



Configuration Partitioning

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The Configuration Partitioning feature provides modularization (“partitioning”) of the running configuration state to provide granular access to the running configuration in Cisco IOS XE software.

This feature is enabled by default in Cisco IOS XE software images that include this feature.

The configuration state of a device is retrieved dynamically whenever a user issues the **show running-config** command. When the Configuration Partitioning feature is enabled, the system groups the configuration state of the device into parts (called “partitions”) so that only the configuration state the user wishes to review is retrieved when generating a displayed list of commands in the running configuration. This feature improves performance for high-end systems with complex configurations because only a part of the running configuration state is processed when generating the running configuration command list, as opposed to the existing method of processing the entire system configuration state.

Default configuration partitions are provided by the introduction of this feature; other Cisco IOS XE software features may define their own command partitions in later releases.

Finding Feature Information

For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the [“Feature Information for Configuration Partitioning” section on page 19](#).

Use Cisco Feature Navigator to find information about platform support and Cisco IOS XE 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 Configuration Partitioning

To use the Configuration Partitioning feature, you should understand the following concepts:

- [System Running Configurations](#)
- [Retrieving the Running Configuration for Display or Copy Operations](#)
- [Benefits of Partitioning the Running Configuration](#)

System Running Configurations

Managing the configuration of any Cisco IOS XE software-based device involves managing the startup configuration (startup-config), which is a file stored in nonvolatile memory, and the running configuration (running-config), which is the set of all configuration options currently in effect on the system. Typically, the startup configuration file is loaded when the system boots, and changes to the system's running configuration, applied using the command-line interface (CLI), are saved by copying the running configuration to a configuration file (either locally or on the network), which can then be used to configure the device at startup, or used to configure other devices.

Retrieving the Running Configuration for Display or Copy Operations

In the Cisco IOS XE software configuration model, the configuration state is maintained in a distributed manner, with each component storing its own configuration state. To retrieve global configuration information, the software must poll every component to collect the distributed information. This configuration state retrieval operation is performed by a process known as nonvolatile generation (NVGEN), and it is invoked by commands such as **show running-config**, which is used to display the current configuration state, and **copy system:running-configuration**, which is used to save the running configuration by copying it to a file. When invoked, the NVGEN process queries each system component, each interface instance, and all other configured component objects in a standard sequence. A running configuration file is constructed as NVGEN traverses the system performing these queries, and it is this "virtual file" that is displayed or copied.

Benefits of Partitioning the Running Configuration

The Configuration Partitioning feature is the latest in a series of Configuration Generation Performance Enhancement Features for Cisco IOS XE software. (See the "[Related Documents](#)" section on page 17 for related features.) This feature improves the system's response time by providing a method for querying only the system component you wish to review when issuing the **show running-config** command.

When the Configuration Partitioning feature is enabled, the system groups the configuration state of the device into parts (called “partitions”) for the purpose of generating the virtual running configuration file (the list of configuration commands). A new command, **show running-config partition**, allows you to display only the part of the running configuration that you want to examine, rather than having to display the entire running configuration at once, or displaying only lines that match a certain string.

The key benefit of this feature is that it increases system performance by allowing the system to run the NVGEN process for only the collection of system components (such as specific interfaces) that you need to display. This is in contrast to other existing extensions to the **show running-config** command, which only *filter* the generated list after all system components have been processed.

The selective processing of the system’s configuration state for the purpose of generating a partial running configuration is called “configuration partitioning.”

More granular access to configuration information offers important performance benefits for high-end routing platforms with very large configuration files, while also enhancing configuration management by allowing advanced configuration features to be implemented at a more granular level. Advanced configuration options include Cisco IOS XE software support for provisioning of customer services, Config Rollback, Config Locking, and configuration access control.

How to Use the Configuration Partitioning Feature

This section contains the following tasks:

- [Displaying Configuration Partitions, page 3](#) (optional)
- [Disabling the Configuration Partitioning Feature, page 5](#) (optional)

Displaying Configuration Partitions

The main method of taking advantage of this feature is by using the **show running-config partition part** command, which is a specialized extension to the **show running-config** command.



Note

The **partition part** command extension is not available for the **more system:running-config** command.

Because this feature offers improved performance for existing commands, this feature is enabled by default in Cisco IOS XE software images that support this feature. To quickly determine if this feature is supported and running on your system, issue the **show running-config partition ?** command in privileged EXEC mode.

SUMMARY STEPS

1. **show running-config partition ?**
2. **show runningconfig partition part**

DETAILED STEPS

Step 1 **show running-config partition ?**

Issuing this command will show you the list of running configuration parts available for display on your system.

