IBM

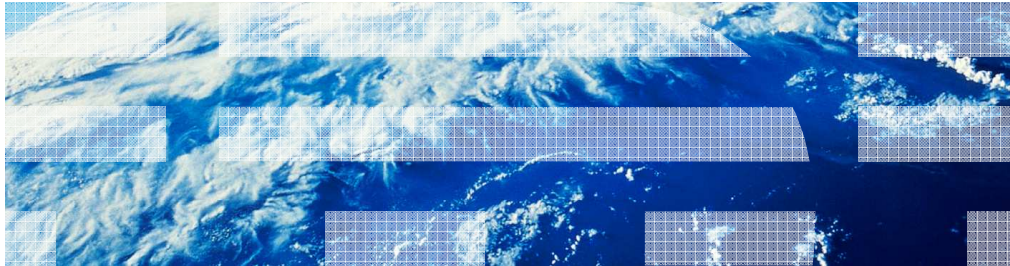# Business Process Management
IBM Business Process Manager V7.5

Migration from WebSphere Process Server to BPM Advanced

WebSphere software

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This presentation provides an overview of the options for migrating from previous versions of WebSphere Process Server to BPM Advanced.

Table of contents

In this presentation, you will first learn about the supported migration paths from WebSphere Process Server to BPM Advanced. Then you will learn about the steps involved in artifact and runtime migration and some of the post runtime migration tasks. You will also look at some of the migration enhancements introduced in BPM Advanced.

Supported migration paths

WebSphere Process Server		Business Process Manager
WPS V6.1	→	BPM Advanced V7.5
WPS V6.1.2		
WPS V6.2		
WPS V7.0		
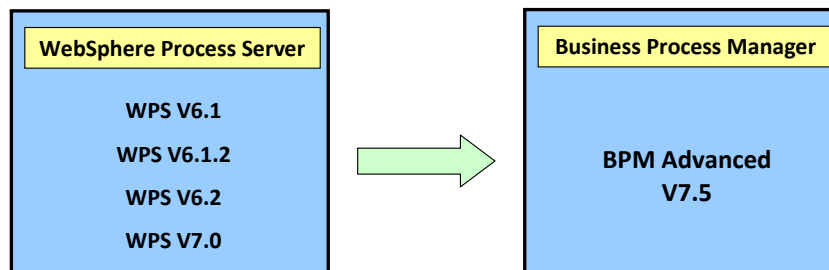
Note - Derby and Informix databases are <u>not</u> supported in BPM Advanced V7.5

- Migrating from a WebSphere Process Server environment using these databases
    - Runtime migration not supported.
    - Artifact migration is the only option

This slide shows the migration paths supported from WebSphere Process Server to BPM Advanced. WebSphere Process Server versions from 6.1 all the way through 7.0 can be migrated to BPM Advanced version 7.5.

It is important to note that the Derby and Infomix databases are not supported in BPM Advanced. Therefore, the runtime migration to BPM Advanced from a WebSphere Process Server environment using one of these databases is not supported. The artifact migration path is the only option in such instances.

Migration methods

- Artifact Migration
  - Source artifacts are migrated to the new V7.5 format
  - A new V7.5 environment and configuration is created
  - New databases are used
  - Source artifacts are then deployed to the new environment
- Runtime Migration
  - Source artifacts are not migrated and existing applications are used as is
  - Existing configuration and application data are used in the new runtime
 - Existing databases are upgraded

Artifact migration and runtime migration are the two major migration methods available to you.;.

In artifact migration, the source application artifacts are migrated to the new version 7.5 format. A new BPM Advanced environment is built from scratch including creation of new databases. The source artifacts are then deployed to the new environment.

In runtime migration, the existing application binaries along with the existing application data are used in new BPM Advanced environment. Rather than creating new databases, the existing databases are upgraded to the new format.

