username for authentication purposes
    - **user**—Use the name as specified.
    - **user-prefix**—Use the name as a prefix to the interface physical location. The router automatically postpends the physical location of the user to the username string. The username format is *userName.slot.port.vpi.vci*. The resulting username string is then used to authenticate the subscriber with the RADIUS server.
  - *userName*—RADIUS username
  - *domainName*—Domain name

- You can optionally supply password information:
  - *passwordUsage*—How the dynamic interface uses the password for authentication purposes
    - **password**—Use the password as specified.
    - **password-prefix**—Use the password as a prefix to the interface physical location. The router automatically postpends the physical location of the user to the password string. The password format is *password.slot.port.vpi.vci*. The resulting password string is then used to authenticate the subscriber with the RADIUS server.
  - *password*—RADIUS password
- If your router is running stateful SRP switchover (high availability), the use of the **atm atm1483 subscriber** command to configure RADIUS authentication for subscribers on dynamic bridged Ethernet interfaces might suspend stateful SRP switchover on the router or prevent stateful SRP switchover from becoming active. For more information about using the subscriber management application to bypass this limitation, see *Authenticating Subscribers on Dynamic Bridged Ethernet over Dynamic ATM Interfaces* on page 549.
- Example 1

  host1(config-profile)#**atm atm1483 subscriber ip user-prefix boston01 domain myisp password-prefix abc123**

- Example 2

  host1(config-subif)#**atm atm1483 subscriber bridgedEthernet user westford003 domain acmecorp.east password xyz123**

- Use the **no** version to remove the subscriber.

atm bulk-config

- Use to create a bulk-configured VC range on a static ATM AAL5 interface for use by a dynamic ATM 1483 subinterface.

NOTE: For information about the maximum number of ATM 1483 bulk configurations supported per chassis, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

- Each VC range consists of one or more nonoverlapping VC subranges. A VC subrange is a group of VCs that resides within the VPI and VCI ranges you specify.

- You can configure multiple VC ranges on an ATM AAL5 interface.

NOTE: For information about the maximum number of VCs (sum of the VPI/VCI addresses within all VC subranges) that you can configure with the **atm bulk-config** command per line module and per chassis, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

NOTE: Do not use any reserved VCI values when configuring VCs with the **atm bulk-config** command. For information about reserved VCIs, see *Configuring F4 OAM* in *Chapter 1, Configuring ATM*.

- When you create a bulk-configured VC range, you must specify the following:
  - A name of up to 80 alphanumeric characters; this is also referred to as the bulk configuration name
  - The starting and ending VPI values (inclusive) for each VC subrange
  - The starting and ending VCI values (inclusive) for each VC subrange
- You can create a placeholder VC range by issuing the **atm bulk-config** command without specifying any subranges. You can assign a profile to this placeholder and add subranges to it later.
- You can add and remove individual VC subranges.
- You cannot remove a VC subrange if any dynamic ATM 1483 subinterfaces currently exist for any circuit within the subrange. Use the **atm bulk-config shutdown** command to remove dynamic ATM 1483 interfaces created within a subrange.
- Removal of a subrange automatically results in the removal of all overriding profile assignments on that subrange.
- You can create a bulk-configured VC subrange that includes the VPI and VCI addresses belonging to an existing ATM PVC on a static ATM interface.
- You cannot create a bulk-configured VC range on an ATM interface on which you have configured CAC. Conversely, you cannot configure CAC on an ATM interface on which you have created a bulk-configured VC range. For information about configuring CAC, see *Setting Optional Parameters* in *Chapter 1, Configuring ATM*.
- Example 1—Configures a VC range named myBulkConfig with a single VC subrange containing VPIs 0–2 and VCIs 101–1100; this command configures a total of 3000 VCs

  host1(config-if)#**atm bulk-config myBulkConfig vc-range 0 2 101 1100**

- Example 2—Configures a VC range named myMultiBulkConfig with two VC subranges containing VPIs 0–1 and VCIs 101–600 (first subrange) and VPIs 3–5 and VCIs 201–3200 (second subrange); this command configures a total of 10,000 VCs

  host1(config-if)#**atm bulk-config myMultiBulkConfig vc-range 0 1 101 600 vc-range 3 5 201 3200**

- Use the **no** version to remove the specified VC range from the ATM AAL5 interface, to remove the specified subranges from the specified VC range, or to remove all subranges from the specified VC range. The **no** version also removes any overriding profile assignments for ATM PVCs within the deleted VC range or VC subrange.

atm class-vc

- Use to assign a previously configured VC class to a base profile for a dynamic ATM 1483 subinterface.
- Issuing this command applies the set of attributes in the specified VC class to all bulk-configured VC ranges that are dynamically created from this base profile.
- You must issue the **exit** command from Profile Configuration mode for the VC class association to take effect.
- Changes to a VC class specified in a base profile apply only to those PVCs that are dynamically created *after* the change is made. These changes do not apply to dynamic PVCs that were created prior to the VC class modification.
- Example

  host1(config-profile)#**atm class-vc gold-subscriber-class**
  host1(config-profile)#**exit**

- Use the **no** version to remove the VC class association with the base profile.

atm pvc

- Use to apply encapsulation, traffic-shaping, and OAM parameters to the range of ATM PVCs configured on an ATM AAL5 interface for use by a dynamic ATM 1483 subinterface.
- Include this command in the base profile for a dynamic ATM 1483 subinterface.
- You must specify one of the following encapsulation types:
  - **aal5autoconfig**—Enables autodetection of the 1483 encapsulation (LLC/SNAP or VC multiplexed)
  - **aal5snap**—Specifies a logical link control (LLC) encapsulated circuit; the LLC/Subnetwork Access Protocol (LLC/SNAP) header precedes the protocol datagram
  - **aal5mux ip**—Specifies a VC-based multiplexed circuit used for IP only
- You can optionally set the *peak*, *average*, and *burst* sizes. To use VBR-RT or VBR-NRT as the service type, you must specify each of these options.
- The default service type is UBR. To set a different service type, specify one of the following keywords:
  - **rt**—Selects VBR-RT as the service type; you can select **rt** only if you set the *peak*, *average*, and *burst* parameters
  - **cbr**—Selects CBR as the service type; you must set the CBR rate in Kbps

- You can optionally include the **oam** keyword and a number of seconds in the range 1–600 to enable generation of OAM F5 loopback cells on this circuit. This option enables VC integrity features that affect the operational state of the ATM PVC.
- Example

  host1(config-profile)#**atm pvc aal5autoconfig cbr 10000 oam 120**

- Use the **no** version to restore the default service type, UBR, on the VC range.

auto-configure atm1483

- Use to configure the static ATM AAL5 interface to support autodetection of an ATM 1483 dynamic interface type.
- You must issue this command to enable creation of a dynamic ATM 1483 subinterface.
- Example

  host1(config-if)#**auto-configure atm1483**

- Use the **no** version to terminate autodetection of the ATM 1483 encapsulation type.

interface atm

- Use to select an ATM interface or ATM 1483 subinterface.
- To specify an ATM interface for ERX-7xx models, ERX-14xx models, and ERX-310 routers, use the *slot*/*port*.[*subinterface*] format.
  - *slot*—Number of the chassis slot
  - *port*—Port number on the I/O module
  - *subinterface*—Number of the subinterface in the range 1–2147483647
- To specify an ATM interface for E120 and E320 routers, use the *slot*/*adapter*/*port*[.*subinterface*] format.
  - *slot*—Number of the chassis slot
  - *adapter*—Identifier for the IOA within the E320 chassis, either 0 or 1, where:
    - 0 indicates that the IOA is installed in the right IOA bay (E120 router) or the upper IOA bay (E320 router).
    - 1 indicates that the IOA is installed in the left IOA bay (E120 router) or the lower IOA bay (E320 router).
  - *port*—Port number on the IOA
  - *subinterface*—Number of the subinterface in the range 1–2147483647
- For more information, see *Creating a Basic Configuration* in *Chapter 1, Configuring ATM*.
- Examples

  host1(config)#**interface atm 5/0.1**
  host1(config)#**interface atm 5/0/0.1**

- Use the **no** version to remove the interface or subinterface.

profile

- Use to create a base profile to configure attributes for a dynamic ATM 1483 subinterface.
- Specify a profile name of up to 80 alphanumeric characters.
- Example

  host1(config)#**profile atm1483BaseProfile**

- Use the **no** version to delete the specified profile if it is not being used by any existing VC subranges.

NOTE: If VC ranges are configured for the dynamic ATM 1483 subinterface associated with the base profile you want to delete, you must use the **no atm bulk-config** command to remove the VC ranges before you can use the **no profile** command to remove the associated base profile.

profile atm1483 bulk-config-name

- Use to assign the base profile configured for a dynamic ATM 1483 subinterface to the VC range configured on a static ATM AAL5 interface.
- You must specify both of the following:
  - Name assigned to the VC range on an ATM AAL5 interface, as specified in the **atm bulk-config** command
  - Name assigned to the base profile for a dynamic ATM 1483 subinterface
- Example

  host1(config-if)#**profile atm1483 bulk-config-name myBulkConfig atm1483BaseProfile**

- Use the **no** version to remove the profile assignment.

Configuring Overriding Profile Assignments

Configuring overriding profile assignments includes the following tasks:

- Assigning an overriding profile to an ATM PVC within a bulk-configured VC subrange
- Removing an overriding profile assignment from an ATM PVC
- Removing overriding profile assignments from a VC range or VC subrange

The following sections describe how to perform these tasks.

Assigning an Overriding Profile to an ATM PVC

You can assign an overriding profile to a single ATM PVC within a bulk-configured VC subrange. Typically, the overriding profile includes debugging attributes to help you identify and troubleshoot problems with the ATM 1483 dynamic subinterface column created on the specified PVC.

To assign an overriding profile to an ATM PVC within a bulk-configured VC subrange:

1. Configure both of the following:

   - Base profile for the bulk-configured VC range on the static ATM AAL5 interface. The VC range consists of one or more VC subranges.

   - Overriding profile for an ATM PVC within a bulk-configured VC subrange

   For information about configuring profiles, see *Configuring a Dynamic Interface from a Profile* in *Chapter 15, Configuring Dynamic Interfaces*.

2. Create a bulk-configured range of VCs on a static ATM AAL5 interface. The following commands create a bulk-configured VC range named myBulkConfig that consists of two VC subranges. The first subrange encompasses VPIs 0–4 and VCIs 21–1000. The second subrange encompasses VPIs 5–7 and VCIs 21–2000.

   host1(config)#**interface atm 4/0**
   host1(config-if)#**atm bulk-config myBulkConfig vc-range 0 4 21 1000 vc-range 5 7 21 2000**

3. Assign the previously configured base profile (atm1483BaseProfile) to the bulk-configured VC range.

   host1(config-if)#**profile atm1483 bulk-config-name myBulkConfig atm1483BaseProfile**

4. Assign the previously configured overriding profile to a single ATM PVC within the bulk-configured VC subrange. The following command assigns the overriding profile myDebugProfile to the PVC with VPI 0 and VCI 101. This PVC exists within the first VC subrange (VPIs 0–4 and VCIs 21–1000) configured in Step 2.

   host1(config-if)#**profile atm1483 bulk-config-name myBulkConfig pvc 0 101 myDebugProfile**

   The router now uses the information in the overriding profile instead of the information in the base profile to create subsequent ATM 1483 dynamic subinterface columns over this PVC.

5. (Optional) You can assign the same overriding profile to a different ATM PVC within the same VC subrange or within a different VC subrange. For example, the following command assigns the overriding profile myDebugProfile to the PVC with VPI 6 and VCI 901. This PVC exists within the second VC subrange (VPIs 5–7 and VCIs 21–2000) configured in Step 2.

   host1(config-if)#**profile atm1483 bulk-config-name myBulkConfig pvc 6 901 myDebugProfile**

NOTE: You can reverse the order of Step 3 and Step 4 with identical results. That is, you can assign the overriding profile to the ATM PVC and then assign the base profile to the entire VC range. In either case, you must first create the bulk-configured VC range with the **atm bulk-config** command.

6. Configure the ATM AAL5 interface to enable all bulk configurations and to support autodetection of the ATM 1483 dynamic encapsulation type.

   host1(config-if)#**auto-configure atm1483**

7. (Optional) Use the **show atm bulk-config** command to verify the overriding profile configuration.

   For more information about using this command, see **show atm bulk-config** on page 602.

Removing an Overriding Profile Assignment from an ATM PVC

After you troubleshoot the ATM 1483 dynamic subinterface column created on the specified PVC, make sure that you remove the overriding profile assignment to restore the original base profile assignment. This action ensures that subsequent ATM 1483 dynamic subinterface columns are created using the same attributes defined in the base profile.

To remove an overriding profile assignment from an ATM PVC within a bulk-configured VC range:

1. Remove the overriding profile assignment from the specified ATM PVC.

   host1(config-if)#**no profile atm1483 bulk-config-name myBulkConfig pvc 0 101**

2. Select the dynamic ATM 1483 subinterface on which the ATM 1483 dynamic subinterface column resides.

   host1(config)#**interface atm 4/0.101**

3. Use the **shutdown** command to disable the dynamic ATM 1483 subinterface. The **shutdown** command deletes the ATM 1483 dynamic subinterface column and removes the dynamic ATM 1483 subinterface.

   host1(config-subif)#**shutdown**

4. Send traffic over the specified PVC (VPI 0 and VCI 101) on the ATM AAL5 interface. This action re-creates the ATM 1483 dynamic subinterface column with the original base profile association.

   The router now uses the information in the base profile instead of the information in the overriding profile to create subsequent ATM 1483 dynamic subinterface columns for the specified PVC.

5. (Optional) Use the **show atm bulk-config** command to verify the removal of the overriding profile assignment.

   For more information about using this command, see **show atm bulk-config** on page 602.

Removing Overriding Profile Assignments from a VC Range or VC Subrange

When you issue the **no atm bulk-config** command to remove an entire VC range (and all VC subranges within that VC range), the router also removes any overriding profile assignments configured for PVCs within those VC subranges. For example, the following command removes the bulk-configured VC range named myBulkConfig and any overriding profile assignments for PVCs within the VC subranges belonging to myBulkConfig.

```
host1(config-if)#no atm bulk-config myBulkConfig
```

When you issue the **no atm bulk-config** command to remove a particular VC subrange in a bulk-configured VC range, the router also removes any overriding profile assignments for PVCs within that VC subrange. However, overriding profile assignments for PVCs within other VC subranges in the VC range remain intact. For example, the following command removes one VC subrange (VPIs 0–4 and VCIs 21–1000) and only those overriding profile assignments associated with this subrange.

```
host1(config-if)#no atm bulk-config myBulkConfig vc-range 0 4 21 1000
```

atm bulk-config

- Use to create a bulk-configured VC range on a static ATM AAL5 interface for use by a dynamic ATM 1483 subinterface.
- For detailed information about how to use this command, see **atm bulk-config** on page 554.
- Example

  ```
  host1(config)#atm bulk-config test1 vc-range 0 1 101 600
  vc-range 3 5 201 3200
  ```

- Use the **no** version to remove the specified VC range from the ATM AAL5 interface, to remove the specified subranges from the specified VC range, or to remove all subranges from the specified VC range. The **no** version also removes any overriding profile assignments for ATM PVCs within the deleted VC range or VC subrange.

auto-configure atm1483

- Use to configure the static ATM AAL5 interface to enable all bulk configurations and support autodetection of the ATM 1483 dynamic encapsulation type.
- You must issue this command to enable creation of a dynamic ATM 1483 subinterface.

- Example

  host1(config-if)#**auto-configure atm1483**

- Use the **no** version to terminate autodetection of the ATM 1483 encapsulation type.

profile atm1483 bulk-config-name

- Use to assign the base profile configured for a dynamic ATM 1483 subinterface to the VC range configured on a static ATM AAL5 interface.
- You must include both of the following:
  - Name assigned to the VC range on an ATM AAL5 interface, as specified in the **atm bulk-config** command
  - Name assigned to the base profile for a dynamic ATM 1483 subinterface
- Example

  host1(config-if)#**profile atm1483 bulk-config-name test1 test1BaseProfile**

- Use the **no** version to remove the base profile assignment.

profile atm1483 bulk-config-name pvc

- Use to assign an overriding profile to a single ATM PVC that exists within a bulk-configured VC subrange.
- An overriding profile typically includes debugging attributes that help you troubleshoot problems with the ATM 1483 dynamic subinterface column created on the specified PVC.
- The VPI and VCI values of the PVC you specify must exist between the starting VPI/VCI values and ending VPI/VCI values of a VC subrange previously configured with the **atm bulk-config** command.
- Example 1—In this example, a previously configured VC range named test1 includes a VC subrange with VPIs 3–5 and VCIs 201–3200. The following command assigns an overriding profile (test1DebugProfile) to the ATM PVC with VPI 4 and VCI 301 that is within this subrange.

  host1(config-if)#**profile atm1483 bulk-config-name test1 pvc 4 301 test1DebugProfile**

- Example 2—Removes the overriding profile assignment from the ATM PVC with VPI 4 and VCI 301, and restores the original base profile assignment

  host1(config-if)#**no profile atm1483 bulk-config-name test1 pvc 4 301**

- Use the **no** version to remove the overriding profile assignment for the PVC and restore the original base profile assignment.

shutdown

- Use to disable an interface.
- When you disable a dynamic ATM 1483 interface, the **shutdown** command deletes the ATM 1483 dynamic subinterface column and removes the dynamic ATM 1483 subinterface.

- Example

  host1(config-subif)#**shutdown**

- Because the **shutdown** command removes the dynamic ATM 1483 subinterface from the router, issuing a subsequent **no** version of this command has no effect; that is, it does not restart the disabled subinterface.

