

# **Crypto Map IKEv2-IPv4 Configuration Mode Commands**

#### **Command Modes**

The Crypto Map IKEv2-IPv4 Configuration Mode is used to configure an IKEv2 IPsec policy for secure X3 interface tunneling between a P-GW and a lawful intercept server.

Exec > Global Configuration > Context Configuration > Crypto Map IKEv2-IPv4 Configuration

configure > context context\_name > crypto map template\_name ikev2-ipv4

Entering the above command sequence results in the following prompt:

[context name]host name(cfg-crypto-ikev2-ipv4-map)#



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

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### allow-cert-enc cert-hash-url

Enables support for a certificate encoding type other than the default. When enabled hash and URL encoding type are supported in CERT and CERTREQ payloads.

Product	Security gateway products
Privilege	Security Administrator
Syntax Description	[ no ] allow-cert-enc cert-hash-url
	no
	Disables support for hash and URL encoding type in CERT and CERTREQ payloads.
Usage Guidelines	Enable support for a certificate encoding type other than the default. When enabled hash and URL encoding type are supported in CERT and CERTREQ payloads.
	Example
	The full sector and each the hard LUDI and the tens in CEDT and CEDTDEO and a large

The following command enables hash and URL encoding type in CERT and CERTREQ payloads:

allow-cert-enc cert-hash-url

### authentication

Configures the subscriber authentication method used for this crypto map.

	<b>(</b>	
		HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
Product		ePDG
		FA
		GGSN
		НА
		HeNBGW
		HNBGW
		HSGW
		MME
		P-GW

	PDSN
	S-GW
	SAEGW
	SALOW
	SecGW
	SGSN
	505N
Privilege	Security Administrator
Syntax Description	<pre>authentication { local   remote } ( certificate   pre-shared-key {     encrypted key value   key value }</pre>
	local   remote
	Specifies which authentication method will be used by the crypto map – local or remote.
	certificate
	Specifies that a certificate will be used by this crypto map for authentication.
	pre-shared-key { encrypted key <i>value</i>   key <i>value</i> }
	Specifies that a pre-shared key will be used by this crypto map for authentication.
	<b>encrypted key</b> <i>value</i> : Specifies that the pre-shared key used for authentication is encrypted and expressed as an alphanumeric string of 1 through 255 characters for releases prior to 15.0, or 16 to 496 characters for release 15.0 and higher.
	<b>key</b> <i>value</i> : Specifies that the pre-shared key used for authentication is clear text and expressed as an alphanumeric string of 1 through 32 characters for releases prior to 14.0 or 1 through 255 characters for release 14.0 and higher.
Usage Guidelines	Use this command to specify the type of authentication performed for IPSEC peers attempting to access the system via this crypto map.
	Example
	The following command sets the authentication method to an open key value of <i>6d7970617373776f7264</i> :
	authentication pre-shared-key key 6d7970617373776f7264

# blacklist

Enables or disables a blacklist (access denied) for this map.

Product

All products supporting IPSec blacklisting

c	Þ	
Importa	This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.	
Privilege	ivilege Security Administrator	
Syntax Description [ no ] blacklist		
	no	
	Disables blacklisting for this crypto map. By default blacklisting is disabled.	
Usage Guidelines	Use this command to enable blacklisting for this crypto map. A blacklist is a list or register of entities that are denied a particular privilege, service, mobility, access or recognition. With blacklisting, any peer is allowed to connect as long as it does not appear in the list. For additional information on blacklisting, refer to the <i>System Administration Guide</i> .	
	Example	
	The following command enables blacklisting:	
	blacklist	

### ca-certificate list

Used to bind an X.509 Certificate Authority (CA) certificate to a crypto map.

	<b>(</b>	
		HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
Product		ePDG
		FA
		GGSN
		НА
		HeNBGW
		HNBGW
		HSGW
		MME
		P-GW
		PDSN

	S-GW
	SAEGW
	SCM
	SecGW
	SGSN
Privilege	Security Administrator
Syntax Description ca-certificate list ca-cert-name name [ ca-cert-name name ] no ca-certificate	
	no
	Unbinds the ca-certificate(s) bound to the crypto map.
	ca-cert-name <i>name</i>
	Binds the named X.509 Certificate Authority (CA) certificate to a crypto map. <i>name</i> is an alphanumeric string of 1 through 129 characters.
	You can chain multiple(max 4) certificates in a single command instance.
Usage Guidelines	Used to bind an X.509 CA certificate to a map.
	Example
	Use the following example to add a CA certificate to a list:
	ca-certificate list ca-cert-name CA_list1

# ca-crl list

Binds one or more Certificate Authority-Certificate Revocation Lists (CA-CRLs) to this crypto map.

