



# Upgrading Prime Service Catalog

## Overview

This chapter describes how to perform an upgrade from a previous release of Cisco Prime Service Catalog to this release.

## Release Upgrade Path

This upgrade process supports direct database component upgrade from Service Catalog Release 10.1 or above to Release 12.1. To bring the database schema to the supported upgrade level, the database installer program for the most recently available service pack, as listed in [Table 6-1](#) below, has to be executed against the database.

**Table 6-1** Direct Upgrade Paths

From Release Version	To Release Version
11.0	12.1
11.1	12.1
11.1.1	12.1
12.0	12.1
12.0.1	12.1

If you are upgrading from releases prior to 11.0, first upgrade your installation to release 11.0 using the 11.0 installer. Then without starting the Prime Service Catalog instance, run the 12.1 installer to upgrade the instance to release 12.1.

## Limitations and Notes

The following section includes product limitation or important notes that should be considered when upgrading to this version.

### New Platform Support

Please refer to the [Cisco Prime Service Catalog Compatibility Matrix](#) for changes in platform support in this release.

Highlights of the new platforms are:

- For release to release upgrade, use a new folder as installation directory, instead of using the existing directory. However, you can continue using an existing database.
- Make sure KEK\_new.txt file is saved. And while upgrading you will be prompted to provide kek\_new.txt, the file that you saved from previous installation should be provided to continue the installation. If KEK doesn't match you will not be able to start the Prime Service Catalog.
- Operating System: Prime Service Catalog will only support Windows Server 2012 R2 and Red Hat Enterprise Linux Server 7.3. If your existing Prime Service Catalog installation was done on a different Windows or Linux Operating System, make sure that you set up new machines with the newly supported Operating System, and prepare the machines with all the necessary prerequisites.
- SQL Server: If your existing database is on SQL Server 2008, you must perform the tasks described in the [Preparing the Upgrade Environment](#) section, prior to running the upgrade for Prime Service Catalog.
- Oracle: If your existing database is on Oracle 12c, you must perform the tasks described in the [Preparing the Upgrade Environment](#) section, prior to running the upgrade for Prime Service Catalog.
- Audit Log Data: Before the upgrade, migrate the Audit Log data from previous release Prime Service Catalog 10.1/11.0/12.0 to Prime Service Catalog 12.1. For more information, see [Migrating the Audit Log Data](#) section.

After the upgrade is completed, disable the Change Data Capture feature as detailed in [Step 8](#) of the [Performing Post-upgrade Tasks](#).

- WebSphere: WebSphere Application Server is no longer supported. Please contact Cisco TAC if you have WebSphere, and is interested in upgrading to Prime Service Catalog 12.1.
- Oracle Java: Oracle JDK 8 Update 91 (or higher update) must be used for WildFly on Windows Operating System, and for WebLogic Application Server on any Operating System. You must install Oracle JDK 8 Update 91 (or higher update) on your machine prior to running the upgrade for Prime Service Catalog. For WebLogic, modify the JAVA\_HOME property in your WebLogic's commEnv.cmd (or commEnv.sh) script to use the correct version of JDK. If you have a clustered WebLogic environment, you must perform this step on every node in the cluster.
- OpenJDK: Red Hat OpenJDK 8 (version 1.8.0\_91 or higher 1.8.0\_x) must be used for WildFly on Red Hat Enterprise Linux Operating System. You must install OpenJDK 1.8.0\_91 (or higher 1.8.0\_x) on your machine prior to installing Prime Service Catalog.
- WebLogic: Ever since release 10.0 of Prime Service Catalog, WebLogic 12c (12.2.1) must be used. If you are on an older release of Prime Service Catalog and use an older version of WebLogic, you must first upgrade your WebLogic to version 10.3.6 or install a brand new WebLogic 12c (12.2.1) environment, and configure your WebLogic server as described in Chapter 5, prior to running the upgrade for Prime Service Catalog.
- Browser: Please refer to the Cisco Prime Service Catalog Compatibility Matrix for a list of new browsers that are supported for this release of Prime Service Catalog.

## Rating Facet

If you have an existing facet with display name as **Rating**, make sure that you rename this facet before upgrading. This is to avoid conflict with the new Rating facet available in current Cisco Prime Service Catalog release.

## New JDBC Drivers

New JDBC drivers for Oracle and SQL Server are shipped with this release of Prime Service Catalog. If you are using WebLogic application server, you will need to delete the existing REQUESTCENTERDS datasource (which used the DataDirect driver in newScale\_drivers.jar), and recreate the REQUESTCENTERDS datasource using the new JDBC driver (either ojdbc7.jar for Oracle or sqljdbc4.jar for SQL Server). More details are described in the [Preparing the Upgrade Environment](#) section.