Changing VC Subranges

Changing VC subranges within a bulk-configured VC range includes the following tasks:

- Adding new VC subranges to an existing VC range
- Removing VC subranges from an existing VC range
- Modifying a VC subrange by shortening or expanding the subrange values
- Merging multiple VC subranges belonging to an existing VC range
- Changing the administrative state of VC subranges

The following sections describe how to perform these tasks.

Adding VC Subranges

You can add a new VC subrange to an existing VC range only when the new subrange does not overlap with any existing subrange. Any overlap causes the addition to fail.

You can add multiple subranges to an existing VC range simultaneously. However, the entire operation fails if even one of the new subranges overlaps with an existing subrange.

The following example specifies the original VC subranges.

host1(config-if)#**atm bulk-config test vc-range 1 1 101 150 vc-range 2 2 201 250 vc-range 5 5 501 550 vc-range 3 3 301 350**

To add subranges to this bulk-configured VC range, you can choose either of the following methods. Each method adds a new subrange (4, 4, 401, 450) to the existing VC range, test.

- Specify one new subrange at a time.

  host1(config-if)#**atm bulk-config test vc-range 4 4 401 450**

- Specify the new subrange and all the existing subranges. If you use this method, all the existing subranges and their order must match exactly, or the operation fails.

  host1(config-if)#**atm bulk-config test vc-range 1 1 101 150 vc-range 2 2 201 250 vc-range 5 5 501 550 vc-range 3 3 301 350 vc-range 4 4 401 450**

The following operation fails because the order of subranges does not match the existing order.

```
host1(config-if)#atm bulk-config test vc-range 2 2 201 250 vc-range 1 1 101 150
vc-range 5 5 501 550 vc-range 3 3 301 350 vc-range 4 4 401 450
vc-range 6 6 601 650
```

You can create a placeholder VC range by specifying a VC range name without specifying any subrange parameters. This VC range has no circuit reservation, but you can assign a profile to it, and add subranges later as desired. The following commands illustrate this approach.

```
host1(config-if)#atm bulk-config test
host1(config-if)#profile atm1483 bulk-config-name test atmProfile
host1(config-if)#atm bulk-config test vc-range 4 4 401 450 vc-range 6 6 601 650
```

Removing VC Subranges

You can remove VC subranges from an existing VC range if no dynamic ATM 1483 subinterfaces currently exists for any circuit within those subranges. The removal operation fails if any such dynamic ATM 1483 subinterface exists. You must first remove the dynamic ATM 1483 subinterfaces before you can remove the subranges. Removal of a subrange automatically results in the removal of all overriding profile assignments on that subrange.

You can remove only a single specific VC subrange at a time. The following example specifies the original VC subranges.

```
host1(config-if)#atm bulk-config test vc-range 1 1 101 150 vc-range 2 2 201 250
vc-range 5 5 501 550 vc-range 3 3 301 350
```

The following command removes one subrange (1, 1, 101, 150) and leaves the remaining subranges, and the named VC range, test, intact.

```
host1(config-if)#no atm bulk-config test vc-range 1 1 101 150
```

To remove more than one VC subrange, you must issue multiple removal commands, one for each subrange. You cannot remove only part of a subrange. A removal command cannot encompass more than one subrange, even if the subranges are adjacent. However, if you do not specify any subranges, you can remove all subranges in the VC, and the named VC range, at the same time.

```
host1(config-if)#no atm bulk-config test
```

Modifying VC Subranges

You can shorten or expand a subrange by modifying the subrange values of a VC range. You can expand a subrange if none of the circuits added overlap with any other subrange. You can shorten a subrange if none of the circuits dropped have existing dynamic ATM 1483 subinterfaces.

You can modify only a single specific subrange at a time. The following example specifies the original VC subranges.

```
host1(config-if)#atm bulk-config test vc-range 1 1 101 150 vc-range 2 2 201 250
vc-range 5 5 501 550 vc-range 3 3 301 350
```

The following command modifies the second subrange from (2, 2, 201, 250) to (2, 3, 210, 230).

```
host1(config-if)#atm bulk-config test modify vc-range 2 3 210 230
```

The router retains any overriding profiles assigned to a subrange after you modify the subrange if the override assignment still falls within the modified subrange. If the assignment falls outside of the newly modified subrange, the router drops the overriding profile assignment.

You cannot modify a subrange at the same time you are adding or removing a subrange. If the new modified values for a subrange partially overlap with another subrange, the operation fails and the router displays an error message.

Merging VC Subranges

You can merge multiple subranges of any particular VC range to form a single unified subrange, conserving subrange resources. Merging takes place only when you modify a subrange so that it completely includes at least one other subrange of the same VC range. The merged subranges do not need to be adjacent to each other.

If the encompassing subrange has any circuits that are outside the subranges to be merged, those circuits are added. The encompassing subrange must cover a subrange completely to incorporate it in the merged subrange. The merge operation fails if the encompassing subrange completely overlaps some subranges but only partially overlaps with another subrange. The encompassing subrange does not have to encompass all subranges of the VC range.

Each subrange that is merged with another frees up a subrange. E-series routers currently support a maximum of 300 bulk-configured VC ranges per chassis. Therefore, if a VC range consists of 5 subranges, 295 subranges are still available for subsequent configuration. If you merge 2 of those subranges, resulting in a new total of 4 subranges in the VC range, then 296 subranges are available for configuration.

The router retains any overriding profile assignments on the subranges made before the merger, and applies them to the new merged subrange. You can separate merged subranges either by removing the merged subrange and then adding new separate subranges or by modifying the merged subrange to remove some portion of the subrange and then adding a new subrange.

The following example specifies the original VC subranges.

```
host1(config-if)#atm bulk-config test vc-range 1 1 101 150 vc-range 2 2 201 250
vc-range 5 5 501 550 vc-range 3 3 301 350
```

The following command merges two subranges, (1, 1, 101, 150) and (2, 2, 201, 250), and effectively replaces them with the new subrange (1, 2, 101, 250).

```
host1(config-if)#atm bulk-config test modify vc-range 1 2 101 250
```

To separate the merged subranges, you can modify the unified subrange and add subranges as needed, provided that no dynamic ATM 1483 subinterfaces currently exist for any circuit within those subranges.

If you merge subranges by using SNMP, the new merged subrange takes the lowest instance value of the incorporated subranges. For example, if a VC range has three subranges with instance values of 2, 4, and 5 and the subranges with instance values of 2 and 5 are merged, the new merged subrange has an instance value of 2.

Changing the Administrative State of VC Subranges

VC subranges have an administrative state that enables you to remove dynamic ATM 1483 subinterfaces on various subranges that belong to a single VC range. This functionality is important because subrange removal requires that no dynamic ATM 1483 subinterfaces exist for any circuit on that subrange. The removal operation fails if any such interfaces exist.

By default, the administrative state of a VC subrange is up. When you change the administrative state to down by using the **atm bulk-config shutdown** command, the router deletes all dynamic ATM 1483 subinterfaces on the affected subranges. You can use the **show atm subinterface** command or the **show atm vc** command to monitor the progress of the removal of all dynamic ATM 1483 subinterfaces for the specified subrange.

No additional dynamic ATM 1483 subinterfaces can be created for the subrange until you restore the administrative state to up by using the **no atm bulk-config shutdown** command.

The following example specifies the original VC subranges.

```
host1(config-if)#atm bulk-config test vc-range 1 1 101 150 vc-range 2 2 201 250
vc-range 5 5 501 550 vc-range 3 3 301 350
```

You cannot specify a partial subrange; the specified subrange must exactly match a subrange that has already been configured. The following command changes the administrative state of the second subrange (2, 2, 201, 250) to down. The router removes all dynamic interface columns built on any of the circuits in this subrange. No additional dynamic ATM 1483 subinterfaces can be created until you change the administrative state to up.

```
host1(config-if)#atm bulk-config test shutdown vc-range 2 2 201 250
```

The following command changes the administrative state of this same VC subrange to up.

```
host1(config-if)#no atm bulk-config test shutdown vc-range 2 2 201 250
```

You can change the administrative state of all subranges in a VC range at the same time by issuing the command without specifying any subranges. The following command shuts down all four subranges belonging to the named VC range, test, regardless of their current state.

```
host1(config-if)#atm bulk-config test shutdown
```

The time required for the router to complete an administrative state change depends on the number of VC subranges configured.

atm bulk-config

- Use to create a bulk-configured VC range on a static ATM AAL5 interface for use by a dynamic ATM 1483 subinterface.
- For detailed information about how to use this command, see **atm bulk-config on page 554**.
- Example

  host1(config)#**atm bulk-config test1 vc-range 0 1 101 600**
  vc-range 3 5 201 3200

- Use the **no** version to remove the specified VC range from the ATM AAL5 interface, to remove the specified subranges from the specified VC range, or to remove all subranges from the specified VC range. The **no** version also removes any overriding profile assignments for ATM PVCs within the deleted VC range or VC subrange.

atm bulk-config modify

- Use to expand or shorten the range of the specified VC subrange. You can modify only a single specific subrange at a time.
- You can expand a subrange if none of the added circuits overlap with any other subrange. You can shorten a subrange if none of the dropped circuits have existing dynamic ATM 1483 subinterfaces.
- Modifying a subrange so that it completely includes at least one other subrange from within the same VC range effectively merges the subranges. Each subrange that is merged with another frees up a subrange for subsequent configuration. The subranges that are merged do not need to be adjacent to each other.
- The router retains any overriding profiles assigned to a subrange if the assignment falls within the modified subrange. If the assignment falls outside of the newly modified subrange, the router drops the overriding profile assignment. If two subranges are merged, the router retains overriding profiles that were assigned to the separate subranges and applies the overriding profiles to the newly merged subrange.
- Example

  host1(config-if)#**atm bulk-config test modify vc-range 2 3 210 230**

- There is no **no** version.

atm bulk-config shutdown

- Use to administratively disable (shut down) a specified VC subrange or all subranges in a VC range. The administrative state of a VC subrange is enabled by default.
- Disabling the VC subrange deletes all dynamic ATM 1483 subinterfaces on the affected subranges. You can use the **show atm subinterface** command or the **show atm vc** command to monitor the progress of the removal of all dynamic ATM 1483 subinterfaces for the specified subrange.

- No dynamic ATM 1483 subinterfaces can subsequently be created for the subrange until you restore the administrative state to enabled by using the **no atm bulk-config shutdown** command.
- Example

  host1(config-if)#**atm bulk-config test shutdown vc-range 2 2 201 250**

- Use the **no** version to enable the specified VC subrange or all subranges in a VC range.

Configuring Static ATM Interfaces Within VC Subranges

You can do either of the following on an E-series router:

- Create a static ATM interface within an existing bulk-configured VC subrange
- Create a bulk-configured VC subrange that includes an existing static ATM interface

The following sections describe how to perform these tasks.

Creating Static ATM Interfaces Within VC Subranges

You can configure a static ATM interface with an ATM PVC whose VPI and VCI addresses fall within an existing bulk-configured VC subrange.

To create a static ATM interface within a VC subrange:

1. Create a bulk-configured VC range that includes one or more VC subranges.

   host1(config)#**interface atm 0/0**
   host1(config-if)#**atm bulk-config test vc-range 1 3 32 1031**

2. Specify a static ATM 1483 subinterface.

   host1(config-if)#**interface atm 0/0.2100**

3. Configure an ATM PVC with VPI and VCI values that fall within the bulk-configured VC subrange. In this example, the VPI value (2) is within the VPI range 1–3, and the VCI value (100) is within the VCI range 32–1031.

   host1(config-subif)#**atm pvc 2100 2 100 aal0**

4. Configure the static ATM interface. For example, the **mpls-relay** command creates a ATM layer 2 services over MPLS tunnel on the circuit.

   host1(config-subif)#**mpls-relay 192.168.0.1 2100**

Creating VC Subranges That Include Static ATM Interfaces

You can configure a bulk-configured VC subrange that includes the VPI and VCI addresses belonging to an existing ATM PVC on a static ATM interface. This example is essentially the reverse of the procedure in *Creating Static ATM Interfaces Within VC Subranges* on page 568.

To create a VC subrange that includes a static ATM interface:

1. Specify a static ATM 1483 subinterface.

   host1(config-if)#**interface atm 3/1.201**

2. Configure an ATM PVC on the static ATM 1483 subinterface. In this example, the VPI value is 1 and the VCI value is 101.

   host1(config-subif)#**atm pvc 201 1 101 aal0**

3. Configure the static ATM interface. For example, the **mpls-relay** command creates an ATM layer 2 services over MPLS tunnel on the circuit.

   host1(config-subif)#**mpls-relay 5.1.1.1 201**

4. Create a bulk-configured VC range that includes the VPI and VCI values of the previously configured ATM PVC. In this example, the VPI range (0–2) includes VPI 1, and the VCI range (100–250) includes VCI 101.

   host1(config)#**interface atm 3/1**
   host1(config-if)#**atm bulk-config test2 vc-range 0 2 100 250**

atm bulk-config

- Use to create a bulk-configured VC range on a static ATM AAL5 interface for use by a dynamic ATM 1483 subinterface.
- For detailed information about how to use this command, see **atm bulk-config** on page 554.
- Example

  host1(config)#**atm bulk-config test1 vc-range 0 1 101 600**
  vc-range 3 5 201 3200

- Use the **no** version to remove the specified VC range from the ATM AAL5 interface, to remove the specified subranges from the specified VC range, or to remove all subranges from the specified VC range. The **no** version also removes any overriding profile assignments for ATM PVCs within the deleted VC range or VC subrange.

atm pvc

- Use to configure a PVC on an ATM interface.
- Specify the VCD, the VPI, the VCI, and the encapsulation type. For more information about these parameters, see *Creating a Basic Configuration* in *Chapter 1, Configuring ATM*.
- You can create a PVC within an existing bulk-configured VC subrange, or a bulk-configured VC subrange that includes the VPI and VCI values of an existing PVC.
- Use the **aal0** encapsulation keyword to cause the router to receive raw ATM cells on this circuit and to forward the cells without performing AAL5 packet reassembly.

- Example

  host1(config-subif)#**atm pvc 10 100 22 aal0**

- Use the **no** version to remove the specified PVC.

interface atm

- Use to select an ATM interface or ATM 1483 subinterface.
- For information about specifying the ATM interface or subinterface, see **interface atm** on page 557.
- Examples

  host1(config)#**interface atm 5/0.1**
  host1(config)#**interface atm 4/0/2**

- Use the **no** version to remove the interface or subinterface.

mpls-relay

- Use to route layer 2 traffic to the specified router.
- For detailed information about using the **mpls-relay** command, see *JUNOSe BGP and MPLS Configuration Guide, Chapter 5, Configuring Layer 2 Services over MPLS*.
- Example

  host1(config-if)#**mpls-relay 10.10.100.2 45**

- Use the **no** version to negate this command.

Configuring VLAN Dynamic Subinterfaces

E-series routers support configuration of dynamic VLAN subinterfaces over static VLAN major interfaces over Ethernet.

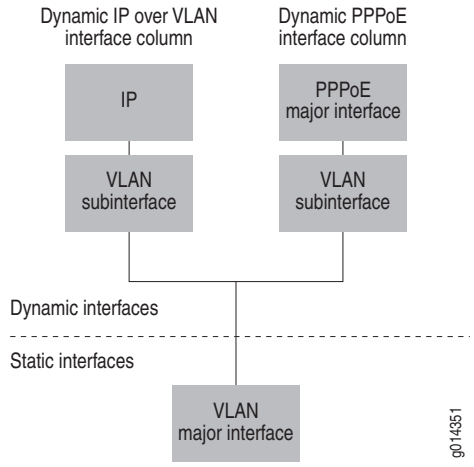
When you configure the dynamic VLAN subinterface, you can enable autodetection and dynamic creation of the following upper-layer encapsulation types:

- IP
- PPPoE

NOTE: Unlike ATM, which supports dynamic upper interfaces over static ATM 1483 subinterfaces, you must configure a dynamic VLAN subinterface to enable autodetection and dynamic creation of IP and PPPoE interfaces.

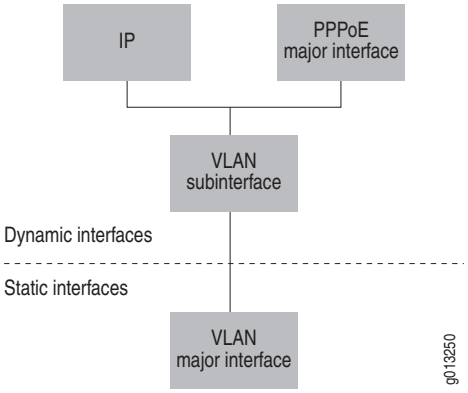
Figure 51 shows the dynamic upper-interface columns supported by dynamic VLAN subinterfaces, and indicates which layers in the columns are static and dynamic.

Figure 51: Dynamic Interface Columns over Dynamic VLAN Subinterfaces



Unlike ATM 1483, you can configure both IP and PPPoE over a single dynamic VLAN subinterface (Figure 52).

Figure 52: Dynamic IP and PPPoE over Single Dynamic VLAN Subinterface



About Configuring Dynamic VLAN Subinterfaces

This section introduces important concepts that you need to understand before you configure dynamic VLAN subinterfaces.

Overview and Benefits

When you configure dynamic VLAN subinterfaces over static VLAN major interfaces, you must configure the VLAN major interface, including the attributes of the VLAN major interface. VLAN major interface attributes include profile assignments and autoconfiguration settings.

As part of the configuration process, you create a VLAN base profile, which can optionally include nested profile assignments, to define the attributes required to configure the dynamic VLAN subinterface and the dynamic upper-layer encapsulation types built over it.

