NetApp

Use Database workloads

Database workloads

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Use Database workloads

Explore savings in Workload Factory for Databases

Explore savings for your database workloads using Amazon Elastic Block Store (EBS) storage.

Workload Factory provides a calculator so you can compare various cost components of running Microsoft SQL Server workloads like storage, compute, SQL license, snapshots, and clones for your database workloads on FSx for ONTAP file systems against Elastic Block Store (EBS) storage. Depending on your storage requirements, you might find that FSx for ONTAP file systems are the most cost effective for your database workloads.

The calculator displays whether the storage for the database workloads on these Microsoft SQL Servers would cost less if you used an FSx for ONTAP file system.

If Workload Factory determines that you could save money by running these workloads on an FSx for ONTAP file system, you can deploy Microsoft SQL over FSx for ONTAP directly from the calculator in Workload Factory. In some cases, Workload Factory may recommend that you deploy multiple file systems based on the amount of storage you are currently using, and based on the performance characteristics of your database workloads. In some cases, Workload Factory may recommend that you deploy multiple file systems based on the amount of storage you are currently using, and based on the performance characteristics of your database workloads.

Provide your system requirements

If you have enabled *automate* mode (learn more about modes) by adding AWS credentials to your Workload Factory account, then Workload Factory can identify all the storage systems that are available in your AWS account and display the characteristics of the volumes on those systems in the Storage inventory page. The AWS account that is searched is based on the credentials you've defined in your Workload Factory account.

This figure shows the volumes on FSx for Windows File Server systems that have been discovered in an AWS account.

If you haven't added credentials to link your Workload Factory account with an AWS account (called *basic* mode), you can manually enter the characteristics required for a storage system you are planning to deploy and the storage calculator will determine the best file system based on cost. You can use this method to scope a new FSx for ONTAP file system while using *automate* mode as well.

This figure shows the storage calculator page with a comparison between FSx for ONTAP and EBS storage.
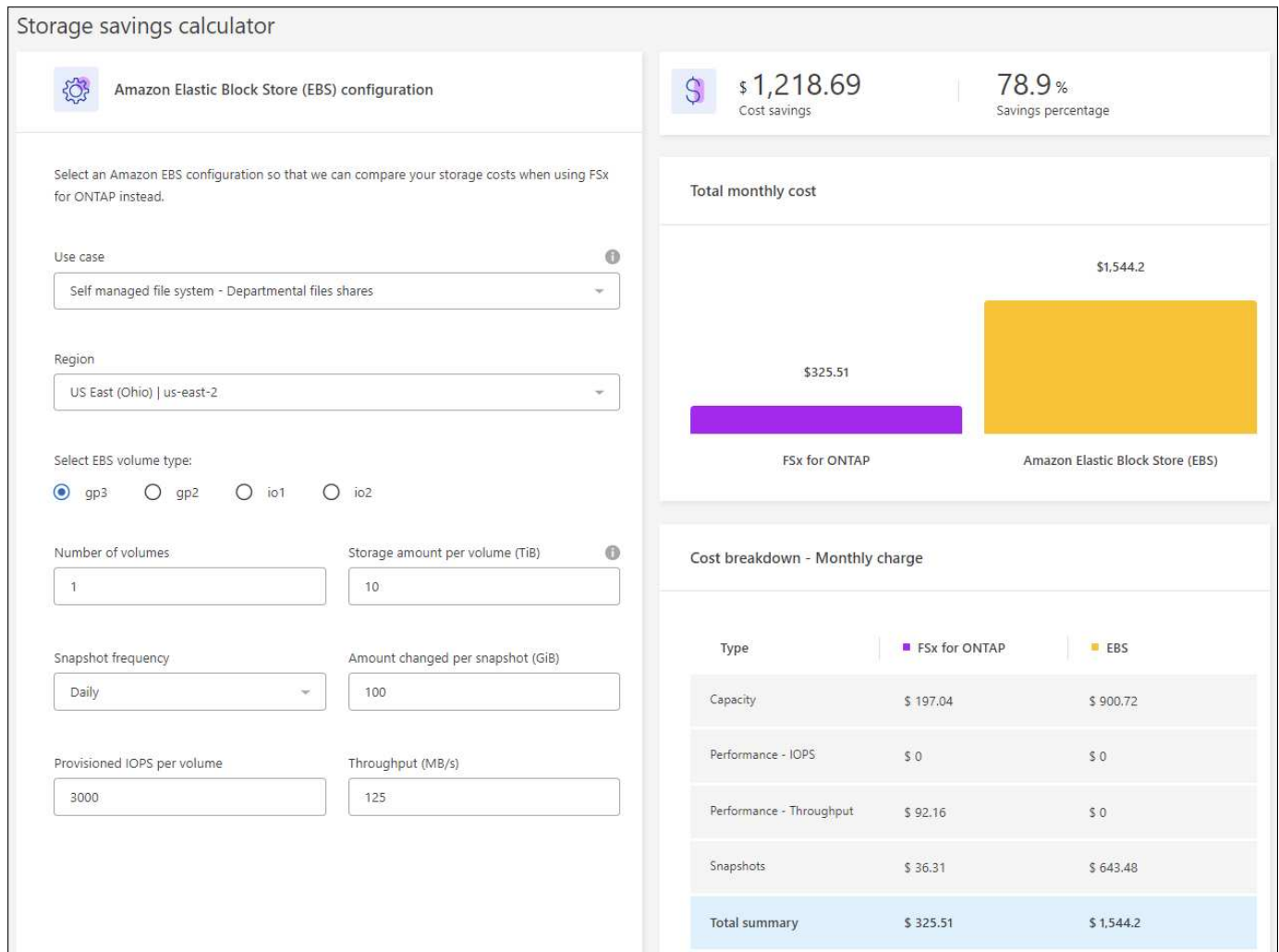
Before you begin

