



Release Notes for Cisco IOS Release 15.5(1)T

The following release notes support Cisco IOS Releases 15.5(1)T and higher releases. These releases support the Cisco 5900 Embedded Services Routers (ESR) platforms. These release notes are updated to describe new features, limitations, troubleshooting, recommended configurations, caveats, and how to obtain support and documentation.

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Image Information and Supported Platforms

**Note**

You must have a Cisco.com account to download the software.

Cisco IOS Release 15.5(1)T includes the following Cisco IOS images:

- c5921i86-universalk9-ms.SPA

Related Documentation

The following documentation is available:

- Software Configuration Guide for the Cisco 5900 Embedded Services Routers
<http://www.cisco.com/c/en/us/td/docs/solutions/GGSG-Engineering/15-4-3M/config-guide/Configuration-Guide.html>
- Cisco 5921 Embedded Services Router Integration Guide
http://www.cisco.com/c/dam/en/us/td/docs/solutions/GGSG-Engineering/Cisco_5921/Cisco_5921_ESR_Integration.pdf

Recommended Configuration Settings

Use the following configuration guidelines when enabling class-based weighted fair-queuing:

- Enter the following command to turn off creation of virtual-template subinterfaces:

```
no virtual-template subinterface
```

- Enter the following commands to create a policy map with class-based weighted fair-queuing and apply the newly created policy-map to the virtual template:

```
class-map match-any chat
  match dscp af11
class-map match-any voice
  match dscp ef
```

```
policy-map mypolicy
  class chat
    bandwidth percent 40
  class voice
    bandwidth percent 40
```

```
interface virtual-template number
service-policy output mypolicy
```

- No additional configuration is supported on the policy-map.

Use the following configuration guidelines when disabling Point to Point Protocol (PPP) keepalives:

- You can turn off the PPP keepalive messages to decrease overhead when the radio alerts the router with a PPPoE Active Discovery Terminate (PADT) message that the layer-2 RF connection is no longer available. Turning off the PPP keepalive messages may also avoid the potential for the router to terminate the connection based on missed PPP keepalives over a poor radio frequency (RF) link.
- To turn off the PPP keepalive messages, enter the following command for the virtual-template:

```
interface virtual-template number
no keepalive
```

Use the following configuration guidelines for setting the recommended Open Shortest Path First (OSPF) values of radio link metrics:

- You may have to dampen the amount of changes in order to reduce network-wide churn because cost components may change rapidly.
- The following recommended values are intended as a starting point for optimizing an OSPFv3 network and are based on network simulations that may reduce the rate of network changes. Each network may have unique characteristics that require different settings to optimize actual network performance.

You must configure these values for both OSPFv3 IPv4 and IPv6:

```
S1 = ipv6 ospf dynamic weight throughout
  Recommended value = 0
  Default=100
```

```
S2 = ipv6 ospf dynamic weight resources
  Recommended value = 29
  Default = 100
```

```
S3 = ipv6 ospf dynamic weight latency
  Recommended value = 29
  Default = 100
```

S4 = ipv6 ospf dynamic weight L2 factor
 Recommended value = 29
 Default = 100

The following is an example configuration for a VMI interface on the virtual template when running bypass mode:

```
interface vmi1
...
ipv6 ospf cost dynamic weight throughput 0
ipv6 ospf cost dynamic weight resources 29
ipv6 ospf cost dynamic weight latency 29
ipv6 ospf cost dynamic weight L2-factor 29
...
ospfv3 cost dynamic weight throughput 0
ospfv3 cost dynamic weight resources 29
ospfv3 cost dynamic weight latency 29
ospfv3 cost dynamic weight L2-factor 29
```

Use the following configuration guidelines for disabling split horizon in EIGRP:

- By default split horizon is enabled in EIGRP. You can disable split horizon by entering the **no ip split-horizon eigrp** command for the respective autonomous system number.

```
interface vmi number
no ip split-horizon eigrp as-number
```

- Enter the following command to disable the ip redirects on the vmi interface when you are configuring the vmi interface for EIGRP:

```
interface vmi number
no ip redirects
```

Use the following configuration guidelines for setting EIGRP values of radio link metrics:

- EIGRP monitors the following metrics on an interface allowing the tuning of the EIGRP metric calculations; use the metric weights router configuration command:

```
metric weights tos k1 k2 k3 k4 k5
```

where *tos* denotes type of service (currently, it must always be zero) and use the following default values for weights:

```
k1 - 1
k2 - 0
k3 - 1
k4 - 0
k5 - 0
```



Note The **no metric weights** command restores the K-values to the defaults listed above.

- Most configurations use the Delay and Bandwidth metrics with Bandwidth taking precedence.
- You must set the weights identically on all routers in an autonomous system.



Note If you wish to use the default K-values you do not need to enter the **metric weights** command.

- To set the metric dampening value for EIGRP, enter the following commands for either change-based or interval-based dampening of metric updates received through VMI:

- Change Based Dampening:

```
ip50-1(config)#int vmi 4
ip50-1(config-if)#eigrp 100 interface dampening-change 40
```

Default Value for Change Based Dampening:

50%

To enable change-based dampening using the default Value, enter the following command:

```
eigrp 100 interface dampening-change
```

To disable change-based dampening, enter the following command:

```
no eigrp 100 interface dampening-change
```

- Interval-based Dampening:

```
ip50-1(config)#int vmi 4
ip50-1(config-if)#eigrp 100 interface dampening-interval 20
```

Default Timer value for Interval-based Dampening:

30 seconds

To enable interval-based dampening using the default Value, enter the following command:

```
eigrp 100 interface dampening-interval
```

To disable interval-based dampening, enter the following command:

```
no eigrp 100 interface dampening-interval
```

- The following exceptions will result in an immediate update:
 - a down interface
 - a down route
 - any change in a metric triggered outside the scope of the VMI metric update



Note

No recommended values other than default are currently available.

For more information on EIGRP commands, refer to:

http://www.cisco.com/en/US/docs/ios/iproute_eigrp/command/reference/ire_book.html

Use the following configuration guidelines to enable Waas Express:

- Enter the following command to turn Waas Express on the Wan interface:

```
waas enable
```

- Enter the following commands to enable full optimizations:

```
parameter-map type waas waas_global
tfo optimize full
```

- Enter the following commands to enable application accelerators:

```
parameter-map type waas waas_global
accelerator http-express
enable
accelerator cifs-express
enable
```

```
accelerator ssl-express  
enable
```

For more information on Waas Express configuration, refer to the following URLs:

http://www.cisco.com/en/US/docs/ios/wan/configuration/guide/cfg_waas_exp.pdf

http://www.cisco.com/en/US/docs/ios-xml/ios/wan_waas/configuration/15-2mt/wan-cfg-waas-exp.html

Caveats

Caveats describe unexpected behavior in Cisco IOS releases. Caveats listed as open in a prior release are carried forward to the next release as either open or closed (resolved).

Cisco IOS Release 15.5(1)T

The following sections list caveats for Cisco IOS Release 15.5(1)T:

Open Caveats

- **CSCuq45380**
The Smart Licensing throughput level is not active after a reload.
Workaround: Reconfigure the throughput level.
- **CSCur43562**
Traceback message seen in c5921
Workaround: None

Closed Caveats

None

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation at: <http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>.

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