



## **Release notes**

### **Setup and administration**

NetApp  
September 12, 2023

This PDF was generated from <https://docs.netapp.com/us-en/bluexp-setup-admin/whats-new.html> on September 12, 2023. Always check docs.netapp.com for the latest.

# Table of Contents

Release notes .....	1
What's new .....	1
Known limitations .....	19

# Release notes

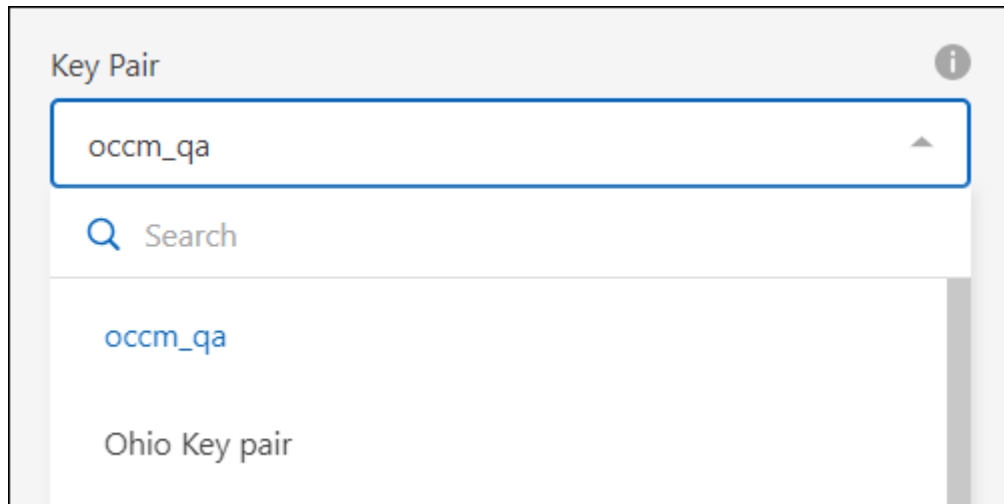
## What's new

Learn what's new with BlueXP administration features: BlueXP accounts, Connectors, cloud provider credentials, and more.

### 10 September 2023

#### Connector 3.9.33

- When you create a Connector in AWS from BlueXP, you can now search within the Key Pair field to more easily find the key pair that you want to use with the Connector instance.



- This update also includes bug fixes.

### 30 July 2023

#### Connector 3.9.32

- You can now use the BlueXP audit service API to export audit logs.

The audit service records information about the operations performed by BlueXP services. This includes workspaces, Connectors used, and other telemetry data. You can use this data to determine what actions were performed, who performed them, and when they occurred.

[Learn more about using the audit service API](#)

Note that this link is also accessible from the BlueXP user interface on the Timeline page.

- This release of the Connector also includes Cloud Volumes ONTAP enhancements and on-prem ONTAP cluster enhancements.
  - [Learn about Cloud Volumes ONTAP enhancements](#)
  - [Learn about ONTAP on-prem cluster enhancements](#)

## 2 July 2023

### Connector 3.9.31

- You can now discover on-premises ONTAP clusters from the **My estate** tab (previously **My Opportunities**)

[Learn how to discover clusters from the My estate page.](#)

- If you're using the Connector in an Azure Government region, you should ensure that the Connector can contact the following endpoint:

`https://occmclientinfragov.azurecr.us`

This endpoint is required to manually install the Connector and to upgrade the Connector and its Docker components.

As a result of this change, a Connector in an Azure Government region no longer contacts the following endpoint:

`https://cloudmanagerinfraproduct.azurecr.io`

Note that this endpoint is still required for all other restricted mode configurations and for standard mode.

## 4 June 2023

### Connector 3.9.30

- When you open a NetApp support case from the Support Dashboard, BlueXP now opens the case using the NetApp Support Site account that is associated with your BlueXP login. BlueXP previously used the NetApp Support Site account associated with the entire BlueXP account.

As part of this change, support registration for a BlueXP account is now done through the NetApp Support Site account that's associated with a user's BlueXP login. Previously, support registration was done through an NSS account associated with the entire BlueXP account. As a result, other BlueXP users will not see the same support registration status if they have not associated a NetApp Support Site account with their BlueXP login. If you previously registered your BlueXP account for support, then your registration status is still valid. You just need to add a user-level NSS account to see the status.