If the Configuration Partitioning feature is supported on your system and is enabled, you will see the string “config partition is TRUE” as the first line of help output.

If you receive an error message when entering the command syntax shown here, this feature is not supported on your system. See the command documentation for the **show running-config** command for existing extensions of that command in other releases that allow you to show only part of the running configuration.

**Note**

The list of available configuration parts may vary by software image and is dependent on what features are currently configured.

```
Router# show running-config partition ?
access-list      All access-list configurations
class-map        All class-map configurations
common           All remaining unregistered configurations
global-cdp       All global cdp configurations
interface        Each Interface specific Configurations
ip-as-path       All IP as-path configurations
ip-community     All IP community list configurations
ip-domain-list  All ip domain list configurations
ip-prefix-list  All ip prefix-list configurations
ip-static-routes All IP static configurations
line             All line mode configurations
policy-map       All policy-map configurations
route-map        All route-map configurations
router           All routing configurations
snmp             All SNMP configurations
tacacs           All TACACS configurations
```

Choose the part of the running configuration you want to display, and use the associated keyword as the *part* argument in Step 2.

Step 2 **show running-config partition part**

As an example, to have the system perform the NVGEN process on only the components associated with the access-list parts of the running configuration state, and display only the access-list related configurations, you would enter the **show running-config partition access-list** command:

```
Router# show running-config partition access-list
      Building configuration...

Current configuration : 127 bytes
!
Configuration of Partition access-list
!
!
!
access-list 90 permit 0.0.0.0 1.2.3.5
access-list 100 permit 10 any any
!
end
```

**Note**

This command also allows you to run the NVGEN process and display the resulting output for specific interfaces. This is a key capability of this feature, as it was designed for systems with numerous active interfaces.

In the following example, the main configuration partition is the interface configuration, and the specific part of the configuration to be generated is the configuration for Fast Ethernet interface 0/0.

```
Router# show running-config partition interface fastethernet0/0
Building configuration...

Current configuration : 213 bytes
!
Configuration of Partition interface FastEthernet0/0
!
!
interface FastEthernet0/0
 ip address 10.4.2.39 255.255.255.0
 no ip route-cache cef
 no ip route-cache
 duplex half
 ipv6 enable
 no cdp enable
!
!
end
```

Disabling the Configuration Partitioning Feature

Because this feature offers improved performance for existing commands, this feature is enabled by default for Cisco IOS XE software images that support this feature. However, you may want to disable this feature if you determine that it is not needed, as this feature does use a small amount of system resources (memory and CPU utilization). To disable configuration partitioning, perform the following task, which assumes you are starting in user EXEC mode.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **no parser config partition**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: Router> <code>enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	<code>configure terminal</code> Example: Router# <code>configure terminal</code>	Enters global configuration mode.
Step 3	<code>no parser config partition</code> Example: Router(config)# <code>no parser config partition</code>	Disables the configuration partitioning feature.

What to Do Next

To reenable the feature after it has been disabled, use the `parser config partition` command in global configuration mode.

**Note**

As this feature is enabled by default, only the `no` form will appear in the running configuration file, or will be written to the startup configuration file when you issue the `copy running-config startup-config` command.

Configuration Examples for Configuration Partitioning

This section provides examples of displaying configuration partitions with the `show running-config partition` command:

- [Displaying Configuration Partitions: Example](#)

Displaying Configuration Partitions: Example

In this example, the `show running-config partition` command is used with related commands in a series of steps an administrator might take to check the status of a specific interface and the current configuration of some of the system's other components. Comparable filtered output from the standard `show running-config` command (for example, `show running-config | include access-list`) is included for demonstration purposes.

**Note**

The `part` argument can consist of multiple partition name keywords, as in `show running-config part router eigrp 1`.

```
Router# show running-config partition ?
access-list      All access-list configurations
class-map        All class-map configurations
```