Artifact migration - Steps

- Setting up the environment
  - Install and configure the BPM Advanced server
  - Install and configure Integration Designer
- Performing artifact migration
  - Import into Integration Designer a project interchange containing the previous version of the application
  - Correct any migration issues reported by Integration Designer
  - Test the new version of the application
  - Deploy the application to the new environment

Existing Apps

Integration Designer

V7.5 Apps

BPM V7.5

V7.5 Tables

V7.5 Server
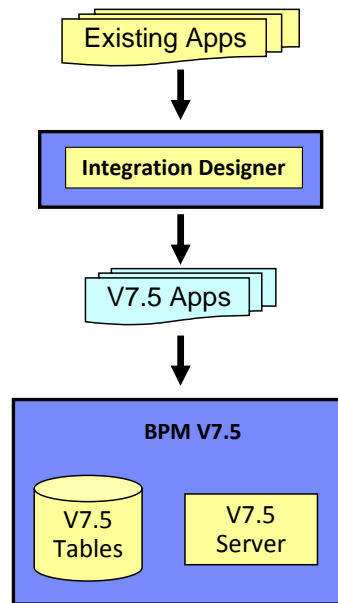
This slide provides detailed information about the artifact migration method.

Before doing artifact migration, the BPM Advanced server environment and the Integration Designer must be installed and configured.

The diagram on the right shows the high level steps involved in artifact migration. The existing application must be in a project interchange file that was exported from the previous version of WebSphere Integration Developer. That project interchange file is then imported into the version 7.5 Integration Designer. The Integration Designer automatically launches the migration wizard, which will convert all the artifacts in the project interchange file to version 7.5 format. The migration wizard provides a report indicating if the migration was successful or if there are any errors that need to be corrected. After sufficient testing, the migrated applications can then be deployed to the new BPM Advanced environment.

Artifact migration – Benefits and costs

- Benefits of artifact migration include
  - Applications can use new functionality
  - Downtime can be avoided
    - In the case of long running processes, parallel environments can be used
- Costs of artifact migration include
  - Existing application data is not used
  - Additional testing might be needed on updated applications

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There are some advantages provided by the artifact migration method. It enables you to modify the existing applications to use some of the new features introduced in BPM Advanced version 7.5. Also, since you are creating a new environment from scratch along with new databases, production downtime can be avoided. If there are long-running process instances currently in production, you can run parallel production environments. Existing process instances can be drained in the original environment, while new instances can be started in the new production environment.

There are some disadvantages to artifact migration. Because new databases are created, existing application data is not used. Also, if the migrated applications are modified to use the new features, additional testing cycles should be planned to thoroughly test the applications.

Runtime migration introduction

- An understanding of the runtime topology is required
  - Source – the previous version of a WebSphere Process Server environment
  - Target – the new BPM Advanced V7.5 environment
- The golden topology is used to explain the runtime migration steps
  - The pre migration source environment is described
  - The post migration target environment is described
  - The steps need to perform the migration are presented
  - Some post migration steps are explained
  - The final target environment is described

Migration from WebSphere Process Server to BPM Advanced

In order for you to understand runtime migration, it is important that you to understand the topologies of the server environments. Because there are differences between BPM Advanced and previous versions of WebSphere Process Server, the source and target topologies are different. The golden topology is a well known WebSphere Process Server network deployment configuration, and therefore is used in this presentation to explain the runtime migration steps. This is done by first describing the source topology from the previous version of WebSphere Process Server and then describing the target BPM Advanced topology once migration is complete. The specific steps needed to get from the source to the target topology are then explained. After the migration has completed, there are post migration steps that are explained and the final resulting topology is then shown.