- [Learn how to create a case with NetApp Support](#)
- [Learn how to manage credentials associated with your BlueXP login](#)
- [Learn how to register for support](#)

- You can now search for documentation from within BlueXP. Search results now provide links to content on `docs.netapp.com` and `kb.netapp.com`, which might help answer a question that you have.



- The Connector now enables you to add and manage Azure storage accounts from BlueXP.

[See how to add new Azure storage accounts in your Azure Subscriptions from BlueXP.](#)

- The Connector is now supported in the following AWS regions:
  - Hyderabad (ap-south-2)
  - Melbourne (ap-southeast-4)
  - Spain (eu-south-2)
  - UAE (me-central-1)
  - Zurich (eu-central-2)
- The Connector is now supported in the following Azure regions:
  - Brazil South
  - France South
  - Jio India Central
  - Jio India West
  - Poland Central
  - Qatar Central
- The Connector is now supported in the following Google Cloud regions:
  - Columbus (us-east5)

- Dallas (us-south1)

[View the full list of supported regions](#)

## 7 May 2023

### Connector 3.9.29

- Ubuntu 22.04 is the new operating system for the Connector when you deploy a Connector from BlueXP or from your cloud provider's marketplace.

You also have the option to manually install the Connector on your own Linux host that's running Ubuntu 22.04.

- Red Hat Enterprise Linux 8.6 and 8.7 are no longer supported with new Connector deployments.

These versions are not supported with new deployments because Red Hat no longer supports Docker, which is required for the Connector. If you have an existing Connector running on RHEL 8.6 or 8.7, NetApp will continue to support your configuration.

Red Hat 7.6, 7.7, 7.8, and 7.9 are still supported with new and existing Connectors.

- The Connector is now supported in the Qatar region in Google Cloud.
- The Connector is also supported in the Sweden Central region in Microsoft Azure.

[View the full list of supported regions](#)

- This release of the Connector includes Cloud Volumes ONTAP enhancements.

[Learn about Cloud Volumes ONTAP enhancements](#)

## 4 April 2023

### Deployment modes

BlueXP *deployment modes* enable you to use BlueXP in a way that meets your business and security requirements. You can choose from three modes:

- Standard mode
- Restricted mode
- Private mode

[Learn more about these deployment modes.](#)



The introduction of restricted mode replaces the option to enable or disable the SaaS platform. You can enable restricted mode at the time of account creation. It can't be enabled or disabled later.

## 3 April 2023

## Connector 3.9.28

- Email notifications are now supported with the BlueXP digital wallet.

If you configure your notification settings, you can receive email notifications when your BYOL licenses are about to expire (a "Warning" notification) or if they have already expired (an "Error" notification).

[Learn how to set up email notifications.](#)

- The Connector is now supported in the Google Cloud Turin region.

[View the full list of supported regions](#)

- You can now manage the user credentials that are associated with your BlueXP login: ONTAP credentials and NetApp Support Site (NSS) credentials.

When you go to **Settings > Credentials**, you can view the credentials, update the credentials, and delete them. For example, if you change the password for these credentials, then you'll need to update the password in BlueXP.

[Learn how to manage user credentials.](#)

- You can now upload attachments when you create a support case or when you update the case notes for an existing support case.

[Learn how to create and manage support cases.](#)