**Note**

If you have any customization that makes use of the newScale unified driver, it has to be replaced with the appropriate JDBC driver based on the database type.

## Service Import/Export Not Backwards Compatible

Service Import/Export is not backwards compatible to previous releases. Services exported in prior releases cannot be imported to this release. Please be sure to export any services you maintain in a code repository after the upgrade is complete.

## Catalog Deployer Packages Not Backwards Compatible

Due to the change in the XML format in Catalog Deployer, packages in “Deployed” or “Received for Deployment” status are no longer usable. The content also may not render. For this reason, all packages pending deployment should be processed before upgrading to Release 12.1.

## What is Upgraded

The upgrade process outlined in this chapter upgrades Service Catalog software as well as the Service Catalog database to support new capabilities provided in Service Catalog. These capabilities include more stringent control over data and referential integrity, ensuring enhanced data quality of the Service Catalog database.

## What is Not Upgraded

The upgrade process identifies all objects in the existing database that are not recognized as part of the application schema.

- Unrecognized objects are automatically removed from the database, if they interact with any Service Catalog tables. For examples, the following objects (if they exist) will be dropped:
  - An unrecognized index on a Service Catalog table.
  - An unrecognized trigger on a Service Catalog table.
  - An unrecognized constraint on a Service Catalog table.
  - An unrecognized foreign key constraint that points to a Service Catalog table.
- All other types of unrecognized objects that do not interact with Service Catalog tables will only be reported and not dropped. For examples, the following objects (if they exist) are left alone: tables, columns, sequences, stored procedures, functions, and indexes that do not reference Service Catalog tables, constraints that do not affect Service Catalog tables.

## Assumptions and Best Practices

- You must create and validate database backups and file system backups before upgrading. This is critical because you can rollback an upgrade only by restoring your databases and file system manually; no rollback function is built into the upgrade program.
- The production site will be down during the upgrade process, so you should schedule the upgrade for maintenance periods.
- You are upgrading from 10.0 or later. See the [Release Upgrade Path](#).

## Prerequisites

- A sandbox environment for upgrade.
- Database backups and a well-rehearsed restore process.
- A complete list of all customizations (custom style sheets, JavaScript libraries, LDAP Java mapping code, and so on.)
- All databases should meet the requirements as stated in the [Configuring the Service Catalog Database](#).

## High-Level Upgrade Procedure

Your organization most likely has already developed an upgrade methodology for Service Catalog solutions or has best practices for other enterprise software upgrades. The methodology described in this guide is useful to either follow as an alternate or to augment your established practices for specific new upgrade requirements.

We recommend that you create a sandbox environment where you rehearse a dry run of the upgrade procedures for your existing Service Catalog system. Take notes of any technical issues and resolutions that may arise along the way. This will help you prepare for the actual upgrade of your production system. This dry run exercise will also provide you with an overall timeline of the upgrade process from beginning to end, which can help you plan the appropriate system downtime needed to complete the upgrade of your production system.

Once you can successfully upgrade the system in your sandbox environment and feel comfortable with the process, you can schedule the upgrade of your production system, and repeat the same process by following the instructions in this guide, in conjunction with the technical notes that you prepared during the dry run exercise.

At a high level, the upgrade procedures are as follows:

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**Step 1** Back up the current production databases and restore them onto another set of databases.



**Note**

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You must restore your database backups onto a brand new SQL Server 2012 SP3 or 2016 database or an Oracle 12c database.

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- Step 2** Create a sandbox environment that has all the prerequisites for Release 12.1, including new version of application server, Java and JDBC driver. This is the environment where you will be executing the upgrade program from the Release 12.1 package and needs to be configured to connect to the copy of production databases.
- Step 3** Execute the Service Catalog setup program as described in the [Installing Prime Service Catalog on WildFly Application Server](#) or [Installing Prime Service Catalog on WebLogic Application Server](#). On the Service Catalog Database panel of the installation wizard, enter the connection information for the copy of the production database.
- Step 4** Click **Next**.
- Step 5** Click **Upgrade Existing Database**.
- Step 6** Click **Validate Schema**.
- Step 7** Click **View Errors**. If any schema errors in your database are reported, work with your database administrator and application programmer to fix the schema errors. Some schema errors may come with a *suggested* SQL command to fix the error, which you can discuss with your DBA and application programmer to see if it is applicable for your error condition. Others may require that you consult with the Cisco Technical Assistance Center (TAC) to come up with an appropriate fix. Document all of the validation errors and resolutions you encounter.
- Step 8** Click **Validate Schema** iteratively after each time you fix the validation errors, until there are no more errors reported.
- Step 9** Click **Validate Data**.
- Step 10** Click **View Errors**. If any data errors in your database are reported, work with your database administrator and application programmer to fix the errors in the data. There are two types of data errors—Validation Errors and Auto-Repairable Errors. Some validation errors may come with a *suggested* SQL command to fix the error, which you can discuss with your DBA and application programmer to see if it is applicable for your error condition. Others may require that you consult with the Cisco Technical Assistance Center (TAC) to come up with an appropriate fix. Document all of the validation errors you encounter and the resolutions that you come up with.
- Step 11** Click **Validate Data** iteratively after each time you fix the validation errors, until no Validation Errors are reported. It is OK to have some Auto-Repairable Errors. They will be programmatically fixed in the next step.
- Step 12** Click **Repair Database**. This function will programmatically fix all Auto-Repairable Errors reported in the previous step.
- Step 13** When the repair database function completes, click **Next** to complete the remaining pages of the Service Catalog installation wizard.
- Step 14** After the installation wizard completes the upgrade installation, reapply any necessary customizations on your sandbox environment.
- Step 15** Perform user acceptance testing for the upgraded system in the sandbox environment.
- Step 16** Gather all of the technical notes that you have created along the way.
- Step 17** At this point, if you feel that you are still not comfortable with the upgrade process, you may want to clean up your sandbox environment, and repeat all steps one more time in the sandbox environment. This time, follow the instructions in this guide, in conjunction with the technical notes that you have documented so far.
- Step 18** When you are ready, repeat the entire upgrade process on your production environment.
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# Upgrading Prime Service Catalog

