



# Storage Bridge 1.0 Administration Guide

May 6, 2020

This publication, or parts thereof, may not be reproduced in any form, by any method, for any purpose.

TIGER TECHNOLOGY MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, REGARDING THESE MATERIALS AND MAKES SUCH MATERIALS AVAILABLE SOLELY ON AN “AS-IS” BASIS.

IN NO EVENT SHALL TIGER TECHNOLOGY BE LIABLE TO ANYONE FOR SPECIAL, COLLATERAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING OUT OF PURCHASE OR USE OF THESE MATERIALS. THE SOLE AND EXCLUSIVE LIABILITY TO TIGER TECHNOLOGY, REGARDLESS OF THE FORM OF ACTION, SHALL NOT EXCEED THE PURCHASE PRICE OF THE MATERIALS DESCRIBED HEREIN.

Tiger Technology reserves the right to revise and improve its products as it sees fit. This publication describes the state of this product at the time of its publication, and may not reflect the product at all times in the future.

#### THIRD-PARTY TRADEMARKS

All other brand names, product names, or trademarks belong to their respective holders.

Title: Storage Bridge Administration Guide  
Software version: 1.0  
Date: May 6, 2020

## Manual Revision and Control

### Revision Record

Date	Description	Page	Version
03 Feb. 2020	Initial Draft		

# toc

## Table of Contents

<b>1</b>	<b>Introduction to Storage Bridge</b>	<b>7</b>
	How It Works . . . . .	8
	Disaster Recovery . . . . .	8
	Storage Extension . . . . .	9
	XProtect Smart Client Integration . . . . .	10
	Storage Bridge Licensing . . . . .	10
	System Requirements . . . . .	11
	Storage Bridge . . . . .	11
	Storage Bridge Plug-in for XProtect Management Client . . . . .	12
	Storage Bridge XProtect Smart Client Plug-in . . . . .	12
	Storage Requirements . . . . .	12
	Recording Storage/Archive Requirements . . . . .	12
	Extension/Disaster Recovery Storage Requirements . . . . .	12
	Extension/Disaster Recovery Storage Prerequisites . . . . .	13
<b>2</b>	<b>Storage Bridge Installation and Activation</b>	<b>17</b>
	Install Storage Bridge . . . . .	18
	Uninstall Storage Bridge . . . . .	23
	Activate Storage Bridge . . . . .	24
<b>3</b>	<b>Manage Disaster Recovery</b>	<b>27</b>
	Enable Disaster Recovery . . . . .	28
	Disable Disaster Recovery . . . . .	30
	Start/Pause Automatic Operations . . . . .	32
	Monitor Data Backup . . . . .	34
	Recover Backed Up Data . . . . .	36
	Recover Recording Storage Data . . . . .	36
	Recover Archive Data . . . . .	39
<b>4</b>	<b>Manage Storage Extensions</b>	<b>43</b>

Table of Contents

Enable Storage Extension . . . . .	44
Disable a Storage Extension . . . . .	48
Configure Storage Extension . . . . .	50
Start/Pause Automatic Operations . . . . .	55
Monitor Storage Extensions . . . . .	56
Monitor Recording Storage/Archive . . . . .	58
Monitor the Extensions . . . . .	58
<b>5 Manually Manage Data</b>	<b>61</b>
Manually Manage Data . . . . .	62
Monitor Manual Jobs Status . . . . .	65
<b>6 XProtect Smart Client Integration</b>	<b>67</b>
Configure XProtect Smart Client Integration . . . . .	68
Enable/Disable the Additional Storage Bridge Timeline Data . . . . .	68
Enable/Disable Automatic Data Retrieval . . . . .	69
Enable/Disable Manual Data Retrieval . . . . .	70
Work with the XProtect Smart Client Plug-in . . . . .	71
The Storage Bridge Timeline . . . . .	72
Work with Nearline or Offline Recordings . . . . .	73



## Table of Contents

# 1

## **Introduction to Storage Bridge**

<i>How It Works</i> . . . . .	8
<i>Storage Bridge Licensing</i> . . . . .	10
<i>System Requirements</i> . . . . .	11
<i>Storage Requirements</i> . . . . .	12

## Introduction to Storage Bridge

Congratulations on your purchase of Tiger Technology's Storage Bridge. Storage Bridge leverages your Milestone XProtect VMS with flexible disaster recovery capabilities and/or seamless extension of the recording storage and archive's capacity to an external storage tier. By enabling a cloud target, a network share or any local volume to seamlessly integrate into your XProtect storage infrastructure, Storage Bridge allows for increased maximum recording and archive retention limits and further ensures your XProtect VMS against data loss.

## How It Works

As soon as you install Storage Bridge on the recording server(s) and the XProtect Management client, you are ready to enable a cloud target, network share or another local volume as an extension and/or disaster recovery storage of a selected recording storage/archive. For the purpose, you should simply provide the credentials for access to the selected extension/disaster recovery storage. As long as Storage Bridge is not paused it immediately begins processing data.

You can enable just extension, just disaster recovery or both on a recording storage/archive. When both are enabled for one and the same recording storage/archive, the same cloud storage provider, network share or local volume is used. You can enable storage extension/disaster recovery on a cloud target for a given recording storage and storage extension/disaster recovery on a network share for the same recording server's archive storage, for example. The two mechanisms are not interchangeable - enabling disaster recovery does not free space on your recording storage/archive and data moved to the extension cannot be used for disaster recovery as it does not include system information, about your recording storage/archive or recording server.

## Disaster Recovery

When you enable disaster recovery, Storage Bridge copies all data and metadata from the recording storage/archive to the specified cloud, network share or local volume, starting with the oldest files. The time for complete backup depends on the network characteristics and connection speed to the disaster recovery storage target. You can keep track of the data backup progress in the Storage Bridge interface.

Storage Bridge disaster recovery is meant to provide a safety net in case of an unforeseen failure of a recording storage/archive or the recording server itself. Thus, it keeps backed up data on the disaster recovery storage for as long as you have specified in XProtect. Should a recording storage/archive reach its retention limit, XProtect will start deleting data and Storage Bridge then automatically deletes the counterpart from the disaster recovery storage, freeing space for new data.

In case of a failure of a recording storage/archive, you can immediately begin recovering all backed up data to a selected location.



## Storage Extension

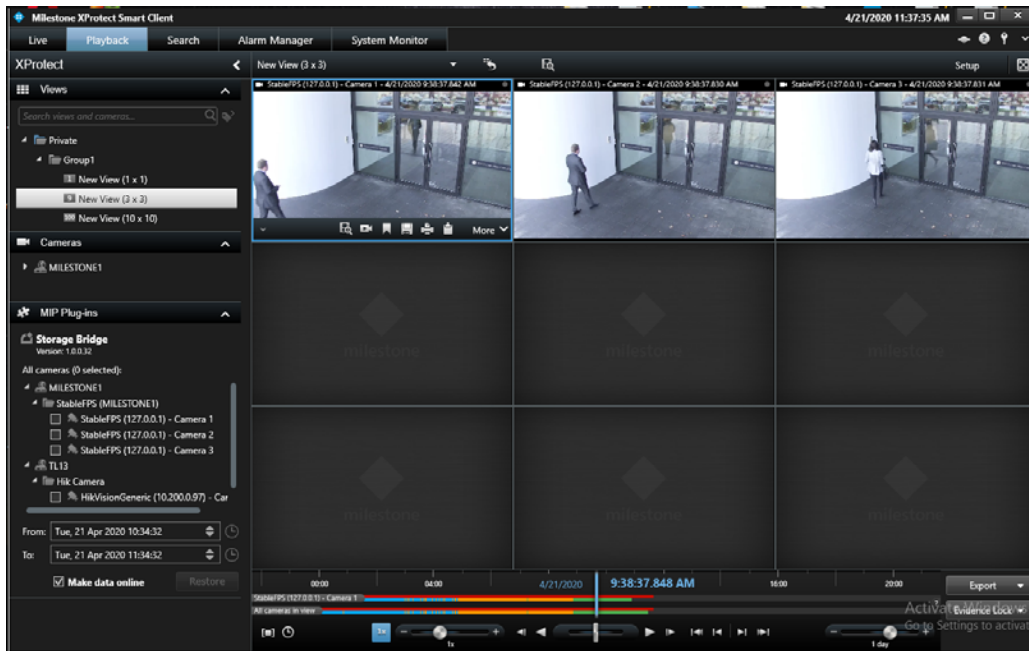
When you extend a recording storage/archive, you simply increase its capacity with the free space on the cloud target, network share, or local volume you have added as an extension. You can expand the capacity of a recording server's storage with a nearline extension, from which data is retrieved as soon as the connection speed allows, or an offline extension (currently, Storage Bridge supports Amazon Glacier, Microsoft Archive and Google Archive), from which data is not retrieved immediately, but must first be rehydrated to an intermediate tier.

Space on the recording storage/archive is freed by moving recordings to the enabled extension. To determine when to move recordings from the recording storage/archive to the nearline extension, Storage Bridge utilizes either the "by size" or the "by age" criteria you specify. With the "by age" method, data is moved to the nearline extension when it has not been accessed for a specified time interval. With the "by size" criteria, Storage Bridge begins moving data when the used space on the recording storage/archive reaches a specified threshold, starting with the least recently accessed files. To determine when a recording should be moved from the nearline extension to the offline extension, if enabled, Storage Bridge utilizes the "by age" criteria i.e. moves files, which have not been accessed for a specified time period.

Once a file is moved to the storage extension, Storage Bridge replaces it with a stub file. Stub files look and act exactly like the actual files they replace, but have almost no size and consume almost no capacity on your local storage/archive. Stub files pointing to actual files on the nearline extension allow immediate and seamless retrieval when playing back and reviewing timeline video. Storage Bridge also allows you to manually move data between the local recording storage/archive and the nearline and offline extensions.

As with disaster recovery, recordings are kept on the nearline/offline extension for as long as the retention limit of the extended recording storage/archive requires. Once the retention limit for a specific recording is reached, both the stub file and its counterpart on the extension are automatically deleted.

## XProtect Smart Client Integration



To facilitate the work of XProtect Smart Client users, the administrator of your surveillance system can enable or disable the integration of Storage Bridge. When enabled, each XProtect Smart Client computer running the Storage Bridge plug-in sees an additional timeline visually displaying the original recording storage/archive, the nearline extension, or the offline extension as enabled by Storage Bridge.

Additionally, when the XProtect Smart Client integration is enabled, users can restore recordings from the nearline or offline extension to the recording storage/archive automatically (when reviewing the recording, for example) or manually, for a selected timeframe.

## Storage Bridge Licensing

In order to benefit from Storage Bridge, you need to activate it on each recording server. For activation Storage Bridge makes use of a software as a service (SaaS). For more information, refer to “Activate Storage Bridge” on page 24. The license holds information about the maximum number of cameras attached to a recording server.

**Note:** *When provided for evaluation purposes, a license may be valid only for a specific amount of time.*

You can keep track of the activation status of a recording server, following the steps on page 25.

## System Requirements

To benefit from Storage Bridge in your XProtect VMS, you must install the Storage Bridge plug-in on the XProtect Management Client and Storage Bridge itself on each recording server whose storage you want to extend or back up. Additionally, to allow XProtect Smart Client integration, you need to install the Storage Bridge XProtect Smart Client plug-in on each computer you want to integrate.

### Storage Bridge

To install the Storage Bridge driver on a recording server whose storage you want to extend and/or back up, it must meet the following minimum requirements:

- PC with 64-bit (x64) processor.

**Note:** *Storage Bridge actively uses the APIs provided by the target provider. These APIs may take significant amount of CPU depending on connection and the amount of data moved. Please, refer to the minimum CPU requirements of your target provider.*

- 64-bit Microsoft Windows® 7/Server 2008 R2/Windows® 8/Server 2012/Server 2012 R2/Windows® 10/Server 2016/Server 2019.

**Important:** *Microsoft Windows® 7/Server 2008 R2 computers must run at least Service Pack 1 and have the KB976932 and the KB3033929 security updates installed.*

- 4 GB of physical RAM at least.
- 30 MB of available hard-disk space for Storage Bridge installation.

**Note:** *Storage Bridge keeps track of the files it manages in a database, stored in the product installation folder. The size of the database grows proportionally to the number of files managed. For example, if Storage Bridge manages 1 000 000 files, the size of the database is approximately 100MB. Unless there's enough free space for the database, Storage Bridge is unable to operate.*

- The following TCP ports must not be blocked by the firewall on the Recording server or the computer managing the inbound and outbound traffic on your network:
  - (for communication with object storage target over http connection) **80** - outbound rule only
  - (for SaaS activation and/or communication with object storage target over https) **443** - outbound rule only
  - (for communication with SMB network share target) **445** - outbound rule only
  - **8536** - inbound and outbound rules
  - **8537** - inbound and outbound rules

## Storage Bridge Plug-in for XProtect Management Client

You can install the Storage Bridge XProtect Management Client plug-in on a computer running XProtect Management Client 2019 R3 or above.

**Note:** *Verify that your computer meets the minimum system requirements of XProtect Management Client 2019 R3, by visiting the Milestone website at: <https://www.milestonesys.com/systemrequirements>*

## Storage Bridge XProtect Smart Client Plug-in

You can install the Storage Bridge XProtect Smart Client plug-in on a computer running XProtect Smart Client 2019 R3 or above.

**Note:** *Verify that your computer meets the minimum system requirements of XProtect Smart Client 2017 R3, by visiting the Milestone website at: <https://www.milestonesys.com/systemrequirements>*

# Storage Requirements

## Recording Storage/Archive Requirements

Currently, Storage Bridge supports only recording storage/archive, which is mounted on the recording server as a local NTFS volume with Read & Write permissions and on which the System account is granted Full Control.

## Extension/Disaster Recovery Storage Requirements

Currently, Storage Bridge supports the following storage types for extension and/or disaster recovery:

**Note:** *Refer to "Extension/Disaster Recovery Storage Prerequisites" on page 13 for specific requirements about each storage type.*

- Amazon S3 object storage
- Microsoft Azure blob storage
- Backblaze B2 cloud storage
- Google cloud storage
- IBM Cloud object storage
- Wasabi Hot Cloud Storage
- S3-compatible object storage (using protocol signature version 2)
- SMB/CIFS network share

- another volume, mounted on the recording server as a local volume with Read & Write permissions

## Extension/Disaster Recovery Storage Prerequisites

### Amazon S3 Object Storage

- a separate empty bucket for each recording storage/archive you want to extend and/or back up on Amazon S3 object storage
- IAM user credentials for access to the respective bucket on the S3 storage. The access of the IAM user can be limited to just the S3 bucket, which will be used as extension/disaster recovery location, but the policy must grant the user full permissions over objects in the bucket, except to delete the bucket itself.

