Service Manager

Software Version: 9.60

For the supported Windows® and UNIX® operating systems

Service Manager Upgrade: an alternative approach to reduce downtime for go-Live

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Purpose of this document

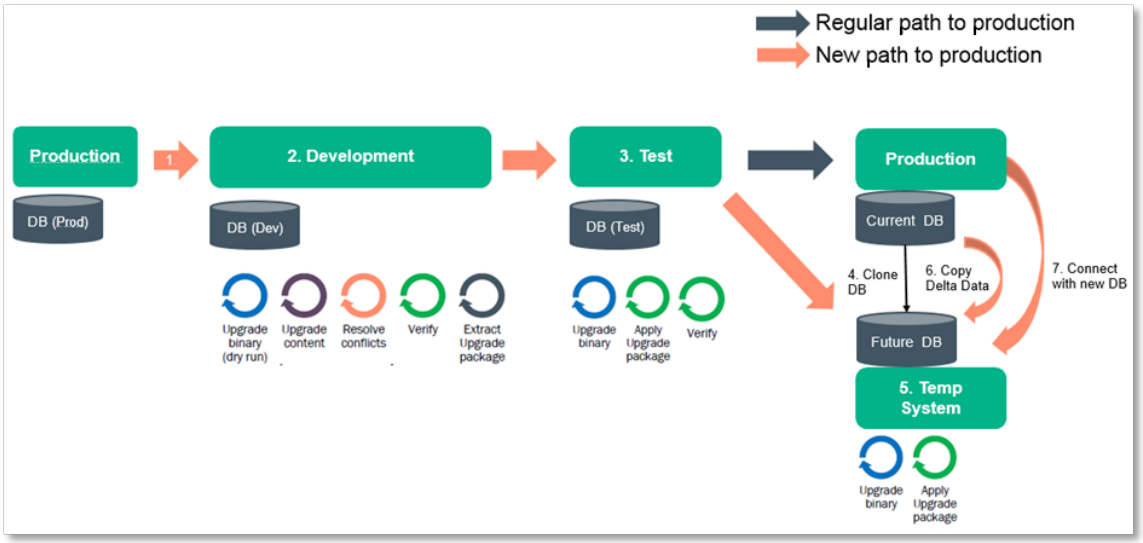
This document outlines an alternative approach to reduce the system downtime during the go-live activities in the Service Manager upgrade process. This approach allows you to prepare all upgrade activities against the production system by using a temporary Service Manager system and an additional database. By using this approach, you can significantly reduce the Service Manager downtime[1] during upgrades. As a result, you may only focus on the data migration between your current production database and the future production database on the go-live day.

> **Note:** Currently, the approach outlined in this document is applicable for Service Manager only.

[1] Depending on the amount of data to migrate, the minimum system downtime is less than an 1 hour.

Overview

To ensure a smooth migration with a minimal downtime during the go-live activities, the approach consists of the following seven steps:



See the following table for more description:

Step	Description
1	Copy your production database to the development system to ensure that the development system is up-to-date.
2	Upgrade your development environment as outlined in the *Upgrade Guide*.
3	Continue to follow the *Upgrade Guide* to upgrade your test environment.
4	Before going-live, prepare your future production database by cloning the current production database to the future production database.
5	• Follow the *Upgrade Guide* to apply the upgrade package to your future production database by using a temporary Service Manager system. By doing so, the most time-consuming steps during a Service Manager upgrade process are already finished. • Perform a sanity check.
6	On the go-live day: • Block the production system from user access. • Upgrade the binaries and the Windows/web client version on your production system.

Step	Description
	• Run the Delta Migration tool to move the missing records from the current production database to the future production database.
7	• Switch the production system (including interfaces) to the future production database after data migration. • Go-live.

> **Note:** An alternative approach is to replicate the full production environment, including the Service Manager server and the web tier servers. The approach introduced in this document focuses on data migration only on the go-live day, since the Service Manager server and web tier are already upgraded.

Prerequisites

To ensure the approach outlined in this document works successfully, the following prerequisites must be followed:

1. You must have additional infrastructure, including at least one database server with the same sizing and configuration as the current production database.
2. To keep a minimum delta data load time, you must keep the time frame from taking a copy of the production database to the final go-live date at an absolute minimum. The time increases with high data volumes.
3. To speed up the export process for large tables, we recommends you to add an index for the sysmodtime field in various database tables. For more information about how to get the files without keys for the sysmodtime field, see "Appendix" on page 25.
4. All tables managed by the Delta Migration tool require a sysmodtime field. If this field is not available, you must manually create both the unload file for affected tables and a full table copy. For more information about how to get the files without keys for the sysmodtime field, see "Appendix" on page 25.
5. Do not change the database structure in the production database after you take a snapshot of the database.
6. If some fields do not exist in an existing production system, these the fields will be kept as empty in the future production system.
7. Make sure that the new Service Manager system does not contain any test records. If there are some test records added to the new system during the delta data migration period, you cannot migrate the delta data from the original Service Manager system to the future system because of a data conflict. Even if you decide to use the delta data from the original Service Manager system and select to overwrite the test records, there is a risk of data integrity violation.

   For example, a new Incident IM12345 (called IM_A) is created in the original system during the delta data migration period, and another test record IM12345 (called IM_B) is created in the future system with several activity logs. If you use IM_A in the original system to overwrite IM_B in the new system, you will find that IM_A in the new system contains some incorrect activity logs, which belong to IM_B.
8. Make sure that the date format of the original Service Manager system does not have the Y2K problem. To solve this problem, follow these steps:

a. From the System Navigator, click **System Administration** > **Base System Configuration** > **Miscellaneous** > **System Information Record**.

b. Click the **Date Info** tab. If the date format contains only two digits for the year value, such as `mm/dd/yy`, change it to four digits (for example, `mm/dd/yyyy`).

c. Click **Save** and **OK**.

d. Log out and then log on to Service Manager again.

9. Background tasks will use the default time zone and date format in the System Information Record during the import and export process. You must use a system administrator account with the same time zone setting and date format as the System Information Record to avoid data inconsistencies.

