# Contextual Configuration Diff Utility

The Contextual Configuration Diff Utility feature provides the ability to perform a line-by-line comparison of any two configuration files (accessible through the Cisco IOS XE Integrated File System [IFS]) and generate a list of the differences between them. The generated output includes information regarding configuration lines that have been added, modified, or deleted, and the configuration modes within which a changed configuration line exists.



## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and 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 table at the end of this module.

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

## Prerequisites for Contextual Configuration Diff Utility

The format of the configuration files used for the Contextual Configuration Diff Utility feature must comply with standard Cisco IOS XE configuration file indentation rules as follows:

- Start all commands on a new line with no indentation, unless the command is within a configuration submode.
- Indent commands within a first-level configuration submode one space.
- Indent commands within a second-level configuration submode two spaces.
- Indent commands within subsequent submodes accordingly.

The router must have a contiguous block of memory larger than the combined size of the two configuration files being compared.

# Restrictions for Contextual Configuration Diff Utility

If the device does not have a contiguous block of memory larger than the combined size of the two configuration files being compared, the diff operation fails.

# Information About Contextual Configuration Diff Utility

## Benefits of the Contextual Configuration Diff Utility

The Contextual Configuration Diff Utility feature provides the ability to perform a line-by-line comparison of any two configuration files (accessible through the Cisco IOS XE File System [IFS]) and generate a list of the differences between them. The generated output includes information regarding the following items:

- Configuration lines that have been added, modified, or deleted.
- Configuration modes within which a changed configuration line exists.
- Location changes of configuration lines that are order-sensitive. For example, the **ip access-list** and **community-lists** commands are order-sensitive commands dependent on where they are listed within a configuration file in relation to other Cisco IOS XE commands of similar type.

## Contextual Configuration Diff Utility Output Format

### Diff Operation

The Contextual Configuration Diff Utility feature uses the filenames of two configuration files as input. A diff operation is performed on the specified files and a list of differences between the two files is generated as output by using the **show archive config differences** command. Interpreting the output is dependent on the order in which the two files are specified in the command. In this section, we assume that the filename of the file entered first is file1 and the filename of the file entered second is file2. Each entry in the generated output list is prefixed with a unique text symbol to indicate the type of difference found. The text symbols and their meanings are as follows:

- A minus symbol (–) indicates that the configuration line exists in file1 but not in file2.
- A plus symbol (+) indicates that the configuration line exists in file2 but not in file1.

- An exclamation point (!) with descriptive comments identifies order-sensitive configuration lines whose location is different in file1 than in file2.

### Incremental Diff Operation

Some applications require that the generated output of a diff operation contain configuration lines that are unmodified (in other words, without the minus and plus symbols). For these applications, an incremental diff operation can be performed by using the **show archive config incremental-diffs** command, which compares a specified configuration file to the running configuration file ().

When an incremental diff operation is performed, a list of the configuration lines that do not appear in the running configuration file (in other words, configuration lines that appear only in the specified file that is being compared to the running configuration file) is generated as output. An exclamation point (!) with descriptive comments identifies order-sensitive configuration lines whose location is different in the specified configuration file than in the running configuration file.

# How to Use the Contextual Configuration Diff Utility

## Performing a Line-by-Line File Comparison Using the Contextual Configuration Diff Utility

### SUMMARY STEPS

1. **enable**
2. Enter one of the following:
   - **show archive config differences** [*file1* [*file2*]]
   - **show archive config incremental-diffs** *file*
3. **exit**

### DETAILED STEPS

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br><br>**Example:**<br>`Device> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | Enter one of the following:<br>• **show archive config differences** [*file1* [*file2*]]<br>• **show archive config incremental-diffs** *file* | Performs a line-by-line comparison of any two configuration files (accessible through the Cisco IOS File System and generates a list of the differences between them.<br>or |

| | Command or Action | Purpose |
|---|---|---|
| | **Example:**<br>`Device# show archive config differences running-config startup-config`<br>**Example:**<br>`Device# show archive config incremental-diffs nvram:startup-config` | Performs a line-by-line comparison of a specified configuration file to the running configuration file and generates a list of the configuration lines that do not appear in the running configuration file. |
| **Step 3** | **exit**<br>**Example:**<br>`Device# exit` | Exits to user EXEC mode. |

# Configuration Examples for the Contextual Configuration Diff Utility

## Diff Operation Example

In this example, a diff operation is performed on the running and startup configuration files. The table below shows the configuration files used for this example.