When the router receives a packet, it examines the packet for a VLAN ID or double-tagged S-VLAN ID. You can also configure the router to further examine the packet for agent-circuit-identifier information. Based on these values and the configuration data received from a profile, the router creates all dynamic layers above the VLAN layer, starting with the lowest dynamic layer. For example, in the case of a dynamic PPPoE interface, the router creates the interfaces in the following order:

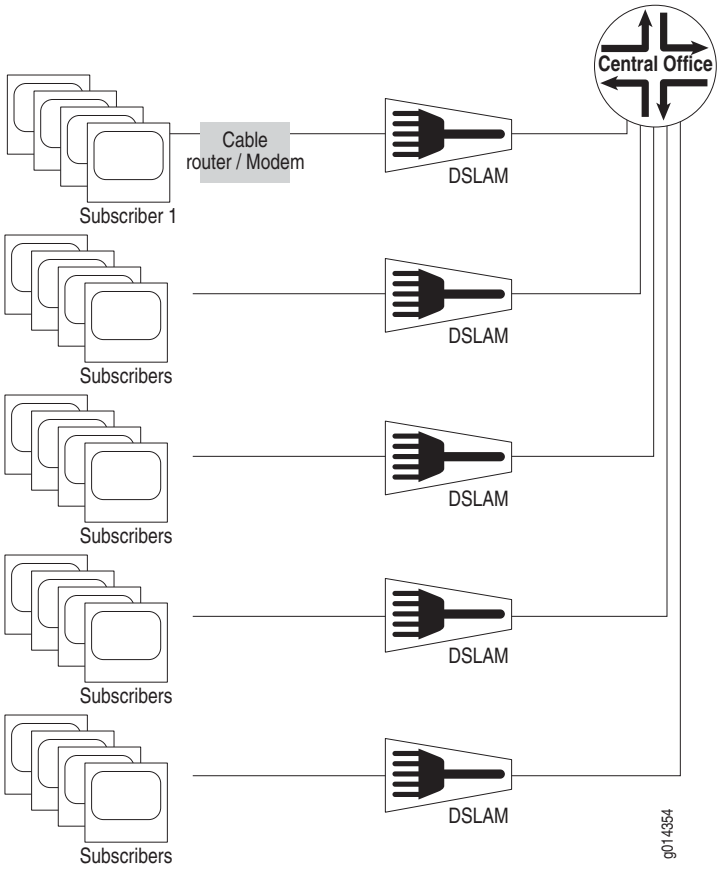
- Dynamic VLAN subinterface
- PPPoE interface
- PPP interface
- IP interface

If any layer of the dynamic portion of the interface column fails to be created, then the interface creation fails and the connection is denied. All dynamic layers above the VLAN subinterface are destroyed, starting with the highest dynamic layer. VLAN subinterfaces are persistent; after they are created, they cannot be destroyed, unless the operational state changes to down.

Dynamic VLAN subinterfaces function identically to static VLAN subinterfaces, except for the manner in which they are created and configured. However, dynamic VLANs provide you with the flexibility of having the dynamic interface column created automatically only when the subscriber logs in.

Figure 53 displays the relationship between the central office, digital subscriber line access multiplexers (DSLAMs), and subscribers. The subscribers are connected to the DSLAMS through Gigabit Ethernet interfaces.

Figure 53: Dynamic VLAN Subinterfaces for Subscribers



For example, if an S-VLAN is assigned at the DSLAM, and each DSLAM subscriber at the DSLAM is assigned a unique VLAN ID, the JUNOSe software dynamically constructs a VLAN-based interface column using that S-VLAN/VLAN ID pair when the subscriber logs in.

For more information about the attributes of VLAN and S-VLAN subinterfaces, see *Chapter 5, Configuring VLAN and S-VLAN Subinterfaces*.

VLAN Base Profiles

To configure a dynamic VLAN subinterface over a static VLAN major interface, you must create a base profile. The base profile includes one or more of the following attributes for the VLAN subinterface:

- advisory-rx-speed—Sets an advisory receive speed for VLAN subinterfaces that are created with this profile. For information, see **vlan advisory-rx-speed** on page 588.
- advisory-tx-speed—Sets an advisory connect speed for VLAN subinterfaces that are created with this profile. For information, see **vlan advisory-tx-speed** on page 588.
- auto-configure—Specifies the types of upper-interface encapsulations that are accepted or detected by the dynamic VLAN subinterface. For information, see **vlan auto-configure** on page 589.
- auto-configure agent-circuit-identifier—Enables the creation of VLAN subinterfaces that are based on agent-circuit-identifier information. For information, see **vlan auto-configure agent-circuit-identifier** on page 589.
- description—Assigns a description to VLAN subinterfaces that are created with this profile. For information, see **vlan description** on page 591.
- policy—Assigns a policy to a VLAN. For information, see **vlan policy** on page 591.
- profile—Adds a nested profile assignment, which references another profile that dynamically configures an upper-interface encapsulation type over the VLAN subinterface. For information, see **vlan profile** on page 592.
- service-profile—Specifies a service profile name for a VLAN. For information, see **vlan service-profile** on page 592.
- svlan ethertype—Specifies that the packet must use this Ethertype to create the dynamic VLAN subinterface. For more information, see **svlan ethertype** on page 588.

You can override the base profile assignment for a VLAN or S-VLAN that exists with a profile. For more information, see *Overriding Base Profile Assignments* on page 578.

Nested Profile Assignments

The configuration for each dynamic upper-interface encapsulation type might differ, depending on the column type built by the router. To manage these differences, you can include one or more nested profile assignments within the VLAN base profile. A nested profile assignment references another profile that configures attributes for a dynamic upper-interface encapsulation type. You can create different profiles for each upper-interface encapsulation type, or you can create a single profile that includes attributes for multiple encapsulation types.

For example, the following commands create a base profile named vlanBaseProfile with two nested profile assignments. The first nested profile assignment references an IP profile named vlanProfileIp, and the second nested profile assignment references a PPPoe profile named vlanProfilePppoe.

```
host1(config)#profile vlanBaseProfile
host1(config-profile)#vlan profile ip vlanProfileIp
host1(config-profile)#vlan profile pppoe vlanProfilePppoe
```

In this example, vlanProfileIp and vlanProfilePppoe have different IP configurations depending on the dynamic interface column constructed. For an IP over VLAN dynamic interface column, the router uses the IP attributes in vlanProfileIp. For an IP over PPPoE dynamic interface column, the router uses the IP attributes in vlanProfilePppoe.

For information about creating profiles for upper-interface encapsulation types, see *Configuring a Dynamic Interface from a Profile* in *Chapter 15, Configuring Dynamic Interfaces*.

Additional Profile Characteristics for Upper Interfaces

In addition to VLAN attributes and nested profile assignments, the base profile for a dynamic VLAN subinterface can also include individual characteristics for several upper-interface encapsulation types, provided that no nested profile assignment for the specified encapsulation type is in the base profile. If, on the other hand, a nested profile assignment for this encapsulation type exists in the base profile, the router obtains all characteristics for that encapsulation type from the nested profile and not from the base profile.

For lists of the characteristics for each supported upper-interface encapsulation type, see *Monitoring Dynamic Interfaces and Profiles* on page 601.

Bulk Configuration of VLAN Ranges

Dynamic creation of VLAN subinterfaces requires you to configure a range of single-tagged VLAN IDs and double-tagged S-VLAN IDs on the VLAN major interface and assign a name to this range. You can also configure a range of S-VLAN IDs that is based on agent-circuit-identifier information. See *Bulk Configuration of VLAN Ranges Using Agent-Circuit-Identifier Information* on page 576 for information.

Each VLAN range consists of one or more nonoverlapping VLAN subranges. A VLAN subrange is a group of VLAN IDs and S-VLAN IDs that reside within the VLAN range you specify.

The process of configuring a VLAN range for a dynamic VLAN subinterface is referred to as *bulk configuration*. You create a bulk configuration by issuing the **vlan bulk-config** command. For example, the following commands create a VLAN bulk configuration named myBulkConfig on the specified VLAN interface.

```
host1(config)#interface gigabitEthernet 2/0
host1(config-if)#vlan bulk-config myBulkConfig svlan-range 101 1100 1 375
svlan-range 1300 1500 500 650
```

In the example, the **vlan bulk-config** command configures a VLAN range made up of two VLAN subranges. The first subrange configures S-VLANs 101–1100 and VLANs 1–375. The second subrange configures S-VLANs 1300–1500 and VLANs 500–650.

NOTE: For information about the maximum number of VLAN bulk configurations supported per router and line module, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

After you issue the **vlan bulk-config** command, the router provisions all VLAN IDs and S-VLAN IDs in the specified VLAN range at the same time. The router does not dynamically create the VLAN subinterface until it receives incoming data traffic on the VLAN ID or S-VLAN ID.

After you create a named VLAN range, you cannot remove the underlying VLAN major interface until you issue the **no vlan bulk-config** command to remove the VLAN range from that interface.

Bulk Configuration of VLAN Ranges Using Agent-Circuit-Identifier Information

Using bulk configuration to create S-VLAN IDs based on agent-circuit-identifier information is similar to the process of creating a bulk-configured VLAN range that is not based on agent-circuit-identifier information. However, when you issue the **vlan bulk-config** command with the **svlan-range** keyword to specify the S-VLAN ID range, you then specify the **agent-circuit-identifier** keyword instead of a VLAN ID range. This technique creates a unique type of S-VLAN range in which the agent-circuit-identifier information is used in place of the second tag.

The agent-circuit-identifier string is contained in the option 82 field of DHCP messages for DHCP traffic, or in the DSL Forum VSA 26-1 of PPPoE PADR and PADI packets for PPPoE traffic. The agent-circuit-identifier information identifies the subscriber's access node and the DSL line on the access node. You can repeat the **svlan-range** and **agent-circuit-identifier** keywords to provide nonoverlapping VLAN subranges that reside within the VLAN range.

The following example configures a VLAN ID range made up of two subranges. The first subrange configures S-VLANs 200–250 and the second subrange configures S-VLANs 3000–3500. Both subranges configure the subscriber identification based on agent-circuit-identifier information.

```
host1(config)#interface gigabitEthernet 2/0
host1(config-if)#vlan bulk-config myAgent2BulkConfig svlan-range 200 250
agent-circuit-identifier svlan-range 3000 3500 agent-circuit-identifier
```

After you issue the **vlan bulk-config** command with the **agent-circuit-identifier** keyword, the router provisions the S-VLAN IDs in the specified bulk-configured VLAN range at the same time. The router does not dynamically create the VLAN subinterface until it receives incoming data traffic. The user information is generated from the incoming data traffic that contains the agent-circuit-identifier string.

Conceptually, a VLAN subinterface in this configuration has two attributes, an S-VLAN ID and an agent-circuit-identifier string. This is analogous to a regular S-VLAN that also has two attributes, an S-VLAN ID and a VLAN ID. However, the packet that the router receives is singly-tagged with only a VLAN ID. The use of the **agent-circuit-identifier** keyword in the **vlan bulk-config** command causes the router to further examine the packet and extract the agent-circuit-identifier string in order to generate the subscriber identification information.

In a DSL access network, subscriber information can be conveyed through either of the following methods:

- VLAN encapsulation; that is, the S-VLAN ID and the VLAN ID
- Insertion of the agent-circuit-identifier string in DHCP or PPPoE messages

For example, the following configurations uniquely identify subscribers by means of VLAN encapsulation:

- Subscriber packets received from the DSLAM are single-tagged with a VLAN ID
- Subscriber packets received from the DSLAM are double-tagged with both an S-VLAN ID and a VLAN ID

The DSL Forum Technical Report (TR)-101—Migration to Ethernet-Based DSL Aggregation (April 2006) refers to the behavior of these configurations as the 1:1 forwarding model because there is a one-to-one correspondence between an individual subscriber and the VLAN encapsulation.

In contrast, the following configurations do *not* uniquely identify subscribers by means of VLAN encapsulation:

- Subscriber packets received from the DSLAM are single-tagged with the same VLAN ID for a group of subscribers. This configuration is typically used to implement service VLANs where the VLAN ID corresponds to the type of service for which the VLAN is used, such as voice or video. In this configuration, the VLAN ID does not correspond to an individual subscriber.
- Subscriber packets received from the DSLAM are untagged.

Instead, these configurations identify subscribers by means of the agent-circuit-identifier information present in DHCP and PPPoE control messages. DSL Forum TR-101 refers to the behavior of these configurations as the N:1 forwarding model because there is a many-to-one correspondence between subscribers and a VLAN.

Creating dynamic VLANs based on agent-circuit-identifier information enables you to manage subscribers in single-tagged or untagged N:1 configurations that do not use encapsulation to uniquely identify subscribers. In these configurations, the router intercepts the agent-circuit-identifier string from DHCP messages or from PPPoE PADR and PADI packets to build a unique subscriber interface.

For double-tagged 1:1 configurations, the router uses standard dynamic VLAN procedures to uniquely identify subscribers. In these configurations, the S-VLAN ID typically represents the DSLAM, and the VLAN ID represents the individual subscriber accessing the router through that DSLAM.

For configuration instructions, see *Configuring Dynamic VLAN Subinterfaces Based on Agent Circuit Identifier Information* on page 581.

NOTE: You must configure the DHCP local or external server to support the creation of dynamic subscriber interfaces that are based on the agent-circuit-id option (suboption 1) of the option 82 field in DHCP messages. See *JUNOSe Broadband Access Configuration Guide, Chapter 19, Configuring DHCP Local Server* or *JUNOSe Broadband Access Configuration Guide, Chapter 21, Configuring the DHCP External Server Application* for information.

Dynamic Interface Creation

After you configure the base profile, you associate it with the VLAN major interface by issuing the **profile vlan bulk-config** command.

As a final step, you must issue the **auto-configure vlan** command. This command configures the VLAN major interface to support autodetection of the VLAN dynamic encapsulation type.

When the router receives an incoming data packet on a circuit, it dynamically creates the VLAN subinterface, using the attributes specified in the base profile. After examining the contents of the data packet, the router dynamically creates the required interface columns above the VLAN subinterface, using the configuration attributes contained in the nested profiles, if specified, or in the base profile itself.

Overriding Base Profile Assignments

You can also use the **profile vlan override bulk-config** command to assign an overriding profile to a single VLAN ID or double-tagged S-VLAN ID that exists within a bulk-configured VLAN subrange. The VLAN ID subrange that encompasses the major interface must have been previously configured with the **vlan bulk-config** command for use by a dynamic VLAN subinterface. After you assign the overriding profile, the router uses the information in this profile instead of the information in the previously assigned base profile to create any subsequent VLAN dynamic subinterface columns on the specified VLAN major interface, as long as they match the VLAN or S-VLAN specified in the override.

The overriding profile, like the original base profile, can include VLAN attributes, nested profile assignments, and individual characteristics for dynamic upper-interface encapsulation types.

Overriding the base profile assignment for a VLAN with a profile enables you to create a special profile for a subscriber in a DSLAM. For example, you can use the overriding profile to create dynamic VLAN subinterfaces for subscribers with an S-VLAN ID of 200 and a VLAN ID of 100.

You can also use an overriding profile with debugging attributes to troubleshoot problems with VLAN dynamic subinterface columns.

For configuration instructions and examples, see *Configuring Overriding Profile Assignments for VLAN Major Interfaces* on page 582.

NOTE: See *JUNOSe Release Notes*, *Appendix A*, *System Maximums* for information about the maximum number of overriding profile assignments currently supported per chassis.

Changing VLAN Subranges

You can add, remove, modify, merge, disable, and enable VLAN subranges within an existing bulk-configured VLAN range.

For configuration instructions and examples, see *Changing VLAN Subranges* on page 592.

Static VLAN Subinterfaces Within VLAN Subranges

You can configure a static VLAN subinterface with a single-tagged VLAN ID or double-tagged S-VLAN ID, or an S-VLAN ID with agent-circuit-identifier information that falls within an existing bulk-configured VLAN subrange. Conversely, you can also create a bulk-configured VLAN subrange that includes the single-tagged VLAN ID or double-tagged S-VLAN ID on a static VLAN subinterface. Configuring static VLAN subinterfaces within VLAN subranges can be useful when you want to create a column statically for users who have difficulty logging on. You might also want to configure static VLAN subinterface within a VLAN subrange as a static column to the DSLAM; the dynamic column can be for subscribers.

The following rules apply when you configure either a static VLAN subinterface within an existing bulk-configured VLAN subrange or a subrange that includes an existing static VLAN interface:

- You have no restrictions on how to configure the static VLAN subinterface.
- Static VLAN interfaces defined within a bulk-configured VLAN subrange are stored in NVS and preserved after a reboot.
- The base profile associated with the VLAN subrange does not apply to any statically defined VLAN interfaces that fall within the subrange.
- If a VLAN subrange includes a statically defined VLAN subinterface, overriding profile assignments configured for the same VLAN ID as a statically defined VLAN subinterface become inactive until the static VLAN subinterface is removed. The overriding profile becomes active again when you remove the static VLAN subinterface. You can display the current operational status (active or inactive) of overriding profile assignments by using the **show vlan bulk-config** command.

- Operations that add, remove, modify, merge, disable, or enable VLAN subranges within a bulk-configured VLAN range do not affect any static VLAN subinterfaces defined within the VLAN subrange.

- You cannot create a static VLAN if the single-tagged VLAN ID or double-tagged S-VLAN ID conflicts with an existing VLAN dynamic subinterface column. Such a configuration would disrupt subscribers already connected to the router via the dynamic subinterface.

For configuration information and examples, see *Configuring Static VLAN Subinterfaces Within VLAN Subranges* on page 598.

Configuring a Dynamic VLAN Subinterface

To configure a dynamic VLAN subinterface:

1. Configure profiles containing characteristics for the dynamic upper-interface encapsulation types to be created over the dynamic VLAN subinterface.

   These profiles are referenced in the base profile for the dynamic VLAN subinterface as nested profile assignments. For detailed instructions on creating profiles, see *Configuring a Dynamic Interface from a Profile* in *Chapter 15, Configuring Dynamic Interfaces*.

