

IBM MobileFirst Platform Foundation V7.1.0

*Upgrading MobileFirst Server from
V6.1.0 to V7.1.0*

IBM

Note

Before you use this information and the product it supports, read the information in “Notices” on page A-1.

IBM MobileFirst Platform Foundation V7.1.0

This edition applies to version V7.1.0 of IBM MobileFirst Platform Foundation and to all subsequent releases and modifications until otherwise indicated in new editions.

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Upgrading MobileFirst Server from V6.1.0 to V7.1.0

The installation of IBM MobileFirst™ Platform Foundation V7.1.0 is different from the installation of IBM® Worklight® V6.1.0. The main difference is that the functions of the Worklight project WAR file are split into three WAR files:

MobileFirst Server Administration Service WAR file

The Administration Service handles the management operations such as uploading a new version of an adapter or an app (.wlapp), and changing the active status of an application.

MobileFirst Operations Console WAR file

The console WAR file provides a web graphical interface to the Administration Service. The Administration Service also offers a REST API, and can be controlled with **wladm** command.

MobileFirst runtime WAR file

The runtime WAR file (also called the project WAR file) handles the communication with the mobile apps.

The first two WAR files (the MobileFirst Server Administration Service and MobileFirst Operations Console) are secured by using security roles in the application server.

The data that is stored in the database is also different between the two versions. There is a new set of database tables for the Administration Service. These tables contain some of the data that is stored in the Worklight table in V6.1.0. The data that is related to the push notification is also modified. The upgrade scripts are available to convert the existing data to the new data model for the push notification.

The new architecture requires that an Administration Service WAR file is installed in each server where a runtime WAR file is installed. Also, all servers of a cluster are symmetric, that is they must contain the same runtime WAR file. The servers of a cluster must be federated as a server farm so that any administration change, such as uploading a new version of an adapter, is reflected to all the servers of the runtime environment. On WebSphere® Application Server Network Deployment, however, you can use non-symmetric deployment and it is not needed to federate the servers as a farm. For more information about the supported topologies, see Planning deployment of administration components and runtimes.

In addition to these changes in the databases and the components of V7.1.0, you might consider the following differences:

Product renaming

The product is renamed from IBM Worklight to IBM MobileFirst Platform Foundation in V6.3.0. This change modifies the use of Installation Manager. Instead of updating IBM Worklight, you must install IBM MobileFirst Platform Foundation in the package group that contains “Worklight”. Installation Manager is instructed to supersede IBM Worklight with IBM MobileFirst Platform Foundation.

Incompatible Ant files

The Ant files that are used to install Worklight V6.1.0 are not compatible with the Ant files for the installation of V7.1.0. You need to create new Ant files.

Changes in deployment scripts

The scripts to deploy adapters or the application in command-line are different. Your deployment scripts need to be updated.

Session-independent mode by default

New applications that are developed with V7.1.0 are session-independent by default. This choice can be overridden. For more information, see Session-independent mode.

- This difference might have impact on:
 - Your network infrastructure and the settings of your load balancers.
 - The ability to auto-scale a cluster or server farm. For session-independent applications, you can stop a server without visible impact for the users.
 - Your maintenance procedures. It is no longer true to assume that a cluster that has some servers that are upgraded and other not upgraded to a new configuration or fix pack level, has no impact on existing sessions.

WorklightReports database is deprecated

If you rely on this database for application monitoring, consider installing MobileFirst Operational Analytics. For more information, see Installing the IBM MobileFirst Platform Operational Analytics.

IBM SmartCloud[®] Analytics Embedded changes

IBM SmartCloud Analytics Embedded is repackaged and renamed as MobileFirst Operational Analytics. In V7.1.0, the component is delivered as two separate WAR files instead of a single WAR file. One for the analytics console and one for the analytics service. Both WAR files are protected by the security roles.

Support for token licensing

Token licensing is introduced in V7.1.0.

- If you have a contract that defines the use of token-based licensing for the product, activate token licensing at upgrade time and configure your application for token licensing.
- If you do not have a contract that defines the use of token-based licensing, do not activate token licensing at upgrade time. With token licensing activated, MobileFirst Server does not start unless it is configured to retrieve tokens from a Rational[®] License Key Server and obtains enough tokens to run.

Installation of Application Center with Ant tasks

From V7.1.0, Application Center can be installed by Ant tasks. Installing Application Center with Ant tasks, instead of Installation Manager, enables you to decouple updates to the server from updates to the Application Center.

If Application Center is installed with Installation Manager, to benefit from this feature and update Application Center with Ant tasks, you need to uninstall Application Center first. Uninstall Application Center with Installation Manager, reinstall it with Ant tasks and then reconfigure it. For more information, see “Installing and upgrading of Application Center with Ant tasks” on page 3-16 before you run the Installation Manager.

New network flow

The Administration Service and the runtime environment communicate via JMX inside a server and also between the servers of a WebSphere Application Server Network Deployment cluster or farm (for Apache Tomcat, WebSphere Application Server Liberty profile, or WebSphere Application Server stand-alone). The communication uses the following protocol, depending on the application server:

- SOAP for WebSphere Application Server and WebSphere Application Server Network Deployment
- RMI for Apache Tomcat
- HTTPS for WebSphere Application Server Liberty.

Note: In a Liberty farm, the HTTPS certificate of each server needs to be embedded in its truststore.

The Administration Service and the runtime environment communicate via HTTP (or HTTPS) to serve large artifacts. The connection is opened by the Administration service. If this communication needs to go through a reverse proxy in your data center, you need to perform some configurations after the applications are installed. For more information, see *Defining the endpoint of the MobileFirst Administration services*.

New startup behavior

At startup, the runtime environment communicates with the Administration Service to get the list of applications and adapters to serve. This operation is called the runtime synchronization. If the operation fails, the runtime environment will not accept queries from the mobile devices. To troubleshoot these startup issues, the trace settings must be activated for the applications at startup.

The high-level procedure is as follows:

1. Prepare a rollback plan. You might want to make a backup of the database before you run the database migration scripts.

Note: Some operations that are run in the migration scripts cannot be undone.

2. Run IBM Installation Manager.
3. Stop all the application servers.
4. Migrate the database content.
5. Install and configure the MobileFirst Server Administration Service and MobileFirst Operations Console.
6. Migrate the V6.1.0 project WAR File (so that it is compatible with V7.1.0) and deploy it to all servers.
7. Install MobileFirst Operational Analytics on a server other than the one that runs the Administration Service and the runtime environment.
8. Restart the application servers
9. Verify that the installation runs correctly and that the connection between the farm members works well.
10. After the migration is completed, the mobile devices that run your applications can continue to use them. However, to deploy apps or adapters that are developed with V7.1.0, you need to deploy a new Project WAR File. For more information, see *Version compatibility*.

Running IBM Installation Manager

Before you begin

Prepare a rollback plan. You might want to make a backup of the database before you run the database migration scripts as some operations that are run in the migration scripts cannot be undone.

About this task

First, run Installation Manager to update the binary files of IBM MobileFirst Platform Foundation on your disk. Then, update the MobileFirst Server components on your application server by following the steps that are described in “Updating the application server and the databases” on page 3-1.

Installation Manager can be run in two ways: by graphical user interface (GUI), or by command-line. The effect of running Installation Manager to upgrade to V7.1.0 depends on the choice that you made at the initial installation.

If Application Center is installed at the initial installation and deployed to an application server, Installation Manager updates Application Center in the application server. It also updates the Application Center database to set the version number to 7.1.0. If Installation Manager fails to find Application Center on the application server (such as Application Center WAR file is removed), the update fails, and Installation Manager fails to apply the upgrade.

If Application Center is not installed at the initial installation and deployed to an application server, Installation Manager updates only the binary files on your disk. This operation usually does not fail unless an error occurs during the updating of the files. For example, on Windows environment, you run a process (such as Ant task or the Server Configuration Tool) inside the MobileFirst installation directory while you apply the update.

Tip: To determine whether Application Center is installed with Installation Manager, you can check the registry of Installation Manager.

