



# Autonomic Networking Infrastructure Commands

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# autonomic adjacency-discovery

To enable adjacency discovery (neighbor discovery) on an interface, use the **autonomic adjacency-discovery** command in interface configuration mode. To disable adjacency discovery, use the **no** form of this command.

**autonomic adjacency-discovery**  
**no autonomic adjacency-discovery**

---

**Command Default** Adjacency discovery is not enabled.

---

**Command Modes** Interface configuration (config-if)

---

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.1	This command was introduced.

---



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**Examples** To enable adjacency discovery:

```
Device(config)# interface Tunnel100
Device(config-if)# autonomic adjacency-discovery
```

# autonomic connect

To connect a non autonomic device to autonomic domain use the **autonomic connect** command in interface configuration mode. To disconnect a device from the domain, use the **no** form of this command.

**autonomic connect**  
**no autonomic connect**

---

**Command Default** Device is not connected to the domain.

---

**Command Modes** Interface configuration (config-if)

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Denali 16.3.1	This command was introduced.

---

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**Usage Guidelines** You need to configure **no switchport** on the interface before configuring the **autonomic connect** command.

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**Examples** To connect a non autonomic device to autonomic domain :

```
Device > enable
Device# configure terminal
Device(config)# int gig 1/0/1
Device(config-if)# no switchport
Device(config-if)# autonomic connect
Device(config-if)# ipv6 address 5000::1/64
```

# clear autonomic

To clear or reset autonomic information, use the **clear autonomic** command in privileged EXEC configuration mode.

**clear autonomic** {**device** | **neighbor** *neighbor's UDI* | **registrar accepted-device** *device UDI*}

Syntax Description	device	Clears or resets device information.
	<b>neighbor</b> <i>udi</i>	Clears or resets neighbor information.
	<b>registrar accepted-device</b> <i>udi</i>	Clears public key stored for each enrolled device

**Command Default** No default behavior or values.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.1	This command was introduced.

**Usage Guidelines** The **clear autonomic device** command clears or resets all device-specific autonomic information, including the information obtained in the bootstrapping process. The **clear autonomic neighbor** command clears the neighbor-related information learned during the neighbor discovery. If no neighbor is specified, the command clears the entire neighbor database. The **clear registrar accepted-device** clears the public key stored for each device enrolled by the registrar.

