What's New

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CHAPTER 1

Introduction

This document outlines major new features and significantly updated APIs or behavior for new NSO versions. It does not replace the `CHANGES` file, which details all the changes in the product. Rather, this document complements it by collecting the relevant information for major new features in a single place. This includes a brief overview, pointers to detailed documentation, and guidance on upgrading existing applications where appropriate.

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Containerized build environment for NSO packages

A new container image, called Development Image, is available from Cisco Software Download. This image comes with the necessary environment and software for building NSO packages.

Administration Guide

- Updated and expanded the Chapter 13, *Containerized NSO* in *Administration Guide* describing the new image flavor.

Support for LDAP and TACACS+ authentication

Two new authentication packages are now available in `$NCS_DIR/packages/auth`: `cisco-nso-ldap-auth` and `cisco-nso-tacacs-auth`. They provide support for LDAP and TACACS+ protocols through the Package Authentication mechanism.

Refer to the respective `README` file inside each package for usage and configuration options.

DNS update support for tailf-hcc

The tailf-hcc package now allows submitting an RFC2136 Dynamic DNS Update to a name server on High Availability (HA) failover, simplifying geographically redundant NSO HA setup.

Administration Guide

- Added the section called “Layer-3 DNS update” in *Administration Guide* describing the new functionality.

Nano service usability

Multiple changes with nano services (documented in Chapter 31, *Nano Services for Staged Provisioning* in *Development Guide*) streamline their development and use:

- The **ncs-make-package** command now supports the `--nano-skeleton [python/java]` option.
- The functionality of `self-as-service-status` is now the default.
- The self component in a nano service plan is now generated automatically if not defined in the service model.
- Cancelled actions in the side effects queue can be manually scheduled for a retry.
- Improved performance of initial create of a nano service with the `converge-on-re-deploy` extension.

Administration Guide

- Updated the section called “NACM Rules and Services” in *Administration Guide* to better document required permissions for nano services.

Upgrade improvements

CDB schema upgrades now use an optimized algorithm, resulting in faster upgrades and ability to preview schema changes through a packages reload dry-run option. A separate upgrade log can be configured for information about CDB upgrade as well.

Additionally, information on upgrading HA Raft clusters has been added.

Administration Guide

- Updated the section called “Loading Packages” in *Administration Guide* describing the dry-run functionality.
- Added the section called “Packages Upgrades in Raft Cluster” in *Administration Guide* and the section called “Version Upgrade of Cluster Nodes” in *Administration Guide* for Raft HA.

NED documentation update

The old NED Development document has been updated and split into two parts. The part on managing and using NEDs is now incorporated into the Administration Guide, while the part detailing creation of new NEDs is now found in the Development Guide.

Administration Guide

- Added Chapter 14, *NED Administration* in *Administration Guide* on managing and using NEDs.

Administration Guide

- Added Chapter 20, *NED Development* in *Development Guide* on creation of new NEDs.

CHAPTER 3

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HA Raft

Introduced HA Raft, a consensus based high availability solution. HA Raft is based on the Raft algorithm and provides secure and durable state replication with robust automatic cluster management.

Administration Guide

- Added a new section, the section called “NSO HA Raft” in *Administration Guide*, with comprehensive documentation on this new feature.

CDB Compaction

Compaction improvements have been made to schedule periodic compaction and disable compaction on start.

Administration Guide

- Added a new section called Compaction in *Administration Guide* to describe automatic and manual compaction. New **ncs** command option **--disable-compaction-on-start** added to disable compaction on start.

Development Guide

- Added a new section called Periodic Compaction in *Development Guide* to include scheduling of NSO compaction during low utilization periods.

Manual Pages

- Updated the Manual Pages, NCS man-pages Volume 5 in *Manual Pages* to add a new configuration parameter **ncs-config/compaction/delayed-compaction-timeout**.

NSO in Containers

NSO can now run in a container runtime, such as Docker. A pre-built image is available for download from software.cisco.com.

Administration Guide

- Added a new chapter called Running NSO in Containers in *Administration Guide* describing how to run NSO in a containerized environment, such as Docker.

NED Packages

NED packages can now be added to the system without triggering a package reload/service outage.

Administration Guide

- Added a new section called Adding NED Packages in *Administration Guide* to guide how to add new NED packages without triggering service outage. Updated the NED Migration in *Administration Guide* and Upgrade in *Administration Guide* section also.

AAA Infrastructure

NSO authentication mechanism has been improved to include Single Sign-on and package authentication.

Administration Guide

- Added a new section called Package Authentication in *Administration Guide* to describe the NSO package authentication mechanism.

Web UI Guide

- Added a new chapter called Single Sign-on in *Web UI* in the NSO Web UI to describe the NSO package authentication mechanism.

Compliance Reporting

The device, service, and template checks now run in parallel across the CPU cores in the system while utilizing less memory by streaming the report to disk instead of building the report in memory. Compliance templates can check devices for compliance. In addition, strict mode checks that the template configuration is the only configuration on the device. Reports can now be generated in 'sqlite' format, which will produce an SQLite database file as the output of a report run.

User Guide

- Added a new section called Additional Configuration Checks in *User Guide*.

Deprecate RFM in Favor of Nano Services

Updates in documentation to promote using nano services over Reactive FastMAP.

Development Guide

- Updated chapter Developing NSO Services in *Development Guide* to include new content and example to promote using nano services to implement Reactive FASTMAP (RFM) based applications. Also updated section Kicker in *Development Guide*.

Progress Trace

The progress trace framework has been improved to add the concepts of spans and links. A span represents a unit of work or operation that occurs over a span of time. A link is a reference to another span event and can be used to find related events.

Development Guide

- Updated the chapter Progress Trace in *Development Guide*.

Phased Provisioning

NSO now provides Phased Provisioning as a support tool to schedule provisioning tasks. Phased Provisioning gives you more fine-grained control over how and when changes are introduced into the network.

Platform Tools

- Updated the NSO Platform Tools documentation to include Cisco NSO Phased Provisioning.

Observability Exporter

NSO Observability Exporter package allows Cisco NSO to export observability-related data using software-industry-standard formats and protocols, such as the OpenTelemetry protocol (OTLP).

Platform Tools

- Updated the NSO Platform Tools documentation to include Cisco NSO Observability Exporter.