Existing WebSphere Process Server topology before migration
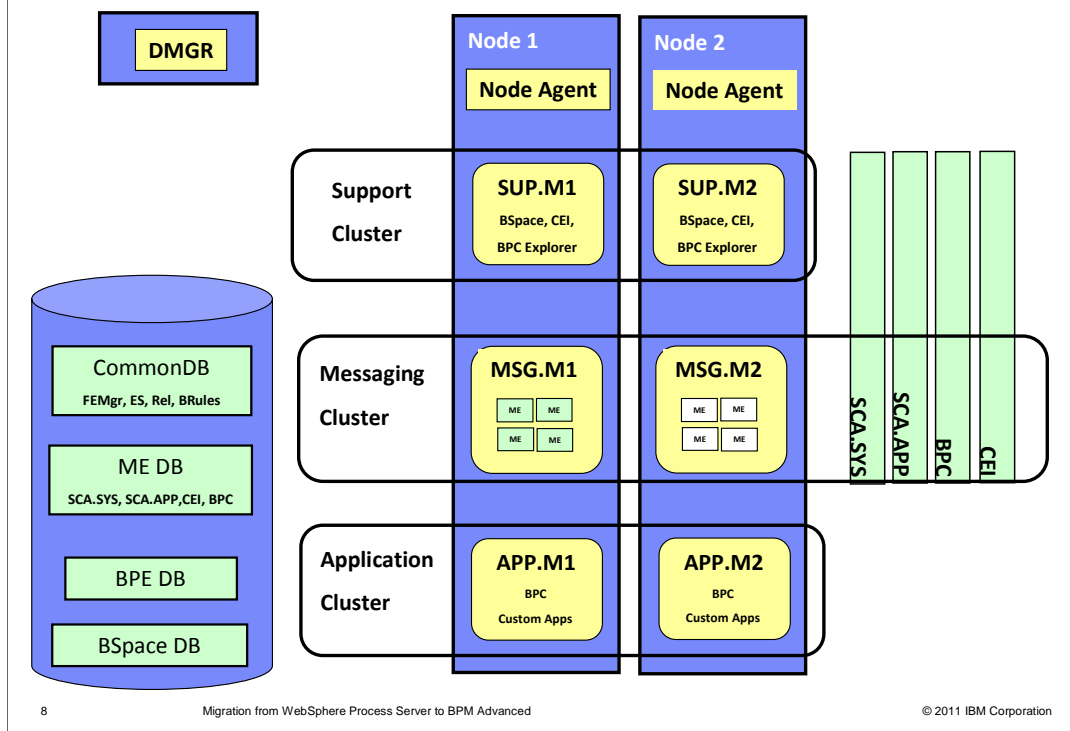
This is a typical WebSphere Process Server, golden topology, network deployment environment, before migration.

In the cell, there are two custom nodes managed by the deployment manager. There are three clusters – Application, Messaging and Support - with members distributed horizontally across the two nodes. There are four service integration buses and the standard product databases.

New BPM Advanced V7.5 topology after migration
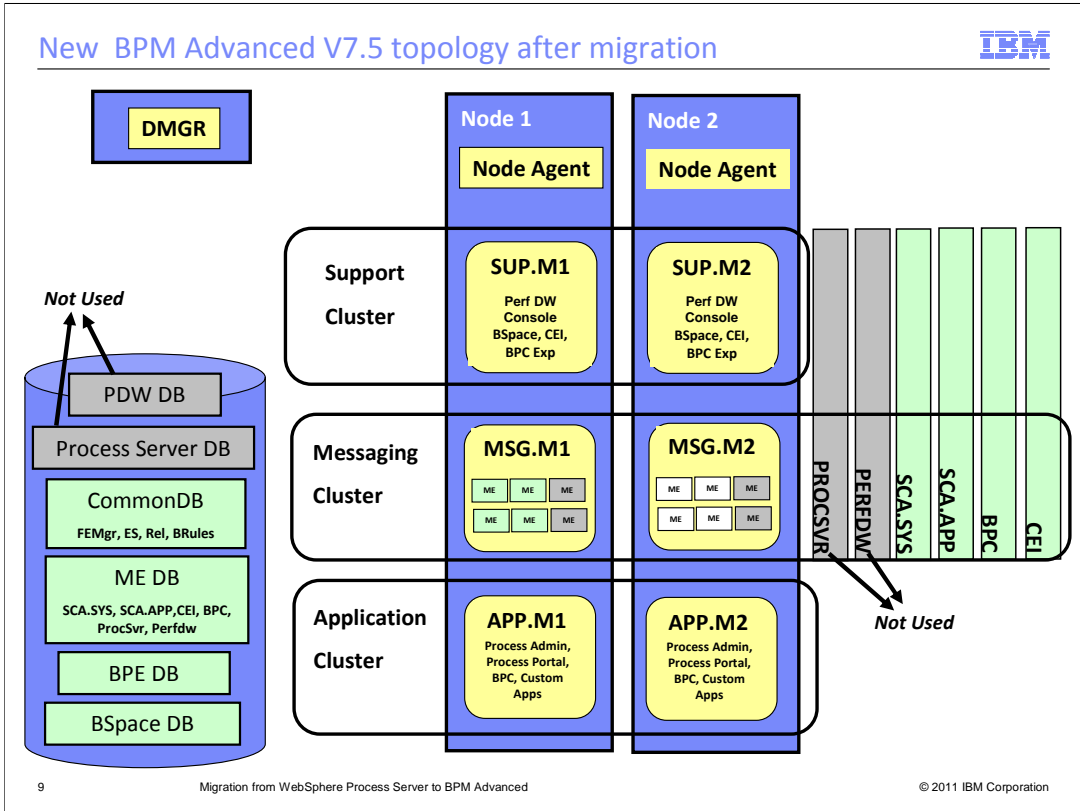
This is the golden topology, network deployment environment, after migration to BPM Advanced version 7.5.