**Note:** *The IAM user does not need to list and have access to other buckets, which will not be used with Storage Bridge.*

**Tip:** *You can find instructions about creating buckets and managing the permissions in the Amazon S3 Console User Guide:*

*<https://docs.aws.amazon.com/AmazonS3/latest/user-guide/what-is-s3.html>*

*The following bucket policy can be used as a sample for granting the minimum required permissions for a bucket "bucket-name" to user "bridge\_user":*

```
{
  "Version": "2012-10-17",
  "Id": "Policy1576080704087",
  "Statement": [
    {
      "Sid": "Stmt1576080702687",
      "Effect": "Allow",
      "Principal": {
        "AWS": "arn:aws:iam::123157284745:user/bridge-user"
      },
      "Action": "s3:*",
      "Resource": "arn:aws:s3:::bucket-name/*"
    }
  ]
}
```

**Note:** *For best practices on securing your AWS resources, refer to the following recommendations for the AWS Identity and Access Management (IAM) service:*

*<https://docs.aws.amazon.com/IAM/latest/UserGuide/best-practices.html>*

### Microsoft Azure Blob Storage

- a separate empty container for each recording storage/archive you want to extend and/or back up on Microsoft Azure blob storage
- account name and key with at least write access to the respective container on the Azure Blob storage

## **Backblaze B2 Cloud Storage**

- create a separate empty bucket for each recording storage/archive you want to extend or back up on the Backblaze B2 cloud storage
- provide Backblaze application key and keyID for access to each respective bucket

## **Google Cloud Storage**

- create a separate empty bucket for each recording storage/archive you want to extend and/or back up on the Google Cloud storage
- provide a client email and private JSON key of a service account user, which is owner of the respective bucket

## **IBM Cloud Object Storage**

- create a separate empty bucket for each recording storage/archive you want to extend and/or back up on the IBM cloud object storage
- provide access key ID and secret access key with at least write access to the respective bucket

## **Wasabi Cloud Object Storage**

- create a separate empty bucket for each recording storage/archive you want to extend and/or back up on the Wasabi cloud storage

*Note: Region specific target URL may be required.*

- provide the access and secret keys with at least write access to the respective bucket

## **S3-compatible Object Storage**

- a separate empty bucket for each recording /archive storage you want to extend and/or back up on the S3-compatible object storage
- provide access key ID and secret access key, which provide at least write access to the respective bucket on S3-compatible object storage

## **Network Share**

- create an empty folder on the network share for each recording storage/archive you want to extend and/or back up
- provide the user name and password of an account that has Read & Write permissions to the network share

## Local NTFS Volume

- provide a unique path on the volume (the root of the volume or a subfolder) for each recording storage/archive you want to extend and/or back up on the local volume

**Important:** *The root of the volume or the subfolder must not contain any other data. Keep in mind that you cannot use one and the same volume as an extension and/or disaster recovery location to more than one recording storage or archive.*

- make sure that the volume is mounted as a local volume with Read & Write permissions on the recording server





# 2

## **Storage Bridge Installation and Activation**

<i>Install Storage Bridge</i> . . . . .	18
<i>Uninstall Storage Bridge</i> . . . . .	23
<i>Activate Storage Bridge</i> . . . . .	24

# Install Storage Bridge

To fully benefit from Storage Bridge on your Milestone XProtect VMS, you should install the following components:

- Storage Bridge - the primary Storage Bridge application must be installed on each recording server to provide all Disaster Recovery and Storage Extension functionality.
- Storage Bridge XProtect Management Client plug-in - on the XProtect Management Client in order to enable and configure storage extension and/or disaster recovery on a recording server's recording storage/archive.
- Storage Bridge XProtect Smart Client plug-in - on each XProtect Smart Client computer, to display additional timeline data, showing the exact location of recordings. It also allows users to automatically or manually retrieve recordings from the nearline or offline extension.

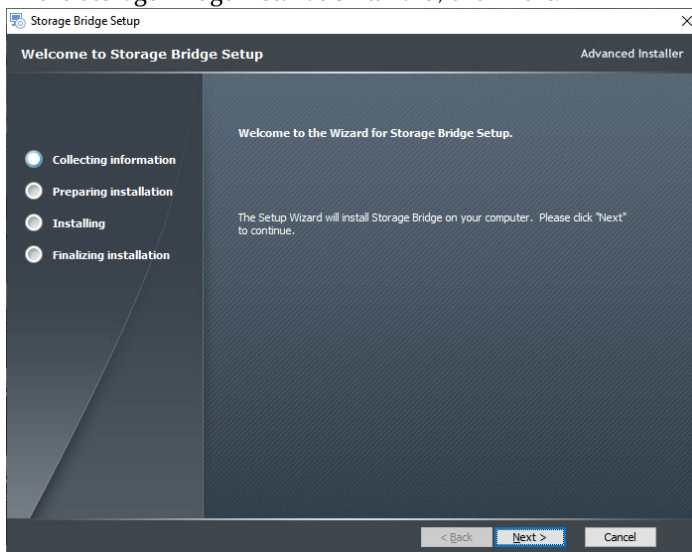
**Note:** *Even if your XProtect VMS uses a Single Computer installation i.e. all XProtect components are installed on one and the same machine, to benefit from the Storage Bridge workflow you must install both Storage Bridge and the Storage Bridge plug-in for XProtect Management Client and optionally the Storage Bridge plug-in for XProtect Smart Client on the XProtect VMS computer.*

## To install Storage Bridge on a recording server:

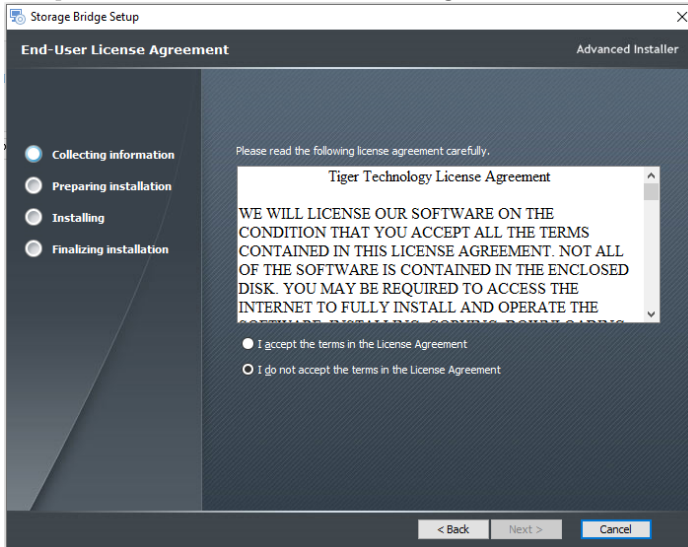
1. Double-click the Storage Bridge installation file.

**Note:** *If the setup wizard detects that prerequisites needed to run Storage Bridge are not installed on the computer, click next to install them.*

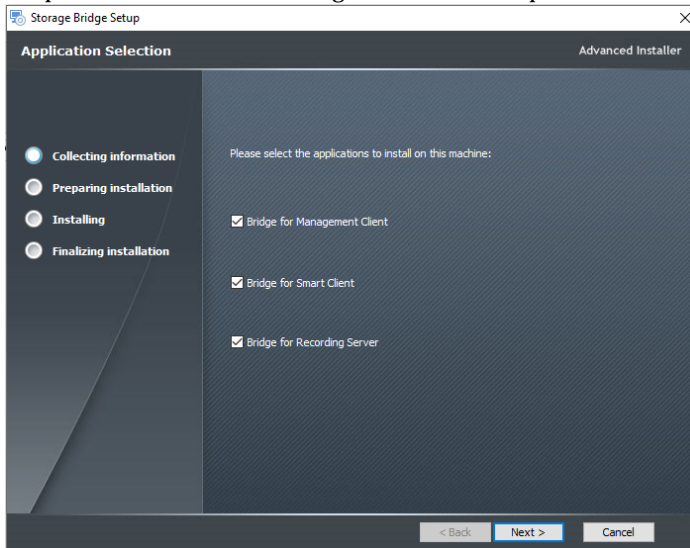
2. In the Storage Bridge installation wizard, click Next.



3. Accept the terms of the software license agreement and click Next.



4. Make sure the “Bridge for Recording Server” check box and the check boxes of all other components that will be running on the same computer are selected, then click Next



**Important:** *If the recording server does not run XProtect Management Client and/or XProtect Smart Client, clear the check boxes of the corresponding components and install them separately, following the instructions below.*

5. When the installation is complete, click Finish.

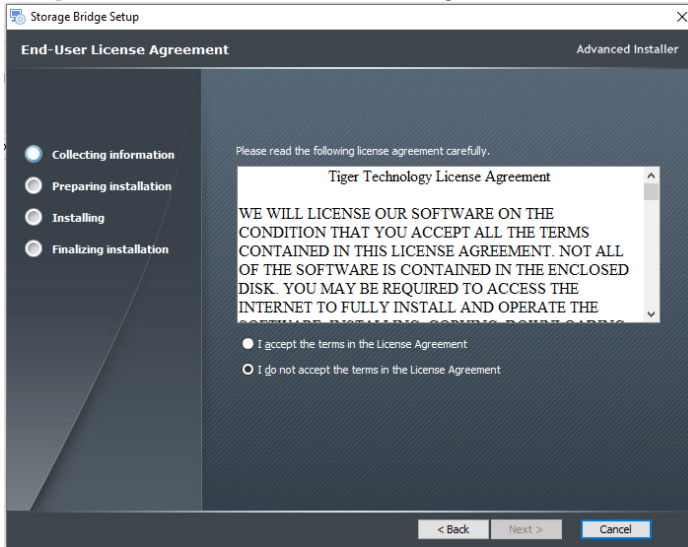
## Storage Bridge Installation and Activation

### To install the Storage Bridge plug-in on the XProtect Management Client:

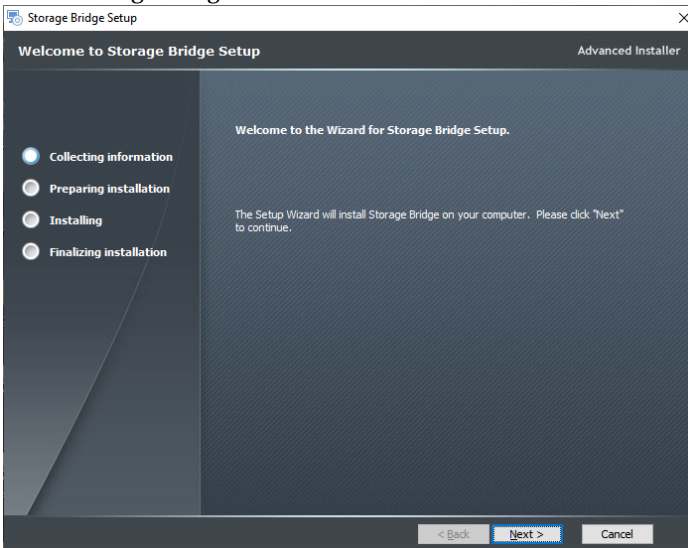
1. Double-click the Storage Bridge installation file.

**Note:** If the setup wizard detects that prerequisites needed to run the Storage Bridge XProtect Smart Client plug-in are not installed on the computer, click next to install them.

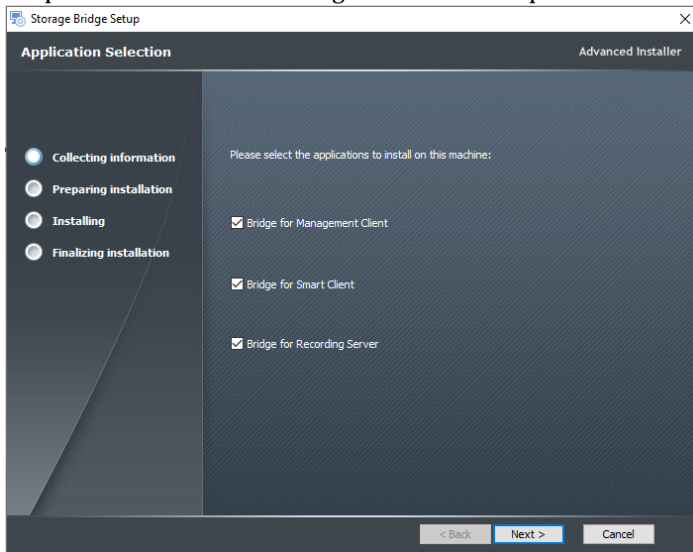
2. Accept the terms of the software license agreement and click Next.



3. In the Storage Bridge installation wizard, click Next.



4. Make sure the “Bridge for Management Client” check box and the check boxes of all other components that will be running on the same computer are selected, then click Next



**Important:** *If the XProtect Management Client computer does not run XProtect Smart Client and is not set up as a recording server, clear the check boxes of the corresponding components and install them separately.*

5. When the installation is complete, click Finish.

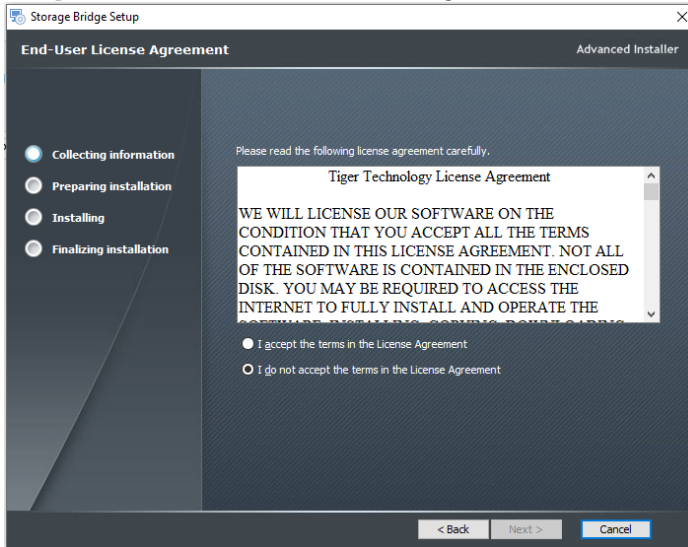
### **To install the Storage Bridge plug-in on the XProtect Smart Client:**

1. Double-click the Storage Bridge installation file.

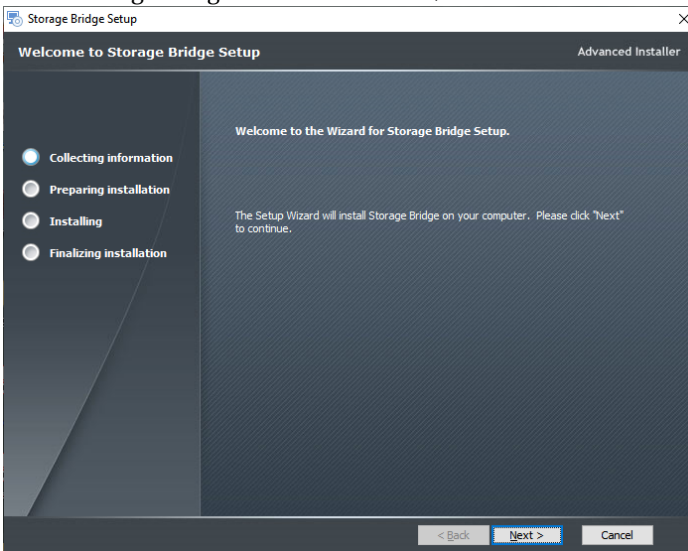
**Note:** *If the setup wizard detects that prerequisites needed to run the Storage Bridge XProtect Smart Client plug-in are not installed on the computer, click next to install them.*

## Storage Bridge Installation and Activation

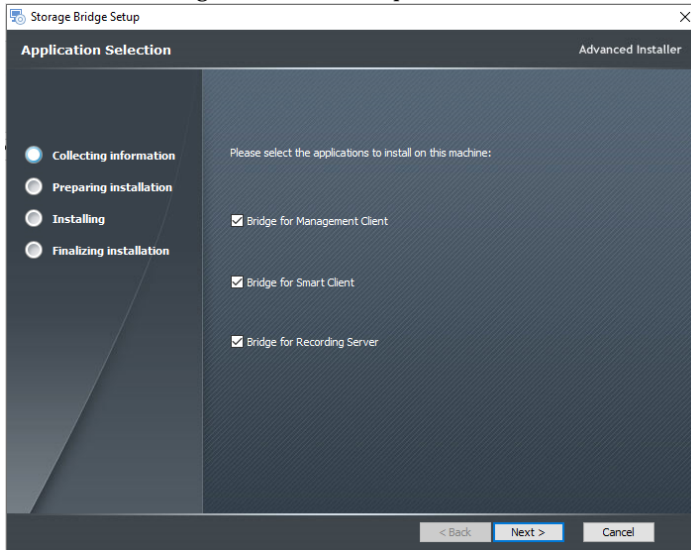
2. Accept the terms of the software license agreement and click Next.