## Examples

To clear all device-specific autonomic information:

```
Device #clear autonomic device

% invoke syslog_an_delete_host: vrf cisco_autonomic
discriminator
Device#
Jul 15 05:55:53.987: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:55:53.988: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write
memory" to save new IOS PKI configuration
Jul 15 05:55:53.990: %AN-6-ACP_DIKE_TO_NBR_REMOVED: Removed DIKE on ACP Tunnel100000 from
Device (Addr FD08:2EEF:C2EE:0:E865:493B:ACFB:7) to Neighbor (Addr
FD08:2EEF:C2EE:0:E865:493B:ACFB:5) connected on interface GigabitEthernet1/0/3
Jul 15 05:55:54.006: %AN-6-ACP_CHANNEL_TO_NBR_REMOVED: Removed ACP Tunnel100000 from Device
(Addr FD08:2EEF:C2EE:0:E865:493B:ACFB:7) to Neighbor (Addr FD08:2EEF:C2EE:0:E865:493B:ACFB:5)
connected on interface GigabitEthernet1/0/3
Jul 15 05:55:54.015: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:55:54.016: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback100000, changed
state to down
Jul 15 05:55:54.097: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:55:54.104: %AN-5-NBR_LOST: Device with ACP (Addr FD08:2EEF:C2EE:0:E865:493B:ACFB:7)
lost connectivity to its Neighbor (Addr FD08:2EEF:C2EE:0:E865:493B:ACFB:5) on interface
GigabitEthernet1/0/3
Jul 15 05:55:54.113: %AN-5-CD_STATE_CHANGED: L2 Channel (0) Removed - Our Intf
(GigabitEthernet1/0/3), Nbr UDI (PID:WS-C3850-24U SN:FCW1934D05Z), Nbr Intf
(GigabitEthernet1/0/3)
Jul 15 05:55:56.004: %LINEPROTO-5-UPDOWN: Line protocol on Interface Tunnel100000, changed
```

```
state to down
Jul 15 05:55:56.005: %LINK-5-CHANGED: Interface Tunnel100000, changed state to
administratively down
Jul 15 05:56:04.128: %AN-6-UDI_AVAILABLE: UDI - PID:WS-C3650-24TD SN:FDO1942E1YK
Jul 15 05:56:36.306: %AN-5-CD_STATE_CHANGED: L2 Channel (0) Created - Our Intf
(GigabitEthernet1/0/3), Nbr UDI (PID:WS-C3850-24U SN:FCW1934D05Z), Nbr Intf
(GigabitEthernet1/0/3)
Jul 15 05:56:36.310: %LINK-3-UPDOWN: Interface ANI1, changed state to up
Jul 15 05:56:37.294: %LINEPROTO-5-UPDOWN: Line protocol on Interface ANI1, changed state
to up
Jul 15 05:56:44.138: %AN-5-NBR_ADDED: Device with UDI (PID:WS-C3850-24U SN:FCW1934D05Z) is
added as a Neighbor to Device with (Addr UNKNOWN) on the interface GigabitEthernet1/0/3
Jul 15 05:56:44.146: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:56:44.148: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:56:44.150: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:56:44.247: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:56:44.258: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:56:44.269: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write
memory" to save new IOS PKI configuration
Jul 15 05:57:04.897: %CRYPTO-6-AUTOGEN: Generated new 3072 bit key pair
Jul 15 05:57:05.359: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:05.815: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write
memory" to save new IOS PKI configuration
Jul 15 05:57:05.817: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:05.830: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:05.840: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write
memory" to save new IOS PKI configuration
Jul 15 05:57:05.841: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:06.308: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write
memory" to save new IOS PKI configuration
Jul 15 05:57:06.311: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:06.313: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:06.314: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:06.810: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:06.811: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write
memory" to save new IOS PKI configuration
Jul 15 05:57:06.811: %AN-5-DEVICE_BOOTSTRAPPED_BY_ANR: Device with UDI (PID:WS-C3650-24TD
SN:FDO1942E1YK) and (Addr FD08:2EEF:C2EE:0:E865:493B:ACFB:7) has been boot trapped by
autonomic registrar, in autonomic domain cisco.com
Jul 15 05:57:06.815: %AN-6-ACP_VRF_GLOBAL_CREATE_SUCCESS: Device UDI (PID:WS-C3650-24TD
SN:FDO1942E1YK) Autonomic VRF created globally vrf name cisco_autonomic, vrf id 3
Jul 15 05:57:06.823: %LINEPROTO-5-UPDOWN: Line protocol on Interface Loopback100000, changed
state to up
Jul 15 05:57:06.828: %AN-6-ACP_VRF_INTERFACE_CREATE_SUCCESS: Device UDI (PID:WS-C3650-24TD
SN:FDO1942E1YK) Autonomic VRF created successfully on interface Loopback100000, vrf name
cisco_autonomic, vrf id 3
Jul 15 05:57:06.837: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:06.840: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:06.842: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:06.842: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write
memory" to save new IOS PKI configuration
Jul 15 05:57:07.905: %LINEPROTO-5-UPDOWN: Line protocol on Interface Tunnel100001, changed
state to up
Jul 15 05:57:08.159: %CRYPTO-6-IKMP_NO_ID_CERT_ADDR_MATCH: (NOT ERROR BUT WARNING ONLY) ID
of FE80::3A20:56FF:FEF3:7158 (type 5) and certificate addr with
Jul 15 05:57:08.160: %CRYPTO-6-IKMP_NO_ID_CERT_ADDR_MATCH: (NOT ERROR BUT WARNING ONLY) ID
of FE80::3A20:56FF:FEF3:7158 (type 5) and certificate addr with
Jul 15 05:57:11.959: %SYS-5-CONFIG_I: Configured from console by console
Jul 15 05:57:11.960: %PKI-4-NOCONFIGAUTOSAVE: Configuration was modified. Issue "write
memory" to save new IOS PKI configuration
Jul 15 05:57:11.963: %SYS-5-CONFIG_I: Configured from console by console
```

# debug autonomic

To enable debugging of autonomic information, use the **debug autonomic** command in privileged EXEC mode. To stop the debugging, use the **no** form of this command.

