



# **Back up cloud-native SQL Server databases using REST APIs**

BlueXP backup and recovery

NetApp  
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# Back up cloud-native SQL Server databases using REST APIs

## Quick start

Get started quickly by following these steps.

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### Verify support for your configuration

- Operating System:
  - Windows 2016
  - Windows 2019
  - Windows 2022
- NetApp Cloud Storage: Amazon FSx for NetApp ONTAP
- Storage layouts: SAN (iSCSI)

NAS configuration is not supported.

- Database versions:
  - Microsoft SQL Server 2016
  - Microsoft SQL Server 2019
  - Microsoft SQL Server 2022
- Database configuration:
  - Standalone

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### Sign up to BlueXP

BlueXP is accessible from a web-based console. When you get started with BlueXP, your first step is to sign up using your existing NetApp Support Site credentials or by creating a NetApp cloud login. For information, refer to [Sign up to BlueXP](#).

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### Log into BlueXP

After you sign up to BlueXP, you can log in from the web-based console. For information, refer to [Log into BlueXP](#).

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### Manage your BlueXP account

You can administer your account by managing users, service accounts, workspaces, and Connectors. For information, refer to [Manage your BlueXP account](#).

# Configure FSx for ONTAP

Using BlueXP you should create an FSx for ONTAP working environment to add and manage volumes and additional data services. You should also create a Connector in AWS that enables BlueXP to manage resources and processes within your public cloud environment.

## Create FSx for ONTAP working environment

You should create the FSx for ONTAP working environments where your databases are hosted. For information, refer to [Get started with Amazon FSx for ONTAP](#) and [Create and manage an Amazon FSx for ONTAP working environment](#).

You can create the FSx for ONTAP working environment either using BlueXP or AWS. If you have created using AWS, then you should discover the FSx for ONTAP systems in BlueXP.

## Create a Connector

An Account Admin needs to create a Connector in AWS that enables BlueXP to manage resources and processes within your public cloud environment.

For information, refer to [Creating a Connector in AWS from BlueXP](#).

- You should use the same connector to manage both FSx for ONTAP working environment and databases.
- If you have the FSx for ONTAP working environment and databases in the same virtual private cloud (VPC), you can deploy the connector in the same VPC.
- If you have the FSx for ONTAP working environment and databases in different VPCs:
  - If you have NAS (NFS) workloads configured on FSx for ONTAP, then you can create the connector on either of the VPCs.
  - If you have only SAN workloads configured and not planning to use any NAS (NFS) workloads, then you should create the connector in the VPC where the FSx for ONTAP system is created.



For using NAS (NFS) workloads, you should have transit gateway between the database VPC and Amazon VPC. The NFS IP address which is a floating IP address can be accessed from another VPC only through transit gateway. We cannot access the floating IP addresses by peering the VPCs.

After creating the Connector, click **Storage > Canvas > My Working Environments > Add Working Environment** and follow the prompts to add the working environment.

Ensure that there is connectivity from the Connector to the Oracle database hosts and FSx working environment. The Connector should be able to connect to the cluster management IP address of the FSx working environment.

- Add the working environment by clicking **Storage > Canvas > My Working Environments > Add Working Environment**.

Ensure that there is connectivity from the connector to the database hosts and FSx for ONTAP working environment. The connector should connect to the cluster management IP address of the FSx for ONTAP working environment.

- Copy the Connector ID by clicking **Connector > Manage Connectors** and selecting the Connector name.

## Install SnapCenter Plug-in for SQL Server and add database hosts

You should install the SnapCenter Plug-in for SQL Server on each of the SQL database hosts, add the database hosts, discover the database instances, and configure the credentials for the database instances.

### Install the SnapCenter Plug-in for SQL Server

You should download plug-in `snapcenter_service_windows_host_plugin.exe` and then run the silent installer command to install the plug-in on the database host.

#### Before you begin

- You should ensure that the following prerequisites are met.
  - .Net 4.7.2 is installed
  - PowerShell 4.0 is installed
  - Minimum disk space of 5 GB is available
  - Minimum RAM size of 4 GB is available
- You should run the API to complete the customer on-boarding. For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#/Tenant%20Registration/createTenant>

#### Steps

1. Download the plug-in by running the API from the Connector host.

```
docker exec -it cloudmanager_scs_cloud curl
'http://127.0.0.1/api/v2/pluginpackage/windows'
```

The location of the file is `/var/lib/docker/volumes/service-manager-2_cloudmanager_scs_cloud_volume/_data/<agent_version>/sc-windows-host-plugin/snapcenter_service_windows_host_plugin.exe`.

