OSPF Area Transit Capability

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The OSPF Area Transit Capability feature provides an OSPF Area Border Router (ABR) with the ability to discover shorter paths through the transit area for forwarding traffic that would normally need to travel through the virtual-link path. This functionality allows Cisco IOS software to be compliant with RFC 2328.

Finding Feature Information in This Module

Your Cisco IOS software release may not support all of the features documented in this module. To reach links to specific feature documentation in this module and to see a list of the releases in which each feature is supported, use the "Feature Information for OSPF Area Transit Capability" section on page 7.

Finding Support Information for Platforms and Cisco IOS and Catalyst OS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS and Catalyst OS software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

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Information About OSPF Area Transit Capability

To use the OSPF Area Transit Capability feature, you should understand the concept in the following section:

- How the OSPF Area Transit Capability Feature Works, page 2

How the OSPF Area Transit Capability Feature Works

The OSPF Area Transit Capability feature is enabled by default. RFC 2328 defines OSPF area transit capability as the ability of the area to carry data traffic that neither originates nor terminates in the area itself. This capability enables the OSPF ABR to discover shorter paths through the transit area and forward traffic along those paths rather than using the virtual link or path, which are not as optimal.

For a detailed description of OSPF area transit capability, see RFC 2328, *OSPF Version 2,* at the following URL:

http://www.faqs.org/rfcs/rfc2328.html

How to Disable OSPF Area Transit Capability

This section contains the following procedure:

- Disabling OSPF Area Transit Capability on an Area Border Router, page 2 (required)

Disabling OSPF Area Transit Capability on an Area Border Router

This task describes how to disable the OSPF Area Transit Capability feature on an OSPF ABR.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **router ospf** *process-id* [**vrf** *vpn-name*]
4. **no capability transit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.

	Command or Action	Purpose
Step 3	**router ospf** *process-id* [**vrf** *vpn-name*] **Example:** `Router(config)# router ospf 100`	Enables OSPF routing and enters router configuration mode. • The *process-id* argument identifies the OSPF process.
Step 4	**no capability transit** **Example:** `Router(config-router)# no capability transit`	Disables OSPF area capability transit on all areas for a router process.

Additional References

The following sections provide references related to the OSPF Area Transit Capability feature.

Related Documents

Related Topic	Document Title
Configuring OSPF	• *Cisco IOS IP Routing Protocols Command Reference*, Release 12.2SB • *Cisco IOS IP Routing Protocols Command Reference*, Release 12.2SR • *Cisco IOS IP Routing Protocols Command Reference*, Release 12.4T • *Cisco IOS IP Routing Protocols Configuration Guide*, Release 12.4

Standards

Standard	Title
None	—

MIBs

MIB	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 2328	*OSPF Version 2*

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/techsupport

Command Reference

This section documents only commands that are new or modified.

- **capability transit**

capability transit

To reenable Open Shortest Path First (OSPF) area capability transit after it has been disabled, use the **capability transit** command in router configuration mode. To disable OSPF area capability transit on all areas for a router process, use the **no** form of this command.

capability transit

no capability transit

Syntax Description

This command has no arguments or keywords.

Command Default

OSPF area capability transit is enabled.

Command Modes

Router configuration

Command History

Release	Modification
12.0(27)S	This command was introduced.
12.3(7)T	This command was integrated into Cisco IOS Release 12.3(7)T.
12.2(25)S	This command was integrated into Cisco IOS Release 12.2(25)S.
12.2(27)SBC	This command was integrated into Cisco IOS Release 12.2(27)SBC.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.

Usage Guidelines

OSPF area capability transit is enabled by default, allowing the OSPF Area Border Router to install better-cost routes to the backbone area through the transit area instead of the virtual links. If you want to retain a traffic pattern through the virtual-link path, you can disable capability transit by entering the **no capability transit** command. If paths through the transit area are discovered, they are most likely to be more optimal paths, or at least equal to, the virtual-link path. To reenable capability transit, enter the **capability transit** command.

If you need to verify whether OSPF area capability transit is enabled for a specific routing process, enter the **show ip ospf** command.

Examples

The following example shows how to disable OSPF area capability transit on all areas for a router process named ospf 1. A **show ip ospf** command is issued first to display the current areas that have area capability transit enabled. The **no capability transit** command is then entered to disable OSPF area capability transit on all areas for the router process ospf 1.

```
Router# show ip ospf

 Routing Process "ospf 1" with ID 10.1.1.1
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
```

```
 Supports Link-local Signaling (LLS)
!Supports area transit capability
It is an area border router
 Initial SPF schedule delay 5000 msecs
 Minimum hold time between two consecutive SPFs 10000 msecs
 Maximum wait time between two consecutive SPFs 10000 msecs
 Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
 LSA group pacing timer 240 secs
 Interface flood pacing timer 33 msecs
 Retransmission pacing timer 66 msecs
 Number of external LSA 8. Checksum Sum 0x02853F
 Number of opaque AS LSA 0. Checksum Sum 0x000000
 Number of DCbitless external and opaque AS LSA 0
 Number of DoNotAge external and opaque AS LSA 0
 Number of areas in this router is 2. 2 normal 0 stub 0 nssa
!Number of areas transit capable is 1
External flood list length 0
    Area BACKBONE(0)
        Number of interfaces in this area is 3
        Area has no authentication
        SPF algorithm last executed 00:02:21.524 ago
        SPF algorithm executed 11 times
        Area ranges are
        Number of LSA 49. Checksum Sum 0x19B5FA
        Number of opaque link LSA 0. Checksum Sum 0x000000
        Number of DCbitless LSA 0
        Number of indication LSA 0
        Number of DoNotAge LSA 38
        Flood list length 0
    Area 1
        Number of interfaces in this area is 3
       !This area has transit capability: Virtual Link Endpoint
        Area has no authentication
        SPF algorithm last executed 00:02:36.544 ago
        SPF algorithm executed 9 times
        Area ranges are
        Number of LSA 42. Checksum Sum 0x1756D5
        Number of opaque link LSA 0. Checksum Sum 0x000000
        Number of DCbitless LSA 0
        Number of indication LSA 0
        Number of DoNotAge LSA 0
        Flood list length 0

Router(config)# router ospf 1
Router(router-config)# no capability transit
```

Related Commands

Command	Description
show ip ospf	Displays general information about OSPF routing processes.

Feature Information for OSPF Area Transit Capability

Table 1 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Note Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Note Software images for Cisco 12000 series Internet routers have been deferred to Cisco IOS Release 12.0(27)S1.

Table 1 Feature Information for OSPF Area Transit Capability

Feature Name	Releases	Feature Information
OSPF Area Transit Capability	12.0(27)S 12.3(7)T 12.2(25)S 12.2(27)SBC 12.2(33)SRA 12.2(33)SXH	The OSPF Area Transit Capability feature provides an OSPF Area Border Router (ABR) the ability to discover shorter paths through the transit area for forwarding traffic that would normally need to travel through the virtual-link path. This functionality allows Cisco IOS software to be compliant with RFC 2328. This feature was introduced in Cisco IOS Release 12.0(27)S. This feature was integrated into Cisco IOS Release 12.3(7)T. This feature was integrated into Cisco IOS Release 12.2(25)S. This feature was integrated into Cisco IOS Release 12.2(27)SBC. This feature was integrated into Cisco IOS Release 12.2(33)SRA. This feature was integrated into Cisco IOS Release 12.2(33)SXH.