



# OSPF Configuration Mode Commands

The OSPF Configuration sub-mode is used to configure the Open Shortest Path First (OSPF) routing protocol. This mode includes commands that configure OSPF routing parameters.

## Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```



### Important

The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).



### Important

For information on common commands available in this configuration mode, refer to the [Common Commands](#) chapter.

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## area authentication

Enables authentication for the specified OSPF area.

### Product

PDSN  
HA  
GGSN

### Privilege

Security Administrator, Administrator

### Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

### Syntax Description

[ **no** ] **area** { *ip\_address* | *decimal\_value* } **authentication** [ **message-digest** ]

#### **no**

Disables authentication for the specified area.

#### ***ip\_address***

Specifies the IP address of the area where authentication will be enabled in IPv4 dotted-decimal notation.

#### ***decimal\_value***

Specifies the identification number of the area where authentication will be enabled. This must be an integer from 0 through 4294967295.

#### **authentication**

Sets the OSPF authentication type to use the simple authentication method.

#### **message-digest**

Sets the OSPF authentication type to use the message digest 5 (MD5) authentication method.

**Usage Guidelines**

Use this command to enable authentication of OSPF areas.

**Example**

The following command enables authentication for an OSPF area defined by the IP address *192.168.100.10* and the OSPF authentication type to MD5:

```
area 192.168.100.10 authentication message-digest
```

## area default-cost

Configures the default cost for an area.

**Product**

PDSN

HA

GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

```
[ no ] area { ip_address | decimal_value } default-cost cost_value
```

**no**

Deletes the default cost for the area.

***ip\_address***

Specifies the IP address of the area in IPv4 dotted-decimal notation.

***decimal\_value***

Specifies the identification number of the area as an integer from 0 through 4294967295.

***cost\_value***

Sets the default cost to be configured for the specified area as an integer from 0 through 16777215.

**Usage Guidelines**

Use this command to configure the default cost for an OSPF area.

**Example**

The following command sets the default cost for an OSPF area defined by the IP address *192.168.100.10* to *300*:

```
area 192.168.100.10 default-cost 300
```

## area nssa

Defines an area as an NSSA (Not So Stubby Area) and configures OSPF parameters for it.

### Product

PDSN  
HA  
GGSN

### Privilege

Security Administrator, Administrator

### Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

### Syntax Description

```
[ no ] area { ip_address | decimal_value } nssa [ default-information-originate ] [ no-redistribution ] [ no-summary ] [ translate-always ] [ translate-candidate ] [ translate-never ]
```

#### *ip\_address*

Specifies the IP address of the NSSA in IPv4 dotted-decimal notation.

#### *decimal-value*

Specifies the identification number of the NSSA area as an integer from 0 through 4294967295.

#### **default-information-originate**

Originates default information to the NSSA area.

#### **no-redistribution**

Does not redistribute external routes to the NSSA area.

#### **no-summary**

Does not inject inter-area routes into NSSA.

#### **translate-always**

Configures the NSSA-ABR (Area Border Router) to always translate

#### **translate-candidate**

Configure NSSA-ABR for translate election. (This is enabled by default.)

**translate-never**

Configure NSSA-ABR to never translate.

**Usage Guidelines**

Use this command to define NSSA areas.

**Example**

The following command defines the area designated by the IP address *192.168.100.10* as an NSSA area:

```
area 192.168.100.10 nssa
```

## area stub

Defines an area as an OSPF stub area.

**Product**

PDSN

HA

GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

```
[ no ] area { ip_address | decimal_value } stub [ no-summary ]
```

***ip\_address***

Specifies the IP address of the stub area in IPv4 dotted-decimal notation.

***decimal\_value***

Specifies the identification number of the stub area as an integer from 0 through 4294967295.

**stub**

Specifies this is a stub area.

**no-summary**

Disables (stops) the ABR (Area Border Router) from sending summary link state advertisements (LSAs) into the stub area.

**Usage Guidelines**

Use this command to define an OPSF area as a stub area.