Complete the following prerequisites before you begin:

- Make sure you grant *automate* permissions in your AWS account to detect Elastic Block Store (EBS) systems in your Databases inventory.

- Detect hosts in EBS storage in your Databases inventory. Learn how to detect hosts.

Steps

1. Log in to the Workload Factory console.

2. In the Databases tile, select **Go to Databases inventory**.

3. Select the **Explore savings** tab.

4. Click **Explore savings** for the database server using EBS storage.

5. Optionally, provide the following details on clone and snapshots in your EBS storage for a more accurate cost savings estimate.

a. **Snapshot frequency**: Select a snapshot frequency from the dropdown.

b. **Clone refresh frequency**: Select a clone refresh frequency from the dropdown.

c. **Monthly change rate**: Enter the percentage that clone and snapshot data changes on average per month.

6. Review the calculations and recommendation provided on the page.

   Additionally, scroll down to the bottom of the page to **Export PDF**.

Deploy FSx for ONTAP file systems

If you'd like to switch to FSx for ONTAP to realize cost savings, click **Create** to create the file system(s) directly from the Create an FSx for ONTAP file system wizard or click **Save** to save the recommended configuration(s) for later.

Deployment methods

In *automate* mode, you can deploy the FSx for ONTAP file system directly from Workload Factory. You can also copy the content from the Codebox window and deploy the system using one of the Codebox methods.

In *basic* mode, you can copy the content from the Codebox window and deploy the FSx for ONTAP file system using one of the Codebox methods.

Create a database server in Workload Factory for Databases

Creating a new Microsoft SQL Server, or database host, in Databases requires an FSx for ONTAP file system deployment and resources for Active Directory.

About this task

You'll need AWS account credentials and *automate* permissions.

Before you begin, learn about the available storage deployment types for the database host configuration, Active Directory deployment, Workload Factory modes of operation, and the requirements to complete this operation.

After deployment, you'll need to enable remote connection on the Microsoft SQL Server.

FSx for ONTAP file system deployments

Creating a new Microsoft SQL Server requires an FSx for ONTAP file system as the storage backend. You can use an existing FSx for ONTAP file system or create a new file system. If you select an existing FSx for ONTAP file system as your database server storage backend, we create a new storage VM for the Microsoft SQL workloads.

FSx for ONTAP file systems have two Microsoft SQL Server deployment models: *Failover Cluster Instance (FCI)* or *Standalone*. Different resources are created for the FSx for ONTAP file system depending on the FSx for ONTAP deployment model you select.

- **Failover Cluster Instance (FCI) Microsoft SQL deployment**: A Multiple Availability Zone FSx for NetApp ONTAP file system is deployed when a new FSx for ONTAP file system is selected for FCI deployment. Separate volumes and LUNs are created for data, log, and tempdb files for an FCI deployment. An additional volume and LUN are created for Quorum or witness disk for Windows cluster.