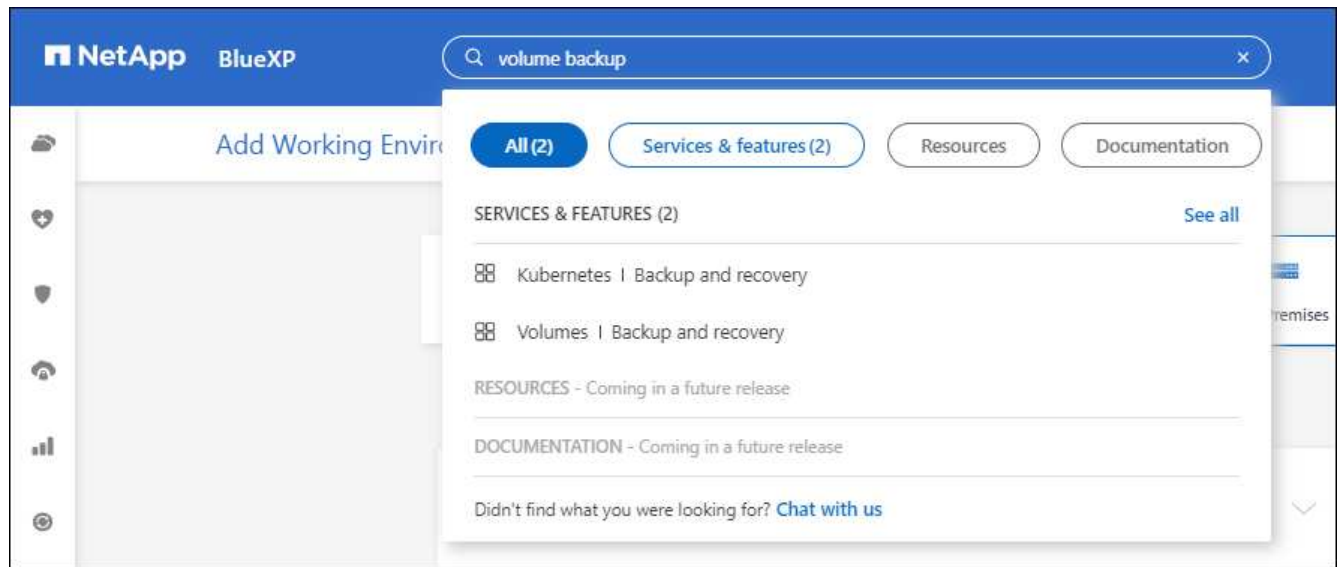
- This release of the Connector also includes Cloud Volumes ONTAP enhancements and on-prem ONTAP cluster enhancements.

- [Learn about Cloud Volumes ONTAP enhancements](#)
- [Learn about ONTAP on-prem cluster enhancements](#)

## 5 March 2023

### Connector 3.9.27

- Search is now available in the BlueXP console. At this time, you can use the search to find BlueXP services and features.



- You can view and manage active and resolved support cases directly from BlueXP. You can manage the cases associated with your NSS account and with your company.

[Learn how to manage your support cases.](#)

- The Connector is now supported in any cloud environment that has complete isolation from the internet. You can then use the BlueXP console that's running on the Connector to deploy Cloud Volumes ONTAP in the same location and to discover on-premises ONTAP clusters (if you have a connection from your cloud environment to on your on-premises environment). You can also use BlueXP backup and recovery to back up Cloud Volumes ONTAP volumes in AWS and Azure commercial regions. No other BlueXP services are supported in this type of deployment, except for the BlueXP digital wallet.

The cloud region can be a region for secure US agencies like AWS C2S/SC2S, Azure IL6, or any commercial region.

To get started, manually install the Connector software, log in to the BlueXP console that's running on the Connector, add your BYOL license to the BlueXP digital wallet, and then deploy Cloud Volumes ONTAP.

- [Install the Connector in a location without internet access](#)
- [Access the BlueXP console on the Connector](#)
- [Add an unassigned license](#)
- [Get started with Cloud Volumes ONTAP](#)
- The Connector now enables you to add and manage Amazon S3 buckets from BlueXP.

[See how to add new Amazon S3 buckets in your AWS account from BlueXP.](#)

- This release of the Connector includes Cloud Volumes ONTAP enhancements.

[Learn about Cloud Volumes ONTAP enhancements](#)

## 5 February 2023

### Connector 3.9.26

- On the **Log in** page, you're now prompted to enter the email address associated with your login. After you



select **Next**, BlueXP then prompts you to authenticate using the authentication method associated with your login:

- The password for your NetApp cloud credentials
- Your federated identity credentials
- Your NetApp Support Site credentials

The image shows a screenshot of the NetApp BlueXP login interface. At the top left is the NetApp logo. Below it, the text "Log in to NetApp BlueXP" is displayed. A horizontal line separates the title from the input field. Below the line is a text input field with the placeholder text "Email". Underneath the input field is a solid blue button with the word "Next" in white text. At the bottom of the form, there is a link that says "Don't have an account? Sign up".