	<b>(</b>	
	Important	HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
Product		ePDG
		FA
		GGSN
		НА
		HeNBGW
		HNBGW

	HSGW	
	MME	
	P-GW	
	PDSN	
	S-GW	
	SAEGW	
	SCM	
	SecGW	
	SGSN	
Privilege	Security Administrator	
Syntax Description	<pre>ion ca-crl list ca-crl-name name [ ca-crl-name name ] +     no ca-crl</pre>	
	no	
	Removes the CA-CRL configuration from this map.	
	ca-crl-name name	
	Specifies the CA-CRL to associate with this crypto map. <i>name</i> must be the name of an existing CA-CRL expressed as an alphanumeric string of 1 through 129 characters.	
	+ indicates that a list of multiple CA-CRLs can be configured for a crypto map. You can chain multiple (max four) CA-CRLs in a single command instance.	
Usage Guidelines	Use this command to associate a CA-CRL name with this crypto map.	
	CA-CRLs are configured in the Global Configuration Mode. For more information about configuring CA-CRLs, refer to the <b>ca-crl name</b> command in the <i>Global Configuration Mode Commands</i> chapter.	
	Example	
	The following example binds CA-CRLs named CRL-5 and CRL-7 to this crypto map:	
	ca-crl list ca-crl-name CRL-5 ca-crl-name CRL-7	

### certificate

Used to bind a single X.509 trusted certificate to a crypto map.

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Important H

HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.

Product	ePDG
	FA
	GGSN
	НА
	HeNBGW
	HNBGW
	HSGW
	MME
	P-GW
	PDSN
	S-GW
	SAEGW
	SCM
	SecGW
	SGSN
Privilege	Security Administrator
Syntax Description	[ no ] certificate name
	no
	Unbinds a certificate from crypto map.
	name
	Specifies the name of a X.509 trusted certificate to bind to a crypto map. <i>name</i> is an alphanumeric string of 1 through 129 characters.
Usage Guidelines	Use this command to bind an X.509 certificate to a map.
	Example
	Use the following example to prevent a certificate from being included in the Auth Exchange payload:
	no certificate

# control-dont-fragment

Controls the Don't Fragment (DF) bit in the outer IP header of the IPSec tunnel data packet.

<b>(</b>	
Important	HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
	i
Product	ePDG
	FA
	GGSN
	НА
	HeNBGW
	HNBGW
	HSGW
	MME
	P-GW
	PDSN
	S-GW
	SAEGW
	SCM
	SecGW
	SGSN
Privilege	Security Administrator
Syntax Description	<pre>control-dont-fragment { clear-bit   copy-bit   set-bit }</pre>
	clear-bit
	Clears the DF bit from the outer IP header (sets it to 0).
	copy-bit
	Copies the DF bit from the inner IP header to the outer IP header. This is the default action.
	set-bit
	Sets the DF bit in the outer IP header (sets it to 1).
Usage Guidelines	A packet is encapsulated in IPsec headers at both ends. The new packet can copy the DF bit from the original unencapsulated packet into the outer IP header, or it can set the DF bit if there is not one in the original packet. It can also clear a DF bit that it does not need.

#### Example

The following command sets the DF bit in the outer IP header: control-dont-fragment set-bit

### end

Exits the current configuration mode and returns to the Exec mode.

Product	All
Privilege	Security Administrator, Administrator
Syntax Description	end
Usage Guidelines	Use this command to return to the Exec mode.

### exit

Exits the current mode and returns to the parent configuration mode.

Product	All
Privilege	Security Administrator, Administrator
Syntax Description	exit
Usage Guidelines	Use this command to return to the parent configuration mode.

### ikev2-ikesa

Configures parameters for the IKEv2 IKE Security Associations within this crypto template.

	<b>(</b>	
	Important	HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
Product		ePDG
		FA
		GGSN
		НА

	HeNBGW
	HNBGW
	HSGW
	MME
	P-GW
	PDSN
	S-GW
	SAEGW
	SCM
	SecGW
	SGSN
Privilege	Security Administrator
Syntax Description	<pre>ikev2-ikesa { allow-empty-ikesa   max-retransmissions number   policy { error-notification [ invalid-major-version ] [ invalid-message-id [ invalid-major-version   invalid-syntax ] ]   invalid-syntax [ invalid-major-version ]   use-rfc5996-notification }   rekey [ disallow-param-change ]   retransmission-timeout msec [ exponential ]   setup-timer sec   transform-set list name1 name2 name3 name4 name5 name6 } default ikev2-ikesa { allow-empty-ikesa   max-retransmissions   policy error-notification   rekey [ disallow-param-change ]   setup-timer } no ikev2-ikesa { allow-empty-ikesa name   policy { error-notification   use-rfc5996-notification }   rekey sec   transform-set list }</pre>

#### no ikev2-ikesa

Disables a previously enabled parameter.