- **Standalone Microsoft SQL deployment**: A Single Availability Zone FSx for ONTAP file system is created when a new Microsoft SQL Server is created. In addition, separate volumes and LUNs are

created for data, log, and tempdb files.

Active Directory

The following occurs for Active Directory (AD) during deployment:

- A new Microsoft SQL service account is created in the domain if you don't provide an existing SQL service account.

- The Windows cluster, node host names, and Microsoft SQL FCI name are added as managed computers to the Microsoft SQL service account.

- The Windows cluster entry is assigned permissions to add computers to the domain.

Resource rollback

If you decide to rollback your Domain Name System (DNS) resources, the resource records in AD and DNS are not removed automatically. You can remove the records from the DNS server and AD as follows.

- For user-managed AD, first remove the AD computer. Then, connect to the DNS server from DNS manager and delete the DNS Resource Records.

- For AWS Managed Microsoft AD, install the AD administration tools. Next, remove the AD computer. Lastly, connect to the DNS server from DNS manager and delete the DNS Resource Records.

Workload Factory operation modes

Workload Factory offers three operational modes depending on how comfortable you are with letting Workload Factory manage your AWS resources.

Basic **mode**: in this mode of operation, you don't need to associate any AWS account credentials in Workload Factory. You can copy or download a partially filled YAML template from the Codebox to be completed outside Workload Factory.

Read **mode**: in this mode of operation, you provide AWS account credentials with read permissions which lets you complete the *Quick create* or *Advanced create* form and then copy or download it. You can also redirect to CloudFormation from Workload Factory with the completed form details. And you will be able to manage the deployed database server in Workload Factory.

Automate **mode**: in this mode of operation, you provide AWS account credentials with automate permissions which lets you create and manage AWS resources within Workload Factory.

Before you begin

Ensure you have the following prerequisites before you create a new database host.

Credentials and permissions

You must have AWS account credentials and automate mode permissions to create a new database host in Workload Factory.

Alternatively, you can use the Codebox to copy an empty template or create a completed template so that you can deploy a database outside of Workload Factory using REST API, AWS CLI, or AWS CloudFormation. Learn more about Codebox automation.

Active Directory

When connecting to Active Directory, you must have administrative access with permissions to do the following:

- Join the domain

- Create Computer Objects

- Create objects in the default Organization Unit (OU)

- Read all properties

- Make the domain user a local admin on the AD nodes

- Create a Microsoft SQL Server service user in the AD, if it doesn't exist already

Step 1: Create a database server

You can use *Quick create* or *Advanced create* deployment modes to complete this task in Workload Factory with *Automate* mode permissions.

Quick create

> ⓘ   In *Quick create*, FCI is the default deployment model, Windows 2016 is the default Windows version, and SQL 2019 Standard Edition is the default SQL version.

Steps

1. Log in to the Workload Factory console.

2. In the Databases tile, select **Deploy database host**.

3. Select **Quick create**.

4. Under **AWS settings**, provide the following:

   a. **AWS credentials**: Select AWS credentials with automate permissions to deploy the new database host.

      AWS credentials with *automate* permissions let Workload Factory deploy and manage the new database host from your AWS account within Workload Factory.

      AWS credentials with *read* permissions let Workload Factory generate a CloudFormation template for you to use in the AWS CloudFormation console.

      If you don't have AWS credentials associated in Workload Factory and you want to create the new server in Workload Factory, follow **Option 1** to go to the Credentials page. Manually add the required credentials and permissions for *automate* mode for Database workloads.

      If you want to complete the create new server form in Workload Factory so you can download a complete YAML file template for deployment in AWS CloudFormation, follow **Option 2** to ensure you have the required permissions to create the new server within AWS CloudFormation. Manually add the required credentials and permissions for *read* mode for Database workloads.

      Optionally, you can download a partially completed YAML file template from the Codebox to create the stack outside Workload Factory without any credentials or permissions. Select **CloudFormation** from the dropdown in the Codebox to download the YAML file.

   b. **Region & VPC**: Select a Region and VPC network.

      Ensure security groups for an existing interface endpoint allow access to HTTPS (443) protocol to the selected subnets.

      AWS service interface endpoints (SQS, FSx, EC2, CloudWatch, CloudFormation, SSM) and the S3 gateway endpoint are created during deployment if not found.

