Database movement operations home page

Article • 11/14/2023

Database movement operations are a suite of self-service actions that can be used as part of Data Application Lifecycle Management (also referred to as *DataALM*). These actions provide structured processes for common implementation scenarios such as golden configuration promotion, debugging/diagnostics, destructive testing, and general refresh for training purposes.

In this article, you learn how to use database movement operations to perform refresh, export, import, and various flavors of point-in-time restore.

Database movement scenarios and quick start guides

The following table shows the various scenarios that are supported and a link to a quick start guide for each scenario.

Expand table

Source environment	Target environment	Quick start guide	Available via API	Tutorials
Production	Sandbox	Refresh database	Create refresh	Refresh for training purposes Debug a copy of the production database
Sandbox	Production	Refresh database	Not supported	Golden configuration promotion
Sandbox	Sandbox	Refresh database	Create refresh	Refresh for training purposes
Sandbox	DevTest	Export a database	Create export	Export a copy of the standard user acceptance testing (UAT) database

Database movement toolkit

Article • 11/07/2023

The Database movement toolkit is a ZIP file hosted in Microsoft Dynamics Lifecycle Services (LCS). This toolkit is available for download. It contains a series of scripts that enhance the customer experience for movement of data between developer environments and sandbox environments. This article explains the components of the toolkit, how to download it, and any recent changes.

Download the latest version

The toolkit is available in the LCS Shared Asset Library under the **Models** section. Search for the entry titled **Database Movement Toolkit** and then download it to your Tier1 DevTest environment.

Toolkit components

The toolkit contains the following primary components:

- **Sqlpackage.exe -** This tool is used to perform extract and publish actions against Microsoft Azure SQL databases, and SQL Server databases hosted on Tier1 DevTest environments.
- **PowerShell 7.0 -** A self-contained version of PowerShell that includes capabilities for parallelism, which increases the performance of transferring data between environments.
- **PowerShell script -** There are several scripts included to provide an enhanced and more automated experience for scenarios such as AX 2012 data upgrade.

Supported scenarios

The toolkit currently supports the following scenarios. More will be added over time.

- Upgrade from AX 2012 - Data upgrade in sandbox environments

Versions

Version 5

Refresh database

Article • 11/06/2023

You can use Microsoft Dynamics Lifecycle Services (LCS) to perform a refresh of the database to a sandbox user acceptance testing (UAT) environment. A database refresh lets you copy the transactional and financial reporting databases of your production environment into the target, sandbox UAT environment. If you have another sandbox environment, you can also copy the databases from that environment to your target, sandbox UAT environment.

> **Important**
>
> Copying production data during business hours or peak hours could have an impact on the production system. It's highly recommended to do the refresh database operation during off-peak hours and limit only one refresh operation at a time.
>
> Copying production data to your sandbox environment for the purpose of production reporting isn't supported.

Self-service database refresh

With the goal of providing Data Application Lifecycle Management (also referred to as *DataALM*) capabilities to our customers without relying on human or manual processes, the Lifecycle Services team has introduced an automated **Refresh database** action. This process is outlined below:

1. Visit your target sandbox on the **Environment Details** page, and click the **Maintain** > **Move database** menu option.
2. Select the **Refresh database** option and choose your source environment.
3. Note the warnings and review the list of data elements that aren't copied from the source environment.
4. The refresh operation begins immediately.

Refresh operation failed

If there's a failure, the refresh operation automatically rolls back. Your target sandbox environment is restored to the state it was before the refresh began. This is made possible by the Azure SQL point-in-time restore capability to restore the database. This

Export a database

Article • 11/14/2023

You can use Microsoft Dynamics Lifecycle Services to export a database from a sandbox user acceptance testing (UAT) environment to the Asset library.

> **Note**
>
> If the customer managed key (CMK) is applied to the environment, the exported file is stored without the CMK in the Lifecycle Services asset library. CMK support for the Lifecycle Services asset library will be available soon, after that the exported files will be stored with the CMK policy applied to the Lifecycle Services asset library.

Self-service export database

From your sandbox **Environment Details** page, click the **Maintain** menu, and then select **Move database**.