- If you run Installation Manager in GUI mode, the choice is displayed in the wizard pane when you are at the **Configuration Choice** panel.
- If you do not run Installation Manager in GUI mode, you can look at the content of the `product_install_dir/shortcuts/application-center.sh` file.
 - If it contains the line
`url='${appserver.root.url} ${appserver.appcenter.console.path}'`, it means that Application Center is not installed by Installation Manager.
 - If it contains a URL that is defined (such as `url='http://localhost:9080/appcenterconsole/'`), it means that Application Center is installed by Installation Manager.

The product is renamed from IBM Worklight to IBM MobileFirst Platform Foundation in V6.3.0. This change modifies the use of Installation Manager. Instead of updating IBM Worklight, you must install IBM MobileFirst Platform Foundation in the package group that contains Worklight. Installation Manager is instructed to supersede IBM Worklight with IBM MobileFirst Platform Foundation. The result is the same as an upgrade.

Running Installation Manager in graphical mode

Procedure

1. Run Installation Manager from the user account that is used at the initial installation.

To apply an update, Installation Manager must run with the same list of registry files that are used at the initial installation. The list of Software that is installed and the options that are used during the installation time are stored in those registry files. If you run Installation Manager in administrator mode, the registry files are installed at the system level. In /var folder on UNIX or Linux. In c:\ProgramData folder on Windows. The location is independent from the user who runs Installation Manager (although root is needed on UNIX and Linux). However, if you run Installation Manager in single user mode, the registry files are stored by default in the user's home directory.

2. Select **File > Preferences**.

Enter the repository of IBM MobileFirst Platform Foundation V7.1.0 and also the repository of the fix pack if you plan to upgrade to a fix pack or interim fix. The fix packs are delivered as delta installers and cannot be installed if the base version is not among the listed repositories.

If you decompress the base installer in *710_installer_directory* folder, the repository file to enter is *710_installer_directory/MobileFirst_Platform_Server/disk1/diskTag.inf*. If you decompress the interim fix file in *ifix_directory* folder, the repository file to enter is *ifix_directory/MobileFirst_Platform_Server/disk1/diskTag.inf*.

3. After the repositories are entered, click **OK** to close the **Preferences** display.
4. Click **Install**. After you accept the license terms of IBM MobileFirst Platform Foundation V7.1.0, Installation Manager displays a list of packages that are already installed.
 - a. Verify that your IBM Worklight V6.1.0 installation is in list and is not disabled.
 - b. Select the package group that contains the installation of V6.1.0 that you need to update. By default, it is named as IBM Worklight. The name might change due to the following scenarios:
 - If you have multiple installations of IBM Worklight, a suffix might be appended to the package name. For example, IBM Worklight_2.
 - If you install the product with a version earlier than V6.0.0, the package name uses the name of the product for that version. For example, Worklight for the product name that is installed for V5.0.6, and then upgraded to V6.1.0.
 - If the package is not in the list, the cause might be that you did not run Installation Manager with the same user account that was used at the initial installation. Either find the user account that was used to run Installation Manager, or make a fresh installation of the product and the interim fix by selecting **Create a new package group** instead of **Use the existing package group**.
 - If you need to make a fresh installation, but Application Center is already installed with Installation Manager, the procedure does not update Application Center in the application server.
 - If Application Center is installed with Installation Manager, but the package is not found, then you have to update Application Center manually.

5. Click **Next**. You must determine whether you need to activate token licensing or not. Token Licensing is a new feature that is introduced in V7.1.0.
 - If you do not have a contract to use token licensing with the Rational License Key Server, click **Do not activate token licensing**.
 - If you activate token licensing, make sure that the Rational License Key Server is configured, and enough tokens can be obtained to run MobileFirst Server and the applications it serves. Otherwise, the MobileFirst Server administration application and the runtime environments cannot be run.

All choices are disabled in the panes, excepted some passwords (databases and server administrator) that you can update if they are modified since the last installation.

6. In the **Thank You** panel, click **Next**. A summary is displayed.
7. Click **Update** to start the update procedure.

What to do next

“Updating the application server and the databases” on page 3-1

Running Installation Manager in command-line mode

Procedure

1. Download the silent install files from http://public.dhe.ibm.com/software/products/en/MobileFirstPlatform/docs/v710/Silent_Install_Sample_Files.zip.
2. Decompress the file, and select 7.1/upgrade-initially-worklightv6.xml file. If you initially installed the product in V5.x, select this 7.1/upgrade-initially-worklightv5.xml file instead.

The file contains the profile identity of the product. The default value of this identity changes over the releases of the product. In V5.x, it is Worklight. In V6.0.0, V6.1.0, and V6.2.0, it is IBM Worklight. In V6.3.0, V7.0.0, and V7.1.0, it is IBM MobileFirst Platform Server.

3. Make a copy of the file you selected.
4. Open the copied XML file with a text editor or XML editor. Modify the following elements:
 - a. The repository element that defines the repository list.

Create a repository entry for the repository of IBM MobileFirst Platform Foundation V7.1.0 and also the repository of the fix pack that you plan to upgrade. The fix packs are delivered as delta installers and cannot be installed if the base version is not among the listed repositories.

If you decompress the base installer in *710_installer_directory* folder, the repository file to enter is *710_installer_directory/MobileFirst_Platform_Server/disk1/diskTag.inf*. If you decompress the interim fix file in *ifix_directory* folder, the repository file to enter is *ifix_directory/MobileFirst_Platform_Server/disk1/diskTag.inf*.
 - b. Optional: Update the passwords for the database and the application server. If Application Center is installed at the initial installation with Installation Manager, and the passwords for the database or the application server are changed, you can modify the value in the XML file. These passwords are used to validate that the database has the right schema version, and to upgrade it if it is in a version older than V7.1.0. They are also used to run **wsadmin** for an installation of Application Center on WebSphere Application Server full profile. Uncomment the appropriate lines in the XML file:

```

<!-- Optional: If the password of the WAS administrator has changed-->
<!-- <data key='user.appserver.was.admin.password2' value='password' /> -->
<!-- Optional: If the password used to access the DB2 database for
Application Center has changed, you may specify it here-->
<!-- <data key='user.database.db2.appcenter.password' value='password' /> -->
<!-- Optional: If the password used to access the MySQL database for
Application Center has changed, you may specify it here -->
<!-- <data key='user.database.mysql.appcenter.password' value='password' /> -->
<!-- Optional: If the password used to access the Oracle database for
Application Center has changed, you may specify it here -->
<!-- <data key='user.database.oracle.appcenter.password' value='password' /> -->

```

- c. Uncomment the line `<data key='user.licensed.by.tokens' value='false' />`. Set the value to true if you have a contract to use token licensing with the Rational License Key Server. Otherwise, set the value to false. If you activate token licensing, make sure that the Rational License Key Server is configured, and enough tokens can be obtained to run MobileFirst Server and the applications it serves. Otherwise, the MobileFirst Server administration application and the runtime environment cannot be run.

Restriction: After the decision is made to activate token licensing or not, it cannot be modified. If you run an upgrade with the value true, and later apply a fix pack with the value false, the second upgrade fails.

- d. Review the profile identity and the installation location. The profile identity and the installation location must match what is installed:
- This line: `<profile id='IBM Worklight' installLocation='/opt/IBM/Worklight'>`
 - And this line: `<offering id='com.ibm.mobilefirst.foundation.server' version='7.1.0.00-20150913-2345' profile='IBM Worklight' features='main.feature' installFixes='none' />`
 - To review the profile identity and the installation directories that are known to Installation Manager, you can type the command:

```
installation_manager_path/eclipse/tools/imcl listInstallationDirectories -verbose
```
- e. Update the version attribute to and set it to the version of the interim fix.
- If you install the base version that is downloaded from Passport Advantage®, you do not need to do anything. The silent response files contain the particular version that is posted on the Passport Advantage.
 - If you install the base version with an interim fix (such as 7.1.0.0-IF201510051721), replace `<offering id='com.ibm.mobilefirst.foundation.server' version='7.1.0.00-20150913-2345' profile='IBM Worklight' features='main.feature' installFixes='none' />` by `<offering id='com.ibm.mobilefirst.foundation.server' version='7.1.0.00-20151005-1721' profile='IBM Worklight' features='main.feature' installFixes='none' />`.