10. You must start the five background schedulers (bg_load_unload 1, ..., bg_load_unload 5) in both the original and the future production Service Manager systems. The background schedulers that have been started are visible in the System Status record. If these background schedulers are not there, click **Start Scheduler** and select **dmt.unload.load**.

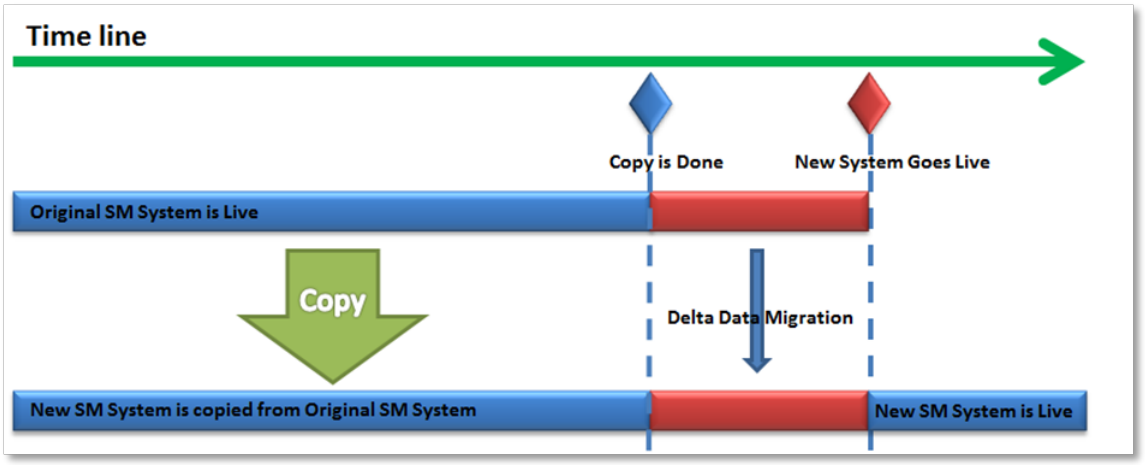
11. You must create an empty folder on the original Service Manager server to export the delta data.

12. Make sure that the counters for critical tables (such as `sla`, `slaresponse`, `slo`, `Subscription`, `AlertLog`, `ApprovalLog`) are inactive in the target Service Manager system prior to re-import the records.

13. To avoid updating the records, make sure that the background schedulers are inactive in the future database after you copy the production database and connected it to the temporary Service Manager system. To do so, you must comment out the `sm system.start` line in the sm.cfg file before starting the temporary Service Manager system.

Using the Delta Migration tool

Service Manager provides a delta migration tool to transfer the delta data from one Service Manager system (original system) to another (new system). You can use the Delta Data migration tool to transfer data from a special time frame from one system to another. The smaller a time frame is, the faster the data migration is completed. See the following illustration for this scenario:

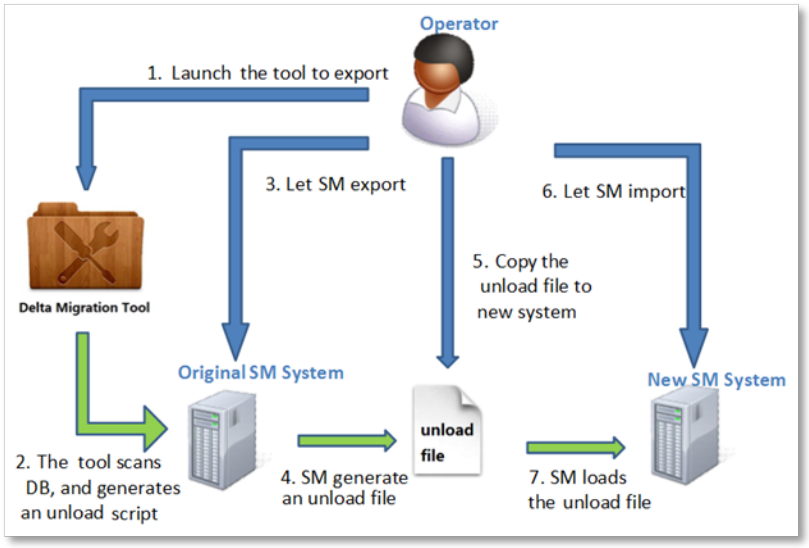


Topics in this section include:

Manual export and import 10
Automatic export and import 11

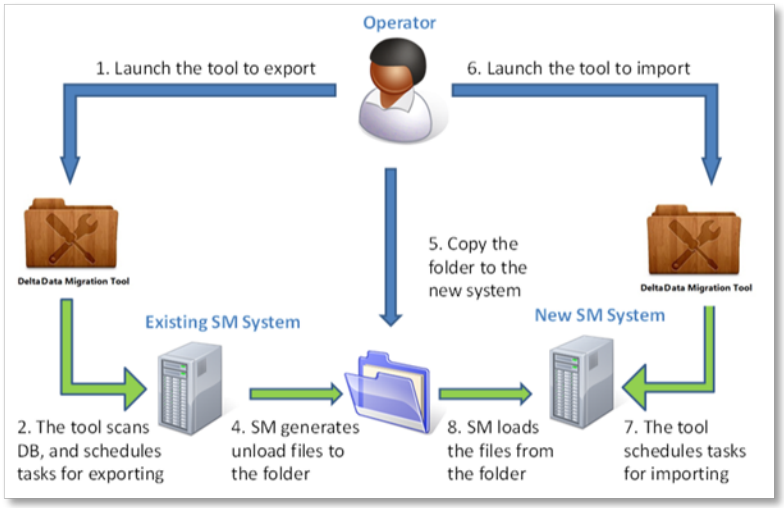
Manual export and import

The following illustration shows how an operator migrates the delta data manually. Service Manager creates one or multiple unload files that include all objects in the manual process. The operator can modify the files as necessary.



Automatic export and import

The following illustration shows how an operator migrates the delta data automatically. Service Manager automatically exports all Database Dictionary records to a separate file on the hard disk and then exports all records after the specified time stamp.