2. (Optional) Create the profile for an upper-interface encapsulation type, and include additional profile characteristics for other encapsulation types as needed. Perform this step if you want to create a nested profile assignment in Step 5.

   host1(config)#**profile myIpProfile**
   host1(config-profile)#**ip inactivity-timer 200**
   host1(config-profile)#**ip auto-configure ip-subscriber include-primary**

3. Create the base profile for the dynamic VLAN subinterface by assigning the profile a name.

   host1(config)#**profile vlanBaseProfile**

   This command accesses Profile Configuration mode, which enables you to configure attributes in the base profile.

4. Define attributes for the VLAN subinterface in the base profile.

   a. Configure the VLAN major interface for autodetection of the PPPoE upper-interface encapsulation type.

   b. Configure the VLAN subinterface for autodetection of the IP upper-interface encapsulation type.

   c. Configure an Ethertype value for any S-VLANs configured on the VLAN.

   host1(config-profile)#**vlan auto-configure pppoe**
   host1(config-profile)#**vlan auto-configure ip**
   host1(config-profile)#**svlan ethertype 8100**

5. (Optional) In the base profile, create nested profile assignments for the upper-interface encapsulation types.

   For example, the following command configures nested profile assignments for the IP upper-interface encapsulation types.

   host1(config-profile)#**vlan profile ip myIpProfile**

6. Exit Profile Configuration mode.

7. Configure the VLAN major interface.

   host1(config)#**interface gigabitEthernet 5/0**
   host1(config-if)#**encapsulation vlan**

8. Configure a VLAN range on the major VLAN interface, and assign a name to this range.

NOTE: For information about the maximum number of VLAN bulk configurations supported per chassis, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

   For example, the following command creates a VLAN range named myBulkConfig made up of two VLAN subranges.

   host1(config-if)#**vlan bulk-config myBulkConfig vlan-range 0 100**
   vlan-range 110 200

9. Assign the base profile configured for the VLAN subinterface to the VLAN range configured on the major VLAN interface.

   host1(config-if)#**profile vlan bulk-config myBulkConfig vlanBaseProfile**

10. Configure the VLAN major interface to support autodetection of the VLAN dynamic encapsulation type.

    host1(config-if)#**auto-configure vlan**

Configuring Dynamic VLAN Subinterfaces Based on Agent Circuit Identifier Information

The procedure you use to configure a dynamic VLAN subinterface that is based on agent-circuit-identification information is similar to the procedure described in *Configuring a Dynamic VLAN Subinterface* on page 580.

1. Configure profiles containing characteristics for the dynamic upper-interface encapsulation types to be created over the dynamic VLAN subinterface.

2. (Optional) If you want to create a nested profile assignment, create the profile for an upper-interface encapsulation type, and include additional profile characteristics for other encapsulation types as needed.

3. Create the base profile for the dynamic VLAN subinterface and enter Profile Configuration mode by assigning the profile a name.

   host1(config)#**profile vlanMyBaseProfile**

4. Define attributes for the VLAN subinterface in the base profile.

   a. Enable autoconfiguration for the PPPoE upper-interface encapsulation type.

   b. Enable autoconfiguration for the IP upper-interface encapsulation type.

   c. Enable autoconfiguration of VLANs that are based on agent-circuit-identifier information.

   d. (Optional) Create nested profile assignments for the upper-interface encapsulation types.

   host1(config-profile)#**vlan auto-configure pppoe**
   host1(config-profile)#**vlan auto-configure ip**
   host1(config-profile)#**vlan auto-configure agent-circuit-identifier**
   host1(config-profile)#**exit**
   host1(config)#

5. Configure the VLAN major interface.

   host1(config)#**interface gigabitEthernet 5/0**
   host1(config-if)#**encapsulation vlan**

6. On the VLAN major interface, configure a VLAN range that is based on agent-circuit-identifier information, and assign a name to this range.

   host1(config-if)#**vlan bulk-config myNewBulkConfig svlan-range 50 100 agent-circuit-identifier**

7. Assign the base profile configured for the VLAN subinterface to the VLAN range configured on the major VLAN interface.

   host1(config-if)#**profile vlan bulk-config myNewBulkConfig vlanMyBaseProfile**

8. Configure the VLAN major interface to support autodetection of the VLAN dynamic encapsulation type.

   host1(config-if)#**auto-configure vlan**

Configuring Overriding Profile Assignments for VLAN Major Interfaces

You can assign an overriding profile to a single VLAN major interface within a bulk-configured VLAN subrange.

The overriding profile includes debugging attributes to help you identify and troubleshoot problems with the VLAN dynamic subinterface column created on the specified VLAN ID.

To assign an overriding profile to a VLAN within a bulk-configured VLAN subrange:

1. Configure both of the following:

   - Base profile for the bulk-configured dynamic VLAN on the static VLAN major interface. The VLAN range consists of one or more VLAN subranges.

   - Overriding profile for a dynamic VLAN within a bulk-configured VLAN subrange.

   For information about configuring profiles, see *Configuring a Dynamic Interface from a Profile* in *Chapter 15, Configuring Dynamic Interfaces*.

2. Create a bulk-configured range of single-tagged VLAN IDs or double-tagged S-VLAN IDs on a static VLAN major interface. The following commands create a bulk-configured VLAN range named myBulkConfig that consists of two VLAN subranges. The first subrange encompasses VLAN IDs 150–250. The second subrange encompasses VLAN IDs 300–500.

   host1(config)#**interface gigabitEthernet 4/0.101**
   host1(config-if)#**vlan bulk-config myBulkConfig vlan-range 150 250 vlan-range 300 500**

3. Assign the previously configured base profile (vlanBaseProfile) to the bulk-configured VLAN range.

   host1(config-if)#**profile vlan bulk-config myBulkConfig vlanBaseProfile**

4. Assign the previously configured overriding profile to a single VLAN ID or double-tagged S-VLAN ID within the bulk-configured VLAN subrange. The following command assigns the overriding profile overrideVoiceSubscriber to the VLAN ID 202. This VLAN ID exists within the first VLAN subrange (VLAN IDs 150–250) configured in Step 2.

   host1(config-if)#**profile vlan override bulk-config myBulkConfig vlan 202 overrideVoiceSubscriber**

   The router now uses the information in the overriding profile instead of the information in the base profile to create subsequent VLAN dynamic subinterface columns over this VLAN ID.

5. (Optional) You can assign the same overriding profile to a VLAN ID within the same VLAN range or within a different VLAN range. For example, the following command assigns the overriding profile overrideVoiceSubscriber to the VLAN ID 160. This S-VLAN ID exists within the VLAN subrange configured in Step 2.

   host1(config-if)#**profile vlan override bulk-config-name myBulkConfig svlan 120 202 overrideVoiceSubscriber**

NOTE: You can reverse the order of Step 2 and Step 4 with identical results. That is, you can assign the overriding profile to an S-VLAN ID and then assign the base profile to the entire VLAN subinterface.

6. Configure the VLAN major interface to support autodetection of the VLAN dynamic encapsulation type.

   host1(config-if)#**auto-configure vlan**

7. (Optional) Use the **show vlan profile** command to verify the overriding profile configuration.

   For more information about using this command, see *Monitoring Dynamic Interfaces and Profiles* on page 601.

Removing an Overriding Profile Assignment from a VLAN

You can remove an overriding profile assignment from a VLAN major interface.

If you use the overriding profile to troubleshoot the VLAN dynamic subinterface column created on the specified VLAN ID, make sure that you remove the overriding profile assignment to restore the original base profile assignment. This action ensures that subsequent VLAN dynamic subinterface columns are created using the same attributes defined in the base profile.

To remove an overriding profile assignment from a VLAN:

1. Remove the overriding profile assignment from the specified VLAN ID or S-VLAN ID.

   host1(config-if)#**no profile vlan override bulk-config-name myBulkConfig vlan 202 overrideVoiceSubscriber**

2. Select the dynamic VLAN subinterface on which the VLAN dynamic subinterface column resides.

   host1(config)#**interface gigabitEthernet 4/0.101**

3. Use the **shutdown** command to disable the dynamic VLAN subinterface. The **shutdown** command deletes the VLAN dynamic subinterface column and removes the dynamic VLAN subinterface.

   host1(config-if)#**shutdown**

4. Send traffic over the VLAN subinterface. This action re-creates the VLAN dynamic subinterface column with the original base profile association.

   The router now uses the information in the base profile instead of the information in the overriding profile to create subsequent VLAN dynamic subinterface columns for the specified VLAN ID or S-VLAN ID.

5. (Optional) Use the **show vlan profile override** command to verify the removal of the overriding profile assignment.

   For more information about using this command, see *Monitoring Dynamic Interfaces and Profiles* on page 601.

Removing Overriding Profile Assignments from a VLAN Range or VLAN Subrange

When you issue the **no vlan bulk-config** command to remove an entire VLAN range (and all VLAN subranges within that VLAN range), the router also removes any overriding profile assignments configured for VLAN IDs within those VLAN subranges. For example, the following command removes the bulk-configured VLAN range named myBulkConfig and any overriding profile assignments for VLAN IDs within the VLAN subranges belonging to myBulkConfig.

```
host1(config-if)#no vlan bulk-config myBulkConfig
```

When you issue the **no vlan bulk-config** command to remove a particular VLAN subrange in a bulk-configured VLAN range, the router also removes any overriding profile assignments for VLAN IDs within that VLAN subrange. However, overriding profile assignments for VLAN IDs within other VLAN subranges in the VLAN range remain intact. For example, the following command removes one VLAN subrange (S-VLAN IDs 50–150 and VLAN IDs 150–250) and only those overriding profile assignments associated with this subrange.

```
host1(config-if)#no vlan bulk-config myBulkConfig svlan-range 50 150 150 250
```

auto-configure vlan

- Use to configure the static VLAN major interface to support autodetection of an VLAN dynamic interface type.
- You must issue this command to enable creation of a dynamic VLAN subinterface.
- By default, all valid VLAN IDs and S-VLAN IDs are accepted.
- Example

  ```
  host1(config-if)#auto-configure vlan
  ```

- Use the **no** version to terminate autodetection of the VLAN dynamic interface type.

encapsulation vlan

- Use to configure VLAN as the encapsulation method for the interface.
- Example

  ```
  host1(config-if)#encapsulation vlan
  ```

- Use the **no** version to disable VLAN on an interface.

interface fastEthernet

- Use to select a Fast Ethernet interface.
- For information about specifying a Fast Ethernet interface, see **interface fastEthernet** on page 585.

- Example

  host1(config)#**interface fastEthernet 4/1**

- Use the **no** version to remove IP from an interface or a subinterface.

interface gigabitEthernet
interface tenGigabitEthernet

- Use to select a Gigabit Ethernet interface or a 10-Gigabit Ethernet interface.
- To specify a Gigabit Ethernet interface for ERX-7xx models, ERX-14xx models, and ERX-310 routers, use the *slot*/*port*[.*subinterface*] format.
- To specify a Gigabit Ethernet interface or 10-Gigabit Ethernet interface for E120 and E320 routers, use the *slot*/*adapter*/*port*[.*subinterface*] format.
- For more information, see *JUNOSe Physical Layer Configuration Guide, Chapter 5, Configuring Ethernet Interfaces*.
- Examples

  host1(config)#**interface gigabitEthernet 1/0**
  host1(config)#**interface gigabitEthernet 4/0/1**
  host1(config)#**interface tenGigabitEthernet 4/0/1**

- Use the **no** version to remove IP from an interface. You must issue the **no** version from the highest level down; you cannot remove an interface or subinterface if the one above it still exists.

profile

- Use to create a base profile to configure attributes for a dynamic VLAN subinterface.
- Specify a profile name of up to 80 alphanumeric characters.
- Example

  host1(config)#**profile vlanBaseProfile**

- Use the **no** version to delete the specified profile.

profile vlan bulk-config

- Use to assign the base profile configured for a dynamic VLAN subinterface to the single-tagged VLAN IDs or double-tagged S-VLAN IDs configured on a static VLAN major interface.
- You must specify both of the following:
  - Name assigned to the VLAN range on a VLAN subinterface, as specified in the **vlan bulk-config** command
  - Name assigned to the base profile for a dynamic VLAN subinterface
- Example

  host1(config-if)#**profile vlan bulk-config myBulkConfig vlanBaseProfile**

- Use the **no** version to remove the base profile assignment.

profile vlan override bulk-config

- Use to assign an overriding profile to a single VLAN ID or double-tagged S-VLAN ID.
- Using an overriding profile enables you to assign a special profile for the subscribers associated with a specific DSLAM.
- You can also use an overriding profile to troubleshoot the specified VLAN or S-VLAN by overriding the currently assigned base profile with one that has debugging attributes enabled.
- Use the **any** keyword to specify a VLAN ID as a wildcard. When you specify the **any** keyword with an S-VLAN ID of a DSLAM, all subscribers associated with the DSLAM will be created with the same profile.
- Example 1—Assigns an overriding profile (test1OverridingProfile) to the dynamic VLAN subinterface with VLAN ID 202

  host1(config-if)#**profile vlan override bulk-config vlan 202 test10verridingProfile**

- Example 2—Assigns an overriding profile (test1DebugProfile) to the S-VLAN subinterface with S-VLAN ID 100 within the VLAN subinterface with V-LAN ID 202

  host1(config-if)#**profile vlan override bulk-config svlan 100 202 test10verridingProfile**

- Example 3—Removes the overriding profile assignment from the VLAN subinterface with VLAN ID 202, and restores the original base profile assignment

  host1(config-if)#**no profile vlan override bulk-config vlan 202 test10verridingProfile**

- Use the **no** version to remove the overriding profile assignment for the VLAN ID or S-VLAN ID and restore the original base profile assignment.

shutdown

- Use to disable an interface.
- When you disable a dynamic VLAN subinterface, the **shutdown** command deletes the VLAN dynamic subinterface column and removes the dynamic VLAN subinterface.
- Example

  host1(config-subif)#**shutdown**

- Because the **shutdown** command removes the dynamic VLAN subinterface from the router, issuing a subsequent **no** version of this command has no effect; that is, it does not restart the disabled subinterface.

svlan ethertype

- Use to specify the available Ethertypes that a packet must use to create a dynamic VLAN subinterface.
- Choose one of the following Ethertype values:
  - **8100**—Specifies Ethertype value 0x8100, as defined in IEEE Standard 802.1q
  - **88a8**—Specifies Ethertype value 0x88a8, as defined in draft IEEE Standard 802.1ad
  - **9100**—Specifies Ethertype value 0x9100
  - **autoconfig**—Specifies that the packet can use any Ethertype to create a dynamic VLAN subinterface
- Examples

  host1(config-profile)#**svlan ethertype 8100**
  host1(config-profile)#**svlan ethertype autoconfig**

- Use the **no** version to restore the default value, autoconfig.

vlan advisory-rx-speed

- Use to set an advisory receive speed for VLAN subinterfaces that are created with the profile you are configuring. This setting has no effect on data forwarding. You can use it to indicate the speed of the client interface. When traffic is tunneled with L2TP, the advisory receive speed is sent from the LAC to the LNS. See *JUNOSe Broadband Access Configuration Guide, Chapter 12, Configuring an L2TP LAC* for additional information about the advisory receive speed.
- The range is 0–2147483647 kbps; 0 indicates no advisory speed setting.
- Example

  host1(config-profile)#**vlan advisory-rx-speed 2000**

- Use the **no** version to restore the default behavior—the Rx speed is not sent to the LNS.

vlan advisory-tx-speed

- Use to set an advisory connect speed for VLAN subinterfaces that are created with the profile that you are configuring. This setting has no effect on data forwarding. You can use it to indicate the speed of the client interface. When traffic is tunneled with L2TP, the advisory receive speed is sent from the LAC to the LNS. See *JUNOSe Broadband Access Configuration Guide, Chapter 12, Configuring an L2TP LAC* for additional information about the advisory receive speed.
- The range is 0–2147483647 kbps; 0 indicates no advisory speed setting.
- Example

  host1(config-profile)#**vlan advisory-tx-speed 2000**

- Use the **no** version to restore the default behavior—the Tx speed is not sent to the LNS.

vlan auto-configure

- Use to specify the types of dynamic upper-interface encapsulations that are accepted or detected by a dynamic VLAN subinterface.
- Include this command in the base profile for a dynamic VLAN subinterface.
- Use the **lockout-time** keyword to specify the minimum and maximum lockout time range for the encapsulation type. For more information, see *Encapsulation Type Lockout* on page 449.
- Example

  host1(config-profile)#**vlan auto-configure ip**

- Use the **no** version to terminate detection of the specified encapsulation type.

vlan auto-configure agent-circuit-identifier

- Use to create a VLAN subinterface that is based on the agent-circuit-id information in the option 82 field of DHCP messages or in the DSL Forum VSA 26-1 of PPPoE PADR and PADI packets.
- Include this command in the base profile for a dynamic VLAN subinterface.
- Example

  host1(config-profile)#**vlan auto-configure agent-circuit-identifier**

- Use the **no** version to disable creation of VLAN subinterfaces based on agent-circuit-identifier information.

vlan bulk-config

- Use to create a bulk-configured VLAN range on a static VLAN major interface for use by a dynamic VLAN subinterface.

NOTE: For information about the maximum number of VLAN bulk configurations supported per chassis, see *JUNOSe Release Notes*, *Appendix A*, *System Maximums*.

- Each VLAN range consists of one or more nonoverlapping VLAN subranges. A VLAN subrange is a group of VLAN IDs or S-VLAN IDs that reside within the VLAN range you specify.
- You can configure multiple VLAN ranges on a VLAN subinterface.
- When you create a bulk-configured VLAN range, you must specify the following:
  - A name of up to 80 alphanumeric characters; this is also referred to as the bulk configuration name
  - The starting and ending VLAN ID or S-VLAN ID values (inclusive) for each VLAN subrange
- Use the **any** keyword to specify a VLAN ID as a wildcard. When you specify the **any** keyword with an S-VLAN ID of a DSLAM, all subscribers associated with the DSLAM will be created with the same profile.