There are two new service integration buses added along with their corresponding messaging engines and there are also two new databases. These new buses and databases are related to functionality in BPM Advanced that came from the WebSphere Lombardi Edition heritage and not from the WebSphere Process Server heritage, and therefore are not used by the existing applications. One database and one bus are for the Performance Data Warehouse and the other bus and database are used by process applications.

When you continue to run the older versions of your applications in BPM Advance version 7.5, these new resources are not used. However, it is important to ensure these resources are there in the new BPM Advanced environment for two reasons.

First, when you create new process applications at a later date and want to deploy them, these resources are needed for the process applications and toolkits to run successfully.

Also, at a later date when you migrate from BPM Advanced version 7.5 to a subsequent version, these new resources need to exist in order for that migration to be successful.

Runtime migration steps (1 of 3)
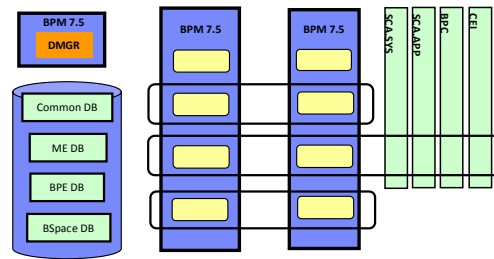
- Steps involved in doing the migration (full downtime)-
  1. Install 7.5 product binaries for the target environment
  2. Stop all the JVM's in the source environment and back up current environment
  3. Migrate the DMgr profile using BPM Profile Migration commands

Migration from WebSphere Process Server to BPM Advanced

The next three slides provide the high level steps involved in the runtime migration of a network deployment environment, with full downtime.

Before starting the runtime migration, the BPM Advanced version 7.5 product binaries must be installed in the target environment. After that, you should stop all the JVM's running in the source environment. Once that is completed, backup the deployment manager profile, custom profile folders and the product databases in the source environment.

The diagram in the slide shows the network deployment environment. The box in bright orange color indicates the component that is migrated, at a particular step in the runtime migration procedure.

The first component that should be migrated is the deployment manager . Both the custom profiles and the deployment manager profile can be migrated using the three BPM profile migration command-line utilities.

If the target BPM 7.5 environment is going to be in a remote system, first complete the BPMSnapshotSourceProfile command on the source WebSphere Process Server environment. Then move the profile snapshot from the source environment to the remote BPM 7.5 target environment. After that, complete the remaining steps in the runtime migration procedure.

Users also have the option to perform the runtime migration with minimal downtime, in circumstances where the amount of downtime required for migration directly impacts the business. Performing the runtime migration with minimal downtime is a relatively more complex procedure compared to runtime migration with full downtime. Refer to the product information center for the detailed steps.

Runtime migration steps (2 of 3)
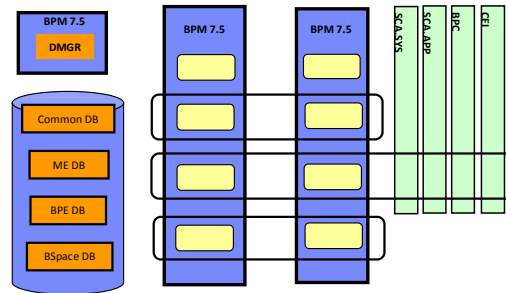
- Steps involved in doing the migration (full downtime)- Contd
  4. Upgrade the Common and Business Process Choreographer product databases
  5. Upgrade the Business Space DB (both schemas and instance data, in one step)
  6. Upgrade the instance data in Business Process Choreographer database.

  Note: CEI and Messaging Engine DB's are upgraded automatically during profile migration

Once the deployment manager profile is migrated, the next three steps involve upgrading the product databases manually.

