

Developer Days



The bridge to possible

NSO Tools

Overview, Roadmap

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Piece of software independent of NSO (may use NSO) to perform specific tasks. Tools makes using NSO easy



NSO Tools Delivery Model

Experimental

- Open source, customers, partners, cisco can contribute
- Available for download from [NSO-Developer Gitlab](#)
- Supported by the developer community
- Inactive repos are archived periodically
- Example:
 - [Scenario Explorer](#), [Open Telemetry Exporter](#)

Production

- Developed by NSO engineers
- Supported by Cisco
- Will be available on future active NSO versions.
- Will follow EOL process to deprecate tools
- No additional licenses needed
- Example:
 - nct, ncs-project etc.

Radar

- Cisco developed (and hosted ?)
- Example:
 - Visual YANG designer
 - Visual Service designer
 - Visual Template designer
 - Visual XPATH evaluator

NSO Tools – User Personas



System Administrator

Install, Backup,
Restore NSO instances



Service Operator / Network Engineer

Create, Monitor
service instances



Service Developer

Develop services



NSO service administrator tools

Experimental

- [ci-runner-image](#) : Docker image for use in CI
- [device automaton](#): automates device onboarding tasks

And more at
<https://gitlab.com/nso-developer>

Production

- nct
- tailf-hcc
- ncs-backup
- ncs-collect-tech-report
- ncs-uninstall

Radar

- nct enhancements
 - Support CDM
 - Support new HA
 - LSA deployments
 - HA operations in LSA
- Orchestrated NSO and package upgrade

Featured admin tool : NCT (NSO Control Tool)

NCT allows one NSO node to act as a control node and perform operations on multiple remote NSO nodes.

Delivery Model	Some operations supported by NCT			
Production	Install	Upgrade	Backup/Restore	Monitor
Available with NSO distribution at \$NCS_DIR/bin/nct	Install NSO	Upgrade NSO version	Backup CDB	Check NSO status
Documentation	Install multiple packages	Upgrade package version	Restore CDB	Check package status
Man pages		Apply a patch to NSO image		Collect logs
NSO Admin Guide	...and more: HERE			



NSO service operator/network engineer tools

Experimental

- Open telemetry package

Production

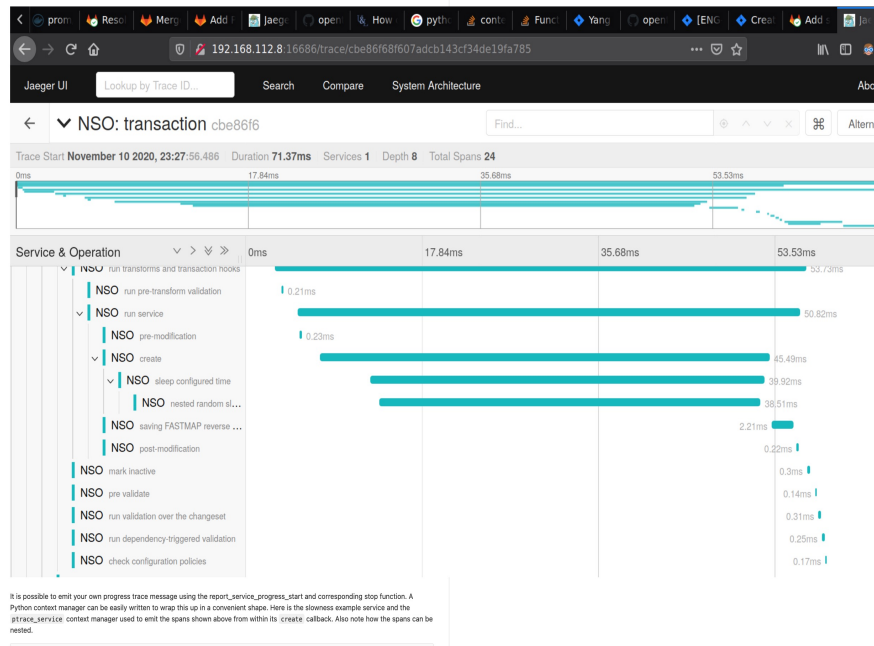
- Resource Manager

Radar

- log analyzer
- Observability tool

Featured Operator tools: Open telemetry package (Experimental)

- Enables collection of granular profiling data from all components within NSO.
- Streams data to external collectors using open protocols
- Collect analyze and visualize collected data to
- Provides insights and helps troubleshooting performance issues.





