



# Tiger BRIDGE

## Tiger Bridge Cloud 3.7 Administration Guide

January 29, 2020

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## Revision Record

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06 Nov. 2019	Data Protection section added.	12	3.6
06 Nov. 2019	Tiger Bridge Licensing section added.	15	3.6
06 Nov. 2019	Microsoft Windows® 7/Server 2008 R2 computers must run at least Service Pack 1 and have the KB976932 and the KB3033929 security updates installed.	16	3.6
06 Nov. 2019	Tiger Bridge system requirements updated with requirements for TCP ports, which must not be blocked by the firewall.	17	3.6
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06 Nov. 2019	Offline folder is a folder containing at least one offline file.	82	3.6
28 Nov. 2019	Source storage requirements updated with requirement for Full Control of the System account.	17	3.7
28 Nov. 2019	Appendix: Tiger Bridge Logs added to the Administration Guide.		3.7
25 Jan. 2020	Monitor Data Management Statistics topic added.	53	3.7



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# 1

## **Introduction to Tiger Bridge**

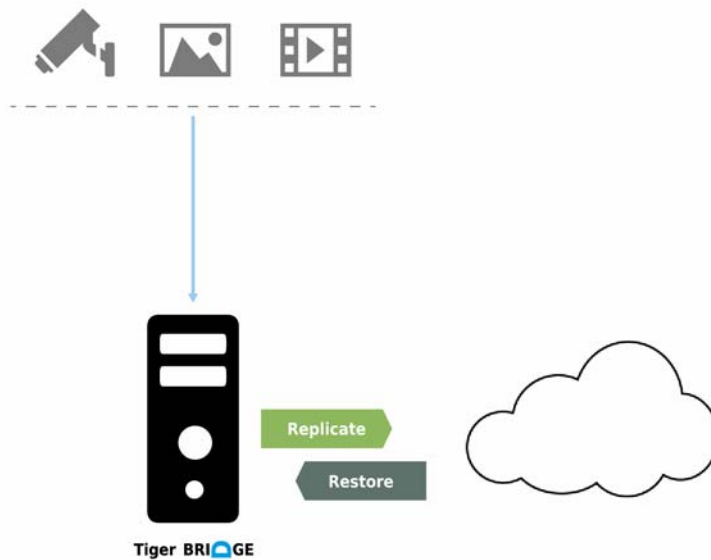
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## Introduction to Tiger Bridge

Congratulations on your purchase of Tiger Bridge, Tiger Technology's data lifecycle manager across heterogeneous storage tiers. It lets you pair a source (locally mounted NTFS volume or just a folder on it) with a cloud object storage target into a seamless unity. Tiger Bridge takes care to automate the assignment of data to the source or the target tier, based on user-defined policies thus addressing various workflow challenges - from alignment of data with storage costs, transparent data migration and synchronization between storage devices or geographically dispersed places, to extending your primary storage on the cloud and gateway to object storage.

## How It Works

As soon as you install Tiger Bridge on the computer, you can create as many pairs consisting of a source and a target storage systems (see "Storage Requirements" on page 17 for a list of supported source and target storage systems). While users and applications work directly on the source location (the local storage tier), the virtual storage unity displays the contents of both the source and the target, as if it is stored locally. By applying one or more of the following data lifecycle management mechanisms, Tiger Bridge distributes data among the two layers of the virtual unity:



**data replication** — Tiger Bridge copies a file from the source to the target. Automatic replication is performed based on user defined criteria. You can also manually replicate a file or a whole folder from the source to the target, using Tiger Bridge's command-line interface or the shell extension. While data replication is indispensable for all other data lifecycle management

mechanisms, it can also be used standalone for addressing the simplest scenarios, like data backup and disaster recovery, for example. To learn more, refer to “Configure Automatic Data Replication” on page 31.

**space reclaiming** — Tiger Bridge frees space on the source by replacing a replicated file with a nearline file. A nearline file is a stub file, which looks exactly like the actual file it replaces, but does not contain any data and does not take up space on your source. A nearline file points to the actual file on the target, which allows its retrieval back on the source. The retrieval from the target is automatic, should a user, an application or a process attempt to access the nearline file, or manual, through Tiger Bridge. Automatic space reclaiming is performed based on user defined criteria. You can also perform manual space reclaiming, using Tiger Bridge’s command-line interface or the shell extension. The most common scenario with space reclaiming is alignment of data with storage costs. To learn more, refer to “Configure Space Reclaiming” on page 36.

**data archiving** — Tiger Bridge moves a replicated file from the hot/cool tier of the target to the archive tier and replaces the replicated/nearline file with an offline file. An offline file is a stub file, which looks exactly like the actual file it replaces, but does not contain any data and does not take up space on your source. An offline file points to the actual file on the archive tier of the target, but unlike nearline files it cannot be retrieved on the source automatically (when a user or application attempts to open it) until you make it nearline by rehydrating it to an intermediate tier of the target. You can retrieve an offline file only manually, using the shell extension or the command-line interface. When you retrieve an offline file or folder, it is first rehydrated to an intermediate tier of your target (the cool tier of Azure or the temporary storage of S3 Glacier, for example) and from there is automatically retrieved on the source. Automatic archiving is performed based on user defined criteria. You can also manually archive, rehydrate or retrieve a file, using Tiger Bridge’s command-line interface or the shell extension. To learn more, refer to “Configure Automatic Archiving” on page 41.

*Note: On targets, which provide archive tier, but do not support third-party policy for moving data from the hot tier to the archive tier, Tiger Bridge can only verify when a file is moved to the archive tier in accordance with the target’s own archiving policy and update the status of such files on the source to offline. On such targets you cannot manually move data to the archive.*

**active sync** — automatically synchronize the contents of multiple sources, each on a different computer running Tiger Bridge, through a common target. Designed to facilitate geo replication scenarios, this mechanism allows you to select whether to synchronize the contents across all sources paired with the same target or set some sources to update their contents with updates from other sources. To learn more, refer to “Configure Active Sync” on page 46.

**data synchronization** — Tiger Bridge allows you to manually synchronize the contents of a target with its source. In case Tiger Bridge detects that a file on the target is not available on the source, the synchronization mechanism automatically creates a nearline counterpart for the

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missing file. Manual data synchronization facilitates scenarios involving data migration from one source to another and disaster recovery of data. For more information, refer to “Synchronize Data on the Source and the Target” on page 85.

In combination with additional configuration parameters Tiger Bridge can be deployed for any of the following purposes:

- data backup and disaster recovery
- alignment of data with storage costs
- extending local storage or a file server’s storage capacity on another storage system
- lowering costs for block storage in the cloud
- interfacing object storage
- geo replication

## Data Protection

While Tiger Bridge gains programmatic access to your data at the source location and the target location, it takes care to prevent unauthorized access to it both when at rest and in transit:

- To gain access to any Tiger Bridge functions you need to authenticate yourself as the administrator of the computer on which Tiger Bridge runs. For more information, refer to “Tiger Bridge Interfaces” on page 13.
- The Tiger Bridge workflow supports applying any Windows techniques for controlling access to and protecting data at rest at source level.
- Tiger Bridge does not require maximum privileges of the credentials used for access to the target and adopts the target provider’s own mechanisms for ensuring credentials protection is not compromised, like support for AWS access key rotation, for example.
- The credentials for access to the target are stored in the registry of the computer running Tiger Bridge and are encrypted using Advanced Encryption Standard, using Tiger Technology’s own 256-bit key.
- Data in transit to cloud targets is protected allowing users to benefit from secure transfer (SSL/TLS) and also relying on the target provider’s own mechanism for protecting data in transit, like AWS libraries, for example.

**Note:** *Tiger Technology encourages you to use any applicable best practices for data protection specified by Microsoft Windows and by your target provider.*

# Tiger Bridge Interfaces

## Tiger Bridge Configuration

Use the Tiger Bridge Configuration to create pairs of source and target and to configure the automatic data lifecycle management mechanisms valid for all pairs or just a specific pair.

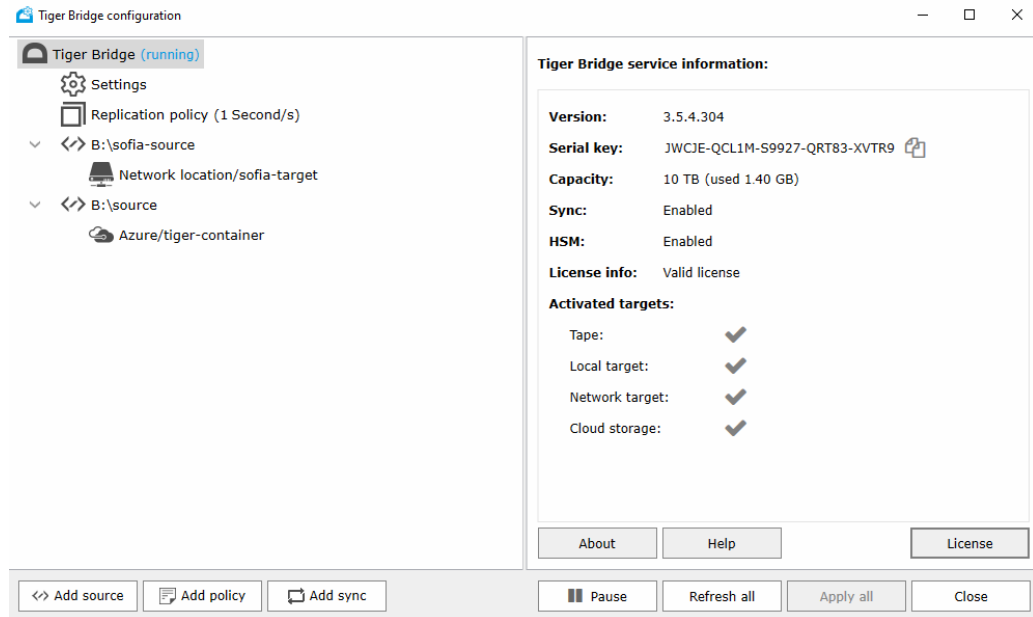
**Note:** You need to run the Tiger Bridge Configuration as an administrator in order to apply changes to the product settings.

### To access the Tiger Bridge Configuration:

**Note:** To access the Tiger Bridge Configuration, you need to run it as administrator.

Do one of the following:

- Double-click the Tiger Bridge Configuration shortcut on the desktop.
- Navigate to the installation folder of the Tiger Bridge Configuration and double-click TigerBridgeConfiguration.exe



## Command-line Interface

The command-line interface lets you configure the product and perform manual data lifecycle operations. The main advantage of using the command-line interface is that you can automate specific tasks by including the commands in a script.

### **To access the command-line interface of Tiger Bridge:**

**Note:** *To access the Tiger Bridge command-line interface, you need to run it as administrator.*

1. In command prompt, execute the following:

```
ti ercli
```

Tiger Bridge lists the available commands.

2. To view the command syntax with examples, simply execute a command without providing additional parameters. For example, to view the available commands for specifying data replication policy, execute the following:

```
ti ercli config policy replicate
```

## **Tiger Bridge Shell Extension**

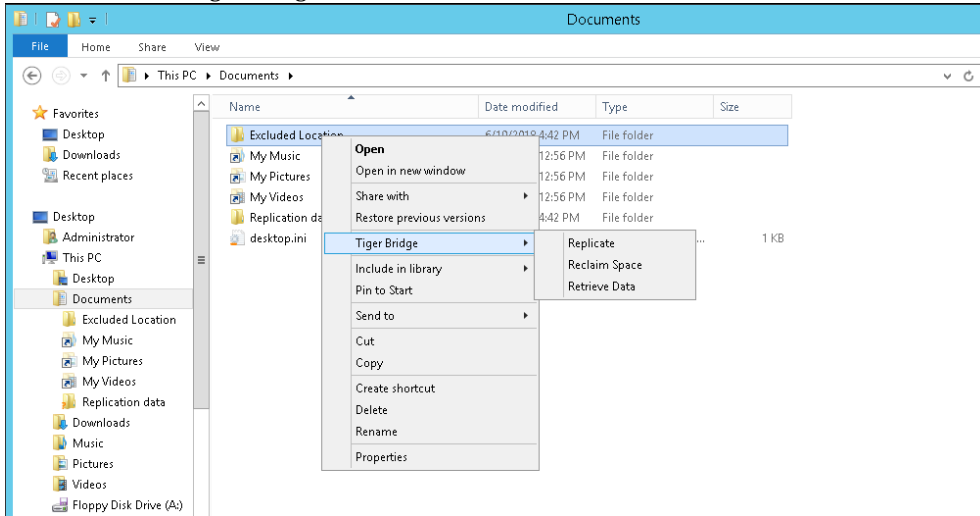
The shell extension of Tiger Bridge is integrated with Windows Explorer and displays the status of files and folders on your source - replicated, nearline or archive. The shell extension also allows you to perform manual data lifecycle management operations, using the Tiger Bridge menu in the Windows Explorer context menu. For more information, refer to “Manage Data Through the Shell Extension” on page 80.

**Note:** *Use NTFS permissions to control the users who can manage data at source level through the Tiger Bridge shell extension.*

The shell extension can be installed during Tiger Bridge installation or later, following the same steps.

## To access the Tiger Bridge shell extension context menu:

1. In Windows Explorer, navigate to a source paired with a target.
2. Right-click the file/folder you want to manage and in the context menu select the respective command under Tiger Bridge.



## Tiger Bridge Licensing

You can activate your Tiger Bridge license using a software activation key, a software protection dongle (HASP) or as a software as a service (SaaS).

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

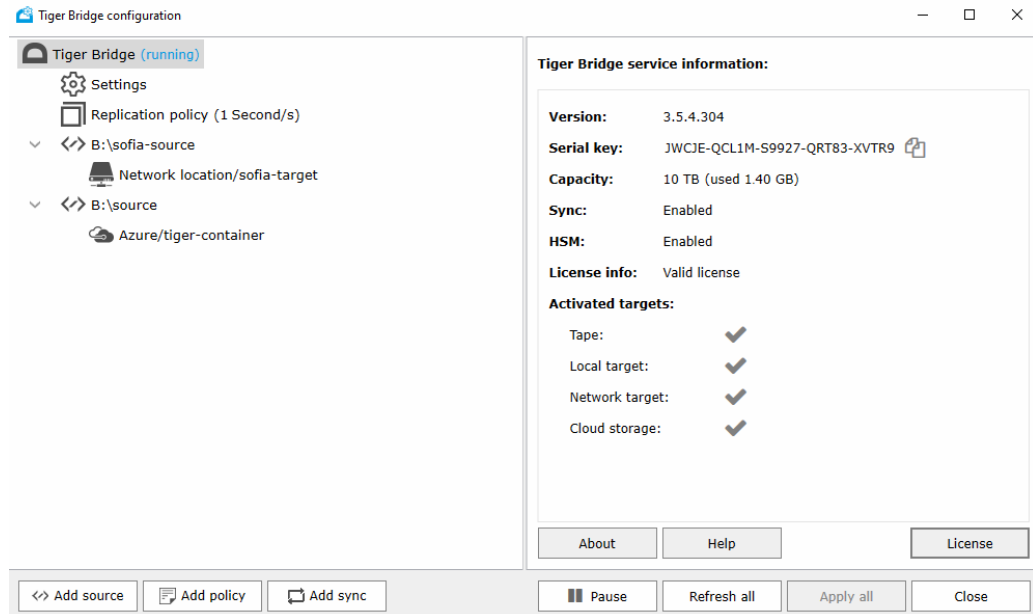
Regardless of the activation method, Tiger Bridge utilizes capacity-based licensing. With perpetual licenses (software or dongle) the license holds information about the maximum amount of data, which Tiger Bridge manages on all your sources. Once you reach your license's capacity limit, Tiger Bridge stops performing automatic data lifecycle operations. Thus, until you expand the capacity of your license or delete unneeded data from your source, you will be able to manage data on your source only manually. With a SaaS license there is no limit to the amount of data Tiger Bridge manages automatically, but capacity is calculated in order to utilize a consumption-based pricing model.

In both cases capacity is calculated as the sum of all file sizes in each source managed by Tiger Bridge, with the exception of excluded locations (subfolders of your source, which you have specified that Tiger Bridge should not manage automatically). Thus, if you add a source containing

## Introduction to Tiger Bridge

2TB of data, even if only 1TB of its files are currently replicated or replaced by stub files, the overall capacity of this source will be calculated as 2TB.

You can keep track of your current capacity usage in the Tiger Bridge Configuration, by clicking Tiger Bridge in the left pane and then checking the used capacity field in the right pane.



**Note:** To see how to keep track of capacity usage per source, refer to "Monitor Data Management Statistics" on page 52.

## System Requirements

You can install Tiger Bridge on a computer that meets these minimum system requirements:

- PC with 64-bit (x64) processor.