**debug autonomic** {Bootstrap | Channel-Discovery | Infra | Intent | Neighbor-Discovery | Registrar | Services} {aaa | all | database | events | ntp | packets} {info | moderate | severe}  
**no debug autonomic** {Bootstrap | Channel-Discovery | Infra | Intent | Neighbor-Discovery | Registrar | Services} {aaa | all | database | events | ntp | packets} {info | moderate | severe}

Syntax Description		
	<b>bootstrap</b>	Enables debugging of bootstrapping information.
	<b>Channel-Discovery</b>	Enables debugging of channel discovery information.
	<b>Infra</b>	Enables debugging of infra information.
	<b>Intent</b>	Enables debugging of intent information.
	<b>Neighbor-Discovery</b>	Enables debugging of neighbor information.
	<b>Registrar</b>	Enables debugging of registrar information.
	<b>Services</b>	Enables debugging of autonomic services information.
	<b>aaa</b>	Enables debugging authentication, authorization, and accounting information.
	<b>all</b>	Enables all debugging.
	<b>events</b>	Provides information about autonomic events.
	<b>ntp</b>	Enables debugging of Network Time Protocol (NTP) information.
	<b>packets</b>	Provides information about autonomic packets.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.1	This command was introduced.

**Usage Guidelines** Use this command to debug the autonomic networking information.

# show autonomic control-plane

To display information about the autonomic control plane, use the **show autonomic control-plane** command in privileged EXEC mode.

**show autonomic control-plane** [{detail}]

<b>Syntax Description</b>	<b>detail</b> (Optional) Displays detailed information.
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<b>Command Modes</b>	Privileged EXEC (#)
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Cisco IOS XE Denali 16.3.1	This command was introduced.

## Examples

To display information about the autonomic control plane:

```
Device# show autonomic control-plane

VRF Name                cisco_autonomic
Device Address          FD08:2EEF:C2EE:0:E865:493B:ACFB:7
RPL                    floating-node, Dag-id = FD08:2EEF:C2EE:0:E865:493B:ACFB:5

Neighbor                ACP                Channel ACP Security
-----
PID:WS-C3850-24U SN:FCW1934D05Z  Tunnel100002  DIKE
```

To display information about the autonomic control plane in detail:

```
Device# show autonomic control-plane detail

VRF Name                cisco_autonomic
Device Address          FD08:2EEF:C2EE:0:E865:493B:ACFB:7
RPL                    grounded-node, Dag-id = FD08:2EEF:C2EE:0:E865:493B:ACFB:1

Neighbor: PID:WS-C3850-24U SN:FCW1934D05Z
Uptime(Created Time): 00:12:16 ( 2016-07-15 05:38:53 UTC)
Supported ACP Channel: IPv6 GRE Tunnel
Negotiated ACP Channel: IPv6 GRE Tunnel
Tunnel Name Tunnel100000
Tunnel Source Interface ANI1
Tunnel Source FE80::5AAC:78FF:FE09:F383
Tunnel Destination FE80::3A20:56FF:FEF3:7158
Supported ACP Security: IPSec, DIKE
Negotiated ACP Security: DIKE
```

The following table describes the significant fields shown in the display.

**Table 1: show autonomic control-plane Field Descriptions**

Field	Description
VRF Name	VPN routing and forwarding (VRF) name.
Device Address	IPv6 address.

Field	Description
RPL	RPL node details.
Neighbor	Unique Device Identifier (UDI) of the neighbor.
Tunnel Name	Tunnel name.
Tunnel Source Interface	IP address of the source tunnel interface.
Tunnel Source	IP address of the tunnel source.
Tunnel Destination	IP address of the destination.



# show autonomic device

To display the autonomic device information, use the **show autonomic device** command in privileged EXEC mode.

**show autonomic device**

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.1	This command was introduced.

