

APNIC



Network Automation and Orchestration

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Module 1: The 3 Ws of Automation



What is automation?

The use of **machines** and **computers** that can **operate without needing human control**

Automation is the creation and application of technologies to produce and deliver goods and services with minimal human intervention. The implementation of automation technologies, techniques and processes improve the efficiency, reliability, and/or speed of many tasks that were previously performed by humans.

What is network automation?

- Often, people replace a manual command with another manual command.
- Usually misunderstood as just configuration management.
- ... but that is not in-line with the definitions from the previous slide.
- Our goal should be to design networks capable to auto-remediate, or at least collect data for investigation or try to repair and report the issues.

Why should you automate?

- Engineers don't need to spend time on boring tasks, but on real engineering difficult problems that computers can't resolve.
- Create more stable networks. "It's always the network. And the DNS" - but the latter is unfixable. :-)
- Create more jobs. More reliable networks means more demand. Think from a global perspective. Example: aviation. See also: [Tim O'Reilly's keynote at APRICOT 2017 opening ceremony.](#)

Why should automate? (2)

- Easy to audit changes. Example: PCI compliance.
- Peer reviewing - a change cannot be applied without being approved.
- You can set up a CI/CD (continuous integration / continuous deployment) pipeline to catch issues before pushing them into production.
- History of actions (either configuration changes, or operational commands), which you can consult to correlate with network events.

Who and when should automate?

- You. Anyone. Starting right now.
- You don't need to learn code. But it's welcome.
- Stop waiting for the “best tool” to be built - that will never happen. You can build what's best for your network, around existing frameworks, no tool will ever fit your requirements out of the box.

Choosing the right tool

Depends on a number of factors:

- How large is your network?
- How diverse / how many different platforms you have?
- How dynamic, i.e., how frequently you apply changes?
- Event-driven automation?

Salt

Ideal for leveraging event-driven automation and orchestration for:

- Large and very large deployments.
- Flexible to abstract away unlimited platforms.
- Thanks to the asynchronous design, you can apply as many changes and commands as your network supports.
- Native integration with hundreds of different products and services.
- Easily configurable and customizable.