**Note:** Tiger 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 installation.

*Note: Tiger 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 Tiger Bridge manages 1 000 000 files, the size of the database is approximately 100MB. Unless there's enough free space for the database, Tiger Bridge is unable to operate.*

- The following TCP ports must not be blocked by the firewall on the Tiger Bridge computer 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
  - **8536** - inbound and outbound rules
  - **8537** - inbound and outbound rules

## High Availability Requirements

In order to use Tiger Bridge with high availability, your setup must meet the following requirements:

- Tiger Bridge must be installed on two server nodes, both running Tiger Store also set up for high availability (for more information, refer to the latest Tiger Store Administration Guide).
- All your source locations must be on Tiger Store-managed volumes, accessible with Read & Write permissions by both server nodes.
- Both server nodes must have identical access to all targets.
- The Tiger Bridge configuration must be identical on both server nodes.

## Storage Requirements

### Source Storage Requirements

Tiger Bridge supports any already existing NTFS volume, mounted on the computer running Tiger Bridge as a local volume with Read & Write permissions and on which the System account is granted Full Control.

You can use as a source the whole volume or just a folder on it. You cannot use as a source a folder whose parent folder is already paired with a target i.e. is set as a source itself.

All sources can contain data prior to pairing them with their respective target.

## Target Storage Requirements

Currently, Tiger Bridge provides support for the following targets:

- Microsoft Azure Blob Storage
- S3 object storage (with support for all available storage classes):
  - a separate bucket for each source configured on the same computer
  - IAM user credentials to be used by Tiger Bridge

**Important:** *Never provide your AWS account root user credentials. 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>*