**NetApp**

Log in to NetApp BlueXP

---

Email

**Next**

Don't have an account? [Sign up](#)

- If you're new to BlueXP and you have existing NetApp Support Site (NSS) credentials, then you can skip the sign up page and enter your email address directly in the log in page. BlueXP will sign you up as part of this initial login.
- When you subscribe to BlueXP from your cloud provider's marketplace, you now have the option to replace the existing subscription for one account with the new subscription.

Subscription Assignment

✓ Your subscription to BlueXP / Cloud Volumes ONTAP from the AWS Marketplace was created successfully.

Subscription name ⓘ

QAAccount\_Sub2Test-PAYGOByTheHourByCapacity

Select the NetApp accounts that you'd like to associate this subscription with. ⓘ

You can automatically replace the existing subscription for one account with this new subscription.

Netapp account	Replace existing subscription
<input checked="" type="checkbox"/> MyAccount	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Netapp-Kobi	<input type="checkbox"/>
<input checked="" type="checkbox"/> KeystoneTest01	<input type="checkbox"/>
<input checked="" type="checkbox"/> MyAccount	<input type="checkbox"/>

Save

- [Learn how to associate an AWS subscription](#)
- [Learn how to associate an Azure subscription](#)
- [Learn how to associate a Google Cloud subscription](#)
- BlueXP will now notify you if your Connector has been powered down for 14 days or longer.
  - [Learn about BlueXP notifications](#)
  - [Learn why Connectors should remain running](#)
- We updated the Connector policy for Google Cloud to include a permission that's required to create and manage storage VMs on Cloud Volumes ONTAP HA pairs:

compute.instances.updateNetworkInterface

[View Google Cloud permissions for the Connector.](#)

- This release of the Connector includes Cloud Volumes ONTAP enhancements.

[Learn about Cloud Volumes ONTAP enhancements](#)

## 1 January 2023

### Connector 3.9.25

This release of the Connector includes Cloud Volumes ONTAP enhancements and bug fixes.

[Learn about Cloud Volumes ONTAP enhancements](#)

## 4 December 2022

### Connector 3.9.24

- We've updated the URL for the BlueXP console to <https://console.bluexp.netapp.com>
- The Connector is now supported in the Google Cloud Israel region.
- This release of the Connector also includes Cloud Volumes ONTAP enhancements and on-prem ONTAP cluster enhancements.
  - [Learn about Cloud Volumes ONTAP enhancements](#)
  - [Learn about ONTAP on-prem cluster enhancements](#)

## 6 November 2022

### Connector 3.9.23

- Your PAYGO subscriptions and annual contracts for BlueXP are now available to view and manage from the digital wallet.

[Learn how to manage your subscriptions](#)

- This release of the Connector also includes Cloud Volumes ONTAP enhancements.

[Learn about Cloud Volumes ONTAP enhancements](#)

## 1 November 2022

Cloud Manager now prompts you to update the credentials associated with your NetApp Support Site accounts when the refresh token associated with your account expires after 3 months. [Learn how to manage NSS accounts](#)

## 18 September 2022

### Connector 3.9.22

- We enhanced the Connector deployment wizard by adding an *in-product guide* that provides steps to meet the minimum requirements for Connector installation: permissions, authentication, and networking.
- You can now create a NetApp support case directly from Cloud Manager in the **Support Dashboard**.

[Learn how to create a case.](#)

- This release of the Connector also includes Cloud Volumes ONTAP enhancements.

[Learn about Cloud Volumes ONTAP enhancements](#)

## 31 July 2022

### Connector 3.9.21

- We've introduced a new way to discover the existing cloud resources that you're not yet managing in Cloud Manager.

On the Canvas, the **My Opportunities** tab provides a centralized location to discover existing resources that you can add to Cloud Manager for consistent data services and operations across your hybrid multicloud.

In this initial release, My Opportunities enables you to discover existing FSx for ONTAP file systems in your AWS account.

[Learn how to discover FSx for ONTAP using My Opportunities](#)

- This release of the Connector also includes Cloud Volumes ONTAP enhancements.

[Learn about Cloud Volumes ONTAP enhancements](#)

## 15 July 2022

### Policy changes

We updated the documentation by adding the Cloud Manager policies directly inside the docs. This means you can now view the required permissions for the Connector and Cloud Volumes ONTAP right alongside the steps that describe how to set them up. These policies were previously accessible from a page on the NetApp Support Site.