Because the deployment manager uses the common database, you must complete the common database upgrade before starting the migrated deployment manager. The remaining databases for Business Process Choreographer and Business Space can be updated in parallel while the managed profiles and clusters are being migrated. But it is important to completely upgrade all the databases, before starting the clusters.

Runtime migration steps (3 of 3)
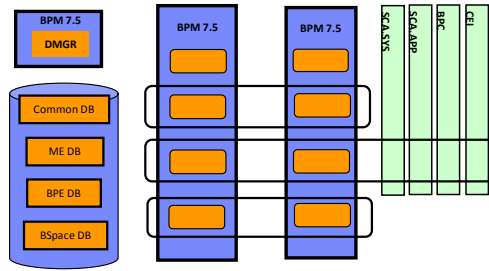
- Steps involved in doing the migration (full downtime)- Contd
    7. Start the migrated DMgr
    8. Migrate all the custom nodes using the BPM Profile Migration commands and start the node agents
    9. Migrate the messaging, support and application clusters using the **BPMMigrateCluster** command utility
    10. Synchronize all the nodes and start the clusters. Verify if the migration is successful using **BPMMigrationStatus** command

The remaining steps in runtime migration procedure are shown here.

Start the deployment manager profile using the startManager command. Then migrate the custom profiles using the BPM profile migration command-line utilities. Once all the custom profiles are migrated, start the respective node agents using the startNode command

Next migrate the cluster scoped configuration using the BPMMigrateCluster command-line utility. Repeat the same procedure for all three clusters, in the exact sequence specified in product information center.

Synchronize all the custom nodes to update the cluster configuration and start the clusters. Verify if the migration is successful by running the BPMMigrationStatus command for each machine that participated in the migration process. Also remember to check the migration log files for any failure or warning messages.

Post runtime migration tasks

- Manually create Performance Data Warehouse and Process Server databases
- Configure Process Admin and Process Portal applications on Application cluster
- Configure Performance Admin application on Support cluster
- The two new service integration buses and their corresponding messaging engines will get created automatically

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There are two, post runtime migration tasks that you need to complete.

As mentioned earlier, there are two new databases introduced in BPM Advanced version 7.5. You should manually create the Performance Data Warehouse database and the Process Server database using the scripts shipped with the product.

Along with that, you also need to configure three system applications using the administration console. The Process Admin and Process portal applications should be configured on the Application cluster and the Performance Admin application should be configured on the support cluster. Once this configuration is complete, two new service integration buses along with their respective messaging engines will get created automatically.

See the product information center for the detailed step-by-step procedure.
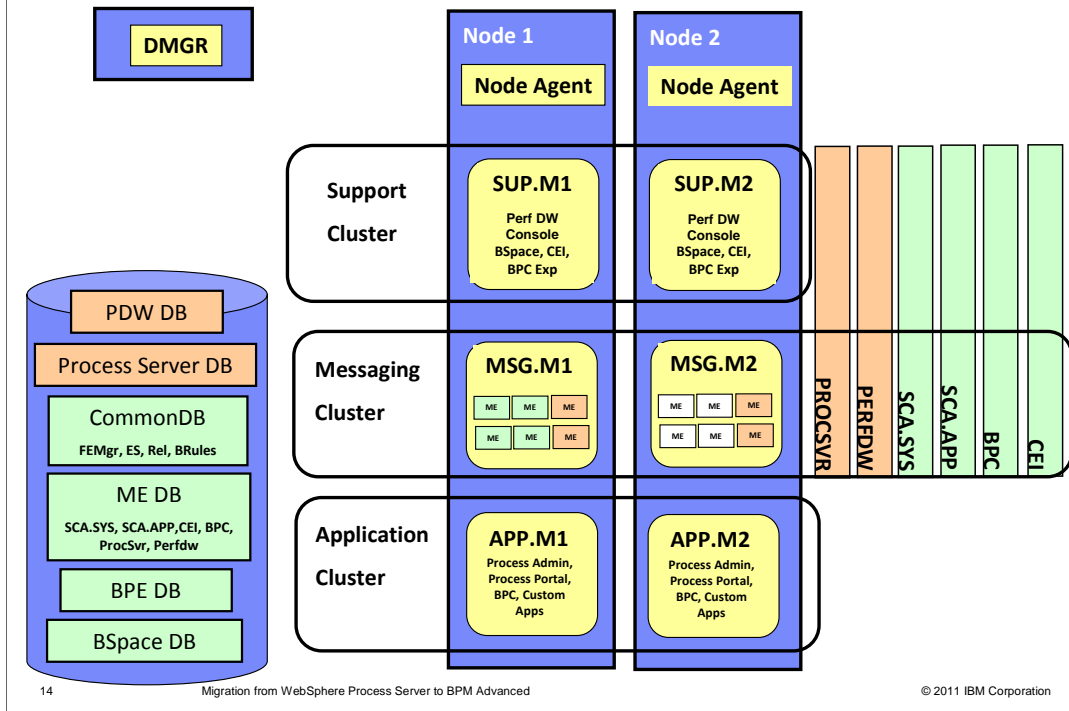
This is the golden topology, network deployment environment, after all the components have been migrated and created in BPM Advanced version 7.5.

