

FlexNet Code Insight 2019 R1 Release Notes

March 2019

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Overview

The **FlexNet Code Insight 2019 R1** is the next generation Open Source security and compliance management solution with the following core capabilities:

- **File-based scanner** designed for fast rescans that fit into a continuous scan process.
- **Automated discovery framework** for detection of various package formats, exe/dll files, and targeted components, with dependency support for multiple package managers.
- **Scan agent framework for** remote scanning on various engineering applications with scan results sent to Code Insight for review, remediation and alerting.
- **Automated inventory review with remediation** according to legal and security policy.
- **Advanced security vulnerability** detection, reporting, alerting, and search; with access to vulnerability information from multiple sources.
- **Web interface** for configuration, analysis, management and reporting functions.
- **Powerful search** for locating high risk inventory per project or across the organization.
- **Integrations** with various engineering systems for a seamless fit into your enterprise IT environment and DevOps lifecycle.
- **REST APIs** with Swagger documentation for programmatic interaction with Code Insight and development of extensions and integrations.

Release Contents

The following functionality is new or improved in this release.

Process Flow

- **My Projects Filter** allows users to quickly get to their assigned projects
- **Inventory Confidence Level** indicates the strength of the discovery technique used to generate the inventory item and the certainty of the finding, helping users to quickly identify items that require triage or additional review. Also available as a pre-scan setting and a search criterion.
- **Inventory Usage Fields** communicate usage information for each inventory item (distribution type, part of product, linking, modification and encryption information)
- **Automatic Assignment of Review and Remediation Tasks** to control task assignment, behavior and notifications at the project level.
- **Project Point of Contact** allows project owners to designate a Legal, Security and Remediation contact for task assignment based on task type. Tasks are routed to appropriate contact based on the task type (requires IP review, security review or remediation).
- **Component/License Lookup Improvements** in the Web UI makes it easier and more intuitive to search for, look up and edit component and license information.

Enterprise Integrations

- **Advanced JIRA Configuration** adds support for custom issue type and custom priority.
- **Visual Studio IDE Scan Plugin** allows developers to perform a local scan in their IDE environment.
- **MS Build Scan Plugin** supports a scan as part of a local/team build.
- **Bamboo Plugin** improvement to support remote agent.

Analysis Workbench

- **Search Term criteria for Advanced File Search** lets analysts search for codebase files containing a specific search term.
- **Show Files Inside Archives in Notes & Detection Tab** so that analysts can more easily determine which file(s) were used to identify the inventory item.

Scanning

- **Rescan Improvements** for faster and more reliable scans on the scan server and remote server.

Security Vulnerabilities

- **RustSec Advisories** as a new security data source (available via Electronic Update service).
- **Support for Vulnerabilities with no CVSS Score** to be displayed as “unknown” in web UI and with a new search option for filtering based on unknown score/severity.
- **Ability to Disable Advisories from Specified Sources** allows users to disable vulnerabilities/advisories from sources such as Secunia, RubySec, and others.

APIs

- **Get License Data API** to programmatically look up all license information based on license ID; information includes license priority, url, description and text.
- **API Support for Private Projects** enforces permissions on private projects so that only users directly assigned to the project, based on their role assignment, can perform specific actions.

Miscellaneous

- **MySQL 8.0 Support**
- **Utf8mb4 Character Set** Default for improved support of foreign languages and special characters.
- **Electronic CL Download** lets users download the full Compliance Library electronically (available in the Product and License Center in Customer Community).
- **Automatic Database Schema Migration** facilitates database schema upgrades.
- **Roles and Permissions** improvements to control access to projects (create, rename, move), tasks (create/close/reassign), alerts (close/re-open) and to restrict access to the scan server filesystem.

Resolved Issues

The following issues are resolved in this release.