[Here's an example that shows the AWS IAM role permissions used to create a Connector.](#)

We also created a page that provides links to each of the policies. [View the permissions summary for Cloud Manager.](#)

## 3 July 2022

### Connector 3.9.20

- We've introduced a new way to navigate to the growing list of features in the Cloud Manager interface. All the familiar Cloud Manager capabilities can now be easily found by hovering over the left panel.



- You can now configure Cloud Manager to send notifications by email so you can be informed of important system activity even when you're not logged into the system.

[Learn more about monitoring operations in your account.](#)

- Cloud Manager now supports Azure Blob storage and Google Cloud Storage as working environments, similar to Amazon S3 support.

After you install a Connector in Azure or Google Cloud, Cloud Manager now automatically discovers information about Azure Blob storage in your Azure subscription or the Google Cloud Storage in the project where the Connector is installed. Cloud Manager displays the object storage as a working environment that you can open to view more detailed information.

Here's an example of an Azure Blob working environment:

Azure blob

Overview

637

Total Storage Accounts

1.5

TiB

Total Capacity

16

Total Locations

637

Storage Accounts

Storage Account Name	Subscription	Location	Creation Date	Resource Group	Blob Capacity
ovu8llxvqdfypxn	OCCM QA1	West US	June 24, 2021	AdmAzureHa-rg	170 B
rootsa9ktpjzcm	OCCM QA1	West US	June 24, 2021	AdmAzureHa-rg	950.22 GiB
scvdwjcwehswli	OCCM QA1	West US	June 24, 2021	AdmAzureHa-rg	22.12 MiB
65qtx0smegmq2vt	OCCM QA1	West US	June 24, 2021	AdmAzureVsa-rg	170 B
bu9klxthymr1be	OCCM QA1	West US	June 24, 2021	AdmAzureVsa-rg	1.01 MiB
8jzsvybvjiwieww8	OCCM QA1	Canada Central	December 12, 2019	aff1-rg	170 B

- We redesigned the resources page for an Amazon S3 working environment by providing more detailed information about S3 buckets, such as capacity, encryption details, and more.
- The Connector is now supported in the following Google Cloud regions:
  - Madrid (europe-southwest1)
  - Paris (europe-west9)
  - Warsaw (europe-central2)
- The Connector is now supported in the Azure West US 3 region.

[View the full list of supported regions](#)

- This release of the Connector also includes Cloud Volumes ONTAP enhancements.

[Learn about Cloud Volumes ONTAP enhancements](#)

## 28 June 2022

### Log in with NetApp credentials

When new users sign up to Cloud Central, they can now select the **Log in with NetApp** option to log in with their NetApp Support Site credentials. This is an alternative to entering an email address and password.



Existing logins that use an email address and password need to keep using that login method. The Log in with NetApp option is available for new users who sign up.

## 7 June 2022

### Connector 3.9.19

- The Connector is now supported in the AWS Jakarta region (ap-southeast-3).
- The Connector is now supported in the Azure Brazil Southeast region.

[View the full list of supported regions](#)

- This release of the Connector also includes Cloud Volumes ONTAP enhancements and on-prem ONTAP cluster enhancements.
  - [Learn about Cloud Volumes ONTAP enhancements](#)
  - [Learn about ONTAP on-prem cluster enhancements](#)

## 12 May 2022

### Connector 3.9.18 patch

We updated the Connector to introduce bug fixes. The most notable fix is to an issue that affects Cloud Volumes ONTAP deployment in Google Cloud when the Connector is in a shared VPC.

## 2 May 2022

### Connector 3.9.18

- The Connector is now supported in the following Google Cloud regions:
  - Delhi (asia-south2)
  - Melbourne (australia-southeast2)
  - Milan (europe-west8)
  - Santiago (southamerica-west1)

[View the full list of supported regions](#)

- When you select the Google Cloud service account to use with the Connector, Cloud Manager now displays the email address that's associated with each service account. Viewing the email address can make it easier to distinguish between service accounts that share the same name.



- We have certified the Connector in Google Cloud on a VM instance with an OS that supports [Shielded VM features](#)
- This release of the Connector also includes Cloud Volumes ONTAP enhancements. [Learn about those enhancements](#)
- New AWS permissions are required for the Connector to deploy Cloud Volumes ONTAP.

