



tail-f



ConfD

XML-Based
Network
Management
Software

Next-Generation Configuration Management

The increasing complexity of operator and enterprise networks and the requirement to deliver new services is driving the need for improved configuration management systems. Network operators can no longer afford to manually provision their networks. Automated configuration management is needed to reduce costs, increase reliability, and respond to customer demands.

ConfD provides the industry-leading implementation of NETCONF to ensure that configuration changes are uniformly rolled out and as a result networking solutions are truly scalable. The NETCONF standard is now supported by many leading suppliers of networking equipment and is becoming a requirement for users of large networks.

Carrier and Enterprise-Class Implementations

ConfD is designed to meet the performance, scalability, redundancy, and security needs of carrier and enterprise-class network management systems. Such capabilities include:

- Transaction management
- Session management
- Audit trailing
- Role-based access control
- Authentication over RADIUS and LDAP
- Extensible schema validation
- Rollback management
- Replication and High-Availability

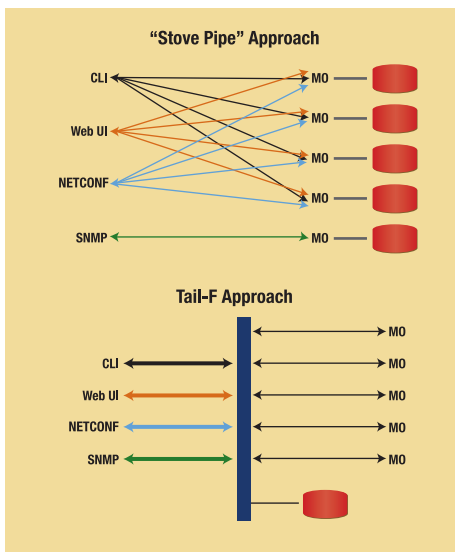
High performance and scalability are crucial in large systems. ConfD uses its own parsing algorithm that streams XML data to ensure that memory usage is bounded. Its embedded database is optimized to allow very efficient operations on binary encoded XML data structures.

Faster and More Affordable Development

ConfD radically reduces the time and resources needed to develop network management applications, helping developers to meet critical market deadlines.

ConfD allows developers to describe a data model for their system once and then, using a unique technology, to automatically render CLI, Web, SNMP, and NETCONF interfaces. Tail-f Systems provides extensive ready to use libraries of XML specifications and C instrumentation code for many of the features expected in a networking device.

In addition to speeding time-to-market, ConfD reduces the cost and time involved in maintaining and supporting applications. ConfD allows NETCONF, CLI, Web, and SNMP interfaces to use a single set of core functionality, including a configuration database, and share one set of common instrumentation functions, thereby avoiding the tedious recoding efforts required by legacy stovepipe architectures.



In the "Stove Pipe" approach, management interfaces connect directly to the Managed Objects (MOs). The Tail-f approach separates the management interfaces and back-end system.



ConfD Overview

ConfD is an XML-based software solution for on-device configuration management consisting of the following key components:

- Shared backplane, called the ConfD Core Engine
- Northbound management interfaces (NETCONF, Web UI, CLI, and SNMP)
- Embedded configuration database

The ConfD Core Engine connects configuration and operational data on the device to all management interfaces through a transaction-oriented API. The Core Engine contains all functionality common to the management interfaces, including transaction management and AAA.

All management interfaces are automatically rendered from an expressive XML data model. This radically reduces development time and allows developers to immediately start using ConfD for internal demonstrations and prototyping.

NETCONF Interface

The NETCONF protocol provides mechanisms to install, manipulate, and delete configuration data on network devices. It uses XML-based data encoding for the configuration data as well as for protocol messages. NETCONF is increasingly required by network operators to configure and provision large networks in an efficient and reliable fashion.

The ConfD NETCONF Interface implements the full set of features described in IETF RFCs 4741 and 4742, including support for transactions, validations, confirmed commits, rollbacks, event notifications, partial locking and XPath filtering.

Web User Interface

ConfD's Web UI enables the rapid development of modern, dynamic, and graphical network management applications. The Web Interface leverages AJAX web development technology and the look and feel of the UI is defined with Cascading Style Sheets (CSS) to allow full freedom for developers to ensure alignment with branding guidelines. ConfD includes an integrated lightweight web server with support for HTTP and HTTPS.