Upgrading Service Manager

Topics in this section include:

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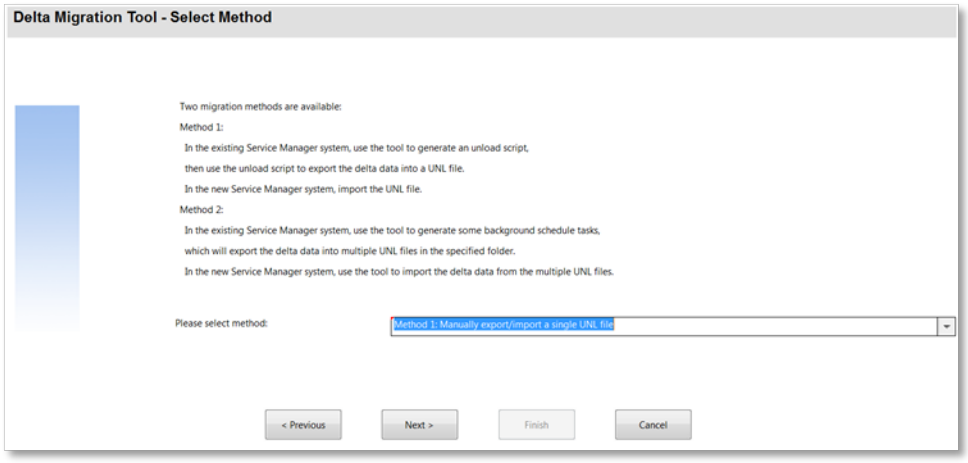
Manually export and import a single unload file

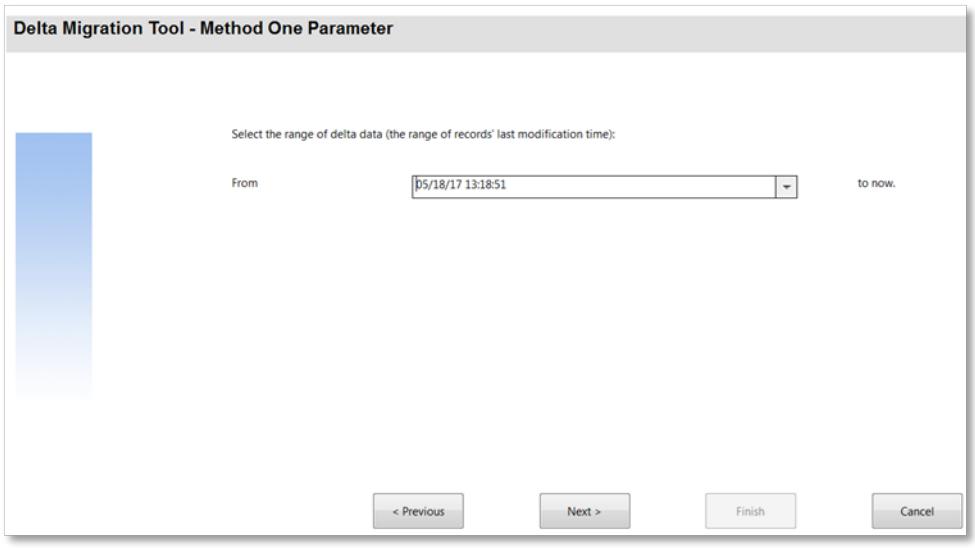
This approach exports all data into an unload file in single process. You can use this approach in small systems with minimum sets of data to migrate. Usually, this approach works fine in systems with less than 100,000 Database Dictionary records in total.

Follow these steps:

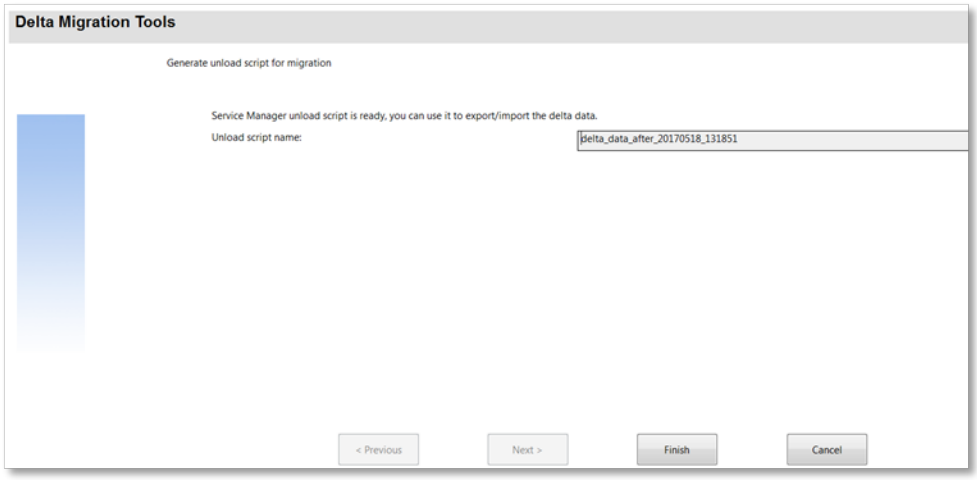
1. Log on to the Service Manager production system as a system administrator by using the Windows client.
2. Click **Tailoring** > **Script Library**. Type `DeltaMigration_Export` in the Name field, and then click **Search**.
3. Click **Execute**. The system opens the General Introduction screen.
4. Click **Next** and select **Method 1: Manually export/import a single UNL file**.



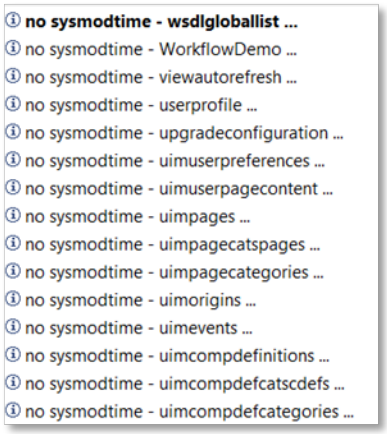
5. Click **Next** to check the steps of using Method 1.
6. Click **Next**. The system opens the following screen to specify the time range of the delta data. The delta migration tool will generate an unload script to extract all the delta data within this range.