## Examples

To display the autonomic device information:

```
Device# show autonomic device

      Status                               Enabled
      Type                                 Autonomic Node
      UDI                                  PID:WS-C3650-24TD SN:FDO1942E1YK
      Device ID                             e865.493b.acfb-7
      Domain ID                             cisco.com
      Domain Certificate                     (sub:) ou=cisco.com+serialNumber=PID:WS-C3650-24TD
SN:FDO1942E1YK,cn=e865.493b.acfb-7
      Certificate Serial Number              09
      Device Address                         FD08:2EEF:C2EE:0:E865:493B:ACFB:7
      Domain Cert is Valid
```

# show autonomic interfaces

To display information about the autonomic interfaces, use the **show autonomic interfaces** command in privileged EXEC mode.

## show autonomic interfaces

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.1	This command was introduced.

## Examples

To display information about the autonomic interfaces:

```
Device# show autonomic interfaces
```

Interface	Channel Disc	AD Enabled	Intf Type
GigabitEthernet0/0	None	No	L2 untagged If
GigabitEthernet1/0/1	None	No	L2 untagged If
GigabitEthernet1/0/2	None	No	L2 untagged If
GigabitEthernet1/0/3	Probing	No	L2 untagged If
GigabitEthernet1/0/4	None	No	L2 untagged If
GigabitEthernet1/0/5	None	No	L2 untagged If
GigabitEthernet1/0/6	None	No	L2 untagged If
GigabitEthernet1/0/7	None	No	L2 untagged If
GigabitEthernet1/0/8	None	No	L2 untagged If
GigabitEthernet1/0/9	None	No	L2 untagged If
GigabitEthernet1/0/10	None	No	L2 untagged If
GigabitEthernet1/0/11	None	No	L2 untagged If
GigabitEthernet1/0/12	None	No	L2 untagged If
GigabitEthernet1/0/13	None	No	L2 untagged If
GigabitEthernet1/0/14	None	No	L2 untagged If
GigabitEthernet1/0/15	None	No	L2 untagged If
GigabitEthernet1/0/16	None	No	L2 untagged If
GigabitEthernet1/0/17	None	No	L2 untagged If
GigabitEthernet1/0/18	None	No	L2 untagged If
GigabitEthernet1/0/19	None	No	L2 untagged If
GigabitEthernet1/0/20	None	No	L2 untagged If
GigabitEthernet1/0/21	None	No	L2 untagged If
GigabitEthernet1/0/22	None	No	L2 untagged If
GigabitEthernet1/0/23	None	No	L2 untagged If
GigabitEthernet1/0/24	None	No	L2 untagged If
GigabitEthernet1/1/1	None	No	L2 untagged If
GigabitEthernet1/1/2	None	No	L2 untagged If
TenGigabitEthernet1/1/3	None	No	L2 untagged If
TenGigabitEthernet1/1/4	None	No	L2 untagged If
Vlan1	None	No	Virtual If
ANI1	None	Yes	Virtual If
Loopback100000	None	No	Virtual If
Tunnel100002	None	No	Virtual If

The following table describes the significant fields shown in the display.

**Table 2: show autonomic interface Field Descriptions**

<b>Field</b>	<b>Description</b>
Interface	Interface name.
Channel Disc	Channel discovery.
AD Enabled	

# show autonomic intent

To verify the configured intent range, use the **show autonomic intent** command in privileged EXEC mode.

**show autonomic intent**

---

**Syntax Description** This command has no arguments or keywords.

---

**Command Modes** Privileged EXEC (#)

---

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.1	This command was introduced.

---



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**Usage Guidelines** Intent is automatically sent to all nodes in an autonomic domain. So, every node should show the same intent

---

**Examples** To display information about the configured intent range:

```
Device# show autonomic intent

Intent File : Available
Version Num : 1443520505 (Parsed)
Version Time: 2015-09-29 09:55:05 UTC
Outer Vlans : 30-35,40,45
Outer Vlans count : 8
```

# show autonomic l2-channels

To display the results of Channel Discovery, use the **show autonomic l2-channels** command in privileged EXEC mode.