- Use the **agent-circuit-identifier** keyword to configure a VLAN range that is based on the agent-circuit-id information in the option 82 field of DHCP messages or in the DSL Forum VSA 26-1 of PPPoE PADR and PADI packets. When you specify the **agent-circuit-identifier** keyword with an S-VLAN ID of a DSLAM, all subscribers associated with the DSLAM are created with the same profile.
- You can create a placeholder VLAN range by issuing the **vlan bulk-config** command without specifying any subranges. You can assign a profile to this placeholder and add subranges to it later.
- You can add and remove individual VLAN subranges.
- You cannot remove a VLAN subrange if any dynamic VLAN subinterfaces currently exist within the subrange. Use the **vlan bulk-config shutdown** command to remove dynamic VLAN interfaces created within a subrange.
- Removal of a subrange automatically results in the removal of all overriding profile assignments on that subrange.
- You can create a bulk-configured VLAN subrange that includes the VLAN IDs and S-VLAN IDs belonging to an existing VLAN major interface on a static VLAN subinterface.
- Example 1—Configures a VLAN range named myBulkConfig with a single VLAN subrange containing VLAN IDs 100–500

  host1(config-if)#**vlan bulk-config myBulkConfig vlan-range 100 500**

- Example 2—Configures a VLAN range named myMultiBulkConfig with two VLAN subranges containing S-VLAN IDs 101–600 with VLAN IDs 0–1 (first subrange) and S-VLAN IDs 201–3200 with VLAN IDs 3–5 (second subrange)

  host1(config-if)#**vlan bulk-config myMultiBulkConfig svlan-range 101 600 0 1 svlan-range 201 3200 3 5**

- Example 3—Configures a VLAN range named myAciBulkConfig containing S-VLAN IDs 200–400. Subscriber information is determined by the packet's agent-circuit-identifier information.

  host1(config-if)#**vlan bulk-config myAciBulkConfig svlan-range 200 400 agent-circuit-identifier**

- Use the **no** version to remove the specified VLAN range from the VLAN interface, to remove the specified subranges from the specified VLAN range, or to remove all subranges from the specified VLAN range. The **no** version also removes any overriding profile assignments for VLAN major interfaces within the deleted VLAN range or VLAN subrange.

vlan description

- Use to assign a description to VLAN subinterfaces that are created with this profile.
- You can use a maximum of 64 characters for the description or to name the alias.
- Example

  host1(config-profile)#**vlan description test1**

- Use the **no** version to remove the VLAN description.

vlan policy

- Use to assign a VLAN policy list to an interface.
- Use the **input** or **output** keyword to assign the policy list to the ingress or egress of the interface.
- You can enable or disable the recording of routing statistics for bytes and packets affected by the policy.
- If you enable statistics, you can enable or disable baselining of the statistics. The router implements the baseline by reading and storing the statistics at the time the baseline is set and then subtracting this baseline whenever baseline-relative statistics are retrieved.
- You must also enable baselining on the interface with the appropriate **baseline** command.
- You can use the **preserve** keyword to save the existing statistics when you attach a policy to an interface that already has a policy attached. This keyword saves the statistics for any classifier-list that is the same for both the new and old policy attachments. Without the **preserve** keyword, all statistics are deleted when you attach the new policy.

  For example, when you replace a policy attachment that references the original policy-list plOne with a new attachment referencing policy-list plTwo, the existing statistics for the classifier group referencing clOne and the default classifier group are saved.

Original Policy Attachment	New Policy Attachment	Comment
ip policy-list plOne	ip policy-list plTwo	–
ip classifier-list clOne	ip classifier-list clOne	statistics from plOne are saved
Forward	Forward	–
ip classifier-list clTwo	ip classifier-list clFour	–
Forward	Forward	–
ip classifier-list clThree	ip classifier-list clFive	–
Forward	Forward	–
classifier-list *	classifier-list *	statistics from plOne are saved
Filter	Filter	–

- Example

  host1(config-profile)#**vlan policy input VlanPolicy33 statistics enabled preserve**

- Use the **no** version to remove the association between a policy list and an interface or a profile.

vlan profile

- Use to add a nested profile assignment to a base profile for a dynamic VLAN subinterface.
- A nested profile assignment references another profile that configures attributes for a dynamic upper-interface type over the VLAN subinterface.
- Examples

  host1(config-profile)#**vlan profile pppoe vlanProfilePppoe**
  host1(config-profile)#**vlan profile ip vlanProfileIP**

- Use the **no** version to remove the profile assignment for the upper-interface encapsulation type.

vlan service-profile

- Use to specify a service profile name for a dynamic VLAN and to enter Service Profile Configuration mode. Service profiles contain user and password information, and are used in route maps for subscriber management and to authenticate subscribers with RADIUS.
- You can specify a service profile name with up to 80 alphanumeric characters.
- Example

  host1(config)#**vlan service-profile vlanClass1Service**
  host1(config-service-profile)#

- Use the **no** version to delete the service profile.

Changing VLAN Subranges

Changing VLAN subranges within a bulk-configured VLAN range includes the following tasks:

- Adding new VLAN subranges to an existing VLAN range
- Removing VLAN subranges from an existing VLAN range
- Modifying a VLAN subrange by shortening or expanding the subrange values
- Merging multiple VLAN subranges belonging to an existing VLAN range
- Changing the administrative state of VLAN subranges

The following sections describe how to perform these tasks.

Adding VLAN Subranges

You can add a new VLAN subrange to an existing VLAN range only when the new subrange does not overlap with any existing subrange. Any overlap causes the addition to fail.

You can add multiple subranges to an existing VLAN range simultaneously. However, the entire operation fails if even one of the new subranges overlaps with an existing subrange.

The following example specifies the original VLAN subranges.

```
host1(config-if)#vlan bulk-config test svlan-range 201 250 2 2
svlan-range 501 550 5 5 svlan-range 301 350 3 3
```

To add subranges to this bulk-configured VLAN range, you can choose either of the following methods. Each method adds a new subrange encompassing S-VLAN IDs 401–450 with VLAN ID 4 to the existing VLAN range, test.

- Specify one new subrange at a time.

  ```
  host1(config-if)#vlan bulk-config test svlan-range 401 450 4 4
  ```

- Specify the new subrange and all the existing subranges. If you use this method, all the existing subranges and their order must match exactly, or the operation fails.

  ```
  host1(config-if)#vlan bulk-config test svlan-range 201 250 2 2
  svlan-range 501 550 5 5 svlan-range 301 350 3 3 svlan-range 401 450 4 4
  ```

  The following operation fails because the order of subranges does not match the existing order.

  ```
  host1(config-if)#vlan bulk-config test svlan-range 201 250 2 2
  svlan-range 101 150 1 1 svlan-range 501 550 5 5 svlan-range 301 350 3 3
  svlan-range 401 450 4 4 svlan-range 601 650 6 6
  ```

You can create a placeholder VLAN range by specifying a VLAN range name without specifying any subrange parameters. This VLAN range has no VLAN ID reservation, but you can assign a profile to it, and add subranges later as desired. The following commands illustrate this approach.

```
host1(config-if)#vlan bulk-config test
host1(config-if)#profile vlan bulk-config-name test vlanProfile
host1(config-if)#vlan bulk-config test svlan-range 401 450 4 4
svlan-range 601 650 6 6
```

Removing VLAN Subranges

You can remove VLAN subranges from an existing VLAN range if no dynamic VLAN subinterfaces currently exists for any circuit within those subranges. The removal operation fails if any such dynamic VLAN subinterface exists. You must first remove the dynamic VLAN subinterfaces before you can remove the subranges. Removal of a subrange automatically results in the removal of all overriding profile assignments on that subrange.

You can remove only a single specific VLAN subrange at a time. The following example specifies the original VLAN subranges.

```
host1(config-if)#vlan bulk-config test svlan-range 101 150 1 1
svlan-range 201 250 2 2 svlan-range 501 550 5 5 svlan-range 301 350 3 3
```

The following command removes one subrange encompassing S-VLAN IDs 101–150 with VLAN ID 1 and leaves the remaining subranges, and the named VLAN range, test, intact.

```
host1(config-if)#no vlan bulk-config test svlan-range 101 150 1 1
```

The following command removes a subrange that includes S-VLAN IDs 700–750, and that is based on agent-circuit-identifier information from the named VLAN range, test.

```
host1(config-if)#no vlan bulk-config test svlan-range 700 750
agent-circuit-identifier
```

To remove more than one VLAN subrange, you must issue multiple removal commands, one for each subrange. You cannot remove only part of a subrange. A removal command cannot encompass more than one subrange, even if the subranges are adjacent. However, if you do not specify any subranges, you can remove all subranges in the VLAN, and the named VLAN range, at the same time.

```
host1(config-if)#no vlan bulk-config test
```

Modifying VLAN Subranges

You can shorten or expand a subrange by modifying the subrange values of a VLAN range. You can expand a subrange if none of the VLAN IDs or S-VLAN IDs added overlap with any other subrange. You can shorten a subrange if none of the VLAN IDs or S-VLAN IDs have existing dynamic VLAN subinterfaces. You can also modify an existing subrange by configuring it to use agent-circuit-identifier information rather than a range of VLAN IDs.

You can modify only a single specific subrange at a time. The following example specifies the original VLAN subranges encompassing S-VLAN IDs 201–250 with VLAN ID 2.

```
host1(config-if)#vlan bulk-config test svlan-range 101 150 1 1
svlan-range 201 250 2 2 svlan-range 501 550 5 5 svlan-range 301 350 3 3
```

The following command modifies the second subrange from S-VLAN IDs 201–250 with VLAN ID 2 to S-VLAN IDs 210–230 with VLAN IDs 2–3.

```
host1(config-if)#vlan bulk-config test modify svlan-range 210 230 2 3
```

The following command modifies the third subrange from S-VLAN IDs 501–550 with VLAN ID 5 to S-VLAN IDs 501–550 with user identification that is based on agent-circuit-identifier information.

```
host1(config-if)#vlan bulk-config test modify svlan-range 501 550
agent-circuit-identifier
```

The router retains any overriding profiles assigned to a subrange after you modify the subrange if the override assignment still falls within the modified subrange. If the assignment falls outside of the newly modified subrange, the router drops the overriding profile assignment.

You cannot modify a subrange at the same time you are adding or removing a subrange. If the new modified values for a subrange partially overlap with another subrange, the operation fails and the router displays an error message.

Merging VLAN Subranges

You can merge multiple subranges of any particular VLAN range to form a single unified subrange, conserving subrange resources. Merging takes place only when you modify a subrange so that it completely includes at least one other subrange of the same VLAN range. The merged subranges do not need to be adjacent to each other.

If the encompassing subrange has any VLAN IDs or S-VLAN IDs that are outside the subranges to be merged, those VLAN IDs or S-VLAN IDs are added. The encompassing subrange must cover a subrange completely to incorporate it in the merged subrange. The merge operation fails if the encompassing subrange completely overlaps some subranges but only partially overlaps with another subrange. The encompassing subrange does not have to encompass all subranges of the VLAN range.

Each subrange that is merged with another frees up a subrange. E-series routers currently support a maximum of 300 bulk-configured VLAN ranges per chassis. Therefore, if a VLAN range consists of 5 subranges, 295 subranges are still available for subsequent configuration. If you merge 2 of those subranges, resulting in a new total of 4 subranges in the VLAN range, then 296 subranges are available for configuration.

The router retains any overriding profile assignments on the subranges made before the merger, and applies them to the new merged subrange. You can separate merged subranges either by removing the merged subrange and then adding new separate subranges or by modifying the merged subrange to remove some portion of the subrange and then adding a new subrange.

The following example specifies the original VLAN subranges.

```
host1(config-if)#vlan bulk-config test svlan-range 101 150 1 1
svlan-range 201 250 2 2 svlan-range 501 550 5 5 svlan-range 301 350 3 3
```

The following command merges two subranges (S-VLAN IDs 101–150 and VLAN ID 1) and (S-VLAN IDs 201–250 and VLAN ID 2) and effectively replaces them with the new subrange encompassing S-VLAN IDs 101–250 and VLAN IDs 1–2.

```
host1(config-if)#vlan bulk-config test modify svlan-range 101 250 1 2
```

To separate the merged subranges, you can modify the unified subrange and add subranges as needed, provided that no dynamic VLAN subinterfaces currently exist for any VLAN ID within those subranges.

If you merge subranges by using SNMP, the new merged subrange takes the lowest instance value of the incorporated subranges. For example, if a VLAN range has three subranges with instance values of 2, 4, and 5 and the subranges with instance values of 2 and 5 are merged, the new merged subrange has an instance value of 2.

Changing the Administrative State of VLAN Subranges

VLAN subranges have an administrative state that enables you to remove dynamic VLAN subinterfaces on various subranges that belong to a single VLAN range. This functionality is important because subrange removal requires that no dynamic VLAN subinterfaces exist for any circuit on that subrange. The removal operation fails if any such interfaces exist.

By default, the administrative state of a VLAN subrange is up. When you change the administrative state to down by using the **vlan bulk-config shutdown** command, the router deletes all dynamic VLAN subinterfaces on the affected subranges. You can use the **show vlan subinterface** command to monitor the progress of the removal of all dynamic VLAN subinterfaces for the specified subrange.

No additional dynamic VLAN subinterfaces can be created for the subrange until you restore the administrative state to up by using the **no vlan bulk-config shutdown** command.

The following example specifies the original VLAN subranges.

```
host1(config-if)#vlan bulk-config test svlan-range 101 150 1 1
svlan-range 201 250 2 2 svlan-range 501 550 5 5 svlan-range 301 350 3 3
```

You cannot specify a partial subrange; the specified subrange must exactly match a subrange that has already been configured. The following command changes the administrative state of the second subrange (S-VLAN IDs 201–250 and VLAN ID 2) to down. The router removes all dynamic interface columns built on any of the VLAN IDs or S-VLAN IDs in this subrange. No additional dynamic VLAN subinterfaces can be created until you change the administrative state to up.

```
host1(config-if)#vlan bulk-config test shutdown svlan-range 201 250 2 2
```

The following command changes the administrative state of this same VLAN subrange to up.

```
host1(config-if)#no vlan bulk-config test shutdown svlan-range 201 250 2 2
```

You can also change the administrative state of VLAN subranges that are based on agent-circuit-identifier information. For example, assume that the following command is issued to configure a VLAN subrange based on agent-circuit-identifier information:

```
host1(config-if)#vlan bulk-config myNewBulkConfig svlan-range 50 100
agent-circuit-identifier
```

The following command changes the administrative state of this same VLAN subrange to down:

```
host1(config-if)#vlan bulk-config myNewBulkConfig shutdown svlan-range 50 100
agent-circuit-identifier
```

You can change the administrative state of all subranges in a bulk-configured VLAN range at the same time by issuing the command without specifying any subranges. When you shut down a named bulk configuration, all VLAN ranges belonging to that bulk configuration, including those based on double-tagged S-VLANs or agent-circuit-identifier information, are disabled.

The following command shuts down all four subranges belonging to the named VLAN range, test, regardless of their current state.

```
host1(config-if)#vlan bulk-config test shutdown
```

The time required for the router to complete an administrative state change depends on the number of VLAN subranges configured.

vlan bulk-config

- Use to create a bulk-configured VLAN range on a static VLAN major interface for use by a dynamic VLAN subinterface.
- For detailed information about how to use this command, see **vlan bulk-config on page 589**.
- Example

  ```
  host1(config)#vlan bulk-config test1 svlan-range 200 250 2
  ```

- Use the **no** version to remove the specified VLAN range from the VLAN major interface, to remove the specified subranges from the specified VLAN range, or to remove all subranges from the specified VLAN range. The **no** version also removes any overriding profile assignments for VLAN IDs or S-VLAN IDs within the deleted VLAN range or VLAN subrange.

vlan bulk-config modify

- Use to expand or shorten the range of the specified VLAN subrange. You can modify only a single specific subrange at a time.
- You can expand a subrange if none of the added VLAN IDs or S-VLAN IDs overlap with any other subrange. You can shorten a subrange if none of the dropped VLAN IDs or S-VLAN IDs have existing dynamic VLAN subinterfaces. You can also modify an existing subrange by configuring it to use agent-circuit-identifier information rather than a range of VLAN IDs.
- Modifying a subrange so that it completely includes at least one other subrange from within the same VLAN range effectively merges the subranges. Each subrange that is merged with another frees up a subrange for subsequent configuration. The subranges that are merged do not need to be adjacent to each other.
- The router retains any overriding profiles assigned to a subrange if the assignment falls within the modified subrange. If the assignment falls outside of the newly modified subrange, the router drops the overriding profile assignment. If two subranges are merged, the router retains overriding profiles that were assigned to the separate subranges and applies the overriding profiles to the newly merged subrange.

- Example

  host1(config-if)#**vlan bulk-config test modify svlan-range 200 250 1 3**

- There is no **no** version.

vlan bulk-config shutdown

- Use to administratively disable (shut down) a specified VLAN subrange or all subranges in a VLAN range. The administrative state of a VLAN subrange is enabled by default.
- Disabling the VLAN subrange deletes all dynamic VLAN subinterfaces on the affected subranges. You can use the **show vlan subinterface** command to monitor the progress of the removal of all dynamic VLAN subinterfaces for the specified subrange.
- No dynamic VLAN subinterfaces can subsequently be created for the subrange until you restore the administrative state to enabled by using the **no vlan bulk-config shutdown** command.
- Example

  host1(config-if)#**vlan bulk-config test shutdown svlan-range 200 250 1 3**

- Use the **no** version to enable the specified VLAN subrange or all subranges in a VLAN range.

Configuring Static VLAN Subinterfaces Within VLAN Subranges

You can do either of the following on an E-series router:

- Create a static VLAN subinterface within an existing bulk-configured VLAN subrange
- Create a bulk-configured VLAN subrange that includes an existing static VLAN subinterface

The following sections describe how to perform these tasks.