3. In the Storage Bridge installation wizard, click Next.



4. Make sure the “Bridge for Smart Client” check box and the check boxes of all other components that will be running on the same computer are selected, then click Next



**Important:** *If the computer running XProtect Smart Client does not run XProtect Management Client and is not set up as a recording server, clear the check boxes of the corresponding components and install them separately.*

5. When the installation is complete, click Finish.

## Uninstall Storage Bridge

You can uninstall Storage Bridge and any of its plug-ins at any time.

When you uninstall Storage Bridge from a recording server, even if the extension/disaster recovery is not disabled, no further data will be backed up/moved and you will not be able to access already moved data from the extension or recover data from the disaster recovery storage through your XProtect VMS.

On the other hand, if you configure extension/disaster recovery in the XProtect Management Client plug-in and then uninstall it, Storage Bridge will continue to back up/move data from the recording storage/archive to its extension/disaster recovery storage, but you will not be able to change the configuration, to manually move or back up data and to recover data in case of a failure of the recording server or its storage, until you install the XProtect Management Client plug-in again.

## Storage Bridge Installation and Activation

Uninstalling the Storage Bridge plug-in from the XProtect Smart Client will simply hide the additional timeline data displaying the exact location of recordings and users will not be able to manually retrieve data from the nearline/offline extension.

### **To uninstall Storage Bridge from the recording server:**

1. In Control Panel, go to Programs and Features.
2. Right-click Storage Bridge and select Uninstall.
3. When prompted to confirm that you want to remove Storage Bridge from the computer, click Yes.

### **To uninstall the Storage Bridge from XProtect Management Client plug-in:**

1. In Control Panel, go to Programs and Features.
2. Right-click Bridge for Management Client and select Uninstall.
3. When prompted to confirm that you want to remove the Storage Bridge XProtect Management Client plug-in from the computer, click Yes.

### **To uninstall the Storage Bridge XProtect Smart Client plug-in:**

1. In Control Panel, go to Programs and Features.
2. Right-click Bridge for Smart Client and select Uninstall.
3. When prompted to confirm that you want to remove the Storage Bridge XProtect Smart Client from the computer, click Yes.

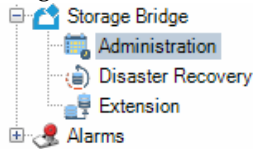
## Activate Storage Bridge

You can activate Storage Bridge using a software as a service (SaaS) license. You need to activate the product on each recording server, whose recording storage/archive you want to extend or back up. To enable more features once you have activated the product, simply repeat the activation procedure again.

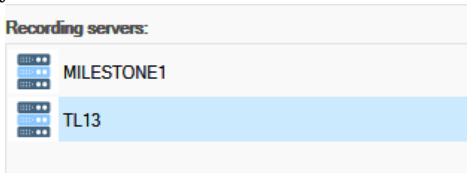


**To view the activation status of Storage Bridge on a recording server:**

1. In the Site Navigation of XProtect Management Client, click Administration under Storage Bridge.

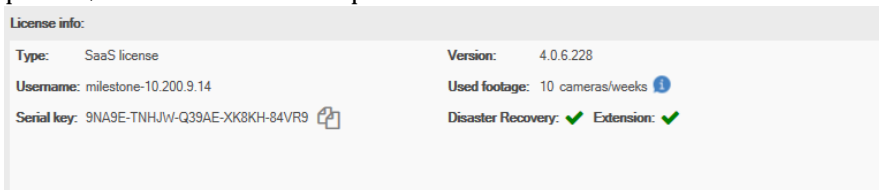


2. In the right pane under Recording Servers, click the recording server, whose activation status you to view.



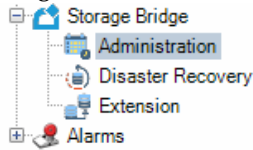
**Note:** *If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.*

3. The License info pane displays the type of license, your user name, serial key, the version of the product, the number of cameras per week and the activated features.

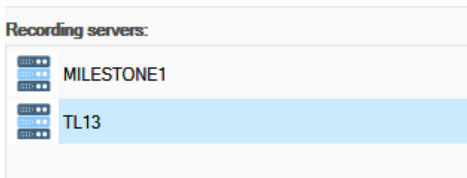


**To activate a Storage Bridge on a recording server:**

1. In the Site Navigation of XProtect Management Client, click Administration under Storage Bridge.

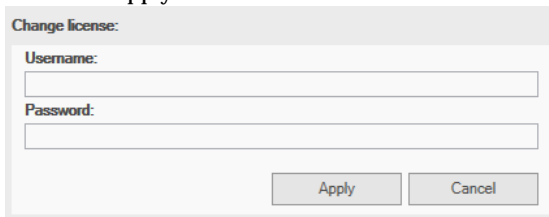


2. In the right pane under Recording Servers, click the recording server, which you want to activate.



**Note:** *If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.*

3. Under Change license, enter the username and password for your software subscription and then click Apply.





# **Manage Disaster Recovery**

<i>Enable Disaster Recovery</i> . . . . .	28
<i>Start/Pause Automatic Operations</i> . . . . .	32
<i>Monitor Data Backup</i> . . . . .	34

## Manage Disaster Recovery

To ensure against data loss, you can configure Storage Bridge to automatically copy all data and metadata from it to a disaster recovery target. For this purpose you need to enable a cloud target, network share, or local volume as your disaster recovery storage following the steps in “Enable Disaster Recovery” on page 28.

The time for full backup depends on the network characteristics and connection speed to the disaster recovery storage. You can keep track of the progress of data backup following the steps in “Monitor Data Backup” on page 34.

Storage Bridge disaster recovery is meant to provide a safety net in case of an unforeseen failure of a recording server’s recording storage/archive. In case of a failure, you can immediately begin recovering all backed up data by following the steps in “Recover Backed Up Data” on page 36.

## Enable Disaster Recovery

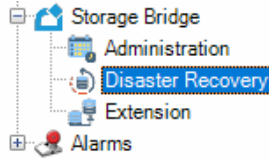
To enable disaster recovery, you should simply provide the credentials for access to the cloud storage, network share or local volume, which will be used for backing data up. If a nearline/offline extension is already enabled for the selected recording storage or archive, the same cloud storage, network share or local volume is also used for disaster recovery and there is no need to provide the credentials for access to the disaster recovery storage.

**Important:** *Storage Bridge does not allow you to use the same bucket/container (on cloud storage) or folder (on network share or local volume) as a disaster recovery location of more than one recording storage/archive.*

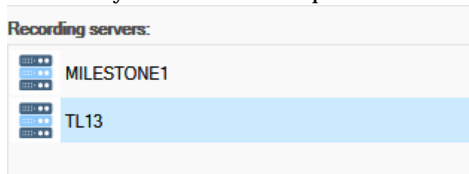
To change the type of disaster recovery storage or the credentials for access to it, you need to first disable disaster recovery, following the steps in “Disable Disaster Recovery” on page 30 and then enable it again. Keep in mind that if you want to change the type of disaster recovery storage or the credentials for access to it, and a nearline/offline extension is also enabled, you must first disable the extension(s), following the steps in “Disable a Storage Extension” on page 48.

**To enable disaster recovery:**

1. In the Site Navigation of XProtect Management Client, click Disaster Recovery under Storage Bridge.

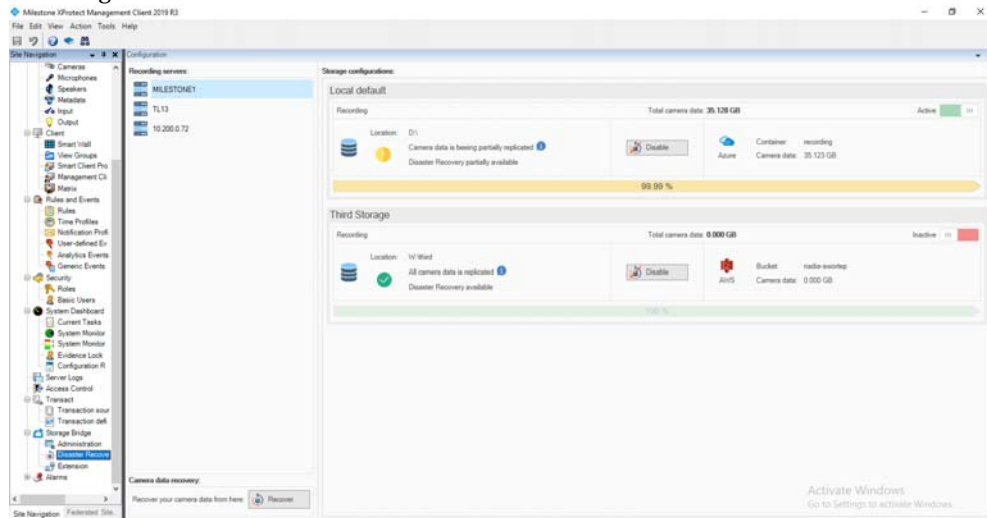


2. In the right pane under Recording Servers, click the recording server, whose recording storage or archive you want to back up.



**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

The Storage Bridge plug-in lists all recording storage/archives configured for the selected recording server.

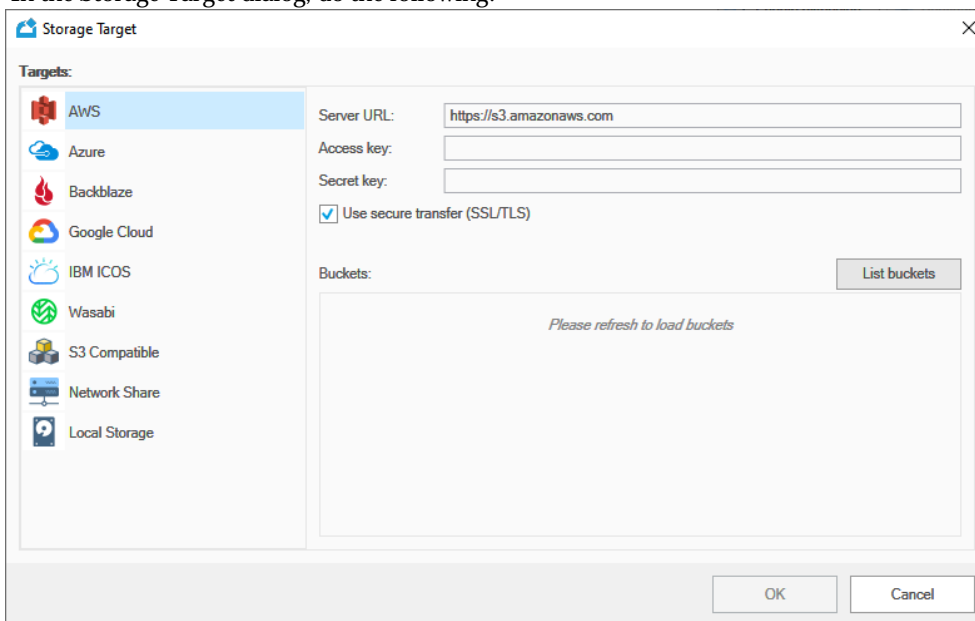


3. Next to the recording storage  or the archive  pane, click Enable.

**Note:** If nearline/offline extension is already enabled for the selected recording storage/archive, the same storage will be used for disaster recovery.

## Manage Disaster Recovery

### 4. In the Storage Target dialog, do the following:



- Under Targets, select the type of the disaster recovery storage.
- Fill in the details for access to the selected disaster recovery storage.

**Important:** *Never provide the credentials of your root user.*

- (cloud storage only) Select whether to use secure transfer of data, select the bucket/container, which should be used as an actual extension and then click OK.

**Note:** *If the account you have specified for access to the disaster recovery storage cannot list all buckets/containers, you must enter the name of the bucket/container manually.*

- (network share only) Enter the name of the folder on the network share, to which data from the recording storage/archive will be backed up and then click OK.
- (local storage only) Browse to and select the folder on the local volume, to which data from the recording storage/archive will be backed up and then click OK.

**Important:** *By default, all automatic Storage Bridge operations are initially paused. To let Storage Bridge begin automatically back up data, follow the instructions in "Start/Pause Automatic Operations" on page 32.*

## Disable Disaster Recovery

When you disable a recording storage/archive's disaster recovery storage, Storage Bridge stops copying data to it both automatically and manually and all already copied data cannot be recovered

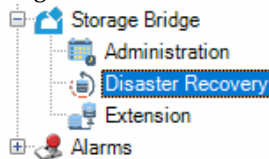
in case of a recording storage/archive failure. Additionally, once you disable disaster recovery, data on it is no longer automatically deleted once the retention limit set for the respective recording storage/archive is reached.

**Important:** *If the recording storage/archive whose disaster recovery you disable also has nearline/offline extension enabled, Storage Bridge stops backing up data, but the storage extension mechanism continues operation. You are also still able to manually move data to and from the extension, following the steps in “Manually Manage Data” on page 61.*

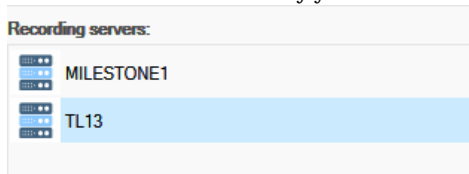
If you want to disable disaster recovery in order to change the credentials for access to the disaster recovery storage, make sure the new credentials provide access to data already backed up. Otherwise it may remain unavailable for recovery in your XProtect VMS. If you want to disable disaster recovery in order to change the type of disaster recovery storage, it is advisable to first migrate all data from your current disaster recovery storage.

### To disable disaster recovery:

1. In the Site Navigation of XProtect Management Client, click Disaster Recovery under Storage Bridge.



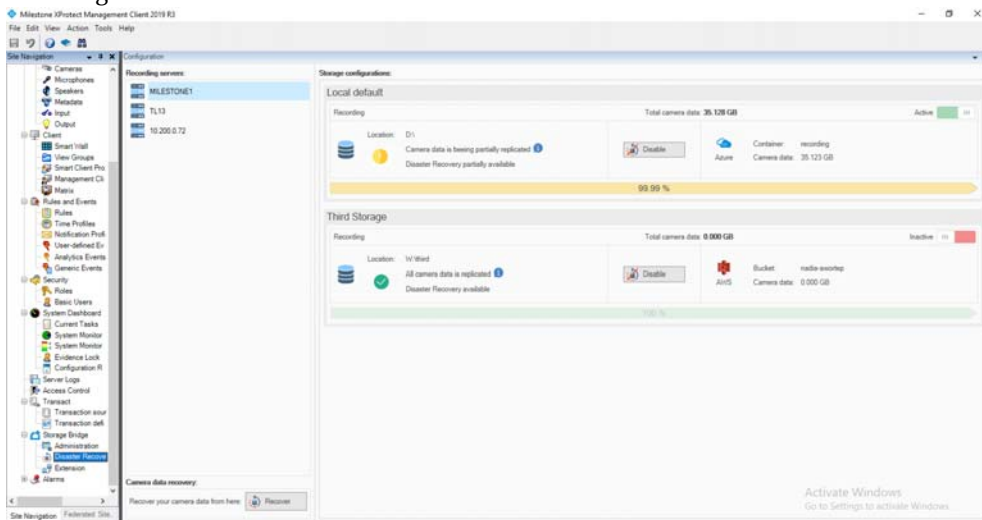
2. In the right pane under Recording Servers, click the recording server, whose recording storage or archive's disaster recovery you want to disable.