#### allow-empty-ikesa

Default is not to allow-empty-ikesa. Activate to have the IKEv2 stack keep the IKE SA when all the Child SAs have been deleted.

#### max-retransmissions number

Specifies the maximum number of retransmissions of an IKEv2 IKE Exchange Request if a response has not been received. *number* must be an integer from 1 through 8. Default: 5

### policy { error-notification [ invalid-major-version ] [ invalid-message-id [ invalid-major-version | invalid-syntax ] ] | invalid-syntax [ invalid-major-version ] | use-rfc5996-notification }

Specifies the default policy for generating an IKEv2 Invalid Message ID error when PDIF receives an out-of-sequence packet.

error-notification: Sends an Error Notify Message to the MS for Invalid IKEv2 Exchange Message ID and Invalid IKEv2 Exchange Syntax for the IKE\_SA\_INIT Exchange.

[invalid-major-version]: Sends an Error Notify Message for Invalid Major Version

[invalid-message-id]: Sends an Error Notify Message for Invalid IKEv2 Exchange Message ID.

[invalid-syntax]: Sends an Error Notify Message for Invalid IKEv2 Exchange Syntax.

**use-rfc5996-notification**: Enables support for TEMPORARY\_FAILURE and CHILDSA\_NOT\_FOUND notify payloads.

#### rekey [ disallow-param-change ]

Specifies if IKESA rekeying should occur before the configured lifetime expires (at approximately 90% of the lifetime interval). Default is not to re-key.

The disallow-param-change option does not allow changes in negotiation parameters during rekey.

#### retransmission-timeout msec

Specifies the timeout period (in milliseconds) before a retransmission of an IKEv2 IKE exchange request is sent (if the corresponding response has not been received). *msec* must be an integer from 300 to 15000. Default: 500

#### exponential

Specifies that the subsequent retransmission delays are exponentially increased with a maximum limit of 15000ms.

#### setup-timer sec

Specifies the number of seconds before a IKEv2 IKE Security Association that is not fully established is terminated. *sec* must be an integer from 1 through 3600. Default: 16

#### transform-set list name1

Specifies the name of a context-level configured IKEv2 IKE Security Association transform set. *name1* ...*name6*must be an existing IKEv2 IKESA Transform Set expressed as an alphanumeric string of 1 through 127 characters.

The transform set is a space-separated list of IKEv2-IKESA SA transform sets to be used for deriving IKEv2 IKE Security Associations from this crypto template. A minimum of one transform-set is required; maximum configurable is six.

Usage Guidelines

Use this command to configure parameters for the IKEv2 IKE Security Associations within this crypto template.

#### Example

The following command configures the maximum number of IKEv2 IKESA request retransmissions to 7:

#### ikev2-ikesa max-retransmissions 7

The following command configures the IKEv2 IKESA request retransmission timeout to 400 milliseconds:

ikev2-ikesa retransmission-timeout 400

The following command configures the IKEv2 IKESA transform set *ikesa43*:

ikev2-ikesa transform-set list ikesa43

### keepalive

Configures keepalive or dead peer detection for security associations used within this crypto template.

	¢	
_	Important	HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
Product		ePDG
		FA
		GGSN
		НА
		HeNBGW
		HNBGW
		HSGW
		MME
		P-GW
		PDSN
		S-GW
		SAEGW
		SCM
		SecGW
		SGSN
Privilege		Security Administrator
Syntax Des	scription	keepalive [ interval sec ] [ timeout sec [ num-retry num ] no keepalive
		no

Disables keepalive messaging.

#### interval sec

Specifies the amount of time (in seconds) that must elapse before the next keepalive request is sent. *sec* must be an integer from 10 through 3600. Default: 10

#### timeout sec

Specifies the amount of time (in seconds) which must elapse during which no traffic is received from the IKE\_SA peer or any CHILD\_SAs derived from the IKE\_SA for Dead Peer Detection to be initiated. *sec* must be an integer from 10 through 3600. Default: 10

#### num-retry num

Specifies the number of times the system will retry a non-responsive peer before defining the peer as off-line or out-of-service. *num* must be an integer from 1 through 100. Default: 2

**Usage Guidelines** 

Use this command to set parameters associated with determining the availability of peer servers.