The example procedures in this section show how to configure static VLAN subinterfaces within VLAN subranges by using the same loopback interface referenced by multiple unnumbered IP interfaces. Instead of assigning a different IP address to each physical interface, the first example assigns an IP address to a loopback interface (loopback 0). Each physical interface is then configured as an unnumbered IP interface, referencing the same loopback interface.

Creating Static VLAN Subinterfaces Within VLAN Subranges

You can configure a static VLAN subinterface with a VLAN whose VLAN ID falls within an existing bulk-configured VLAN subrange.

To create a static VLAN subinterface within a VLAN subrange:

1. Create the VLAN major interface.

   host1(config)#**interface gigabitEthernet 0/0**
   host1(config-if)#**encapsulation vlan**

2. Create a bulk-configured VLAN range that includes one or more VLAN subranges.

   host1(config-if)#**vlan bulk-config test vlan-range 200 250**

3. Create a static VLAN subinterface by adding a subinterface number to the interface identification command.

   host1(config-if)#**interface gigabitEthernet 0/0.2100**

4. Do one of the following:

   - Assign a VLAN ID for the subinterface.

     host1(config-if)#**vlan id 201**

   - Assign a VLAN ID and the optional unique MAC address for the subinterface.

     host1(config-if)#**vlan id 201 mac-address 0090.1a01.1234**

5. To fully configure the VLAN subinterface, assign an IP address, or make it unnumbered.

   host1(config-if)#**ip unnumbered loopback 0**

Creating VLAN Subranges That Include Static VLAN Subinterfaces

You can configure a bulk-configured VLAN subrange that includes the VLAN ID belonging to an existing VLAN on a static VLAN subinterface. This example is essentially the reverse of the procedure in *Creating Static VLAN Subinterfaces Within VLAN Subranges* on page 599.

To create a VLAN subrange that includes a static VLAN subinterface:

1. Create the VLAN major interface.

   host1(config)#**interface gigabitEthernet 3/1**
   host1(config-if)#**encapsulation vlan**

2. Specify a static VLAN subinterface.

   host1(config-if)#**interface gigabitEthernet 3/1.201**

3. Do one of the following:

   - Assign a VLAN ID for the subinterface.

     host1(config-if)#**vlan id 201**

   - Assign a VLAN ID and the optional unique MAC address for the subinterface.

     host1(config-if)#**vlan id 201 mac-address 0090.1a01.1234**

4. Create a bulk-configured VLAN range that includes the VLAN ID of the previously configured VLAN. In this example, the VLAN range 100–250 includes VLAN ID 201.

   host1(config)#**interface gigabitEthernet 3/1**
   host1(config-if)#**vlan bulk-config test2 vlan-range 100 250**

5. To fully configure the VLAN subinterface, assign an IP address or make it unnumbered.

   host1(config-if)#**ip unnumbered loopback 0**

encapsulation vlan

- Use to configure VLAN as the encapsulation method on an interface.
- Issuing this command creates the VLAN major interface.
- Example

  host1(config-if)#**encapsulation vlan**

- Use the **no** version to disable VLAN encapsulation on the interface.

interface gigabitEthernet
interface tenGigabitEthernet

- Use to select a Gigabit Ethernet interface or a 10-Gigabit Ethernet interface.
- For information about specifying a Gigabit Ethernet or 10-Gigabit Ethernet interface, see **interface gigabitEthernet** and **interface tenGigabitEthernet** on page 586.
- Examples

  host1(config)#**interface gigabitEthernet 1/0**
  host1(config)#**interface gigabitEthernet 4/0/1**
  host1(config)#**interface tenGigabitEthernet 4/0/1**

- Use the **no** version to remove IP from an interface.

ip unnumbered

- Use to configure an unnumbered IP interface.
- This command enables IP processing on an interface without assigning an explicit IP address to the interface.

- You must specify an interface location, which is the identifier of another interface on which the router has an assigned IP address. This interface cannot be another unnumbered interface.
- Examples

  host1(config-if)#**ip unnumbered fastEthernet 3/0**
  host1(config-if)#**ip unnumbered loopback 10**

- Use the **no** version to disable IP processing on the interface.

vlan bulk-config

- Use to create a bulk-configured VLAN range on a static VLAN major interface for use by a dynamic VLAN subinterface.
- For detailed information about how to use this command, see **vlan bulk-config** on page 589.
- Example

  host1(config)#**vlan bulk-config test1 svlan-range 200 250 2 2**

- Use the **no** version to remove the specified VLAN range from the VLAN major interface, to remove the specified subranges from the specified VLAN range, or to remove all subranges from the specified VLAN range. The **no** version also removes any overriding profile assignments for VLAN IDs or S-VLAN IDs within the deleted VLAN range or VLAN subrange.

Monitoring Dynamic Interfaces and Profiles

You can use the **show** commands described in this section to monitor configurations created with dynamic interfaces and profiles.

NOTE: The E120 router and E320 router output for **monitor** and **show** commands is identical to output from other E-series routers, except that the E120 and E320 router output also includes information about the adapter identifier in the interface specifier (*slot/adapter/port*).

show atm aal5 interface

- Use to display information about a configured ATM AAL5 interface.
- Field descriptions
  - AAL5 Interface operational status—Operational status of the AAL5 interface: up, down, lowerLayerDown
  - time since last status change—Time since last reported change to the AAL5 interface operational status in hh:mm:ss format
  - SNMP trap link-status—Whether SNMP link status traps are enabled or disabled on the ATM AAL5 interface
  - Auto configure ATM 1483 status—Whether the autoconfiguration feature for a dynamic ATM 1483 subinterface configured over the ATM AAL5 interface is enabled or disabled

- InPackets—Number of packets received on this interface
- InBytes—Number of bytes received on this interface
- OutPackets—Number of packets transmitted on this interface
- OutBytes—Number of bytes transmitted on this interface
- InErrors—Number of incoming errors received on this interface
- OutErrors—Number of outgoing errors on this interface
- InPacketDiscards—Number of incoming packets discarded on this interface
- OutDiscards—Number of outgoing packets discarded on this interface

- Example

```
host1#show atm aal5 interface atm 3/0
AAL5 Interface ATM 3/0 operational status:    lowerLayerDown
      time since last status change: 00:08:46

SNMP trap link-status: disabled
Auto configure ATM 1483 status: disabled

InPackets:        0
InBytes:          0
OutPackets:       0
OutBytes:         0
InErrors:         0
OutErrors:        0
InPacketDiscards: 0
OutDiscards:      0
```

show atm bulk-config

- Use to display information, including base profile assignments and overriding profile assignments, for the bulk-configured VC ranges on an ATM AAL5 interface.
- To display information for all VC ranges on the router, use the command with no keywords.
- To display information for all VC ranges on a specified ATM AAL5 interface, use the command with the **atm** keyword and interface specifier.
- To display information for the VC range associated with a particular bulk configuration name, use the command with the **name** keyword.
- To display information for a particular VC range on a specified ATM AAL5 interface, use the command with the **atm** keyword and interface specifier and the **name** keyword.
- To display information only about overriding profile assignments configured for specific ATM PVCs within bulk-configured VC subranges, use the command with the **override** keyword. When you specify the **override** keyword, the command does not display information about base profile assignments.

- Field descriptions
  - Interface—Identifier of the ATM AAL5 physical interface on which the bulk-configured VC range resides. For more information about specifying the ATM interface, see *Interface Types and Specifiers* in *JUNOSe Command Reference Guide, About This Guide*.
  - Bulk Config Name—Name of the bulk-configured VC range on this interface
  - Start VPI—Starting virtual path identifier (inclusive) of the VC subrange
  - End VPI—Ending virtual path identifier (inclusive) of the VC subrange
  - Start VCI—Starting virtual circuit identifier (inclusive) of the VC subrange
  - End VCI—Ending virtual circuit identifier (inclusive) of the VC subrange
  - Assigned Profile—Base profile name for the dynamic ATM 1483 subinterface assigned to this VC subrange with the **profile atm1483 bulk-config-name** command. When no profile is assigned to the VC subrange, the field displays none assigned.
  - Admin State—Administrative state of the VC subrange: up or down
  - Profile override(s)—When overriding profile assignments are configured on the router, the command displays the following fields:
    - Interface—Identifier of the ATM AAL5 physical interface
    - Bulk Config Name—Name of the bulk-configured VC range on this interface that includes the VC subrange encompassing the specified ATM PVC
    - VPI—Virtual path identifier of the PVC within the bulk-configured VC subrange
    - VCI—Virtual circuit identifier of the PVC within the bulk-configured VC subrange
    - Assigned Profile—Name of the overriding profile assigned to the specified PVC with the **profile atm1483 bulk-config-name pvc** command
    - Status—Operational status of the overriding profile assignment: Active or Inactive. Active indicates that the router uses the overriding profile to create dynamic interface columns because no static ATM circuits with the same VPI/VCI values exist on this interface. Inactive indicates that the router does not use the overriding profile to create dynamic interface columns because a static ATM circuit with the same VPI/VCI values exists on this interface.

- Example 1—Displays information about base profile assignments and overriding profile assignments for all bulk-configured VC ranges on the router. The VC range named test consists of a single VC subrange (1, 1, 101, 200), has a base profile named atm1483BaseProfile assigned, and has an overriding profile named overrideProfile1 assigned to two ATM PVCs within the VC subrange. The VC range named test2 is a placeholder range that has no VC subranges configured and no base profile assigned.

```
host1#show atm bulk-config

             Bulk
            Config Start End Start End                    Admin
 Interface   Name   VPI  VPI  VCI  VCI  Assigned Profile  State
------------ ------ ----- --- ----- --- ------------------ -----
ATM AAL5 3/0  test     1   1   101 200 atm1483BaseProfile    up
ATM AAL5 3/2  test2    --  --   --- ---      none assigned   ---

2 bulk configuration(s) found

Profile override(s):

             Bulk
            Config
 Interface   Name  VPI VCI Assigned Profile Status
------------ ------ --- --- ---------------- ------
ATM AAL5 3/0  test   1 151 overrideProfile1 Active
ATM AAL5 3/0  test   1 161 overrideProfile1 Active
2 profile override(s) found
```

- Example 2—Displays information about base profile assignments and overriding profile assignments for all VC ranges configured on a specified ATM AAL5 interface

```
host1#show atm bulk-config atm 3/0

             Bulk
            Config Start End Start End                    Admin
 Interface   Name   VPI  VPI  VCI  VCI  Assigned Profile  State
------------ ------ ----- --- ----- --- ------------------ -----
ATM AAL5 3/0  test     1   1   101 200 atm1483BaseProfile    up
1 bulk configuration(s) found

Profile override(s):

             Bulk
            Config
 Interface   Name  VPI VCI Assigned Profile Status
------------ ------ --- --- ---------------- ------
ATM AAL5 3/0  test   1 151 overrideProfile1 Active
ATM AAL5 3/0  test   1 161 overrideProfile1 Active
2 profile override(s) found
```

- Example 3—Displays information about base profile assignments and overriding profile assignments for a particular bulk-configured VC range

```
host1#show atm bulk-config name test

             Bulk
            Config Start End Start End                    Admin
 Interface   Name   VPI  VPI  VCI  VCI  Assigned Profile  State
------------ ------ ----- --- ----- --- ------------------ -----
ATM AAL5 3/0   test     1   1   101 200 atm1483BaseProfile    up
1 bulk configuration(s) found

Profile override(s):

             Bulk
            Config
 Interface   Name  VPI VCI Assigned Profile Status
------------ ------ --- --- ---------------- ------
ATM AAL5 3/0   test   1 151 overrideProfile1 Active
ATM AAL5 3/0   test   1 161 overrideProfile1 Active
2 profile override(s) found
```

- Example 4—Displays information only about overriding profile assignments for all bulk-configured VC ranges on the router

```
host1#show atm bulk-config override

Profile override(s):

             Bulk
            Config
 Interface   Name  VPI VCI Assigned Profile Status
------------ ------ --- --- ---------------- ------
ATM AAL5 3/0   test   1 151 overrideProfile1 Active
ATM AAL5 3/0   test   1 161 overrideProfile1 Active
2 profile override(s) found
```

- Example 5—Displays information only about overriding profile assignments for a particular VC range configured on a specified ATM AAL5 interface

```
host1#show atm bulk-config atm 3/0 override

Profile override(s):

             Bulk
            Config
 Interface   Name  VPI VCI Assigned Profile Status
------------ ------ --- --- ---------------- ------
ATM AAL5 3/0   test   1 151 overrideProfile1 Active
ATM AAL5 3/0   test   1 161 overrideProfile1 Active
2 profile override(s) found
```

show atm subinterface

- Use to display the current state of all ATM subinterfaces, all ATM subinterfaces configured on a specified ATM physical interface, or a specific ATM subinterface.
- To specify an ATM subinterface for ERX-7xx models, ERX-14xx models, and ERX-310 routers, use the *slot*/*port*.*subinterface* format.
  - *slot*—Number of the chassis slot
  - *port*—Port number on the I/O module
  - *subinterface*—Number of the subinterface in the range 1–2147483647
- To specify an ATM subinterface for E120 and E320 routers, use the *slot*/*adapter*/*port*.*subinterface* format.
  - *slot*—Number of the chassis slot
  - *adapter*—Identifier for the IOA within the E320 chassis, either 0 or 1, where:
    - 0 indicates that the IOA is installed in the right IOA bay (E120 router) or the upper IOA bay (E320 router).
    - 1 indicates that the IOA is installed in the left IOA bay (E120 router) or the lower IOA bay (E320 router).
  - *port*—Port number on the IOA
  - *subinterface*—Number of the subinterface in the range 1–2147483647
- To display brief summary information for all ATM subinterfaces, or for ATM subinterfaces configured on a specified ATM physical interface, use the **summary** keyword.
- To display status information only for ATM subinterfaces with a specific operating status, use the **status** keyword with one of the following status values. (See the Status field description for an explanation of these values.)
  - dormant
  - dormantLockout
  - down
  - lowerLayerDown
  - notPresent
  - up

- To display the current state of an ATM subinterface created on the PVC with the specified VPI and VCI values, use the **atm** *slot/port/vpi/vci* format (for ERX-7xx models, ERX-14xx models, and ERX-310 routers) or the *slot/adapter/port/vpi/vci* format (for E120 and E320 routers) to identify the ATM subinterface (Example 5).

NOTE: You can use the **atm** *slot/port/vpi/vci* format as an alternative to the **atm** *slot/port.subinterface* format with the specific **show interface** and **show subinterface** commands to monitor all ATM 1483 subinterfaces (except NBMA interfaces) as well as the upper-layer interfaces configured over an ATM 1483 subinterface. You cannot, however, use the **atm** *slot/port/vpi/vci* format to create or modify an ATM 1483 subinterface.

These guidelines also apply to E120 and E320 routers when you use the **atm** *slot/adapter/port/vpi/vci* format as an alternative to the **atm** *slot/adapter/port.subinterface* format.

- For more information, see *Creating a Basic Configuration* in *Chapter 1, Configuring ATM*.
- Field descriptions
  - Interface—Interface identifier
  - ATM-Prot—One of the following ATM protocol types:
    - RFC-1483—Multiprotocol encapsulation over AAL5
    - NBMA—Nonbroadcast multiaccess interface
    - ATM/MPLS—Local ATM passthrough interface
  - VCD—Virtual circuit descriptor
  - VPI—Virtual path identifier
  - VCI—Virtual circuit (or channel) identifier
  - Circuit Type—Type of circuit: PVC
  - Encap—Administered encapsulation method based on what was configured with the **atm pvc** command
  - MTU—Maximum transmission unit size for the interface
  - Status—One of the following ATM 1483 subinterface states:
    - absent—Represents the notPresent state and indicates that, although the SRP detects the ATM 1483 subinterface, the module on which the subinterface resides has not completed booting up, has failed, or is disabled.
    - dormant—Indicates that the ATM 1483 subinterface is performing autodetection of one or more upper-layer encapsulation types and is waiting to receive a packet of that type on a lower-layer interface. An ATM 1483 subinterface transitions from the dormant state to the up state when the router receives a valid packet of the specified encapsulation type on the interface.