## Manage Disaster Recovery

**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

The Storage Bridge plug-in lists all recording storage/archives configured for the selected recording server.



3. In the recording storage  or the archive  pane, click Disable.

## Start/Pause Automatic Operations

You can pause and start all automatic operations for a specific recording storage/archive at any time. It's important to keep in mind that pausing/starting automatic operations concerns both backing up data and moving data to the extension if extension is enabled for the same recording storage/archive. Additionally, even if automatic operations are started for the disaster recovery mechanism, but then you enable storage extension for the same recording storage/archive, by default the automatic operations will be paused, until you manually start them again.

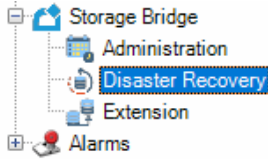
While automatic operations are paused, Storage Bridge stops backing up data to the disaster recovery storage, but already backed up data can be recovered in case of a recording storage/archive failure.

Once you start automatic operations, Storage Bridge immediately resumes processing the queue with files scheduled to be backed up.

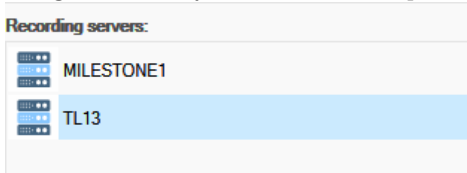


**To start/pause automatic operations for a recording storage/archive:**

1. In the Site Navigation of XProtect Management Client, click Disaster Recovery under Storage Bridge.

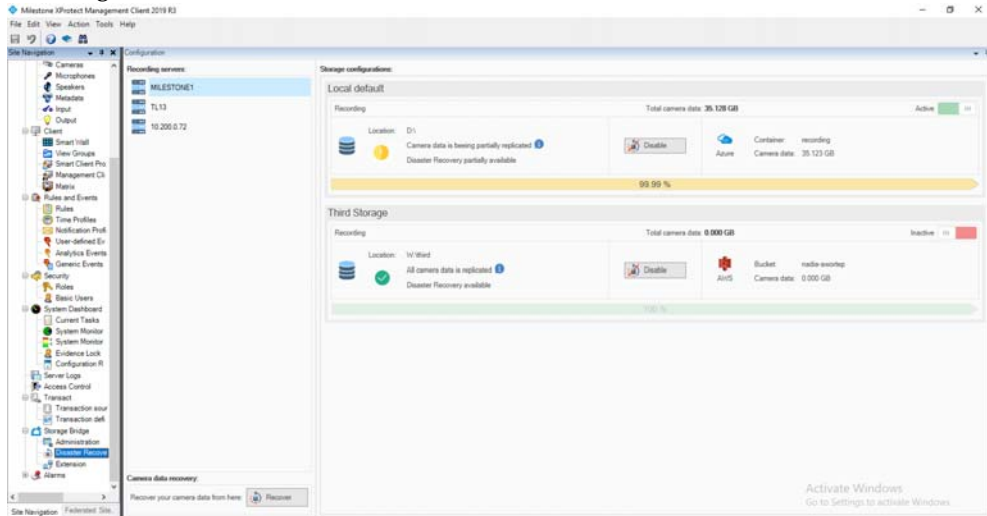




2. In the right pane under Recording Servers, click the recording server, for whose recording storage or archive you want to start or pause the automatic operations.




**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.


The Storage Bridge plug-in lists all recording storage/archives configured for the selected recording server.



3. In the upper right corner of the recording storage  or the archive  pane, do one of the following:

- Switch the setting to Active  and when prompted, confirm that you want to start automatic Storage Bridge operations.

## Manage Disaster Recovery

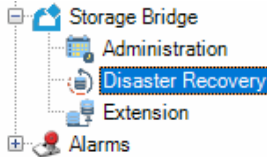
- Switch the setting to Inactive  and when prompted, confirm that you want to pause automatic Storage Bridge operations.

# Monitor Data Backup

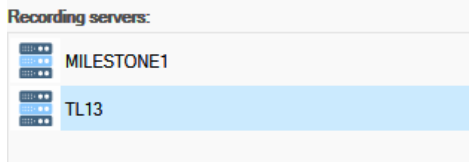
The interface of the Storage Bridge XProtect Management Client plug-in provides you with all information necessary to keep track of the status of the recording storage/archive, the disaster recovery storage and the data backup progress.

To view information about the recording storage/archive(s) of a recording server running Storage Bridge and about their disaster recovery storage, navigate to the Disaster Recovery page:

1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.

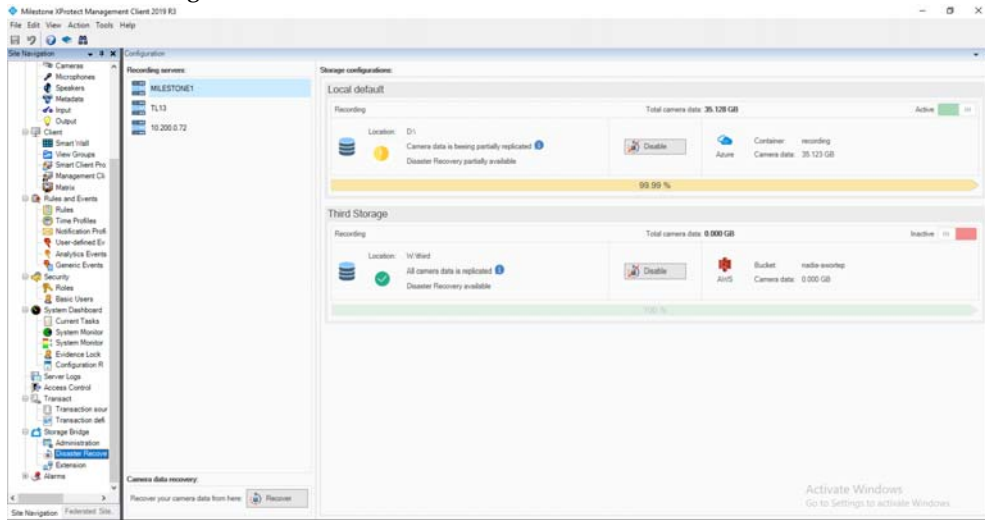




2. In the right pane under Recording Servers, click the recording server, whose recording storage/archive and data backup you want to monitor.

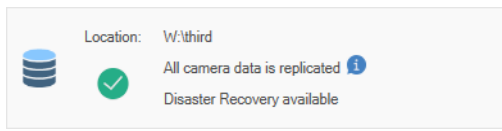


**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

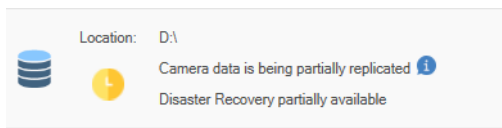
The Storage Bridge plug-in lists all recording storages  and archives  configured for the selected recording server.



The recording storage  or archive  pane, gives you information about its mount path on the recording server as well as the status of the recording storage/archive:

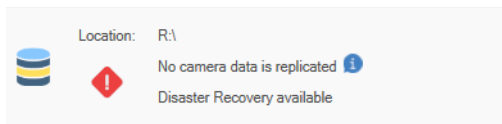


The recording storage or archive is available and all its data is fully backed up.



The recording storage or archive is available and data on it is still being backed up.

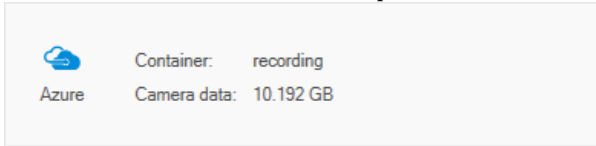
**Note:** You can keep track of the percentage of backed up data in the progress bar below the recording storage/archive's pane.



The recording storage or archive is not available - it may have been dismounted from the recording server because it has suffered a failure. You can recover all data backed up from this recording storage or archive, following the steps in “Recover Backed Up Data” on page 36.

## Manage Disaster Recovery

The disaster recovery storage pane gives you information about the storage type, the name of the container in which data is backed up and the size of the total data already backed up.



You can view the total size of camera data, which needs to be backed up in the header of a recording storage/archive and keep track of the percentage of already backed up data in the progress bar below.

**Note:** *Keep in mind that if cameras are actively recording on the recording storage and data is being constantly sent to the archive, the percentage of backed up data may never reach 100%.*

## Recover Backed Up Data

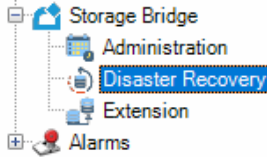
The procedures for recovering data differ depending on the XProtect VMS component, which has failed - the recording storage or the archive.

### Recover Recording Storage Data

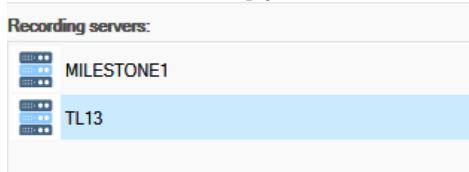
To recover backed up data from a failed recording storage using Storage Bridge, you need to prepare an empty folder on an NTFS volume, which is locally mounted on the same recording server and attach all devices previously attached to the failed recording storage to the new one. Once you perform the data recovery procedure, all backed up data will quickly become available from the new recording storage in the form of stub files. You can then retrieve them on demand, by simply reviewing them in the XProtect Smart Client, or manually by initiating a retrieval job from the disaster recovery storage.

**To recover a failed recording storage's data:**



1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.

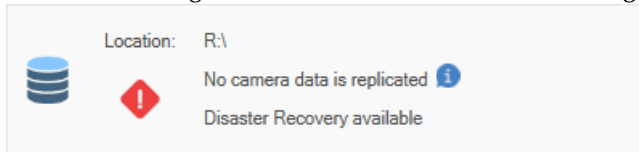



2. In the right pane under Recording Servers, click the recording server, whose recording storage/archive and data backup you want to monitor.

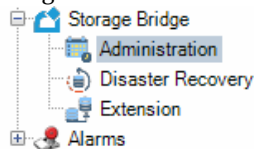


**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

The Storage Bridge plug-in lists all recording storage  and archives  configured for the selected recording server. In the case of a failure, a warning icon is displayed in the pane.

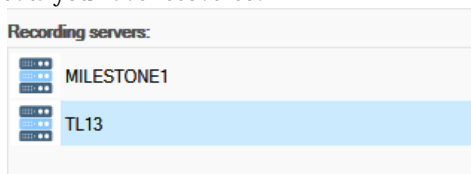


3. Next to the failed recording storage pane, click Recover .
4. In the dialog, which opens, browse to and select the folder on a locally mounted NTFS volume, which will be added as an additional recording storage and to which backed up data will be recovered.
5. Once all data is recovered to the new recording storage in the form of stub files, attach all cameras previously associated with the failed recording storage to the new one.
6. (optional, if you want to replace the recovered stub files with the actual recordings) In the Site Navigation of XProtect Management Client, click Administration under Storage Bridge.

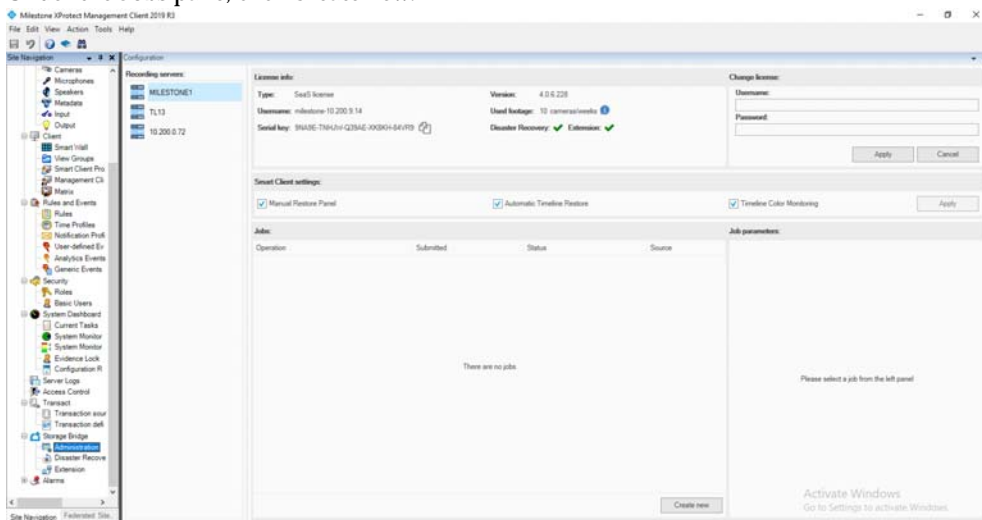


## Manage Disaster Recovery

7. In the right pane under Recording Servers, click the recording server for the recording storage data you have recovered.



8. Under the Jobs pane, click Create new.



9. In the Job parameters pane, do the following:

**Job parameters:**

Operation: Move data to be available locally

All cameras (1 selected):


- StableFPS (MILESTONE1)
  - StableFPS (127.0.0.1) - Camera 1
  - StableFPS (127.0.0.1) - Camera 2
  - StableFPS (127.0.0.1) - Camera 3

From: Tue, 05 May 2020 18:51:42

To: Tue, 05 May 2020 19:51:42

Submit job Cancel

- In the Operation drop-down box, select “Move data to be available locally”.
- Under Cameras, select the camera(s), attached to the new recording storage.
- Select the start and end period of the recordings in the respective boxes.

**Tip:** Click  next to the From or To box, to display the Calendar and more easily navigate to the respective date or enter the respective start/end time.

10. Click Submit job.

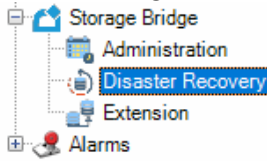
The job appears on top of the jobs queue pane. You can monitor its status, following the steps in “Monitor Manual Jobs Status” on page 65. Once all data is retrieved from the disaster recovery storage, you will be able to normally work with it in XProtect Smart Client.

## Recover Archive Data

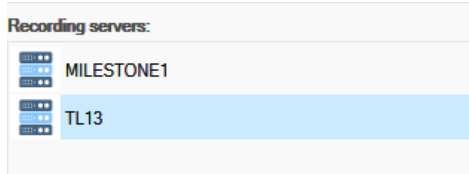
To recover backed up data from a failed archive using Storage Bridge, you need to add a new recording storage to the recording server whose archive has failed. Once you perform the data recovery procedure, a new archive for this new recording storage will automatically be created on the same locally mounted NTFS volume. All backed up data will become available in the form of stub files. Data can be retrieved automatically simply by reviewing it in the timeline or manually by creating a retrieval job from the disaster recovery storage.



**To recover a failed archive's data:**

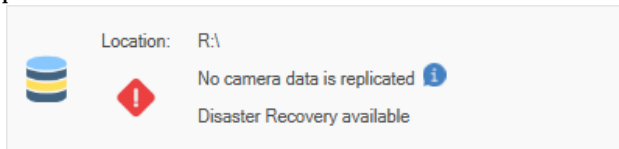
1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.




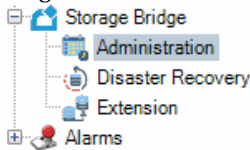
2. In the right pane under Recording Servers, click the recording server for the archive you want to recover.



The Storage Bridge plug-in lists all recording storages  and archives  configured for the selected recording server. In the case of a failure, a warning icon is displayed in the archive's pane.