The following permissions are now required to create an AWS spread placement group when deploying an HA pair in a single Availability Zone (AZ):

```
"ec2:DescribePlacementGroups",  
"iam:GetRolePolicy"
```

These permissions are now required to optimize how Cloud Manager creates the placement group.

Be sure to provide these permissions to each set of AWS credentials that you've added to Cloud Manager. [View the latest IAM policy for the Connector.](#)

## 3 April 2022

### Connector 3.9.17

- You can now create a Connector by letting Cloud Manager assume an IAM role that you set up in your environment. This authentication method is more secure than sharing an AWS access key and secret key.

[Learn how to create a Connector using an IAM role.](#)

- This release of the Connector also includes Cloud Volumes ONTAP enhancements. [Learn about those enhancements](#)

## 27 February 2022

### Connector 3.9.16

- When you create a new Connector in Google Cloud, Cloud Manager will now display all of your existing firewall policies. Previously, Cloud Manager wouldn't display any policies that didn't have a target tag.
- This release of the Connector also includes Cloud Volumes ONTAP enhancements. [Learn about those enhancements](#)

## 30 January 2022

### Connector 3.9.15

This release of the Connector includes Cloud Volumes ONTAP enhancements. [Learn about those enhancements](#)

## 2 January 2022

### Reduced endpoints for the Connector

We reduced the number of endpoints that a Connector needs to contact in order to manage resources and processes within your public cloud environment.

[View the list of required endpoints](#)

### EBS disk encryption for the Connector

When you deploy a new Connector in AWS from Cloud Manager, you can now choose to encrypt the Connector's EBS disks using the default master key or a managed key.



Get Ready

AWS Credentials

3 Details

4 Network

5 Security Group

6 Review

## Details

Connector Instance Name

Connector1

Connector Role

☒ Create Role ☐ Select an existing Role

Role Name

Cloud-Manager-Operator-9yils3K

+ Add Tags to Connector Instance

☒ AWS Managed Encryption

Master Key: aws/ebs (default) [Change Key](#)

### Email address for NSS accounts

Cloud Manager can now display the email address that's associated with a NetApp Support Site account.



**28 November 2021**

### **Update required for NetApp Support Site accounts**

Starting in December 2021, NetApp now uses Microsoft Azure Active Directory as the identity provider for authentication services specific to support and licensing. As a result of this update, Cloud Manager will prompt you to update the credentials for any existing NetApp Support Site accounts that you previously added.

If you haven't yet migrated your NSS account to IDaaS, you first need to migrate the account and then update your credentials in Cloud Manager.

- [Learn how to update an NSS account to the new authentication method.](#)
- [Learn more about NetApp's use of Microsoft Azure AD for identity management](#)

### **Change NSS accounts for Cloud Volumes ONTAP**

If your organization has multiple NetApp Support Site accounts, you can now change which account is associated with a Cloud Volumes ONTAP system.

[Learn how to attach a working environment to a different NSS account.](#)

## 4 November 2021

### SOC 2 Type 2 certification

An independent certified public accountant firm and services auditor examined Cloud Manager, Cloud Sync, Cloud Tiering, Cloud Data Sense, and Cloud Backup (Cloud Manager platform), and affirmed that they have achieved SOC 2 Type 2 reports based on the applicable Trust Services criteria.

[View NetApp's SOC 2 reports.](#)

### Connector no longer supported as a proxy

You can no longer use the Cloud Manager Connector as a proxy server to send AutoSupport messages from Cloud Volumes ONTAP. This functionality has been removed and is no longer supported. You will need to provide AutoSupport connectivity through a NAT instance or your environment's proxy services.

[Learn more about verifying AutoSupport with Cloud Volumes ONTAP](#)

## 31 October 2021

### Authentication with service principal

When you create a new Connector in Microsoft Azure, you can now authenticate with an Azure service principal, rather than with Azure account credentials.

[Learn how to authenticate with an Azure service principal.](#)

### Credentials enhancement

We redesigned the Credentials page for ease of use and to match the current look and feel of the Cloud Manager interface.