  - dormantLockout—Indicates that a dormant ATM 1483 subinterface has one or more upper-layer encapsulation types currently undergoing encapsulation type lockout. An ATM 1483 subinterface transitions from the dormantLockout state to the dormant state when the lockout time expires for all upper-layer encapsulation types undergoing lockout. An ATM 1483 subinterface transitions from the dormantLockout state to the up state when the router receives a valid packet for an encapsulation type that is configured for autodetection but is not undergoing lockout.
  - down—Indicates that the ATM 1483 subinterface is administratively disabled or has a circuit that is down or not configured.
  - lowerLayerDown—Indicates that a lower-layer interface below the ATM 1483 subinterface is down.
  - up—Indicates that the ATM 1483 subinterface is up and able to transfer data. For an ATM 1483 subinterface that supports one or more dynamic upper-layer interfaces, indicates that the router has created the dynamic upper-layer interface or is in the process of creating it.
- Interface Type—Type of ATM 1483 subinterface: dynamic or static
- Auto configure status—Setting of the autoconfiguration feature
  - dynamic—Autodetection is on; the router automatically detects the next upper interface
  - static—Autodetection is off
- Auto configure interface(s)—Types of dynamic upper interfaces configured with the **auto-configure** command: bridged Ethernet, IP, PPP, or PPPoE
- Detected 1483 encapsulation—If the encapsulation type is set to **aal5autoconfig**, displays the 1483 encapsulation type detected on the subinterface (displays AUTO until a packet is detected)
- Detected dynamic interface—Type of dynamic upper interface detected during autoconfiguration: bridged Ethernet, IP, PPP, PPPoE, or (if no packet has been received) none
- Interface types in lockout—Encapsulation types currently experiencing lockout: bridged Ethernet, IP, PPP, PPPoE, or none
- Lockout state (seconds)—Settings of encapsulation type lockout for the upper-layer encapsulation type indicated
  - Min—Minimum lockout time, in seconds
  - Max—Maximum lockout time, in seconds
  - Current—Current lockout time, in seconds; displays 0 (zero) if lockout is not occurring
  - Elapsed—Time elapsed into the lockout time, in seconds; displays 0 (zero) if lockout is not occurring
  - Next—Lockout time for the router to use for the next lockout event, in seconds
- Assigned profile—For each dynamic interface type, indicates whether or not a profile is assigned and, if assigned, displays the profile name

- Subscriber info—Subscriber login information for the specified dynamic interface type (bridged Ethernet or IP)
- SNMP trap link-status—Trap link status: enabled or disabled
- InPackets—Number of packets received on this interface
- InBytes—Number of bytes received on this interface
- OutPackets—Number of packets transmitted on this interface
- OutBytes—Number of bytes transmitted on this interface
- InErrors—Number of errors received on this interface
- OutErrors—Number of outgoing errors on this interface
- InPacketDiscards—Number of incoming packets discarded on this interface
- InPacketsUnknownProtocol—Number of incoming packets with an unknown protocol type
- OutDiscards—Number of outgoing packets discarded on this interface

- Example 1—Displays the current state of all ATM subinterfaces

```
host1#show atm subinterface
                                    Circuit                              Interface
 Interface  ATM-Prot VCD VPI VCI  Type   Encap MTU      Status            Type
----------- -------- --- --- --- ------- ----- ---- -------------- ---------
ATM 2/0.101 RFC-1483 101   0 101 PVC     AUTO  9180 dormantLockout Static
ATM 2/0.102 RFC-1483 102   0 102 PVC     AUTO  9180 up             Dynamic
ATM 2/0.103 RFC-1483 103   0 103 PVC     AUTO  9180 dormant        Static
3 interface(s) found
```

- Example 2—Displays summary information for all ATM subinterfaces shown in Example 1

```
host1#show atm subinterface summary
3 subinterfaces: 1 up, 0 down,
1 dormant, 1 dormantLockout,
0 lowerLayerDown, 0 not present
```

- Example 3—Displays status information for all ATM subinterfaces in the dormantLockout state

```
host1#show atm subinterface status dormantLockout
                                    Circuit                              Interface
 Interface  ATM-Prot VCD VPI VCI  Type   Encap MTU      Status            Type
----------- -------- --- --- --- ------- ----- ---- -------------- ---------
ATM 2/0.101 RFC-1483 101   0 101 PVC     AUTO  9180 dormantLockout Static
1 interface(s) found
```

- Example 4—Displays the current state of a specific ATM subinterface

```
host1#show atm subinterface atm 2/0.101
                                    Circuit                              Interface
 Interface  ATM-Prot VCD VPI VCI  Type   Encap MTU      Status            Type
----------- -------- --- --- --- ------- ----- ---- -------------- ---------
ATM 2/0.101 RFC-1483 101   0 101 PVC     AUTO  9180 dormantLockout Static

Auto configure status         : dynamic
Auto configure interface(s)   : IP  bridgedEthernet  PPP  PPPoE
Detected 1483 encapsulation   : AUTO
Detected dynamic interface    : none
```

```
Interface types in lockout    : IP
Lockout state (seconds)       : Min Max  Current Elapsed Next
------------------------------ --- ---- ------- ------- ----
IP                              1   30      16       7   30
BridgedEnet                   900 3600       0       0  900
PPP                             1  300       0       0    1
PPPoE                           1  300       0       0    1

Assigned profile (IP)         : ipoa
Assigned profile (BridgedEnet): beth
Assigned profile (PPP)        : ppptest
Assigned profile (PPPoE)      : pppoetest
Assigned profile (any)        : none assigned

BridgedEnet subscriber info   :
Username: elaine@jpeterman.com
Password: putty
Authenticate: enabled

SNMP trap link-status: disabled

InPackets:                0
InBytes:                  1904
OutPackets:               0
OutBytes:                 0
InErrors:                 0
OutErrors:                0
InPacketDiscards:         14
InPacketsUnknownProtocol: 0
OutDiscards:              0
1 interface(s) found
```

- Example 5—Displays the current state of a specific ATM subinterface created on the PVC with the specified VPI and VCI values

```
host1#show atm subinterface atm 0/0/0/101
                                  Circuit                   Interface
 Interface  ATM-Prot VCD VPI VCI  Type   Encap MTU  Status   Type
----------- -------- --- --- --- ------- ----- ---- ------ ---------
ATM 0/0.101 RFC-1483 101   0 101 PVC     AUTO  9180 up     Static

Auto configure status         : dynamic
Auto configure interface(s)   : PPPoE
Detected 1483 encapsulation   : SNAP
Detected dynamic interface    : PPPoE
Interface types in lockout    : none

Lockout state (seconds)       : Min Max Current Elapsed Next
------------------------------ --- --- ------- ------- ----
PPPoE                           1 300       0       0    1

Assigned profile (IP)         : none assigned
Assigned profile (BridgedEnet): none assigned
Assigned profile (PPP)        : none assigned
Assigned profile (PPPoE)      : pppoeprofile
Assigned profile (any)        : none assigned

SNMP trap link-status: disabled

InPackets:                5119
InBytes:                  358672
OutPackets:               5107
OutBytes:                 357510
```

```
InErrors:                0
OutErrors:               0
InPacketDiscards:        3
InPacketsUnknownProtocol: 0
OutDiscards:             0
1 interface(s) found
```

show atm vc

- Use to display a summary of all configured ATM VCs and reserved VC ranges.
- You can specify one or more of the following keywords individually or in combination:
  - **vpi**—Displays VCs on a specific VPI
  - **category**—Displays VCs that have a specific service category
  - **status**—Displays VCs with a certain status
- To display only a summary of all reserved VC ranges on the router, specify the **reserved** keyword with no other keywords. This includes VPI/VCI ranges reserved for use by dynamic ATM 1483 subinterfaces.
- Field descriptions
  - Interface—Interface identifier
  - VPI—Virtual path identifier
  - VCI—Virtual channel identifier
  - VCD—Virtual circuit descriptor
  - Type—Type of circuit: PVC
  - Encap—Encapsulation method: AUTO, AAL5, MUX, SNAP, ILMI, F4-OAM
  - Category—Service type configured on the VC: UBR, UBR-PCR, NRT-VBR, RT-VBR, or CBR
  - Rx/Tx Peak—Peak rate, in Kbps
  - Rx/Tx Avg—Average rate, in Kbps
  - Rx/Tx Burst—Maximum number of cells that can be burst at the peak cell rate
  - Status—State of the virtual circuit: Up or Down
  - Start VPI—Starting virtual path identifier (inclusive) of the reserved VC range
  - Start VCI—Starting virtual circuit identifier (inclusive) of the reserved VC range
  - End VPI—Ending virtual path identifier (inclusive) of the reserved VC range
  - End VCI—Ending virtual circuit identifier (inclusive) of the reserved VC range

- Example 1—Displays all VCs and reserved VC ranges on the router

```
host1#show atm vc
                                          Cate Rx/Tx Rx/Tx Rx/Tx Sta
Interface    VPI VCI  VCD  Type Encap gory Peak   Avg  Burst tus
------------ --- ---- ---- ---- ----- ---- ----- ----- ----- ---
ATM 3/0.2      0 101  4375 PVC  AUTO  CBR   1000     0     0 UP
ATM 3/0.3      0 102  4376 PVC  AUTO  CBR   1000     0     0 DOWN
...
ATM 3/0.8099   1 8099 8099 PVC  SNAP  UBR      0     0     0 UP
ATM 3/0.8100   1 8100 8100 PVC  SNAP  UBR      0     0     0 DOWN
8000 circuit(s) found


Reserved VCC ranges:

          Start Start End End
Interface  VPI   VCI  VPI VCI
--------- ----- ----- --- ---
ATM 2/0       2   100   2 102
ATM 2/0       3   300   3 303
2 reservation(s) found
```

- Example 2—Displays all reserved VC ranges on the router

```
host1#show atm vc reserved
Reserved VCC ranges:

          Start Start End End
Interface  VPI   VCI  VPI VCI
--------- ----- ----- --- ---
ATM 2/0       2   100   2 102
ATM 2/0       3   300   3 303
2 reservation(s) found
```

show columns

- Use to display static and dynamic interface counts for each interface column.
- Counts for PPP and PPPoE interface columns are updated when the PPP layer comes up.
- Counts for bridged Ethernet and IP over ATM columns are updated when the ATM layer comes up.
- Field descriptions
  - Type—Interface type
  - Total—Total number of interfaces on this column
  - Static—Number of static interfaces on this column
  - Dynamic—Number of dynamic interfaces on this column

- Example

```
host#show columns
                  Interface columns:
                  ------------------
        Type           Total      Static    Dynamic
-------------------- ---------- ---------- ----------
Bridged Ethernet              4          2          2
IP over ATM                   4          2          2
PPP                          22         12         10
PPPoE                        10          5          5
```

show pppoe interface

- Use to display summary information about the encapsulation type lockout parameters configured for PPPoE clients on a dynamic PPPoE subinterface column.
- The following field descriptions and example include only the portion of the **show pppoe interface** command display relevant to lockout configuration for PPPoE clients. For more information about using this command, see **show pppoe interface** in *Chapter 10, Configuring Point-to-Point Protocol over Ethernet*.
- Field descriptions
  - Lockout Configuration (seconds)—Encapsulation type lockout settings for the PPPoE client associated with the dynamic PPPoE subinterface column
    - Min—Minimum lockout time, in seconds
    - Max—Maximum lockout time, in seconds
    - Total clients in active lockouts—Number of PPPoE clients currently undergoing dynamic encapsulation type lockout
    - Total clients in lockout grace period—Number of PPPoE clients currently in a lockout grace period; for more information about the lockout grace period, see *Guidelines for Configuring Encapsulation Type Lockout* in *Chapter 15, Configuring Dynamic Interfaces*.
- Example

```
host1#show pppoe interface atm 3/0.101
. . .
Lockout Configuration (seconds): Min 5, Max 60
 Total clients in active lockouts: 0
 Total clients in lockout grace period: 0
```

show pppoe interface lockout-time

- Use to display detailed information about the current encapsulation type lockout condition for each PPPoE client associated with a dynamic PPPoE subinterface column on a static PPPoE major interface.
- Field descriptions
  - PPPoE interface—Specifier for the PPPoE interface
  - Lockout Configuration (seconds)—Encapsulation type lockout settings for the PPPoE client associated with the dynamic PPPoE subinterface column
    - Min—Minimum lockout time, in seconds
    - Max—Maximum lockout time, in seconds
    - Total clients in active lockouts—Number of PPPoE clients currently undergoing dynamic encapsulation type lockout
    - Total clients in lockout grace period—Number of PPPoE clients currently in a lockout grace period; for more information about the lockout grace period, see *Guidelines for Configuring Encapsulation Type Lockout* in *Chapter 15, Configuring Dynamic Interfaces*
  - Client Address—Source MAC address of the PPPoE client
  - Current—Current lockout time, in seconds; displays 0 (zero) if the PPPoE client is not undergoing lockout
  - Elapsed—Time elapsed into the lockout time, in seconds; displays 0 (zero) if the PPPoE client is not undergoing lockout
  - Next—Lockout time that the router uses for the next lockout event, in seconds
- Example

```
host1#show pppoe interface atm 3/0.101 lockout-time
PPPoE interface ATM 3/0.101
Lockout Configuration (seconds): Min 5, Max 60
 Total clients in active lockout: 0
 Total clients in lockout grace period: 0
Client Address Current Elapsed Next
-------------- ------- ------- ----
0090.1a10.165e       0       0    5
```

show pppoe subinterface

- Use to display the source MAC address of a PPPoE client when a subscriber is connected to the router through an available PPPoE session. You can then specify this MAC address in the **pppoe clear lockout interface** command to clear the lockout condition for the PPPoE client.
- To display configuration, status, and statistics information, including the source MAC address of the PPPoE client, use the **full** keyword.
- The following field descriptions and example include only the portion of the **show pppoe subinterface** command display relevant to the source MAC address for PPPoE clients. For more information about using this command, see **show pppoe subinterface** in *Chapter 10, Configuring Point-to-Point Protocol over Ethernet*.

- Field descriptions
  - PPPoE subinterface—Specifier for the PPPoE subinterface
  - source MAC address—MAC address of the PPPoE client associated with the dynamic PPPoE subinterface column
- Example

```
host1#show pppoe subinterface full
...
    PPPoE subinterface ATM 3/0.101 has source MAC address 0090.1a10.165e
...
```

show profile

- Use to display information about profiles.
- To display information about a specific profile, use the **name** keyword.
- To display a list of profiles configured on the router, use the **brief** keyword.
- Field descriptions
  - Profile—Name of the profile that is displayed
  - IP address—IP address and subnet mask of the interface, or none if the interface is unnumbered
  - Unnumbered interface—Specifier for the unnumbered interface, or none if the interface is numbered
  - Router—Name of the virtual router (VR) assigned to the profile; interfaces created by the profile are attached to this VR
  - Directed Broadcast—Enabled or disabled
  - ICMP Redirects—Enabled or disabled
  - Access Route Addition—Enabled or disabled
  - Network Address Translation—Enabled or disabled; domain location (inside or outside)
  - Source-Address Validation—Enabled or disabled
  - Ignore DF Bit—Enabled or disabled
  - Filter Option Packets—Router filters out packets with IP options; enabled or disabled
  - Administrative MTU—MTU size configured on the profile
  - TCP MSS value—Maximum segment size for TCP SYN packets traveling through the interface
  - Inactivity Timer—Inactivity timer setting; enabled or disabled
  - Route Map Name—Route map applied to the IP interface subscriber; enabled or disabled
  - Auto Detect—Router automatically detects packets that do not match any entries in the demultiplexer table; enabled or disabled
  - Auto Configure—Dynamic creation of subscriber interfaces on a primary IP interface; enabled or disabled

- IGMP—Enabled or disabled
- static-groups—Displays address of any static groups configured for IGMP
- Input policy—Name of input policy and whether statistics are enabled or disabled
- Output policy—Name of output policy and whether statistics are enabled or disabled
- PPP Keepalive—PPP keepalive period, in seconds
- PPP Magic Number—Enabled or disabled
- PPP Peer DNS Priority—Enabled or disabled
- PPP Peer WINS Priority—Enabled or disabled
- PPP Authentication—Type of authentication configured: PAP, CHAP, or none
- PPP Authentication Router—Name of authentication virtual router
- PPP Negotiate MRU—MRU configured for the profile
- PPP Packet Log—Enabled or disabled
- PPP State Log—Enabled or disabled
- PPP Chap Challenge Length—Minimum and maximum Chap Challenge length
- PPP Passive Mode—Enabled or disabled
- PPP Multilink—Enabled or disabled
- PPP IPCP netmask option—Enabled or disabled
- PPP AAA Profile—AAA profile associated with this PPP interface
- PPP Multilink Fragmentation—Enabled or disabled
- PPP Multilink Fragment Size—Multilink fragment size for this PPP interface
- PPP Multilink Reassembly—Enabled or disabled
- PPP Multilink Mrru—Multilink MRRU value for this PPP interface
- PPP Initiate IP—Initiation of IPv4 over this PPP interface; enabled or disabled
- PPP Initiate IPv6—Initiation of IPv6 over this PPP interface; enabled or disabled
- PPPoE Max Sessions—Maximum number of PPPoE subinterfaces that can be on an interface
- PPPoE Always-offer—Router offers to set up a session for the client, even if the router has insufficient resources to establish a session; enabled or disabled
- PPPoE Remote-Circuit-Id—Router captures and processes a vendor-specific tag containing a remote circuit ID transmitted from a digital subscriber line access multiplexer (DSLAM); enabled or disabled
- PPPoE Log PPPoeControlPacket—Enabled or disabled
- PPPoE duplicate-protect—Enabled or disabled

- PPPoE ACNAME—Access concentrator name
- PPPoE URL—URL sent in PADM message to PPPoE clients
- PPPoE MOTM—Message of the minute sent in the PADM message to PPPoE clients
- PPPoE Service-Name Table—Name of the PPPoE service name table, if configured for the specified profile
- ATM1483 Auto-configure—Whether autodetection of the specified upper-interface encapsulation type (bridged Ethernet, IP, PPP, or PPPoE) is enabled or disabled for a dynamic ATM 1483 subinterface
- ATM1483 lockout (seconds)—Encapsulation type lockout setting for the specified upper-interface encapsulation type (bridged Ethernet, IP, PPP, or PPPoE) configured on a dynamic ATM 1483 subinterface
  - range—Minimum lockout time–maximum lockout time, in seconds
  - no lockout—Encapsulation type lockout is disabled
- ATM1483 PVC circuit type—Encapsulation setting for the PVC configured on a dynamic ATM 1483 subinterface
  - aal5autoconfig—Enables autodetection of the 1483 encapsulation (LLC/SNAP or VC multiplexed)
  - aal5mux ip—VC-based multiplexed circuit for IP only
  - aal5snap—LLC encapsulated circuit; the LLC/SNAP header precedes the protocol datagram
- ATM1483 PVC service category—Service type setting for the PVC configured on a dynamic ATM 1483 subinterface: UBR (the default), UBR PCR, NRT-VBR, RT-VBR, or CBR
- ATM1483 PVC Peak rate—Peak cell rate (PCR), in Kbps, for the PVC configured on a dynamic ATM 1483 subinterfaces
- ATM1483 PVC Avg rate—Average rate, in Kbps, for the PVC configured on a dynamic ATM 1483 subinterface; also referred to as sustained cell rate (SCR)
- ATM1483 PVC Burst size—Length in cells of the burst for the PVC configured on a a dynamic ATM 1483 subinterface; also referred to as maximum burst size (MBS)
- ATM1483 Description—Text description assigned to ATM 1483 subinterfaces that are created with this profile
- ATM1483 Advisory Rx Speed—Configured receive speed, in Kbps, for the dynamic ATM 1483 subinterface. The E-series LAC sends this value to the LNS in the RX Connect-Speed AVP [38].
- ATM1483 PVC OAM Administrative status—Status of OAM F5 loopback cell generation (for VC integrity) on a circuit created with this profile: enabled or disabled
- ATM1483 PVC OAM Loopback frequency—Number of seconds between transmissions of OAM F5 end-to-end loopback cells on a circuit created with this profile

