MPLS MTU Values During Upgrade

If you have configuration files with MPLS MTU values that are larger than the interface MTU values and you upgrade to Cisco IOS Release 12.2(27)SBC, 12.2(33)SRA, 12.4(11)T, 12.2(33)SXH or later releases, the software does not change the MPLS MTU value. When you reboot the router, the software accepts the values that are set for the MPLS MTU and the interface MTU. The following error message is displayed during system initialization:

```
Setting the mpls mtu to xxxx on interface x/x, which is higher than the interface MTU
xxxx. This could lead to packet forwarding problems including packet drops.
You must set the MPLS MTU values equal to or lower than the interface MTU values.
```

Caution: If you do not set the MPLS MTU less than or equal to the interface MTU, data corruption, dropped packets, and high CPU conditions can occur.

Guidelines for Setting MPLS MTU and Interface MTU Values

When configuring the network to use MPLS, set the core-facing interface MTU values greater than the edge-facing interface MTU values, using one of the following methods:

- Set the interface MTU values on the core-facing interfaces to a higher value than the interface MTU values on the customer-facing interfaces to accommodate any packet labels, such as MPLS labels, that an interface might encounter. Make sure that the interface MTUs on the remote end interfaces have the same interface MTU values. The interface MTU values on both ends of the link must match.

- Set the interface MTU values on the customer-facing interfaces to a lower value than the interface MTU on the core-facing interfaces to accommodate any packet labels, such as MPLS labels, than an interface might encounter. When you set the interface MTU on the edge interfaces, ensure that the interface MTUs on the remote end interfaces have the same values. The interface MTU values on both ends of the link must match.

Changing the interface MTU can also modify the IP MTU, Connectionless Network Service (CLNS) MTU, and other MTU values, because they depend on the value of the interface MTU. The Open Shortest Path First (OSPF) routing protocol requires that the IP MTU values match on both ends of the link. Similarly, the Intermediate System-to-Intermediate System (IS-IS) routing protocol requires that the CLNS MTU values match on both ends of the link. If the values on both ends of the link do not match, IS-IS or OSPF cannot complete its initialization.

If the configuration of the adjacent router does not include the mpls mtu and mtu commands, add these commands to the router.

Note: The MPLS MTU setting is displayed only in the show running-config output if the MPLS MTU value is different from the interface MTU value. If the values match, only the interface MTU value is displayed.

If you attempt to set the MPLS MTU value higher than the interface MTU value, the software displays the following error, which reminds you to set the interface MTU to a higher value before you set the MPLS MTU value:

```
Please increase interface mtu to xxxx and then set mpls mtu
```

Note: In Cisco IOS Release 15.0(1)M1, you can configure the interface MTU on PA-1FE and PA-2FE port adapters. The range of values is 1500 -1530. Before this enhancement, the MTU of those interfaces was not configurable.

MPLS MTU Values for Ethernet Interfaces

If you have an interface with a default interface MTU value of 1580 or less (such as an Ethernet interface), the mpls mtu command provides an override keyword, which allows you to set the MPLS MTU value higher than the interface MTU value. The override keyword is not available for interface types that do not have a default interface MTU value of 1580 or less. For configuration details, see the "Setting the MPLS MTU Value on an Ethernet Interface" section.

Setting the MPLS MTU value higher than the Ethernet interface MTU value can lead to dropped packets, data corruption, or high CPU rates. When you set the MPLS MTU value higher than the Ethernet interface MTU value, the software displays the following message:

```
%MFI-30-MPLS_MTU_SET: Setting the mpls mtu to xxxx on Ethernet x/x, which is higher than
the interface MTU xxxx. This could lead to packet forwarding problems including packet
drops.
Most drivers will be able to support baby giants and will gracefully drop packets that are
too large. Certain drivers will have packet forwarding problems including data corruption.
Setting the mpls mtu higher than the interface mtu can lead to packet forwarding problems
and may be blocked in a future release.
```

Note: The override keyword is supported in Cisco IOS Release 12.2(27)SBC, 12.2(33)SRA, 12.4(11)T, 12.2(33)SXH, and later releases, but may not be supported in a future release.