Installation Manager does not only use the repositories that are listed in the installation file, but also the repositories that are installed in its preferences. Specifying the version attribute in the offering element is optional. However, by specifying it, you ensure that the interim fix that is defined is the version that you intend to install. This specification overrides the other repositories with interim fixes that are listed in the Installation Manager preferences.

You can also find the version number in `ifix_directory/MobileFirst_Platform_Server/disk1/md/repository.xml` file, in the line `<offering id=... version='6.2.0.00-20141005-1729'>`.

5. Open a session with the user account that is used at the initial installation.
To apply an update, Installation Manager must run with the same list of registry files that are used at the initial installation. The list of Software that is installed and the options that are used during the installation time are stored in those registry files. If you run Installation Manager in administrator mode, the registry files are installed at the system level. In /var folder on UNIX or Linux. In c:\ProgramData folder on Windows. The location is independent from the user who runs Installation Manager (although root is needed on UNIX and Linux). However, if you run Installation Manager in single user mode, the registry files are stored by default in the user's home directory.
6. Run the command `installation_manager_path/eclipse/tools/imcl input <responseFile> -log /tmp/installwl.log -acceptLicense`
Where
 - `<responseFile>` is the XML file that you edit in 4 on page 2-3.
 - `-log /tmp/installwl.log` is optional. It specifies a log file for the output of Installation Manager.
 - `-acceptLicense` is mandatory. It means that you accept the license terms of IBM MobileFirst Platform Foundation V7.1.0. Without that option, Installation Manager cannot proceed with the update.

What to do next

“Updating the application server and the databases” on page 3-1

Updating the application server and the databases

About this task

IBM MobileFirst Platform Foundation provides several components that you might have installed. Here is a description of their dependencies to update them:

MobileFirst Server Administration Service, MobileFirst Operations Console, and MobileFirst runtime environment

These three components compose as MobileFirst Server and replace the unique V6.1.0 project WAR file. Make sure that you install and configure the Administration Service and MobileFirst Operations Console with a topology that is supported in the list at Planning deployment of administration components and runtimes.

Although the runtime environment is provided by your development team and built with MobileFirst Studio or MobileFirst Platform Command Line Interface (CLI), it is not necessary to recompile the project and applications with MobileFirst Studio or CLI V7.1.0 when you upgrade your server to V7.1.0. It is possible to separate these lifecycles. However, you need to migrate the project WAR file to make it compatible with V7.1.0. The following instructions include the step to migrate the project WAR file so that it is binary compatible with V7.1.0.

You can continue to upload the applications and adapters that are built with V6.1.0 to that runtime environment after you migrate the server to V7.1.0. However, do not upload the applications and adapters that are built with V7.1.0. For more information, see [Version compatibility](#).

To deploy the applications that are built with V7.1.0, you have the following two choices.

- Add a MobileFirst runtime environment with its own database. Do not share the database between different runtimes.
- Replace the deployed runtime environment by a runtime environment that is built with V7.1.0, at the condition that its configuration is compatible with the applications that are built with V6.1.0. For example, a session-independent configuration would not be compatible with the applications that are developed with V6.1.0. For V7.0.0 or earlier, the runtime application is configured for session-dependent mode by default.

You might have to increment the version number of the applications that you recompile with V7.1.0 and post them to the application store. For more information, see [Impact of migrating to a new version of MobileFirst Studio for applications already in production](#).

Application Center

The installation of this component is optional. This component is independent of the other components. It can be run at a different interim fix level than the others if needed.

MobileFirst Operational Analytics

The installation of this component is optional. The MobileFirst components send data to MobileFirst Operational Analytics via a REST API. This component replaces IBM SmartCloud Analytics Embedded that is in V6.1.0.

Updating MobileFirst Server Administration Service, MobileFirst Operations Console, and MobileFirst runtime environment

About this task

You can update these components in three ways:

- With the Server Configuration Tool
- With Ant tasks
- Manually

The updating procedure depends on the method you used at the initial installation.

The product is installed with the Server Configuration Tool

- You can upgrade with the Server Configuration Tool.
- You can upgrade with Ant tasks. The Ant files that are used to install V6.1.0 are not compatible with the V7.1.0 Ant files. You cannot directly use the Ant files that are exported from the Server Configuration Tool. You need to enter your installation parameters in the sample Ant files that are provided in the installation of V7.1.0.
- You can upgrade manually.

The product is installed with Ant tasks

- You can upgrade with Ant tasks. The Ant files that are used to install V6.1.0 are not compatible with the V7.1.0 Ant files. You cannot directly use the Ant files that are exported from the Server Configuration Tool. You need to enter your installation parameters in the sample Ant files that are provided in the installation of V7.1.0.
- You can upgrade manually.

The product is installed manually

- You can uninstall the Worklight runtime environment manually, then perform the new installation with Ant tasks. You need to enter your installation parameters in the sample Ant files that are provided in the installation of V7.1.0.
- You can upgrade manually.

Important:

- Upgrade the database by a database administrator:

In some cases, you might want to upgrade the databases manually. For example, to set some non-default properties to the new tables created. When you run an upgrade with Server Configuration Tool, it looks at the value in the tables (such as `WORKLIGHT_VERSION` for a runtime database) and detects that the tables are already upgraded to V7.1.0. Thus, the tool would not attempt to upgrade them. When you use Ant tasks, do not run the database and `admdatabases` targets if the databases are already updated manually. If you do run them, the Ant tasks would detect that the schema is in V7.1.0.

- Impact on high availability:

You need to stop the application servers that run the MobileFirst applications until all your cluster or farm is upgraded. For an in-place upgrade, this stop is potentially long. You need to install and configure two new applications, possibly reconfigure the web proxy, and reverse proxy with the new URLs that are used by the new applications. You also need to upgrade the databases. This upgrade includes a migration of some data to the new administration database.

If you are using the push feature of V6.1.0, the upgrade also includes the conversion of push data. This conversion can be long if you have a large number of users.

- WebSphere Application Server specifics:
 - The user that runs the upgrade needs to have at least the privileges of a Configurator role to install new application. In some cases if a user needs to be created, or the application security needs to be activated, an Administrator role is required.
 - The order of operations is important. Make sure that you follow the sequence that is described in the following sections to update the MobileFirst Server Administration component first. Then, the runtime environments. If the runtime environments fail to synchronize with the MobileFirst Server Administration (such as JMX binary incompatibility that is introduced in the fix pack), they would fail to start.
 - If your application server is WebSphere Application Server V7.0, you must add the configuration property `com.ibm.ws.webcontainer.invoekerequestlistenerforfilter = true`. For more information about how to add this property, see *Configuring WebSphere Application Server V7.0*. This setting is required for the runtime environment (the Project WAR File) in V7.1.0.
- All application servers must be stopped. All procedures in the following tasks assume that the application servers running the Worklight applications are stopped until the upgrade of all components is complete.

Upgrading the databases

About this task

This task is optional if you upgrade with the Server Configuration Tool. The upgrade of the database does the following things:

1. Create a set of new tables for the Administration Service.
2. Copy some of the data in the Worklight runtime database to the Administration Service database. The data is related to the artifacts (such as the apps and the adapters) that you can manage from MobileFirst Operations Console.
3. Upgrade the content of the Worklight runtime database to V7.1.0. This operation includes removing the data that is transferred to the Administration database, and converting the data that is related to the push notification to a new data model.

Important: Back up the databases for the Worklight runtime environment. The migration scripts delete some data in your database and the operation cannot be undone. If you decide to roll back the upgrade of MobileFirst Server, you need this backup.

Upgrading the databases with Ant tasks

Run the `admdatabases` target to create the `WorklightAdmin`. Then, run the `databases` target to migrate and upgrade the Worklight database.