Import a database

Article • 11/13/2023

You can use Microsoft Dynamics Lifecycle Services (LCS) to import a golden configuration database into a sandbox user acceptance testing (UAT) environment.

Prerequisites

Database import isn't applicable to LCS projects that are configured for a Dynamics AX 2012 upgrade. Therefore, import is blocked if the **Legacy system** field at **Project Onboarding** > **Project overview** is set to **AX2012 Upgrade**.

Self-service import database

To import a database that is prepared from a developer environment to a standard user acceptance test (UAT), or a database previously exported from a UAT environment, follow the steps outlined below:

1. Go to your target sandbox **Environment Details** page, and select the **Maintain** > **Move database** menu option.
2. Select **Import database** and choose your source database backup (.bacpac format) file from the Asset Library.
3. Note the warnings. Review the list of data elements that are cleaned up from the backup file.
4. The import operation will begin immediately.

> **Note**
>
> All users except the Admin user and other internal service user accounts will be unavailable after import. Therefore, the Admin user can delete or obfuscate data before other users are allowed back into the system.

To import a database to a developer environment after you've downloaded a database backup (.bacpac) file, you can begin the manual import operation on your Tier 1 environment. When you import the database, we recommend that you follow these guidelines:

- Keep a copy of the existing AxDB database, so that you can revert to it later if needed.

Database point-in-time restore (PITR)

Article • 11/06/2023

You can use Microsoft Dynamics Lifecycle Services (LCS) to perform the point-in-time restore (PITR) for a sandbox user acceptance testing (UAT) environment or a production environment (live). Microsoft maintains automated backups of the business and financial reporting databases for 28 days for production environments and 7 days for sandbox environments.

Self-service point-in-time restore

To restore the database of a standard user acceptance test (UAT) environment to a previous point-in-time, follow the steps outlined below:

1. Go to your target sandbox **Environment Details** page, and select the **Maintain** > **Move database** menu option.
2. Select the **Point-in-time restore** option and choose a point-in-time.
3. Note the warnings. Review the list of data elements that are not copied over from the previous point-in-time.
4. The restore operation will begin immediately.

> **Important**
>
> Restoring the database in production to a previous point-in-time is not a common lifecycle operation and could result in the following issues:
>
> - **Large downtime for the production environment**. Point-in-time restore (PITR) may take multiple hours, depending on the database size.
> - **SQL data loss**. SQL data loss would depend on how far back the PITR request is made.
> - **Breaking of the SQL database** chain of available restore points.

To restore the database of a production environment to a previous point-in-time, follow the steps outlined below:

1. Go to your target production **Environment Details** page, and select the **Maintain** > **Move database** menu option.
2. Select the **Point-in-time restore** option and choose a point-in-time.
3. Note the warnings. Review the list of data elements that are not copied over from the previous point-in-time.

Point-in-time restore of the production database to a sandbox environment

Article • 11/07/2023

You can use Microsoft Dynamics Lifecycle Services (LCS) to do a point-in-time restore (PITR) of the production database to a user acceptance testing (UAT) sandbox environment. Microsoft maintains automated backups of the business and financial reporting databases for 28 days for Production environments and 7 days for Sandbox environments.

> **Important**
>
> Microsoft doesn't support copying production data to a sandbox environment for the purpose of production reporting.

Self-service point-in-time restore Production to Sandbox

To provide customers with data application lifecycle management (DataALM) capabilities that don't rely on human or manual processes, the Lifecycle Services team has introduced an automated restore database action. The following is an overview of the process for doing a self-service database restore.

1. Go to the **Environment Details** page for your target Sandbox, and select **Maintain** > **Move database** button.
2. Select the **Point-in-time restore Prod to Sandbox** option, and then select the desired point in time.
3. Make a note of the warnings, and review the list of data elements that aren't copied from the source environment's previous point in time.
4. The restore operation begins immediately.

> **Important**
>
> Self-service point in time restore (PITR) isn't supported between environments that are on different regions. For more information, see the Known issues section later in this article.