Issue key	Summary
SCA-3359	Restrict which users can rename or move projects
SCA-3800	Jenkins Plugin: improve messaging if projects don't exist
SCA-4062	RBAC: role-based access control for projects, tasks, alerts and scan server
SCA-5466	Web UI: Improve user experience for inventory edits (CVL)
SCA-8202	Component Analyzer for Boost library misses doc folder
SCA-9087	Support for security vulnerabilities with no CVSS score and Unknown Severity
SCA-9239	Web UI: My Projects filter for access to projects
SCA-9478	Reports: support for Japanese and other languages in reports (utf8mb4 collation)
SCA-9504	RBAC: Restrict who can create/delete project folders and projects
SCA-9602	Mark Associated Files as Reviewed option not working as expected
SCA-10438	Support for Usage Fields on inventory
SCA-10452	Process Flow: Project point-of-contact config (legal, security, development lead)
SCA-10588	Web UI should not show deleted projects
SCA-10641	Integrations: MSBuild Scan Plugin
SCA-10648	Integrations: VisualStudio IDE Scan Plugin
SCA-10737	Edits to system-generated inventory CVL are not retained on rescan
SCA-11070	Upload: creates temporary file .tmp which does not get deleted after successful upload
SCA-11142	Automatic detection of facebook-ios-sdk items generating false positives
SCA-11404	Multiple Git syncs do not update codebase
SCA-11453	Scan Performance: Improve speed of agent scan (initial and incremental)
SCA-11476	RBAC: Enforce permissions for APIs that access Private Projects
SCA-11488	Artifactory: missing '/' results in exception
SCA-11504	Plugin Performance: NVD download slows down scans
SCA-11517	Emails not triggering if there is space after providing SMTP User name
SCA-11675	Support a Confidence Indicator on Inventory
SCA-11682	Platform Support: MySQL 8.0
SCA-11806	Auto discovered inventory items not listed in FNCI (for a .exe file)
SCA-11848	AWB: Inventory Item URL of an added component is incorrect
SCA-11896	AW: Show files inside archives in Notes & Guidance tab

- SCA-11921 Incorrect version identification of bouncy castle jar (HIGH vulnerability missed)
- SCA-12114 Vulnerabilities: System option to disable vulnerability data from specified sources
- SCA-12212 AW: Disable license highlights in Partial Matches by default
- SCA-12214 AW: Search Term Criteria for Advanced File Search
- SCA-12216 Web UI: ability to see text on page in presence of modals and alerts
- SCA-12356 First level dependencies are not Listed for PHP project
- SCA-12564 Bamboo Plugin: Remote Agent Scan scenario
- SCA-12895 Utf8mb4 character set collation support for MySQL
- SCA-13018 LDAP: Java Null Pointer Exception when LDAP sync finds a duplicate login
- SCA-13035 AutoWriteUp rules apply to only one of many duplicate jars
- SCA-13157 Project Report - json file does not contain full information
- SCA-13172 AW: Files skipped during scanning are missing from Codebase File Tree
- SCA-13204 Web UI: Highlight associated repository item instance
- SCA-13317 Console error when you double click on a project name
- SCA-13407 AW: Evidence Summary and Partial Matches are cut off when the file path is long
- SCA-13425 Full reanalysis is expected but does not occur until subsequent scan
- SCA-13450 Rescan with full reanalysis takes longer than expected
- SCA-13499 Missing role-based access control for creating inventory on Inventory tab
- SCA-13502 Policies are not applied to inventory created from Inventory tab
- SCA-13538 Global Search for security vulnerability should filter Inventory List
- SCA-13542 Wrong version associated to some components (Windows)
- SCA-13568 Discrepancy in inventories count between Linux and Windows
- SCA-13642 Unable to rename a project by changing only the letter case
- SCA-13664 First level dependency scan yields more results than transitive dependency scan
- SCA-13783 ALM: Support custom issue priority and issue type
- SCA-13841 ALM: Screen freezes when "Test Connection" is clicked with empty fields
- SCA-13861 Improve performance for Component Search
- SCA-14123 Edit Inventory improvements to show info icons for components and licenses
- SCA-14137 Missing vulnerabilities due to vendor name mismatch in NVD
- SCA-14250 REST API Get License Data based on license Id
- SCA-14311 Jenkins Plugin: 'Failed to get results from AWUService, skipping to next round' error
- SCA-14332 Don't fail the whole import process if one inventory hits an exception
- SCA-14416 Compliance Library Installer