**Example**

The following command defines the OSPF area defined by the IP address *192.168.100.10* as a stub area:

```
area 192.168.100.10 stub
```

## area virtual-link

Configures a virtual link between an area that cannot be physically connected to the network backbone and an area that is physically connected to the network backbone.

**Product**

PDSN  
HA  
GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

```
[ no ] area { ip_address | decimal_value } virtual-link router_id_address
```

**no**

Disables area virtual-link.

***ip\_address***

Specifies the IP address of the transit area in IPv4 dotted-decimal notation.

***decimal\_value***

Specifies The identification number of the transit area as an integer from 0 through 4294967295.

***router\_id\_address***

Specifies the router id of the ABR to be linked to in IPv4 dotted-decimal notation.

**Usage Guidelines**

Use this command to create a virtual link between an area that is connected to the network backbone and an area that cannot be connected to the network backbone.

**Example**

The following command creates a virtual link between the OSPF areas defined by the IP address *192.168.100.10* and the IP address *192.168.200.20*:

```
area 192.168.100.10 virtual-link 192.168.200.20
```

## area virtual link authentication

Configures the OSPF authentication method to be used by the virtual link between an area that cannot be physically connected to the network backbone and an area that is physically connected to the network backbone.

<b>Product</b>	PDSN HA GGSN
<b>Privilege</b>	Security Administrator, Administrator
<b>Command Modes</b>	Exec > Global Configuration > Context Configuration > OSPF Configuration <b>configure &gt; context</b> <i>context_name</i> > <b>router ospf</b> Entering the above command sequence results in the following prompt: <pre>[local]host_name(config-ospf)#</pre>
<b>Syntax Description</b>	<pre>[ <b>no</b> ] <b>area</b> { <i>ip_address</i>   <i>decimal_value</i> } <b>virtual-link</b> <i>router_id_address</i>  <b>authentication</b> { <b>message-digest</b>   <b>null</b>   <b>text</b> }</pre> <p><b>no</b></p> <p>Disables area virtual link authentication.</p> <p><b><i>ip_address</i></b></p> <p>Specifies the IP address of the transit area in IPv4 dotted-decimal notation.</p> <p><b><i>decimal_value</i></b></p> <p>Specifies the identification number of the transit area as an integer from 0 through 4294967295.</p> <p><b><i>router_id_address</i></b></p> <p>Specifies the router id of the ABR to be linked to in IPv4 dotted-decimal notation.</p> <p><b>authentication</b></p> <p>Sets the OSPF authentication type to use the simple authentication method.</p>

**message-digest**

Sets the OSPF authentication type to use the message digest (MD) authentication method.

**null**

Set the OSPF authentication type to use no authentication, thus disabling either MD or clear text methods.

**text**

Set the OSPF authentication type to use the clear text authentication method.

**Usage Guidelines**

Use this command to set the authentication method for a virtual link between an area that is connected to the network backbone and an area that cannot be connected to the network backbone.

**Example**

The following command sets the authentication method for a virtual link between the OSPF areas defined by the IP address *192.168.100.10* and the IP address *192.168.200.20* to use no authentication:

```
area 192.168.100.10 virtual-link 192.168.200.2 null
```

## area virtual-link authentication-key

Configures the authentication password for the virtual link between an area that cannot be physically connected to the network backbone and an area that is physically connected to the network backbone.

**Product**

PDSN  
HA  
GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

```
area { ip_address | decimal_value } virtual-link router_id_address authentication-key
    { encrypted password encrypted_key | password password_key }
no area { ipaddress | decimal_value } virtual-link router_id_address
authentication-key
```

**no**

Disables the area virtual link authentication key.



***ipaddress***

Specifies the IP address of the transit area in IPv4 dotted-decimal notation.

***decimal-value***

Specifies the identification number of the transit area as an integer from 0 through 4294967295.

***router\_id\_address***

Specifies the router id of the ABR to be linked to in IPv4 dotted-decimal notation.

**encrypted password**

*encrypted\_key* is an alphanumeric string of 1 through 523 characters.