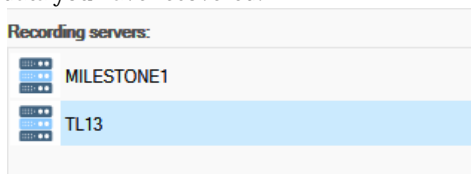


3. Next to the failed archive's pane, click Recover .
4. In the dialog, which opens, browse to and select the path to the newly created recording storage, then click OK.  
Storage Bridge begins recovering all backed up data to the new archive in the form of stub files.
5. (optional, if you want to replace the recovered stub files with the actual recordings) In the Site Navigation of XProtect Management Client, click Administration under Storage Bridge.

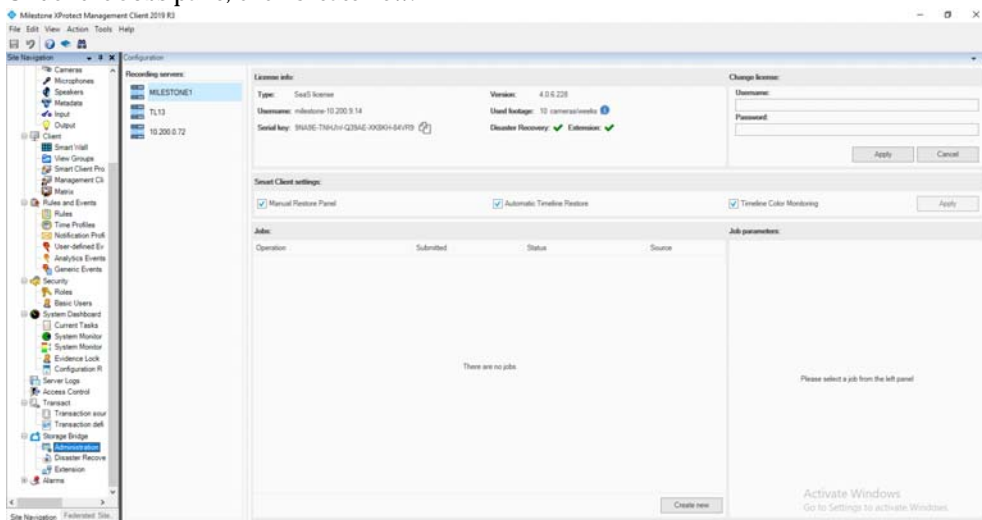




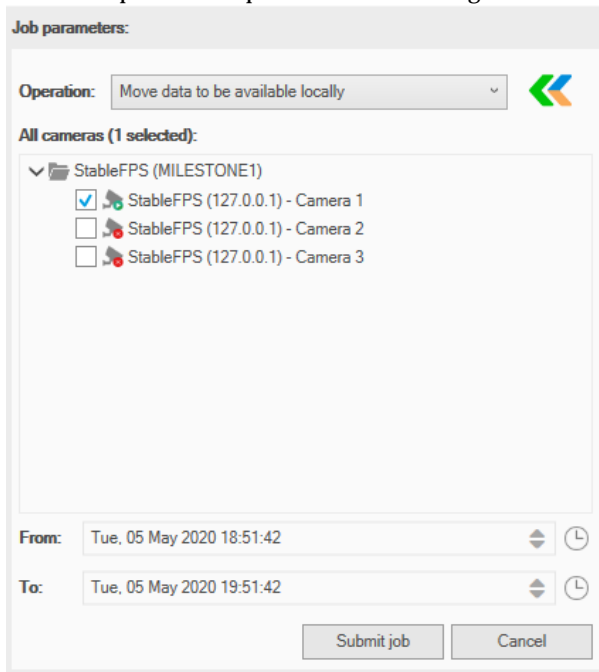
- In the right pane under Recording Servers, click the recording server, whose recording storage data you have recovered.




- Under the Jobs pane, click Create new.



8. In the Job parameters pane, do the following:



- In the Operation drop-down box, select “Move data to be available locally”.
- Under Cameras, select the camera(s), attached to the recording storage of the failed archive.
- Select the start and end period of the recordings in the respective boxes.

**Tip:** Click  next to the From or To box, to display the Calendar and more easily navigate to the respective date or enter the respective start/end time.

9. Click Submit job.

The job appears on top of the jobs queue pane. You can monitor its status, following the steps in “Monitor Manual Jobs Status” on page 65. Once all data is retrieved from the disaster recovery storage, you will be able to normally review it in XProtect Smart Client.

# 4

## Manage Storage Extensions

<i>Enable Storage Extension</i> . . . . .	44
<i>Configure Storage Extension</i> . . . . .	50
<i>Start/Pause Automatic Operations</i> . . . . .	55
<i>Monitor Storage Extensions</i> . . . . .	56

## Manage Storage Extensions

When you extend the recording storage or archive of a recording server, you simply increase its capacity with the free space on the cloud storage, network share or local volume you have added as an extension. You can expand the capacity of a recording server's storage with a nearline extension, from which data is transparently retrieved as soon as the connection speed allows, or an offline extension, from which data is not retrieved immediately, but must first be rehydrated to an intermediate tier.

Once the retention limit you have specified for the respective recording storage/archive is reached, data is automatically deleted from it and from its nearline/offline extension to make way for newly recorded data.

To extend the recording storage or archive of a recording server, you should do the following:

- enable the storage extension (see “Enable Storage Extension” on page 44).
- configure what data should be automatically moved to the extension and made accessible from there (see “Configure Storage Extension” on page 50).
- turn on automatic Storage Bridge management of data between the extended recording storage/archive and the extension (see “Start/Pause Automatic Operations” on page 55).

## Enable Storage Extension

To enable an extension, you should simply provide the credentials for access to the cloud storage, network share or local volume, which will be used as an extension. If disaster recovery is already enabled for the selected recording storage or archive, the same cloud storage, network share or local volume is used as a nearline extension. Thus, there is no need to provide the credentials for access to the extension, but simply configure the extension and enable automatic Storage Bridge operations on it.

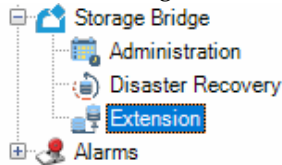
The offline extension can only be on the same storage as the nearline extension and uses the same credentials for access. You cannot enable an offline extension of a recording storage/archive, which does not have a nearline extension already enabled. You also cannot enable an offline extension of a recording storage, which has an archive, as moving groomed data to the archive would require unnecessary retrieval of data from the offline extension.

**Important:** *Storage Bridge does not allow you to use the same bucket/container (on cloud storage) or folder (on network share or local volume) as an extension of more than one recording storage/archive.*

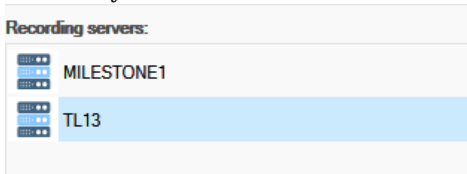
To change the type of storage extension or the credentials for access to it, you need to first disable the current extension, following the steps in “Disable a Storage Extension” on page 48 and then enable it anew. Keep in mind that if you want to change the type of storage extension or the credentials for access to it of a recording storage/archive, which also has Storage Bridge disaster recovery enabled, you must first disable disaster recovery too, following the steps on page 30.

**To enable a nearline extension:**

1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.

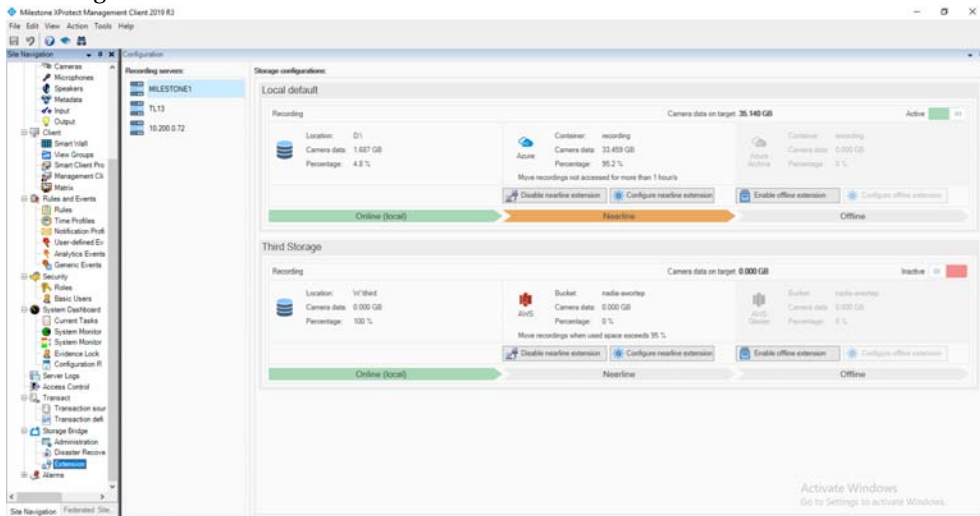


2. In the right pane under Recording Servers, click the recording server, whose recording storage or archive you want to extend.



**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed and/or activated.

The Storage Bridge plug-in lists all recording storages/archives configured for the selected recording server.

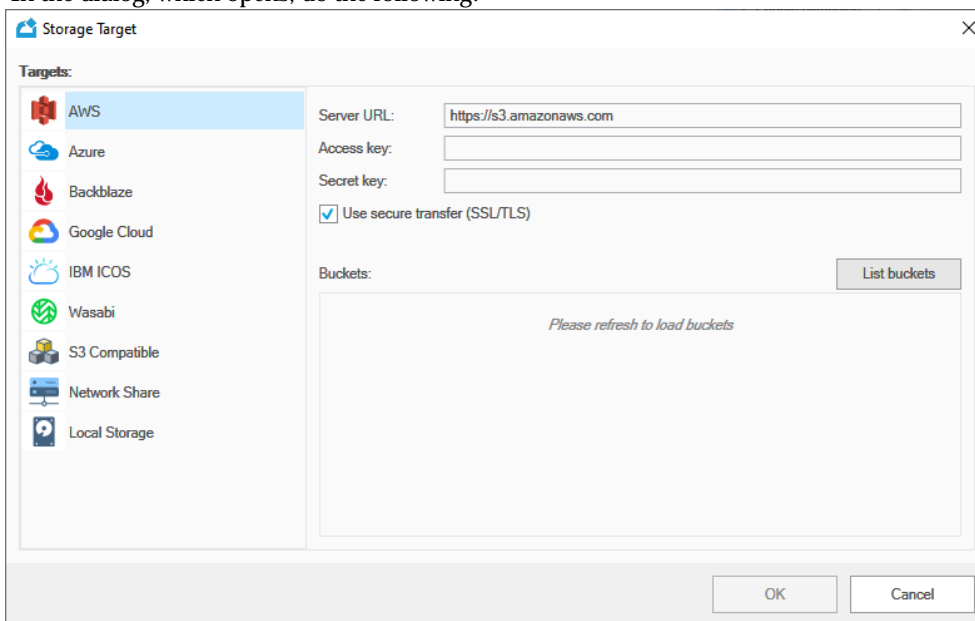


3. In the Nearline pane of the recording storage  or the archive  you want to extend, click Enable Extension.

**Note:** If disaster recovery is already enabled for the selected recording storage/archive, the same storage will be used as nearline extension. To enable the extension, in the dialog which opens, configure either by size or by age criteria for moving data, following the steps in “Configure Storage Extension” on page 50.

## Manage Storage Extensions

### 4. In the dialog, which opens, do the following:



- Under Targets, select the storage type of the extension you want to enable.
- Fill in the details for access to the selected extension.

**Important:** *Never provide the credentials of your root user.*

- (cloud storage only) Select whether to use secure transfer of data, select the bucket/container, which should be used as an actual extension and then click OK.

**Note:** *If the account you have specified for access to the extension cannot list all buckets/containers, you must enter the name of the bucket/container manually.*

- (network share only) Enter the name of the folder on the network share, to which data from the recording storage/archive will be moved and then click OK.
- (local storage only) Browse to and select the folder on the local volume, to which data from the recording storage/archive will be moved and then click OK.

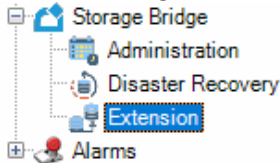
Until you configure the extension, Storage Bridge uses the default parameter - data is automatically moved to the nearline extension and is made accessible from there, when the used space on your recording storage/archive reaches 95%. You can change this default parameter, following the steps in “Configure Storage Extension” on page 50.

**Important:** *By default, all automatic Storage Bridge operations are initially paused and you can move data to the nearline extension only manually, following the steps in “Manually Manage Data” on page 61. To let Storage Bridge automatically move data, follow the steps in “Start/ Pause Automatic Operations” on page 55.*

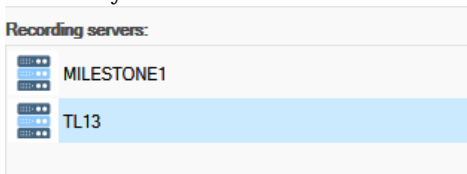
**To enable an offline extension:**

**Important:** You cannot enable an offline extension of a recording storage/archive, which does not have a nearline extension enabled. Additionally, you cannot enable an offline extension of a recording storage, which has a Milestone archive enabled.

1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.

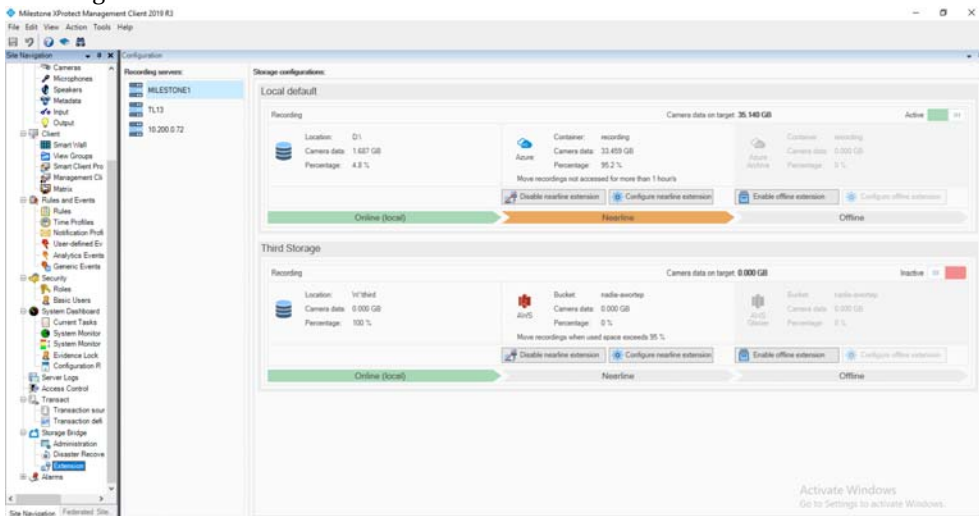


2. In the right pane under Recording Servers, click the recording server, whose recording storage or archive you want to extend.



**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

The Storage Bridge plug-in lists all recording storage/archives configured for the selected recording server.

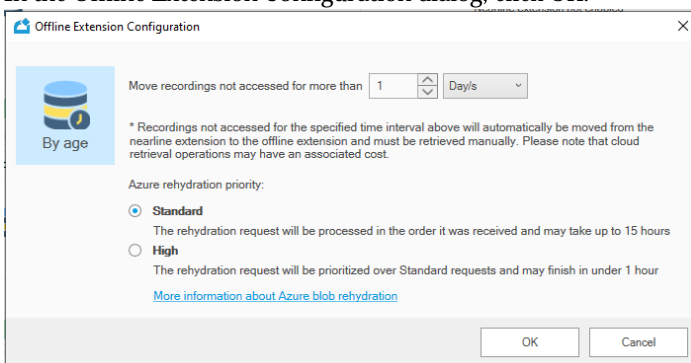


3. In the Offline pane of the recording storage  or the archive  you want to extend, click Enable Extension.

## Manage Storage Extensions

**Note:** The button is inactive, if no nearline extension on a supported cloud target is enabled or if you attempt to enable an offline extension of a recording storage, which has a Milestone archive.