2. Copy `snapcenter_service_windows_host_plugin.exe` from the connector to each of the MSSQL Server database hosts either using scp or other alternate methods.
3. Install the plug-in.
 

```
"C://<install_folder>/snapcenter_service_windows_host_plugin.exe"/silent/debuglog
"C://<install_folder>/HA_Suite_Silent_Install_SCSQL_FRESH.log" /log"C://install_folder/"
BI_SNAPCENTER_PORT=8145 ISFeatureInstall=SCSQL'
```
4. Copy the self signed certificate from `/var/lib/docker/volumes/service-manager-2_cloudmanager_scs_cloud_volume/_data/client/certificate/certificate.pem` to the MSSQL Server database hosts.

You can also generate a self signed certificate or a CA signed certificate if you do not use the default one.

5. Convert the certificate from .pem to .crt format in the Connector host.
 

```
'openssl x509 -outform der -in certificate.pem -out certificate.crt'
```
6. Double-click the certificate to add it to the **Personal** and **Trusted Root Certification Authorities** store.

## Add the SQL Server database host

You should add the MSSQL database host using the host FQDN.

'POST snapcenter.cloudmanager.cloud.netapp.com/api/v1/hosts'

For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/Host%20Management/AddHosts>

This API creates a job that can be tracked from the **Job Monitor** tab in the BlueXP UI.

### Parameters

Name	Type	Required
addr	string	True
connector_id	string	True
plugin_type	string	True
install_method	string	True
plugin_port	number	True
username	string	True

### Response

If the API is executed successfully, response code 202 is displayed.

Example:

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "3fa85f64-5717-4562-b3fc-2c963f66afa6"
  }
}
```

## View the added SQL Server database hosts

You can run this API to view all the added SQL Server database hosts.

'GET snapcenter.cloudmanager.cloud.netapp.com/api/v1/hosts'

For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#!/Host%20Management/GetHosts>

## Response

If the API is executed successfully, response code 200 is displayed.

Example:

```
{
  "num_records": 1,
  "total_records": 1,
  "records": [
    {
      "id": "85bd4603-08f7-45f4-ba8e-a0b1e2a0f4d0",
      "addr": "scspa2722211001.rtp.openenglab.netapp.com",
      "status": "Running",
      "connector_id": "fBf8Iwbp4BscBfD02qBwWm6I03gGAesRclients",
      "plugin_port": 8145,
      "plugins": [
        {
          "type": "mssql"
        }
      ],
      "os_type": "windows",
      "platform": "onprem",
      "username": "administrator",
      "operating_mode": "production"
    }
  ],
  "_links": {
    "next": {}
  }
}
```

## Discover the database instances

You can run this API and enter the host ID to discover all the MSSQL instances.

'POST snapcenter.cloudmanager.cloud.netapp.com/api/mssql/instances/discovery'

For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#!/MSSQL%20Instances/MSSQLInstancesDiscoveryRequest>

This API creates a job that can be tracked from the **Job Monitor** tab in the BlueXP UI.

## Parameter

Name	Type	Required
host_id	string	True

## Response

If the API is executed successfully, response code 202 is displayed.

Example:

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "3fa85f64-5717-4562-b3fc-2c963f66afa6"
  }
}
```

## View the discovered database instances

You can run this API to view all the discovered database instances.

'GET snapcenter.cloudmanager.cloud.netapp.com/api/mssql/instances'

For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#!/MSSQL%20Instances/GetMSSQLInstancesRequest>

## Response

If the API is executed successfully, response code 200 is displayed.

Example:



```
{
  "num_records": 2,
  "total_records": 2,
  "records": [
    {
      "id": "953e66de-10d9-4fd9-bdf2-bf4b0eaabfd7",
      "name": "scspa2722211001\\NAMEDINSTANCE1",
      "host_id": "85bd4603-08f7-45f4-ba8e-a0b1e2a0f4d0",
      "status": "Running",
      "auth_mode": 0,
      "version": "",
      "is_clustered": false,
      "is_credentials_configured": false,
      "protection_mode": ""
    },
    {
      "id": "18e1b586-4c89-45bd-99c8-26268def787c",
      "name": "scspa2722211001",
      "host_id": "85bd4603-08f7-45f4-ba8e-a0b1e2a0f4d0",
      "status": "Stopped",
      "auth_mode": 0,
      "version": "",
      "is_clustered": false,
      "is_credentials_configured": false,
      "protection_mode": ""
    }
  ],
  "_links": {
    "next": {}
  }
}
```

## Configure the database instance credentials

You can run this API to validate and set credentials for the database instances.