Several platforms have been de-supported since Release 12.1. Therefore, review Release Upgrade Path to find out whether you need to upgrade the versions of the database, application server, Java, web server, or Operating System, prior to upgrading Prime Service Catalog.

If the platform that your existing Service Catalog is running on is no longer supported, you need to prepare a new environment for one of the newly supported platforms, as described in [Chapter 2, “Installation Requirements”](#).

Upgrading Service Catalog involves:

- Performing preupgrade tasks while the current version of the application is up and running
- Preparing a sandbox environment that meets the newly supported platforms and prerequisites for the Service Catalog Release 12.1 installation
- Running the Service Catalog installation wizard and selecting Upgrade Existing Database.
- Validating the integrity of preupgrade database, and repairing any schema or data issues found
- Performing post-upgrade tasks

The upgrade procedures are described in more detail in the following sub-sections:

- [Performing Preupgrade Tasks, page 6-6](#)
- [Preparing the Upgrade Environment](#)
- [Run the Installation Wizard to the Validation Page](#)
- [Validating Database](#)
- [Validating Schema](#)
- [Validating Data](#)
- [Repairing the Database](#)
- [Completing Installation](#)
- [Performing Post-upgrade Tasks](#)

## Performing Preupgrade Tasks

Perform the following mandatory preupgrade tasks on your production environment.

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- Step 1** If you do not have the Advanced Reporting module, proceed to Step 2. Otherwise, you need to perform several preupgrade tasks for the Advanced Reporting module, as described in the [Performing Preupgrade Tasks for Reporting](#). Perform only the preupgrade steps for the Advanced Reporting module, then return to this section, and complete the rest of the procedures outlined here.
- Step 2** If there are application server version changes, the unprocessed messages residing in the JMS queues for Service Link will not be migrated automatically to the new application servers. Prior to upgrade, you should check that there are no unprocessed messages in the queues and resolve any that may be present. Once the queues are clear, stop all Service Link agents, so that you have a chance to verify Service Link communication before any agent is restarted after upgrade.
- Step 3** Catalog Deployer does not support deploying packages between different release levels of Service Catalog. Therefore, prior to upgrade, ensure that you have deployed all assembled packages that are ready for deployment. Otherwise, you will not be able to deploy them after your database is upgraded to

Release 12.1. Furthermore, as you approach the time for the upgrade, for any new package that you assemble in your current system, you might want to include the release version of Service Catalog in the description. This will make it easier for you to identify different release versions of packages.

- Step 4** An optional activity that may be included in the preupgrade checklist is to review the list of deployed packages. You may want to export and delete the packages that no longer need to be maintained online. Since these packages can no longer be deployed (once the upgrade has taken place), keeping them online is useful only for querying deployment history. By deleting these packages, you recover space in the database. Such clean-up activities can be conducted in all systems (development, test/QA, and production).
  - Step 5** Stop all Service Catalog services on the application server.
  - Step 6** Back up all Service Catalog databases. Make sure that you back up all Service Catalog-related databases if you have more than one. For example, in addition to the Service Catalog database, you may have a separate Data Mart database or Content Store database (which is used by Cognos). If so, you need to back up all databases.
  - Step 7** Back up all customization scripts or files. The upgrade process will not preserve any customizations on your existing installation. Therefore, after the upgrade, you may need to reapply some or all of these customizations on your system if they are still applicable.
  - Step 8** Back up the installation directory. Back up the directory where you originally installed the Service Catalog software.
  - Step 9** Migrate the Audit Log Data. See [Migrating the Audit Log Data](#).
  - Step 10** Proceed to the [Preparing the Upgrade Environment](#) section below.
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## Migrating the Audit Log Data

To migrate the Audit Log data from an older release (such as 10.1 on Oracle 11g) to the current release (12.1 on Oracle 12c), the CDCADMIN schema should be imported into the current release.