Command Line Interface

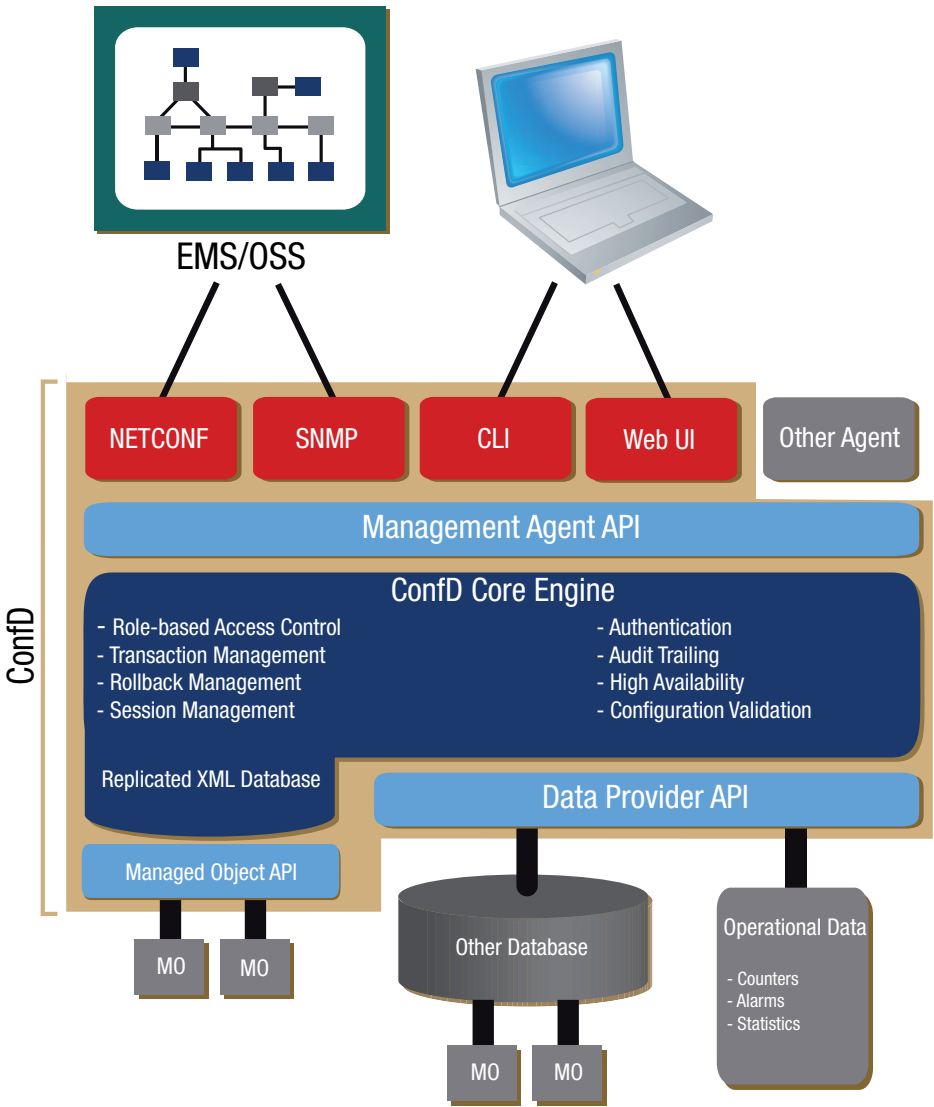
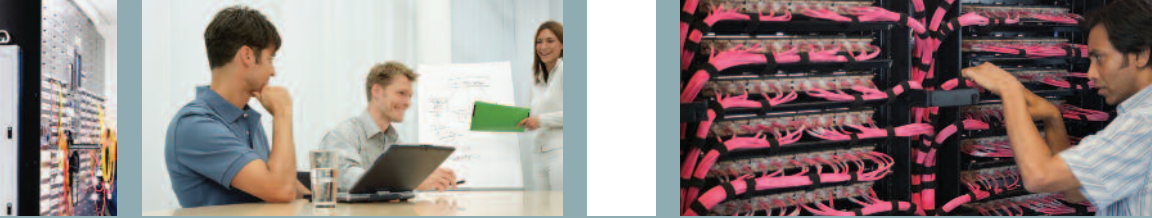
The ConfD CLI provides both Juniper-style and Cisco-style command line environments with all the well-known features and idioms from these CLIs. This includes powerful features like command line editing, keyboard shortcuts, and command history. New commands and wizards can be added as needed.

SNMP Agent

The SNMP Agent supports SNMP v1, v2c, and v3. It is completely integrated with the ConfD's XML-based Core Engine. ConfD also provides tools to translate between SNMP MIBs and XML data models.

Embedded Database

ConfD's Embedded Database provides fast, lightweight access to configuration and operational data. Optimized for efficiently storing and retrieving binary encoded XML data, the database scales to the performance levels required by very large networks. The database supports data replication, providing high-availability operation.





Flexible Deployment

ConfD's modular architecture provides designers the flexibility to employ some or all of its components in developing new on-device management systems or extending existing ones.

Developing a New System

ConfD provides all the components needed to rapidly build state-of-the-art network management applications. Developers need only develop a single data model of the system and write instrumentation code once to provide support for all management interfaces.

Extending an Existing System

An existing network management system may already have one or several northbound interfaces, such as CLI and SNMP Agents, but needs to add new management interfaces, such as NETCONF and Web UI, in response to customer demands. ConfD has rich APIs designed for integrating new software with existing interfaces and data stores.

Unifying Disparate Systems

In legacy product lines, it is common for each member of a product family to have a unique adapter or network management API. ConfD enables equipment suppliers to streamline the development of multiple devices in a product family by removing silos of development and standardizing all parameters on a common XML data model. This leads to reduced development time and costs for both on-device and element management systems.

Supported Platforms

- Linux
- NetBSD
- FreeBSD
- QNX
- Solaris

Examples of Devices Suitable for ConfD

- Routers
- Switches
- Security appliances
- Base stations
- Gateways
- DSLAMs
- Network controllers
- IMS control nodes
- Chassis-based products
- Stackable appliances
- Blade server products



Tail-f Systems is the leading developer of XML-based network management software for network equipment suppliers. Customers using Tail-f Systems' technology radically reduce their time-to-market and benefit from carrier-grade implementations of NETCONF, Web, CLI, and SNMP interfaces.

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