NSO developer tools

Experimental

- Design/Development tools:
 - IDEs
 - VSCode extensions
 - Python Notebooks
- Test /CI/CD tools:
 - scenario explorer
 - nso-docker

Production

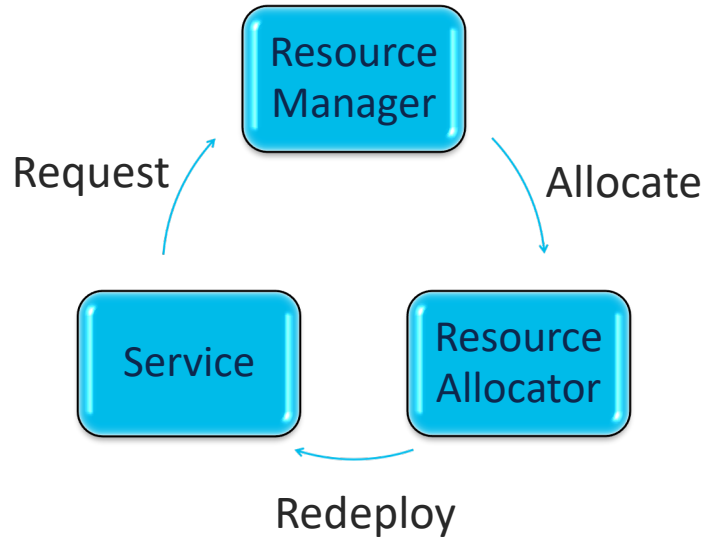
- Design/Development tools:
 - ncs-project
 - ncs-make-package
 - nso docker support
- Test /CI/CD tools:
 - netsim

Radar

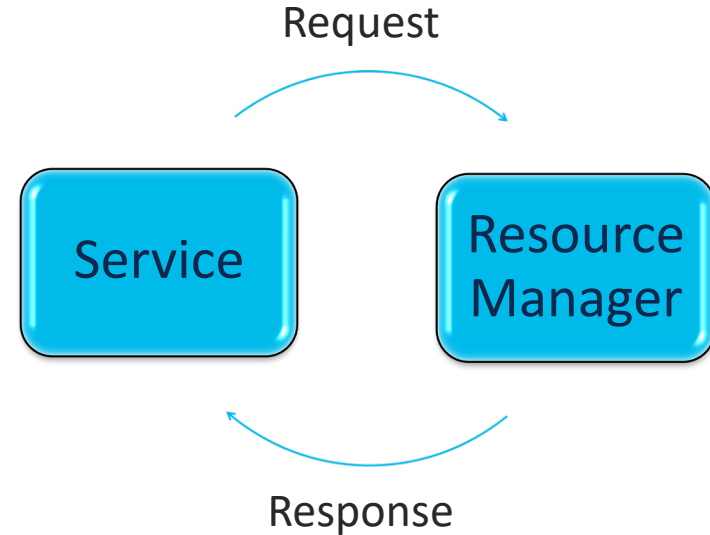
- Design/Development tools:
 - Visual template designer
 - Visual service designer
 - Visual Xpath evaluator
 - Visual YANG designer
- Test/CI/CD tools:
 - ROBOT test framework
 - pyATS tests

Resource Manager enhancements (Roadmap)

Asynchronous (Existing)



Synchronous (new)



Demo (8 mins)

Synchronous RM enhancement

**“We shape our
tools and
thereafter our
tools shape us”**

- **John Culkin and Marshall McLuhan**

What's next?

- Use the tools
- Visit
 - NSO community at [DevNet](#)
 - [NSO-Developer Gitlab](#)
- Stay tuned for more to come



The bridge to possible

The background is a solid dark blue color. It features a repeating pattern of faint, light blue geometric shapes. These shapes include clusters of small circles connected by thin lines, resembling a network or molecular structure. There are also curved lines and small dots scattered throughout the pattern.

Backup

***“We shape our tools and thereafter
our tools shape us”***

John Culkin and Marshall McLuhan

Poll -1

1. Do you believe good tools can increase value of NSO ?
 - Rate from scale 1(yes significantly)-5(unlikely to add value)
3. Tools are most useful if there are..
 - Like Linux shell commands i.e. easy to use CLI
 - Visual web applications on-prem
 - cloud-hosted web applications

In the works...



Admin

- NCT Enhancements
- Install multiple versions of same package (CDM)
- LSA enhancements



Operator

- Observability tool



Developer

- ncs-project enhancements
- NCT compatible export
- Resource-Manager enhancements
- Synchronous RM
- Allocations shared by multiple services

Experimental

Production