Use this if you are pasting a previously encrypted authentication key into the CLI command.

**password *password\_key***

The password to use for authentication. *password\_key* is an alphanumeric string of 1 through 16 characters that denotes the authentication password. This variable is entered in clear text format.

**Usage Guidelines**

Use this command to specify the authentication password for a virtual link between an area that is connected to the network backbone and an area that cannot be connected to the network backbone.

**Example**

The following command creates an authentication password of *123456* for a virtual link between the OSPF areas defined by the IP address *192.168.100.10* and the IP address *192.168.200.20*:

```
area 192.168.100.10 virtual-link 192.168.200.20 authentication-key password
123456
```

## area virtual link intervals

Configures the interval or delay type, and the delay time in seconds, for the virtual link between an area that cannot be physically connected to the network backbone and an area that is physically connected to the network backbone.

**Product**

PDSN

HA

GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

### Syntax Description

```
[ no ] area { ip_address | decimal_value } virtual-link router_id_address [
dead-interval dead_value ] [ hello-interval hello_value ] [ retransmit-interval
rt_value ] [ transmit-delay td_value ]
```

#### **no**

Disables the area virtual link intervals.

#### ***ipaddress***

Specifies the IP address of the area in IPv4 dotted-decimal notation.

#### ***decimal\_value***

Specifies the identification number of the transit area as an integer from 0 through 4294967295.

#### ***router\_id\_address***

Specifies the router id of the ABR to be linked to in IPv4 dotted-decimal notation.

#### ***dead-interval dead\_value***

Specifies The interval (in seconds) that the router should wait, during which time no packets are received and after the router considers a neighboring router to be off-line. *dead\_value* must be an integer from 1 through 65535.

#### ***hello-interval hello\_value***

Specifies the interval (in seconds) before sending a hello packet. *hello\_value* must be an integer from 1 through 65535.

#### ***retransmit-interval rt\_value***

Specifies the interval (in seconds) that router should wait before retransmitting a packet. *rt\_value* must be an integer from 1 through 3600.

#### ***transmit-delay td\_value***

Specifies the interval (in seconds) that the router should wait before transmitting a packet. *td\_value* must be an integer from 1 through 3600.

### Usage Guidelines

Use this command to set the intervals or delay types for a virtual link between an area that is connected to the network backbone and an area that cannot be connected to the network backbone.

### Example

The following command sets the retransmit interval for a virtual link between the OSPF areas defined by the IP address 192.168.100.10 and the IP address 192.168.200.20 to 60 seconds:

```
area 192.168.100.10 virtual-link 192.168.200.20 retransmit-interval 60
```

# area virtual link message-digest-key

Enables the use of MD5-based OSPF authentication for the virtual link between an area that cannot be physically connected to the network backbone and an area that is physically connected to the network backbone.

## Product

PDSN

HA

GGSN

## Privilege

Security Administrator, Administrator

## Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

## Syntax Description

**area** { *ip\_address* | *decimal\_value* } **virtual-link** *router\_id\_address* **message-digest-key** *key\_id* **md5** { **encrypted password** *encrypted\_key* | **password** *password\_key* }  
**no area** { *ipaddress* | *decimal\_value* } **virtual-link** *router\_id\_address* **message-digest-key** *key\_id*

**no**

Disables the area virtual link message digest key.

***ip\_address***

Specifies the IP address of the transit area in IPv4 dotted-decimal notation.

***decimal\_value***

Specifies the identification number of the transit area as an integer from 0 through 4294967295.

***router\_id\_address***

Specifies the router id of the ABR to be linked to in IPV4 dotted-decimal notation.

**message-digest-key** *key\_id*

Specifies the key identifier number. *key\_id* must be an integer from 1 through 255.

**encrypted password** *encrypted\_key*

Specifies the use of an encrypted password. *encrypted\_key* is an alphanumeric string of 1 through 523 characters.

Used this if you are pasting a previously encrypted authentication key into the CLI command.