SCA-14423	Linux directions for Running as a Service starts Tomcat as non-root user
SCA-14647	New user not being saved to the database
SCA-14656	Project Report shows the wrong number of vulnerabilities
SCA-14684	Detection rule for highchart.js
SCA-14722	Component Lookup shows 'No results' text while search is in progress
SCA-14725	Chartjs file shows GPL despite no traces of GPL in the file
SCA-14828	Agent scan produces invalid inventory due to trailing '/'
SCA-14844	License search improvements for dynamic search (naming and info)
SCA-14885	Unable to generate Project report for "projects with more than 1000 inventories"
SCA-14913	File too large to open when Partial Matches tab is selected
SCA-14993	Inventories are not generating for Podfile.lock
SCA-15017	Inventory count mismatch on parallel agent scans
SCA-15020	Generic Plugin: improve usability
SCA-15050	URL missing from components detected by automated discovery
SCA-15181	Web UI: SMTP User Password field should be consistent with other fields
SCA-15253	RBAC: Task assignee who is not a reviewer of the project is able to close the task
SCA-15339	SQL Server installation folder memory increases rapidly due to .ndf file creation
SCA-15379	Exceptions in Tomcat logs during NVD data download
SCA-15563	Misleading log message under certain error conditions
SCA-15578	Jenkins Scan Scheduler plugin does not work per documentation
SCA-15626	Skip JSON file for Audit and Project Reports
SCA-15676	AW: Searching within source matches doesn't work (SQL Server)

Changes to Existing Functionality

Database Schema Migration

As of **2019 R1**, database schema migration is no longer a manual process. The database schema is migrated automatically when Tomcat is started after the application upgrade (according to steps in the [Upgrade Instructions](#) section below). Please note that the database user listed in *core.db.properties* must have minimum privileges to perform the migration steps. These apply primarily to tables and columns: *Alter, Drop, Create, Delete, Index, Insert and Update*. If you suspect that your database user does not have sufficient privileges, you will need to temporarily replace the credentials in *core.db.properties* with those of the database administrator when performing the upgrade and change the credentials back after the upgrade completes. If you are migrating from **FNCI 2018 R2 or earlier**, manual execution of the database migration scripts may still be necessary.

MySQL 8.0 Support

This release introduces support for MySQL 8.0 (also known as MySQL 5.8). Running FNCI in a MySQL 8.0 environment requires the database connector *mysql-connector-java-8.0.13.jar* (available at <https://dev.mysql.com/downloads/connector/j/>). Note this database connector is not compatible with MySQL 5.7. For MySQL 5.7, continue to use *mysql-connector-java-5.1.x-bin.jar* (available at <http://dev.mysql.com/downloads/connector/j/5.1.html>). Please see the Installation Guide for additional requirements (such as configuring binary log files) for running Code Insight on MySQL 8.0.

MySQL New Character Set Default is utf8mb4

In this release, the default character set for MySQL installations is updated from utf8 to utf8mb4 to allow for improved support of foreign languages and special characters. For new installations, select the *utf8mb4* default collation when creating the database schema. The Installer will perform a check for this setting. For upgraded instances, the character set will be automatically updated for every existing table and column when you first start the application after the upgrade. No additional action is required for utf8mb4 support.

Report JSON Output

In previous releases, the JSON data file was included in the report output when running Code Insight reports. As of 2019 R1, it will no longer be standard output. If you prefer that the JSON data file be included in the report output, please contact SCA Support for instructions on how to restore the functionality.

Secunia Advisories

The Secunia Community site will no longer be accessible starting in April 2019.

We plan on making the following changes in a future release of Code Insight to address this situation:

1. Deliver additional Secunia Advisory properties (currently available on the Secunia Community site) to Code Insight via the Electronic Update service.

2. Provide a new Get Vulnerability Details REST API to obtain the additional Secunia Advisory data
 3. Develop a new vulnerability details interface to display additional Secunia Advisory data
- Meanwhile, if you would like to temporarily disable Secunia Advisories from Code Insight, please contact SCA Support for instructions.

License Highlights in Partial Matches

In previous releases, license highlighting was enabled by default in the Partial Matches tab in Analysis Workbench. Based on user feedback, as of 2019 R1, license highlighting is turned off by default. This default setting will be configurable in future releases via User Preferences.