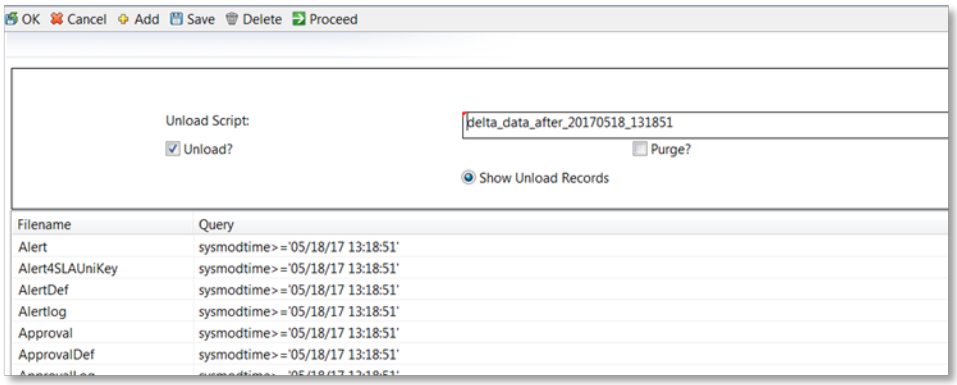
7. Click **Next** to generate the unload script.
8. Open the generated unload script, and then run it to generate an unload file.



9. Check the messages window, and then copy all dbdicts with `no sysmodtime` to a text editor.



10. Click **Tailoring** > **Unload Script Utility**, and then search for the generated unload file.

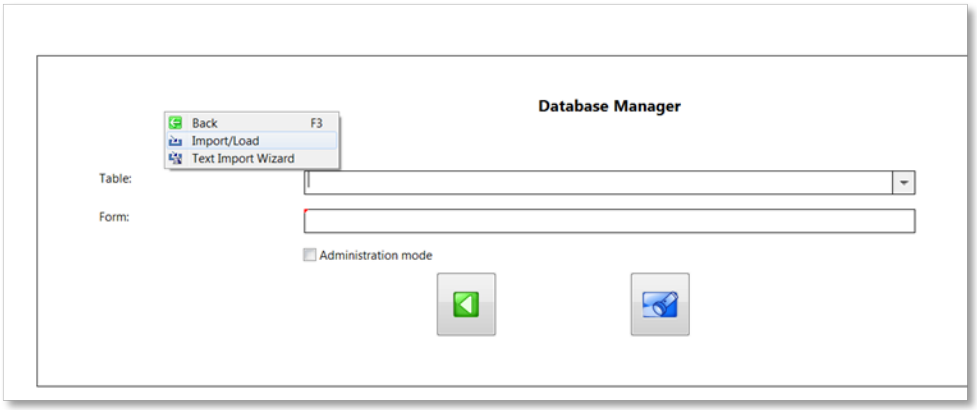


11. Click **Proceed**, and then enter a folder name and a file name to unload the data.

12. Check the list of dbdicts with `no sysmodtime` in your text editor and decide for which dbdicts data migration is required. Manually create a new unload file and enter all the required dbdicts with a true query to export that data. Refer to the following screenshot as an example:

For more information about how to get the files without keys for the sysmodtime field, see "Appendix" on page 25.

13. When the process is completed, click **Proceed** and then enter a folder name and a file name to unload these data too.
14. Copy the unload files to the target system.
15. To import the data in the target system, go to **Tailoring** > **Database Manager**. Right-click the mouse, and select **Import/Load**.



16. Select the unload file, and then click **Load FG**.

Manually export and import multiple unload files

This approach schedules and splits the data export process to export data in parallel. We recommend this approach to avoid a large file and to parallel the processing. Refer to the following way to balance the amount of data in several unload files:

1. Basic Data (contacts, groups, departments, CIs, sla, slo, securityRoles, and so on)
2. Ticket data (Incidents, Changes, Tasks, Requests, and so on)
3. Activities
4. Attachments
5. Tables without sysmodtime
6. Queues for Interfaces

You can use this approach in large systems with a huge amount of data.

Important: You must load the schedule.unloads.unl file before using this approach.

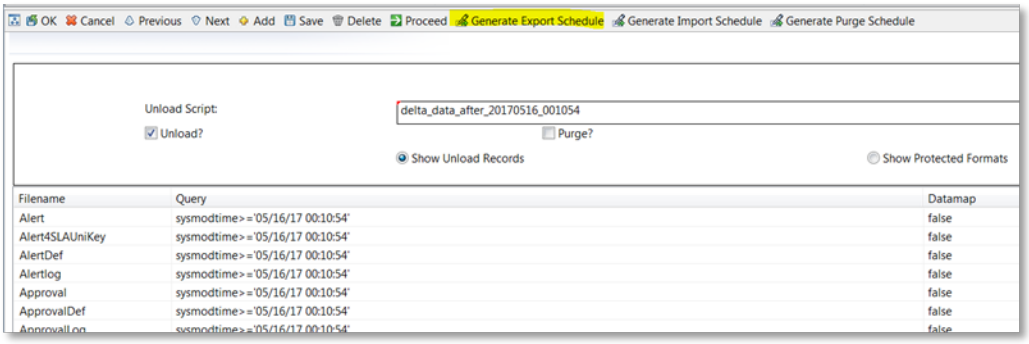
Follow these steps to export data:

1. Follow *step 1* to *step 9* as described in "Manually export and import a single unload file" on page 12 to generate unload files.