#### Example

The following command sets a keepalive interval to three minutes (180 seconds):

```
keepalive interval 180
```

### match

Matches or associates the crypto map to an access control list (ACL) configured in the same context.

	<b>(</b>	
	Important	HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
Product		ePDG
		FA
		GGSN
		НА
		HeNBGW
		HNBGW
		HSGW
		MME
		P-GW
		PDSN
		S-GW
		SAEGW
		SCM
		SecGW

	SGSN
Privilege	Security Administrator
Syntax Description	<pre>match address acl_name [ priority ] no match address acl_name</pre>
	no
	Removes a previously matched ACL.
	match address <i>acl_name</i>
	Specifies The name of the ACL with which the crypto map is to be matched. <i>acl_name</i> is an alphanumeric string of 1 through 79 characters that is case sensitive.
	priority
	Specifies the preference of the ACL as integer from 0 through 4294967295. 0 is the highest priority. Default: 0
	The ACL preference is factored when a single packet matches the criteria of more than one ACL.
<b>(</b>	
Important	The priorities are only compared for ACLs matched to other crypto maps or to policy ACLs (those applied to the entire context).
Usage Guidelines	ACLs matched to crypto maps are referred to as crypto ACLs. Crypto ACLs define the criteria that must be met in order for a subscriber data packet to routed over an IPSec tunnel.
	Prior to routing, the system examines the properties of each subscriber data packet. If the packet properties match the criteria specified in the crypto ACL, the system will initiate the IPSec policy dictated by the crypto map.
	Example
	The following command sets the crypto map ACL to the ACL named <i>acl-list1</i> and sets the crypto maps priority to the highest level.
	match address acl-list1 0
natt	
natt	Configures Network Address Translation - Traversal (NAT-T) for all security associations associated with this crypto template. This feature is disabled by default.
Product	All Security Gateway products
Privilege	- Security Administrator

Syntax De	escription	[ default   no ] natt [ include-header ] [ send-keepalive [ idle-interval idle_secs ] [ interval interval_secs ] ]
		default
		Disables NAT-T for all security associations associated with this crypto template.
		no
		Disables NAT-T for all security associations associated with this crypto template.
		include-header
		Includes the NAT-T header in IPSec packets.
		send-keepalive [ idle-interval <i>idle_secs</i> ] [ interval <i>interval_secs</i> ]
		Sends NAT-Traversal keepalive messages.
		<b>idle-interval</b> <i>idle_secs</i> : Specifies the number of seconds that can elapse without sending NAT keepalive packets before sending NAT keepalive packets is started. <i>idle_secs</i> is an integer from 20 to 86400. Default: 60.
		<b>interval</b> <i>interval_secs</i> : Specifies the number of seconds between the sending of NAT keepalive packets. <i>interval_secs</i> is an integer from 20 to 86400. Default: 60.
Usage Gu	idelines	Use this command to configure NAT-T for security associations within this crypto template.
		Example
		The following command disables NAT-T for this crypto template:
		no natt
ocsp	)	
		Enables use of Online Certificate Status Protocol (OCSP) from a crypto template. OCSP provides a facility to obtain timely information on the status of a certificate.
Product		All products supporting IPSec
	<b>(</b>	
	Important	This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.
Privilege		Security Administrator
Syntax De	escription	<pre>ocsp [ nonce   responder-address ipv4_address [ port port_value ] ] no ocsp [ nonce   responder-address [ port ] ]</pre>

default ocsp [ nonce ]

#### no

Disables the use of OCSP.

#### default

Restores the default value assigned for ocsp nonce.

#### nonce

Enables sending nonce (unique identifier) in OCSP requests.

#### responder-address ipv4\_address

Configures the OCSP responder address that is used when absent in the peer (device) certificate.

*ipv4\_address* is an IPv4 address specified in dotted decimal format.

#### port port\_value

Configures the port for OCSP responder.

port value is an integer value between 1 and 65535. The default port is 8889.

**Usage Guidelines** This command enables the use of Online Certificate Protocol (OCSP) from a crypto map/template. OCSP provides a facility to obtain timely information on the status of a certificate.

OCSP messages are exchanged between a gateway and an OCSP responder during a certificate transaction. The responder immediately provides the status of the presented certificate. The status can be good, revoked or unknown. The gateway can then proceed based on the response.