- The access of the IAM user can be limited to just the S3 bucket, which will be used as a target, 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 Tiger 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/*"
    }
  ]
}
```

- S3-compatible object storage (using protocol signature version 2)
- Spectra BlackPearl Deep Storage Gateway
- IBM Cloud Object Storage
- Backblaze B2 Cloud Storage
- Wasabi Hot Cloud Storage

To learn about other targets supported by Tiger Bridge, visit:  
[www.tiger-technology.com/software/tiger-bridge/](http://www.tiger-technology.com/software/tiger-bridge/)

## Introduction to Tiger Bridge

# 2

## **Getting Started with Tiger Bridge**

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# Install Tiger Bridge

During Tiger Bridge installation, you can select to install the following components:

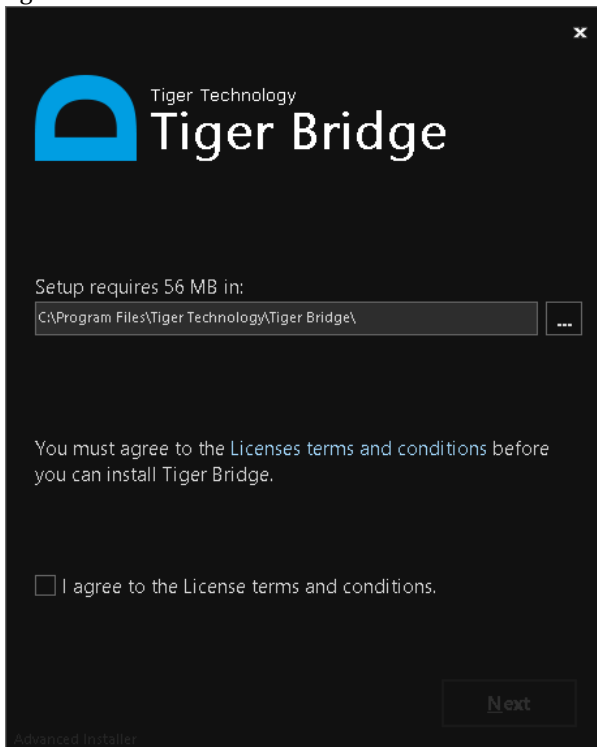
- Tiger Bridge - installs the product, the graphic and command-line interfaces for configuring the product.
- Shell Extension - provides integration with Windows Explorer, allowing you to view the status of files and folders on your source (replicated, nearline or offline), and to perform manual data lifecycle management operations through the Windows Explorer context menu.

## To install Tiger Bridge and additional components:

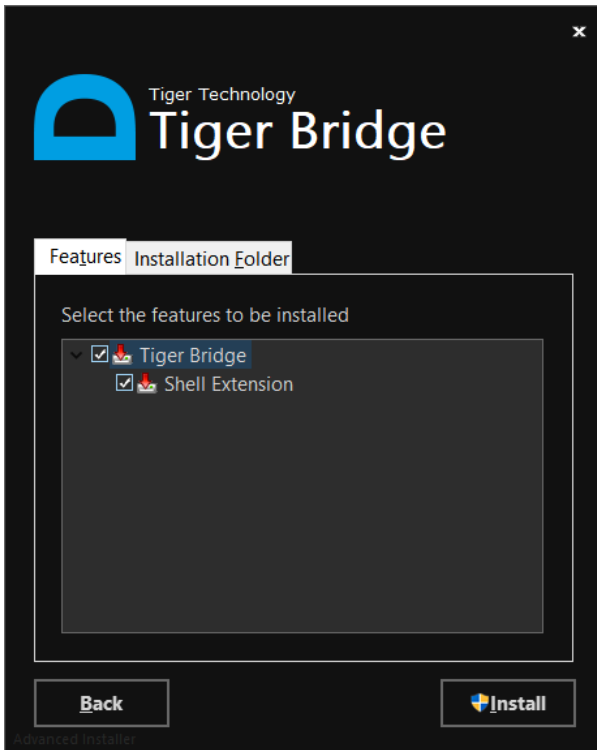
1. Double-click the Tiger Bridge installation file.

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

2. Select the folder where to install Tiger Bridge, accept the terms of the software license agreement and click Next.



3. Make sure the check boxes of the Tiger Bridge components you want to install are selected and then click Install.



**Note:** If you clear the check box of a component, you can install it later, following the same installation steps.

4. When the installation is complete, click Finish.  
The Tiger Bridge Configuration Wizard starts, allowing you activate the product and to perform the initial configuration.

## Uninstall Tiger Bridge

You can uninstall Tiger Bridge and/or any of the additional components at any time. After you uninstall Tiger Bridge, you will not be able to retrieve any replicated file, which has a copy only on the target, except by manually accessing the target. Tiger Bridge preserves the link between files on the source and the target, and should you decide to install it again, you will be able to retrieve all your files from the target.

Getting Started with Tiger Bridge

### **To uninstall Tiger Bridge:**

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

## **Initial Configuration of Tiger Bridge**

The Configuration Wizard of Tiger Bridge starts immediately after installation of the product and helps you:

- activate the product after providing a valid e-mail address
- connect to your cloud storage provider
- create a sample pair of source folder (“tiger-bridge” in the Documents folder of the computer) and target (an automatically created bucket/container “tiger-bridge”)

**Note:** *If a “tiger-bridge” bucket/container already exists on your cloud storage or the user whose credentials for access to the target are used does not have sufficient permissions to create new buckets/containers, the Configuration Wizard allows you to select or specify which existing bucket/container to pair with the sample source folder.*

- enable data replication, space reclaiming and geo replication (if Tiger Bridge is installed on more than one computer) for the sample pair of source folder and target.

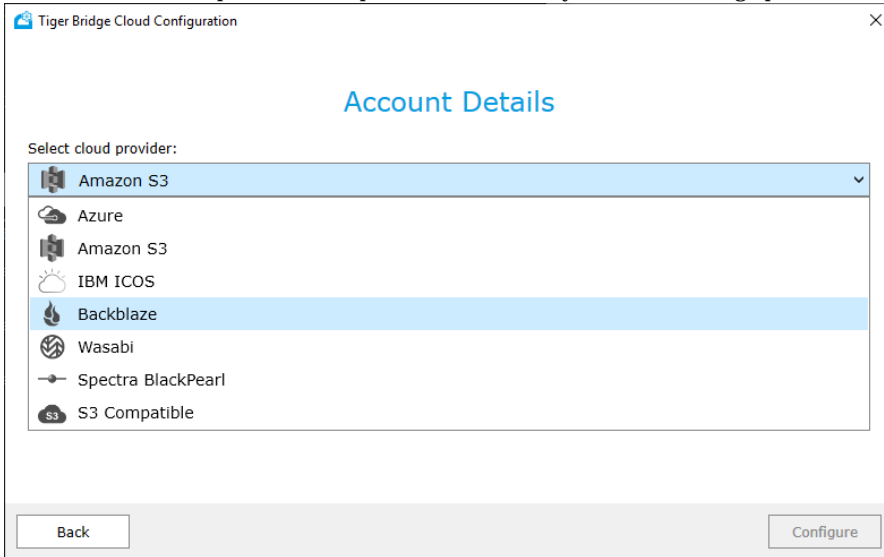


**To perform the initial configuration of Tiger Bridge:**

1. In Tiger Bridge Configuration Wizard, click Next.



2. In the "Select cloud provider" drop-down box, select your cloud storage provider.



3. Enter your e-mail to automatically activate Tiger Bridge on the computer.
4. Fill in the credentials for access to your account on the cloud.

## Getting Started with Tiger Bridge

**Important:** (Amazon S3 Transfer Acceleration) To use Tiger Bridge with an acceleration-enabled buckets, include "accelerate" in the server URL as described in the Amazon documentation. Keep in mind, that specifying access to your Amazon cloud storage using transfer acceleration will allow you to use Tiger Bridge only with acceleration-enabled buckets.

5. (Amazon access key rotation) To benefit from Amazon's access key rotation, select the "Rotate access key" check box to let Tiger Bridge update the access key of the IAM user once a week.

**Note:** Before enabling access key rotation in Tiger Bridge, make sure you have created an Amazon S3 policy that allows IAM users to rotate their own access keys, signing certificates, service specific credentials, and passwords.

**Important:** If you deploy Tiger Bridge for geo replication, to allow successful access key rotation on each computer running Tiger Bridge you must specify a different IAM account for access to the same bucket(s).

6. (Amazon storage class) In Default storage class, select the storage class to which Tiger Bridge to replicate data directly, omitting any intermediate tiers.

**Note:** If you do not select a specific storage class, Tiger Bridge uses S3 Standard-IA. You can change this setting later on in the Tiger Bridge Configuration.

7. (Amazon archive retrieval) In Archive retrieval option, select the method for retrieving data from the archival tier of your S3 object storage.

**Note:** If you do not select a specific archive retrieval option, Tiger Bridge uses Standard as default.

**Important:** If at the time of data retrieval there is insufficient capacity to process an Expedited request, Tiger Bridge automatically switches to Standard. Expedited retrieval option is not available for S3 Glacier Deep Archive storage class. Make sure you are acquainted with the Amazon pricing model, before changing your archive retrieval option, in order to avoid incurred costs.

8. Click Configure.

To see how to create new pairs, to enable data archiving or to change the default settings of the data replication, space reclaiming and geo synchronization policies, refer to "Configure Tiger Bridge Using the Configuration" on page 27.

**Note:** By default, initially all automatic Tiger Bridge operations are initially paused. To see how to resume them, refer to "Pause/Resume Automatic Tiger Bridge Operations" on page 52.



# Configure Tiger Bridge Using the Configuration

- Add a Source . . . . . 29*
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## Configure Tiger Bridge Using the Configuration

Use the Tiger Bridge Configuration to:

- Add another source and pair it with an existing or a new bucket/container on the target. For more details, see “Add a Source” on page 29.
- Specify data format on the cloud - select whether to display files uploaded to the cloud with their full path and file name instead of object IDs in the cloud browser. For more details, refer to “Specify Data Format on the Cloud” on page 30.
- Configure automatic data replication - specify what files are automatically replicated to the target. As data replication is indispensable for any Tiger Bridge workflow, a global replication policy governing all pairs of source and target is configured by default. The global replication cannot be deleted and you can only change its settings. You can overwrite the global replication policy for any pair of source and target. For more details about managing replication policies, refer to “Configure Automatic Data Replication” on page 31.
- Configure space reclaiming - specify which replicated files to be replaced with nearline files on the source. You can configure global space reclaiming policy, valid for all pairs of sources and targets. You can also overwrite the global space reclaiming policy for any pair of source and target. For more details about managing space reclaiming policies, refer to “Configure Space Reclaiming” on page 36.
- Configure automatic data archiving - on targets like Microsoft Azure and Amazon S3 Glacier, the policy defines which files on the source should be moved to the archival tier on the target and replaced by an offline file on your local storage. On targets like IBM Cloud Object Storage Archive and some S3-compatible object storage providers, which have their own policy for moving files from the hot or cool tier to the archival tier, you can specify at what interval Tiger Bridge should check for file moved to the archival tier and change their status on the source accordingly. As the data archiving policies differ from target to target, you cannot configure a global archiving policy, valid for all pairs of source and target. You can only specify archiving policy for a specific pair of source and target. For more details about managing archiving policies, refer to “Configure Automatic Archiving” on page 41.
- Configure active sync (geo replication) - specify when a source on one computer sends a notification to sources on other computers that new data is replicated on the same target and also when a source updates its contents with files replicated on the same target from other sources. You can configure global active sync policy, valid for all sources. You can also overwrite the global active sync policy for any source. For more details about configuring active sync policies, refer to “Configure Active Sync” on page 46.
- Configure operation mode - whether Tiger Bridge should keep the copy on the target, when a nearline file is retrieved back on the source and also whether to keep the replicated file on the target, when its version on the source is deleted. For more details, see “Configure Operation Mode” on page 50.

- Pause/resume all automatic Tiger Bridge operations. For more details, see “Pause/Resume Automatic Tiger Bridge Operations” on page 52.

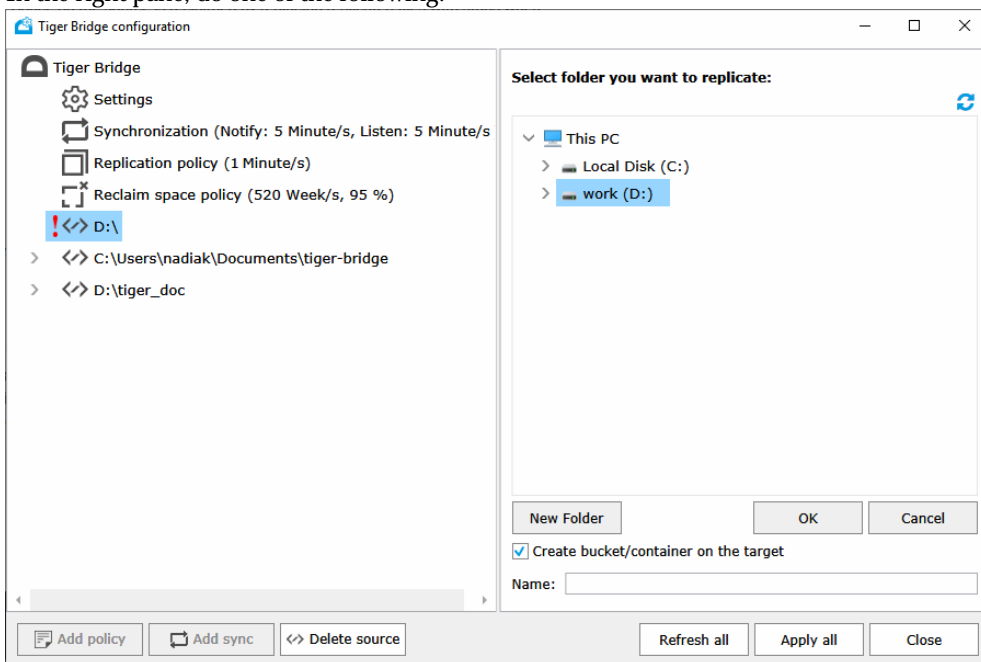
## Add a Source

You can use as a source a whole NTFS volume, which is locally mounted on the computer, or just a folder on it. You cannot use as a source a folder whose parent folder is already paired with a target i.e. is set as a source itself.

You can add as many sources as you wish.

### To add a source:

1. In the Tiger Bridge Configuration, select Tiger Bridge in the left pane and click Add Source.
2. In the right pane, do one of the following:



- To add a whole volume as a source, select the root of the volume.
- To add an existing folder as a source, browse to and select the folder.
- To create a new folder as a source, browse to the location where you want to create it, click New Folder, enter a name of the new folder and then press Enter.

Configure Tiger Bridge Using the Configuration

3. Make sure the “Create bucket/container on the target” check box is selected and in the Name field below it enter the name of the bucket/container to be paired with the source.

**Note:** *If a bucket/container with the name you have entered does not exist on the target, Tiger Bridge automatically creates it. If the user does not have sufficient permissions to create new buckets/containers, clear the “Create bucket/container on the target” check box and enter the name of an existing bucket for which the user has sufficient permissions to pair it with the source.*

4. Click OK to pair the source with the bucket/container.

**Note:** *Until you specify data lifecycle management parameters, Tiger Bridge uses the global policies specified during the initial configuration. You can change their settings or apply specific data replication, space reclaiming, data archiving and active sync policies for a given pair of source and target only.*

## Specify Data Format on the Cloud

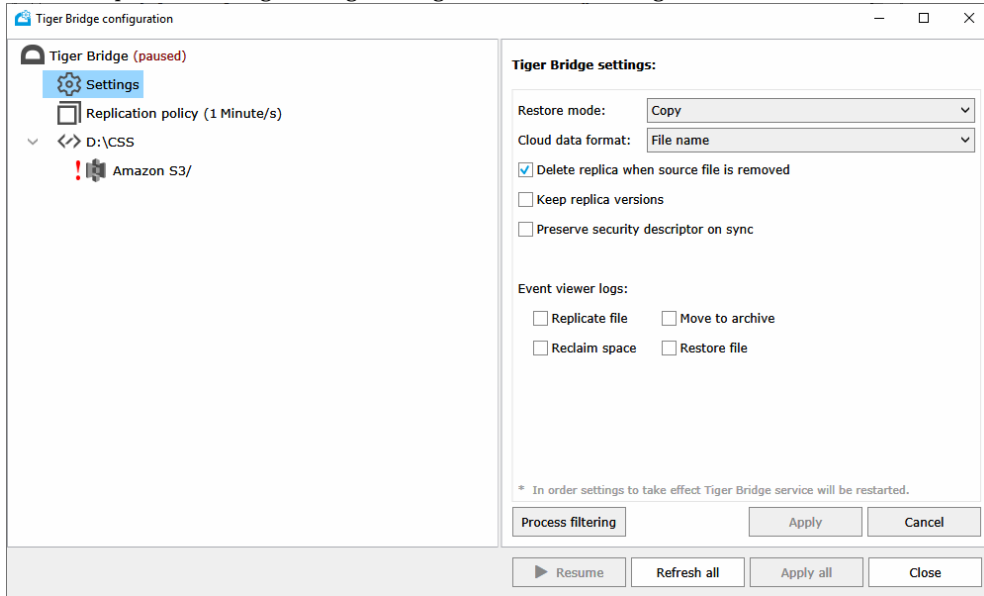
**Note:** *This parameter is valid only for object storage targets, which support using a cloud browser displaying the actual name and the full path of a file instead of its object ID.*

To facilitate you in interfacing the cloud, Tiger Bridge allows you to select whether to display files uploaded to the cloud with their full path and file name instead of object IDs in the cloud browser. If you select to display files with their full path and file name, it is advisable not to rename a replicated file on the source in order to avoid inconsistencies between file names on the source and on the target.

**Note:** *To see how to specify data format on the cloud using the command-line interface of Tiger Bridge, refer to “Specify Data Format on the Cloud” on page 57.*

## To specify cloud data format:

1. In the left pane of the Tiger Bridge Configuration, click Settings.



2. In the Cloud data format drop-down box, do one of the following:
  - select ID, to display files on the cloud with their object IDs.
  - select Filename, to display files on the cloud with their name and full path.
3. Click Apply and restart the computer running Tiger Bridge.

## Configure Automatic Data Replication

**Note:** To see how to configure automatic data replication using the command-line interface of Tiger Bridge, refer to "Automatic Data Replication" on page 58.

To allow Tiger Bridge to automatically replicate files from the source to the target, you should simply specify for how long a file should not have been modified in order Tiger Bridge to queue it for replication. You can configure global data replication policy (created during the initial configuration of Tiger Bridge), which is valid for all pairs of source and target. By default, the global replication policy is set to queue for replication data not modified within the last 1 minute. You can also overwrite the global data replication policy by specifying different parameters for a given pair of source and target.

## Configure Tiger Bridge Using the Configuration

When configuring the global data replication policy, you can also refine the list of automatically managed locations on all sources. For more information, refer to “Refine the List of Automatically Managed Locations” on page 32.

By default, if a replicated file is modified on the source and is queued for replication again, the new copy on the target overwrites the previous one. As long as your target supports versioning, you can set Tiger Bridge to not overwrite the replica on the target and allow the versioning software to keep each copy as a separate version. See steps for enabling/disabling versioning during replication on page 35.

**Note:** *Whether or not versioning is enabled, using Tiger Bridge you can retrieve from the target only the last replicated version of the file. Retrieving a given version of the replicated file is up to the versioning software on the target.*

## Refine the List of Automatically Managed Locations

Depending on the interface you have used to pair a source with a target, Tiger Bridge assumes that:

- (Configuration Wizard) it should automatically manage all data on the source.
- (command-line interface) it should not automatically manage any data on the source.

You can refine the list of locations on your sources, in which data should be automatically managed, by specifying a list of included and excluded locations, thus instructing Tiger Bridge to automatically manage (replicate, reclaim space, archive):

- all data on a source, when the root of the source is added as an included location;
- all data on a source, except data in subfolders added as excluded locations, when the root of the source is added as an included location;
- no data on the source except data in subfolders added as included locations, when the root of the volume is not added as an included location;

**Note:** *Although data in the excluded locations is not subject to Tiger Bridge’s automatic data lifecycle management, you can manually perform such operations on files/folders in an excluded location. For more information, see “Manually Manage Data” on page 79.*

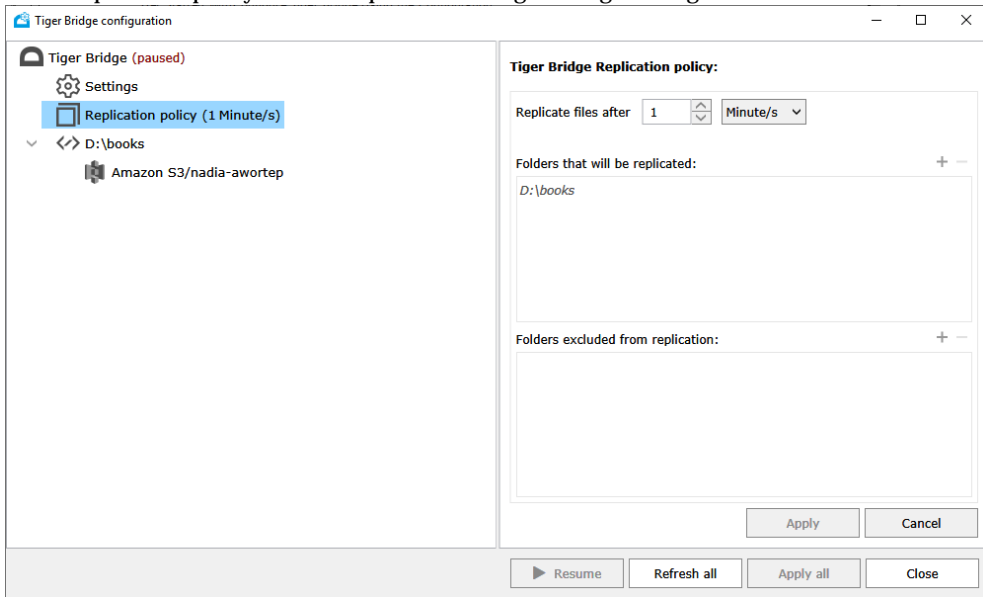
You can edit the list of included and excluded locations at any time as part of the global data replication policy configuration, following the steps below.

**Note:** *To see how to refine the list of automatically managed locations, using the command-line interface of Tiger Bridge, refer to “Refine the List of Automatically Managed Locations” on page 56.*



**To configure global data replication policy:**

1. Click Replication policy in the left pane of the Tiger Bridge Configuration.