common	All remaining unregistered configurations
global-cdp	All global cdp configurations
interface	Each Interface specific Configurations
ip-as-path	All IP as-path configurations
ip-community	All IP community list configurations
ip-domain-list	All ip domain list configurations
ip-prefix-list	All ip prefix-list configurations
ip-static-routes	All IP static configurations
line	All line mode configurations
policy-map	All policy-map configurations
route-map	All route-map configurations
router	All routing configurations
snmp	All SNMP configurations
tacacs	All TACACS configurations

```
Router# show running-config partition access-list
Building configuration...
```

```
Current configuration : 87 bytes
!
!
!
!
access-list 90 permit 0.0.0.0 1.2.3.5
access-list 100 permit 10 any any
!
end
```

```
Router# show running-config | include access-list
access-list 90 permit 0.0.0.0 1.2.3.5
access-list 100 permit 10 any any
Router#
```

```
Router# show running-config partition class-map
Building configuration...
```

```
Current configuration : 78 bytes
!
!
!
class-map match-all abc
  match any
class-map match-all xyz
!
!
!
end
```

```
Router# show running-config | begin class-map
class-map match-all abc
  match any
class-map match-all xyz
!
!
```

```
Router# show running-config partition global-cdp
Building configuration...
```

```
Current configuration : 43 bytes
!
!
!
cdp timer 20
```

```

cdp holdtime 100
!
end

```

```
Router# show running-config | include global-cdp
```

```

cdp timer 20
cdp holdtime 100
Router#

```

```
Router# show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	unassigned	YES	NVRAM	administratively down	down
FastEthernet2/0	10.4.2.32	YES	NVRAM	up	up
FastEthernet2/1	unassigned	YES	NVRAM	administratively down	down
FastEthernet2/2	unassigned	YES	NVRAM	administratively down	down
FastEthernet2/3	unassigned	YES	NVRAM	administratively down	down
Serial3/0	unassigned	YES	NVRAM	administratively down	down
Serial3/1	unassigned	YES	NVRAM	administratively down	down
Serial3/2	unassigned	YES	NVRAM	administratively down	down
Serial3/3	unassigned	YES	NVRAM	administratively down	down
Loopback0	unassigned	YES	NVRAM	administratively down	down
Loopback234	unassigned	YES	NVRAM	administratively down	down

```
Router# show running-config partition interface fastethernet0/0
```

```
Building configuration...
```

```
Current configuration : 98 bytes
```

```

!
!
!
interface FastEthernet0/0
no ip address
no ip route-cache
shutdown
duplex half
!
!
end

```

```
Router# show running-config partition interface FastEthernet2/0
```

```
Building configuration...
```

```
Current configuration : 122 bytes
```

```

!
!
!
interface FastEthernet2/0
ip address 10.4.2.32 255.255.255.0
no ip proxy-arp
no ip route-cache
duplex half
!
!
end

```

```
Router# show running-config partition interface FastEthernet2/1
```

```
Building configuration...
```

```
Current configuration : 94 bytes
```

```

!
!
!
interface FastEthernet2/1
no ip address

```

```
no ip route-cache
shutdown
duplex half
!
!
end
```

```
Router# show running-config partition interface FastEthernet2/2
Building configuration...
```

```
Current configuration : 94 bytes
!
!
!
interface FastEthernet2/2
no ip address
no ip route-cache
shutdown
duplex half
!
!
end
```

```
Router# show running-config partition interface FastEthernet2/3
Building configuration...
```

```
Current configuration : 94 bytes
!
!
!
interface FastEthernet2/3
no ip address
no ip route-cache
shutdown
duplex half
!
!
end
```

```
Router# show running-config partition interface serial3/0
Building configuration...
```

```
Current configuration : 103 bytes
!
!
!
interface Serial3/0
no ip address
no ip route-cache
shutdown
serial restart-delay 0
!
!
end
```

```
Router# show running-config partition interface serial3/1
Building configuration...
```

```
Current configuration : 103 bytes
!
!
!
interface Serial3/1
no ip address
```

```

no ip route-cache
shutdown
serial restart-delay 0
!
!
end

```

```

Router# show running-config partition interface serial3/2
Building configuration...

```

```

Current configuration : 103 bytes
!
!
!
interface Serial3/2
no ip address
no ip route-cache
shutdown
serial restart-delay 0
!
!
end

```

```

Router# show running-config partition interface serial3/3
Building configuration...

```

```

Current configuration : 103 bytes
!
!
!
interface Serial3/3
no ip address
no ip route-cache
shutdown
serial restart-delay 0
!
!
end

```

```

Router# show running-config partition interface loopback0
Building configuration...

```

```

Current configuration : 79 bytes
!
!
!
interface Loopback0
no ip address
no ip route-cache
shutdown
!
!
end

```

```

Router# show running-config partition interface loopback1
                                     ^
% Invalid input detected at '^' marker.

```

```

Router# show running-config partition interface loopback234
Building configuration...

```

```

Current configuration : 81 bytes
!
!

```

```

!
interface Loopback234
  no ip address
  no ip route-cache
  shutdown
!
!
end

Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# interface FastEthernet 2/0.1
Router(config-subif)# exit
Router(config)# exit

Router#
00:13:05: %SYS-5-CONFIG_I: Configured from console by console
Router# show running-config partition interface FastEthernet2/0.1
Building configuration...