      VPC DNS attributes `EnableDnsSupport` and `EnableDnsHostnames` are modified to enable endpoint address resolution if they aren't already set to `true`.

   c. **Availability zones**: Select availability zones and subnets according to the Failover Cluster Instance (FCI) deployment model.

      > ⓘ   FCI deployments are only supported on Multiple Availability Zone (MAZ) FSx for ONTAP configurations.

      Subnets should not share the same route table for high availability.

    i. In the **Cluster configuration - Node 1** field, select the primary availability zone for the MAZ FSx for ONTAP configuration from the **Availability zone** dropdown menu and a subnet from the primary availability zone from the **Subnet** dropdown menu.

    ii. In the **Cluster configuration - Node 2** field, select the secondary availability zone for the MAZ FSx for ONTAP configuration from the **Availability zone** dropdown menu and a subnet from the secondary availability zone from the **Subnet** dropdown menu.

5. Under **Application settings**, enter a user name and password for **Database credentials**.

6. Under **Connectivity**, provide the following:

  a. **Key pair**: Select a key pair.

  b. **Active Directory**:

    i. In the **Domain name** field, select or enter a name for the domain.

      A. For AWS-managed Active Directories, domain names appear in the dropdown menu.

      B. For a user-managed Active Directory, enter a name in the **Search and Add** field, and click **Add**.

    ii. In the **DNS address** field, enter the DNS IP address for the domain. You can add up to 3 IP addresses.

    For AWS-managed Active Directories, the DNS IP address(es) appear in the dropdown menu.

    iii. In the **User name** field, enter the user name for the Active Directory domain.

    iv. In the **Password** field, enter a password for the Active Directory domain.

7. Under **Infrastructure settings**, provide the following:

  a. **FSx for ONTAP system**: Create a new FSx for ONTAP file system or use an existing FSx for ONTAP file system.

    i. **Create new FSx for ONTAP**: Enter user name and password.

    A new FSx for ONTAP file system may add 30 minutes or more of installation time.

    ii. **Select an existing FSx for ONTAP**: Select FSx for ONTAP name from the dropdown menu, and enter a user name and password for the file system.

  b. **Data drive size**: Enter the data drive capacity and select the capacity unit.

8. Summary:

  a. **Preview default**: Review the default configurations set by Quick create.

  b. **Estimated cost**: Provides an estimate of charges that you might incur if you deployed the resources shown.

9. Click **Create**.

Alternatively, if you want to change any of these default settings now, create the database server with Advanced create.

You can also select **Save configuration** to deploy the host later.

Advanced create

Steps

1. Log in to the Workload Factory console.

2. In the Databases tile, select **Deploy database host**.

3. Select **Advanced create**.

4. For **Deployment model**, select **Failover Cluster Instance** or **Single instance**.

5. Under **AWS settings**, provide the following:

   a. **AWS credentials**: Select AWS credentials with automate permissions to deploy the new database host.

   AWS credentials with *automate* permissions let Workload Factory deploy and manage the new database host from your AWS account within Workload Factory.

   AWS credentials with *read* permissions let Workload Factory generate a CloudFormation template for you to use in the AWS CloudFormation console.

   If you don't have AWS credentials associated in Workload Factory and you want to create the new server in Workload Factory, follow **Option 1** to go to the Credentials page. Manually add the required credentials and permissions for *automate* mode for Database workloads.

   If you want to complete the create new server form in Workload Factory so you can download a complete YAML file template for deployment in AWS CloudFormation, follow **Option 2** to ensure you have the required permissions to create the new server within AWS CloudFormation. Manually add the required credentials and permissions for *read* mode for Database workloads.

   Optionally, you can download a partially completed YAML file template from the Codebox to create the stack outside Workload Factory without any credentials or permissions. Select **CloudFormation** from the dropdown in the Codebox to download the YAML file.

   b. **Region & VPC**: Select a Region and VPC network.

   Ensure security groups for an existing interface endpoint allow access to HTTPS (443) protocol to the selected subnets.

   AWS Service interface endpoints (SQS, FSx, EC2, CloudWatch, Cloud Formation, SSM) and S3 gateway endpoint are created during deployment if not found.

   VPC DNS attributes `EnableDnsSupport` and `EnableDnsHostnames` are modified to enable resolve endpoint address resolution if not already set to `true`.

   c. **Availability zones**: Select availability zones and subnets according to the deployment model you selected.

   > (i) FCI deployments are only supported on Multiple Availability Zone (MAZ) FSx for ONTAP configurations.