Enable just-in-time database access

Article • 04/22/2025

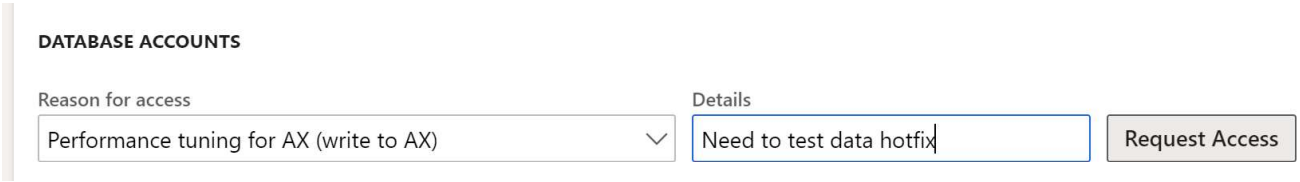
This article provides the steps necessary to enable database access using a just-in-time (JIT) fashion. JTT is useful if access to the database is required for various troubleshooting efforts, running unplanned queries, or data upgrade problem solving. This process is available for both Lifecycle Services managed environments and Power Platform admin center managed environments. For more information about the available environment types, see Deployment overview.

Lifecycle Services Managed Self-service environments

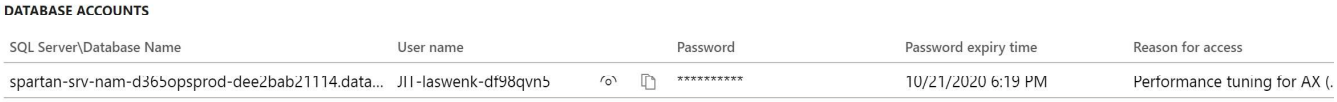
The self-service environment type never had Remote Desktop Protocol (RDP) access or static database accounts. However, it's still possible to access the database.

From the environment details page for your sandbox environment, select **Maintain** > **Enable access**, and then in the dialog box, add the IP address of your source environment. This firewall entry expires after 8 hours or it's lost after the database is replaced by a database movement operation (whichever comes first) including operations such as database refresh or database import.

You also need to enter which type of access you require in the **Database Accounts** section. The available options include read or read-write access. Enter a short reason description and then select **Request access**.



When the page is refreshed, the database account is shown with its expiry time.



You can now use tools like SQL Server Management Studio (SSMS) to connect to the database, using the accounts from Lifecycle Services and the IP address that you enabled. Lifecycle Services shows the server and database in the following format: **serverName\databaseName**. To connect in SSMS, you need to append the domain name suffix, such as

Refresh for training purposes

Article • 06/03/2022

Database movement operations are a suite of self-service actions that can be used as part of data application lifecycle management (DataALM). This tutorial shows how to use the refresh database operation in a training scenario.

In this tutorial, you will learn how to:

- ✓ Prepare the target environment.
- ✓ Run the refresh.
- ✓ Reconfigure the target environment.
- ✓ Enable selected users.

As an example of this scenario, a customer who has already gone live with the application wants to load a recent copy of production transactions into the user acceptance testing (UAT) environment. In this way, the customer can support training of new employees and evaluate configuration changes without affecting the live environment.

Prerequisites

To do a refresh database operation, your production environment must be deployed, or you must have a minimum of two standard UAT environments.

Notify users about the pending downtime

Before you start the bulk of the work, notify users of the target environment that the environment will be offline for a period. You can notify users either manually via Microsoft Dynamics Lifecycle Services (LCS) or programmatically by using RESTful application programming interface (API) calls.

Manually send a broadcast message

To notify users manually via LCS, follow these steps.

1. In LCS, open the **Environment details** page for the target environment.
2. Select **Maintain** > **Message online users**.
3. Select **Broadcast a new message for downtime**.
4. Select the valid from/valid to times in your local time zone.

Debug a copy of the production database

Article • 01/12/2023

Database movement operations are a suite of self-service actions that can be used as part of data application lifecycle management (DataALM). This tutorial shows how to debug specific data and transactions from a recent copy of production data.

In this tutorial, you will learn how to:

- ✓ Refresh the user acceptance testing (UAT) environment.
- ✓ Add the IP address of your developer environment to an approved list ("safe list").
- ✓ Update your developer environment so that it connects to the UAT database.
- ✓ Set a breakpoint, and start to debug the data.