#### Example

The following command enables OSCP:

ocsp

### payload

Creates a new, or specifies an existing, crypto map payload and enters the Crypto Map Payload Configuration Mode.

	<b>(</b>	
	Important	HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
Product		ePDG
		FA
		GGSN

I

	НА
	HeNBGW
	HNBGW
	HSGW
	MME
	P-GW
	PDSN
	S-GW
	SAEGW
	SCM
	SecGW
	SGSN
Privilege	Security Administrator
Syntax Description	payload name match ipv4 no payload name
	payload <i>name</i>
	Specifies the name of a new or existing crypto template payload as an alphanumeric string of 1 through 127 characters.
	match ipv4
	Filters IPSec IPv4 Child Security Association creation requests for subscriber calls using this payload. Further filtering can be performed by applying the following:
Usage Guidelines	Use this command to create a new or enter an existing crypto template payload. The payload mechanism is a means of associating parameters for the Security Association (SA) being negotiated.
	Two payloads are required: one each for MIP and IKEv2. The first payload is used for establishing the initial Child SA Tunnel Inner Address (TIA) which will be torn down. The second payload is used for establishing the remaining Child SAs. Note that if there is no second payload defined with home-address as the <i>ip-address-allocation</i> then no MIP call can be established, just a Simple IP call.
	Currently, the only available match is for ChildSA, although other matches are planned for future releases.
	Entering this command results in the following prompt:
	[ctxt_name]hostname(cfg-crypto- <name>-ikev2-tunnel-payload)#</name>
	Crypto Template IKEv2-IPv4 Payload Configuration Mode commands are defined in the Crypto Template IKEv2-IPv4 Payload Configuration Mode Commands chapter.

#### Example

The following command configures a crypto template payload called *payload5* and enters the Crypto Template IKEv2-IPv6 Payload Configuration Mode:

payload payload5 match ipv4

### peer

Configures the IP address of a peer IPSec.

<b>(</b>	
Important	HNBGW is not supported from Release 20 and later, and HeNBGW is not supported in Releases 20, 21.0 and 21.1. This command must not be used for HNBGW and HeNBGW in these releases. For more information, contact your Cisco account representative.
Product	ePDG
	FA
	GGSN
	НА
	HeNBGW
	HNBGW
	HSGW
	MME
	P-GW
	PDSN
	S-GW
	SAEGW
	SCM
	SecGW
	SGSN
Privilege	Security Administrator
Syntax Description	peer ip_address no peer
	no

Removes the configured peer IP address.

#### peer ip\_address

Specifies the IP address of a peer IPSec server in IPv4 dotted-decimal or IPv6 colon-separated-hexadecimal notation.

Use this command to specify a peer IPsec peer server. The IPsec peer server can also be the Lawful Intercept server.

#### Example

The following command configures the system to recognize an IPsec peer server with an IPv6 address of *fe80::200:f8ff:fe21:67cf*:

```
peer fe80::200:f8ff:fe21:67cf
```

### remote-secret-list

Enables the use of a Remote Secret List containing up to 1000 pre-shared keys.

Product	All Security Gateway products
	uf*
Impo	This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.
Privilege	Security Administrator
Syntax Descript	ion remote-secret-list list_name no remote-secret-list
	no
	Disables use of a Remote Secret List.
	list_name
	Specifies the name of an existing Remote Secret List as an alphanumeric string of 1 through 127 characters.
Usage Guideline	Enable the use of a Remote Secret List containing up to 1000 pre-shared keys.
	Only one active remote-secret-list is supported per system.
	For additional information, refer to the <i>Remote Secret List Configuration Commands</i> chapter of the <i>Command Line Interface Reference</i> and the <i>System Administration Guide</i> .
	Example
	The following command enables a remote-secret-list named <i>rs-list</i> :
	remote-secret-list rs-list

# whitelist

		Enables or disables a whitelist (access granted) for this crypto map.
Product		All products supporting IPSec whitelisting
	¢	
	Important	This command appears in the CLI for this release. However, it has not been qualified for use with any current Cisco StarOS gateway products.
Privilege		Security Administrator
Syntax Description		[ no ] whitelist
		no
		Disables whitelisting for this crypto map. By default whitelisting is disabled.
Usage Guidelines		Use this command to enable whitelisting for this crypto map. A whitelist is a list or register of entities that are being provided a particular privilege, service, mobility, access or recognition. With whitelisting, no peer is allowed to connect unless it appears in the list. For additional information on whitelisting, refer to the <i>System Administration Guide</i> .
		Example
		The following command enables whitelisting:
		whitelist