   Subnets should not share the same route table for high availability.

   For single instance deployments
   i. In the **Cluster configuration - Node 1** field, select an availability zone from the **Availability zone** from the dropdown menu and a subnet from the **Subnet** dropdown menu.

For FCI deployments

   i. In the **Cluster configuration - Node 1** field, select the primary availability zone for the MAZ FSx for ONTAP configuration from the **Availability zone** dropdown menu and a subnet from the primary availability zone from the **Subnet** dropdown menu.

   ii. In the **Cluster configuration - Node 2** field, select the secondary availability zone for the MAZ FSx for ONTAP configuration from the **Availability zone** dropdown menu and a subnet from the secondary availability zone from the **Subnet** dropdown menu.

  d. **Security group**: Select an existing security group or create a new security group.

  Three security groups get attached to the SQL nodes (EC2 instances) during new server deployment.

    1. A workload security group is created to allow ports and protocols required for Microsoft SQL and Windows cluster communication on nodes.

    2. In case of AWS-managed Active Directory, the security group attached to the directory service gets automatically added to the Microsoft SQL nodes to allow communication with Active Directory.

    3. For an existing FSx for ONTAP file system, the security group associated with it is added automatically to the SQL nodes which allows communication to the file system. When a new FSx for ONTAP system is created, a new security group is created for the FSx for ONTAP file system and the same security group also gets attached to SQL nodes.

  For a user-managed Active Directory, you can select a security group that allows traffic from your existing systems which need to connect to the database. The security group should allow communication to the Active Directory domain controllers from the subnets where EC2 instances for Microsoft SQL are configured.

6. Under **Application settings**, provide the following:

  a. Under **SQL Server install type**, select **License included AMI** or **Use custom AMI**.

   i. If you select **License included AMI**, provide the following:

    A. **Operating system**: Select **Windows server 2016**, **Windows server 2019**, or **Windows server 2022**.

    B. **Database edition**: Select **SQL Server Standard Edition** or **SQL Server Enterprise Edition**.

    C. **Database version**: Select **SQL Server 2016**, **SQL Server 2019**, or **SQL Server 2022**.

    D. **SQL Server AMI**: Select a SQL Server AMI from the dropdown menu.

   ii. If you select **Use custom AMI**, select an AMI from the dropdown menu.

  b. **SQL Server collation**: Select a collation set for the server.

    ⓘ   If the selected collation set isn't compatible for installation, we recommend that you select the default collation "SQL_Latin1_General_CP1_CI_AS".

  c. **Database name**: Enter the database cluster name.

  d. **Database credentials**: Enter a user name and password for a new service account or use existing service account credentials in the Active Directory.

7. Under **Connectivity**, provide the following:

a. **Key pair**: Select a key pair to connect securely to your instance.

b. **Active Directory**: Provide the following Active Directory details:

    i. In the **Domain name** field, select or enter a name for the domain.

        A. For AWS-managed Active Directories, domain names appear in the dropdown menu.

        B. For a user-managed Active Directory, enter a name in the **Search and Add** field, and click **Add**.

    ii. In the **DNS address** field, enter the DNS IP address for the domain. You can add up to 3 IP addresses.

        For AWS-managed Active Directories, the DNS IP address(es) appear in the dropdown menu.

    iii. In the **User name** field, enter the user name for the Active Directory domain.

    iv. In the **Password** field, enter a password for the Active Directory domain.

8. Under **Infrastructure settings**, provide the following:

a. **DB Instance type**: Select the database instance type from the dropdown menu.

b. **FSx for ONTAP system**: Create a new FSx for ONTAP file system or use an existing FSx for ONTAP file system.

    i. **Create new FSx for ONTAP**: Enter user name and password.

        A new FSx for ONTAP file system may add 30 minutes or more of installation time.

    ii. **Select an existing FSx for ONTAP**: Select FSx for ONTAP name from the dropdown menu, and enter a user name and password for the file system.

c. **Snapshot policy**: Enabled by default. Snapshots are taken daily and have a 7-day retention period.

    The snapshots are assigned to volumes created for SQL workloads.

d. **Data drive size**: Enter the data drive capacity and select the capacity unit.

e. **Provisioned IOPS**: Select **Automatic** or **User-provisioned**. If you select **User-provisioned**, enter the IOPS value.

f. **Throughput capacity**: Select the throughput capacity from the dropdown menu.