Restricted Access to Scan Server Filesystem

In previous releases, in Project Scan Settings, the project owner was able to navigate the entire scan server filesystem and to select folders for scanning outside of the project codebase folder. As of 2019 R1, this type of navigation and selection are restricted. By default, the project owner can navigate only within the project codebase folder and select files/folders within this folder for scanning. If you prefer to revert the default behavior to allow access to the full scan server filesystem, contact SCA Support for instructions.

Dependency Scanning

Dependency scanning (direct and transitive) is designed to address scanning and of pre-build artifacts. It is not applicable to source code or built artifacts. If scanning with dependencies turned on, please ensure that you are scanning pre-built artifacts. If you attempt to scan other types of files, you are likely to get inconsistent scanning results. All dependency inventory items generated by a dependency scan will be marked with a “low” confidence level, or in the case where the dependency is matched to a component and version in the Code Insight compliance library, the dependency will have a corresponding confidence level of “medium”. Please contact SCA Support if you require additional guidance in scanning dependencies.

Configuring ALM Jira Connector for Custom Issue Types and Priorities

The ALM Jira connector by default supports Jira instances that are configured with Issue Type “Bug” or “Task” and Issue Priorities “1-5”. If the plugin needs to connect to a Jira instance that uses a different set of issue types or priorities, you may use a global property to drive the permitted values in the Jira plugin. Please contact SCA Support for instructions.

File Search by Search Term Criteria

Analysis Workbench now supports the ability to search the codebase by Search Term or the presence/absence of search terms. The new search option can be found in Analysis Workbench > Advanced Search > Add Criteria > File Evidence - Search Term Matches. Note that the search is performed only across search terms that are identified as evidence during the scan based on the scan profile configuration. For example, the Standard Scan Profile contains the Search Term “gpl” and the

search term is found in three files in your codebase; searching the codebase for Search Term = "gpl" will thus return three files.

Inventory Name Update

As part of inventory creation and editing, when you select the component/version/license to associate to the inventory item, the inventory name is automatically populated and updated based on your selection. To ensure that an inventory update does not result in an unintended change to the inventory item name, make sure that you verify the inventory item name before you save any inventory updates.

NVD Feed Changes

The NVD Vulnerability source provider has recently changed the way in which data is supplied to consumers. If you upgraded to 2019 R1 from version 2019 R3 or earlier, we recommend that you rescan each project or create and scan a new project pointed to the same codebase to ensure the latest NVD data is applied.

Inventory Differences

It is not uncommon to see a difference in the quantity of system-generated inventory when upgrading to the latest release of Code Insight (including a decrease in the total number of inventory items). This is due to the ongoing evolution of Automated Discovery rules as we aim to reduce false positives. To better address this scenario, the next release will include a confidence indicator for system-generated inventory.

Known Issues in this Release

Installation / Configuration

SCA-10791: Unable to delete large projects on SQL Server

Attempting to delete a large project (e.g. codebase containing 30K+ files) on a Code Insight instance using SQL Server database may result in a SQL grammar exception. Smaller projects are not impacted. Workaround: Create a To Be Deleted folder, and move all projects to be deleted into this folder until a resolution for this issue is provided.

SCA-15952: Installer unable to install embedded JRE on some Windows 10 instances

Running the installer on some (but not all) Windows 10 systems results in an "Installation: Successful null" message and does not completely populate the <INSTALL_ROOT>\jre directory. Workaround: should you encounter the above error, install the JRE manually. Download JRE 8u192 [here](#). Configure the JAVA_HOME and JRE_HOME variables in catalina.* to point to the newly installed JRE.

SCA-1652 / SCA-5812: Deleted or disabled users are still visible in the Web UI

Users who are deleted from the LDAP server or disabled in LDAP still appear on the Users page in the Code Insight Web UI and in some picklists, such as for projects. Workaround: none. However, deleted or disabled users are blocked from logging into the application and attempting to add one of these users will result in an error.

Scanning and Automated Discovery

SCA-7820: Some NPM version patterns are not supported

When scanning an NPM project, certain versions may not be detected via automated analysis. The following are not supported: # URLs as dependencies: * version containing hyphen as 3.1.9-1 (EX: "crypto-js": "3.1.9-1") and versions of the format X.X.X (Ex: "through": "X.X.X"). Workaround: none.