As an example of this scenario, a customer who has already gone live wants to debug a recent copy of production transactions from the development environment. In this way, the customer will be able to debug specific transactions that are stuck, or develop new features and reports by using realistic datasets.

Prerequisites

To do a refresh operation, you must have your production environment deployed, or you must have a minimum of two standard UAT environments. To complete this tutorial, you must have a developer environment deployed.

> **ⓘ Important**
>
> For debugging, we highly recommend that you use a DevTest environment that runs the same code and business logic that are available in your UAT environment. If you use multiple branches in version control, we recommend that the DevTest environment that is used to debug recent UAT or production transactions be connected to the same branch that you use to build packages for UAT and, later, for production. In this way, you don't have to run a database synchronization between your DevTest environment and UAT database, because the schema will be compatible. Historically, this environment is known as a Hotfix/Support environment, because it's outside your usual code promotion path.

Export a copy of the standard user acceptance testing (UAT) database

Article • 02/13/2024

Database movement operations are a suite of self-service actions that can be used as part of data application lifecycle management (DataALM). This tutorial shows how to export all the data and transactions from a sandbox standard user acceptance testing (UAT) environment.

In this tutorial, you'll learn how to:

- ✓ Refresh the UAT environment.
- ✓ Run the export to the Asset library in Microsoft Dynamics Lifecycle Services (LCS).
- ✓ Download the database backup.
- ✓ Import the database, and prepare it so that it can be used in a developer environment.

As an example of this scenario, a customer who has already gone live wants to load a recent copy of production transactions into the development environment. In this way, the customer is able to debug specific transactions, or develop new features and reports by using realistic datasets.

> ⓘ **Important**
>
> Database copy to a build environment is not supported. Learn more about **build environments**.

Known limitations

Because of recent restrictions by the Microsoft Azure SQL Database platform, Microsoft doesn't recommend that you export your database if it's larger than 200 gigabytes (GB). If you must export a larger database, Microsoft recommends that you use the legacy documentation until SQL Database can support larger exports. This recommendation applies to export operations, not refresh operations. Refresh operations can support databases that are up to 4 terabytes (TB) in size.

Prerequisites

Golden configuration promotion

Article • 10/28/2023

Database movement operations are a suite of self-service actions that can be used as part of data application lifecycle management (DataALM). "Golden configuration" refers to a common practice among customers and partners in the Microsoft Dynamics ecosystem, where a developer environment is used as a configuration store. In this way, implementation projects can store finalized global and company-specific settings in a database that can later become a baseline for Conference Room Pilots, mock go-lives, and go-lives. This tutorial shows how to prepare a golden configuration database and hydrate a target user acceptance testing (UAT) environment.

In this tutorial, you'll learn how to:

- ✓ Prepare the golden configuration database for Microsoft Azure SQL Database.
- ✓ Run the import to the target UAT environment.
- ✓ Copy the UAT environment into a production environment.

As an example of this scenario, a customer who hasn't gone live is instead preparing for a Conference Room Pilot, mock go-live, or go-live. This scenario supports promoting a baseline golden database from a developer environment to a UAT environment and eventually to production.

Prerequisites

To complete this tutorial, you must have a developer environment that is deployed with a database that is curated as a golden configuration database. You must also have at least one standard UAT environment deployed and, optionally, a production environment.

The developer environment must run the same *application version* as the target UAT environment. In addition, the *platform version* of the developer environment must be earlier than or the same as the platform version in the target UAT environment.

Before you begin

Supported SQL Server collation

The only supported collation databases in the cloud is **SQL_Latin1_General_CP1_CI_AS**. Make sure that your Microsoft SQL Server and database collations in development

Destructive testing

Article • 07/01/2022

Database movement operations are a suite of self-service actions that can be used as part of data application lifecycle management (DataALM). In some situations, destructive testing must be done on an environment. In this context, destructive testing means that the environment is rendered no longer useful for continued testing. Destructive testing is typical in an implementation lifecycle during Conference Room Pilots. This tutorial shows how to use database movement operations to facilitate destructive testing.

In this tutorial, you will learn two approaches:

- ✓ Use a database backup asset.
- ✓ Use point-in-time restore.