## show autonomic l2-channels

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.1	This command was introduced.

## Examples

To display the results of Channel Discovery:

```
Device# show autonomic l2-channels
```

```
AN L2 Channel Discovery Info :
```

```
Nbr UDI                               Encap    Our Intf    State    Retry
```

```
-----
```

```
PID:WS-C3850-24U SN:FCW1934D05Z  4018    Gi1/0/3    Active  1
```

To display more detailed information:

```
Device# show autonomic l2-channels detail
```

```
AN L2 Channel Discovery Info :
```

```
-----
```

```
Nbr UDI                               : PID:WS-C3850-24U SN:FCW1934D05Z
ANI Intf                               : ANI1
Encap                                   : 0
Nbr Intf                               : GigabitEthernet1/0/3
Our Intf                               : GigabitEthernet1/0/3
Keepalives Missed                      : 0
Channel Status                         : Active
```

## show autonomic service

To verify the service announcements distributed over the Autonomic Control Plane (ACP) to all devices, use the **show autonomic service** command in privileged EXEC mode.

**show autonomic service**

**Syntax Description** This command has no arguments or keywords.

**Command Modes** Privileged EXEC (#)

Command History	Release	Modification
	Cisco IOS XE Denali 16.3.1	This command was introduced.

### Examples

To display information about the services:

```
Device# show autonomic service

Service          IP-Addr
Syslog           5000::100
AAA              5000::100
  AAA Accounting Port 1813
  AAA Authorization Port 1812
Autonomic registrar FD08:2EEF:C2EE:0:E865:493B:ACFB:1
  ANR type          IOS CA
Config Server Address 5000::100
Auto IP Server     UNKNOWN
```

# show autonomic neighbor

To display information about autonomic neighbors, use the **show autonomic neighbor** command in privileged EXEC mode.

```
show autonomic neighbor [{detail}]
```

<b>Syntax Description</b>	<b>detail</b> (Optional) Displays detailed information.				
<b>Command Modes</b>	Privileged EXEC (#)				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Cisco IOS XE Denali 16.3.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Cisco IOS XE Denali 16.3.1	This command was introduced.
Release	Modification				
Cisco IOS XE Denali 16.3.1	This command was introduced.				

## Examples

The following is sample output from the **show autonomic neighbor** command:

```
Device# show autonomic neighbor

UDI                               Device-ID           Domain             Interface
-----
PID:WS-C3850-24U SN:FCW1934D05Z  e865.493b.acfb-5  cisco.com         ANI1
```

The following is sample output from the **show autonomic neighbor detail** command:

```
Device# show autonomic neighbor detail

UDI: "PID:WS-C3850-24U SN:FCW1934D05Z"

      Device ID           e865.493b.acfb-5
      Domain ID           cisco.com
      Address             FD08:2EEF:C2EE:0:E865:493B:ACFB:5
      State               Nbr inside the Domain
      Credential           Domain Cert
      Credential Validation Passed
      Last Validated Time 2016-07-15 05:48:37 UTC
      Certificate Expiry Date 2017-07-15 05:30:39 UTC
      Certificate Expire Countdown 31534693 (secs)
      Number of Links connected 1

      Link:
      Local Interface:    ANI2
      Remote Interface:   ANI2
      IP Address:         FE80::3A20:56FF:FEF3:7158
      Uptime(Discovered Time): 00:14:21 ( 2016-07-15 05:38:05 UTC)
      Last Refreshed time: 0 seconds ago
```

The following table describes the significant fields shown in the display.

**Table 3: show autonomic neighbor detail Field Descriptions**

Field	Description
UDI	Unique device identifier.

Field	Description
Device Identifier	Device name.
Domain Identifier	Domain name.
State	Information about whether the neighbor is inside or outside the domain. If a device is inside an autonomic domain, it must have a valid domain certificate.
Credential	Detection method.
Credential Validation	Detection validation.
Number of Links connected	Number of neighbors detected.
Local Interface	Interface from which the neighbor is connected.
Remote Interface	Interface to which the neighbor is connected.
IP Address	IPv6 address of the neighbor,