SCA-7759: Rescan does not process some Scan Profile changes

There are cases when a rescan does not reflect the current state of the codebase and project settings. For example, scanning with transitive dependencies on, followed by a rescan of top-level dependencies only, will not delete inventory generated for the transitive dependencies. Similarly, rescanning a project after changing the codebase files, does not delete inventory generated by the original scan. Workaround: scan the materials in a new project or manually clean up the outdated inventory using bulk delete functionality in Analysis Workbench (multi-select the inventory and right-click to select delete).

SCA-3296 / SCA-2587: Duplicate Inventory for some CocoaPods and Bower projects

When a CocoaPods project has both a .podspec file and a podfile.lock file, duplicate inventory is created in Code Insight. Likewise, inventory that contains both a bower.json and composer.json file, may result in duplicate inventory. Workaround: review and remove duplicate inventory after scan completion; you can select multiple items for deletion using multi-select functionality.

SCA-3000: Scan agent plugins may generate inventory with no selected license

In this release, using the scan agent plugin, you may end up with inventory that has no license associated with it if the scan agent is not able to identify a specific license in the scanned files. In this case, the inventory item is created using Compliance Library data. You will see the inventory item with one or more possible licenses and potentially no selected license. Workaround: recall the inventory item to prevent it from showing up in the published inventory items list.

Export / Import

SCA-7794: Export via Web UI is not available for Inventory projects

The export button is only available on projects of type “Standard”. Projects of type “Inventory-Only”, such as those created for plugin use, do not show the export button. Workaround: use the Export Project REST API to perform export of inventory-only projects.

SCA-3123: Inventory Only import does not process custom vulnerabilities

Import does not process custom vulnerabilities and custom vulnerability mappings on import into a project of type “Inventory Only”. Workaround: run import into a project of type “Standard”.

SCA-3222: Import overrides inventory details

Importing the same inventory into a project that already contains inventory, may cause some details to be overwritten or blanked out. If duplicate inventory (by associated repository item ID) is encountered during the import process, inventory details are overwritten with data from the export data file. Recommended: perform an export of the project prior to importing into the project in case you need to return to the original project state.

Analysis Workbench

SCA-10414: Cannot add more than 30K files to inventory

Attempting to add a folder with more than 30k files to inventory does not work. The associated files are missing from inventory. Workaround: add files to inventory in smaller increments (e.g. no more than 10k files).

SCA-7896: Remote File search shows wrong file count for empty result set

In Analysis Workbench > Partial Matches, searching for a license that is not valid may show a file count result of -1 when the result should be zero. Workaround: none.

SCA-5063: Strings outside of the scrolling pane cannot be found using browser search

In Analysis Workbench > Partial Matches > Strings view, searching for a string using the browser search does not yield a result if the string is outside the scrolling pane. Workaround: open the file outside of Code Insight and search for the string.

Inventory Management

SCA-11520: Policies are not applied on rescan of a project

The triggering event for applying policy to project inventory is “Publish” (not scan). Policies are applied during the initial scan if the default setting “Automatically publish system-created inventory items” is

enabled and not applied during a rescan because inventory is not re-published. This behavior is in place to avoid inadvertent overriding of inventory status due to a change in policy by another user.

Workaround: to apply policy, first recall all inventory and rescan with “Automatically publish system-created inventory items” enabled.

Project Administration

SCA-15928: Cannot delete a project (SQL Server only)

Attempting to delete a project on systems running on SQL server, causes the Web UI to freeze and the project is not deleted. Workaround: Create a temporary “Projects to Delete” folder and move all projects requiring deletion into the folder for future processing. To fully hide the projects from other users, the projects can also be made “private”. We are actively working to resolve this issue and will be issuing a patch or resolution in the next release.

After refreshing the page, create a temporary folder and move all projects you wish to delete into the temporary folder.

Web UI

SCA-2290: Refresh required to update filtered search results in Web UI

Search results are not automatically refreshed when the contained data is edited (i.e. editing an inventory item does not automatically update the search result set to reflect the change). Workaround: use F5 to refresh the page.

SCA-3256: Cases of slow UI performance during scan on systems with hundreds of projects

On systems with more than 500 projects, users may experience a performance lag while a scan is running. Workaround: wait for the scan to complete prior to bringing up the Web UI.