**password *password\_key***

Specifies the password to use for authentication. *password\_key* is an alphanumeric string from 1 through 16 characters that is entered in clear text format.

**Usage Guidelines**

Use this command to enable the use of MD5-based OSPF authentication for a virtual link between an area that is connected to the network backbone and an area that cannot be connected to the network backbone.

**Example**

The following command enables the use of MD5-based OSPF authentication for a virtual link between the OSPF areas defined by the IP address 192.168.100.10 and the IP address 192.168.200.20, sets the MD5 Key ID to 25, and the password to 123456:

```
area 192.168.100.10 virtual-link 192.168.200.20 message-digest-key 25 md5
password 123456
```

## bfd-all-interfaces

Enables or disables Bidirectional Forwarding Detection (BFD) on all OSPF interfaces.

**Product**

PDSN  
HA  
GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context *context\_name* > router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

**[no] bfd-all-interfaces**

**no**

Disables BFD capability on all interfaces.

**Usage Guidelines**

Use this command to configure BFD on all OSPF interfaces. See the *System Administration Guide* for additional information on how to configure BFD.

**Example**

The following command configures BFD on all OSPF interfaces:

```
bfd-all-interfaces
```

## capability graceful-restart

Configures graceful-restart. By default, this capability is set to enabled.

### Product

PDSN  
HA  
GGSN

### Privilege

Security Administrator, Administrator

### Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

### Syntax Description

[ **no** | **default** ] **capability graceful-restart**

#### no

Disables the graceful-restart capability.

#### default

Enables the graceful-restart capability if it has been disabled.

### Usage Guidelines

Use this command to configure graceful-restart.

### Example

The following command configures graceful-restart:

```
capability graceful-restart
```

## default-information originate

Creates a default external route into an OSPF routing domain.

### Product

PDSN  
HA  
GGSN

### Privilege

Security Administrator, Administrator

### Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

#### Syntax Description

**default-information originate**  
**default-information originate** [ **always** ] [ **metric** *metric\_value* ] [ **metric-type** { **1** | **2** } ] [ **route-map** *route\_map\_name* ]  
**no default-information originate**

**no**

Disables the default external route.

**always**

Always advertise the route regardless of whether or not the software has a default route.

**metric** *metric\_value*

Sets the OSPF metric used in creating the default route as an integer from 1 through 16777214.

**metric-type** { **1** | **2** }

Sets the default route metric type.

**1**: Sets the OSPF external link type for default routes to Type 1.

**2**: Sets the OSPF external link type for default routes to Type 2.

**route-map** *route\_map\_name*

Specifies the name of the default route-map to be used as an alphanumeric string of 1 through 79 characters.

#### Usage Guidelines

Use this command to set the default external route into an OSPF routing domain.

#### Example

The following command sets the default external route to originate from the route map named *rmap1*:

```
default-information originate route-map rmap1
```

## default-metric

Configures the default metric value for the OSPF routing protocol. All OSPF interfaces have a cost, which is a routing metric that is used in the link-state calculation. Routes with lower total path metrics are preferred over those with higher path metrics. When several equal-cost routes to a destination exist, traffic is distributed equally among them. The default metric is a global parameter that specifies the cost applied to all OSPF routes by default.

#### Product

PDSN

HA

GGSN

#### Privilege

Security Administrator, Administrator

#### Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

#### Syntax Description

**default-metric** *metric\_value*  
**no default-metric**

#### *metric-value*

Sets the metric value expressed as an integer from 1 through 16777214. Default: 26385.

#### **no**

Enables or disables the default metric value for OSPF.

#### Usage Guidelines

Use this command to set the default metric for routes.

#### Example

The following command sets the default metric to 235:

```
default-metric 235
```

## distance

Configures the OSPF route administrative distances for all OSPF route types or based on specific route type. Administrative distance is the measure used by Cisco routers to select the best path when there are two or more different routes to the same destination from two different routing protocols. Administrative distance defines the reliability of a routing protocol. Each routing protocol is prioritized in order of most to least reliable (believable) using an administrative distance value. A lower numerical value is preferred.