You can see the two, new, service integration buses and databases, indicated in bright orange color. You can also see the Process Admin and Process Portal applications listed on the application cluster and the Performance Admin application on the support cluster.

Runtime migration – Benefits and costs

- Benefits of runtime migration include
  - Existing application data is used in new environment
  - Additional hardware resources not needed
- Costs in runtime migration include
  - Downtime needed in production environment
  - Applications cannot be migrated and deployed in phased manner
- Potential risks in runtime migration
  - Existing applications should run correctly in new runtime
  - Rollback plan must be in place to handle migration failure

Migration from WebSphere Process Server to BPM Advanced

There are several advantages when using the runtime migration method. The existing application data and the tuning parameters is used even after migration to version 7.5. Also, since you don't need to manage two production environments in parallel, there is no need for additional hardware resources.

There are also some disadvantages. You need to plan for some amount of downtime in production environment, to complete the migration. Also, you cannot migrate your existing applications in a phased manner. All the existing applications along with the instance data in the databases are migrated at once.

There are also couple of potential risks that you need to plan for. In case the runtime migration procedure was not successful, there should be a rollback plan in place for the production environments. And though there is backward support for existing application binaries, there might be changes in the new runtime such as a BPEL API change. If an existing application is using an API that has been changed, it will fail in the new runtime. So it is highly recommended, that you test the existing applications functionality in a pre-prod or test environments, before migrating the production environment.

Migration enhancements

- New capability
  - Migration to remote machines
  - Detection of defined databases

- Multiple serviceability enhancements, including:
  - Optional parameters for JVM heap size, SOAP timeout
  - More consistent database upgrade procedure for all components

- Enhanced user feedback, including:
  - Notification, if user attempts to start a server/cluster, not properly migrated

There are numerous migration enhancements introduced in BPM Advanced version 7.5.

Detection of defined databases is a new capability added in this version. The source environment's configuration is analyzed and a report is generated, reflecting the databases being used. This report will facilitate communication between the BPM administrator and the DBA. Migration of profiles to remote machines is a new feature supported in BPM Advanced version 7.5.

There are multiple serviceability enhancements introduced in this release. You can now specify the JVM heap size as a parameter, when running the BPM profile migration commands. This parameter is used internally and will help in completing the command successfully, without experiencing any out of memory problems.

When running the BPM profile migration command, it is necessary to establish a connection to the cell's deployment manager and download needed configuration. The default SOAP timeout value used for this connection was relatively small and caused timeout errors in the previous releases. You can now specify this SOAP timeout value as a parameter and avoid the timeout problem.

The database upgrade procedure has been made consistent. In the previous releases, different components within the product each required different methods. This new enhancement provides a consistent methodology for generating and executing each component's database migration scripts.

The quality of the feedback provided during the migration process is enhanced. For example, if you forgot to run the BPM migrate cluster command for a cluster and tried to start the cluster, then a clear error message is added in the cluster member's log file indicating the problem.

Summary

- Migration paths supported in V7.5
- High level steps involved in artifact and runtime migration procedures
- Migration enhancements made in V7.5

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In this presentation you were first introduced to the supported migration paths in BPM Advanced version 7.5. The next set of slides covered the high level steps involved in artifact migration. Following that, details about the high level steps involved in the runtime migration, its associated benefits and costs and some of the post migration tasks were discussed. And finally, information about the migration enhancements introduced in version 7.5 are provided.

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