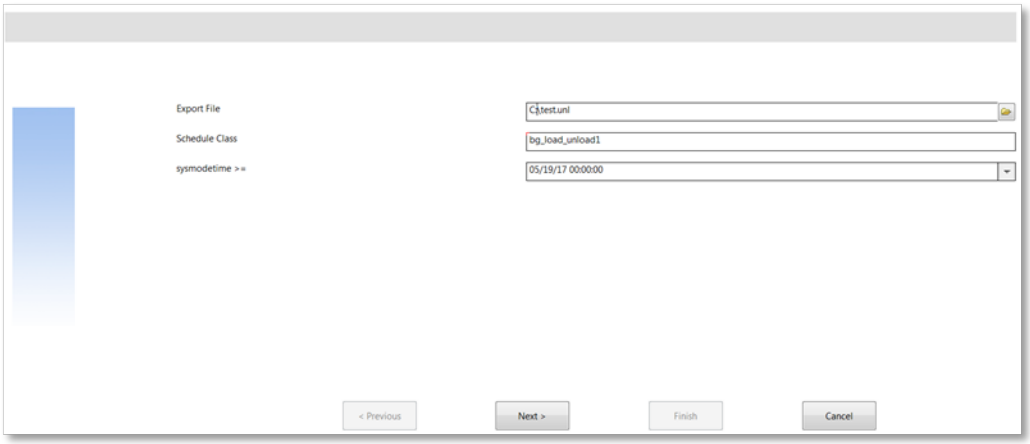
   You can also remove some objects which include customization data that will not change. For example, ScriptLibrary and objects.

2. Use either of the following methods to export your data.
   - Follow *step 10* to *step 11* as described in "Manually export and import a single unload file" on page 12 to export the unload files by using several Windows clients in parallel.
   - Schedule the data export by using the Generate Import Schedule option introduced by the schedule.unloads.unl file.

i. Select your unload file to export, and then click **Generate Import Schedule**.



The system display the following screen:



ii. Specify the name of the export file.

iii. Specify a schedule class, which will handle the export.

> **Note:** There are several background processes (schedule classes) available for exporting data. See the 10th point in "Prerequisites" on page 8

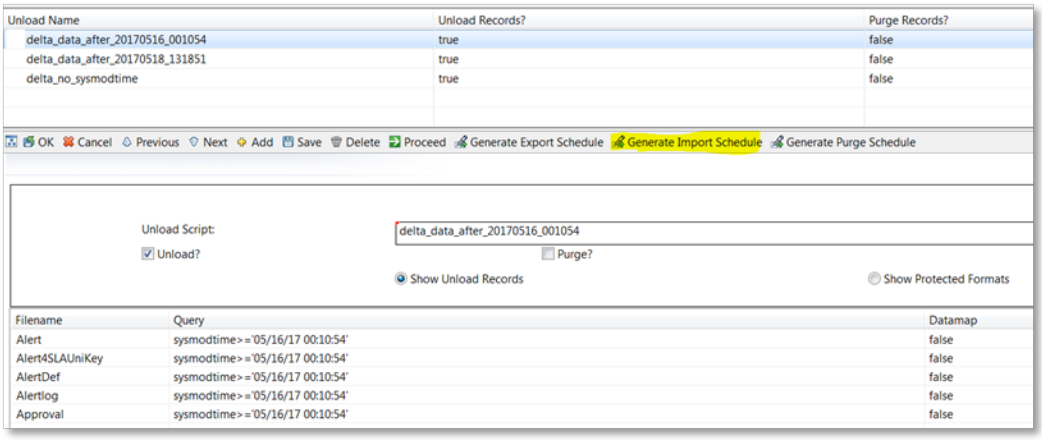
iv. Specify a time stamp in the sysmodtime field. The system will ignore the query in the unload file and create schedule records to export data. The data is exported from the time stamp as you entered.

v. Click **Next** to create the schedule records. The system starts exporting the data in the background.

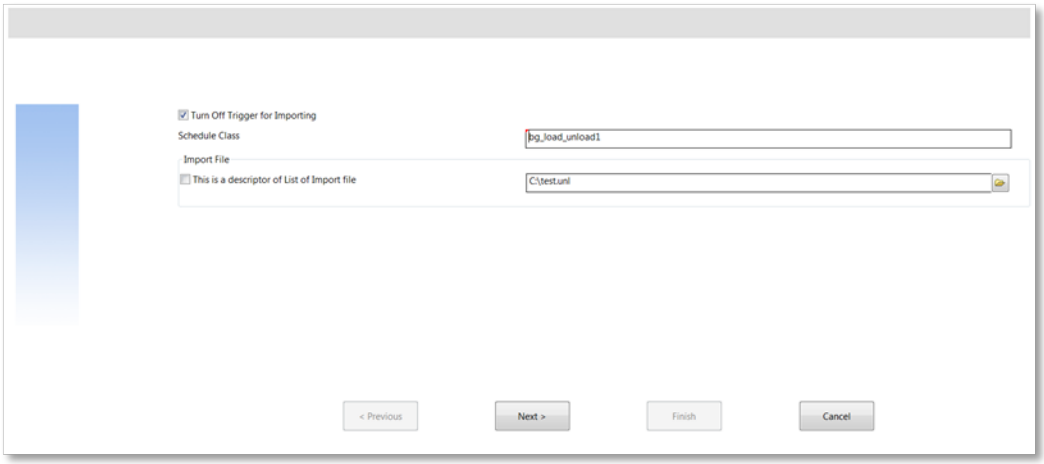
vi. Continue to follow *step i* to *step v* by using another schedule class to export several files in parallel.

Follow these steps to import data:

1. Follow *step 15* and *step 16* as described in "Manually export and import a single unload file" on page 12 to import the data by using several Windows clients.
2. Schedule the data import by using the Generate Import Schedule option introduced by the schedule.unloads.unl file.
   a. Select a unload file, and then click **Generate Import Schedule**.