#### Product

PDSN

HA

GGSN

#### Privilege

Security Administrator, Administrator

#### Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

## Syntax Description

```
[ no ] distance { distance_value | ospf { [ external distance_value ] [ inter-area distance_value ] [ intra-area distance_value ] } }
```

### no

Disables the OSPF route administrative distances for all OSPF route types.

### distance\_value

Specifies the OSPF route administrative distances as an integer from 1 to 255. The default distance value is 110.

```
ospf{ [ external distance_value ] [ inter-area distance_value ] [ intra-area distance_value ] }
```

Set the distance value for the specified route type.

**external distance\_value:** Set the OSPF route administrative distance for routes from other routing domains, learned by redistribution. This must be an integer from 1 through 255. The default is 110.

**inter-area distance\_value:** sets the OSPF route administrative distance for routes from one routing area to another. This must be an integer from 1 through 255. The default is 110.

**intra-area distance\_value:** sets the OSPF route administrative distance for all routes within an area. This must be an integer from 1 through 255. The default is 110.

### no

Enables or disables the specified option.

## Usage Guidelines

Use this command to set the administrative distance for OSPF routes.

### Example

The following command sets the administrative distance for all OSPF route types to 30:

```
distance 30
```

# distribute-list

Enables or disables the filtering of networks in outgoing routing updates.

## Product

PDSN  
HA  
GGSN

## Privilege

Security Administrator, Administrator

## Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

```
configure > context context_name > router ospf
```

Entering the above command sequence results in the following prompt:



```
[local]host_name(config-ospf)#
```

### Syntax Description

```
[ no ] distribute-list route_access_list out { connected | rip | static }
```

#### no

Disables the filtering of networks in outgoing routing updates.

#### route\_access\_list

Specifies the name of the OSPF route access list to use for filtering as an alphanumeric string of 1 through 63 characters.

#### connected

Filters connected routes.

#### rip

Filters RIP routes. (RIP is not supported at this time.)

#### static

Filters static routes.

#### no

Disables the specified option.

### Usage Guidelines

Use this command to enable the filtering of outgoing route updates by using the specified route access list.

#### Example

The following command uses the route access list named *ral1* to filter outgoing routing updates for all connected routes:

```
distribute-list ral1 out connected
```

## ip vrf

Configures the Virtual Routing and Forwarding (VRF) instances for OSPF routing protocol.

### Product

All

### Privilege

Security Administrator, Administrator

### Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

```
configure > context context_name > router ospf
```

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

[ **no** ] **ip vrf** *vrf\_name*

**no**

Disables the VRF instances and removes the configured VRF context association for OSPF routing.

**vrf *vrf\_name***

Configures Virtual Routing & Forwarding (VRF) parameters.

*vrf\_name* is name of a preconfigured VRF context configured in Context Configuration Mode via the **ip vrf** command. It is an alphanumeric string of 1 through 63 characters.

**Usage Guidelines**

Use this command to configure the IP VRF forwarding also to associate the preconfigured VRF context with the specific tunnel interface.

This command creates and enters the OSPF VRF Configuration Mode if required to configure the VRF context instances for OSPF routing.

**Example**

The following command enables preconfigured VRF context instance *ospf\_vrf1* for OSPF routing and enters the OSPF VRF Configuration mode:

```
ip vrf ospf_vrf1
```

# neighbor

Configures OSPF routers that interconnect to non-broadcast networks.

**Product**

PDSN

HA

GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context *context\_name* > router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

[ **no** ] **neighbor** *ip\_address* [ **poll-interval** *poll\_interval\_value* ] [ **priority** *priority\_value* ]

**no**

Disables OSPF routers that interconnect to non-broadcast networks.

***ip\_address***

Specifies the interface IP address of the OSPF neighbor expressed using IPv4 dotted-decimal notation.