As an example of this scenario, a customer wants to do a Conference Room Pilot and wants to start with an environment that has no transactions (that is, no sales orders or purchase orders). The customer will be traveling from physical warehouse to physical warehouse throughout the geographic region to do the same pilot, and wants the environment to be "reset" before each pilot is done.

Prerequisites

To complete this tutorial, you must have a standard user acceptance testing (UAT) environment deployed in your project.

Using a database backup

If you've prepared a database backup (.bacpac) file that is already at the starting point for the test, the easiest approach is to upload the backup file to the **Database backup** section in your LCS project's Asset Library. It can then be imported to your target environment as described here.

To import a database that is prepared from a developer environment to a standard user acceptance test (UAT), or a database previously exported from a UAT environment, follow the steps outlined below:

1. Go to your target sandbox **Environment Details** page, and select the **Maintain** > **Move database** menu option.
2. Select **Import database** and choose your source database backup (.bacpac format) file from the Asset Library.

Database Movement API

Article • 06/03/2022

The Database Movement application programming interface (API) is a RESTful endpoint that is used to manage the data lifecycle of Microsoft Dynamics 365 environments. It provides a versioned set of capabilities that you can currently use to copy databases between environments, and to list and download database backups. More supported actions will be added in later releases.

What is supported by the Database Movement API?

The Database Movement API exposes RESTful endpoints for the following Dynamics 365 services:

- Dynamics 365 Finance
- Dynamics 365 Supply Chain Management
- Dynamics 365 Commerce

Next steps

- Learn how to set up authentication.
- Review the API reference.

Versioning and support

Article • 06/03/2022

This article provides an overview of the versioning and breaking change policies for the Database Movement application programming interface (API).

Support and deprecation information

As new versions of the REST APIs are released, earlier versions will be retired. Microsoft will declare a version deprecated at least six months before it retires an API endpoint.

By incrementing the version number of the API (for example, from v1 to v2), Microsoft announces that the lowest version (in this example, v1) is immediately deprecated and will no longer be supported six months after the announcement. However, Microsoft might make exceptions to this policy for service health and security issues.

When an API is marked as deprecated, a date value will be entered in the **VersionEOL** (Version end of life) field. Therefore, you can proactively monitor this field and plan for upcoming changes.

Compatible and breaking changes

Microsoft will provide details of API changes in the private preview group. If the changes are non-breaking in nature, the API version number will remain the same. If the changes are breaking in nature, Microsoft will increment the API version number.

Here are some examples of breaking changes:

- The URL or fundamental request/response is changed.
- A declared property is removed or renamed, or its type is changed.
- The API or API parameters are removed or renamed.
- A required request parameter is added.

Here are some examples of non-breaking changes:

- Properties are added that are nullable or have a default value.
- A member is added to an enumeration.
- Paging is introduced to existing collections.
- Error codes are changed.
- The order of properties in requests or responses is changed.

Database movement API - Authentication

Article • 03/08/2024

This article provides an overview of the Microsoft Entra setup for calling Lifecycle Services APIs including Database Movement API. To access resources available via API, you must get a bearer token from Microsoft Entra and send it as a header along with each request. The steps to obtain this token are below.

The following steps are required to obtain a bearer token with the correct permissions:

1. Create an application registration in your Microsoft Entra tenant
2. Configure API permissions
3. Configure public client
4. Request an access token

Step 1. Create an application registration

Navigate to the Microsoft Entra app registration page and create a new registration. Give the application a name and ensure the **Single tenant** option is selected. You can skip the redirect URI setup.

Step 2. Configure API permissions

Within your new app registration, navigate to the **Manage - API Permissions** tab. Under the **Configure permissions** section, select **Add a Permission**. On the dialog window that opens, select the **APIs my organization uses** tab, and then search for **Dynamics Lifecycle services**. You might see several entries with a name similar to this, so be sure you use the one with the GUID, **913c6de4-2a4a-4a61-a9ce-945d2b2ce2e0**.

> **Note**
>
> These APIs make use of delegated permissions only at this time. For applications that run with a user context, you request delegated permissions using the **scope** parameter of **user_impersonation**. These permissions delegate the privileges of the signed-in user to your application, allowing it to act as the user when calling the API endpoints.

