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Automate Your Network with Nornir

Python automation framework

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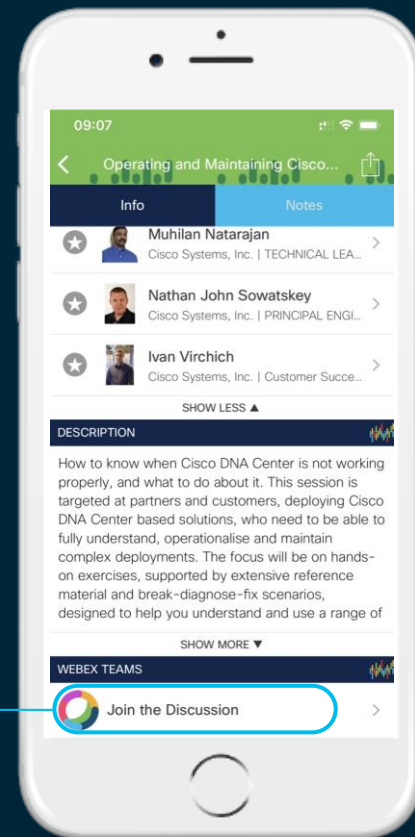
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Agenda

- What is Nornir
- Nornir vs Ansible
- Demo
- Wrap-up

Code

<https://github.com/dmfigol/nornir-apps>



*“I am not sure why they are
reinventing Ansible.”*

Me in 2018

*”I would like to help you maintain
Nornir”*

Also me 9 months later

Nornir

Pluggable multi-threaded Python framework with inventory management to help operate collections of devices

Why not Ansible

- Tasks written in domain-specific language (DSL)
 - Programming in YAML
- Troubleshooting, debugging and maintaining playbooks is hard
- Inflexible: problems with extensibility and non-trivial tasks
- Slow and resource-intensive
- Breaking changes between versions

Nornir advantages

- Provides an abstraction for [inventory](#) (hosts and groups) and concurrent [task execution](#)
- Everything in Python (or Golang, check out [Gornir](#))
 - Just another Python library to import
- Great flexibility and extensibility
- [Fast](#) thanks to threads

Nornir advantages (cont.)

- Re-uses existing libraries for the connections: [netmiko](#), [napalm](#), [ncclient](#)
- Caches, re-uses and automatically closes opened connections
- Use any troubleshooting, debugging or testing tool from Python ecosystem
- Easy hosts filtering based on any attribute or combination of attributes
- Easy integration with other Python frameworks ([Flask](#), [Django](#), [pytest](#))

*”The more I work with Nornir; the
more I like it.
The more I work with Ansible; the
more I like Nornir”*

Kirk Byers

Twin Bridges Technology

Development focus

- Backwards compatibility
 - Semantic versioning is strictly followed
- Modern tooling used with CI to improve code quality: linting, code style, static type checking, unit testing
- Good documentation
 - Even examples in tutorials are being automatically tested as part of CI

Use-cases

- Run as a standalone script
- Integrate with a web framework
- Integrate with pytest for network testing

Latest features

- NETCONF support (integration with [ncclient](#))
- Processors – functions executed on events

What we are working on

- Exploring `asyncio` support
- Customization of task runners (e.g. retry mechanisms)



Demo

Summary

- Nornir is a flexible multi-threaded Python network automation framework which abstracts inventory and task execution
- Everything is in Python so it's very easy to integrate with any other Python code

Resources and where to go next

- Code: <https://github.com/dmfigol/nornir-apps>
- Nornir documentation: <https://nornir.readthedocs.io>
- Talk to the developer team on:
 - Our forum: <https://nornir.discourse.group/>
 - [Network To Code Slack](#), #nornir channel
- Open an issue on GitHub: <https://github.com/nornir-automation/nornir>



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