Before the upgrade process, run the following commands to create the appropriate table spaces in the current release:

### 1. create table space cdc\_tbsp

```
CREATE TABLESPACE cdc_tbsp DATAFILE
'cdctbsp.dbf' SIZE 525M AUTOEXTEND ON NEXT 512M MAXSIZE 20G
EXTENT MANAGEMENT LOCAL UNIFORM SIZE 1m
SEGMENT SPACE MANAGEMENT AUTO;
```

### 2. create schema cdcadmin

```
CREATE USER cdcadmin
IDENTIFIED BY cdcadmin
DEFAULT TABLESPACE cdc_tbsp
TEMPORARY TABLESPACE temp
QUOTA UNLIMITED ON cdc_tbsp;
```

After executing the above commands, ensure that the RCUser schema is prepared in the same name as was used earlier, and then import the Audit Log data into the CDCADMIN schema, which was created now.

## Preparing the Upgrade Environment

Skip this section if you are ready to perform the upgrade on your production environment.

In this section, you will be creating a sandbox environment which you will use to perform the dry run exercise for the upgrade process. Once you are comfortable with the upgrade process and are armed with the technical notes that you have collected during the dry run exercise, you can then begin the upgrade procedures on the actual production system.

### Before you Begin

Perform the mandatory preupgrade tasks in [Performing Preupgrade Tasks, page 6-6](#).

To prepare a sandbox environment:

- Step 1** Restore the production database backups onto another set of databases. If you have enabled Audit Logs in Service Catalog Version 10.1 in your SQL Server environment, execute the following commands to display Audit Log records when restoring database during an upgrade from Service Catalog Version 10.1 to 12.1:

When restore is to be done on same host:

```
RESTORE DATABASE DB_101_RESTORE FROM DISK='C:\Databases\Backup\DB_101.bak'
WITH
MOVE 'DB_101' TO 'C:\Databases\Backup\DB_101.mdf',
MOVE 'DB_101_log' TO 'C:\Databases\Backup\DB_101_log.ldf'
, KEEP_CDC
```

When restore is to be done on a different host:

```
RESTORE DATABASE DB_101_RESTORE FROM DISK='C:\Databases\Backup\DB_101.bak'

WITH
MOVE 'DB_101' TO 'C:\Databases\Backup\DB_101.mdf',
MOVE 'DB_101_log' TO 'C:\Databases\Backup\DB_101_log.ldf'
, KEEP_CDC

USE DB_101_RESTORE
GO
EXEC sys.sp_cdc_add_job 'capture'
GO
EXEC sys.sp_cdc_add_job 'cleanup'
GO
```



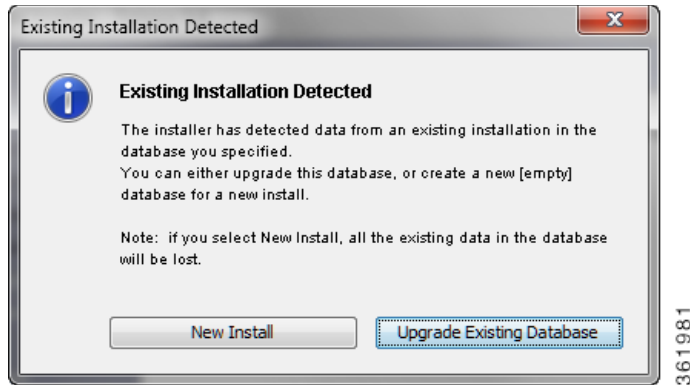
### Note

Audit Logs are displayed by default for database backup operations during a direct upgrade of Service Catalog 10.1 to Service Catalog 12.1.

- Step 2** If you are using Oracle DBMS, it is recommended that you execute recompile the statistics for each database after it is restored. This step is essential for enhancing the performance of upgrade processes on large databases. Make sure that you meet all the requirements as described in the “Configuring Oracle” section of Chapter 3.
- Step 3** If your database is SQL Server, you must activate the READ\_COMMITTED\_SNAPSHOT by performing the following:
- a. Connect to your SQL Server as the “sa” user, and set the SQL Server in single-user mode.





**Figure 6-1 Existing Installation Detected****Step 4** Click **Upgrade Existing Database**.

The Validation page of the installation wizard appears.