***poll-interval poll\_interval\_value***

Default: 120

Sets the number of seconds in the dead neighbor polling interval as an integer from 1 through 65535

***priority priority\_value***

Default: 0

Sets the 8-bit number that represents the router priority value of the non-broadcast neighbor associated with the specified IP address. This must be an integer from 0 through 255. This keyword does not apply to point-to-multipoint interfaces.

**Usage Guidelines**

Use this command to configure OSPF routers that connect to non-broadcast networks.

**Example**

The following command specifies an OSPF router neighbor with the IP address of *192.168.100.10*:

```
neighbor 192.168.100.10
```

## network area

Enables OSPF on an interface and defines the OSPF area for that network.

**Product**

PDSN

HA

GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context context\_name > router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

```
[ no ] network network_ip_address / network_mask area { area_id | area_ip_address }
```

**no**

Disables OSPF on an interface and defines the OSPF area for that network.

***network\_ip\_address/network\_mask***

Specifies the network address and mask as well as the interface on which OSPF will be enabled.

*network\_ip\_address* is entered in IPv4 dotted-decimal notation, followed by the "/" and the mask (CIDR).

***area\_id***

Specifies the OSPF area identification number for the specified network as an integer from 0 through 4294967295.

***area\_ip\_address***

Specifies the IP address of the OSPF area for this network. This must be entered in IPv4 dotted-decimal notation.

**Usage Guidelines**

Use this command to specify the IP address of the network interface that the OSPF router will use.

**Example**

The following command specified that the OSPF router will use the interface at IP address *192.168.1.0* with a netmask of *24*:

```
network 192.168.1.0/24
```

## ospf graceful-restart

Configures OSPF graceful-restart settings.

**Product**

PDSN

HA

GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context *context\_name* > router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

```
ospf graceful-restart { grace-period grace_period | helper { never | policy {  
only-reload | only-upgrade } } }
```

***grace-period grace-period***

Specifies the OSPF graceful restart grace period (in seconds) as an integer from 1 through 1800. Default grace period is 60 seconds.

**helper { never | policy { only-reload | only-upgrade } }**

Helps configure OSPF helper settings.

**never**: Do not allow helper mode.

**policy { only-reload | only-upgrade }**: Allows ospf graceful-restart helper mode.

- **only-reload**: Allows ospf graceful-restart helper mode only for a reload.
- **only-upgrade**: Allows ospf graceful-restart helper mode only for an upgrade.

Default is ospf graceful-restart grace-period.

#### Usage Guidelines

Use this command to configure graceful-restart specific settings.

#### Example

The following command sets the graceful restart grace period to 60 seconds:

```
ospf graceful-restart grace-period 60
ospf graceful-restart helper policy only-reload
ospf graceful-restart helper policy only-upgrade
```

## ospf router-id

This command configures the router ID for the OSPF process.

#### Product

PDSN  
HA  
GGSN

#### Privilege

Security Administrator, Administrator

#### Command Modes

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context *context\_name* > router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

#### Syntax Description

[ **no** ] **ospf router-id** *ip\_address*

**no**

Disables the router ID for the OSPF process.

**router-id** *ip\_address*

Specifies the router ID for the OSPF process. *ip\_address* is entered using IPv4 dotted-decimal notation.

#### Usage Guidelines

Use this command to set the router ID for the current OSPF router process.

**Example**

The following command sets the router ID to *192.168.200.1*:

```
ospf router-id 192.168.200.1
```

## passive-interface

Enables or disables the suppression of OSPF routing updates on the specified interface.

**Product**

PDSN

HA

GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

[ **no** ] **passive-interface** *interface\_name*

**no**

Disables the name assigned to a logical interface within the specific context.

***interface\_name***

Specifies the name assigned to a logical interface within the specific context as an alphanumeric string of 1 through 79 characters.

**Usage Guidelines**

Use this command to suppress router updates on an interface in the current context.

**Example**

The following command suppresses OSPF routing updates on the interface named *Intfc1*:

```
passive-interface Intfc1
```

## redistribute

Redistributes routes from other protocols to OSPF neighbors using the OSPF protocol.