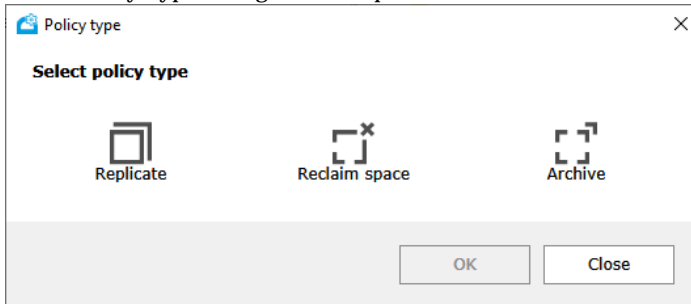
2. In the right pane, specify for how long a file should not have been modified for Tiger Bridge to replicate it, by entering the desired number and selecting the unit of measure in the drop-down box beside it.
3. (optional) Refine the list of automatically managed locations on all sources, by doing one of the following:
  - To add a folder to the list of included or excluded locations, click the + next to the respective list and browse to and select the respective folder.
  - To remove a folder from the list of included or excluded locations, select the folder in the respective list and click the - button.
4. Click Apply.

**Note:** By default, all automatic Tiger Bridge operations are initially paused. To resume them, follow the steps in "Pause/Resume Automatic Tiger Bridge Operations" on page 52.

Configure Tiger Bridge Using the Configuration

**To overwrite the global replication policy for a specific pair:**

1. In the Tiger Bridge Configuration, select the source in the left pane and click Add policy.
2. In the Policy Type dialog, select Replicate and click OK.



**Important:** *If the selected source already has its own replication policy assigned, you cannot add a new replication policy, but can edit the existing policy, following the steps below.*

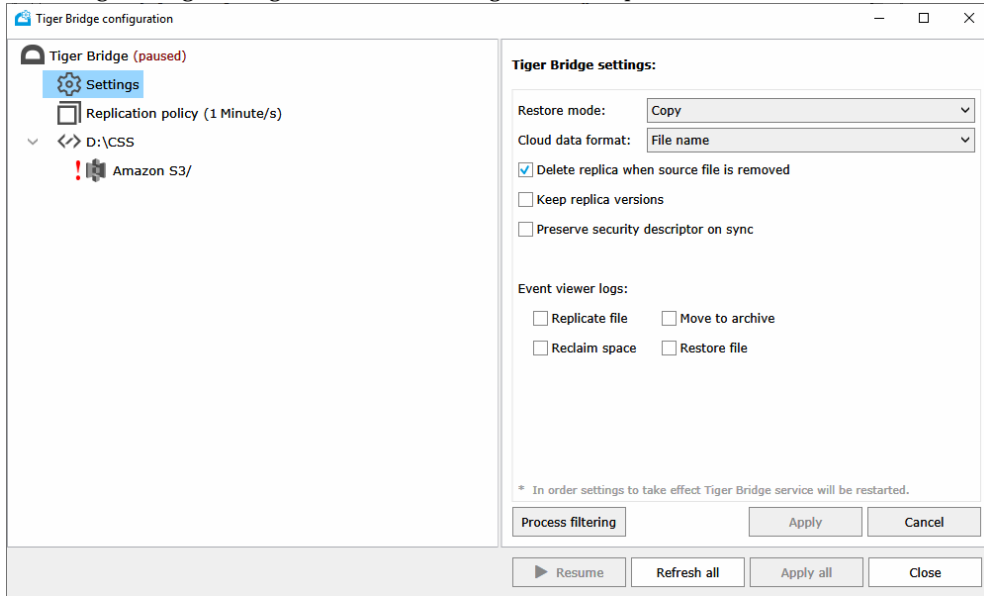
**Note:** *To make the source use the global replication policy set for all pairs, simply delete its own policy by selecting it and clicking Delete policy.*

3. In the right pane, specify for how long a file should not have been modified for Tiger Bridge to replicate it, by entering the desired number and selecting the unit of measure in the drop-down box beside it.
4. Click Apply.

**Note:** *By default, all automatic Tiger Bridge operations are initially paused. To resume them, follow the steps in "Pause/Resume Automatic Tiger Bridge Operations" on page 52.*

**To enable/disable versioning during replication:**

1. In the Tiger Bridge Configuration, click Settings in the left pane.



2. Do one of the following:
  - Select the “Keep replica versions” check box, to enable versioning.
  - Clear the “Keep replica versions” check box, to disable versioning.
3. Click Apply.

**Additional Data Replication Options**

You can manually replicate files even if they are not in the included locations, which are automatically scanned by Tiger Bridge. For more details, see “Manually Manage Data” on page 79.

You can also configure the following advanced settings in order to optimize your data replication workflow:

- specify the minimum size of a file for it to be replicated (see “Minimum File Size for Replication” on page 69).
- specify for how long Tiger Bridge should wait on startup for the file system scan before beginning to perform data replication (see “Set Startup Scan Wait Time” on page 73).
- specify the number of parallel threads run by Tiger Bridge when replicating files to the target (see “Set Number of Parallel Threads during Data Replication” on page 74).

## Configure Space Reclaiming

**Note:** *To see how to configure automatic space reclaiming using the command-line interface of Tiger Bridge, refer to "Space Reclaiming" on page 58.*

Aside from turning space reclaiming on, to instruct Tiger Bridge under what conditions it should replace replicated files on the source(s) with nearline files, you must configure the following parameters:

**space reclaiming policy** — Tiger Bridge decides which replicated files to replace with nearline files on the source volume based on 2 parameters - minimal file size and time interval for which the file has not been accessed. For example, if you set the file size threshold to 10MB and the time interval to 2 weeks, Tiger Bridge will replace with nearline files all replicated files with size 10MB or above that have not been accessed for at least 2 weeks, leaving on the source volume replicated files whose size is smaller than 10MB and also replicated files with bigger size that have been accessed by a client computer in less than 2 weeks. By default, Tiger Bridge is set to replace any file, which has not been accessed for more than 4 weeks, regardless of its size.

**used space thresholds for space reclaiming** — the default used space threshold is 0% and space reclaiming is triggered as soon as any file meets the criteria for replacement with a nearline file. You can increase the used space threshold and let Tiger Bridge reclaim space only when a given amount of your source is full. You can also specify maximum used space threshold on your source - it specifies when all files subject to replication are queued for replacement with nearline files regardless of their size and last access time. By default, maximum used space value is set to 90% for all source volumes.

**Note:** *Tiger Bridge processes the queue of files scheduled for replacement with nearline files starting from the ones, which are least recently accessed.*

**processes triggering file retrieval** — By default, each process, attempting to open a nearline file on the source volume, triggers its retrieval from the target. To prevent useless retrieval of nearline files by your antivirus software, for example, you can specify which processes exactly can trigger the file retrieval operation. You can do this by creating either a list of processes allowed to trigger retrieval or by creating a list of processes, which cannot trigger retrieval of nearline files. There is no need to create both lists. In case you create a list of processes allowed to trigger nearline file retrieval from the target, any process not included in the list will not trigger the operation, when this process attempts to open the file. In case you decide to specify the processes, which are not allowed to trigger file retrieval from the target, any process not mentioned in the list will trigger the nearline file retrieval, when this process attempts to open that file.

You can configure global space reclaiming policy (the policy automatically created during the initial configuration of Tiger Bridge), valid for each pair of source and target, which does not have its own

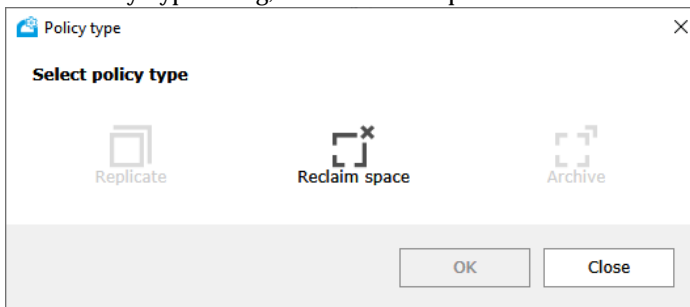
space reclaiming policy assigned. You can overwrite the global space reclaiming policy for a given pair of source and target or disable space reclaiming for that pair only.

**Note:** *If you have deleted the global space reclaiming policy, created during the initial configuration of Tiger Bridge, you have to create it anew, following the steps below.*

**Important:** *If the storage class of your Amazon S3 target is an archive tier (S3 Glacier or S3 Glacier Deep Archive), when Tiger Bridge reclaims space on your source, files are not replaced by nearline stubs, but by offline files, which can be retrieved back on the source only manually through the Tiger Bridge shell extension or the command-line interface.*

### To configure global space reclaiming policy:

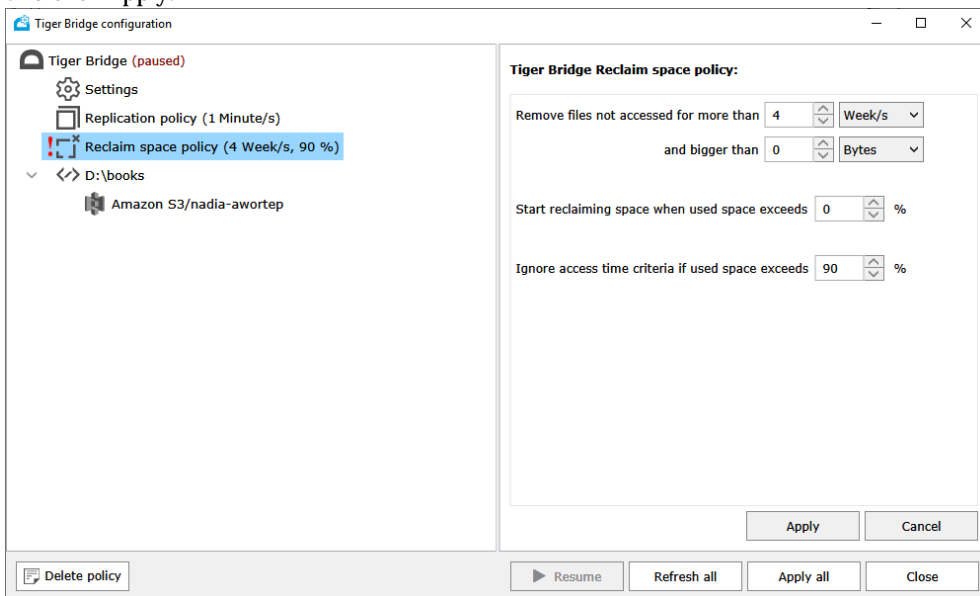
1. Select Tiger Bridge in the left pane and then click Add policy.
2. In the Policy Type dialog, select Reclaim space and click OK.



**Note:** *If you have not deleted the global space reclaiming policy, created during the initial configuration of Tiger Bridge, you can only edit its settings. To do so, select "Reclaim space policy" under Tiger Bridge in the left pane and then proceed with the steps below.*

## Configure Tiger Bridge Using the Configuration

3. In the right pane, specify the parameters for file access time and size, for used space thresholds and click Apply.

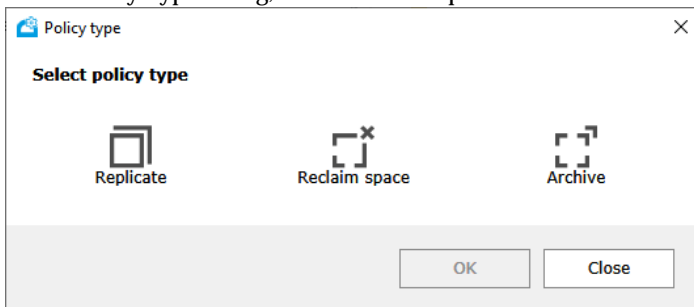


The global space reclaiming policy is valid for all sources, which don't have their own policy assigned. To edit the global policy, simply select it in the left pane, edit the desired parameter and click Apply. To delete the global policy, select it in the left pane and click Delete policy.

**Note:** By default, all automatic Tiger Bridge operations are initially paused. To resume them, follow the steps in "Pause/Resume Automatic Tiger Bridge Operations" on page 52.

### To overwrite the global space reclaiming policy for a specific source:

1. In the Tiger Bridge Configuration, select the source in the left pane and then click Add policy.
2. In the Policy Type dialog, select Reclaim space and click OK.



**Important:** *If the selected source already has its own space reclaiming policy assigned, you cannot add a new space reclaiming policy, but can edit the existing policy, following the steps below.*

- 3. In the right pane, make sure the Enabled check box is selected and specify the parameters for file access time and size, for used space thresholds, then click Apply.**

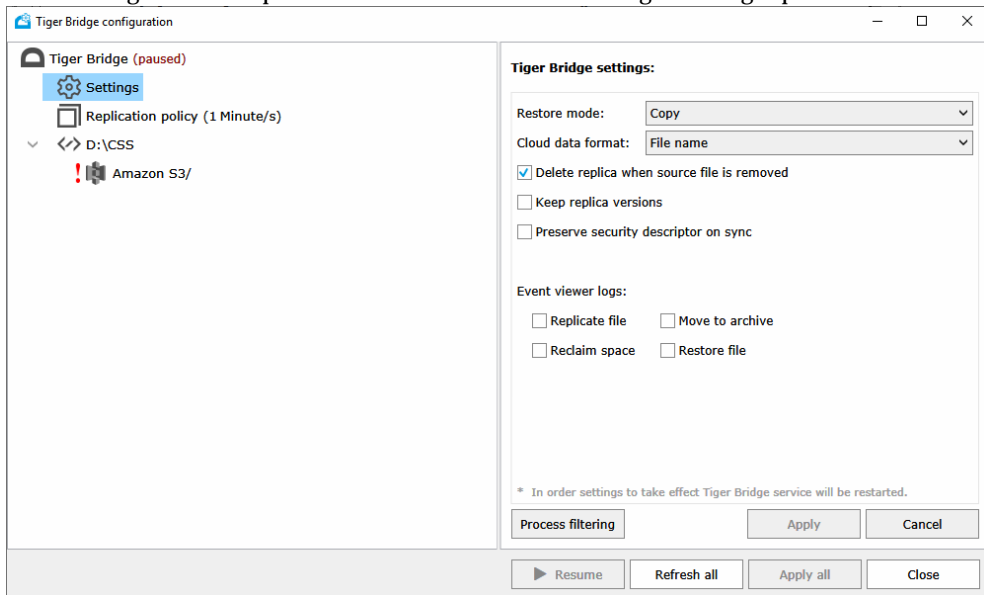
**Tip:** *To make the source use the global space reclaiming policy set for all sources, either disable the space reclaiming policy specified just for it by clearing the Enabled check box in the right pane, or delete the policy by selecting it in the left pane and clicking Delete policy.*

**Note:** *By default, all automatic Tiger Bridge operations are initially paused. To resume them, follow the steps in "Pause/Resume Automatic Tiger Bridge Operations" on page 52.*

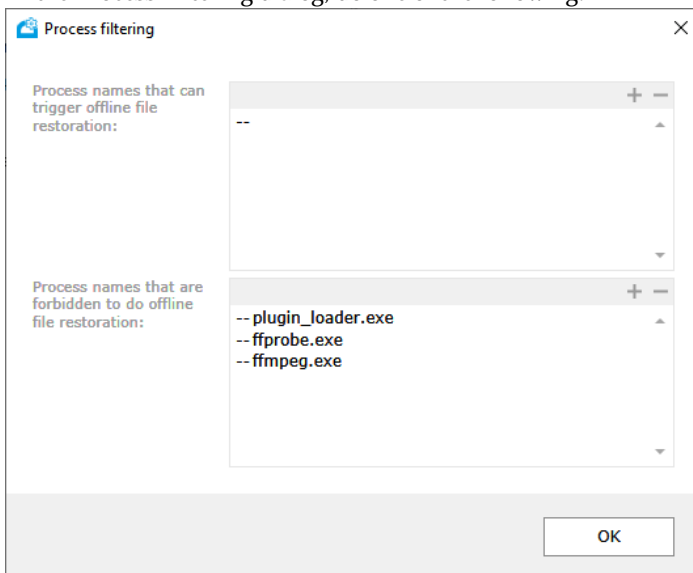
## Configure Tiger Bridge Using the Configuration

**To configure the processes, which can or cannot trigger retrieval of files from the target:**

1. Click Settings in the left pane and then click Process Filtering in the right pane.



2. In the Process Filtering dialog, do one of the following:





- Enter the name of a process in either the list of processes allowed to trigger the retrieving of nearline files or in the list of processes forbidden to trigger the retrieving of nearline files and click OK.

**Tip:** Click the + button on top of each list to place the cursor at the end of each respective list.

- Delete a process from either list and then click OK.

**Tip:** Click the - button on top of each list to remove the last process of the respective list.

3. In the Tiger Bridge Configuration, click Apply.

### Additional Space Reclaiming Options

You can manually replace replicated files with nearline ones on your source volume and thus free space on it. For more details, see “Manually Manage Data” on page 79.

You can also configure the following advanced settings in order to optimize your data replication workflow:

- specify for how long Tiger Bridge should wait on startup for the file system scan before beginning to perform data replication (see “Set Startup Scan Wait Time” on page 73).
- specify whether a file should be retrieved each time a user or application attempts to open it (default behaviour) or only when you manually retrieve it through Tiger Bridge (see “Retrieving Nearline Files Behaviour” on page 69).
- specify whether to turn on/off write-through retrieving of files (see “Enable/Disable Write-through on File Retrieve” on page 70).
- specify timeout after which a file retrieving from the target should be considered unsuccessful (see “Set File Retrieve Timeout” on page 71).
- specify whether Tiger Bridge should show the actual size of a nearline file or the size of the replicated file it replaces (see “Set Stub File Allocation Size Display Option” on page 72).
- specify nearline file head and tail size (see “Set Nearline File Head and Tail Sizes” on page 72).

## Configure Automatic Archiving

**Note:** Currently, Tiger Bridge supports data archiving only on Microsoft Azure, Amazon S3 Glacier, IBM Cloud Object Storage Archive and S3-compatible targets (as long as the S3-compatible target provides data archiving).

To enable automatic data archiving, you should configure a data archiving policy for a specific pair of source and target. On targets, which allow third-party policies to manage the moving of data from their hot/cool tier to the archive tier, you can use Tiger Bridge’s archive policy. Currently, the following targets allow using Tiger Bridge’s own archiving policy:

## Configure Tiger Bridge Using the Configuration

- Microsoft Azure
- S3 Glacier

**Important:** *If you have configured Tiger Bridge to use as a target one of Amazon's S3 archive storage classes (S3 Glacier or S3 Glacier Deep Archive), there is no need to configure archiving policy as files from the source will be replicated directly on the archival tier. Additionally, if you want to reclaim space on your source by replacing a replicated file with a stub, you must configure space reclaiming policy instead. Thus, when Tiger Bridge reclaims space on your source it will replace replicated files with offline files instead of nearline files.*

On targets, which do not support third-party policies for moving of data from their hot/cool tier to the archive tier, you can synchronize Tiger Bridge with the target's own archiving policy and thus let it verify when a file is moved to the archive tier and update the status of such files on the source to offline. Currently, you can synchronize Tiger Bridge with the target's own archiving policy on IBM Cloud Object Storage Archive and S3-compatible object storage, which supports data archiving.

## Configure Tiger Bridge Archiving Policy

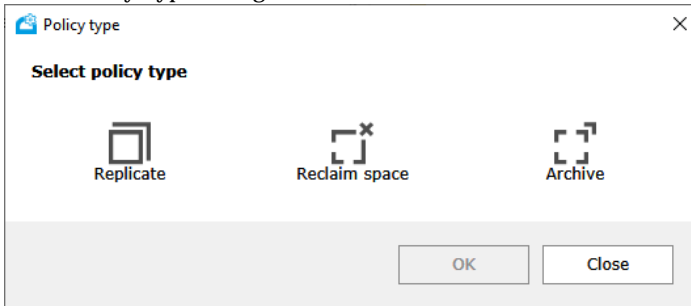
**Note:** *To see how to configure the Tiger Bridge archiving policy using the command-line interface of Tiger Bridge, refer to "Automatic Archiving" on page 60.*

Tiger Bridge's archiving policy allows you to specify which files on your source must be moved to the archive tier of the target and replaced by offline counterpart on the source. The policy uses two parameters - minimal file size and time interval for which the file has not been accessed on the source. For example, if you set the file size threshold to 10MB and the time interval to 2 weeks, Tiger Bridge will move to the archive tier all replicated files with size 10MB or above that have not been accessed for at least 2 weeks and will replace them on the source with offline files, thus designating that they can be retrieved only manually. By default, Tiger Bridge replaces files with offline files only if they are bigger than 10MB and if they have not been accessed for more than 50 weeks. Tiger Bridge processes the queue of replicated files scheduled for archiving starting from the ones, which are least recently accessed.

**Note:** *You cannot specify a global archiving policy, valid for all targets. You can configure an archiving policy only for a specific pair of source and target.*

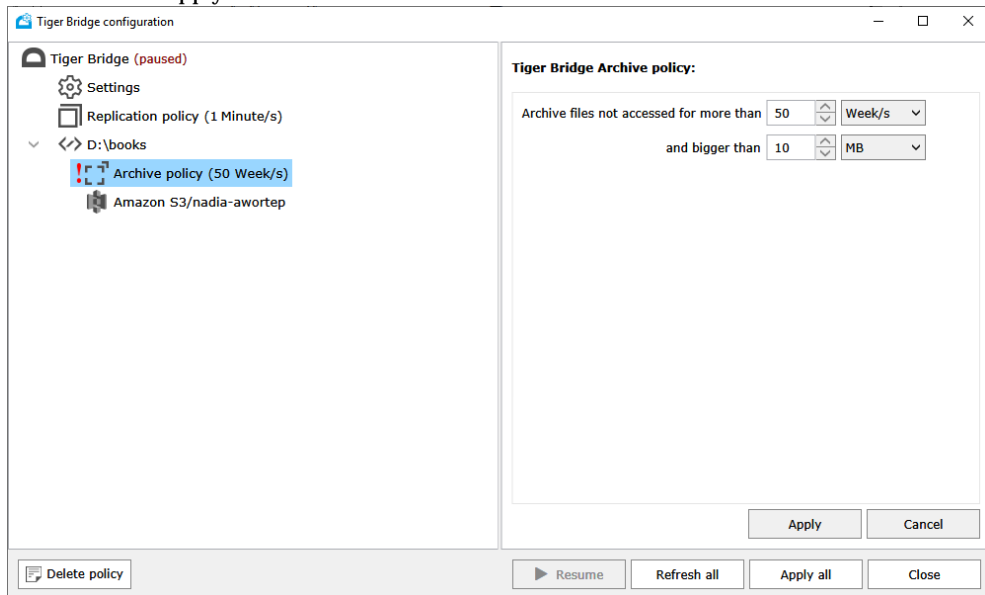
### To configure Tiger Bridge archiving policy:

1. In the Tiger Bridge Configuration, select the source in the left pane and then click Add policy.
2. In the Policy Type dialog, select Archive and click OK.



**Note:** *Archive policy is greyed out, when the target does not provide archive tier.*

3. In the right pane, specify the minimum file size and for how long a file should not have been accessed on the source in order to be moved to the archival tier and replaced with an offline file and then click Apply.



**Note:** *By default, all automatic Tiger Bridge operations are initially paused. To resume them, follow the steps in "Pause/Resume Automatic Tiger Bridge Operations" on page 52.*

## Synchronize Tiger Bridge with the Target's Own Archiving Policy

**Note:** Currently, you can synchronize Tiger Bridge with the target's own archiving policy only on IBM Cloud Object Storage Archive and S3-compatible object storage, which supports data archiving.

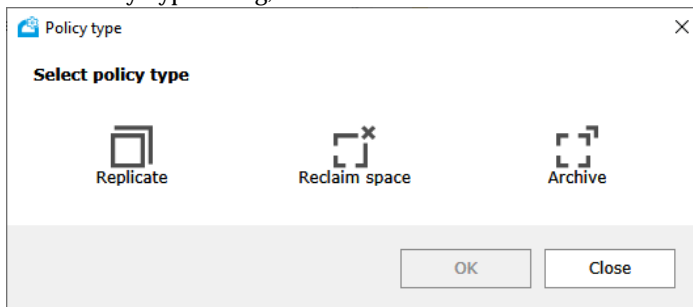
On targets, which do not allow third-party policies to move data between the hot/cool tier and the archive tier, you can synchronize Tiger Bridge with the target's own policy by specifying at what interval Tiger Bridge should check for files moved to the archive tier in order to update their status on the source to offline.

You can also overwrite the target's own archiving policy by synchronizing it with the time interval at which Tiger Bridge checks for files moved to the archive tier. Thus, each time the target's policy checks for files meeting the criteria for archiving and moves them to archive tier, Tiger Bridge checks which files have been moved and immediately changes their status to offline on your source. For example, if you set Tiger Bridge to check for archived files every 30 days, the target's policy will move to the archive tier only replicated files which have not been modified on the hot/cool tier within 30 days.