Before you begin

You need the following privileges to run the Ant tasks:

- CREATE INDEX, CREATE SEQUENCE, CREATE TABLE, CREATE VIEW, REPLACE VIEW, SELECT, DELETE, INSERT, UPDATE, MERGE, DROP VIEW, DROP TABLE, DROP INDEX, DROP SEQUENCE, and ALTER TABLE

The upgrade scripts not only modify the table structure, but also run a data conversion for the push data. You need the privileges such as CREATE VIEW and DROP VIEW that are not required in previous upgrade path. If the DB user is not created by the installation of V6.1.0 or earlier, or it is modified since the creation, verify that you have enough privileges to run the scripts.

Procedure

1. Create an Ant file from the model of the configuration samples that are provided in *product_install_dir/WorklightServer/configuration-samples* folder.

The Ant files that are used to install Worklight V6.1.0 are not compatible with V7.1.0. New targets and elements are added in V7.1.0.

- To install the new components such as the MobileFirst Server Administration Service and MobileFirst Operations Console
- To migrate of some content of the Worklight runtime database to the Administration Service database.

If you plan to create the tables in a database that exists and also use an existing user, use the file that is named as *configure-`<appserver>-<dbtype>.xml`*.

If you plan to create tables in a database that does not exist, or with a user that does not exist, use the file that is named as *create-database-`<dbtype>`.xml*.

These files require database administrator credentials to run the operations to create tables and user. When you run the *admdatabases* target, the Ant tasks might need to open an ssh session to the server that runs the database.

Note: Make sure that you verify the parameters you use are the same as the one you use at the initial installation time. Verify the parameter details such as the server name, the cluster name, the database, the users, and the schemas. If the database parameters are different than the ones that are used at the initial installation, the Ant task might create new empty tables instead of upgrading the tables to the new format. If the application servers parameters are not the same as the ones that used at the initial installation, the Ant task might fail to update the application.

2. Run the *admdatabases* target to create the WorklightAdmin database and tables. For example,

```
product_install_dir/shortcuts/ant -f your_ant_file.xml admdatabases
```

3. Run the *databases* target to migrate and upgrade the Worklight databases. For example,

```
product_install_dir/shortcuts/ant -f your_ant_file.xml databases
```

The target migrates the administration-related content of the Worklight database to the Administration Service database. Then, it deletes the migrated content, converts the data that is related to push notification to the new data structure, and upgrades the tables to the V7.1.0 schema.

Note: You need to run this step 3 on each runtime environment if you have more than one runtime environment.

4. If you use push notification, you must complete some additional manual configuration.

This task requires the use of a database account that can modify the content of the runtime database. It also requires basic knowledge to run SQL scripts on the database. For DB2®, you need to know how to run the DB2 command line processor or the command line program. For Oracle, make sure that you know how to run SQLPlus. This task is only needed for Oracle or DB2. It is not needed for MySQL.

DB2

- a. Change *SCHEMANAME* instances to actual names.
- b. Replace X and Y values based on the given description.

```
SELECT MAX(ID) FROM SCHEMANAME.PUSH_DEVICES;  
SELECT MAX(ID) FROM SCHEMANAME.PUSH_SUBSCRIPTIONS;
```

```
--Value of X = Result of the selected query of PUSH_DEVICES + 1. For example, if SELECT MAX(ID) FROM  
--SCHEMANAME.PUSH_DEVICES returns 100, then X = 101;  
--Value of Y = Result of the selected query of PUSH_SUBSCRIPTIONS + 1. For example, if SELECT MAX(ID) FROM  
--SCHEMANAME.PUSH_SUBSCRIPTIONS returns 100, then Y = 101;
```

```
ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ RESTART WITH X ;  
ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ RESTART WITH Y ;
```

```
VALUES NEXT VALUE FOR SCHEMANAME.PUSHDEVICE_SEQ;  
VALUES NEXT VALUE FOR SCHEMANAME.PUSHSUBSCRIPTION_SEQ;
```

Oracle

- a. Change *SCHEMANAME* instances to actual names.
- b. Replace X and Y values (based on the given description) while running the query.

```
SELECT MAX(ID) FROM SCHEMANAME.PUSH_DEVICES;  
SELECT MAX(ID) FROM SCHEMANAME.PUSH_SUBSCRIPTIONS;
```

```
SELECT LAST_NUMBER FROM ALL_SEQUENCES WHERE SEQUENCE_NAME='PUSHDEVICE_SEQ';  
SELECT LAST_NUMBER FROM ALL_SEQUENCES WHERE SEQUENCE_NAME='PUSHSUBSCRIPTION_SEQ';
```

```
--Take note of the resulting value of each query above to use in the following X and Y calculations
```

```
--Value of X = (MAX(ID) OF PUSH_DEVICES - LAST_NUMBER OF PUSHDEVICE_SEQ) + 20. For example, if SELECT MAX(ID) FROM  
--SCHEMANAME.PUSH_DEVICES returned 100 and SELECT LAST_NUMBER FROM ALL_SEQUENCES  
--(where SEQUENCE_NAME='PUSHDEVICE_SEQ' is 50), then X=100-50+20 = 70
```

```
--Value of Y = (MAX(ID) OF PUSH_SUBSCRIPTIONS - LAST_NUMBER OF PUSHSUBSCRIPTION_SEQ) + 20. For example, if SELECT  
--MAX(ID) FROM SCHEMANAME.PUSH_SUBSCRIPTIONS returned 100, then Y = 101 and SELECT --LAST_NUMBER  
--FROM ALL_SEQUENCES (where SEQUENCE_NAME='PUSHSUBSCRIPTION_SEQ' is 50), then Y=100-50+20 = 70
```

```
ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ INCREMENT BY X ;  
SELECT SCHEMANAME.PUSHDEVICE_SEQ.NEXTVAL FROM dual;  
ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ INCREMENT BY 1;
```

```
ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ INCREMENT BY Y ;  
SELECT SCHEMANAME.PUSHSUBSCRIPTION_SEQ.NEXTVAL FROM dual;  
ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ INCREMENT BY 1;
```

MySQL

No action is required.

Upgrading the databases manually

The upgrade and database creation scripts are in *product_install_dir/WorklightServer/databases*.

Procedure

1. Create the administration database.
 - For DB2, see Setting up your DB2 database manually for the MobileFirst Server administration.
 - For MySQL, see Setting up your MySQL database manually for the MobileFirst Server administration.
 - For Oracle, see Setting up your Oracle database manually for the MobileFirst Server administration.

2. Use the data migration tool to migrate the content that is related to the administration from the Worklight Runtime database to the administration database.

When you upgrade from IBM Worklight V6.1.0 or older, before you call the script `WorklightServer/databases/upgrade-worklight-61-62-<dbms>.sql`, run the data migration tool to migrate the administration database to the new administration database. Then, run the SQL scripts from V6.2.0 to the current release to update the WRKLGHT database schema. If you forgot to run the data migration tool before you run the SQL script, `WorklightServer/databases/upgrade-worklight-61-62-<dbms>.sql` is likely to fail, and indicates that the data migration was not run. In that case, the WRKLGHT schema is not updated, or the production data might be corrupted or lost.

The data migration tool is included in the `product_install_dir/WorklightServer/worklight-ant-deployer.jar` file.