   The system display the following screen:



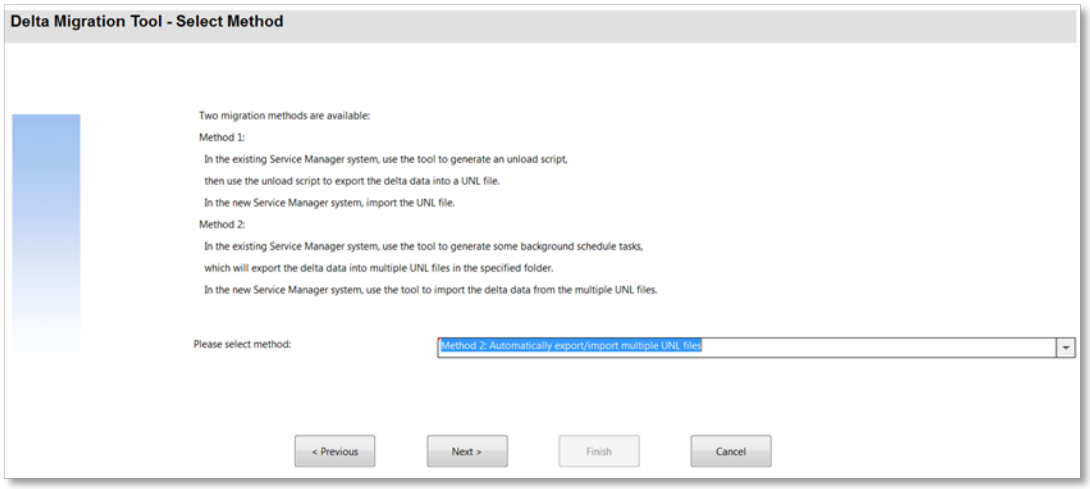
   b. Specify the schedule class in the Schedule Class field.
   c. Specify the location and name of the import file.
   d. The triggers are turned on automatically after the import. Select the **Turn Off Trigger for Importing** check box to turn off the triggers.
   e. Click **Next** to create the schedule record. The system starts importing the data in the background.

f. Continue to follow *step a* to *step e* by using another schedule class to import several files in parallel.

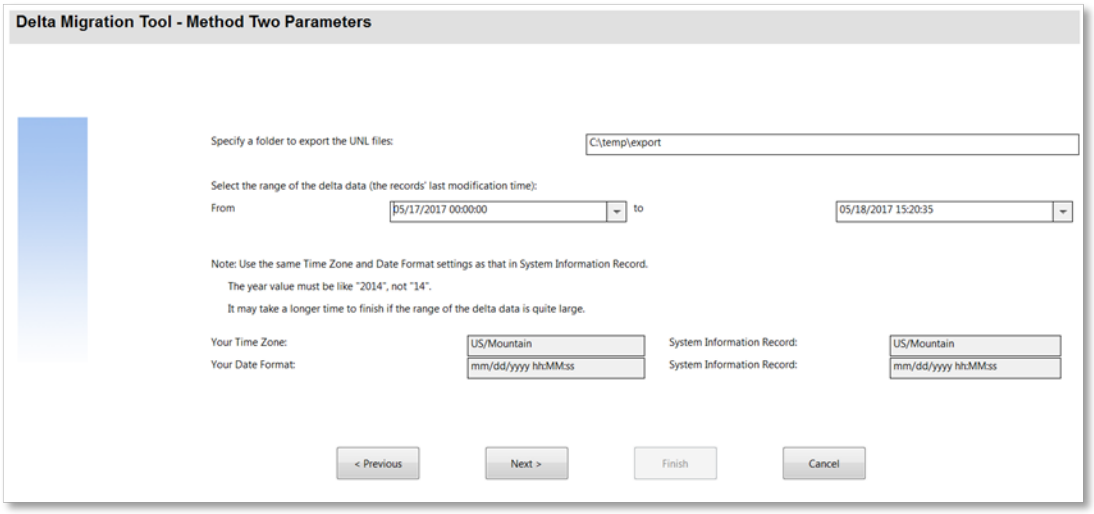
Automatically export the delta data

Follow these steps to export the delta data automatically:

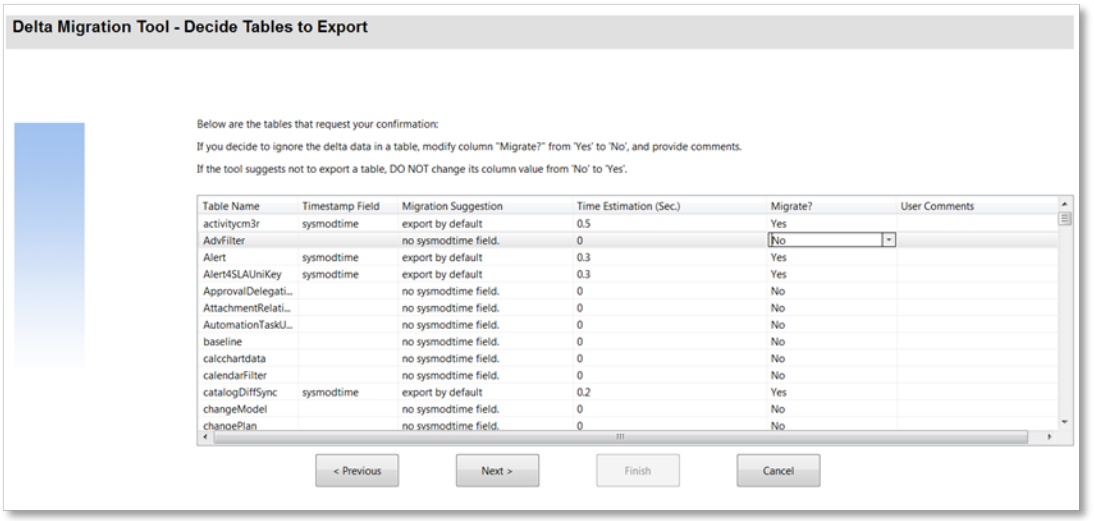
1. Log on to the original Service Manager system as a system administrator by using the Windows client.
2. Click **Tailoring** > **Script Library**. Type `DeltaMigration_Export`, and then click **Search**.
3. Click **Execute**. The system opens the General Introduction screen.
4. Click **Next**, and then select **Method 2: Automatically export/import multiple UNLs**.



5. Review the steps of using Method 2.
6. Click **Next**. The system opens the following screen to specify a folder for the exported data. You also need to specify the time range of the delta data.



7. Click **Next** to review the provided migration suggestions after the tool checks the tables. You can ignore some tables even if they contain some delta data.