The Service Catalog installation wizard will not allow you to upgrade an existing database until it has been successfully validated and repaired. The Validation page is designed so that the functions are executed in sequential order:

1. Validate Schema
2. Validate Data
3. Repair Database

You cannot execute Validate Data without having executed Validate Schema at least once. You cannot execute Repair Database without having executed Validate Data at least once.

You can execute each function multiple times. However, each time that you execute Validate Schema, the program reinitializes as if you start the validation process from the beginning. For example, let's say you have just completed Validate Data. You can proceed with Repair Database. But, instead you choose to execute Validate Schema again. Because you execute Validate Schema, the system is reinitialized, and thus after you complete Validate Schema, you cannot jump to Repair Database. You must execute Validate Data next.

**Step 5** Proceed to the [Validating Database](#) section below.

## Validating Database

Skip this section and proceed to the [Validating Schema](#) section if you are already familiar with the database validation process during the Prime Service Catalog upgrade. You can always come back to review this section when the Validate Schema and Validate Data steps return any error.

The functions on the Validation page verify the integrity of your existing schema and database. The results for all validation scripts are stored in a table called SchValidationLog in the database. See the [SchValidationLog Table](#) for instructions to view this log file. All possible validation entry ErrorLevels and their descriptions are shown in [Table 6-2](#) below.

**Table 6-2 Validation ErrorLevels**

ErrorLevel	Description
inform	<p>The validation test results in an anomaly that is deemed harmless for the upgrade process, as well as for the application. For example, the validation detects a table that does not belong to the database schema. The existence of this table will not cause the upgrade to fail, nor will it have any ill effect on the application.</p> <p>These unrecognized objects that do not interact with Service Catalog tables are flagged with a status of “inform” in the SchValidationLog table. The following objects (if they exist) are reported only: tables, columns, sequences, stored procedures, functions, indexes and constraints that do not interact with Service Catalog tables. These objects are reported only, and are left alone.</p> <p>All validation entries with ErrorLevel= “inform” will be ignored.</p> <p>No action is required on your part to address these entries.</p>
inform: auto-repairable	<p>The data validation test results in a data error that is deemed to be harmful. However, this type of error can be safely and programmatically fixed by the Repair Database function.</p> <p>Most errors of this type are the result of internal inconsistencies, possibly introduced by previous upgrades or import utilities, and the repair typically consists of restoring referential or data integrity.</p> <p>The RepairScript column in the SchValidationLog table shows the SQL statement that is used to repair the error.</p> <p>No action is required on your part.</p>
inform: auto-repaired	<p>The Repair Database function executes the sql statement documented in the RepairScript column to fix the error that was reported as “inform: auto-repairable” above.</p> <p>All validation entries with ErrorLevel= “inform:auto-repaired” are shown in the SchValidationLog table, and in the Validation Errors table when you click View Errors for the Repair Database function.</p> <p>No action is required on your part.</p>
inform: pending-repair	<p>The validation test results in an anomaly that is deemed to be harmful to the upgrade process, but one that will be programmatically repaired during the upgrade process.</p> <p>Missing or modified objects are flagged with a status of “inform: pending-repair” in the SchValidationLog table. An example of this type of anomaly is a missing index or a missing primary key constraint. The missing index or primary key constraint will be created correctly, if it does not exist.</p> <p>No action is required on your part.</p>

**Table 6-2 Validation ErrorLevels (continued)**

ErrorLevel	Description
inform: pending-removal	<p>The validation test detected an unrecognized database object that touches a Service Catalog table. The existence of this object may prevent the upgrade from completing successfully. These unrecognized objects are flagged with a status of “inform: pending-repair” in the SchValidationLog table.</p> <p>For example, the following objects (if they exist) are flagged for removal: a) an unrecognized index on a Service Catalog table, b) an unrecognized trigger on a Service Catalog table, c) an unrecognized constraint on a Service Catalog table, and d) an unrecognized foreign key constraint that points to a Service Catalog table. These objects are automatically deleted.</p> <p>No action is required on your part.</p>
error	<p>A validation test has resulted in a hard “error” that cannot be fixed programmatically. Usually, this type of error is related to a bad data relationship, such as missing row, or duplicate entries.</p> <p>All validation entries with ErrorLevel= “error” are shown in the SchValidationLog table, and in the Validation Errors table, when you click View Errors for the Validate Schema or Validate Data function.</p> <p>The TestType column indicates the type of error, and the TestDetail column contains the SQL statement that was used for the validation test. This SQL statement should provide you with some hints regarding the error. This error would cause the upgrade to fail; thus, when such an error is detected, it must be fixed before proceeding with the upgrade.</p> <p><b>The application administrator or database administrator must manually fix all errors of this type, and then run the same Validate function again until it reports no more errors.</b></p> <p>Contact the Cisco Technical Assistance Center (TAC) if you need assistance on how to fix validation errors. In some cases, the RepairScript column may contain a <i>suggested</i> SQL statement that can be used to fix the error. Consult with your application administrator or DBA to ensure that such a repair script is applicable for your specific situation.</p> <p>Document clearly how each validation error is fixed. You will need your notes when you have to repeat the upgrade procedures on another environment.</p>

As described in [Table 6-2](#) above, only validation entries with ErrorLevel= “error”, as shown in the Validation Errors table when you click View Errors for the Validate Schema or Validate Data function, must be manually fixed. All other validation errors, reported in the SchValidationLog table, are automatically handled.