**Product**

PDSN

HA  
GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

**redistribute { connected | rip | static } [ metric *metric\_value* ] [ metric-type { 1 | 2 } ] [ route-map *route\_map\_name* ]**  
**no redistribute { connected | rip | static }**

**no**

Disables the redistributed routes.

**connected**

Redistributes connected routes.

**rip**

Specifies that RIP routes will be redistributed. (RIP is not supported at this time.)

**static**

Redistributes static routes.

**metric *metric\_value***

Sets the OSPF metric used in the redistributed route. This must be an integer from 1 through 16777214.

**metric-type { 1 | 2 }**

Default: 2

Sets route metric type that is applied to redistributed routes.

**1:** Sets the OSPF external link type for routes to Type 1.

**2:** Sets the OSPF external link type for routes to Type 2.

**route-map *route\_map\_name***

Filter routes through the specified route map before redistribution. *route\_map\_name* specifies the name of the route-map to use as an alphanumeric string of 1 through 79 characters.

**Usage Guidelines**

Use this command to define what routing protocols should have their routes redistributed into OSPF.

**Example**

The following command defines that BGP routes should be redistributed:

```
redistribute connected
```

## refresh timer

Adjusts settings for the OSPF refresh timer.

**Product**

PDSN

HA

GGSN

**Privilege**

Security Administrator, Administrator

**Command Modes**

Exec > Global Configuration > Context Configuration > OSPF Configuration

**configure > context** *context\_name* > **router ospf**

Entering the above command sequence results in the following prompt:

```
[local]host_name(config-ospf)#
```

**Syntax Description**

```
[ no ] refresh timer value
```

**no**

Disables the refresh timer.

***value***

Default: 10

Specifies the minimum amount of time (in seconds) to wait before refreshing a Link-state Advertisement (LSA). This must be an integer from 10 through 1800.

**Usage Guidelines**

Use this command to define the amount of time to wait before refreshing an LSA.

**Example**

The following command sets the refresh timer to 90 seconds:

```
refresh timer 90
```

## router-id

Configures the router ID for the OSPF process.



<b>Product</b>	PDSN HA GGSN
<b>Privilege</b>	Security Administrator, Administrator
<b>Command Modes</b>	Exec > Global Configuration > Context Configuration > OSPF Configuration <b>configure &gt; context</b> <i>context_name</i> > <b>router ospf</b> Entering the above command sequence results in the following prompt: [local]host_name(config-ospf)#
<b>Syntax Description</b>	[ <b>no</b> ] <b>router-id</b> <i>ip_address</i>  <b>no</b> Disables the router ID for the OSPF process.  <b>ip_address 196</b> Specifies the router ID for the OSPF process in IPv4 dotted-decimal notation.
<b>Usage Guidelines</b>	Use this command to set the router ID for the current OSPF router process.  <b>Example</b> The following command sets the router ID to <i>192.168.200.1</i> : <b>router-id 192.168.200.1</b>

## timers spf

Sets the Shortest Path First (SPF) timers.

<b>Product</b>	PDSN HA GGSN
<b>Privilege</b>	Security Administrator, Administrator
<b>Command Modes</b>	Exec > Global Configuration > Context Configuration > OSPF Configuration <b>configure &gt; context</b> <i>context_name</i> > <b>router ospf</b> Entering the above command sequence results in the following prompt: [local]host_name(config-ospf)#

---

**Syntax Description**

**timers spf** *delay\_value hold\_time\_value*  
**no timers spf**

**no**

Disables SPF timers.

***delay\_value***

Default: 5

Specifies the delay time (in seconds) between receiving changes to an SPF calculation. This must be an integer from 0 through 4294967295.

***hold\_time\_value***

Default: 10

Specifies the hold time (in seconds) between consecutive SPF calculations. This must be an integer from 0 through 4294967295.

---

**Usage Guidelines**

Use this command to set the SPF delay and hold timers for the current OSPF router process.

**Example**

The following command sets the delay timer to *15* and the hold timer to *15*:

```
timers spf 15 15
```