- (Amazon S3 only) Select the archive retrieval option, choosing between Expedited, Standard or Bulk.
- (Azure only) Select whether files from the offline extension should be rehydrated to the Standard or the High tier.
- In the Offline Extension Configuration dialog, click OK.



Until you configure the parameters for automatically moving data to the offline extension, Storage Bridge uses the default parameter - data is made accessible from there, when it has not been accessed for 1 day on your recording storage/archive. You can change this default parameter, following the steps in “Configure Storage Extension” on page 50.

**Important:** By default, all automatic Storage Bridge operations are initially paused and you can move data to the nearline extension only manually, following the steps in “Manually Manage Data” on page 61. To let Storage Bridge automatically move data, follow the steps in “Start/ Pause Automatic Operations” on page 55.

## Disable a Storage Extension

When you disable a recording storage/archive’s extension, Storage Bridge stops moving data to it both automatically and manually and all already moved data is accessible only directly from the extension i.e. cannot be retrieved through your XProtect VMS. Thus, if you attempt to review footage from the extension using XProtect Smart Client, for example, the operation will fail. Additionally, once you disable the extension, data on it is no longer automatically deleted once the retention limit set for the respective recording storage/archive is reached.

**Important:** If the recording storage/archive whose extension you disable also has disaster recovery enabled, Storage Bridge stops moving data to the extension only automatically, but the disaster recovery mechanism keeps on copying data based on the criteria you have specified and you are still able to move data to and from the extension manually, following the steps in “Manually Manage Data” on page 61.



You can disable just the offline extension and leave the nearline extension active. But if you disable the nearline extension, the offline extension is automatically disabled too.

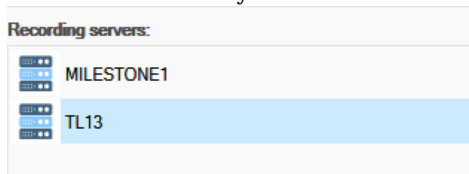
If you want to disable a storage extension, in order to change the credentials for access to it, make sure the new credentials provide access to data already moved there, otherwise it may remain inaccessible in your XProtect VMS. If you want to disable the extension in order to change the type of storage used as an extension, it is advisable to first migrate all data from your current extension to the new one.

### To disable an extension:

1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.



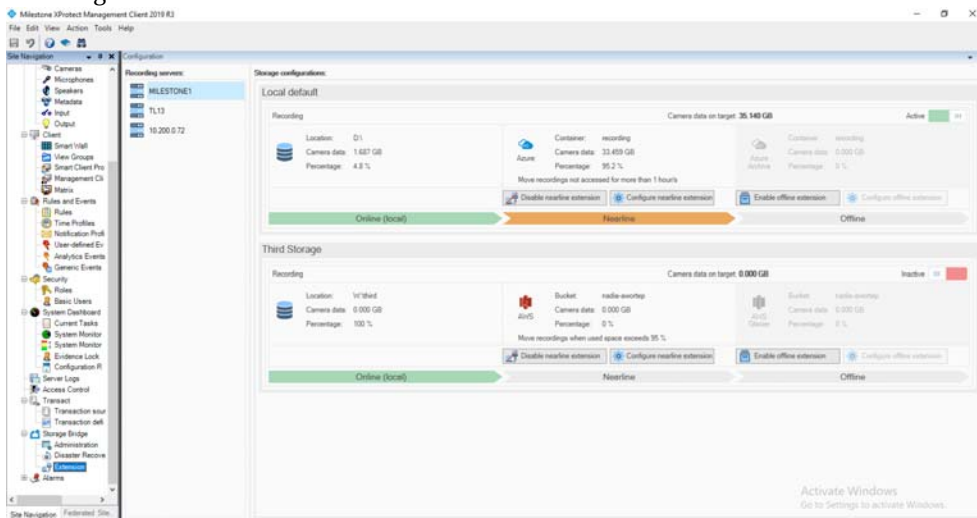
2. In the right pane under Recording Servers, click the recording server, whose recording storage or archive's extension you want to disable.





## Manage Storage Extensions

**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed or activated.

The Storage Bridge plug-in lists all recording storage/archives configured for the selected recording server.



3. In the Nearline or Offline pane of the recording storage  or the archive , click Disable Extension.

## Configure Storage Extension

To configure a storage extension means to specify the criteria based on which Storage Bridge automatically moves data from the recording storage/archive to the extension. On both nearline and offline extensions you can instruct Storage Bridge to move recorded data to the extension using the “by age” criteria. On the nearline extension you can also utilize the “by size” criteria.

**by age** — Storage Bridge moves to the nearline or offline extension recordings that have not been accessed on your recording storage/archive for a specified time interval. Once the “by age” interval is reached for a specific recording, Storage Bridge copies it to the respective extension and then replaces it on the recording storage/archive with a stub file, pointing to the copy on the extension and allowing it to be transparently retrieved upon request from the nearline extension or rehydrated from the offline extension.

**by size** — Storage Bridge moves recorded data to the nearline or offline extension, when the used space on the extended recording storage/archive reaches a specified threshold. Once the threshold is reached, Storage Bridge begins copying data to the extension, starting with the least recently

accessed files. Once a recording is copied to the extension, Storage Bridge replaces it on the recording storage/archive with a stub file. The stub file points to the copy on the extension, allowing it to be transparently retrieved upon request from the nearline extension or rehydrated from the offline extension.

By default, nearline extensions use the “by size” method with a used space threshold of 95%. By default, files are moved from the nearline to the offline extension, when they have not been accessed for 1 day. You can change the configuration of the nearline and offline extensions at any time with changes applied immediately.

Additionally, when configuring an Amazon S3 or Azure offline extension, you can configure the following options:

**Amazon S3** — change the archive retrieval option, choosing between Expedited, Standard or Bulk.

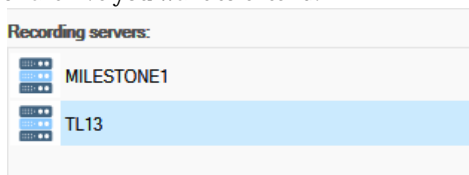
**Azure** — change the rehydration priority for files on the offline extension, choosing between Standard or High.

### To configure a nearline extension:

1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.



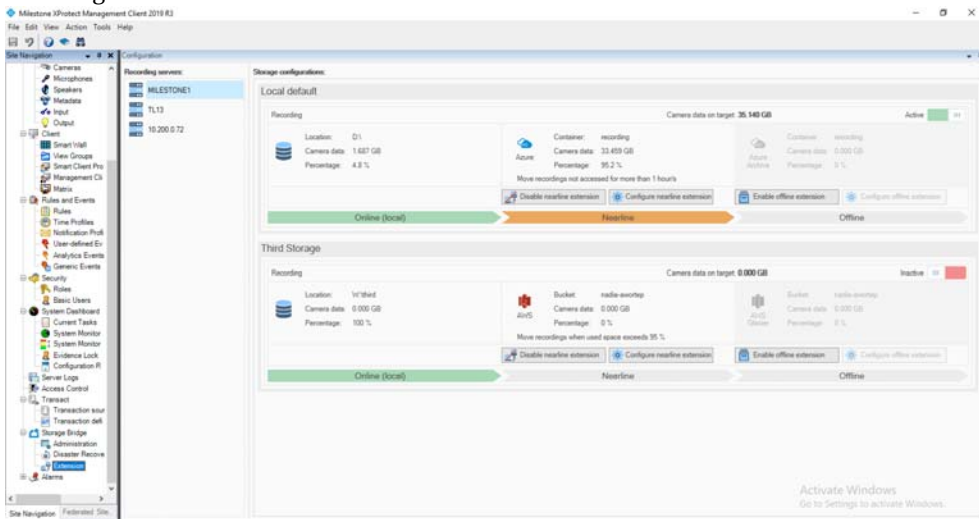
2. In the right pane under Recording Servers, click the recording server, whose recording storage or archive you want to extend.



## Manage Storage Extensions

**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

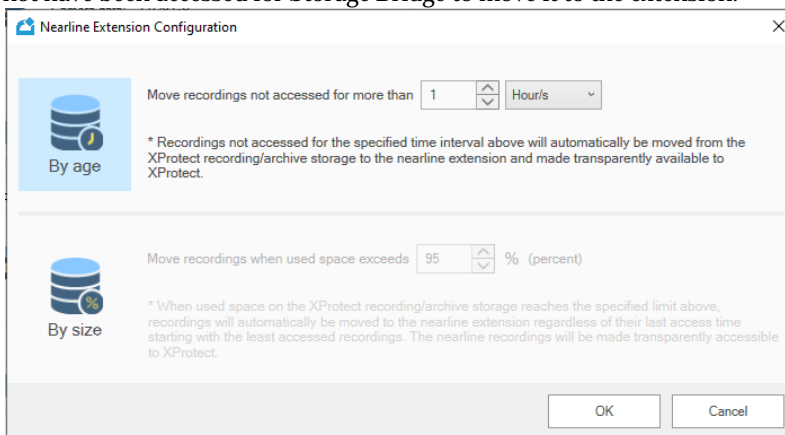
The Storage Bridge plug-in lists all recording storage/archives configured for the selected recording server.



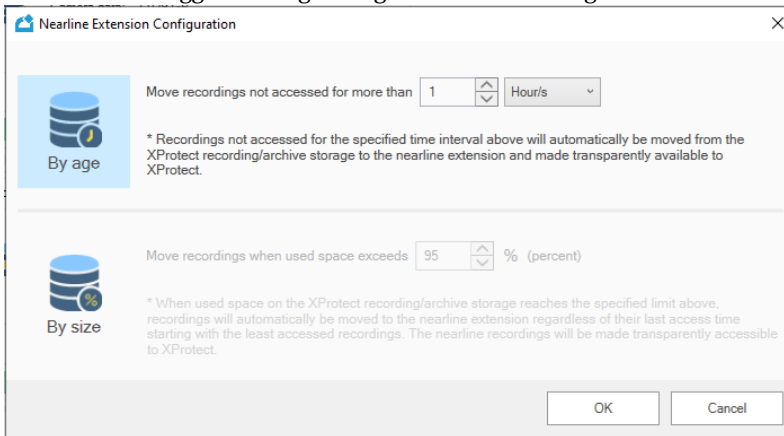
3. In the Nearline pane of the recording storage  or the archive , click Configure nearline extension.

**Note:** The button is inactive, if the nearline extension has not been enabled.

4. In the Extension Configuration dialog, do one of the following:
  - Click “By age” and specify for how long a recording on the recording storage/archive should not have been accessed for Storage Bridge to move it to the extension.



- Click “By size” and specify the percent of used capacity on the recording storage/archive, which when reached triggers Storage Bridge to move recordings to the extension.



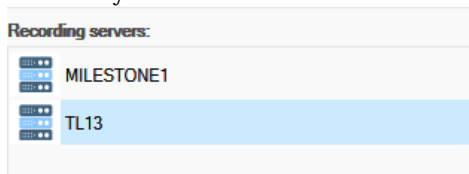
5. In the Extension Configuration dialog, click OK.

**To configure an offline extension:**

1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.



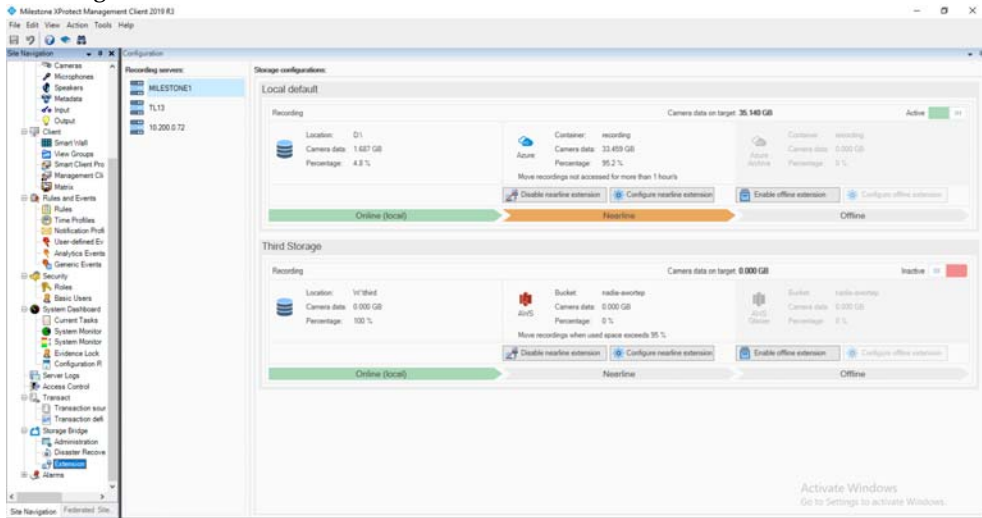
2. In the right pane under Recording Servers, click the recording server, whose recording storage or archive you want to extend.



## Manage Storage Extensions

**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed or activated.

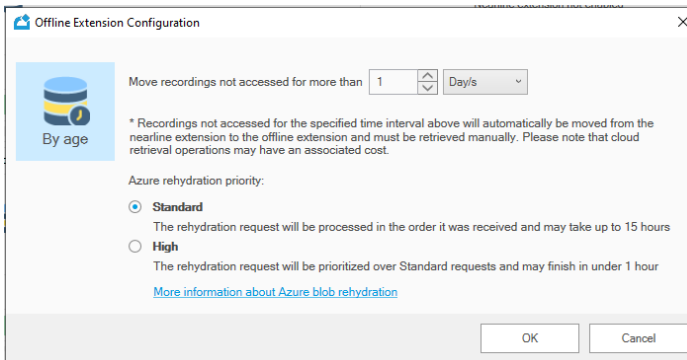
The Storage Bridge plug-in lists all recording storage/archives configured for the selected recording server.



3. In the Offline pane of the recording storage  or the archive , click Configure offline extension.

**Note:** The button is inactive, if no offline extension has been enabled.

4. In the Extension Configuration dialog, specify for how long a recording on the recording storage/archive should not have been accessed for Storage Bridge to move it to the offline extension.



5. (optional) Specify additional options for Amazon S3 or Azure offline extension:

- (Amazon S3 offline extension only) Change the archive retrieval option, choosing between Expedited, Standard or Bulk.
  - (Azure offline extension only) Change whether files from the offline extension should be rehydrated using Standard or High priority.
6. In the Offline Extension Configuration dialog, click OK.

## Start/Pause Automatic Operations

You can pause and start all automatic Storage Bridge operations for a specific recording storage/archive. It's important to keep in mind that pausing/starting automatic operations concerns both moving data to the extension as well as backing up data, if disaster recovery is enabled for the same recording storage/archive. Additionally, even if automatic Storage Bridge operations are started for the extension, but later on you enable disaster recovery for the same recording storage/archive, by default the automatic operations will be paused, until you manually start them again.

While automatic operations are paused, Storage Bridge stops automatically moving any data to the extension, but already moved data remains accessible from the extension, when you want to review it in the XProtect Smart Client, for example. While automatic Storage Bridge operations are paused for a recording storage/archive, you can also manually move data to the extension, following the steps in “Manually Manage Data” on page 61.