- ATM1483 Ip Subscriber information—Subscriber login information for the specified dynamic interface type
- ATM1483 Profile—Name of the profile assigned to the specified upper-interface encapsulation type (bridged Ethernet, IP, PPP, or PPPoE); these profiles are referenced in the base profile for a dynamic ATM 1483 subinterface as nested profile assignments
- ATM Virtual Circuit Class—Name of the ATM VC class assigned to the bulk-configured VC ranges associated with this base profile, if configured
- VLAN Auto-configure—Whether autodetection of the specified upper-interface encapsulation type (IP or PPPoE) is enabled or disabled for a dynamic VLAN subinterface
- VLAN Agent Circuit Identifier— Whether autodetection of the VLAN subinterface uses the agent-circuit-identifier information in the option 82 field of DHCP messages or in the DSL Forum VSA 26-1 of PPPoE PADR and PADI packets: enabled or disabled
- VLAN Advisory Rx Speed—Configured advisory receive speed, in Kbps, for the dynamic VLAN subinterface; the E-series LAC sends this value to the LNS in the RX Connect-Speed AVP [38]
- VLAN Advisory Tx Speed—Configured advisory speed, in Kbps, for the dynamic VLAN subinterface.
- VLAN Description—Text description assigned to VLAN subinterfaces that are created with this profile
- VLAN Profile—Name of the profile assigned to the specified upper-interface encapsulation type (IP or PPPoE); these profiles are referenced in the base profile for a dynamic VLAN subinterface as nested profile assignments
- VLAN Service Profile—Service profile name for a VLAN
- VLAN Svlan Ethertype—Ethertype that the packet must use this to create the dynamic VLAN subinterface
- Bridged Ethernet Mtu—MTU size configured for a dynamic bridged Ethernet interface
- Bridged Ethernet Service Profile—Name of the IP service profile associated with the interface profile for this dynamic bridged Ethernet interface

- Example 1—Displays configuration information for a profile assigned to a dynamic interface

```
host1#show profile name pppoeProfile
Profile                    : pppoeProfile
Unnumbered interface on    : loopback 1
Router                     : default
Directed Broadcast         : Disabled
ICMP Redirects             : Disabled
Access Route Addition      : Enabled
Network Address Translation: Disabled
Source-Address Validation  : Disabled
Ignore DF Bit              : Disabled
Filter Option Packets      : Disabled
Administrative MTU         : 1500
TCP MSS value              : 0
Inactivity Timer           : Disabled
Route Map Name             : Disabled
Auto Detect                : Disabled
Auto Configure             : Disabled

IGMP                       : Enabled
  static-groups            :
  Input policy:  bobb statistics enabled
  Output policy: bobb statistics enabled

PPP Keepalive               : 30
PPP Magic Number            : enabled
PPP Peer DNS Priority       : disabled
PPP Peer WINS Priority      : disabled
PPP Authentication          : pap/chap
PPP Authentication Router   :
PPP Negotiate MRU           : (use lower layer MRU)
PPP Packet Log              : disabled
PPP State Log               : disabled
PPP Chap Challenge Length   : 16 - 32
PPP Passive Mode            : disabled
PPP Multilink               : disabled
PPP IPCP Netmask Option     : disabled
PPP AAA Profile             :
PPP Multilink Fragmentation : disabled
PPP Multilink Fragment Size : (use MTU)
PPP Multilink Reassembly    : disabled
PPP Multilink Mrru          : (use MRU)
PPP Initiate IP             : disabled
PPP Initiate IPv6           : disabled
PPPoE Max Sessions          : 2
PPPoE Always-offer          : Disabled
PPPoE Remote-Circuit-Id     : Enabled
PPPoE Log PPPoeControlPacket: Disabled
PPPoE duplicate-protect     : Enabled
PPPoE ACNAME                : CYM9876
PPPoE URL                   : http://www.urlofinterest.com
PPPoE MOTM                  : goodmorning
PPPoE Service-Name table    : myServiceTable1
```

- Example 2—Displays configuration information for a base profile assigned to a dynamic ATM 1483 subinterface

```
host1#show profile name atm1483BaseProfile
ATM1483 Auto-configure ip                 : disabled
ATM1483 Auto-configure bridgedEthernet    : disabled
ATM1483 Auto-configure ppp                : enabled
ATM1483 lockout (seconds) ppp             : range : 1-300
ATM1483 Auto-configure pppoe              : enabled
ATM1483 lockout (seconds) pppoe           : range : 1-300
ATM1483 PVC circuit type         :  aal5autoconfig
ATM1483 PVC service category     :  Nrt-Vbr
ATM1483 PVC Peak rate : 10000, Avg rate : 2000, Burst size : 500
ATM1483 Description              :  VC_atm1483
ATM1483 Advisory Rx Speed        :  2000000000

ATM1483 PVC OAM Administrative status: enabled
ATM1483 PVC OAM Loopback frequency:    30

ATM1483 Ip Subscriber information:
  user             : elaine
  domain           : jpeterman.com
  password         : putty
ATM1483 IP Profile               : none assigned
ATM1483 Bridged Ethernet Profile : none assigned
ATM1483 PPP Profile              : none assigned
ATM1483 PPPoE Profile            : pppoeProfile
ATM Virtual Circuit Class        : premium-subscriber-class
```

- Example 3—Displays configuration information for a base profile assigned to a dynamic VLAN subinterface

```
host1#show profile name vlanProfile
VLAN Auto-configure ip             : enabled
VLAN Auto-configure pppoe          : enabled
VLAN Svlan Ethertype               : auto-configure
VLAN Agent Circuit Identifier      : disabled
VLAN Advisory Rx Speed             : 100 Kbps
VLAN Advisory Tx Speed             : 2500 Kbps
VLAN Description                   : testing
VLAN IP Profile                    : ipProfile
VLAN PPPoE Profile                 : pppoeProfile
VLAN Service Profile               : none assigned
Bridged Ethernet Mtu               : 1971
Bridged Ethernet Service Profile   : eastServiceProfile
```

show vlan bulk-config

- Use to display information, including base profile assignments and overriding profile assignments, for the bulk-configured VLAN ranges on a VLAN major interface.
- To display information for all VLAN ranges on the router, use the command with no keywords.
- To display information for the VLAN range associated with a particular bulk configuration name, use the command with the **name** keyword.
- To display information for a particular VLAN range on a specified VLAN interface, use the command with the interface specifier and the **name** keyword.

- Field descriptions
  - Interface—Identifier of the physical interface on which the bulk-configured VLAN range resides. For more information about specifying the VLAN subinterface, see *Interface Types and Specifiers* in *JUNOSe Command Reference Guide, About This Guide*.
  - Bulk Config Name—Name of the bulk-configured VLAN range on this interface
  - Start Svlan Id—Starting S-VLAN ID (inclusive) of the S-VLAN group in the subrange
  - End Svlan Id—Ending S-VLAN ID (inclusive) of the S-VLAN group in the subrange
  - Start Vlan Id—Starting VLAN ID (inclusive) of the VLAN group in the subrange
  - End Vlan Id—Ending VLAN ID (inclusive) of the VLAN group in the subrange
  - Assigned Profile—Base profile name for the dynamic VLAN subinterface assigned to this VLAN subrange with the **profile vlan bulk-config** command. When no profile is assigned to the VLAN subrange, the field displays none assigned.
  - Admin State—Administrative state of the VLAN subrange: up or down
- Example 1—Displays information about base profile assignments and overriding profile assignments for all bulk-configured VLAN ranges on the router

```
host1#show vlan bulk-config
                  Bulk   Start  End  Start End
                 Config  Svlan Svlan Vlan  Vlan   Assigned
   Interface      Name    Id    Id    Id    Id     Profile    Status
---------------- -------- ----- ----- ----- ---- ------------- ------
FastEthernet 4/6 vlanOnly     1     1     0    0 vlanProfile   Up
FastEthernet 4/6 vlanOnly     2     2   any  any vlanProfile   Up
FastEthernet 0/5 vlanOnly ----- ----- ----- ---- none assigned ------
FastEthernet 4/0 vlanOnly     2     2   any  any none assigned Up
% 4 vlan bulk-config(s) found

Profile override(s):

                  Bulk
                 Config  Svlan Vlan Assigned
   Interface      Name    Id    Id   Profile  Status
---------------- -------- ----- ---- --------- ------
FastEthernet 4/6 vlanOnly     2    3 ipProfile Active
FastEthernet 4/6 vlanOnly     2    4 ipProfile Active
% 2 profile override(s) found
```

- Example 2—Displays information about base profile assignments and overriding profile assignments for all VLAN ranges configured on a specified Fast Ethernet interface

```
host1#show vlan bulk-config interface fastEthernet 4/6
                  Bulk   Start  End  Start End
                 Config  Svlan Svlan Vlan  Vlan   Assigned
   Interface      Name    Id    Id    Id    Id     Profile    Status
---------------- -------- ----- ----- ----- ---- ------------- ------
FastEthernet 4/6 vlanOnly     1     1     0    0 vlanProfile   Up
FastEthernet 4/6 vlanOnly     2     2   any  any vlanProfile   Up

% 2 vlan bulk-config(s) found

Profile override(s):

                  Bulk
                 Config  Svlan Vlan Assigned
   Interface      Name    Id    Id   Profile  Status
---------------- -------- ----- ---- --------- ------
FastEthernet 4/6 vlanOnly     2    3 ipProfile Active
FastEthernet 4/6 vlanOnly     2    4 ipProfile Active
% 2 profile override(s) found
```

show vlan profile

- Use to display information about the dynamic VLAN subinterfaces that have been created with an overriding profile assignment.
- Use the **bulk-config** keyword to display information about bulk-configured ranges.
- Field descriptions
  - Interface—Type and specifier of the VLAN subinterface
  - Svlan Id—S-VLAN ID value, if configured
  - Vlan Id—VLAN ID for the interface
  - Assigned Profile—Overriding profile to be assigned to the VLAN
  - Status—Operational status of the overriding profile assignment: Active or Inactive. Active indicates that the router uses the overriding profile to create dynamic interface columns because no static VLAN subinterfaces exist on this interface. Inactive indicates that the router does not use the overriding profile to create dynamic interface columns because a static VLAN subinterface exists on this interface.
- Example

```
host1#show vlan profile override

Profile override(s):

                  Bulk
                 Config Svlan Vlan Assigned
   Interface      Name   Id    Id   Profile  Status
---------------- ------ ----- ---- --------- ------
FastEthernet 4/6 vlanB2  ----    2 ipProfile Active

% 1 profile override(s) found
```

show vlan subinterface

- Use to display configuration and status information for a specified VLAN subinterface or for all VLAN subinterfaces configured on the router.
- Use the **summary** keyword to display only the counts of all VLAN subinterfaces and VLAN major interfaces configured on the router.
- Use the **vlan** or **svlan** keywords to display information about specific VLAN IDs or S-VLAN IDs.
- Use the **agent-circuit-identifier** keyword to display information about VLAN subinterfaces that are created based on the agent-circuit-id information in the option 82 field of DHCP messages or in the DSL Forum VSA 26-1 of PPPoE PADR and PADI packets. Using this keyword causes the router to display the agent-circuit-identifier string in the command output.
- Field descriptions
  - Interface—Type and specifier of the VLAN subinterface
  - Status—Status of the VLAN subinterface: up, down, dormant, lowerLayerDown, absent
  - MTU—Maximum allowable size (in bytes) of the MTU for the VLAN subinterface
  - Svlan Id—S-VLAN ID value, if configured
  - Vlan Id—VLAN ID value for the VLAN subinterface
  - Ethertype—S-VLAN Ethertype value, if configured
  - Type—Type of VLAN subinterface
    - Static—VLAN or S-VLAN subinterface was configured statically
    - Dynamic—VLAN or S-VLAN subinterface was configured dynamically
  - Auto configure interface(s)—Types of dynamic upper interfaces configured with the **auto-configure** command: IP or PPPoE
  - Detected dynamic interface—Type of dynamic upper interface detected during autoconfiguration: IP, PPPoE, or (if no packet has been received) none
  - Interface types in lockout—Encapsulation types currently experiencing lockout: IP, PPPoE, or none
  - Lockout state (seconds)—Settings of encapsulation type lockout for the upper-layer encapsulation type indicated
    - Min—Minimum lockout time, in seconds
    - Max—Maximum lockout time, in seconds
    - Current—Current lockout time, in seconds; displays 0 (zero) if lockout is not occurring
    - Elapsed—Time elapsed into the lockout time, in seconds; displays 0 (zero) if lockout is not occurring
    - Next—Lockout time for the router to use for the next lockout event, in seconds

- In—Analysis of inbound traffic on this interface
  - Bytes—Number of bytes received on the VLAN or S-VLAN subinterface
  - Packets—Sum of all unicast, broadcast, and multicast packets received on the VLAN or S-VLAN subinterface
  - Multicast—Number of multicast packets received on the VLAN or S-VLAN subinterface
  - Broadcast—Number of broadcast packets received on the VLAN or S-VLAN subinterface
  - Errors—Total number of errors in all received packets; some packets might contain more than one error
  - Discards—Total number of discarded incoming packets
- Out—Analysis of outbound traffic on this interface
  - Bytes—Number of bytes sent on the VLAN or S-VLAN subinterface
  - Packets—Number of packets sent on the VLAN or S-VLAN subinterface
  - Multicast—Number of multicast packets received on the VLAN or S-VLAN subinterface
  - Broadcast—Number of broadcast packets received on the VLAN or S-VLAN subinterface
  - Errors—Total number of errors in all transmitted packets; some packets might contain more than one error
  - Discards—Total number of discarded outgoing packets
- ARP Statistics—Analysis of ARP traffic on this interface; In fields are for traffic received on the interface and Out fields are for traffic sent on the interface
  - ARP requests—Number of ARP requests
  - ARP responses—Number of ARP responses
  - Errors—Total number of errors in all ARP packets
  - Discards—Total number of discarded ARP packets
- Total VLAN interfaces—Total numbers of VLAN subinterfaces and VLAN major interfaces configured on the router; only this field appears when you specify the **summary** keyword
- Agent-Circuit-Identifier— Agent-circuit-identifier string

- Example 1—Displays full status and configuration information for all VLAN subinterfaces configured on the router

```
host1#show vlan subinterface
        Interface           Status   MTU  Svlan Id Vlan Id  Ethertype   Type
------------------------ ---------- ---- -------- -------- --------- ---------
ATM 3/0.1.2              Up         1522  ----    11       ----      Static
ATM 3/0.1.3              Up         1522  ----    12       ----      Static
ATM 3/1.1.1              Up         1522  ----    13       ----      Static
ATM 3/1.1.2              Up         1522  ----    14       ----      Static
ATM 3/2.1.1              Down       1526  4       255      0x9100    Static
FastEthernet 4/5.1       Up         1522  ----    1        ----      Dynamic
6 vlan subinterfaces found
```

- Example 2—Displays full status and configuration information for the specified VLAN subinterface

```
host1#show vlan subinterface fastEthernet 4/5.1
        Interface           Status   MTU  Svlan Id Vlan Id  Ethertype  Type
------------------------ ---------- ---- -------- -------- --------- -------
FastEthernet 4/5.1        Up         1522 ----     1        ----      Dynamic
1 vlan subinterface found
```

- Example 3—Displays full status and configuration information for the specified S-VLAN ID

```
host1#show vlan subinterface svlan id 100 53
        Interface           Status   MTU  Svlan Id Vlan Id  Ethertype  Type
------------------------ ---------- ---- -------- -------- --------- -------
FastEthernet 0/0.1        Up         1526 100      53       0x9100    Static
FastEthernet 4/6.1        Up         1526 100      53       0x9100    Dynamic

2 vlan subinterfaces found
```

- Example 4—Displays full status and configuration information for the specified dynamic VLAN subinterface

```
host1#show vlan subinterface fastEthernet 4/6.1000053
        Interface           Status   MTU  Svlan Id Vlan Id  Ethertype  Type
------------------------ ---------- ---- -------- -------- --------- -------
FastEthernet 4/6.1000053  Up         1526 100      53       0x9100    Dynamic

Auto configure interface(s)   : IP  PPPoE
Detected dynamic interface    : PPPoE
Interface types in lockout    : none

Lockout state (seconds)       : Min Max Current Elapsed Next
------------------------------ --- --- ------- ------- ----
IP                               1 300       0       0    1
PPPoE                            1 300       0       0    1

  In: Bytes 1040, Packets 15
   Multicast 0, Broadcast 1
   Errors 0, Discards 0
  Out: Bytes 984, Packets 15
   Multicast 0, Broadcast 1
   Errors 0, Discards 0
ARP Statistics:
  In: ARP requests 0, ARP responses 0
   Errors 0, Discards 0
  Out: ARP requests 0, ARP responses 0
   Errors 0, Discards 0
```

- Example 5—Displays status information for dynamic VLAN subinterfaces that are created based on agent-circuit-identifier information

```
host1#show vlan subinterface
        Interface           Status   MTU  Svlan Id Vlan Id  Ethertype   Type
------------------------ ---------- ---- -------- -------- --------- ---------
FastEthernet 4/0.1        Up         1522  2       ----     ----      Dynamic *
FastEthernet 4/0.2        Up         1522  2       ----     ----      Dynamic *
2 vlan subinterfaces found
* Created via agent circuit identifier

host1#show vlan subinterface agent-circuit-identifier
        Interface         Svlan Id Agent-Circuit-Identifier
------------------------ -------- --------------------------
FastEthernet 4/0.1        2        ----
FastEthernet 4/0.2        2        0200D0CB2729E5
```