

CLI Functionality

Out-of-band: using serial console port or management port

In-band: using Telnet or SSH

Root User vs Non Root User

- by default, non-root users do not exist. These need to be created
- By default, non-root user do not have any permissions
- Upon login, non-root users are placed into the operational mode
- Non-root users can be deleted

Key features of CLI

- Consistent command names
- Question mark for completion
- Tab and space completion of commands
- UNIX style utilities and keyboard sequences

CLI Modes

Shell Mode

- prompt ends with %
- directly available when you login as root
- non-root users can enter start shell from the operational mode

Operational Mode (view config, use network utilities)

- prompt ends with >

Configuration mode

- prompt ends with #

Universal CLI Navigation

Question mark ?

- when <ENTER> showed, meaning it reach to a possible completion command

Tab vs Space

- Tab used to complete not only system defined commands but also user defined variables
- Space used to complete system defined commands

Naming convention

- user defined variable to be upper case
- system commands are lower case

Keyboard shortcut sequences

- ctrl + a: move to the beginning
- ctrl + e: move to the end
- ctrl + w: erases word to the left
- ctrl + u: rases entire line

CLI Help

help topic - shows usage guidelines for the statement

help reference - show summary information about the statement

help apropos - list all commands and help text that contain a particular string

help syslog - shows information about system log messages

help tip cli - shows a tio about using the CLI

Output Levels

Terse - displays least amount of information. Output is shown as a list

Brief - displays additional information about each element

Detail - displays most of the information about each element

Extensive - displays all information about each element

Filtering Output

compare	Compare configuration changes with prior version
count	Count occurrences
display	Show additional kinds of information
except	Show only text that does not match a pattern
find	Search for first occurrence of pattern
hold	Hold text without exiting the --More-- prompt
last	Display end of output only
match	Show only text that matches a pattern
no-more	Don't paginate output
request	Make system-level requests
resolve	Resolve IP addresses
save	Save output text to file
trim	Trim specified number of columns from start of line

Active vs Candidate Config

Active Config

- The configuration that is currently active on the device is known as active config
- Active config loaded when the device is rebooted.

Candidate Config

- When entering configuration mode, a copy of the active config is created. This is known as candidate configuration.
- When a candidate config is committed, it becomes an active config.

Configure Command

<https://www.juniper.net/documentation/us/en/software/junos/cli/topics/topic-map/configure-command.html>

configure

- share configuration
- multiple users can be in the configuration mode at the same time
- if other users are editing the configuration, you will see a warning message
- when config is committed, changes made by all users are committed, if conflict, most recent one effective.

configure exclusive

- Only one user is allowed to enter the exclusive configuration mode
- The user editing the config can be forcibly logged out using the *request system logout* command in operational mode.

configure private

- multiple users can enter the private configuration mode, each user has a private candidate config to edit
- when committed, only changes made by the private user will be saved.
- when conflicts, first commit takes precedence

Configure Navigation Commands

edit

- navigate the configuration hierarchy

up

- one level up from configuration hierarchy
- up [num] moves num levels

top

- to the top of hierarchy

exit configuration-mode

- exit and enter operational mode

Configuration Hierarchy

Configure from

- top of the configuration hierarchy
- item specific configuration hierarchy
 - reduces length of commands
 - only commands specific to the hierarchy are shown
 - output is reduced to only items under hierarchy

Junos Commit

- The commit command saves the candidate configuration as the active configuration
- Before committing, Junos performs a commit check to look for syntax errors
- To manually run a check, use **commit check**
- Use show | compare to view changes before committing
- Schedule a commit, use **commit at**
- Clear pending commit operations, use **clear system commit**
- Use **commit confirmed** command to commit changes and then require confirmation before making changes permanent
- use **commit and-quit** to commit changes and return to operational mode
- use **commit comment** to add comment to the commit
- **show system commit** to show all commit, use in operational mode

Junos Rollback

Junos stores up to 50 committed versions of the configuration - these can be used to rollback, version 0 - 49

rollback 0 is the active configuration

rollback requires a commit

set system max-configuration-rollback command to set max roll up to 49

Junos Configuration Files

- use **save filename** to save the configuration
- files are saved to /var/home/username

- use **show | compare filename** to compare candidate config with a configuration file
- use **show configuration | compare filename** to compare active config with a configuration file
- use **file compare files filename1 filename2** to compare any two saved configuration files
- use **file compare files filename1 filename2 context** for context style output
- use **file compare files filename1 filename2 unified** for unified style output

Load Command (Configuration Mode)

used to load configuration from a saved file

Load Override

- discards the current candidate configuration and loads config from the file
- the current candidate config is completely replaced

Load Merge

- Merges the configuration from the saved file with the existing candidate config
- If conflicting statements, statements in the saved configuration file will override those in the existing candidate config

Load Replace

- Looks for the replace: tags in the loaded file, and replaces parts of the candidate config with whatever is specific after the tag
- Loaded file must include replace: tags
- if no match, then replace becomes add

Current Configuration	File Contents	New Configuration
<pre> interfaces { fe-0/0/0 { unit 0 { family inet { address 192.168.1.1/24; } } } fe-0/0/1 { unit 0 { family inet { address 10.1.1.1/24; } } } } </pre>	<pre> interfaces { replace: fe-0/0/1 { unit 0 { family inet { address 172.16.1.1/24; } } } } </pre>	<pre> interfaces { fe-0/0/0 { unit 0 { family inet { address 192.168.1.1/24; } } } fe-0/0/1 { unit 0 { family inet { address 172.16.1.1/24 } } } } </pre>

Load Patch

- On a device that has configuration changes, type show | compare to output the difference
- use load patch command to load the differences on another device
- instructions can contain any configuration mode command, such as edit, exit, and top

Current Configuration	File Contents	New Configuration
<pre> interfaces { fe-0/0/0 { unit 0 { family inet { address 192.168.1.1/24; } } } } </pre>	<pre> [edit interfaces] + fe-0/0/1 { + unit 0 { + family inet { + address 172.16.1.1/24; + } + } + } +} </pre>	<pre> interfaces { fe-0/0/0 { unit 0 { family inet { address 192.168.1.1/24; } } } fe-0/0/1 { unit 0 { family inet { address 172.16.1.1/24; } } } } </pre>

Load Set

- Loads a configuration that contains set commands
- Executes the configuration instructions line by line as they are stored in the file

J-WEB

- allows monitor, configure, troubleshoot, and manage the device using a web browser enabled with HTTP or HTTPS
- All configuration statements are supported
- J-WEB is provided by the Routing Engine
- ***edit system services web-management*** to the hierarchy to enable HTTPS

Tab	Function
The Dashboard Tab	Provides a quick glance at the system status, alarms, and security events information (in SRX devices) and utilization information
The Monitor Tab	Enables you to view the interfaces details and logs
The Reports Tab	Enables you to generate reports on demand and view them in HTML format
The Device Administration Tab	Enables you to configure the system in a point-and-click fashion or by a direct edit of the configuration in text format