    In certain regions, you may select 4 GBps throughput capacity. To provision 4 GBps of throughput capacity, your FSx for ONTAP file system must be configured with a minimum of 5,120 GiB of SSD storage capacity and 160,000 SSD IOPS.

g. **Encryption**: Select a key from your account or a key from another account. You must enter the encryption key ARN from another account.

    FSx for ONTAP custom encryption keys aren't listed based on service applicability. Select an appropriate FSx encryption key. Non-FSx encryption keys will cause server creation failure.

    AWS-managed keys are filtered based on service applicability.

h. **Tags**: Optionally, you can add up to 40 tags.

i. **Simple Notification Service**: Optionally, you can enable the Simple Notification Service (SNS) for this configuration by selecting an SNS topic for Microsoft SQL Server from the dropdown menu.

<li style="list-style-type: lower-roman;">Enable the Simple Notification Service.
<li style="list-style-type: lower-roman;">Select an ARN from the dropdown menu.

j. **CloudWatch monitoring**: Optionally, you can enable CloudWatch monitoring.

We recommend enabling CloudWatch for debugging in case of failure. The events that appear in the AWS CloudFormation console are high-level and don't specify the root cause. All detailed logs are saved in the `C:\cfn\logs` folder in the EC2 instances.

In CloudWatch, a log group is created with the name of the stack. A log stream for every validation node and SQL node appear under the log group. CloudWatch shows script progress and provides information to help you understand if and when deployment fails.

k. **Resource rollback**: This feature isn't currently supported.

9. Summary

a. **Estimated cost**: Provides an estimate of charges that you might incur if you deployed the resources shown.

10. Click **Create** to deploy the new database host.

Alternatively, you can save the configuration.

Step 2: Enable remote connection on the Microsoft SQL Server

After the server deploys, Workload Factory does not enable remote connection on the Microsoft SQL Server. To enable the remote connection, complete the following steps.

Steps

1. Use computer identity for NTLM by referring to Network security: Allow Local System to use computer identity for NTLM in Microsoft documentation.
2. Check dynamic port configuration by referring to A network-related or instance-specific error occurred while establishing a connection to SQL Server in Microsoft documentation.
3. Allow the required client IP or subnet in the security group.

What's next

Now you can create a database in Workload Factory.

Detect a Microsoft SQL Server instance

Detect a Microsoft SQL Server instance in Workload Factory for Databases.

This task is for detecting an *undetected instance*.

About this task

When AWS credentials are associated in Workload Factory, Databases allows automated discovery of Microsoft SQL Servers beginning with SQL server 2016 with the following AWS storage types:

- FSx for ONTAP
- Elastic Block Store (EBS)

- FSx for Windows File Server

In Databases, discovered instances are categorized as follows:

- *Undetected instances*: undetected instances that have been automatically discovered by Workload Factory. Instances are undetected in the following cases:
    - Microsoft SQL Server authentication fails.
    - The FSx for ONTAP file system for the Microsoft SQL Server isn't registered with your account in Workload Factory.
- *Unmanaged instances*: detected instances that are not managed by Workload Factory
- *Managed instances*: detected instances that are managed by Workload Factory

The first step to managing a Microsoft SQL Server instance, or host instance, in Workload Factory for Databases is detecting an undetected database server instance.

Before you begin

The requirements for detecting an undetected database server instance are as follows:

- You must have AWS account credentials to detect a database server instance in Workload Factory.
- The storage type for the instance must be one of the following:
    - FSx for ONTAP
    - Elastic Block Store (EBS)
    - FSx for Windows File Server
- EC2 instances must have a role/instance profile that allows SSM connection for detection to work.

    When a Microsoft SQL instance is detected, the existing environment isn't modified. Detection happens through AWS Systems Manager Session Manager (SSM). Without the right IAM instance profile, detection will fail. Learn more about SSM troubleshooting.

Steps
1. Log in to the Workload Factory console.
2. In the Databases tile, select **Go to Databases Inventory**.
3. In Databases, select the **Inventory** tab.
4. Click the dropdown arrow to expand the row of the host to detect.

    The host expands and host instances appear.

5. Click the three dots menu of the instance to detect.
6. Click **Detect**.
7. In the **Detect instance** dialog, provide the Microsoft SQL Server user name and password or FSx for ONTAP user name and password.

    Workload Factory tries to validate your Microsoft SQL credentials or FSx for ONTAP credentials.