Throttling

Article • 02/23/2024

This article provides an overview of throttling for the Database Movement application programming interface (API).

Rate limits

To help maintain the reliability of the service and reduce costs, excessive calls to the Database Movement API are being throttled. Throttling helps protect against malicious and excessive use of the RESTful endpoints. Database movement operations are some of the most time-consuming and CPU-intensive tasks that can be run from Lifecycle Services. Therefore, database movement operations are throttled.

Current limits

Currently, the Database Movement API has a global call limit of **three executions per 24-hour timeframe per environment** for all actions that trigger a new operation. These operations include database refresh operations.

Calls to the API that exceed the limit are presented with the following error message:

JSON

```
{
    "IsSuccess": false,
    "OperationActivityId": "55eb4327-9346-4c7b-82bd-fe8ef15112c6",
    "ErrorMessage": "Maximum allowed API operations are 3 from 2019-09-
30T04:01:01.9999999",
    "VersionEOL": "9999-12-31T23:59:59.9999999"
}
```

Frequently asked questions

The following are frequently asked questions, and related answers regarding throttling limits for the Lifecycle Services APIs.

Which start time is used by the throttling, the start time of the database operation or the end time?

API v1 reference overview

Article • 06/03/2022

Welcome to the Database Movement application programming interfaces (API) reference for the version 1 (v1) endpoint. Use the table of contents to the left to view details of each endpoint that is available.

List database backups

Article • 06/03/2022

You can retrieve a list of database backups from the Project asset library.

Permissions

One of the following permissions is required to call this application programming interface (API). For more information about permissions and how to select them, see Authentication.

Expand table

Permission type	Permissions (from least privileged to most privileged)
Delegated (work or school account)	user_impersonation

HTTP request

HTTP

```
GET /databasemovement/v1/databases/project/{projectId}
```

Request headers

Expand table

Header	Value
Authorization	Bearer {token} (required)
'x-ms-version'	'2017-09-15' (required)
Content-Type	application/json

Request body

Don't supply a request body for this method.

Create a database refresh

Article • 06/03/2022

You can create a database refresh between two environments. Note that the same validation rules from the details page in Microsoft Dynamics Lifecycle Services (LCS) apply to the application programming interface (API).

Permissions

One of the following permissions is required to call this API. For more information about permissions and how to select them, see Authentication.

Expand table

Permission type	Permissions (from least privileged to most privileged)
Delegated (work or school account)	user_impersonation

HTTP request

HTTP

```
POST
/databasemovement/v1/refresh/project/{projectId}/source/{sourceEnvironmentId
}/target/{targetEnvironmentId}
```

Request headers

Expand table

Header	Value
Authorization	Bearer {token} (required)
'x-ms-version'	'2017-09-15' (required)
Content-Type	application/json

Request body

Create a database export

Article • 06/03/2022

You can create a database export from a sandbox environment to the project's asset library. Note that the same validation rules from the details page in Microsoft Dynamics Lifecycle Services (LCS) apply to the application programming interface (API).

Permissions

One of the following permissions is required to call this API. For more information about permissions and how to select them, see Authentication.

Expand table

Permission type	Permissions (from least privileged to most privileged)
Delegated (work or school account)	user_impersonation

HTTP request

HTTP

```
POST
/databasemovement/v1/export/project/{projectId}/environment/{environmentId}/
backupName/{backupName}
```

Request headers

Expand table

Header	Value
Authorization	Bearer {token} (required)
Content-Type	application/json

Request body

Don't supply a request body for this method.

Get status

Article • 06/03/2022

You can get the status of an ongoing operation.

Permissions

One of the following permissions is required to call this application programming interface (API). For more information about permissions and how to select them, see Authentication.

Expand table

Permission type	Permissions (from least privileged to most privileged)
Delegated (work or school account)	user_impersonation

HTTP request

HTTP

```
GET
/databasemovement/v1/fetchstatus/project/{projectId}/environment/{environmentId}/operationactivity/{operationactivityId}
```

Request headers

Expand table

Header	Value
Authorization	Bearer {token} (required)
'x-ms-version'	'2017-09-15' (required)
Content-Type	application/json

Request body

Don't supply a request body for this method.