Email Notifications and Reports

SCA-11263: Project Report hyperlink on tasks worksheet for inventory does not work

Clicking on an inventory link in the Project Report takes the user to the login page even if user is currently logged in. This is a bug in Excel. Workaround: Log into the application. Go back to the Excel report output and click on the hyperlink again. This is an issue only for inactive sessions.

SCA-8975 / SCA-11193: Incorrect URL(s) in email notifications due to multiple IP addresses

In cases where Code Insight is running on a server that uses multiple IP addresses (e.g. a server that has both a wired and wireless active network connection), the core server address cannot be accurately resolved. As a consequence, users may encounter an unexpected URL in the email notification received from Code Insight. This issue is most often seen if the Code Insight core server is configured as “localhost” instead of a full IP address. Workaround: Ensure that only a single network interface controller is enabled on the core server running Code Insight. As an added measure, configure the core server using a numerical IP address instead of a “localhost”.

REST APIs

SCA-7950: Page and size parameters are not working with some REST APIs

Limiting the result set returned by some REST APIs is not currently supported. Using the page and size parameters with the Component Lookup and Get Project Inventory APIs (and possibly others) returns the full result set. Workaround: none. Issue will be addressed in an upcoming release.

Plugins

SCA-11736: Eclipse Plugin

At this time, the Eclipse plugin is only supported with Java projects and not with General projects. Workaround: none.

SCA-3378: Jenkins Scan Plugin – downgrade not supported

After a Jenkins plugin upgrade, a downgrade button option is available in the Web UI. Clicking on the option results in a 404 error. Workaround: none.

Archives

SCA-6564: Files inside archives are not available in the codebase file tree

If processing of archives is enabled during scanning, the archive is scanned recursively to produce inventory and file evidence for all files inside the archive. However, the files inside archives are not available in the codebase tree. Workaround: unpack the archive prior to scanning or open the archive file outside of Code Insight to see the inner files of archives.

SCA-5871: Archive scanning does not handle archives/path containing “\$” character

If the archive file name or archive file path contains a “\$” in the name, the external archive extractor (7z) is not able to extract the file for archive scanning. Workaround: rename the file or path to remove the “\$” character.

Upgrade Instructions

This upgrade procedure is applicable for FNCI v7 upgrades only. It can be used to upgrade from **FNCI 2017 R1** or later version to **FNCI 2019 R1**. Do not use it to upgrade from **FNCI v6** to **FNCI v7**.

Upgrade Considerations

Definitions

In the following procedure:

- **vCurrent** refers to the currently installed version of Code Insight (for example **FNCI 2018 R4**)
- **vNew** refers to the Code Insight version to which you are upgrading (for example **FNCI 2019 R1**)
- **catalina.*** refers to the **catalina.bat** file on Windows systems or **catalina.sh** file on Linux systems

Instance Upgrade

- The **FNCI 2019 R1** instance (**vNew**) is installed in parallel to your current instance (**vCurrent**) such that no files are overwritten.

Database Upgrade

- The **FNCI 2019 R1** instance will use your **vCurrent** database schema.
- There are database schema changes from **FNCI 2018 R4** to **FNCI 2019 R1**.
- As of **FNCI 2019 R1** all database migration is performed automatically when you start Tomcat. Manual execution of the database migration scripts is required only if you are migrating from **FNCI 2018 R2** or earlier version to **FNCI 2019 R1**.
- The user specified in **core.db.properties** must have minimum database privileges to perform the migration steps. The following privileges are required: *Alter, Drop, Create, Delete, Index, Insert and Update*. If you suspect that the database user does not have sufficient privileges, you will need to temporarily replace the credentials in **core.db.properties** with those of the database administrator when performing the upgrade and change the credentials back after the upgrade completes.
- **Ensure that you perform a full backup of the database schema prior to upgrade!**

Upgrade Steps

Step	Summary	Description	Required / Optional
1	Download & Install FNCI 2019siR1	<p>Download the zip archive of the FNCI 2019 R1 release from the Product and License Center in the Customer Community portal.</p> <p>Unzip the archive into the vNew directory, parallel to the vCurrent directory. For example, if your vCurrent directory is D:/FNCI/2018R4, your vNew directory will be D:/FNCI/2019R1.</p>	Required