## 2 September 2021

### A new Notification Service has been added

The Notification service has been introduced so you can view the status of Cloud Manager operations that you have initiated during your current login session. You can verify whether the operation was successful, or if it failed. [See how to monitor operations in your account.](#)

## 7 July 2021

### Enhancements to Add Connector wizard

We redesigned the **Add Connector** wizard to add new options and to make it easier to use. You can now add tags, specify a role (for AWS or Azure), upload a root certificate for a proxy server, view code for Terraform automation, view progress details, and more.

- [Create a Connector in AWS](#)
- [Create a Connector in Azure](#)
- [Create a Connector in Google Cloud](#)

## NSS account management from Support Dashboard

NetApp Support Site (NSS) accounts are now managed from the Support Dashboard, rather than from the Settings menu. This change makes it easier to find and manage all support-related information from a single location.

[Learn how to manage NSS accounts.](#)



## 5 May 2021

### Accounts in the Timeline

The Timeline in Cloud Manager now shows actions and events related to account management. The actions include things like associating users, creating workspaces, and creating Connectors. Checking the Timeline can be helpful if you need to identify who performed a specific action, or if you need to identify the status of an action.

[Learn how to filter the Timeline to the Tenancy service.](#)

## 11 April 2021

### API calls directly to Cloud Manager

If you configured a proxy server, you can now enable an option to send API calls directly to Cloud Manager without going through the proxy. This option is supported with Connectors that are running in AWS or in Google Cloud.

[Learn more about this setting.](#)

### Service account users

You can now create a service account user.

A service account acts as a "user" that can make authorized API calls to Cloud Manager for automation purposes. This makes it easier to manage automation because you don't need to build automation scripts based on a real person's user account who can leave the company at any time. And if you're using federation, you can create a token without generating a refresh token from the cloud.

[Learn more about using service accounts.](#)

## Private previews

You can now allow private previews in your account to get access to new NetApp cloud services as they are made available as a preview in Cloud Manager.

[Learn more about this option.](#)

## Third-party services

You can also allow third-party services in your account to get access to third-party services that are available in Cloud Manager.

[Learn more about this option.](#)

## 9 February 2021

### Support Dashboard improvements

We've updated the Support Dashboard by enabling you to add your NetApp Support Site credentials, which registers you for support. You can also initiate a NetApp Support case directly from the dashboard. Just click the Help icon and then **Support**.

## Known limitations

Known limitations identify platforms, devices, or functions that are not supported by this release of the product, or that do not interoperate correctly with it. Review these limitations carefully.

These limitations are specific to BlueXP set up and administration: the Connector, the SaaS platform, and more.

### Connector limitations

#### Proxy configuration with domain users

BlueXP does not support domain users when configuring a proxy server for the Connector. When you enter a user name for the proxy server, it must be a local user.

#### Default EC2 instance settings should not be changed

When you deploy the Connector in AWS, the following EC2 instance settings are configured by default:

- IMDSv2 is set to optional
- HttpTokens is set to optional

These settings should not be changed to required. Changing these settings to required impacts the Connector and Cloud Volumes ONTAP availability.

#### Possible conflict with IP addresses in the 172 range

BlueXP deploys the Connector with two interfaces that have IP addresses in the 172.17.0.0/16 and 172.18.0.0/16 ranges.

If your network has a subnet configured with either of these ranges, then you might experience connectivity failures from BlueXP. For example, discovering on-prem ONTAP clusters in BlueXP might fail.

See Knowledge Base article [BlueXP Connector IP conflict with existing network](#) for instructions on how to change the IP address of the Connector's interfaces.

### **SSL decryption isn't supported**

BlueXP doesn't support firewall configurations that have SSL decryption enabled. If SSL decryption is enabled, error messages appear in BlueXP and the Connector instance displays as inactive.

For enhanced security, you have the option to [install an HTTPS certificate signed by a certificate authority \(CA\)](#).

### **Blank page when loading the local UI**

If you load the web-based console that's running on a Connector, the interface might fail to display sometimes, and you just get a blank page.

This issue is related to a caching problem. The workaround is to use an incognito or private web browser session.

### **Shared Linux hosts are not supported**

The Connector isn't supported on a VM that is shared with other applications. The VM must be dedicated to the Connector software.

### **3rd-party agents and extensions**

3rd-party agents or VM extensions are not supported on the Connector VM.

## Copyright information

Copyright © 2023 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

## Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.