*Table 1: Configuration Files Used for the Diff Operation Example*

| Running Configuration File | Startup Configuration File |
|---|---|
| no ip subnet-zero<br>ip cef<br>interface FastEthernet1/0<br> ip address 10.7.7.7 255.0.0.0<br> no ip route-cache<br> no ip mroute-cache<br> duplex half<br>no ip classless<br>snmp-server community public RO | ip subnet-zero<br>ip cef<br>ip name-server 10.4.4.4<br>voice dnis-map 1<br> dnis 111<br>interface FastEthernet1/0<br> no ip address<br> no ip route-cache<br> no ip mroute-cache<br> shutdown<br> duplex half<br>ip default-gateway 10.5.5.5<br>ip classless<br>access-list 110 deny ip any host 10.1.1.1<br>access-list 110 deny ip any host 10.1.1.2<br>access-list 110 deny ip any host 10.1.1.3<br>snmp-server community private RW |

The following is sample output from the **show archive config differences**command. This sample output displays the results of the diff operation performed on the configuration files in the table below.

```
Router# show archive config differences system:running-config nvram:startup-config
+ip subnet-zero
+ip name-server 10.4.4.4
+voice dnis-map 1
```

```
 +dnis 111
interface FastEthernet1/0
 +no ip address
 +shutdown
+ip default-gateway 10.5.5.5
+ip classless
+access-list 110 deny ip any host 10.1.1.1
+access-list 110 deny ip any host 10.1.1.2
+access-list 110 deny ip any host 10.1.1.3
+snmp-server community private RW
-no ip subnet-zero
interface FastEthernet1/0
 -ip address 10.7.7.7 255.0.0.0
-no ip classless
-snmp-server community public RO
```

# Incremental Diff Operation Example

In this example, an incremental diff operation is performed on the startup and running configuration files. The table below shows the configuration files used for this example.

*Table 2: Configuration Files Used for the Incremental Diff Operation Example*

| Startup Configuration File | Running Configuration File |
|---|---|
| ip subnet-zero<br>ip cef<br>ip name-server 10.4.4.4<br>voice dnis-map 1<br> dnis 111<br>interface FastEthernet1/0<br> no ip address<br> no ip route-cache<br> no ip mroute-cache<br> shutdown<br> duplex half<br>ip default-gateway 10.5.5.5<br>ip classless<br>access-list 110 deny ip any host 10.1.1.1<br>access-list 110 deny ip any host 10.1.1.2<br>access-list 110 deny ip any host 10.1.1.3<br>snmp-server community private RW | no ip subnet-zero<br>ip cef<br>interface FastEthernet1/0<br> ip address 10.7.7.7 255.0.0.0<br> no ip route-cache<br> no ip mroute-cache<br> duplex half<br>no ip classless<br>snmp-server community public RO |

The following is sample output from the **show archive config incremental-diffs**command. This sample output displays the results of the incremental diff operation performed on the configuration files in the table below.

```
Router# show archive config incremental-diffs startup-config
ip subnet-zero
ip name-server 10.4.4.4
voice dnis-map 1
```

```
 dnis 111
interface FastEthernet1/0
 no ip address
 shutdown
ip default-gateway 10.5.5.5
ip classless
 access-list 110 deny   ip any host 10.1.1.1
 access-list 110 deny   ip any host 10.1.1.2
 access-list 110 deny   ip any host 10.1.1.3
snmp-server community private RW
```

# Additional References

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

### Related Documents

| Related Topic | Document Title |
|---|---|
| Running configuration performance enhancement--**parserconfigcache** 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 |
| Configuration management --Quick-save for config change logging[1]. | Configuration Logger Persistency |
| Cisco IOS software configuration access control and config session locking ("Config Lock"). | Exclusive Configuration Change Access and Access Session Locking |

1 The "Configuration Logger Persistency" feature allows saving just the commands entered since the last startup-config file was generated, rather than saving the entire startup configuration.

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

# Feature Information for Contextual Configuration Diff Utility

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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*Table 3: Feature Information for Contextual Configuration Diff Utility*

| Feature Name | Releases | Feature Information |
|---|---|---|
| Contextual Configuration Diff Utility | Cisco IOS XE Release 2.1 | The Contextual Configuration Diff Utility feature provides the ability to perform a line-by-line comparison of any two configuration files and generate a list of the differences between them. The generated output includes information regarding configuration lines that have been added, modified, or deleted, and the configuration modes within which a changed configuration line exists.<br><br>In Cisco IOS XE Release 2.1, this feature was introduced on Cisco ASR 1000 Series Routers.<br><br>The following commands were modified by this feature: **show archive config differences**, **show archive config incremental-diffs**. |