After you manually fix all validation entries with ErrorLevel= “error”, click the same Validate function again to verify that no more errors are reported. It is possible that as a result of your manual fixes, new validation errors may appear. If this happens, you have to repeat the Validate function again, and fix the validation errors, iteratively.

We recommend that you review and address validation errors by doing so iteratively first for all schema validation errors, and then for all data validation errors. This methodology reduces the chance of regression errors you may encounter by mixing schema validation error fixes with data validation error fixes.

### SchValidationLog Table

The results for all validation scripts, regardless of whether validation errors were found or not, are stored in a table called SchValidationLog in the database.

To view the SchValidationLog table:

**Step 1** Connect to your database as the schema owner (that is, CPSCUser), and browse the table SchValidationLog to view the validation results. You can use a utility like SQL Analyzer (Figure 6-2) or SQL\*Plus to connect to your database.

**Figure 6-2 Browse SchValidationLog Table**

SchFunctions	dbo	User	11/5/2007 5:28:25 PM
SchIndColumns	dbo	User	11/5/2007 5:28:25 PM
SchIndexes	dbo	User	11/5/2007 5:28:25 PM
SchObjectActionLog	dbo	User	11/5/2007 5:28:25 PM
SchObjectExceptions	dbo	User	11/5/2007 5:28:25 PM
SchPackages	dbo	User	11/5/2007 5:28:25 PM
SchPrimaryKeys	dbo	User	11/5/2007 5:28:25 PM
SchProcedures	dbo	User	11/5/2007 5:28:25 PM
SchSequences	dbo	User	11/5/2007 5:28:25 PM
SchTabColumns	dbo	User	11/5/2007 5:28:25 PM
SchTables	dbo	User	11/5/2007 5:28:25 PM
SchTriggers	dbo	User	11/5/2007 5:28:25 PM
SchValidationLog	dbo	User	11/5/2007 5:28:25 PM
SchValidationRunAttributes	dbo	User	11/5/2007 5:28:25 PM
SchViewColumns	dbo	User	11/5/2007 5:28:25 PM
SchViews	dbo	User	11/5/2007 5:28:25 PM

**Step 2** Open the SchValidationLog table to view its contents (Figure 6-3).

**Figure 6-3 SchValidationLog Contents**

RunType	TestType	ObjectType	ObjectName	ObjectShortName	ErrorLevel	TestDetail
Check Schema	Table column ty...	Column	DirProject.Perce...	DirProject.Perce...	inform	Expected type: ...
Check Schema	Table column siz...	Column	DirPerson.SSN	DirPerson.SSN	inform	Expected type: ...
Check Schema	Unexpected tabl...	Table	CUSTOMER_TAB...	CUSTOMER_TAB...	inform	NULL
Check Schema	Unexpected tabl...	Table	CUSTOMER_TAB...	CUSTOMER_TAB...	inform	NULL
Check Schema	Unexpected tabl...	Table Column	DirPermission.C...	DirPermission.C...	inform	NULL
Check Schema	Unexpected tabl...	Table Column	DirPerson.CUST...	DirPerson.CUST...	inform	NULL
Check Schema	Unexpected FK ...	FK	FK_CUSTOMER_...	Table name: CU...	pending removal	NULL
Check Schema	Expected index ...	Index	TxInvocationAtt...	TxInvocationAtt...	inform;pending-r...	NULL
Check Schema	Expected index ...	Index	TxObjectRelatio...	TxObjectRelation3	inform;pending-r...	NULL
Check Schema	Expected index ...	Index	TxSatisfaction.T...	TxSatisfaction1	inform;pending-r...	NULL
Check Schema	Expected index ...	Index	XtrAgent.XtrAge...	XtrAgent3	inform;pending-r...	NULL

**Step 3** Check the ErrorLevel column in the SchValidationLog table for the following values and take the recommended actions.

**Step 4** Your SchValidationLog table may contain a lot of entries. Thus, you may want to use the following SQL command to filter the contents:

```
SELECT * FROM SchValidationLog WHERE ErrorLevel= "error"
AND RunType= "Check Data";
```

Include the WHERE clause "ErrorLevel= 'error'" if you just want to see the validation errors that you must fix manually before you can proceed with the upgrade process. Exclude that WHERE clause, or change the value "error" to another value (such as "inform: auto-repairable"; see Table 6-2 for more information) if you want to view other entries in the SchValidationLog table.