2	Shut down Tomcat	Shut down Tomcat to stop your vCurrent instance: <ul style="list-style-type: none"> Execute shutdown.bat or shutdown.sh in vCurrent/tomcat/bin/ 	Required
3	Back up Database	Back up your vCurrent database schema.	Required
4	Migrate Database	<p>If migrating from 2018 R3 or 2018 R4: Skip this step since the database schema will be migrated automatically when you first start the application after the upgrade.</p> <p><i>* Note that the user specified in core.db.properties must have minimum database privileges to perform the migration steps. The following privileges are required: Alter, Drop, Create, Delete, Index, Insert and Update. If you suspect that the database user does not have sufficient privileges, temporarily replace the credentials in core.db.properties with those of the database administrator when performing the upgrade and change the credentials back after the upgrade completes.</i></p> <p>If migrating from 2018 R2 or earlier: To migrate the vCurrent database schema, apply the database migration script(s) located in vNew/dbScripts/install/<database_type>/ in consecutive order from earliest to latest.</p> <p>For example, to migrate from FNCI 2017 R1 to FNCI 2018 R3, you should run all the migration scripts starting with migrateTo2017R1SP1.sql and ending with migrateTo2018R3.sql. After 2018 R3, the database schema will be migrated automatically when you first start the application after the upgrade.</p>	Required for FNCI 2018 R2 or earlier versions only.
5	<i>Steps 5a-5g involve copying files from the vCurrent home directory to the vNew directory.</i>		
5a	License Key	Copy vCurrent/codeInsight.key to vNew/ <i>* If you have a new license key provided by Flexera, copy the new license key file to vNew/ instead.</i>	Required
5b	Database Connector	Copy one of the following database connectors to vNew/tomcat/lib/ <ul style="list-style-type: none"> MySQL 5.7: vCurrent/tomcat/lib/mysql-connector-java-5.*-bin.jar MySQL 8.0: mysql-connector-java-8.0.13.jar SQL Server: vCurrent/tomcat/lib/sql*.jar 	Required
5c	Server and Database Properties	Copy the following property files to vNew/config/core/ : <ul style="list-style-type: none"> vCurrent/config/core/internal.properties vCurrent/config/code/core.db.properties <p><i>* If you are using a new license key file, change the encrypted password in the core.db.properties file to its plaintext form and save the file.</i></p>	Required

5d	Project Data Indexes	<p>Copy the vCurrent/proj_indexes/ folder to vNew/</p> <p><i>* If you are migrating from a version prior to FNCI 2018 R1, skip this step as the index format has changed. Instead, rescan the projects to re-create the indexes.</i></p>	Required
5e	Data Library Indexes	<p>Copy the vCurrent/pdl_indexes/ folder to vNew/</p>	Required
5f	JRE	<p>To use the JRE embedded with Code Insight: Copy the vCurrent/jre/ folder to vNew/.</p> <p>To use the system JRE: Skip this step.</p> <p><i>* If your JRE version is older than JRE 8u192, please consider upgrading. The download is available here.</i></p> <p><i>* Note the location of your JRE. You will need to supply this information in Step 6 when configuring JAVA_HOME and JRE_HOME variables in the catalina.* file.</i></p>	Required
5g	Reports	<p>Copy the vCurrent/reports/ folder to vNew/</p>	Optional
5e	Custom Properties	<p>If you manually configured advanced auto discovery settings in the codeaware.properties file and wish to retain the settings, copy vCurrent/config/codeaware.properties to vNew/config/.</p> <p>If you do not have the file in your vCurrent instance or do not need to retain the settings, skip this step.</p> <p><i>* Note: the majority of the settings previously configurable via codeaware.properties file are now available in the Web UI.</i></p>	Optional
6	Configure Tomcat	<p>Edit the vNew/tomcat/bin/catalina.* file as follows:</p> <ul style="list-style-type: none"> Set JAVA_HOME= to the absolute path of your JRE. This is either the system JRE path or the embedded JRE path if you followed step 5 (vCurrent/jre/) Set JRE_HOME= to the absolute path of your JRE. This is either the system JRE path or the embedded JRE path if you followed step 5 (vCurrent/jre/) Set CATALINA_OPTS= to the same value as set in vCurrent/tomcat/bin/catalina.* For example, CATALINA_OPTS=-Xms3261m -Xmx26088m Set -DcodeinsightInstallPath=<vNew> 	Required