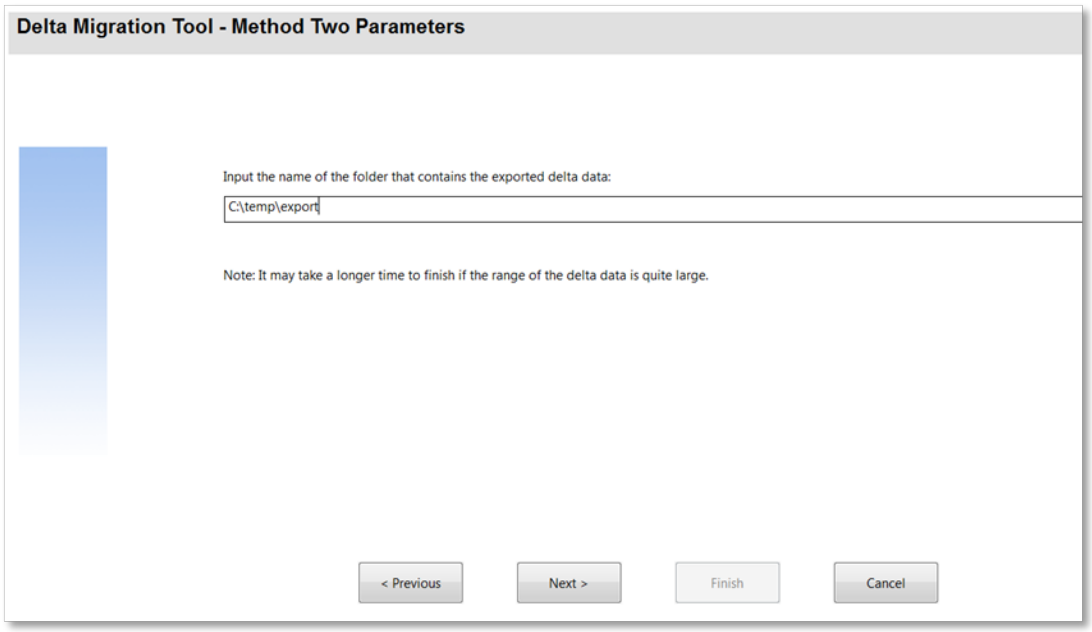
8. Click **Next** to verify the final confirmation for the migration. The message displays the number of the tables that will be migrated and the time that the export process will take.
9. Click **Next** to start background jobs to export the delta data.
10. Click **Finish** to exit the tool when the overall progress reaches 100%.

> **Note:**
> To check the export status, go to the selected folder and open the Overall Export Status Report.html file.

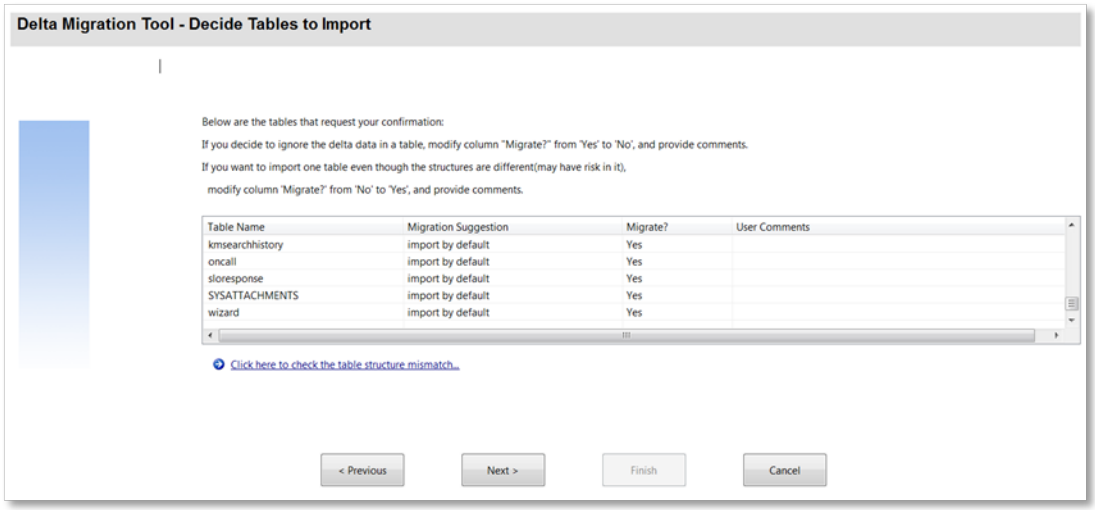
11. Copy the whole folder to the target Service Manager System.

Follow these steps to import the delta data automatically:

1. Log on to the new Service Manager system as a system administrator by using the Windows client.
2. Click **Tailoring** > **Script Library**. Type `DeltaMigration_Import` in the Name field, and then click **Search**.
3. Click **Execute**.
4. Click **Next**, and then specify the folder that contains the exported delta data.



5. Click **Next** to select the tables to migrate.



If the table structures are different, we recommend that you click the **Click here to check the table structure mismatch...** link to acknowledge the difference, the risk, and then decide whether to migrate these tables or not.

> **Note:**
> The table structure mismatch may introduce risks. If you decide not to migrate these tables by using the migration tool, you need to write a script to perform the migration manually. The script should include a field mapping to ensure that all fields in the table of the new Service Manager system will be prepared, just as if these delta data were created or modified in the new Service Manager system.

6. Click **Next** to check the final confirmation for the migration. The message displays the number of the tables that will be imported.
7. Click **Next** to start the background schedulers to import the delta data.
8. Click **Finish** to exit the tool when the overall progress reaches 100%.

> **Note:**
> - To check the importing status, go to the selected folder and then open the Overall Import Status Report.html file.
> - Some tables may be ignored during the export process because they have no sysmodtime fields. If you need a full-table migration, you can create an unload file manually.

Additional steps

Follow these additional steps after all data are migrated:

- Truncate all data in the following files and reload all records from these dbdicts from the source system. By doing so, you can ensure that the current database has the same state as the future production database. The delta load cannot be used for these files because the records are not only added or updated but also deleted.
  - todo
  - inbox
  - usergrid
  - any potential other file (For example, interface queues)
- The schedule file is special. The easiest way is to truncate the schedule file and reload all records

from the source system. However, some out-of-box schedule records may have been added during the upgrade process. You must identify these records to ensure they are still available after the upgrade.