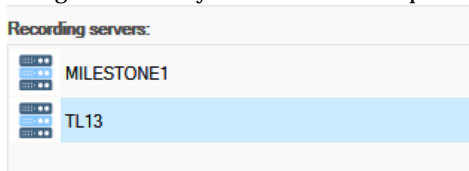
Once you resume automatic operations, Storage Bridge immediately begins parsing data on your recording storage/archive and resumes processing the queue with files scheduled to be moved to the extension.

### To start/pause automatic operations for a recording storage/archive:

1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.



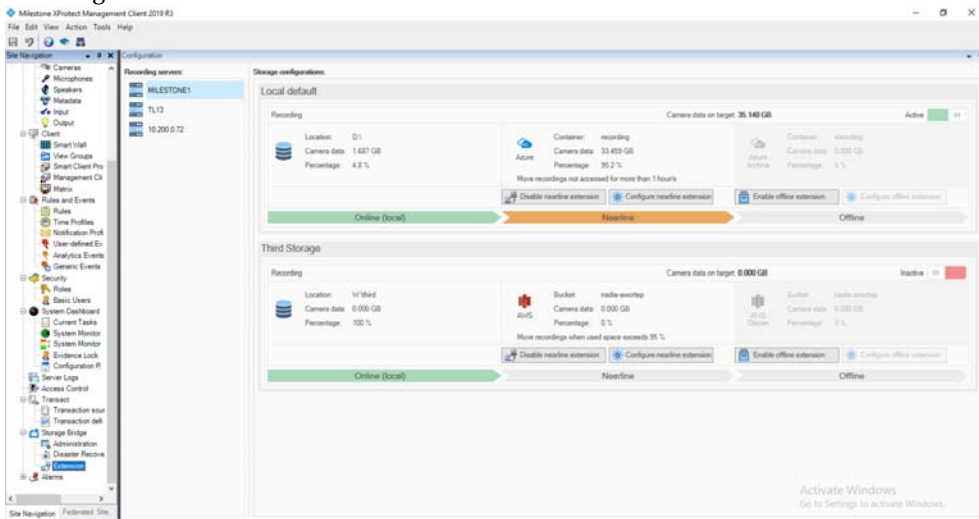
2. In the right pane under Recording Servers, click the recording server, for whose recording storage or archive you want to start or pause the automatic operations.







## Manage Storage Extensions

**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

The Storage Bridge plug-in lists all recording storage/archives configured for the selected recording server.



3. In the upper right corner of the recording storage  or the archive  pane, do one of the following:
  - Switch the setting to Active  and when prompted, confirm that you want to start automatic Storage Bridge operations.
  - Switch the setting to Inactive  and when prompted, confirm that you want to pause automatic Storage Bridge operations.

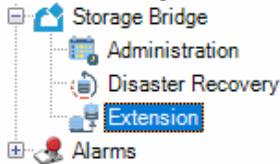
## Monitor Storage Extensions

The interface of the Storage Bridge XProtect Management Client plug-in provides you with all information necessary to keep track of the status of the recording storage/archive its extension(s) and the distribution of data between them.

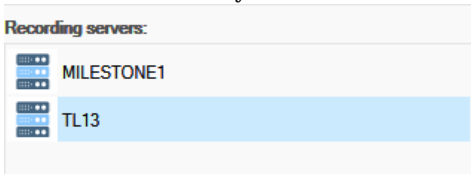
To view information about the recording storage/archive(s) of a recording server running Storage Bridge and about their extensions, navigate to the Extensions page:



1. In the Site Navigation of XProtect Management Client, click Extension under Storage Bridge.

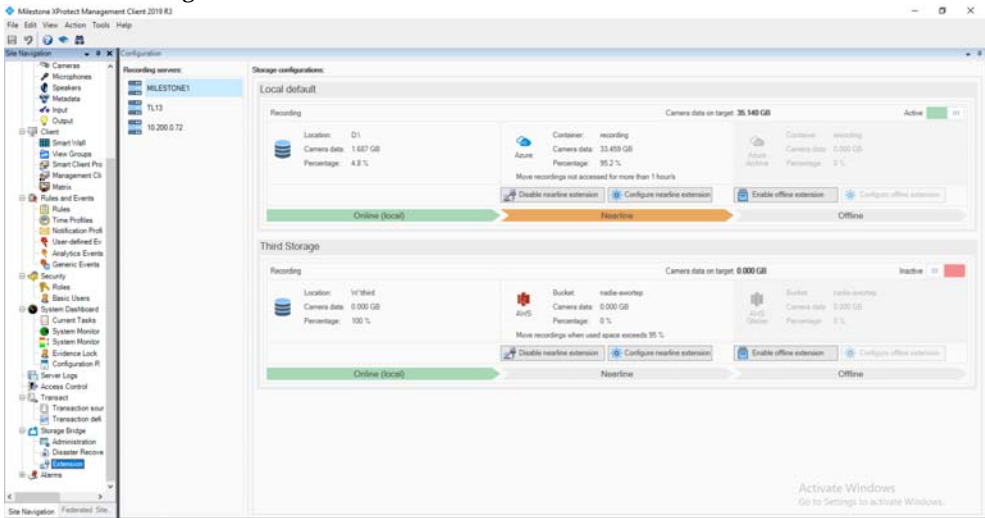


2. In the right pane under Recording Servers, click the recording server, whose recording storage/archive and extension you want to monitor.





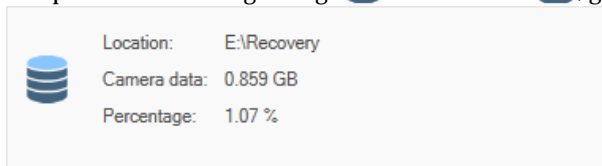
**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

The Storage Bridge plug-in lists all recording storages and archives configured for the selected recording server.



## Monitor Recording Storage/Archive

The pane of a recording storage  or an archive , gives you the following information:



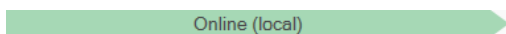
**Location** — the path on the recording server, on which the respective recording storage/archive is mounted

**Camera data** — the total size of recordings accessible directly from the recording storage/archive

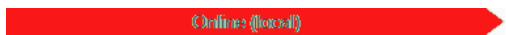
**Tip:** You can view the total size of camera data both on the recording storage/archive and on any of the extensions in the Camera data on target field above each listing.

**Percentage** — the percentage of recordings accessible directly from the recording storage/archive

Additionally, the color label below a recording storage/archive's pane shows you its status on the recording server:



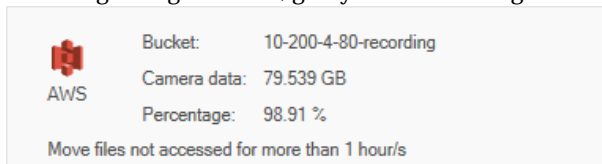
the recording storage/archive is available



the recording storage/archive is not available to the recording server

## Monitor the Extensions

The panes of the nearline and the offline extensions, displayed next to the pane of the respective recording storage/archive, give you the following information:



**Extension storage type** — the pane displays the logo of the storage provider, on which the extension is located

**Bucket/Container/Folder** — displays the name of the bucket/container/folder, to which data from the recording storage/archive is moved

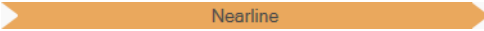
**Camera data** — the total size of recordings accessible only from the nearline/offline extension

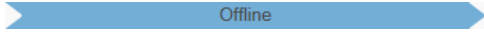
**Tip:** *You can view the total size of camera data both on the recording storage/archive and on any of the extensions in the Camera data on target field above each listing.*

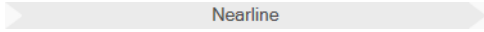
**Percentage** — the percentage of recordings accessible only from the nearline/offline extension

**Note:** *Keep in mind that the percentage may never reach 100%, if the cameras recording on the respective recording storage are continuously writing data on it.*

Additionally, the color label below the nearline/offline extension's pane shows you its status:

 - automatic Storage Bridge operations are started for the nearline extension

 - automatic Storage Bridge operations are started for the offline extension

 - the nearline/offline extension is either not enabled or automatic Storage Bridge operations for the extension are paused and you can move data to it only manually

## Manage Storage Extensions

# 5

## **Manually Manage Data**

<i>Manually Manage Data</i> . . . . .	62
<i>Monitor Manual Jobs Status</i> . . . . .	65

## Manually Manage Data


Using the Storage Bridge plug-in for XProtect Management Client, you can manually move data between a selected recording storage or archive and its nearline/offline extension. This way you can move data, which does not yet meet the criteria you have specified for the extension. You can perform manual operations for data recorded by all cameras on a selected recording server or just for a selected one. You can also limit the number of recordings you perform the desired manual operation on for a selected time interval only.

Additionally, the manual operations are indispensable for Storage Bridge's disaster recovery mechanism. When you recover backed up data, it is retrieved from the disaster recovery storage in the form of stub files. To retrieve the actual recordings, you should either review them in the XProtect Smart Client (on-demand data retrieval) or by executing a manual data retrieval job, following the steps in "Recover Backed Up Data" on page 36.


You can perform manual data operations even if automatic Storage Bridge operations for the recording storage or archive have been paused. Manually initiated operations take precedence over automatic operations, i.e. until the manual jobs queue is processed, Storage Bridge does not perform any automatic operations.

## Manually Manage Data


To manually manage data, you must create a separate job for each of the following operations:

 move data to be available locally - retrieve back selected data from the extension and make it accessible directly from the respective recording storage or archive. You can use this operation to actually recover backed up data, in case of disaster.

**Important:** *Keep in mind that the operation requires enough free space on your recording storage/archive to accommodate all data retrieved from the extension.*

 bring back offline data - rehydrate recordings from the offline extension of a recording storage or archive and make them accessible from the nearline extension, which allows their automatic retrieval upon request from an XProtect Smart Client computer as soon as the connection speed allows.

**Note:** *If you execute this job for recordings which are not replaced by stub files on the recording storage/the archive i.e. data is still available locally, Storage Bridge will move these files to the nearline tier of your cloud target, but their status will remain online until they are replaced with stubs, based on the nearline policy.*

 make data nearline to free local storage space - move data to the nearline extension and replace it on the recording storage/archive with stub files, which point to the copies on the nearline extension, but take no space on your local storage.

 make data offline - move data from the nearline extension to the offline extension.

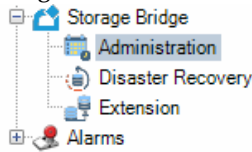
**Important:** *If you select to perform the above operation for recordings that are still stored on your recording storage or archive, they will first be moved to the nearline extension and only after that to the offline extension.*

**Note:** *If some data for the specified time period does not yet meet the criteria for space reclaiming, it will remain accessible locally and will be reported as offline only after it is replaced by stub files.*

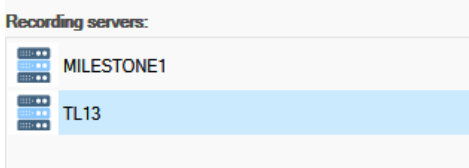
You can create as many manual operation jobs as you wish. Once you create a job, it is automatically added to the end of the jobs queue. Storage Bridge processes the queue one job at a time, starting with the first in line. You can monitor the jobs queue, following the steps in “Monitor Manual Jobs Status” on page 65.

**To create a manual data operation job:**

1. In the Site Navigation of XProtect Management Client, click Administration under Storage Bridge.



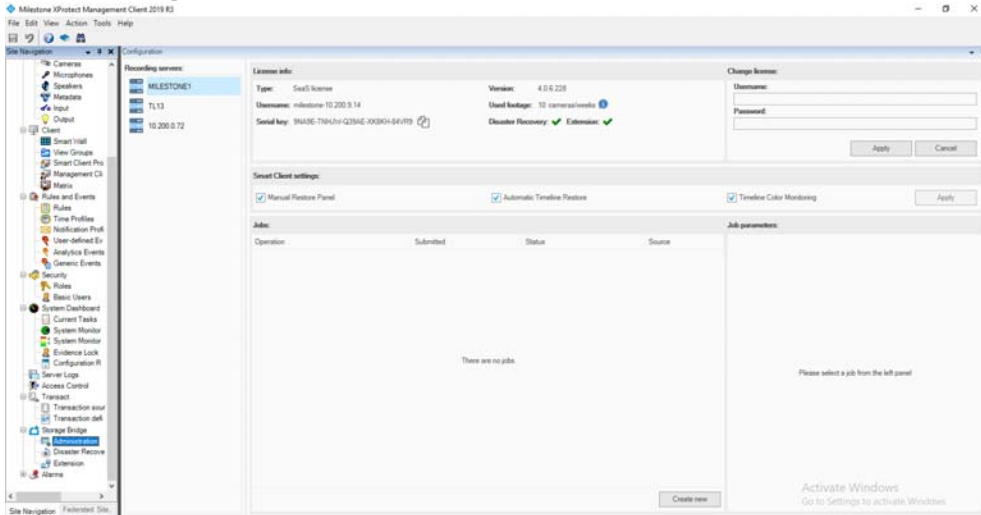
2. In the right pane under Recording Servers, click the recording server, whose recording storage or archive data you want to manually manage.



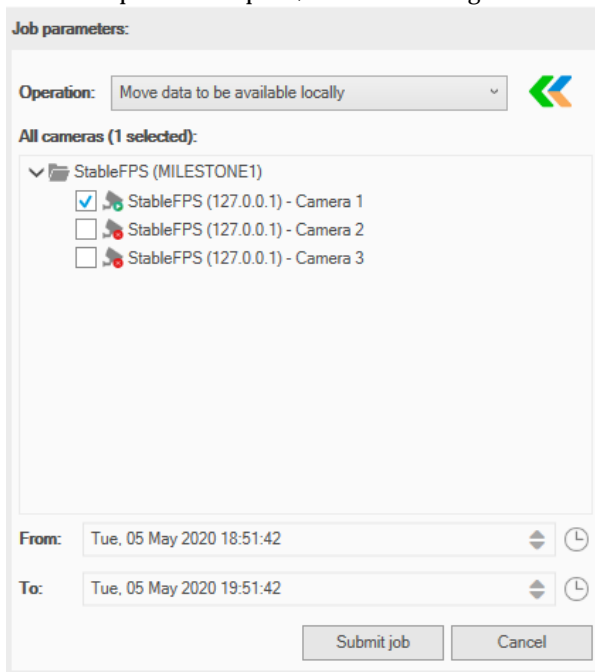
**Note:** *If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.*

## Manually Manage Data

3. Under the Jobs pane, click Create new.




4. In the Job parameters pane, do the following:



- In the Operation drop-down box, select the type of operation.













- Under Cameras, select the camera(s), whose recordings you want to manually manage.
- Select the start and end time of the recordings in the respective boxes.

**Tip:** Click  next to the From or To box, to display the Calendar and more easily navigate to the respective date or enter the respective start/end time.

5. Click Submit job.
6. When prompted, confirm that you want to manually move the specified amount of data between the recording storage/the archive and the nearline or offline extension.  
The job appears on top of the jobs queue pane. You can monitor its status, following the steps in “Monitor Manual Jobs Status” on page 65.

## Monitor Manual Jobs Status

The Jobs queue pane displays the list of all jobs, arranged in descending order starting with the most newly added job. If you have allowed users to manually retrieve footage from the nearline/offline extension through the XProtect Smart Client plug-in, the list also includes jobs initiated there.