    If either of these credentials isn't available, Workload Factory tries to install the `aws.tools.SimpleSystemsManagement` module in PowerShell.

8. Click **Detect**.

   Detected instance information appears.

9. Select **Yes, Manage instance via Workload Factory** or **No**.

10. Click **Done**.

What's next

When the storage type for the host instance is FSx for ONTAP, you can manage the instance via Workload Factory.

Create a Microsoft SQL database in Workload Factory for Databases

Creating a new Microsoft SQL database in the Workload Factory console enables you to manage the resource within Workload Factory.

About this task

Upon database creation, two new volumes are created in the FSx for ONTAP file system consisting of independent LUNs to host data and log files for the database. The database files in the new database are thin-provisioned and consume only a few MBs of the total size allocated for the new database.

If you want to segregate storage for the database, you can do this by using a *virtual mount point*. The virtual mount point lets you consolidate databases to a few common drives on the host.

Creating a database in Workload Factory requires automate mode permissions. Alternatively, in basic mode, you can copy or download a partially completed code template to complete the operation outside Workload Factory. Learn about operational modes in Workload Factory to decide which mode you'd like to use.

ⓘ   Microsoft SQL Servers using SMB protocol don't support database creation.

Before you begin

Ensure you complete the following prerequisites before you create a new database.

Credentials and permissions

You must have AWS account credentials and *read* or *automate* mode permissions to create a new database in Workload Factory.

Alternatively, you can use the Codebox to copy a template so that you can deploy a database outside of Workload Factory using REST API. Learn more about Codebox automation.

Windows host

You must have enough drive letters available on the Microsoft SQL Server to create new drives for the new database if you use *Quick create* mode.

Microsoft SQL Server

You must have a managed Microsoft SQL Server in Workload Factory for Databases to host the new database.

AWS Systems Manager

Ensure the `NT Authority\SYSTEM user` privilege is enabled in the Microsoft SQL host via AWS System Manager.

Create a database

You can use *Quick create* or *Advanced create* deployment modes to complete this task in Workload Factory with *read* or *automate* mode permissions.

Quick create

Steps

1. Log in to the Workload Factory console.

2. In the Databases tile, select **Go to Databases Inventory**.

3. In Databases, select the **Inventory** tab.

4. In the Inventory tab, select a database server with a managed SQL server instance to create the database in.

5. Click the three dots menu of the managed instance and then select **Create user database**.

6. On the Create user database page, under Database information, provide the following:

   a. **Database name**: Enter name for the database.

   b. **Collation**: Select a collation for the database. The default collation SQL_Latin1_General_CP1_CI_AS" on Microsoft SQL Server is selected.

7. Under File settings, provide the following:

   a. **File settings mode**: Select **Quick create**.

   b. **File names & path**:

      ▪ **Data file name**: Enter the data file name.

      ▪ **Log file name**: Enter the log file name.

   c. **File sizes**: Enter the data size and log size for the database.

8. Click **Create**.

   Alternatively, if you want to change any of these default settings now, change the **File settings mode** to **Advanced create**.

Advanced create

Steps

1. Log in to the Workload Factory console.

2. In the Databases tile, select **Go to Databases Inventory**.

3. In Databases, select the **Inventory** tab.

4. In the Inventory tab, select a database server with a managed SQL server instance to create the database in.

5. Click the three dots menu of the managed instance and then select **Create user database**.

6. Select **Create user database**.

7. On the Create user database page, under Database information, provide the following:

   a. **Database name**: Enter name for the database.

   b. **Collation**: Select the collation for the database. The default collation SQL_Latin1_General_CP1_CI_AS" on Microsoft SQL Server is selected.

8. Under File settings, provide the following:

   a. **File settings mode**: Select **Advanced create**.

   b. **File names & path**:

      i. **Data file**: Select a drive letter and enter the data file name.

Optionally, click the box for **Virtual mount point**.

    ii. **Log file**: Select a drive letter and enter the log file name.

       Optionally, click the box for **Virtual mount point**.

  c. **File sizes**: Enter the data size and log size for the database.

9. Click **Create**.

If you created the database host, you can check the job's progress in the **Job monitoring** tab.

Automate with Codebox

You can automate host deployment, database creation, and more with Codebox. Codebox is an infrastructure as code (IaC) co-pilot that helps you generate code to execute any operations supported by Workload Factory.

Learn more about Codebox automation and how to use it.