Before you run the tool in command-line, make sure that the library `worklight-ant-deployer.jar` of the MobileFirst version that you installed is in your current directory, or that your CLASSPATH variable references the directory it is in. An example on a Unix/Linux machine:

```
# Go to the directory library that worklight-ant-deployer.jar is in
$ cd $product_install_dir/WorklightServer
# Print the usage
$ java -cp worklight-ant-deployer.jar com.ibm.worklight.config.dbmigration.MigrationTool usage
Usage:
    java -cp worklight-ant-deployer.jar com.ibm.worklight.config.dbmigration.MigrationTool [options]
```

Options:

```
-p <project>          The name of the project to create.
-sourceurl            The path to the source database.
-sourceschema        The name of the schema of the source database.
-sourcedriver        The fully qualified driver class name of the source
                    database. This driver must be in the class path.
-sourceuser          The user name of the source database.
-sourcepassword      The password of the source database.
-sourceproperty <key> <value>  Adds additional OpenJPA properties to the connection
                    of the source database.
-targeturl           The path to the target database.
-targetschema       The name of the schema of the target database.
-targetdriver       The fully qualified driver class name of the target
                    database. This driver must be in the class path.
-targetuser         The user name of the target database.
-targetpassword     The password of the target database.
-targetproperty <key> <value>  Adds additional OpenJPA properties to the connection
                    of the target database.
```

```
# Example with DB2 as DBMS
$ java -cp worklight-ant-deployer.jar com.ibm.worklight.config.dbmigration.MigrationTool
-p worklight
-sourceurl jdbc:db2://proddb.example.com:50000/WRKLGHT
-sourceschema WLRT
-sourcedriver com.ibm.db2.jcc.DB2Driver
-sourceuser wuser1
-sourcepassword wuser1_pswd
-targeturl jdbc:db2://proddb.example.com:50000/WLADMIN
-targetschema ADMIN
-targetdriver com.ibm.db2.jcc.DB2Driver
-targetuser wuser2
-targetpassword wuser2_pswd
```

To run the data migration tool, you must add the database drivers to the class path. For example, to migrate a DB2 database, you must add the `db2jcc4.jar` file and the license JAR file (for example `db2jcc_license_cu.jar`), to the class path:

```
$ java -cp worklight-ant-deployer.jar:/path/to/db2jcc4.jar:/path/to/db2jcc_license_cu.jar  
com.ibm.worklight.config.dbmigration.MigrationTool usage
```

Note:

- The name of the project to create (worklight in the example) must be the context root where the MobileFirst runtime component (project WAR file) is deployed. For example, if the runtime component is deployed in the application server with a context root /worklight, then the project name must be worklight. The applications will be assigned to this project name. When a runtime component starts, it contacts the administration service to get the applications and the adapters it needs to serve. The runtime component uses its project name, computed by removing the initial / from its context root, to indicate which applications it needs. If the project name is not the same as the context root without the initial slash, then the migrated applications and the adapters are not visible by the runtime component.
 - For MySQL databases, the schema options '-sourceschema' and '-targetschema' must be left unspecified. The name of the schema to use will be the name of the database specified in the connection URL.
3. Comment the I_USERPRF_USERID index in the upgrade script if it exists.
- Before you apply the SQL scripts that upgrade the WRKLGHT database from V6.1.0 to a later version, you must check whether the index I_USERPRF_USERID, in column USER_ID of the table GADGET_USER_PREF, exists. You might have added it manually to solve the performance problem that is described in the technote IBM Worklight queries on the GADGET_USER_PREF table might take time. If this index exists, you must comment the statement that creates this index, in the script WorklightServer/databases/upgrade-worklight-61-62-<dbms>.sql. Comment the following line that refers to its creation before running it:
- ```
INDEX I_USERPRF_USERID ON GADGET_USER_PREF (USER_ID);
```
4. Select the script, depending on your database, to upgrade the Runtime databases.

The upgrade is done in four steps.

- a. Upgrade the database from V6.1.0 to V6.2.0 by using one of the following scripts:
  - upgrade-worklight-61-62-db2.sql
  - upgrade-worklight-61-62-mysql.sql
  - upgrade-worklight-61-62-oracle.sql
- b. Upgrade the database from V6.2.0 to V6.3.0.
  - upgrade-worklight-62-63-db2.sql
  - upgrade-worklight-62-63-mysql.sql
  - upgrade-worklight-62-63-oracle.sql
- c. Upgrade the database from V6.3.0 to V7.0.0.
  - upgrade-worklight-63-70-db2.sql
  - upgrade-worklight-63-70-mysql.sql
  - upgrade-worklight-63-70-oracle.sql
- d. Lastly, upgrade the database from V7.0.0 to V7.1.0.
  - upgrade-worklight-70-71-db2.sql
  - upgrade-worklight-70-71-mysql.sql
  - upgrade-worklight-70-71-oracle.sql

**Note:** If several runtime environments (also know as the project WAR files) are installed, you have several instances of that database, one per runtime environment.

5. The reports database is deprecated in V7.1.0. However, if you still plan to use them, select the script, depending on your database, to upgrade the Reports database for the runtime environment.
  - a. Upgrade the database from V6.1.0 to V6.2.0 by using one of the following scripts:
    - upgrade-worklightreports-61-62-db2.sql
    - upgrade-worklightreports-61-62-mysql.sql
    - upgrade-worklightreports-61-62-oracle.sql
  - b. Upgrade the database from V6.2.0 to V6.3.0.
    - upgrade-worklightreports-62-63-db2.sql
    - upgrade-worklightreports-62-63-mysql.sql
    - upgrade-worklightreports-62-63-oracle.sql
  - c. Upgrade the database from V6.3.0 to V7.0.0.
    - upgrade-worklightreports-63-70-db2.sql
    - upgrade-worklightreports-63-70-mysql.sql
    - upgrade-worklightreports-63-70-oracle.sql
  - d. Lastly, upgrade the database from V7.0.0 to V7.1.0.
    - upgrade-worklightreports-70-71-db2.sql
    - upgrade-worklightreports-70-71-mysql.sql
    - upgrade-worklightreports-70-71-oracle.sql

**Note:** If you are not using the reports feature, do not upgrade the databases. Make sure that your applications do not export data to the reports database by setting the value of the JNDI property (**reports.exportRawData**) to false.

6. If you use push notification, you must complete some additional manual configuration.

#### DB2

- a. Change *SCHEMANAME* instances to actual names.
- b. Replace X and Y values based on the given description.

```
SELECT MAX(ID) FROM SCHEMANAME.PUSH_DEVICES;
SELECT MAX(ID) FROM SCHEMANAME.PUSH_SUBSCRIPTIONS;
```

```
--Value of X = Result of the selected query of PUSH_DEVICES + 1. For example, if SELECT MAX(ID) FROM
--SCHEMANAME.PUSH_DEVICES returns 100, then X = 101;
--Value of Y = Result of the selected query of PUSH_SUBSCRIPTIONS + 1. For example, if SELECT MAX(ID) FROM
--SCHEMANAME.PUSH_SUBSCRIPTIONS returns 100, then Y = 101;
```

```
ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ RESTART WITH X ;
ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ RESTART WITH Y ;
```

```
VALUES NEXT VALUE FOR SCHEMANAME.PUSHDEVICE_SEQ;
VALUES NEXT VALUE FOR SCHEMANAME.PUSHSUBSCRIPTION_SEQ;
```

#### Oracle

- a. Change *SCHEMANAME* instances to actual names.
- b. Replace X and Y values (based on the given description) while running the query.

```

SELECT MAX(ID) FROM SCHEMANAME.PUSH_DEVICES;
SELECT MAX(ID) FROM SCHEMANAME.PUSH_SUBSCRIPTIONS;

SELECT LAST_NUMBER FROM ALL_SEQUENCES WHERE SEQUENCE_NAME='PUSHDEVICE_SEQ';
SELECT LAST_NUMBER FROM ALL_SEQUENCES WHERE SEQUENCE_NAME='PUSHSUBSCRIPTION_SEQ';

--Take note of the resulting value of each query above to use in the following X and Y calculations

--Value of X = (MAX(ID) OF PUSH_DEVICES - LAST_NUMBER OF PUSHDEVICE_SEQ) + 20. For example, if SELECT MAX(ID) FROM
--SCHEMANAME.PUSH_DEVICES returned 100 and SELECT LAST_NUMBER FROM ALL_SEQUENCES
--(where SEQUENCE_NAME='PUSHDEVICE_SEQ' is 50), then X=100-50+20 = 70

--Value of Y = (MAX(ID) OF PUSH_SUBSCRIPTIONS - LAST_NUMBER OF PUSHSUBSCRIPTION_SEQ) + 20. For example, if SELECT
--MAX(ID) FROM SCHEMANAME.PUSH_SUBSCRIPTIONS returned 100, then Y = 101 and SELECT --LAST_NUMBER
--FROM ALL_SEQUENCES (where SEQUENCE_NAME='PUSHSUBSCRIPTION_SEQ' is 50), then Y=100-50+20 = 70

ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ INCREMENT BY X ;
SELECT SCHEMANAME.PUSHDEVICE_SEQ.NEXTVAL FROM dual;
ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ INCREMENT BY 1;

ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ INCREMENT BY Y ;
SELECT SCHEMANAME.PUSHSUBSCRIPTION_SEQ.NEXTVAL FROM dual;
ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ INCREMENT BY 1;

```

### MySQL

No action is required.

