



# ConfD CLI

## XML Based Command Line Interface for Network Equipment

ConfD is a production-ready on-device management software solution for network equipment vendors. Using ConfD, such vendors can reduce development costs and speed time-to-market while supporting the latest and most advanced network management capabilities in their products.

Tail-f offers a complete solution with all required components needed to build a carrier-grade on-device management system. Customers with an existing on-device management system can integrate ConfD CLI with an existing system, using well-defined APIs.

### ConfD Components

Tail-f Systems' CLI is part of the ConfD on-device management solution. ConfD also provides NETCONF, Web interface, and SNMP agents. The XML-centric management backplane in ConfD implements the operations of all agents. All management agents interface to the same AAA subsystem, configuration storage, and data model.

### ConfD CLI Functionality

ConfD CLI provides various commands for configuring and monitoring software, hardware, and network connectivity of target devices. The CLI supports two modes: operational mode, for monitoring the state of the device; and configuration mode, for changing the state of the device.

Operational mode is the initial mode after successful login to the CLI. It is primarily used for viewing the system status, controlling the CLI environment, monitoring and troubleshooting network connectivity, and initiating the configuration mode.

Configuration mode can be initiated by entering the *configure* command in operational mode. All changes to the device's configuration are done to a copy of the active configuration, called a candidate configuration. These changes do not take effect until a successful *commit* or *confirmed commit* command is entered.

When a candidate configuration is committed, the system verifies that nothing of relevance to the update has changed in the active configuration of the device. In the event relevant changes have occurred, the system displays them for the user and asks if the commit should proceed (and overwrite the changed active configuration).

The system saves multiple past configurations. Users may use the default command name or specify another name. Past configurations can be reinstated by using the *rollback* command.

### ConfD Developer Functionality

- Auto-generated CLI from XML specification
- Easy to extend and customize
- Move/Delete/Mount of CLI subtrees
- Transformations
- Wizards
- Help functionality
- Hidden Commands/Settings

### ConfD End-user Functionality

- Configuration of target device
- Displays the configuration
- Juniper-style and Cisco-style CLIs
- CLI operates on configuration candidate
- Validates when candidate configuration is committed
- Helps with debugging of configuration
- Displays alarms and log messages
- Saves the configuration on file and later reinstalls or moves it to another device
- Batch processing of commands
- Command line history and editor
- Tab completion of commands and arguments



## Auto-generated CLI

Device developers use an optimized XML syntax for describing the configuration data model. ConfD NETCONF and ConfD Web Interface use the same data model. Developers can specify configuration data, which are subsequently linked into a single data model schema.

From this specification of the configuration, ConfD automatically generates a fully functional CLI that adheres to the operational model described above. The auto-generated CLI supports the following features:

- Support for running commands in batch mode and for scripting new commands which may invoke several built-in commands.
- Command line history and command line editor.
- Tab completion for content of the configuration database.

## Extending and Customizing the CLI

A number of features are built into the auto-generated CLI, but require the CLI developer to add information or code. These features include:

- **Internationalization (I18n).** Help texts can be translated if developers supply translation files.
- **Help.** Users may choose from three options for command display: short descriptions, longer documentations, or short descriptions of arguments.
- **Transformation** The Transformation offers a translation between internal names, such as commands, and the strings displayed in the CLI.
- **Wizards.** For more complicated configurations, or for bringing up the system initially, wizards can pose questions to the user and then configure relevant parameters.
- **Move/Delete/Mount.** Vendors frequently want to restructure an existing CLI. This feature allows this without changing the data model.
- **Advanced Command Completion.** The auto-generated CLI performs command completion with respect to values at the current position of the configuration tree.
- **Hidden Commands/Settings.** This is very useful when adding experimental features, debugging functionality, or customer-specials to a CLI.

## ConfD CLI Commands

ConfD CLI provides three types of commands: built-in commands, built-in commands that can be extended by CLI developers, and commands defined by CLI developers. The built-in commands in operational mode are configure, file, help, quit, and set.

Built-in commands in operational mode that can be extended by CLI developers are monitor, request, and show. For example, some show commands are built-in, such as show configuration, which displays the current configuration. Other show commands must be supplied by the CLI developer (show interfaces, corresponding to “ifconfig -a” in Linux).

The built-in commands in configuration mode are commit, copy, delete, edit, exit, help, load, quit, rollback, run, save, set, show, status, top, and up. Of these, help can be extended by CLI developers. Examples of typical commands defined by CLI developers are restart, mtrace, and test.

ConfD CLI also provides a mechanism for CLI developers to invoke, as CLI commands, arbitrary programs from the CLI. For example, a ping command that invokes the ping utility can easily be defined. Other extensions can be programmed in Javascript (for example, wizards and informational programs).

## Supported Platforms

- Linux
- NetBSD
- FreeBSD
- QNX
- Solaris

tail-f

Tail-f Systems  
[www.tail-f.com](http://www.tail-f.com)  
[info@tail-f.com](mailto:info@tail-f.com)

Klara Norra Kyrkogata 31  
SE-111 22 STOCKHOLM  
Sweden