Follow these steps to identify the out-of-box schedule records:

a. Create a Script Library and add the following code:

```
lib.upgradeConvert.updateSchedules(true);
```

b. Click **Execute** to identify the out-of-box schedule records.

- If some modules have been moved to Process Designer (for example, the SLM or Service Catalog module), ensure that you run the PD data migration tool again for the records imported with the delta migration tool. See Step11: Migrate Process Designer data for details.
- Align counters to avoid unique key constraints.

Troubleshooting

For more information about troubleshooting, see Troubleshooting delta migration.

Appendix

This section provides detailed information about the unload files that are used to simplify some analysis during the data migration.

schedule.unloads.unl

The schedule.unloads.unl file introduces the schedule function to the unload utility.

Schedule an export: The export function takes the selected unload files as baselines and loops through each line to schedule the export for the Database Dictionary records. The query in the unload record is overwritten by the `sysmodtime>=’timestamp’` query. The function will then generate schedule records to export and append the data to the same file on the server.

Schedule an import: The import function allows to schedule the import of the data from an unload file on the server. This function offers a check box to disable the triggers during the import process.

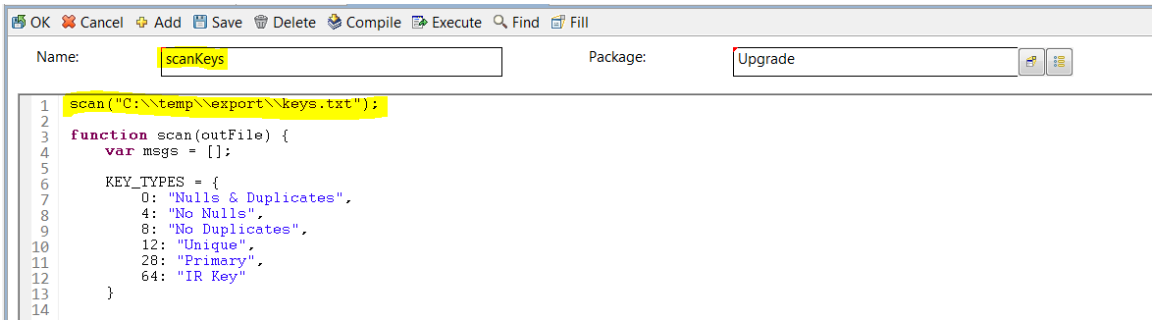
scanKeys.unl

The scanKeys.unl file loads the `scanKeys` Script Library, which checks the indexes of all Service Manager Database Dictionary records and prints them to a text file in a folder on the Service Manager server.

Follow these steps to use this unload file:

1. Click **Tailoring** > **Script Library**, and then search for `scanKeys`.
2. Change the folder and file name in the first line of the Java Script, and then save your modifications. The folder must be an existing folder on the Service Manager Server.

3. Click **Execute** to start the scan.



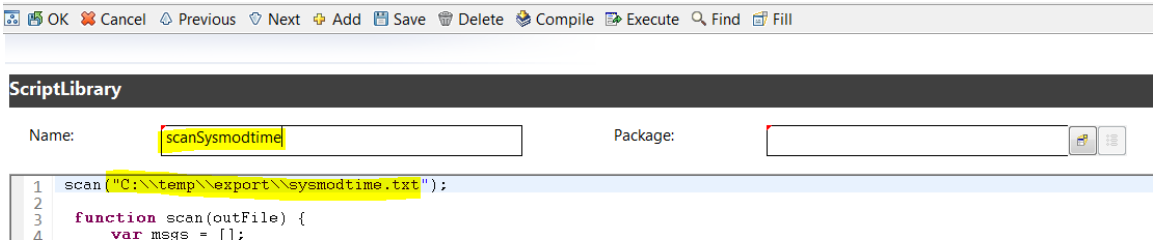
> **Note:**
> Do not use this script in a production environment.

scanSysmodtime.unl

The scanSysmodtime.unl file contains the `scanSysmodtime` Script Library, which checks all Service Manager Database Dictionary records for the `sysmodtime` field and verifies if a key for this field exists. The script prints the result to a text file in a folder on the Service Manager server.

Follow these steps to use this unload file:

1. Click **Tailoring** > **Script Library**, and then search for `scanSysmodtime`.
2. Change the folder and file name in the first line of the Java Script, and then save your modifications. The folder must be an existing folder on the Service Manager Server.
3. Click **Execute** to start the scan.



Sample result:

A	B	C	D	E	F
table	has sysmodtime?	DB Table	DB field	key	key pos
cm3groups	TRUE	CM3GROUPSM1	SYSMODTIME		
cm3messages	TRUE	CM3MESSAGESM1	SYSMODTIME		
cm3profile	TRUE	CM3PROFILEM1			
cm3r	TRUE	CM3RM1	SYSMODTIME	Nulls & Duplicates	18#1
cm3rcategory	TRUE	CM3RCATEGORYM1	SYSMODTIME		
cm3rcatphase	TRUE	CM3RCATPHASEM1			
cm3roperatorinfo		CM3ROPERATORINFOM1			
cm3rpage	TRUE	CM3RPAGEM1	SYSMODTIME		
cm3rsubcat	TRUE	CM3RSUBCATM1	SYSMODTIME		
cm3t	TRUE	CM3TM1	SYSMODTIME		
cm3tcategory	TRUE	CM3TCATEGORYM1	SYSMODTIME		
cm3tcatphase	TRUE	CM3TCATPHASEM1			
cm3tpage	TRUE	CM3TPAGEM1	SYSMODTIME		
cmcontrol	TRUE	CMCONTROLM1	SYSMODTIME		
cmlabor	TRUE	CMLABORM1	SYSMODTIME		
cmparts	TRUE	CMPARTSM1	SYSMODTIME		
code	TRUE	CODEM1	SYSMODTIME		

Note:
Do not use this script in a production environment.

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Feedback on Service Manager Upgrade: an alternative approach to reduce downtime for go-Live (Service Manager 9.60)

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