Current configuration : 58 bytes
!
!
!
interface FastEthernet2/0.1
  no ip route-cache
!
!
end
Router# show run partition ip?
ip-as-path ip-community ip-domain-list ip-static-routes

Router# show running-config partition ip-as
Router# show running-config partition ip-as-path

Building configuration...

Current configuration : 125 bytes
!
!
!
ip as-path access-list 2 permit $ABC
ip as-path access-list 2 permit $xyz*
ip as-path access-list 2 permit qwe*
!
end
Router# show running-config partition ip-community
Building configuration...

Current configuration : 92 bytes
!
!
!
ip community-list standard asd permit
ip community-list expanded qwe deny uio*
!
end

Router# show running-config | include ip community
ip community-list standard asd permit
ip community-list expanded qwe deny uio*
Router#
Router# show running-config partition ip-domain-list
Building configuration...

```

```

Current configuration : 70 bytes
!
ip domain-list iop
ip domain-list tyu
ip domain-list jkl
!
!
!
end
Router# show running-config partition ip-static-routes
Building configuration...

Current configuration : 98 bytes
!
!
!
ip route 0.0.0.0 0.0.0.0 FastEthernet2/0
ip route 171.69.1.129 255.255.255.255 10.4.29.1
!
!
end

Router# show running-config partition line
Building configuration...

Current configuration : 489 bytes
!
!
!
!
line con 0
  exec-timeout 0 0
  transport output lat pad v120 mop telnet rlogin udptn nasi
  stopbits 1
line aux 0
  transport output lat pad v120 mop telnet rlogin udptn nasi
  stopbits 1
line vty 0
  password lab
  login
  transport input lat pad v120 mop telnet rlogin udptn nasi
  transport output lat pad v120 mop telnet rlogin udptn nasi
line vty 1 4
  login
  transport input lat pad v120 mop telnet rlogin udptn nasi
  transport output lat pad v120 mop telnet rlogin udptn nasi
!
end
Router# show running-config partition policy-map
Building configuration...

Current configuration : 162 bytes
!
!
!
policy-map qwer
  description policy-map qwer.
  class xyz
    shape peak 8000 32 32
policy-map p1
policy-map sdf
  class abc
    set precedence 4
!

```

```
!
!
end
Router# show running-config partition route-map
Building configuration...

Current configuration : 65 bytes
!
!
!
route-map iop permit 10
!
route-map rty permit 10
!
!
end
Router# show running-config partition router bgp 1
Building configuration...

Current configuration : 111 bytes
!
!
!
router bgp 1
  no synchronization
  bgp log-neighbor-changes
  distance bgp 2 2 2
  no auto-summary
!
!
end

Router# show running-config partition router egp ?
<0-65535> Remote autonomous system number

Router# show running-config partition router egp 1
Building configuration...

Current configuration : 46 bytes
!
!
!
router egp 1
  timers egp 20 20
!
!
end

Router# show running-config partition router ?
  bgp      Border Gateway Protocol (BGP)
  egp      Exterior Gateway Protocol (EGP)
  eigrp    Enhanced Interior Gateway Routing Protocol (EIGRP)
  isis     ISO IS-IS
  iso-igrp IGRP for OSI networks
  mobile   Mobile routes
  odr      On Demand stub Routes
  ospf     Open Shortest Path First (OSPF)
  rip      Routing Information Protocol (RIP)

Router# show running-config partition router eigrp ?
<1-65535> Autonomous system number

Router# show running-config partition router eigrp 1
Building configuration...
```

```

Current configuration : 13 bytes
!
!
!
!
end

Router#
Router# show running-config partition router eigrp 2
Building configuration...

Current configuration : 57 bytes
!
!
!
router eigrp 2
  variance 10
  auto-summary
!
!
end

Router# show running-config partition router ?
  bgp      Border Gateway Protocol (BGP)
  egp      Exterior Gateway Protocol (EGP)
  eigrp    Enhanced Interior Gateway Routing Protocol (EIGRP)
  isis     ISO IS-IS
  iso-igrp IGRP for OSI networks
  mobile   Mobile routes
  odr      On Demand stub Routes
  ospf     Open Shortest Path First (OSPF)
  rip      Routing Information Protocol (RIP)

Router# show running-config partition router isis ?
  WORD    ISO routing area tag
  |       Output modifiers
  <cr>

Router# show running-config partition router isis qwe
Building configuration...