## Installing the MobileFirst Server Administration Service, MobileFirst Operations Console, and upgrading the MobileFirst runtime environment

### About this task

The runtime environment that is referred by this procedure is the project WAR file. This WAR file is provided by your development team and built with MobileFirst Studio or MobileFirst Platform Command Line Interface (CLI). It is not necessary to recompile the project and applications with MobileFirst Studio or CLI V7.1.0 when you upgrade your server to V7.1.0. It is possible to separate these lifecycles. However, you need to migrate the project WAR file to make it compatible with V7.1.0. The following instructions include the step to migrate the project WAR file so that it is binary compatible with V7.1.0.

You can continue to upload the applications and adapters that are built with V6.1.0 to that runtime environment after you migrate the server to V7.1.0. However, do not upload the applications and adapters that are built with V7.1.0. For more information, see [Version compatibility](#).

To deploy the applications that are built with V7.1.0, you have the following two choices.

- Add a MobileFirst runtime environment with its own database. Do not share the database between different runtimes.
- Replace the deployed runtime environment by a runtime environment that is built with V7.1.0, at the condition that its configuration is compatible with the applications that are built with V6.1.0. For example, a session-independent configuration would not be compatible with the applications that are developed with V6.1.0. For V7.0.0 or earlier, the runtime application is configured for session-dependent mode by default.

You might have to increment the version number of the applications that you recompile with V7.1.0 and post them to the application store. For more information, see *Impact of migrating to a new version of MobileFirst Studio for applications already in production*.

## Upgrading with the Server Configuration Tool

### Before you begin

The database user for the WORKLIGHT database needs the following privileges to perform the upgrade:

- CREATE INDEX, CREATE SEQUENCE, CREATE TABLE, CREATE VIEW, REPLACE VIEW, SELECT, DELETE, INSERT, UPDATE, MERGE, DROP VIEW, DROP TABLE, DROP INDEX, DROP SEQUENCE, and ALTER TABLE

The upgrade scripts not only modify the table structure, but also run a data conversion for the push data. You need the privileges such as CREATE VIEW and DROP VIEW that are not required in previous upgrade path. If the DB user is not created by the installation of V6.1.0 or earlier, or it is modified since the creation, verify that you have enough privileges to run the scripts.

### About this task

This procedure upgrades the databases as well if it is not manually done before. The Server Configuration Tool looks at the value in the XXX\_VERSION table. For example, WORKLIGHT\_VERSION for a runtime database.

**Important:** Back up the databases for the Worklight runtime environments. The migration scripts delete some data in your database and the operation cannot be undone. If you decide to roll back the upgrade of MobileFirst Server, you need this backup.

### Procedure

1. Start the Server Configuration Tool from the V7.1.0 product installation.

**Note:** If the Server Configuration Tool does not show your configuration files, review the directory that it uses for the configuration files in the menu **File > Preferences**. In general, the Server Configuration Tool uses the same default directory as you had in V6.1.0. However, in some non-standard upgrade scenarios, it might be reset to the default value for V7.1.0. On Windows, the default directory for V7.1.0 is Documents\IBM MobileFirst Platform Server Data\Server Configuration Tool. On UNIX, the default value is *home\_dir/mobilefirst\_platform\_server/server-configuration-tool/*.

To verify that the Server Configuration Tool runs the version that you want to upgrade to, open the menu **Help > About the Server Configuration Tool**. A dialog appears with the build number. It must match the version that you install with Installation Manager. For example, make sure that the build number of the Server Configuration Tool is 7.1.0.00.20151005-1721 if V7.1.0 and the interim fix 7.1.0.0-IF201510051721 are installed.

The Server Configuration Tool updates the application server with the WAR files and JAR files that it finds in its installation directory. If you start the Server Configuration Tool from a product installation that does not contain the correct fix pack or interim fix, it will not update the application server to the right level.

Make sure that your configuration appears under the Worklight V6.1 Configurations folder.



2. Select the configuration to update.
3. Select **Migrate a V6.1 configuration**. A dialog opens.
  - a. Enter the requested passwords (database / application server).
  - b. Edit the parameters that are needed to install the Administration Service and MobileFirst Operations Console.
  - c. In the **Database Additional Settings** panel, enter the name of the database or schema to use for the administration database.
  - d. In the **Application Server Settings** panel, clear the Create a default user option if you do not want a default user to be created in the application server local registry.
  - e. In the **Analytics Settings** panel, keep the Enable the connection to the Analytics Server option cleared. You can enable the connection later by changing JNDI properties of the application after you install MobileFirst Operational Analytics.
  - f. Click **Migrate**.
  - g. The upgrade starts. The Server Configuration Tool installs the Administration Service and MobileFirst Operations Console, creates the administration database, upgrades the runtime database, and upgrades the project WAR File.
  - h. If you use push notification, you must complete some additional manual configuration.

This task requires the use of a database account that can modify the content of the runtime database. It also requires basic knowledge to run SQL scripts on the database. For DB2, you need to know how to run the DB2 command line processor or the command line program. For Oracle, make sure that you know how to run SQLPlus. This task is only needed for Oracle or DB2. It is not needed for MySQL.

### DB2

- 1) Change *SCHEMANAME* instances to actual names.
- 2) Replace X and Y values based on the given description.

```
SELECT MAX(ID) FROM SCHEMANAME.PUSH_DEVICES;
SELECT MAX(ID) FROM SCHEMANAME.PUSH_SUBSCRIPTIONS;
```

```
--Value of X = Result of the selected query of PUSH_DEVICES + 1. For example, if SELECT MAX(ID) FROM
--SCHEMANAME.PUSH_DEVICES returns 100, then X = 101;
--Value of Y = Result of the selected query of PUSH_SUBSCRIPTIONS + 1. For example, if SELECT MAX(ID) FROM
--SCHEMANAME.PUSH_SUBSCRIPTIONS returns 100, then Y = 101;
```

```
ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ RESTART WITH X ;
ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ RESTART WITH Y ;
```

```
VALUES NEXT VALUE FOR SCHEMANAME.PUSHDEVICE_SEQ;
VALUES NEXT VALUE FOR SCHEMANAME.PUSHSUBSCRIPTION_SEQ;
```

### Oracle

- 1) Change *SCHEMANAME* instances to actual names.
- 2) Replace X and Y values (based on the given description) while running the query.

```
SELECT MAX(ID) FROM SCHEMANAME.PUSH_DEVICES;
SELECT MAX(ID) FROM SCHEMANAME.PUSH_SUBSCRIPTIONS;
```

```
SELECT LAST_NUMBER FROM ALL_SEQUENCES WHERE SEQUENCE_NAME='PUSHDEVICE_SEQ';
SELECT LAST_NUMBER FROM ALL_SEQUENCES WHERE SEQUENCE_NAME='PUSHSUBSCRIPTION_SEQ';
```

```
--Take note of the resulting value of each query above to use in the following X and Y calculations
```

--Value of X = (MAX(ID) OF PUSH\_DEVICES - LAST\_NUMBER OF PUSHDEVICE\_SEQ) + 20. For example, if SELECT MAX(ID) FROM --SCHEMANAME.PUSH\_DEVICES returned 100 and SELECT LAST\_NUMBER FROM ALL\_SEQUENCES --(where SEQUENCE\_NAME='PUSHDEVICE\_SEQ' is 50), then X=100-50+20 = 70

--Value of Y = (MAX(ID) OF PUSH\_SUBSCRIPTIONS - LAST\_NUMBER OF PUSHSUBSCRIPTION\_SEQ) + 20. For example, if SELECT --MAX(ID) FROM SCHEMANAME.PUSH\_SUBSCRIPTIONS returned 100, then Y = 101 and SELECT --LAST\_NUMBER --FROM ALL\_SEQUENCES (where SEQUENCE\_NAME='PUSHSUBSCRIPTION\_SEQ' is 50), then Y=100-50+20 = 70

```
ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ INCREMENT BY X ;
SELECT SCHEMANAME.PUSHDEVICE_SEQ.NEXTVAL FROM dual;
ALTER SEQUENCE SCHEMANAME.PUSHDEVICE_SEQ INCREMENT BY 1;
```

```
ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ INCREMENT BY Y ;
SELECT SCHEMANAME.PUSHSUBSCRIPTION_SEQ.NEXTVAL FROM dual;
ALTER SEQUENCE SCHEMANAME.PUSHSUBSCRIPTION_SEQ INCREMENT BY 1;
```

## MySQL

No action is required.

