

# The API is the new CLI?

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[@ChrisGrundemann](https://twitter.com/ChrisGrundemann)  
Principal Architect, [Myriad Supply](https://myriadsupply.com)  
[cgrundemann@myriadsupply.com](mailto:cgrundemann@myriadsupply.com)



The API is the new CLI

A tale of two interfaces...

- CLI: Person to Machine
- API: Software to Software

The "big three"

- NETCONF
- REST
- RESTCONF

# NETCONF

- Network Configuration Protocol
- RFC 6241
- “provides mechanisms to install, manipulate, and delete the configuration of network devices.”
  - CRUD

# NETCONF

- Remote procedure call (RPC)
- Client <> Server
- SSH
- XML

# NETCONF

- Configuration Lock
- Two-way (RPC) communication
- State data

# REST

- Representational State Transfer
- “Architectural Styles and the Design of Network-based Software Architectures” by Roy Thomas Fielding



# REST

*What is life?*

*It is the flash of a firefly in the night.*

*It is the breath of a buffalo in the wintertime.*

*It is the little shadow which runs across the grass  
and loses itself in the sunset.*

— Crowfoot's last words (1890), Blackfoot warrior and orator.

*Almost everybody feels at peace with nature: listening to the ocean waves against the shore, by a still lake, in a field of grass, on a windblown heath. One day, when we have learned the timeless way again, we shall feel the same about our towns, and we shall feel as much at peace in them, as we do today walking by the ocean, or stretched out in the long grass of a meadow.*

— Christopher Alexander, *The Timeless Way of Building* (1979)

# REST

- HTTP

- GET, PUT, POST, DELETE

# RESTCONF

- RFC 8040
- a RESTful implementation of NETCONF
- “an HTTP-based protocol that provides a programmatic interface for accessing data defined in YANG, using the datastore concepts defined in the Network Configuration Protocol (NETCONF).”

# RESTCONF

- XML or JSON
- Event stream
- NETCONF, RESTCONF, or both...

# YANG

- RFC 7950
- Not an API
- “a data modeling language used to model configuration data, state data, Remote Procedure Calls, and notifications for network management protocols.”

# What?

So you have YANG, which is the data model (template) for formatting your data. Then you use either NETCONF or RESTCONF to encode that data with XML or JSON and send it to (or receive it from) network devices over SSH or HTTP(s). Clear as mud? Great. Back to the original question...

Is the API the new CLI?

# Is the API the new CLI?

- APIs are powerful tools
- Allow programs to communicate reliably with network devices
  - Scripts
  - Intent



Is the API the new CLI?

- APIs are here to stay

Is the API the new CLI?

- APIs are here to stay
- but so is the CLI

More...

[https://www.youtube.com/playlist?  
list=PLqjLDraZaSBEvEBWA8WRwl60-aE77WEAh](https://www.youtube.com/playlist?list=PLqjLDraZaSBEvEBWA8WRwl60-aE77WEAh)