Jobs:			
Operation	Submitted	Status	Source
 Move data to be available locally	Fri, 17 Apr 2020 18:33:25	<div style="width: 51%;"><div style="width: 51%;"></div></div> 51 %	Smart Client
 Move data to be available locally	Fri, 17 Apr 2020 18:32:53	Completed	Smart Client
 Move data to be available locally	Fri, 17 Apr 2020 18:32:20	Completed	Smart Client
 Move data to be available locally	Fri, 17 Apr 2020 18:31:50	Completed	Smart Client
 Move data to be available locally	Fri, 17 Apr 2020 18:31:11	Completed	Smart Client
 Make data nearline to free local storage space	Fri, 17 Apr 2020 18:30:09	Completed	Management Client
 Make data nearline to free local storage space	Fri, 17 Apr 2020 18:10:37	Completed	Management Client
 Move data to be available locally	Fri, 17 Apr 2020 17:56:22	Completed	Smart Client
 Make data offline	Fri, 17 Apr 2020 17:42:09	Completed	Management Client
 Make data nearline to free local storage space	Fri, 17 Apr 2020 17:41:30	Completed	Management Client

The listing of each job gives you the following information:

- type of the manual operation
- date and time the job has been submitted
- status of the job
  - Completed - the job has been successfully completed

#### Manually Manage Data

- Pending - Storage Bridge is still processing the manual operation job and may display a progress bar
- Completed (failed) - Storage Bridge's attempt to perform the manual operation has failed. The reason for the failed operation may be temporary inaccessibility of the extension, for example.
- source - whether the manual operation job has been submitted through the XProtect Management Client plug-in or through the XProtect Smart Client plug-in.

**Note:** *To clear the jobs queue, you must restart the respective recording server.*



# **XProtect Smart Client Integration**

<i>Configure XProtect Smart Client Integration</i> . . . . .	68
<i>Work with the XProtect Smart Client Plug-in</i> . . . . .	71

## XProtect Smart Client Integration

The Storage Bridge plug-in for XProtect Smart Client provides you with the following features:

- additional timeline data that displays the origin of the recording you are reviewing - local, the nearline extension or the offline extension.
- automatic retrieval of recordings from the extension - allows you to retrieve camera in real-time while reviewing it on the timeline.
- manual retrieval of recordings from the extension - allows you to manually retrieve camera data from the extension to the recording storage/archive for a selected time interval.

An administrator of your XProtect VMS can enable or disable any of these features for a specific recording server in the Storage Bridge plug-in for XProtect Management Client. For more details, refer to “Configure XProtect Smart Client Integration” on page 68.

For more information about using the above options on an XProtect Smart Client computer, refer to “Work with the XProtect Smart Client Plug-in” on page 71.

## Configure XProtect Smart Client Integration

In the Storage Bridge plug-in for XProtect Management Client, you can enable or disable any of the XProtect Smart Client integration features for a specific recording server. Enabling or disabling any of the features is valid for all XProtect Smart Client computers reviewing footage from the same recording server.

### Enable/Disable the Additional Storage Bridge Timeline Data

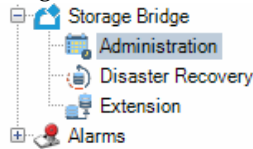
When the Storage Bridge additional timeline data is enabled, it appears right below the default XProtect Smart Client timeline on the Playback tab. It changes color depending on the origin of the recording currently being reviewed indicating to users if the data is from the nearline or offline extension. When manual retrieval of data from the extension is also allowed, Storage Bridge allows users to easily select the section of the recording they want to retrieve locally or to manually rehydrate from the offline extension.

When the additional Storage Bridge timeline data is disabled, but automatic retrieval from the extension is enabled, you can still review footage originating from the nearline extension.

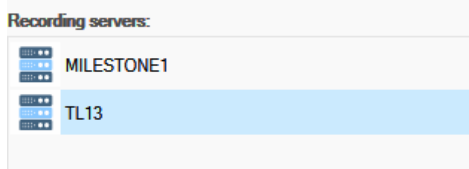
By default, the additional Storage Bridge timeline data is enabled on each recording server.

### To enable/disable the additional Storage Bridge timeline data:

1. In the Site Navigation of XProtect Management Client, click Administration under Storage Bridge.



2. In the right pane under Recording Servers, click the recording server, whose XProtect Smart Client integration features you want to manage.



**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

3. Under Smart Client Settings, do one of the following:



- Select the “Timeline Color Monitoring” check box, to allow displaying the additional Storage Bridge timeline data on each XProtect Smart Client reviewing footage from this recording server and then click Apply.
- Clear the “Timeline Color Monitoring” check box, to hide the additional Storage Bridge timeline data on each XProtect Smart Client reviewing footage from this recording server and then click Apply.

## Enable/Disable Automatic Data Retrieval

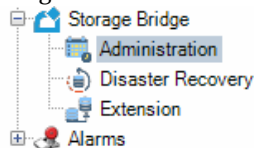
When automatic data retrieval is enabled for a recording server, a user reviewing recordings moved to the nearline extension automatically triggers the retrieval of the currently reviewed data on the recording storage/the archive. The retrieval of data from the nearline extension is typically in real-time as determined by the network and connection characteristics. To retrieve footage from the offline extension, you must first manually rehydrated it to the nearline extension. Storage Bridge is able to partially retrieve data to efficiently play timeline video during reviewing operations.

When automatic data retrieval is disabled, should a user attempt to review footage stored either on the nearline or the offline extension, the XProtect Smart Client player will report that the recording is nearline or offline and will not play it.

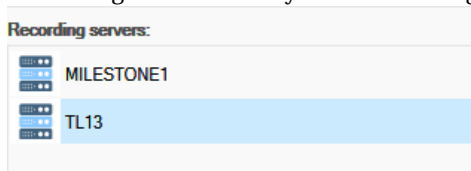
By default, the automatic retrieval of data is enabled on each recording server.

### To enable/disable automatic data retrieval:

1. In the Site Navigation of XProtect Management Client, click Administration under Storage Bridge.

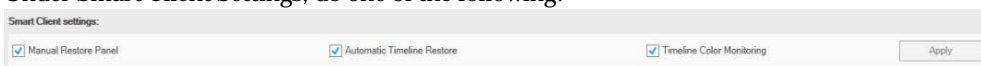


2. In the right pane under Recording Servers, click the recording server, whose XProtect Smart Client integration features you want to manage.



**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

3. Under Smart Client Settings, do one of the following:



- Select the “Automatic Timeline Restore” check box, to let Storage Bridge retrieve data run time while users review it, and then click Apply.
- Clear the “Automatic Timeline Restore” check box, to prevent users from retrieving data run time when they attempt to review it, and then click Apply.

## Enable/Disable Manual Data Retrieval

When you enable manual data retrieval from the extension, you allow users on XProtect Smart Client to retrieve camera recordings within a selected period from the extension to the recording storage/archive. The operation is identical to manual data retrieve operation initiated in the Storage Bridge plug-in for XProtect Management Client and appears as a job in the manual operation jobs queue.

Enabling manual data retrieval may be especially useful, when automatic retrieval is disabled, but you still want to allow XProtect Smart Client users to be able to work with recordings available only on the extension.

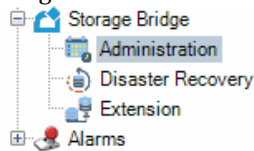
**Note:** Manual data retrieval operations retrieve all data for the specified time interval and not just the frames currently being played as is with automatic retrieval of recordings.

When both automatic and manual data retrieval are disabled, should a user attempt to review a recording stored either on the nearline or the offline extension, the XProtect Smart Client player reports that the recording is nearline or offline and does not play it.

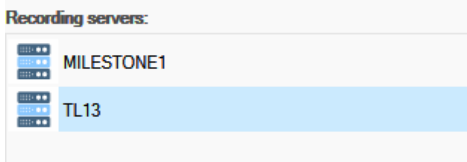
By default, the manual retrieval of data is enabled on each recording server.

### To enable/disable manual data retrieval:

1. In the Site Navigation of XProtect Management Client, click Administration under Storage Bridge.



2. In the right pane under Recording Servers, click the recording server, whose XProtect Smart Client integration features you want to manage.



**Note:** If a recording server is missing from the list, it is either not online or does not have Storage Bridge installed.

3. Under Smart Client Settings, do one of the following:



- Select the “Manual Restore Panel” check box, to display the manual restore panel in XProtect Smart Client and allow users to manually retrieve data, then click Apply.
- Clear the “Manual Restore Panel” check box, to hide the manual restore panel in XProtect Smart Client and prevent users from manually retrieving data from the extension, then click Apply.

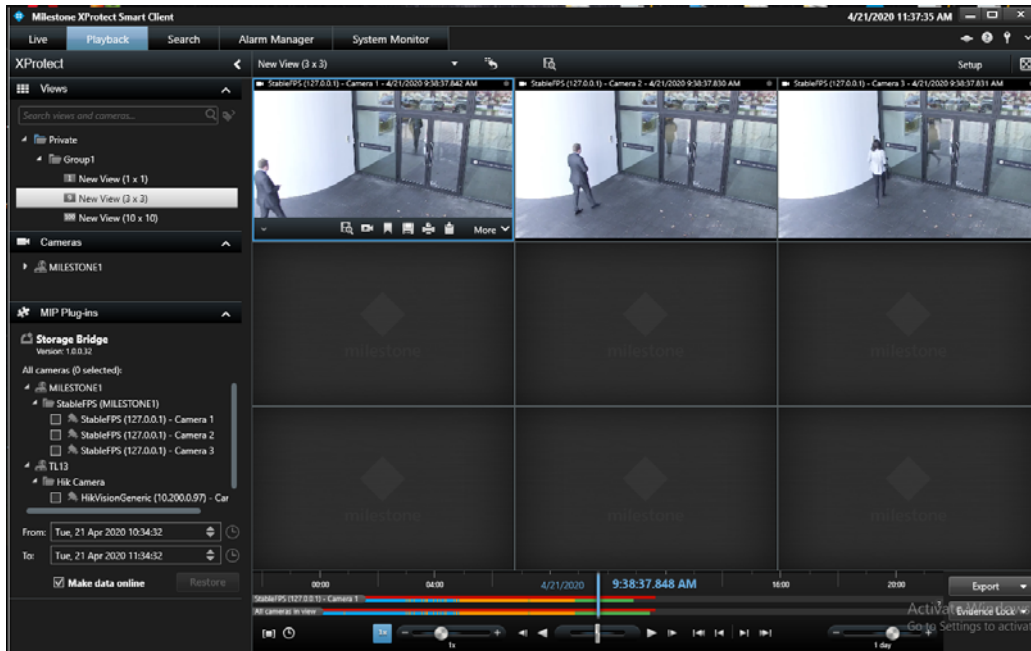
## Work with the XProtect Smart Client Plug-in

When the Storage Bridge plug-in is installed on an XProtect Smart Client, it appears in the MIP Plug-ins pane in the Playback tab. It complements your XProtect Smart Client workflow with the following additional features:

- additional timeline data, which shows you whether a recording is accessible from the local recording storage/archive, the nearline extension or the offline extension.

## XProtect Smart Client Integration

- real-time retrieval of recordings from the nearline extension by reviewing or exporting them in the XProtect Smart Client.
- panel for manual retrieval of recordings within a specified time range from the nearline/offline extension.





## The Storage Bridge Timeline

**Note:** To be able to view the Storage Bridge timeline information, configure your XProtect Smart Client to display additional timeline data - in Settings, click Timeline and in the Additional data drop-down box, select Show.

When enabled through the XProtect Management Client plug-in, the additional Storage Bridge timeline appears right below the XProtect Smart Client player timeline both for a selected camera in the pane and for all cameras.

It gives you the following information:

-  the recording is accessible directly from the recording storage or the archive.
-  the recording is accessible only from the nearline extension of the recording storage or the archive. Reviewing the recording depends on the setting for automatic and/or manual retrieval of data from the extension.



the recording is accessible only from the offline extension of the recording storage or the archive. Reviewing the recording depends on the setting for automatic and/or manual retrieval of data from the extension.

**Important:** *Whether or not a recording is available locally or only through the extension, the Milestone metadata is kept and the XProtect Smart Client timeline displays the markers for recordings with or without motion.*

## Work with Nearline or Offline Recordings

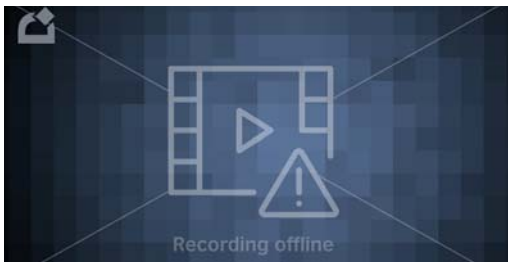
**Note:** *Keep in mind that retrieving data from most cloud targets may be associated with additional costs.*

As long as automatic retrieval of recordings is enabled for a recording server, you can play, export or lock its recordings as you would normally do with recordings stored on the recording storage or the archive. With nearline recordings (marked in orange in the Storage Bridge timeline) the retrieve operation depends on the network and connection speed to the nearline extension. In most cases this should be in real-time with minimal delay. With offline recordings (marked in blue on the timeline), data must first be retrieved to the nearline storage tier. Once retrieved and in the nearline extension, the timeline data can be retrieved to the local storage and will display green on the timeline.

If automatic retrieval of data is disabled for a Recording server, attempting to play or export or lock recordings available from the nearline or offline extension will fail and the recordings will be displayed in the XProtect Smart Client player with one of the following thumbnails:



A recording on the nearline extension

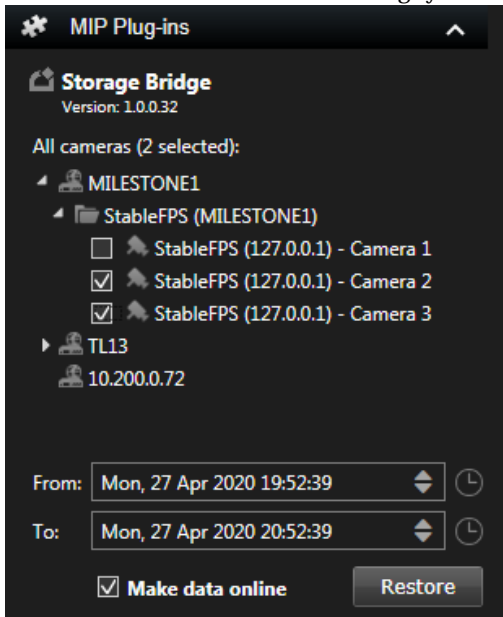



A recording on the offline extension

If manual retrieval from the extension is enabled for the recording server, to play or export such recordings, you must first retrieve them locally, following the steps below.

**To manually retrieve nearline or offline recordings:**

1. In the Playback tab of the XProtect Smart Client window, expand the MIP Plug-ins pane and navigate to the Storage Bridge plug-in.
2. Under Storage Bridge, expand the node of one or more Recording servers and select the check boxes of the cameras, whose recordings you want to retrieve.



3. In the From and To fields specify the period for which you want to retrieve recordings.  
**Tip:** Click  to display the Calendar and more easily specify the start and end date and time.  
**Note:** Alternatively, on the timeline, click the Time Selection Mode button to select the start and end time of the sequence you want to retrieve.
4. Do one of the following:
  - Select the “Make data online” check box, to retrieve both nearline and offline recordings locally.
  - Clear the “Make data online” check box, to only rehydrate offline recordings within the time selection to the nearline extension.

5. Click Restore.

Storage Bridge begins retrieving the recordings from the respective extension. Once the operation is complete, the recordings are displayed on the timeline with green, if you have selected to make data online, or with orange, if you have selected to only rehydrate offline recordings.