- i. Configure the user authentication for MobileFirst Server administration as described in Configuring user authentication for MobileFirst Server administration.
- j. Optional: If you have a reverse proxy and all network traffic in your data center go through that proxy, you must configure the endpoints. For more information, see Defining the endpoint of the MobileFirst Administration services.

## Upgrading with Ant tasks Before you begin

You must upgrade the databases before you run this procedure. For more information, see “Upgrading the databases” on page 3-3.

### About this task

Run the `admininstall` target to install the Administration Service WAR file. Then, run the `uninstall` and `install` targets to uninstall and reinstall the runtime WAR file and the `worklight-jee-library.jar` library. Restart the application server for these updates to take effect.

### Procedure

1. Optional: If the databases are already upgraded with an Ant file, and the file is named as `configure-<appserver>-<dbtype>.xml`, you can skip this step. Otherwise, read the following instructions:
  - a. Create an Ant file from the model of the configuration samples that are provided in `product_install_dir/WorklightServer/configuration-samples` folder.

The Ant files that are used to install Worklight V6.1.0 are not compatible with V7.1.0. New targets and elements are added in V7.1.0.

    - To install the new components such as the MobileFirst Server Administration Service and MobileFirst Operations Console
    - To migrate of some content of the Worklight runtime database to the Administration Service database.
  - b. Verify that the parameters you use are the same as the one you use at the initial installation time.

Check the parameter details such as the server name, the cluster name, the database, the users, and the schemas. If the database parameters are different than the ones that are used at the initial installation, the Ant task might create new empty tables instead of upgrading the tables to the new format. If the application servers parameters are not the same as the ones that used at the initial installation, the Ant task might fail to update the application.

- c. Verify the path of the project WAR File (the runtime path).

If the path is not to the most current project WAR file that is deployed to the application server, update the path. This WAR file is to be migrated (to be binary compatible with the `worklight-jee-library.jar` of the fix pack or interim fix) and redeployed to the application server. The base name of the project WAR file must be the same as the one that is previously installed.

- d. Optional: Follow the instructions that are described in Manually creating and configuring the reports database if you plan to use the deprecated `WorklightReports` feature after you complete the upgrade with Ant tasks. Manual configuration is needed because the Ant files in `product_install_dir/WorklightServer/configuration-samples` do not install the Worklight Reports database by default.

2. Run the `admininstall` target to install the MobileFirst Server Administration Service and MobileFirst Operations Console WAR files. For example,

```
product_install_dir/shortcuts/ant -f your_ant_file.xml admininstall
```

3. Run the `uninstall` target and then the `install` target to update each MobileFirst runtime environment. For example,

```
product_install_dir/shortcuts/ant -f your_ant_file.xml uninstall install
```

This `uninstall` target uninstalls the V6.1.0 project WAR file from the application server. It makes a copy of the project WAR file that is specified in the `worklight.project.war.file` property and migrates the copy so that it is binary compatible with the `newworklight-jee-library.jar` library. The `install` target installs this copy of the WAR file into the application server and updates the `worklight-jee-library.jar` library.

4. Configure the user authentication for MobileFirst Server administration as described in [Configuring user authentication for MobileFirst Server administration](#).
5. If you have a reverse proxy and all network traffic in your data center go through that proxy, you must configure the endpoints. For more information, see [Defining the endpoint of the MobileFirst Administration services](#).
6. Repeat this operation for all the servers of a farm.

## Upgrading manually

### Before you begin

You must upgrade the databases before you run this procedure. For more information, see ["Upgrading the databases"](#) on page 3-3.

### Procedure

1. Install the MobileFirst Server Administration Service and MobileFirst Operations Console as described at [Manually installing MobileFirst Server administration](#).

**Note:** Skip the "Setting up your XXX database manually for the MobileFirst Server administration" operation that is under the "Configuring the XXX

database manually for the IBM MobileFirst Platform Server administration" topic. This operation is done earlier when you upgrade the databases.

2. Locate the WAR and JAR files. The new versions of these files that you need to update are in *product\_install\_dir/WorklightServer* folder.
3. Replace the *worklight-jee-library.jar* library.
4. Migrate the project WAR file (MobileFirst runtime WAR file) so that it is binary compatible with the upgraded *worklight-jee-library.jar* library.
  - a. Find the most current version of the project WAR file that is published by your development team.
  - b. Migrate the project WAR file as described in Migrating a project WAR file for use with a new MobileFirst Server.
5. Uninstall the previous project WAR file from your application server.
6. Install the migrated project WAR file to your application server. For more information, see Deploying a project WAR file and configuring the application server manually.
7. On WebSphere Application Server Network Deployment, do a full synchronization of the servers.

### Configuring your server farm

You must perform this task regardless you install the applications manually, with Server Configuration Tool, or with Ant tasks.

You need to update the configuration if you configure a server farm to run IBM MobileFirst Platform Foundation in V6.0.0.

In V7.1.0, the servers of a cluster, if they are not running on a WebSphere Application Server Network Deployment cluster, need to be federated as a server farm. In this case, any administration change, such as uploading a new version of an adapter, can be reflected to all the servers of the runtime environment.

The high-level procedure to configure the server farm is as follows:

1. Declare some JNDI properties in MobileFirst Server Administration Service to declare the farm topology and other information to enable the other farm members to contact it via JMX. The information is then shared via the administration database.
2. For WebSphere Application Server Liberty profile and WebSphere Application Server, the authentication to stateless applications such as MobileFirst Operations Console uses LTPA tokens, you must ensure that all servers have the same LTPA keys.

For more information about the configuration, see Configuring a server farm.

To verify the farm configuration, you can look at the **Server Farm Nodes** tab in MobileFirst Operations Console. For more information, see Lifecycle of a server farm node.

### Special configurations Procedure

1. If Activate Token Licensing is selected when you run Installation Manager to upgrade the product installation to V7.1.0, you need to configure your server for token licensing. Select Activate Token Licensing only if you have a contract to use token licensing.
2. If your application server is WebSphere Application Server V7.0, you must add the configuration property

`com.ibm.ws.webcontainer.invokerequestlistenerforfilter = true`. For more information about how to add this property, see *Configuring WebSphere Application Server V7.0*. This setting is needed for the runtime environment (the Project WAR File) in V7.1.0.

## Updating your deployment scripts

In V7.1.0, the `app-deployer` and `adapter-deployer` Ant tasks no longer exist. The apps and adapters cannot be deployed with these Ant tasks. Use `wladm` in command-line, or as Ant tasks. For more information, see the following topics:

- Administering MobileFirst applications through Ant
- Administering MobileFirst applications through the command line
- REST API Administration Services

## Upgrading Application Center

### About this task

You can update this component in two ways:

- Directly with Installation Manager
- Manually

The updating procedure depends on the method you used at the initial installation.

### The component is installed with Installation Manager

Application Center is automatically upgraded when you run Installation Manager to update your installation. There is no further action required.

### The component is installed manually

- You can upgrade manually.
- An attempt to upgrade with Ant tasks might fail. The target of the Ant tasks to upgrade the component assume that the installation is made in a certain way.