Notes about the RunType column in the SchValidationLog table:

- Validate Schema inserts entries with RunType= “Check Schema”.
- Validate Data inserts entries with RunType= “Check Data”.
- Repair Database updates all entries with ErrorLevel= “inform: auto-repairable” to ErrorLevel= “inform: auto-repaired”, and at the same type, changes the RunType to “Fix Data”.

## Validating Schema

Perform the following steps to validate schema:

**Step 1** Click **Validate Schema**.

If the schema validation test completes without validation errors, a “Completed” message appears.

If no errors are reported, proceed to the [Validating Data](#).

If the schema validation test completes with validation errors, a “Completed with errors” message appears.

**Step 2** Click **View Errors**.

The Validation Errors window appears. Resize the window to see the complete table, as shown in the example below ([Figure 6-4](#)).

**Figure 6-4** Validation Errors (Validate Schema)

Error Level	Test Type	Object Type	Test Detail	Object Short Name	Runtime Timestamp
error	Invalid data relationship	ColConstraint	SELECT * FROM DefService WHERE AreaID IS NOT NULL AND NOT EXISTS (SELECT AreaID FROM DefArea DefArea2 WHERE DefArea2.AreaID = DefService.AreaID)	FK_DefS_DefArea	2012-07-18 18:15:46.233

**Step 3** You need to manually fix the errors shown in the Validation Errors table before continuing the upgrade process. See the [Validating Database](#) for more information.

**Step 4** When all validation errors have been fixed iteratively, proceed to the [Validating Data](#) section below.

## Validating Data

Perform the following steps to validate data:

**Step 1** Click **Validate Data**.

If the data validation test completes without validation errors, a “Completed” message appears.

If no errors are reported, proceed to the [Repairing the Database](#).

If the data validation encounters validation errors, then a “Completed with errors” message appears.

**Step 2** Click **View Errors**.

The Validation Errors window appears.

**Step 3** You need to manually fix the errors shown in the Validation Errors table before continuing the upgrade process. See the [Validating Database](#) for more information.

**Step 4** When all validation errors have been fixed iteratively, proceed to the [Repairing the Database](#) section below.

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## Repairing the Database

Perform the following steps to repair the database:

**Step 1** Click **Repair Database**.

When the database has been repaired a “Completed” message appears,

**Step 2** (Optional) Click **View Errors**.

The Validation Errors window appears. Resize the window to see the complete table.

Note that the Validation Errors are only with ErrorLevel= “inform:auto-repaired” that are fixed programmatically by the Repair Database function.

**Step 3** Proceed to the [Completing Installation](#) section below.

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## Completing Installation

You have validated and repaired your database, and are now ready to proceed with the upgrade.

**Step 1** Click **Next** to proceed to the next page of the Service Catalog installation wizard.


**Step 2** Continue to run the installation wizard as described in the [Installing Prime Service Catalog on WildFly Application Server](#) or [Installing Prime Service Catalog on WebLogic Application Server](#).

When you click **Install** on the Pre-Installation Summary page of the installation wizard, the installer proceeds to execute the upgrade scripts to modify your database schema and contents. Depending on the size of your database, the upgrade scripts may take a long time to run. After the upgrade scripts modify the database schema and contents, the installer proceeds to create the WAR files. Follow the same procedures described in [Postinstallation Tasks for WildFly](#) section or [Postinstallation Configuration for WebLogic](#) section to deploy the WAR files for the Service Catalog product.


- Step 3** Once you finish the deployment of the WAR files, and are able to start up the application servers, you have essentially completed the upgrade process. Your Service Catalog application is now at Release 12.1. At this time, if you wish, you can take a backup of the databases and the installation directory. If you are using Oracle DBMS, it is recommended that you again execute recompile statistics for the upgraded databases in order to improve the system runtime performance.

## Performing Post-upgrade Tasks

To perform post-upgrade tasks:

- Step 1** Where necessary, recreate custom database objects that were deleted from the database by the installer.
- Step 2** Any custom code must be compatible with the new version of the JDK:
- Service Link custom adapters must be rebuilt with Release 12.1 version of the Service Link ADK.
  - Custom Java code developed at the customer site must be rebuilt using the new JDK.
  - Any enterprise portal into which Service Catalog Portlets are deployed must use JDK 8 Update 91.
- Step 3** Service Import/Export is not backward compatible with previous releases. Services exported in prior releases cannot be imported into Release 12.1. If you have maintained any Services export files in a code repository prior to upgrade, then you may want to export them again, and mark them for Release 12.1.
-  **Note** Users imported from a different database (for example, using Catalog Deployer) must reset their passwords for logging into the application. This is because the Key Encryption Key is different for different databases.
- Step 4** Follow procedures your organization has used in the past to re-implement all customizations for the application.
- Step 5** Connect to the Service Catalog application as an administrative user. Navigate to the “Administration” module, and click the **Settings** tab. Under Customizations Settings, look for “Browser Cache” (as shown in [Figure 6-5](#)).