**Note:** Currently, you can synchronize Tiger Bridge with the target's own archiving policy in the Configuration only.

### To synchronize Tiger Bridge with the target's own archiving policy:

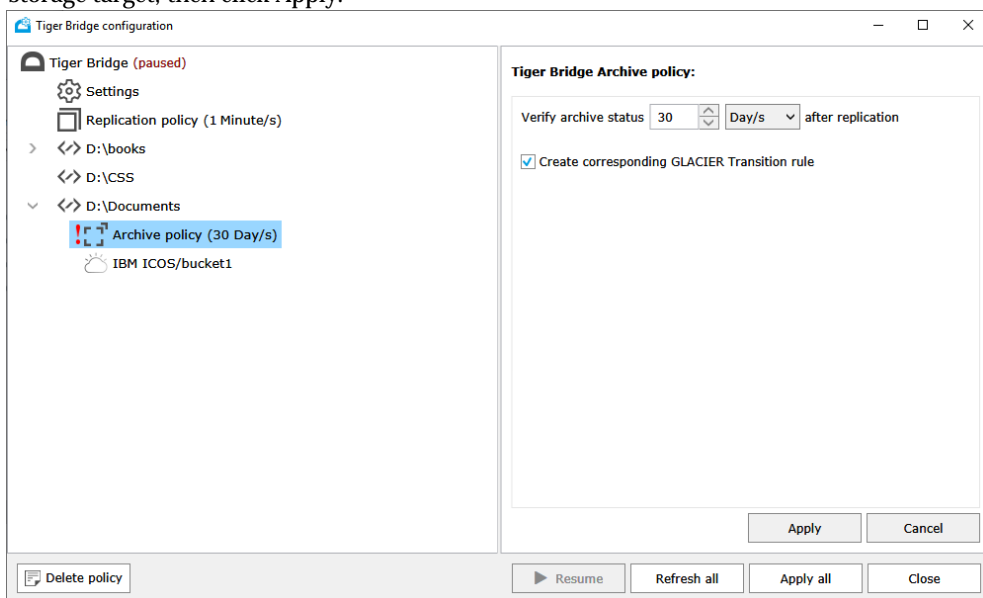
1. In the Tiger Bridge Configuration, select the source in the left pane and then click Add policy.
2. In the Policy Type dialog, select Archive and click OK.



**Note:** Archive policy is greyed out, when the target does not provide archive tier.

3. In the right pane, specify the time interval at which Tiger Bridge should check for files moved to the archive tier and optionally, select the "Create corresponding Glacier Transition rule" check

box to synchronize the archiving policy of Tiger Bridge with that of the S3-compatible object storage target, then click Apply.



**Important:** By selecting the check box you overwrite the target rule for moving files to the archive tier, if there is such a rule already configured. If the check box is cleared, you need to configure a transition rule in the interface of the target.

**Note:** By default, all automatic Tiger Bridge operations are initially paused. To resume them, follow the steps in “Pause/Resume Automatic Tiger Bridge Operations” on page 52.

## Additional Archiving Options

With targets, which allow third-party policies for moving files from the hot/cool tier to the archive tier, you can manually replace replicated files with offline ones on your source volume and thus free space on it. You can also manually rehydrate files (move them from the archive to the hot/cool tier) and allow Tiger Bridge to retrieve them from the target on demand, when a user or application attempts to access them on the source.

On targets, which do not allow third-party policies to move files between the hot/cool tier and the archive tier, you can manually check if the status of a replicated file on your source needs to be changed to offline.

For more details, see “Manually Manage Data” on page 79.

You can also configure the following advanced settings in order to optimize your data archiving workflow:

Configure Tiger Bridge Using the Configuration

- specify for how long Tiger Bridge should wait on startup for the file system scan before beginning to replacing replicated files with offline files (see “Set Startup Scan Wait Time” on page 73).
- specify whether Tiger Bridge should show the actual size of an offline file or the size of the replicated file it replaces (see “Set Stub File Allocation Size Display Option” on page 72).
- specify offline file head and tail size (see “Set Nearline File Head and Tail Sizes” on page 72).

## Configure Active Sync

**Note:** *To see how to configure active sync using the command-line interface of Tiger Bridge, refer to “Active Sync” on page 61.*

Tiger Bridge’s active sync allows you to synchronize the contents of two or more sources (each on a separate computer) through a common target. For the purpose you must pair all sources with the same target and configure the active sync policy. The active sync mechanism operates using two parameters - the time interval at which each source sends notifications to other sources about changes to its content on the target, and the time interval at which each source checks for notifications from other sources about modified content (new replicated data available, deleted content, etc.) on the target. After a source receives a notification for updated contents from other sources, Tiger Bridge automatically creates a nearline file for each new file replicated from other sources. Nearline files are created on the source on demand, only upon receiving a request (by a user or application) for access to the directory, which should contain them and each nearline file can then be retrieved manually or automatically, should a user or application attempt to open it. You can also set Tiger Bridge to begin retrieving new nearline files immediately after it finishes the synchronization.

**Note:** *If you have configured Tiger Bridge to use as a target one of Amazon’s S3 archive storage classes (S3 Glacier or S3 Glacier Deep Archive), when the contents of the sources is updated with offline files instead of nearline.*

You can use a global active sync policy (automatically created during the initial configuration of Tiger Bridge), valid for all sources paired with the same target or you can create a separate policy, valid only for the source it is assigned to. You can choose to enable just one of the parameters on specific computers - thus one computer can be set to just send notifications about changes introduced on its source, letting sources on other computers synchronize their contents with these changes, but disable notifications from other sources paired with the same target, thus not synchronizing its own content with the changes introduced on other sources.

Additionally, you set Tiger Bridge to keep a file’s security descriptor when it is being retrieved on other sources. It is advisable to enable this option only if all sources are in the same Active Directory domain.

To allow for the proper contents synchronization, it is advisable on all sources to set up Tiger Bridge operation mode parameters in such a way that a file on the target is not deleted when it is retrieved

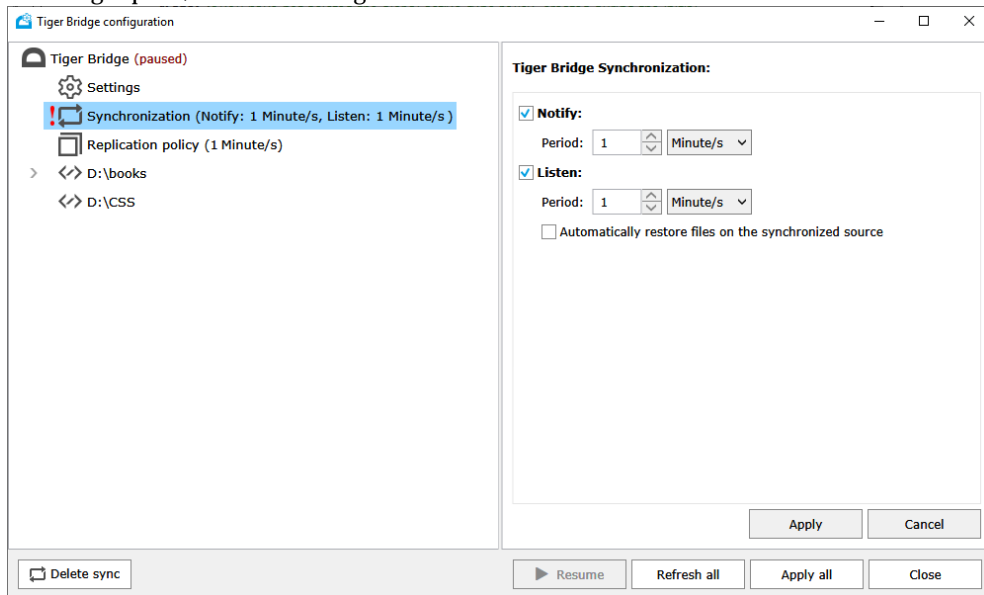
on one of the sources and also not to delete the file from the target, if it is deleted on any of the sources. Otherwise, other sources may fail to retrieve the respective file, even though the retrieve mode and delete mode on them are set to keep the replica. For more information, refer to “Configure Operation Mode” on page 50.

### To configure global active sync policy:

1. In the Tiger Bridge Configuration, select Tiger Bridge in the left pane and then click Add sync.

**Note:** *If you have not deleted the global active sync policy, created during the initial configuration of Tiger Bridge, you can only edit its settings. To do so, select “Synchronization” under Tiger Bridge in the left pane and then proceed with the steps below.*

2. In the right pane, do the following:



- Below Notify, enter the time interval at which the computer should send notifications to other computers about changes to its source contents and select the unit of measure in the drop-down box beside the Period box.

- Below Listen, enter the time interval at which the computer should check for notifications from other computers about changes in the contents of their sources and select the unit of measure in the drop-down box beside the Period box.

**Note:** *It is advisable to leave both the Notify and the Listen check boxes selected, when specifying the global active sync policy.*

- Select the “Automatically restore file on the synchronized source” check box, to let Tiger Bridge begin restoring the files immediately after contents is synchronized.

Configure Tiger Bridge Using the Configuration

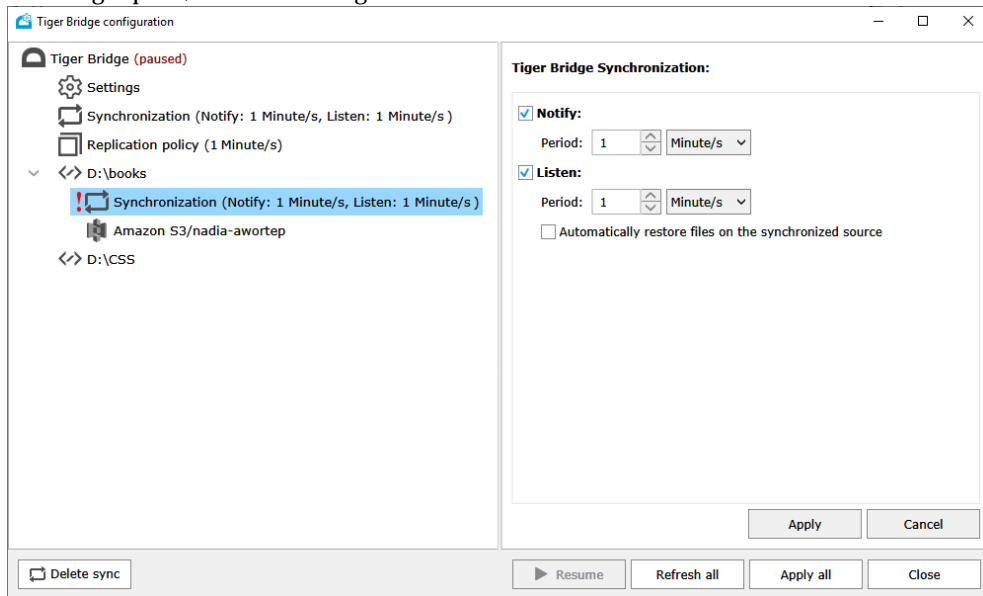
3. Click Apply.

The global active sync policy is valid for all sources, which don't have their own policy assigned. To edit the global policy, simply select it in the left pane, edit the desired parameter and click Apply.

**Note:** By default, all automatic Tiger Bridge operations are initially paused. To resume them, follow the steps in "Pause/Resume Automatic Tiger Bridge Operations" on page 52.

**To overwrite the global active sync policy for a specific source:**

1. In the Tiger Bridge Configuration, select the source in the left pane and click Add sync.
2. In the right pane, do the following:



- Below Notify, enter the time interval at which the computer should send notifications to other computers about changes to its source contents and select the unit of measure in the drop-down box beside the Period box.

- Below Listen, enter the time interval at which the computer should check for notifications from other computers about changes in the contents of their sources and select the unit of measure in the drop-down box beside the Period box.

**Note:** You can disable either the Notify check box or the Listen check box for a selected source, thus configuring this computer to only send notifications about changes to the contents at its source side, but not letting it synchronize its source contents with changes from other sources and vice versa.



- Select the “Automatically restore file on the synchronized source” check box, to let Tiger Bridge begin restoring the files immediately after contents is synchronized.

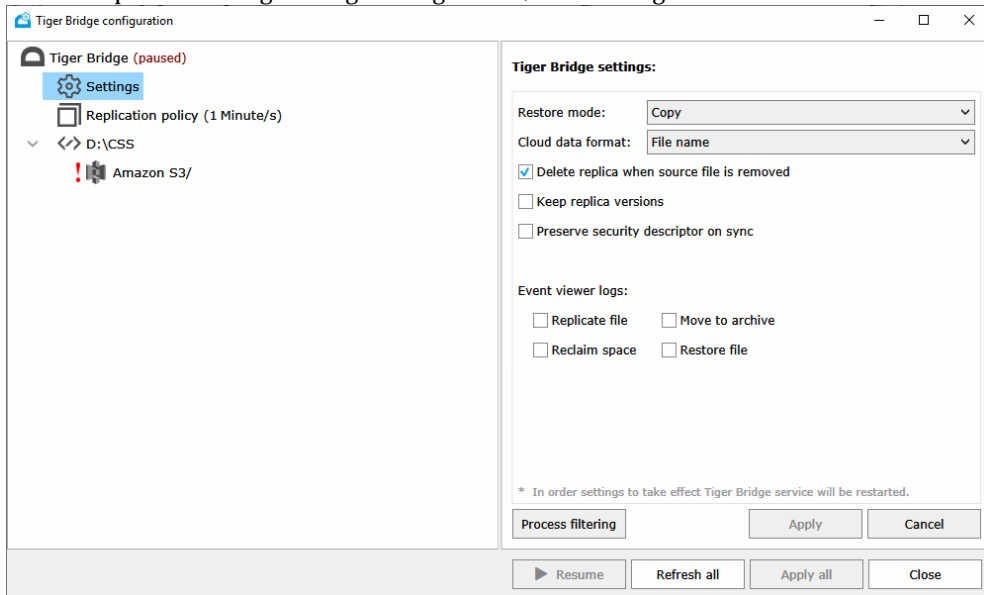
### 3. Click Apply.

To edit the active sync policy for this source, simply select it in the left pane, edit the desired parameter and click Apply. To delete the policy and let the source use the global active sync policy, select it in the left pane and then click Delete sync.

**Note:** By default, all automatic Tiger Bridge operations are initially paused. To resume them, follow the steps in “Pause/Resume Automatic Tiger Bridge Operations” on page 52.

## To set Tiger Bridge to preserve the files security descriptor on all sources:

### 1. In the left pane of the Tiger Bridge Configuration, click Settings.



### 2. Do one of the following:

- Select the “Preserve security descriptor on sync” check box, to keep the security of all files on each source after contents synchronization.
- Clear the “Preserve security descriptor on sync” check box, to retrieve all files without security on each source after contents synchronization.

### 3. Click Apply.

## Configure Operation Mode

**Note:** To see how to configure Tiger Bridge operation mode parameters using the command-line interface, refer to “Operation Mode Parameters” on page 63.

There are two operation mode parameters that you can specify:

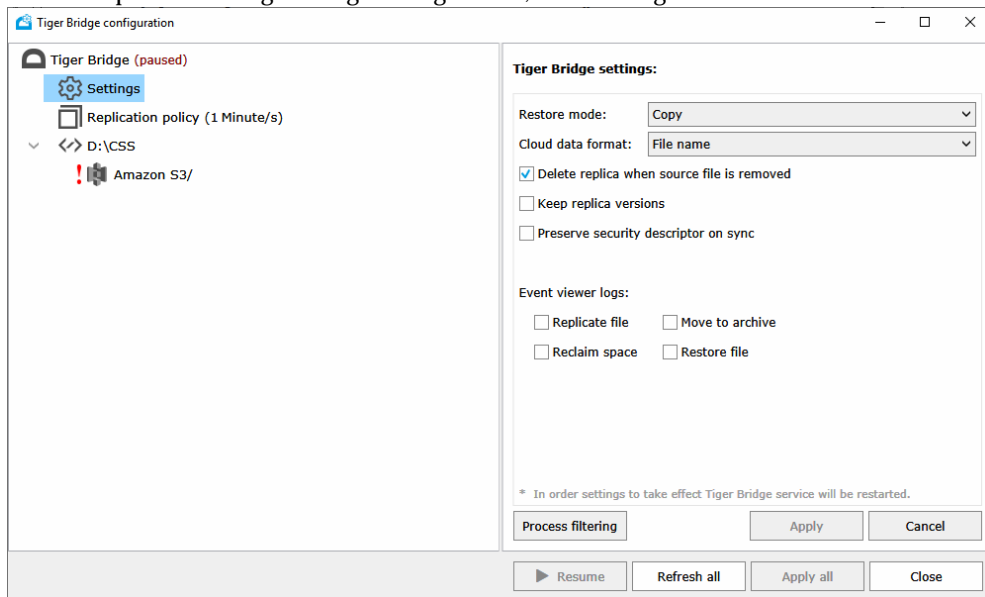
**retrieve mode** — By default, Tiger Bridge is set up to keep the replica on the target when you retrieve it on the source. You can set Tiger Bridge to remove file replica from target when it is successfully retrieved on the source.

**delete mode** — By default, when a file is deleted from the source, Tiger Bridge automatically deletes its replica from the target as well. To ensure against accidental deletion of valuable data, for example, you can set Tiger Bridge to delete just the instance of the file on the source, but keep the copy on the target. To retrieve a file deleted only from the source, you will have to manually synchronize the contents of the source and the target (see “Synchronize Data on the Source and the Target” on page 111).

**Note:** When you set Tiger Bridge to delete just the instance of the file on the source, to delete it from the target as well you should access the target and manually delete the file.

### To configure retrieve mode:

1. In the left pane of the Tiger Bridge Configuration, click Settings.



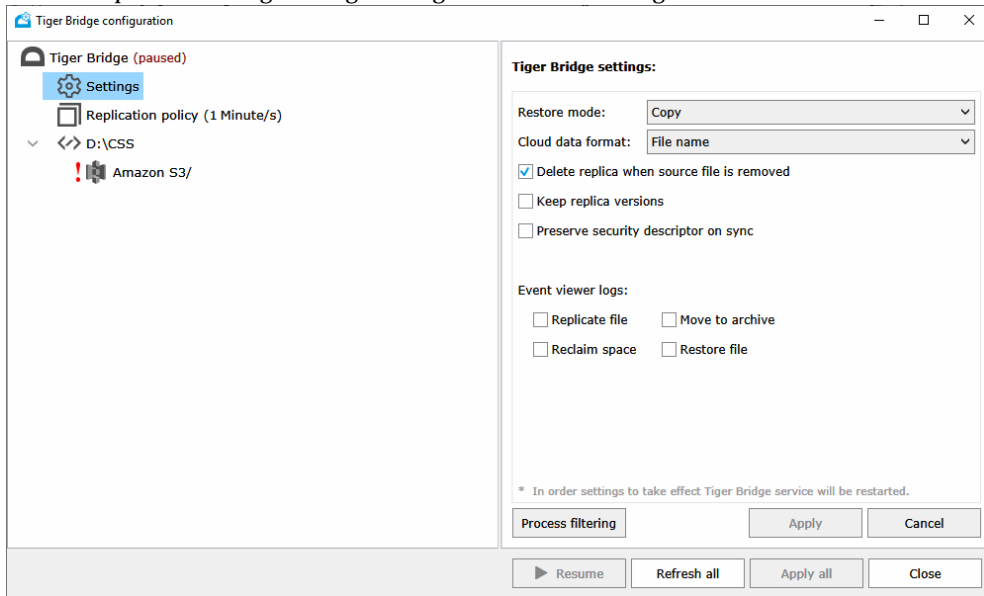
2. In the Restore mode drop-down box, do one of the following:

- To let Tiger Bridge keep the replica on the target, when the file is successfully retrieved on the source volume, select Copy.
- To let Tiger Bridge remove the replica from the target, when the file is successfully retrieved on the source volume, select Move.

3. Click Apply.

### To configure delete mode setting:

1. In the left pane of the Tiger Bridge Configuration, click Settings.



2. Do one of the following:

- Select the “Delete replica when source file is removed” check box, to let Tiger Bridge remove the replica from the target, upon deleting the file from the source volume.
- Clear the “Delete replica when source file is removed” check box, to let Tiger Bridge keep the replica on the target, upon deleting the file from the source volume.

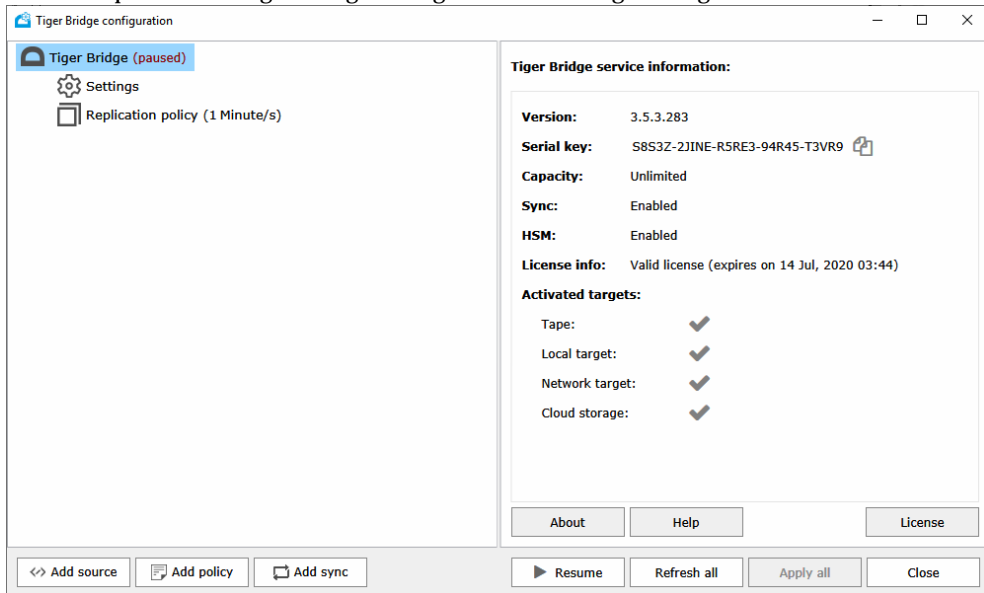
3. Click Apply.

## Pause/Resume Automatic Tiger Bridge Operations

By default, all automatic data lifecycle operations are initially paused and even though you may have configured the policies for data replication, space reclaiming and archiving, Tiger Bridge does not manage any data until you resume the operations. You can pause and resume all automatic Tiger Bridge operations at any time, following the steps below.

### To pause/resume automatic Tiger Bridge operations:

1. In the left pane of the Tiger Bridge Configuration, click Tiger Bridge.



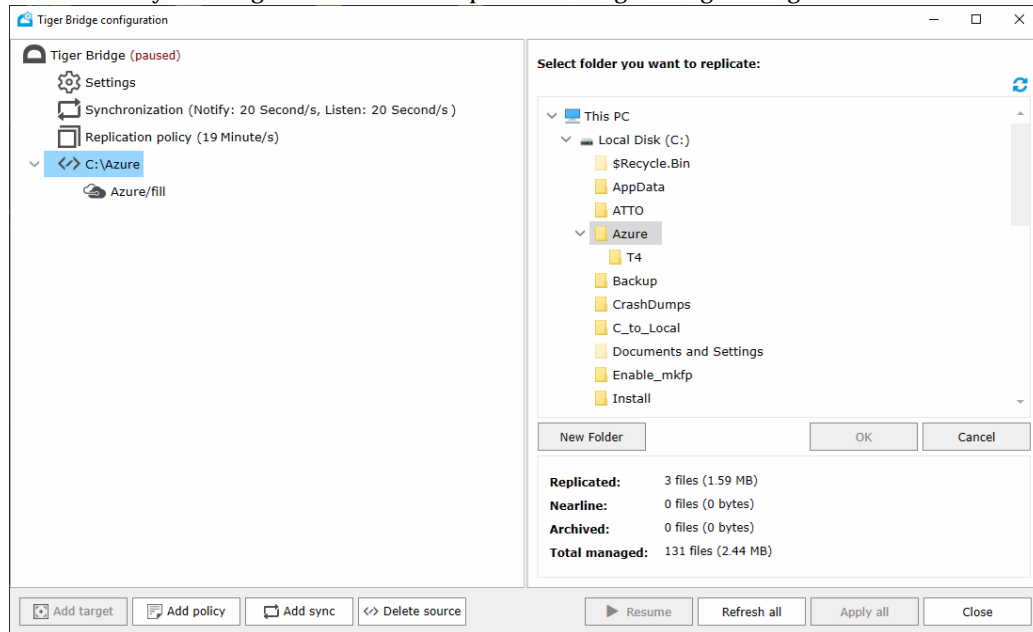
2. Do one of the following:

- To resume all automatic Tiger Bridge operations, click Resume in the taskbar.
- To pause all automatic Tiger Bridge operations, click Pause in the taskbar.

## Monitor Data Management Statistics

**Note:** To see how to monitor data management statistics, using the command-line interface, refer to "Monitor Data Management Statistics" on page 64.

You can view per-source statistics about the number of files managed by Tiger Bridge and their overall size, by selecting a source in the left pane of the Tiger Bridge Configuration.



The statistics field gives you the following information about data on the selected source:

**Replicated** — the number and overall size of files, which have copies both on the source and the target.

**Nearline** — the number and overall size of files, which have copies only on the nearline tier of the target i.e. nearline stub files.

**Archived** — the number and overall size of files, which have copies on the archival tier of the target i.e. replicated files, which have copies on both the source and the archival tier as well as offline stub files.

**Total managed** — the number and overall size of files Tiger Bridge has already managed as well as of files potentially manageable by Tiger Bridge, with the exception of files in excluded locations. You can use information in this field to calculate what part of the total storage capacity associated with your Tiger Bridge license is used on the selected source.

**Note:** *As long as the Tiger Bridge shell extension is installed, you can keep track of individual files' and folders' status in Windows Explorer. For more information, see "Manage Data Through the Shell Extension" on page 80.*

## Configure Tiger Bridge Using the Configuration

# 4

## Configure Tiger Bridge Using Command-line Interface

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## Add Source

Using the command-line interface of Tiger Bridge you can pair other sources (a folder on a locally mounted NTFS volume or the whole volume itself) with a bucket/container on the target.

### To pair a source with a bucket on the target:

1. Run command prompt as an administrator.
2. In command prompt, execute the following:  
`tiercli config <path to source> container <bucket/container name>`  
where:
  - <path to source> is the full path to the local volume or a folder on it;
  - <bucket/container name> is the name of an existing bucket/container on the target or the bucket/container you would like Tiger Bridge to automatically create on the target;For example, to pair volume mounted as drive letter F:\ with a bucket on your target named “backup”, execute the following:  
`tiercli config F: container backup`
3. To reload the updated configuration and allow Tiger Bridge to use it without a restart, execute the following:  
`tiercli config reload`

## Refine the List of Automatically Managed Locations

**Note:** For more information about specifying included and excluded locations on your source(s), refer to “Refine the List of Automatically Managed Locations” on page 32.

When refining the list of automatically managed locations through the command-line interface, you should keep in mind that the list is valid for all sources and as long as at least one included/excluded location is already specified, all other locations not included in the list are not automatically managed, except if they are locations on sources paired with a target through the Tiger Bridge Configuration.

**Important:** Each time you want to update the list of included/excluded locations, you should specify the full list anew.

### To specify a list of included and excluded locations:

1. To configure the list of included locations on all sources, from which data should be automatically managed, execute the following:



```
ti ercli config include <path to source> <path to a subfolder on the
source> ...
```

**Important:** *You must add all included locations using one command. For the purpose separate each added location with a space. Issuing the command anew will overwrite the previous setting.*

For example, to add to the list of included locations the root of source volume F: and the folder “Data” in the root of source volume G:, execute the following:

```
ti ercli config include F: G: \Data
```

**Tip:** *To clear the included locations list and start configuring it anew, execute the following:*

```
ti ercli config include ""
```

2. To configure the list of excluded locations on all sources, from which data should not be automatically managed, execute the following:

```
ti ercli config exclude <path to source> <path to a subfolder on the
source> ...
```

**Important:** *You must add all excluded locations using one command. For the purpose separate each added location with a space. Issuing the command anew will overwrite the previous setting.*

For example, to add as excluded locations the root of source volume H: and the folder “Drafts”, which is subfolder of the folder “Data” in the root of source volume G:, execute the following:

```
ti ercli config exclude H: G: \Data \Drafts
```

**Tip:** *To clear the excluded locations list and start configuring it anew, execute the following:*

```
ti ercli config exclude ""
```

3. Check if all settings are correctly configured, by executing the following:

```
ti ercli config show
```
4. To reload the updated configuration and allow Tiger Bridge to use it without a restart, execute the following:

```
ti ercli config reload
```

## Specify Data Format on the Cloud

**Note:** *This parameter is valid only for object storage targets, which support using a cloud browser displaying the actual name and the full path of a file instead of its object ID.*

### To set cloud data format through the command-line interface:

1. In command prompt, do one of the following:
  - execute the following, to display files with their name and full path in the cloud browser:

```
ti ercli config global cloudfmt path
```

Configure Tiger Bridge Using Command-line Interface

- execute the following, to display files with their object IDs in the cloud browser:

```
tiercli config global cloudfmt id
```

2. Click Apply and restart the computer running Tiger Bridge.

## Automatic Data Replication

To learn more about Tiger Bridge's automatic data replication mechanism, refer to "Configure Automatic Data Replication" on page 31.

### To configure automatic data replication:

1. To configure global replication policy, execute the following:

```
tiercli config policy replicate <period>
```

Where <period> can be the desired period in seconds (s), minutes (m), hours (h), days (d), weeks (w).

For example, to specify that Tiger Bridge should replicate data only after it has not been modified for 36 hours, execute the following:

```
tiercli config policy replicate 36h
```

2. (optional) To overwrite the global replication policy for a specific source, execute the following:

```
tiercli config <path to source> policy replicate <period>
```

For example, to specify that data from source volume mounted as drive letter E: should be replicated only after it has not been modified for one day, execute the following:

```
tiercli config E policy replicate 1d
```

3. Check if all settings are correctly configured, by executing the following:

```
tiercli config show
```

4. To reload the updated configuration and allow Tiger Bridge to use it without a restart, execute the following:

```
tiercli config reload
```

## Space Reclaiming

To learn more about Tiger Bridge's automatic space reclaiming mechanism, refer to "Configure Space Reclaiming" on page 36.

**To configure automatic space reclaiming:**

1. To enable space reclaiming, execute the following:

```
ti ercli config policy reclaimspace turn on
```

**Note:** *To disable space reclaiming for all source volumes, execute the following:*

```
ti ercli config policy reclaimspace turn off
```

2. To configure for how long a replicated should not have been accessed in order to be replaced by a nearline file, execute the following:

```
ti ercli config policy reclaimspace age <period>
```

Where <period> can be the desired period in seconds (s), minutes (m), hours (h), days (d), weeks (w).

For example, to specify that Tiger Bridge should replace files with nearline files only after they have not been accessed for 36 hours, execute the following:

```
ti ercli config policy reclaimspace age 36h
```

3. To configure what is the minimal size of a file for it to be replaced by a nearline file, execute the following:

```
ti ercli config policy reclaimspace size <size>
```

Where <size> is the size in bytes (b), KB (k), MB (m), GB (g), TB (t).

For example, to specify that Tiger Bridge should replace files with nearline files only if they are bigger than 1GB, execute the following:

```
ti ercli config policy reclaimspace size 1g
```

4. To configure what used space on the source volumes should be reached for Tiger Bridge to trigger space reclaiming, execute the following:

```
ti ercli config policy reclaimspace minused <percent>
```

Where <percent> is just the percent value without the % sign.

For example, to specify that Tiger Bridge should begin replacing files with nearline counterparts once used space on the source volumes reaches 65%, execute the following:

```
ti ercli config policy reclaimspace minused 65
```

5. To configure what used space on the source volumes should be reached for Tiger Bridge to trigger space reclaiming of all replicated files regardless of their size and last access time, execute the following:

```
ti ercli config policy reclaimspace maxused <percent>
```

Where <percent> is just the percent value without the % sign.

For example, to specify that Tiger Bridge should begin replacing all files with nearline counterparts once used space on the source volumes reaches 85%, execute the following:

```
ti ercli config policy reclaimspace maxused 85
```

## Configure Tiger Bridge Using Command-line Interface

6. To limit the processes, which trigger the retrieval of a nearline file from the target, execute one of the following:

- to specify the processes allowed to trigger the retrieving of nearline files, execute the following:  
`ti ercli config global whi teproc <process> . . . <process>`

Where <process> is the full name of the process with its extension.

**Note:** *To specify more than one process, list all processes separating them with a space.*

For example, to specify that only Microsoft Paint and AutoCAD can trigger the retrieving of a nearline file that they are attempting to open/read, execute this:

```
ti ercli config global whi teproc mspai nt.exe acad.exe
```

- to specify the processes, which cannot trigger the retrieving of nearline files, execute the following:

```
ti ercli config global bl ackproc <process> . . . <process>
```

Where <process> is the full name of the process with its extension.

**Note:** *To specify more than one process, list all processes separating them with a space.*

For example, to specify that only Windows Explorer and Eset NOD32 antivirus cannot trigger the retrieving of a nearline file that they are attempting to open/read, execute this:

```
ti ercli config global bl ackproc expl orer.exe nod32.exe
```

7. Check if all settings are correctly configured, by executing the following:

```
ti ercli config show
```

8. To reload the updated configuration and allow Tiger Bridge to use it without a restart, execute the following:

```
ti ercli config reload
```

### **To overwrite the space reclaiming policy for a specific source:**

Simply execute the command for a given parameter, including the drive letter of the source, for which you want to overwrite it.

For example, to specify that files on source volume mounted as drive letter E: must be replaced by nearline files when their size is equal to or bigger than 350MB, execute the following:

```
ti ercli config E pol icy recl ai mspace si ze 350m
```

**Note:** *You cannot overwrite the parameter specifying which processes can trigger the retrieving of a nearline file from the target for a specific volume.*

## Automatic Archiving

**Note:** *Currently, Tiger Bridge lets you configure data archiving in the command-line interface only on Microsoft Azure and Amazon S3 Glacier targets.*

To learn more about Tiger Bridge's automatic data archiving mechanism, refer to "Configure Automatic Archiving" on page 41.

### To configure Tiger Bridge archiving policy in the command-line interface:

1. To enable archiving of data on the source, execute the following:

```
tiercli config <path to source> policy archive turn on
```

**Note:** To disable archiving for the source, execute the following:

```
tiercli config <path to source> policy archive turn off
```

2. To configure for how long a replicated file should not have been accessed in order to be replaced by an offline file, execute the following:

```
tiercli config <path to source> policy archive age <period>
```

Where <period> can be the desired period in seconds (s), minutes (m), hours (h), days (d), weeks (w).

For example, to specify that on source volume mounted as drive letter D Tiger Bridge should replace replicated files with offline counterparts only after they have not been accessed for 36 hours, execute the following:

```
tiercli config D policy archive age 36h
```

3. To configure what is the minimal size of a file for it to be replaced by an offline file, execute the following:

```
tiercli config <path to source> policy archive size <size>
```

Where <size> is the size in bytes (b), KB (k), MB (m), GB (g), TB (t).

For example, to specify that on source volume mounted as drive letter D Tiger Bridge should replace replicated files with offline counterparts only if they are bigger than 1GB, execute the following:

```
tiercli config D policy archive size 1g
```

4. Check if all settings are correctly configured, by executing the following:

```
tiercli config show
```

5. To reload the updated configuration and allow Tiger Bridge to use it without a restart, execute the following:

```
tiercli config reload
```

## Active Sync

To learn more about Tiger Bridge's active sync mechanism, refer to "Configure Active Sync" on page 46.

**To configure global active sync policy:**

1. To configure at what interval sources should send notifications about changes to their contents, execute the following:

```
tiercli config sync notify <period>
```

Where <period> can be the desired period in seconds (s), minutes (m), hours (h), days (d), weeks (w).

For example, to specify that each source should send out notification to other sources every hour, execute the following:

```
tiercli config sync notify 1h
```

2. To configure at what interval sources should receive notifications from other sources about changes in their contents, execute the following:

```
tiercli config sync listen <period>
```

Where <period> can be the desired period in seconds (s), minutes (m), hours (h), days (d), weeks (w).

For example, to specify that each source should check for notifications from other sources every 50 minutes, execute the following:

```
tiercli config sync listen 50m
```

3. To configure whether Tiger Bridge should begin retrieving new nearline files immediately after it finishes the synchronization, do one of the following:

- To set Tiger Bridge to automatically retrieve a newly created nearline file on the source, execute the following:

```
tiercli config sync autorestore on
```

- To disable automatic retrieval of newly created nearline files once sources' contents are synchronized, execute the following:

```
tiercli config sync autorestore off
```

**Note:** To disable the global active sync policy, execute the following:

```
tiercli config sync mode off
```

**To overwrite the global active sync policy for a source:**

1. To configure at what interval the source should send notifications about changes to its contents, execute the following:

```
tiercli config <path to source> sync notify <period>
```

Where <period> is the desired period in seconds (s), minutes (m), hours (h), days (d), weeks (w).

For example, to specify that source volume mounted as drive letter E: should send out notification to other sources every hour, execute the following:

```
tiercli config E: sync notify 1h
```

2. To configure at what interval the source should receive notifications from other sources about changes to their contents, execute the following:

```
tiercli config <path to source> sync listen <period>
```

Where <period> can be the desired period in seconds (s), minutes (m), hours (h), days (d), weeks (w).

For example, to specify that source volume mounted as drive letter E: should check for notifications from other sources every 50 minutes, execute the following:

```
tiercli config E: sync listen 50m
```

3. To configure whether Tiger Bridge should begin retrieving new nearline files immediately after it finishes the synchronization, do one of the following:

- To set Tiger Bridge to automatically retrieve a newly created nearline file on the source, execute the following:

```
tiercli config sync autorestore on
```

- To disable automatic retrieval of newly created nearline files once sources' contents are synchronized, execute the following:

```
tiercli config sync autorestore off
```

**Note:** To disable the active sync policy for this source and use the global policy instead, execute the following:

```
tiercli config <drive letter or mount point of the source volume> sync mode off
```

## Operation Mode Parameters

To learn more about the operation mode in which Tiger Bridge can operate, refer to “Configure Operation Mode” on page 50.

### To specify the retrieve mode settings:

Do one of the following:

- To let Tiger Bridge keep the replica on the target, when the file is successfully retrieved on the source volume, execute the following:

```
tiercli config global resmode copy
```

- To let Tiger Bridge remove the replica from the target, when the file is successfully retrieved on the source volume, execute the following:

```
tiercli config global resmode move
```

### To specify the delete mode settings:

Do one of the following:

### Configure Tiger Bridge Using Command-line Interface

- To let Tiger Bridge remove the replica from the target, upon deleting the file from the source volume, execute the following:

```
ti ercli config global del mode on
```

- To let Tiger Bridge keep the replica on the target, upon deleting the file from the source volume, execute the following:

```
ti ercli config global del mode off
```

## Monitor Data Management Statistics

**Note:** To see how to monitor data management statistics, using the Tiger Bridge Configuration, refer to “Monitor Data Management Statistics” on page 52.

Using the command-line interface of Tiger Bridge you can view the following statistics about the number and overall size of files Tiger Bridge manages:

**Not processed** — data with unknown status at the moment of the statistics report.

**Excluded** — the number and overall size of files, which are omitted by automatic Tiger Bridge operations.

**Failed** — the number and overall size of files, which Tiger Bridge has failed to automatically manage.

**Pending** — the number and overall size of files, queued for automatic Tiger Bridge management.

**Replicated** — the number and overall size of files, which have copies both on the source and the target.

**Nearline** — the number and overall size of files, which have copies only on the nearline tier of the target i.e. nearline stub files.

**Archived** — the number and overall size of files, which have copies on the archival tier of the target i.e. replicated files, which have copies on both the source and the archival tier as well as offline stub files.

**Total managed** — the number and overall size of files Tiger Bridge has already managed as well as of files potentially manageable by Tiger Bridge, with the exception of files in excluded locations. You can use information in this field to calculate what part of the total storage capacity associated with your Tiger Bridge license is used on the selected source.



**To view data management statistics per source:**

In command prompt, execute the following:

```
ti ercli op info <full path to source>
```

**Note:** *To view data management statistics about a specific file or folder, execute the command providing the full path to that file/folder. For example, to view data management statistics about folder "Projects" on volume F, added as a source location, execute the following:*

```
ti ercli op info f:\projects
```

## Disable Tiger Bridge

You can disable Tiger Bridge at any time without uninstalling it. Keep in mind that once you disable Tiger Bridge, you will not be able to retrieve any nearline or offline files from the target either on demand or manually. To enable Tiger Bridge again, you will have to configure all parameters anew.

**To disable Tiger Bridge:**

In command prompt, execute the following:

```
ti ercli config disable
```

## Configure Tiger Bridge Using Command-line Interface

# 5

## Manage Advanced Settings

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## Manage Advanced Settings

To let you fine-tune your workflow with Tiger Bridge, you can change the following advanced settings:

- specify proxy server to be used by Tiger Bridge for access to Amazon S3 and Microsoft Azure targets (see “Specify Proxy Server Settings” on page 68).
- specify the minimum size of a file for it to be replicated (see “Minimum File Size for Replication” on page 69).
- specify whether a file should be retrieved from the target each time a user or application attempts to open it (default behaviour) or only when you manually retrieve it through Tiger Bridge (see “Retrieving Nearline Files Behaviour” on page 69).
- specify whether to turn on/off write-through retrieving of files (see “Enable/Disable Write-through on File Retrieve” on page 70).
- specify timeout after which a file retrieve operation should be considered unsuccessful (see “Set File Retrieve Timeout” on page 71).
- specify whether Tiger Bridge should show the actual size of a nearline/offline file or the size of the replicated file it replaces (see “Set Stub File Allocation Size Display Option” on page 72).
- specify nearline file head and tail size (see “Set Nearline File Head and Tail Sizes” on page 72).
- specify for how long Tiger Bridge should wait on startup for the file system scan before beginning to perform data replication and space reclaiming (see “Set Startup Scan Wait Time” on page 73).
- specify the number of parallel threads run by Tiger Bridge when replicating files to the target (see “Set Number of Parallel Threads during Data Replication” on page 74).
- manage Tiger Bridge logs (see “Manage Tiger Bridge Logs” on page 74).

## Specify Proxy Server Settings

You can let Tiger Bridge access Amazon S3 and Microsoft Azure targets using a proxy server, already set up on your network.

### To specify proxy server settings:

1. In command prompt, execute the following:

```
tiercli config global proxy <server:port> <username> <password>
```

where:

<server:port> is the proxy server IP address and the port through which it will access the targets;

<username> is the user name with which for authentication on the proxy server;

<password> is the password used for authentication on the proxy server;

**Note:** If your proxy server does not require authentication, enter empty values in quotation marks for the user name and password. For example, if your proxy server has IP address 10.200.9.16 and communication with the targets will go through port 3128, execute the following:

```
ti ercli confi g gl obal proxy 10.200.9.16:3128 "" ""
```

- Restart the computer running Tiger Bridge.

## Minimum File Size for Replication

By default, the only criteria for queuing a file for replication is for how long this file have not been modified. You can also set Tiger Bridge to queue for replication only files whose size is above a given threshold, thus ignoring small files like log files, for example.

**Note:** The minimum file size for replication setting is valid only for files scheduled for automatic replication. Should you manually replicate a file with size below this minimum, this file will be replicated.

### To specify minimum file size for it to be replicated:

- Start the Registry Editor.

**Tip:** To start Registry Editor, on the Start menu click Run and in the dialog type regedit.

- Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
- Right-click the repli cati on\_mi n\_fi l esi ze value and select Modify.
- Do one of the following:
  - to set Tiger Bridge to replicate any file regardless of its size, change the value to 0 and click OK.
  - to set Tiger Bridge to schedule for automatic replication only files with size above the one you specify, enter the minimum file size in bytes and click OK.

For example, to set Tiger Bridge to replicate only files whose size is above 100MB, enter 104857600 and click OK.

- Restart the computer running Tiger Bridge.

## Retrieving Nearline Files Behaviour

By default, Tiger Bridge is set up to automatically retrieve a nearline file from the target each time a user or application accesses it. You can change this default behaviour and specify that nearline files should be retrieved from the target only when a manual retrieve operation is executed through the command-line interface or the shell extension of Tiger Bridge.

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### **To specify file retrieve behaviour:**

1. Start the Registry Editor.

**Tip:** *To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*

2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click the `active_restore` string value and select Modify.
4. Do one of the following:
  - to set Tiger Bridge to automatically retrieve a nearline file, when a user or application accesses it, change the value to 1 and click OK.
  - to set Tiger Bridge to retrieve a nearline file, only if manual retrieve operation is executed from the command-line interface or the shell extension, change the value to 0 and click OK.
5. Restart the computer running Tiger Bridge.

## **Enable/Disable Write-through on File Retrieve**

By default, when a file is being retrieved, write-through is disabled. To specify that write operations should not go through any intermediate cache, but go directly to the disk of the source volume, you should enable write-through.

**Important:** *It is advisable to enable write-through on file retrieve, only when your source volume is accessible in SAN environment.*

### **To enable/disable write-through on file retrieve:**

1. Start the Registry Editor.

**Tip:** *To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*

2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click the `write_through_restore` value and select Modify.
4. Do one of the following:
  - to let Tiger Bridge buffer data when retrieving a file, change the value to 0 and click OK.
  - to let Tiger Bridge retrieve data unbuffered to the source volume, change the value to 1 and click OK.
5. Restart the computer running Tiger Bridge.

# Set File Retrieve Timeout

**Note:** *When the target cannot be reached or there is another problem, the timeout is not taken into consideration and Tiger Bridge displays an error.*

When a user or application opens a nearline file on the source, Tiger Bridge attempts to retrieve it from the target before a specified timeout elapses. If the whole file has not been fully retrieved for the timeout duration, Tiger Bridge displays an unsuccessful operation error. By default, the timeout is calculated as the sum of a fixed timeout value of 30 seconds and additional 1000 milliseconds for each 1MB of the actual file size, which has to be retrieved. For example, the timeout for retrieving a 10GB file from the target is approximately 10270 seconds or 171 minutes (30 seconds fixed timeout and the additional 1000 milliseconds for each of the 10240MB comprising the actual file).

You can change both the value of the fixed timeout and the additional timeout in milliseconds for each 1MB of the file size, thus adjusting it to the response time of your target and the connection to it.

## **To set the fixed timeout value for successfully retrieving a file:**

1. Start the Registry Editor.

**Tip:** *To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*

2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click the `active_restore_timeout` value and select Modify.
4. Enter the fixed timeout value in seconds and click OK.  
For example, to set the fixed timeout value to 2 minutes, enter 120 and click OK.
5. Restart the computer running Tiger Bridge.

## **To set the additional timeout for each 1MB of the file being retrieved:**

1. Start the Registry Editor.

**Tip:** *To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*

2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click the `active_restore_activity_timeout` value and select Modify.
4. Enter the additional timeout value in milliseconds per 1MB of the total file size and click OK.  
For example, to set the additional timeout to 2 minutes per each 1MB of the file, enter 120000 and click OK.
5. Restart the computer running Tiger Bridge.

## Set Stub File Allocation Size Display Option

By default, when you request to view the actual size of a nearline or an offline file on the source volume, Tiger Bridge displays the actual size of the original file it has replaced. You can set Tiger Bridge to display the actual size of the nearline/offline file instead, keeping in mind that using this option may disturb the workflow of some applications.

### To set stub file allocation size display option:

1. Start the Registry Editor.

**Tip:** To start Registry Editor, on the Start menu click Run and in the dialog type `regedit`.

2. Navigate to:

HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings

3. Right-click the `stub_show_actual_size` value and select Modify.

4. Do one of the following:

- to set Tiger Bridge to display the allocation size of the original file instead of the actual size of the stub file, change the value to 0 and click OK.
- to set Tiger Bridge to display the actual size of the stub file, change the value to 1 and click OK.

5. Restart the computer running Tiger Bridge.

## Set Nearline File Head and Tail Sizes

By default, nearline files keep none of the original file's data or metadata and take no space on the source volume. Because of this, it is possible a nearline file to be retrieved from the target simply because Windows Explorer, for example, attempts to read the supplemental data placed in the header of the nearline file (with some file types this information may also be stored in the end of a file). To prevent needless retrieving of nearline files, you can set Tiger Bridge to keep the beginning and/or the end of nearline files, specifying the size of respectively the head and the tail of the file. Thus, if the specified size is enough to hold the information from the header of a file, upon requesting to read it, Windows Explorer will not trigger the retrieving the original file from the target. With most file types a head/tail size of 64KB would be sufficient to include the information from the file header. Keep in mind that by specifying head and/or tail size, you automatically increase the size of each nearline file on your source volume with the sum of the head/tail sizes.

### To set nearline file head size:

1. Start the Registry Editor.

**Tip:** To start Registry Editor, on the Start menu click Run and in the dialog type `regedit`.



2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click the stub\_sparse\_head\_size value and select Modify.
4. Enter the file head size in KB and click OK.
5. Restart the computer running Tiger Bridge.

**To set nearline file tail size:**

1. Start the Registry Editor.  
*Tip: To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*
2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click the stub\_sparse\_tail\_size value and select Modify.
4. Enter the file tail size in KB and click OK.
5. Restart the computer running Tiger Bridge.

## Set Startup Scan Wait Time

On startup Tiger Bridge scans the file systems of the source volumes it manages to determine what data on them needs to be processed. By default, Tiger Bridge is set to wait until this scan finishes, before beginning with data lifecycle management operations, thus ensuring maximum precision of the scheduled file operations. On source volumes with much data this scan may take significant time and you can set up Tiger Bridge to reduce this wait time before the scan finishes.

**To set Tiger Bridge startup scan wait time:**

1. Start the Registry Editor.  
*Tip: To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*
2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click in the right pane and select New | String Value.
4. Rename the new REG\_SZ value to:  
step\_ready\_wait\_time
5. Right-click the step\_ready\_wait\_time value and select Modify.
6. Do one of the following:

### Manage Advanced Settings

- to set Tiger Bridge to wait until the startup scan finishes completely, change the value to 0 and click OK.
  - enter the time in seconds, for which Tiger Bridge should wait before beginning to process data and click OK.
7. Restart the computer running Tiger Bridge.

## Set Number of Parallel Threads during Data Replication

By default, when Tiger Bridge replicates files to the target, it runs just one thread. You can increase the number of threads for remote targets, like IBM cloud object storage for example.

### To set the number of parallel threads during data replication:

1. Start the Registry Editor.  
*Tip: To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*
2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click the `work_threads_count` value and select Modify.
4. Enter the number of threads that Tiger Bridge should use when replicating data to the target and click OK.
5. Restart the computer running Tiger Bridge.

## Manage Tiger Bridge Logs

Tiger Bridge can log most events related to its operations, using a standard Windows output console like DebugView, for example. You can set Tiger Bridge to output its logs as files in the Windows Event Viewer. You can find a detailed description of the logs generated by Tiger Bridge in “Appendix: Tiger Bridge Logs” on page 87.

**Important:** *It is advisable to keep track of the amount of log files generated by Tiger Bridge, in order to avoid running out of disk space.*

Tiger Bridge logs all target/source connectivity events, additionally you can set it to create logs for the following events:

- a file is replicated
- a file is replaced with a nearline/offline file

- a nearline file is retrieved from the target
- the status of a directory is changed (replicated, nearline, offline)

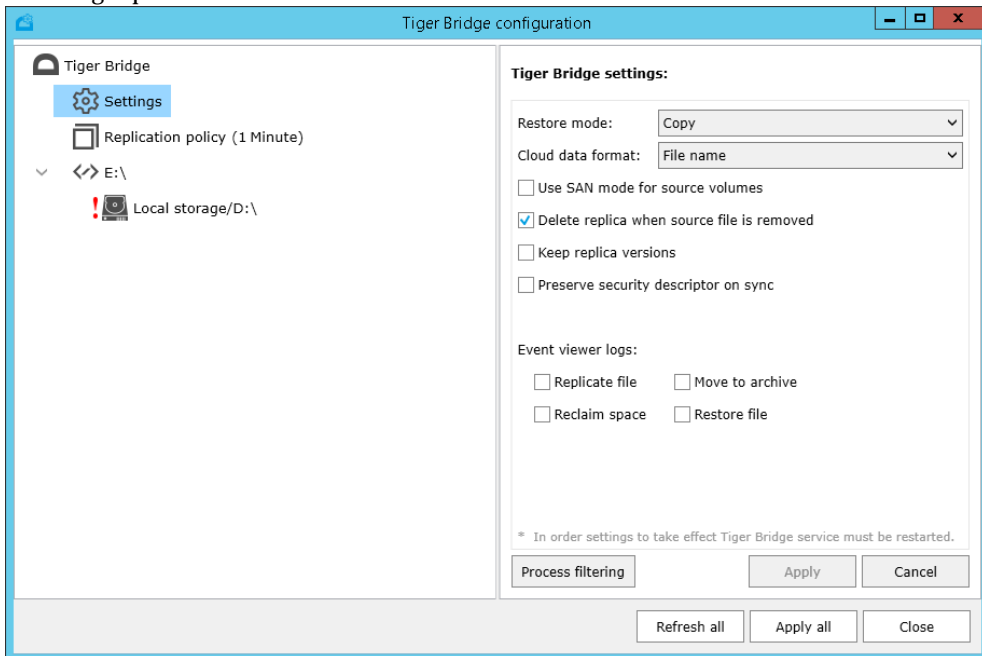
## Manage Tiger Bridge Logs in the Configuration

The Tiger Bridge Configuration lets you specify which of the following events should be output as logs in Windows Event Viewer:

- a file is replicated
- a file is replaced with a nearline/offline file
- a nearline file is retrieved from the target

### To configure Tiger Bridge logs in the Configuration:

1. In the left pane of the Tiger Bridge Configuration, click Settings and then do one of the following in the right pane:



- Select the check box of an operation, to let Tiger Bridge output logs for it in Windows Event Viewer.
- Clear the check box of an operation, to prevent Tiger Bridge from outputting logs for it in Windows Event Viewer.

2. Click Apply.

## Manage Tiger Bridge Logs in the Registry

### **To enable/disable Tiger Bridge logging on each file replicate operation:**

1. Start the Registry Editor.

**Tip:** *To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*

2. Navigate to:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Tiger Technology\tiger-bridge\tiersvc\settings
3. Right-click the log\_replicate value and select Modify.
4. Do one of the following:
  - To enable Tiger Bridge logging, change the value to 1 and click OK.
  - To disable Tiger Bridge logging, change the value to 0 and click OK.
5. Restart the computer running Tiger Bridge.

### **To enable/disable Tiger Bridge logging on replace with a nearline/offline file operation:**

1. Start the Registry Editor.

**Tip:** *To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*

2. Right-click the log\_replace value and select Modify.
3. Do one of the following:
  - To enable Tiger Bridge logging, change the value to 1 and click OK.
  - To disable Tiger Bridge logging, change the value to 0 and click OK.
4. Restart the computer running Tiger Bridge.

### **To enable/disable Tiger Bridge logging on file retrieve operation:**

1. Start the Registry Editor.

**Tip:** *To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*

2. Right-click the log\_restore value and select Modify.
3. Do one of the following:
  - To enable Tiger Bridge logging, change the value to 1 and click OK.
  - To disable Tiger Bridge logging, change the value to 0 and click OK.
4. Restart the computer running Tiger Bridge.

**To enable/disable Tiger Bridge logging on directory status change:**

1. Start the Registry Editor.

**Tip:** *To start Registry Editor, on the Start menu click Run and in the dialog type regedit.*

2. Right-click the `log_dir_status` value and select Modify.
3. Do one of the following:
  - To enable Tiger Bridge logging, change the value to 1 and click OK.
  - To disable Tiger Bridge logging, change the value to 0 and click OK.
4. Restart the computer running Tiger Bridge.

## Manage Advanced Settings



# **Manually Manage Data**

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### Manually Manage Data

Using the shell extension or the command-line interface you can manually perform data lifecycle management operations on separate files or whole folders.

Initiating a Tiger Bridge operation manually always takes precedence over the automatically scheduled tasks. That means that if you choose to manually replicate files through the shell extension or the command-line interface, for example, the execution of the operation will begin immediately and will pause the automatic replication queue that is being processed at the moment.

## Manage Data Through the Shell Extension

Tiger Bridge is integrated with Windows Explorer and displays files and folders subject to replication, space reclaiming and/or archiving with separate icons.



## File icons:



This is a replicated file, which has a copy on both the source volume and the target.



This is a nearline file, pointing to the actual file, which exists only on the target. A nearline file can be automatically retrieved whenever a user or application attempts to open it on the source.



This is an offline file, pointing to the actual file, which exists only on the archival tier of the target. An offline file can be retrieved only manually, through Tiger Bridge. When you retrieve an offline file, it is first rehydrated to an intermediate tier of the target and only after that is retrieved on the source. Optionally, you can choose to rehydrate an offline file i.e. make it nearline, which allows its automatic retrieval when a user or application attempts to open it on the source.



Tiger Bridge is currently performing a data lifecycle management operation on the file. Wait until the operation finishes for the file icon to change.

## Folder icons:



All files in the folder are replicated. Some of the replicated files may be replaced with nearline or offline counterparts.

## Manually Manage Data



The folder contains only nearline files.

**Note:** When the retrieve mode of Tiger Bridge is set to move (see “Configure Operation Mode” on page 50), this folder icon designates that the folder contains at least one nearline file.



The folder contains at least one offline file.



Tiger Bridge is currently performing data lifecycle management operations on data in the folder. Wait until the operation finishes for the folder icon to change.



Tiger Bridge is currently scanning the contents of the folder and is unable to display its status.

### To perform data lifecycle management operations through the Tiger Bridge shell extension:

**Note:** The respective commands are available only to files/folders to which they apply i.e. you cannot issue the “Reclaim space” command for a nearline file, for example.

1. In Windows Explorer, right-click the file/folder you want to manage.
2. In the context menu do one of the following:
  - Select “Tiger Bridge | Replicate” to replicate the selected file or all files in the selected folder on the target.
  - Select “Tiger Bridge | Reclaim space” to replace the selected replicated file or all replicated files in the selected folder with nearline file(s), pointing to the actual replicas on the target.
  - Select “Tiger Bridge | Move to archive” to move the selected replicated file or all replicated files in the selected folder from the hot/cool tier to the archive tier on the target and on the source replace with offline file(s), pointing to the actual replicas on the target.

**Note:** *On targets, which do not support third-party policies for moving files between the hot/cool and the archive tiers, this command only performs a check for files moved to the archive tier and if such files are found, updates their status to "offline" on the source.*

- Select "Tiger Bridge | Rehydrate from archive" to change the status of an offline file to nearline i.e. to move a file from the archive tier of the target to the hot/cool tier.

**Note:** *This command is not available on targets, which do not support third-party policies for moving files between the hot/cool and the archive tiers.*

- Select "Tiger Bridge | Retrieve data" to retrieve from the target the selected nearline/offline file or all nearline/offline files in the selected folder.

**Note:** *Retrieving a file from the target is possible only if there's enough free space on the volume.*

## Manage Data Through the Command-line Interface

You can perform the following manual data lifecycle management operations through the Tiger Bridge command-line interface:

<b>action:</b>	<b>command:</b>
show file/folder lifecycle status	<code>tiercli op info &lt;path to file/folder on source volume&gt;</code>
replicate a file/folder to the target	<code>tiercli op replicate &lt;path to file/folder on source volume&gt;</code>
replace a replicated file with a nearline file. When you perform this command for a whole folder, all files in it are replicated and replaced by nearline files.	<code>tiercli op offline &lt;path to file/folder on source volume&gt;</code>
retrieve a nearline/offline file from the target. When you perform this command for a whole folder, all nearline/offline files in it are retrieved from the target.	<code>tiercli op restore &lt;path to file/folder on source volume&gt;</code> <b>Note:</b> <i>To preserve the last access time of the retrieved file(s), execute the command adding -p before the path to the file/folder:</i> <code>tiercli op restore -p &lt;path to file/folder on source volume&gt;</code>
delete a file or folder from the source volume.	<code>tiercli op delete &lt;path to file/folder on source volume&gt;</code>
rehydrate an offline file, changing its status to nearline.	<code>tiercli op move_hot &lt;path to file/folder on source volume&gt;</code>
replace a replicated file on the source volume with an offline file.	<code>tiercli op move_archive &lt;path to file/folder on source volume&gt;</code>
display the status of the currently performed data lifecycle operation	<code>tiercli op status &lt;path to file/folder on source volume&gt;</code>
abort the currently performed data lifecycle operation	<code>tiercli op abort &lt;path to file/folder on source volume&gt;</code>
display a list of all queued data lifecycle operations.	<code>tiercli op list &lt;path to file/folder on source volume&gt;</code>
check if the replica of a nearline/offline file is available on the target.	<code>tiercli op avail &lt;path to file/folder on source volume&gt;</code>
show the content of a selected replicated folder on the target	<code>tiercli op target_enum &lt;path to folder on source volume&gt;</code>
pause a manually initiated data lifecycle operation	<code>tiercli op pause &lt;path to file/folder on source volume&gt;</code>

To execute any of the above operations you should specify the full path to the file/folder on the source volume. For example, to manually replicate file “Schedule” in the folder “Schedules” on source volume F, execute the following:

```
ti ercli op repli cate F: \Schedul es\Schedul e
```

## Synchronize Data on the Source and the Target

As means of disaster recovery, Tiger Bridge offers you the possibility to synchronize the contents of the source with the target. Thus, in case a replicated file has no nearline or offline counterpart on the source volume, Tiger Bridge automatically creates it after synchronizing the contents with the target. You can synchronize the contents of the current directory on the source or execute the command recursively, also synchronizing all data in all subfolders.

### To synchronize content on the source and target volumes:

1. In command prompt, do one of the following:

- To synchronize just the contents of a folder on a source with the target, execute the following:  
`tiercli op sync <path to folder on the source>`

For example, to synchronize the content of the folder “Projects” in the root of the source volume mounted as drive letter F:, execute the following:

```
tiercli op sync F:\Projects
```

- To synchronize the contents recursively - the specified folder on a source and all its subfolders, execute the following:

```
tiercli op sync -r <path to folder on the source>
```

For example, to synchronize the content of the folder “Projects” in the root of the source volume mounted as drive letter F: and all data in its subfolders, execute the following:

```
tiercli op sync -r F:\Projects
```

2. To check the progress of the synchronization operation, execute the following:

```
tiercli op status
```

## Manually Manage Data

# Appendix: Tiger Bridge Logs

Tiger Bridge logs three types of events:

**information** — logs information about successfully performed operation. See “Information Logs” on page 88.

**warning** — logs an unsuccessful attempt to perform an operation. See “Warning Logs” on page 88.

**error** — logs failure to perform an operation. See “Error Logs” on page 90.

**Important:** *Unlike warning messages, which signify a temporary problem, error messages notify you that Tiger Bridge has reached its threshold of scheduled attempts to accomplish the operation. To make Tiger Bridge attempt to accomplish such operations anew, you must restart the computer running Tiger Bridge.*

## Information Logs

<b>Log message</b>	<b>Description</b>
Source <source path> connected to <target type> target.	Tiger Bridge successfully connected the specified source to its target.
Replication target for source <source path> is online now.	Displayed after unsuccessful attempt(s) to connect the specified source to the target, once the target is accessible to Tiger Bridge and it can perform data lifecycle management operations on it.
File <path to file on source> is successfully replicated on the target.	The specified file has been successfully replicated on the target by the automatic or manual data replication mechanism.
Replication of file <path to file on source> has been aborted due to requested write access to it.	The replication of the specified file has been aborted, because a user or application has opened it on the source. If the file has been scheduled for automatic data replication, once it is no longer in use, it will be queued for replication anew.
File <path to file on source> is replaced with a stub file on the source.	The specified replicated file has been successfully replaced by a nearline file on the source by the automatic or manual space reclaiming mechanism.
File <path to file on source> <process name> is successfully retrieved on the source.	The specified nearline file on the source has been successfully retrieved from the target. If the nearline file has been retrieved manually through the shell extension or the command-line interface, the process name is "user operation", if the nearline file has been retrieved by attempting to open it on the source, the message displays the name of the process.
File <path to file on source> is moved to <tier type> storage on the target.	A replicated file has successfully been moved from the hot/cool tier of the target to the archival tier, the automatic or manual data archiving mechanism. The stub file icon on the source changes from nearline to offline.

## Warning Logs

<b>Log message</b>	<b>Description</b>
Source <path to source> failed to connect to <target type> target.	The target of the specified source is currently inaccessible. The reason for the problem may be lost connection or changed credentials for access to the target. Tiger Bridge attempts to connect to the target and in case it fails to do so until a specified timeout expires, it displays an error message.
Replication target for source <path to source> is not accessible.	The specified source has been disconnected from its target, because it is currently inaccessible. The reason for the problem may be lost connection or changed credentials for access to the target. Tiger Bridge attempts to re-connect to the target and in case it fails to do so until a specified timeout expires, it displays an error message.



Log message	Description
Replication of file <path to file on source> failed.	Tiger Bridge's attempt to replicate the specified file to the target has failed. The reason for the failed operation may be temporary inaccessibility of the target, for example. The message is displayed until the operation succeeds or until Tiger Bridge reaches the maximum number of attempts in which case it displays an error message.
Replacing file <path to file on source> with a stub file on the source failed.	Tiger Bridge's attempt to automatically reclaim space on the source by replacing the specified file with a nearline file has failed. The message is displayed until the operation succeeds or until Tiger Bridge reaches the maximum number of attempts in which case it displays an error message.
Moving file <path to file on source> to <tier type> storage on the target failed.	Tiger Bridge's attempt to move the specified replicated/nearline file from the hot/cool tier of the target to the archival tier has failed. The reason for the failed operation may be temporary inaccessibility of the target, for example. The message is displayed until the operation succeeds or until Tiger Bridge reaches the maximum number of attempts in which case it displays an error message.
Adding file <file name> failed.	Tiger Bridge's attempt to synchronize the contents of two sources through a common target by creating a nearline/offline file in the source of one computer upon receiving notification for replicated file from another computer has failed. The reason for the failed operation may be temporary inaccessibility of the target, for example. The message is displayed until the operation succeeds or until Tiger Bridge reaches the maximum number of attempts in which case it displays an error message.
Removing file <file name> failed.	Tiger Bridge's attempt to synchronize the contents of two sources through a common target by removing a nearline/offline file in the source of one computer upon receiving notification for removed file from another computer has failed. The reason for the failed operation may be temporary inaccessibility of the target, for example. The message is displayed until the operation succeeds or until Tiger Bridge reaches the maximum number of attempts in which case it displays an error message.
Renaming file <current file name> to <updated file name> failed.	Tiger Bridge's attempt to synchronize the contents of two sources through a common target by renaming a nearline/offline file in the source of one computer upon receiving notification for file rename on another computer has failed. The reason for the failed operation may be temporary inaccessibility of the target, for example. The message is displayed until the operation succeeds or until Tiger Bridge reaches the maximum number of attempts in which case it displays an error message.

<b>Log message</b>	<b>Description</b>
Failed to parse sync notification <notification ID>.	Tiger Bridge's attempt to parse a notification for updated contents on one computer when synchronizing it with the contents of another computer through a common target (active sync) has failed. The message is displayed until the operation succeeds or until Tiger Bridge reaches the maximum number of attempts in which case it displays an error message.
Failed to process notification <notification ID>.	Tiger Bridge's attempt to process a notification for updated contents on one computer when synchronizing it with the contents of another computer through a common target (active sync) has failed. The message is displayed until the operation succeeds or until Tiger Bridge reaches the maximum number of attempts in which case it displays an error message.

## Error Logs

<b>Log message</b>	<b>Description</b>
Source location is missing. Volume with guid <volume GUID> is not mounted.	Tiger Bridge failed to load a source, because the GUID of the volume, on which it is stored, does not match the GUID of any volume accessible to Tiger Bridge.
Source location<path to source> is missing.	Tiger Bridge managed to load the volume on which the specified source is stored, but failed to load the source itself, because the path to it has changed (a folder is renamed, for example) or missing (the folder added as a source has been deleted).
Source <path to source> cannot be loaded.	Tiger Bridge failed to load a source, because its file system is not supported. For example, a Tiger Store-managed volume added as a source is now mounted as a Tiger Client.
Replication of file <path to file on source> failed.	All attempts to replicate the specified file on the target have failed, because the target is inaccessible, for example. To let Tiger Bridge attempt to replicate the file again, you must restart Tiger Bridge.
Retrieving file <path to file on source> <process name> from the target failed.	All attempts to retrieve the specified file from the target have failed, because the target is inaccessible, for example. To let Tiger Bridge attempt to retrieve the file again, you must restart Tiger Bridge.



Appendix: Tiger Bridge Logs

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