### Important:

- Upgrade the database by a database administrator:

In some cases, you might want to upgrade the databases manually. For example, to set some non-default properties to the new tables created. This is not possible if you upgrade Application Center with Installation Manager since the database scripts are only available after you run Installation Manager. However, if you upgrade the Application Center manually before you run Installation Manager, it would detect that the tables are upgraded to V7.1.0. Installation Manager looks at the value in the table (such as `APPCNTR_VERSION`) and would not attempt to upgrade them. When you use Ant tasks, do not run the database target if the databases are already updated manually. If you do run them, the Ant tasks would detect that the schema is in V7.1.0.
- WebSphere Application Server specifics:
  - The user that runs the upgrade needs to have at least the privileges of a `Deployer` role to update the WAR files.
- Upgrade the databases:
  - This step is optional if you upgrade with Installation Manager.
  - Back up the databases for Application Center. The migration scripts delete some data in your database and the operation cannot be undone. If you decide to roll back the upgrade of Application Center, you need this backup.

- If you upgrade manually, the upgrade scripts can be found in *product\_install\_dir/ApplicationCenter/databases* folder.
  1. Upgrade the database from V6.1.0 to V6.2.0.
    - upgrade-appcenter-61-62-db2.sql
    - upgrade-appcenter-61-62-mysql.sql
    - upgrade-appcenter-61-62-oracle.sql
  2. Upgrade the database from V6.2.0 to V6.3.0.
    - upgrade-appcenter-62-63-db2.sql
    - upgrade-appcenter-62-63-mysql.sql
    - upgrade-appcenter-62-63-oracle.sql
  3. Upgrade the database from V6.3.0 to V7.0.0.
    - upgrade-appcenter-63-70-db2.sql
    - upgrade-appcenter-63-70-mysql.sql
    - upgrade-appcenter-63-70-oracle.sql
  4. Lastly, upgrade the database from V7.0.0 to V7.1.0.
    - upgrade-appcenter-70-71-db2.sql
    - upgrade-appcenter-70-71-mysql.sql
    - upgrade-appcenter-70-71-oracle.sql

### Upgrading manually Procedure

1. Locate the Application Center WAR files. The new versions of these files are in *product\_install\_dir/ApplicationCenter/console* folder.
2. Replace the appcenterconsole.war and applicationcenter.war files in your application server.

**Note:** For WebSphere Application Server full profile, make sure that the configured values of the JNDI properties are not erased.

3. On WebSphere Application Server Network Deployment, do a full synchronization of the servers.
4. Restart the application servers for these updates to take effect.

### Installing and upgrading of Application Center with Ant tasks About this task

It is possible to move from an installation and upgrading of Application Center with Installation Manager to an installation with Ant task.

The high-level procedure is as follows:

1. Uninstall the product and Application Center with Installation Manager.
2. Reinstall the product without installing Application Center with Installation Manager.
3. Upgrade the databases. You might want to back up the databases for Application Center. The migration scripts delete some data in your database and the operation cannot be undone. If you decide to roll back the upgrade of Application Center, you need this backup.
4. Install Application Center with an Ant file.
5. Keep the Ant file for future usage (such as applying a fix pack).
6. Configure the newly installed Application Center.

## Procedure

1. Uninstall the product and Application Center with Installation Manager.
  - a. Run Installation manager to uninstall your existing product installation.
    - Uninstallation process removes Application Center that is installed in the application server.
    - The databases are not modified.
    - The installation of MobileFirst Server or MobileFirst Operational Analytics are not modified on the application server.
2. Install IBM MobileFirst Platform Foundation V7.1.0 with Installation Manager without installing Application Center.
  - a. For a silent installation, use the `install-no-appcenter.xml` file that is listed in Working with sample response files for IBM Installation Manager.
3. Make a copy of the file you selected.
4. Open the copied XML file with a text editor or XML editor. Modify the following elements:
  - a. The repository element that defines the repository list.

Create a repository entry for the repository of IBM MobileFirst Platform Foundation V7.1.0 and also the repository of the fix pack that you plan to install.

The fix packs are delivered as delta installers and cannot be installed if the base version is not among the listed repositories. If you plan to update an existing IBM MobileFirst Platform Foundation V7.1.0 (apply an interim fix), the repository of product is not needed.

However, if you plan to make a fresh installation of IBM MobileFirst Platform Foundation V7.1.0 with an interim fix, then you need both repositories. For example, if you decompress the base installer in `710_installer_directory` folder, the repository file to enter is `710_installer_directory/MobileFirst_Platform_Server/disk1/diskTag.inf`. If you decompress the interim fix file in `ifix_directory` folder, the repository file to enter is `ifix_directory/MobileFirst_Platform_Server/disk1/diskTag.inf`.
  - b. Uncomment the line `<data key='user.licensed.by.tokens' value='false'/>`. Set the value to true if you have a contract to use token licensing with the Rational License Key Server. Otherwise, set the value to false.

If you activate token licensing, make sure that the Rational License Key Server is configured, and enough tokens can be obtained to run MobileFirst Server and the applications it serves. Otherwise, the MobileFirst Server administration application and the runtime environment cannot be run.

**Restriction:** After the decision is made to activate token licensing or not, it cannot be modified. If you run an upgrade with the value true, and later another upgrade with the value false, the second upgrade fails.
  - c. Review the profile identity and the installation location. Make sure that the profile identity and the installation location do not collide with another installation on your computer.
    - This line: `<profile id='IBM MobileFirst Platform Server' installLocation='/opt/IBM/MobileFirst_Platform_Server'>`
    - And this line: `<offering id='com.ibm.mobilefirst.foundation.server' version='7.1.0.00-20150913-2345' profile='IBM MobileFirst Platform Server' features='main.feature' installFixes='none'/>`

- To review the profile identity and the installation directories that are known to Installation Manager, you can type the command:  

```
installation_manager_path/eclipse/tools/imcl listInstallationDirectories -verbose
```
- d. Update the version attribute to and set it to the version that you plan to install.
- If you install the base version that is downloaded from Passport Advantage, you do not need to do anything. The silent response files contain the particular version that is posted on the Passport Advantage.
  - If you install the base version with an interim fix (such as 7.1.0.0-IF201510051721), replace `<offering id='com.ibm.mobilefirst.foundation.server' version='7.1.0.00-20150913-2345' profile='IBM MobileFirst Platform Server' features='main.feature' installFixes='none' />` by `<offering id='com.ibm.mobilefirst.foundation.server' version='7.1.0.00-20151005-1721' profile='IBM MobileFirst Platform Server' features='main.feature' installFixes='none' />`.

Installation Manager does not only use the repositories that are listed in the installation file, but also the repositories that are installed in its preferences. Specifying the version attribute in the offering element is optional. However, by specifying it, you ensure that the interim fix that is defined is the version that you intend to install. This specification overrides the other repositories with interim fixes that are listed in the Installation Manager preferences.

5. Select the sample Ant file for Application Center that corresponds to your application server and database.  
The sample Ant files are available in `product_install_dir/ApplicationCenter/configuration-samples` folder. The naming conventions are similar to the sample ant files for MobileFirst Server.
6. Edit the parameters. For the database, use the same parameters (same database, user, and schema) as the parameters that are used at the previous installation with Installation Manager. By using the same credentials, the existing database can be upgraded and connected to the new installation.
7. Run the `databases` target to upgrade the database. For example,  

```
product_install_dir/shortcuts/ant -f your_ant_file.xml databases
```

  
Alternatively, you can upgrade the database manually as explained earlier in this section.
8. Run the `install` target to deploy Application Center to your application server. For example,  

```
product_install_dir/shortcuts/ant -f your_ant_file.xml install
```
9. Configure Application Center. For more information, see [Configuring Application Center after installation](#).

## Reinstalling MobileFirst Operational Analytics

### About this task

In V7.1.0, IBM SmartCloud Analytics Embedded is repackaged and renamed as MobileFirst Operational Analytics. The component is delivered as two separate WAR files instead of a single WAR file. One for the analytics console and one for the analytics service. Both WAR files are protected by the security roles. You need to uninstall the old version and install the one from V7.1.0.



## **Procedure**

1. Uninstall IBM SmartCloud Analytics Embedded V6.1.0.
2. Install MobileFirst Operational Analytics V7.1.0 as described in Installing the IBM MobileFirst Platform Operational Analytics.



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