**Figure 6-5 Enable Browser Cache Setting**

Browser Cache:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	The Browser Cache setting enables the browser-side caching of images, javascripts, css, etc., which may improve performance. When the Version setting value is incremented, the login process is interrupted until the browser's cache is deleted. Default is Disabled.
Version:	2 	
<input type="button" value="Update"/>		

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- Step 6** Click the **Enabled** radio button for the “Browser Cache” setting. Click the + button located to the right of the Version text box. This will increment the Version number by one. Then click **Update**. This setting will notify the users to clear their browser cache when they connect to the Service Catalog URL for the first time after the Service Catalog system is upgraded.
- Step 7** The master key password files kek\_new.txt and kek\_old.txt, located under the <ServiceCatalog\_Install\_Dir>/dist directory, must be backed-up to a secure location.



- Step 8** After the Audit Log data has been migrated, disable the Change Data Capture feature provided by the database vendor, as Prime Service Catalog 12.1 no longer uses this feature.
- Disable the Change Data Capture for an SQL Server by executing the following stored procedure:  
`sp_DisableCDC()`
  - In Oracle 12c, delete the CDCADMIN schema.
- 

## Moving Customizations to Website

The Custom Themes for Service Catalog module is no longer supported and the only way to customize Service Catalog is through website model. If you have customizations applied on Service Catalog module prior to 12.1 you would need to move the customization files to a new location during upgrade. The *ngc* folder which contained all the UI files is now removed from the location `/RequestCenter/modules/`. The files used for customization found in `/custom/*` folders must now be moved to the out-of-box or custom website folders.

To facilitate the transition from the Classic Custom Themes to the new website model, two scripts are provided. These scripts can be used to change the references to the *ngc* folder in the custom files to `ServiceCatalogWebsite` or any other website directory. This would make it easy to move the files out of classic custom to website.

### High-Level Steps to Migrate to Website Model:

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- Step 1** Download the files available on [cisco.com](http://cisco.com).
- Step 2** Navigate to the directory that contains the downloaded `WebsiteModelUpgradeScripts.zip` and extract the files.
- Step 3** Run the `GenerateCSV.py` script. For detailed info on this script, see section [Working of Script GenerateCSV.py, page 6-17](#).
- Step 4** Review the output `.csv` file generated from the `GenerateCSV.py` script. You may need to update the paths, if necessary.
- Step 5** Run the script `ChangePathReferences.py`, which updates the paths referring to old *ngc* folder to `ServiceCatalogWebsite` folders specified in the input file. For detailed info on this script, see section [Working of Script ChangePathReferences.py, page 6-18](#).
- 

### Working of Script GenerateCSV.py

This script generates a report of all the customization files in which path references need to be modified. The script parses the files given in the input file and looks for matching strings from the list of predefined regexs (references to old *ngc* folder) and the additional regexs (new references) given as user inputs, if any. The pre-defined regexs take priority over the additional regexs. These matches are written in the output file along with a suggested reference.

1. In case of pre-defined regex matches, the 'suggested reference' column is automatically populated.
2. In case new regexs are given as input, the match is replaced with 'replace\_this' string in the suggested reference column.

**Input:**

1. .txt file with file paths
2. .txt file with additional regexes, if any (can be left empty)
3. Folder path to generate the output file

**Output:**

This script generates a .csv file with the below columns in the destination folder. The table represents the fields in the output file with an example.

File moved	String Matched	Referred in file	Line numbers	Current Reference	Suggested reference
Add.png		/RC/modules/idp/APIManager.js		../../ngc/img/add.png	/RC/website/common/images/add.png

**Note**

You must thoroughly review the output before you proceed to run the script `ChangePathReferences.py`. Review the suggested references column and change them, if needed.

**Working of Script ChangePathReferences.py**

This script uses the .csv output file generated from the script `GenerateCSV.py` and ‘reads’ the columns *Referred in file*, *Current Reference*, and *Suggested reference*. The script then replaces the *Current References* path with the *Suggested References* in the respective files.

**Input:**

The .csv output file generated by the first script (with changes, if any).

**Result:**

All the references in custom files to the files in *ngc* folder are now changed to the file paths from website folder.

The next chapter describes the procedures for upgrading the Cognos component of the Reporting module. If your preupgrade Service Catalog system included the Reporting module, then you must continue with the next chapter to complete the upgrade process for the Cognos component so that the Reporting module will work for Release 12.1.