		<p>For example, -DcodeinsightInstallPath="D:/FNCI/2019R1"</p> <p><i>*For Proxy and SSL configuration, additional edits to the catalina.* file are necessary. See the next steps.</i></p>	
7	Configure Proxy	<p>If your current FNCI instance is running over a proxy, copy the following values from the vCurrent/tomcat/bin/catalina.* to vNew/tomcat/bin/catalina.*</p> <ul style="list-style-type: none"> • -Dhttps.proxyHost • -Dhttps.proxyPort • -Dhttps.proxyUser • -Dhttps.proxyPassword <p><i>To configure Proxy for the first time, see Configuring a Networking Proxy Server Connection chapter in the Installation & Configuration Guide.</i></p>	Optional
8	Configure SSL	<p>If your current FNCI instance is running over SSL</p> <ul style="list-style-type: none"> • Copy the following SSL configuration files from vCurrent to vNew: <ul style="list-style-type: none"> ○ vCurrent/tomcat/conf/server.xml ○ vCurrent/tomcat/codeinsight.jks • Edit the vNew/tomcat/bin/catalina.* file: <ul style="list-style-type: none"> ○ Set -Dcodeinsight.ssl=true <p><i>To configure SSL for the first time, see the Enabling Secure HTTP Over SSL section in the Installation and Configuration Guide.</i></p>	Optional
9	Configure SSO	<p>If your current FNCI instance is running over SSO, copy the following files and folders from vCurrent to vNew:</p> <ul style="list-style-type: none"> • vCurrent/config/core/core.sso.common.properties • vCurrent/core/security/ • vCurrent/config/core/env.properties • vCurrent/config/core/security/SPMetadata.xml • vCurrent/config/core/security/IDPMetadata.xml <p><i>To configure SSO for the first time, see the Configuring Code Insight to Use Single Sign-On chapter in the Installation & Configuration Guide.</i></p>	Optional
10	Running as a Service	<p>If your current FNCI instance is running as a service on Windows:</p> <ul style="list-style-type: none"> • Copy vCurrent/tomcat/bin/service.bat to vNew/tomcat/bin/ <p>If your current FNCI instance is running as a service on Linux:</p> <ul style="list-style-type: none"> • Edit /etc/systemd/system/OpenSpecimen.service <ul style="list-style-type: none"> ○ Set ExecStart=<vNew>/tomcat/bin/startup.sh <p><i>To configure FNCI to run as a service for the first time, see the Running Code Insight as a Service chapter in the Installation & Configuration Guide.</i></p>	Optional

11	Update Plugins	<p>If you are using one or more Code Insight scan agent plugins to scan remotely, you may need to upgrade the plugin to be compatible with FNCI 2019 R1.</p> <ul style="list-style-type: none"> • Obtain the latest plugins zip file from the Product License Center in the Customer Community portal. • Install and configure the plugin on the remote server according to the instructions in the Plugins Guide. • Delete the scan agent index from the remote server (typically located in <user_home>/codeaware on the remote server) so that the index will be rebuilt using the new plugin. • Ensure that the environment variable CODEINSIGHT_ROOT is set on the remote server. • Verify that the 7-zip tool is installed on the remote server. If missing, copy it from vNew/7-zip. 	Optional
12	Start Tomcat	<p>Start Tomcat in the vNew instance:</p> <ul style="list-style-type: none"> • Execute startup.bat or startup.sh in vNew/tomcat/bin/ <p><i>* The database schema will be automatically migrated when you start Tomcat.</i></p>	Required
13	Launch FNCI	<p>Open a web browser and navigate to: http://<SERVER_HOST_NAME>:<PORT>/codeinsight/. For example, http://localhost:8888/codeinsight/.</p>	Required
14	Run Electronic Update	<p>Go to Administration > Electronic Update to run the update to obtain the latest compliance library and automated discovery rules data.</p>	Required
15	Rescan	<p>To benefit from the latest automated detection rules and updates to the data library, a rescan of existing projects is recommended. Alternatively, you can create and scan the same codebase in a new project.</p>	Optional

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