Current configuration : 86 bytes
!
!
!
router isis qwe
  set-attached-bit route-map qwer
  use external-metrics
!
!
end

Router# show running-config partition router isis ?
  WORD    ISO routing area tag
  |       Output modifiers
  <cr>

Router# show running-config partition router iso
Router# show running-config partition router iso-igrp ?
  WORD    ISO routing area tag
  |       Output modifiers
  <cr>

```

```
Router# show running-config partition router iso-igrp
Building configuration...

Current configuration : 31 bytes
!
!
!
router iso-igrp
!
!
end

Router# show running-config | begin iso
router iso-igrp
!
router isis qwe
  set-attached-bit route-map qwer
  use external-metrics
!
router egp 1
  timers egp 20 20
!
router bgp 1
  no synchronization
  bgp log-neighbor-changes
  distance bgp 2 2 2
  no auto-summary
!

Router# show running-config partition router ?
  bgp      Border Gateway Protocol (BGP)
  egp      Exterior Gateway Protocol (EGP)
  eigrp    Enhanced Interior Gateway Routing Protocol (EIGRP)
  isis     ISO IS-IS
  iso-igrp IGRP for OSI networks
  mobile   Mobile routes
  odr      On Demand stub Routes
  ospf     Open Shortest Path First (OSPF)
  rip      Routing Information Protocol (RIP)

Router# show running-config partition router mobile ?
  | Output modifiers
  <cr>

Router# show running-config partition router mobile
Building configuration...

Current configuration : 42 bytes
!
!
!
router mobile
  distance 20
!
!
end

Router# show running-config | include router
router mobile
router odr
router eigrp 2
router ospf 4
router iso-igrp
```

```
router isis qwe
router egp 1
router bgp 1
```

```
Router# show running-config partition router ?
  bgp      Border Gateway Protocol (BGP)
  egp      Exterior Gateway Protocol (EGP)
  eigrp    Enhanced Interior Gateway Routing Protocol (EIGRP)
  isis     ISO IS-IS
  iso-igrp IGRP for OSI networks
  mobile   Mobile routes
  odr      On Demand stub Routes
  ospf     Open Shortest Path First (OSPF)
  rip      Routing Information Protocol (RIP)
```

```
Router# show running-config partition router ospf ?
<1-65535> Process ID
```

```
Router# show running-config partition router ospf 4
Building configuration...
```

```
Current configuration : 64 bytes
!
!
!
router ospf 4
  log-adjacency-changes
  distance 4
!
!
end
```

```
Router# show running-config partition service
Building configuration...
```

```
Current configuration : 190 bytes
!
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service internal
service udp-small-servers
service tcp-small-servers
!
!
!
end
```

```
Router# show running-config partition snmp
Building configuration...
```

```
Current configuration : 84 bytes
!
!
!
snmp-server community user101 RW
snmp mib target list qwe host 0.0.0.0
!
```

end

Additional References

The following sections provide references related to the Configuration Partitioning feature.

Related Documents

Related Topic	Document Title
Running configuration performance enhancement— parser config cache for interfaces.	“Configuration Generation Performance Enhancement”
Provisioning of customer services, Config Rollback, Config Locking, and configuration access control	“Contextual Configuration Diff Utility”
Configuration management—Config change logging.	“Configuration Change Notification and Logging”
Cisco IOS XE software configuration access control and config session locking (“Config Lock”).	“Exclusive Configuration Change Access and Access Session Locking”

Standards

Standard	Title
No standards are associated with this feature.	—

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	—

RFCs

RFC	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>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.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	http://www.cisco.com/techsupport

Feature Information for Configuration Partitioning

Table 1 lists the features in this module and provides links to specific configuration information.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS XE 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 XE software release that introduced support for a given feature in a given Cisco IOS XE software release train. Unless noted otherwise, subsequent releases of that Cisco IOS XE software release train also support that feature.

Table 1 Feature Information for Configuration Partitioning

Feature Name	Releases	Feature Information
Configuration Partitioning	Cisco IOS XE Release 2.1	<p>The Configuration Partitioning feature provides modularization (“partitioning”) of the running configuration state to provide granular access to the running configuration in Cisco IOS XE software. This feature is enabled by default in Cisco IOS XE software images that include this feature.</p> <p>In Cisco IOS XE Release 2.1, this feature was introduced on Cisco ASR 1000 Series Routers.</p> <p>The following sections provide information about this feature:</p> <ul style="list-style-type: none"> • Information About Configuration Partitioning • How to Use the Configuration Partitioning Feature

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