'POST snapcenter.cloudmanager.cloud.netapp.com/api/mssql//api/mssql/credentials-configuration'

For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#!/MSSQL%20Instances/ConfigureCredentialRequest>

This API creates a job that can be tracked from the **Job Monitor** tab in the BlueXP UI.

### Parameter

Name	Type	Required
host_id	string	True
instance_ids	string	True
username	string	True
password	string	True
auth_mode	string	True

## Response

If the API is executed successfully, response code 202 is displayed.

Example:

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "3fa85f64-5717-4562-b3fc-2c963f66afa6"
  }
}
```

# Back up cloud-native Microsoft SQL Server databases

You can create scheduled or on-demand backups by assigning the policies that you created.

## Create backup policy

You can run this API to create the backup policy.

'POST snapcenter.cloudmanager.cloud.netapp.com/api/mssql/backup/policies'

For more information, refer to: [https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#!/MSSQL%20Backup%20Policies/MSSQLBackupPolicyService\\_CreateMSSQLBackupPolicy](https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#!/MSSQL%20Backup%20Policies/MSSQLBackupPolicyService_CreateMSSQLBackupPolicy)

This API creates a job that can be tracked from the **Job Monitor** tab in the BlueXP UI.

## Parameters

Name	Type	Required
name	string	True
backup_type	string	True
copy_only_backup	string	False
is_system_defined	string	False
backup_name_format	string	True
schedule_type	string	True
start_time	number	True
hours_interval	number	True
minutes_interval	number	True
retention_type	string	True
retention_count	number	True
end_time	number	True

## Response

If the API is executed successfully, response code 201 is displayed.

Example:

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}
```

## Assign policy to SQL database instance

You can run this API to assign policy to SQL database instance.

'POST snapcenter.cloudmanager.cloud.netapp.com/api/mssql/instances/{id}/policy-assignment'

Where, *id* is MSSQL instance ID obtained by running the discover database instance API. For more information, refer to [Discover the database instances](#).

Array of IDs is the input here. For example:

```
[  
  "c9f3e68d-1f9c-44dc-b9af-72a9dfc54320"  
]
```

For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#!/MSSQL%20Policy%20Assignment/PostMSSQLInstanceAssignPolicyRequest>

This API creates a job that can be tracked from the **Job Monitor** tab in the BlueXP UI.

## Response

If the API is executed successfully, response code 202 is displayed.

Example:

```
{  
  "job": {  
    "_links": {  
      "self": {  
        "href": "/api/resourcelink"  
      }  
    },  
    "uuid": "3fa85f64-5717-4562-b3fc-2c963f66afa6"  
  }  
}
```

## Create an on-demand backup


You can run this API to create an on-demand backup.

'POST snapcenter.cloudmanager.cloud.netapp.com/api/mssql/backups'

For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#!/MSSQL%20Backups/CreateMSSQLBackupRequest>

This API creates a job that can be tracked from the **Job Monitor** tab in the BlueXP UI.

## Parameters

Name	Type	Required
id	string	True
 This is ID of the MSSQL database instance.		
resource_type	string	True
policy_id	string	True
schedule_type	string	True

## Response

If the API is executed successfully, response code 202 is displayed.

Example:

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "3fa85f64-5717-4562-b3fc-2c963f66afa6"
  }
}
```

## View the backups

You can run these APIs to list view all the backups and also to view details of a particular backup.

'GET snapcenter.cloudmanager.cloud.netapp.com/api/mssql/backups'

'GET snapcenter.cloudmanager.cloud.netapp.com/api/mssql/backups/{id}'

For more information, refer to: <https://snapcenter.cloudmanager.cloud.netapp.com/api-doc/#/MSSQL%20Backups/MSSQLGetBackupsRequest>

## Response

If the API is executed successfully, response code 200 is displayed.

Example:

```

{
  "total_records": 1,
  "num_records": 1,
  "records": [
    {
      "backup_id": "602d7796-8074-43fc-a178-eee8c78566ac",
      "resource_id": "a779578d-cf78-46f3-923d-b9223255938c",
      "backup_name":
"Hourly_policy2_scspa2722211001_NAMEDINSTANCE1_2023_08_08_07_02_01_81269_0",
      "policy_name": "policy2",
      "schedule_type": "Hourly",
      "start_time": "2023-08-08T07:02:10.203Z",
      "end_time": "0001-01-01T00:00:00Z",
      "backup_status": "success",
      "backup_type": "FullBackup"
    }
  ],
  "_links": {
    "next": {}
  }
}

```

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