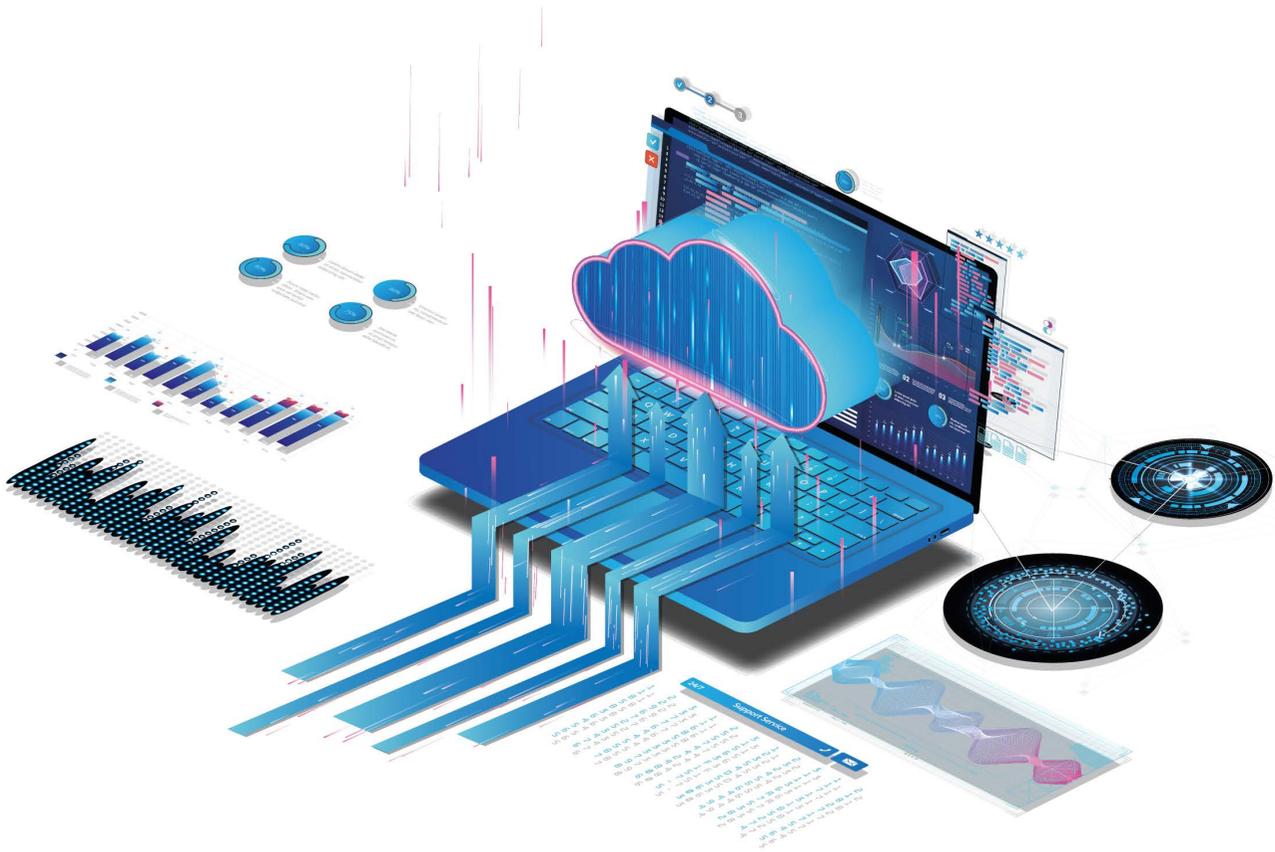


A PRACTITONER'S GUIDE TO
**MIGRATION FROM
TABLEAU SERVER
TO CLOUD**



ACKNOWLEDGEMENTS	2
FOREWORD	3
1. INTRODUCTION	5
1.1 ABOUT THE BOOK	5
1.2 WHEN SHOULD YOU CONSIDER SERVER MIGRATION?	5
1.3 WHY MOVE TO TABLEAU CLOUD?.....	6
2. DIFFERENT SCENARIOS FOR SERVER MIGRATION	8
2.1 MIGRATION WITHIN AN ENTERPRISE	8
2.2 ON PREM TO YOUR CLOUD MIGRATION	8
2.3 ON-PREM TO TABLEAU CLOUD	9
3. ON PREM TO ON PREM/ CLOUD SERVER MIGRATION:.....	12
3.1 STEPS IN SERVER MIGRATION	12
3.2 NATIVE SERVICE TYPES AND DATA CONNECTORS	34
4. ON-PREM TO TABLEAU CLOUD USING CONTENT MIGRATION TOOL	37
4.1 CONTENT MIGRATION TOOL DEPLOYMENT	37
4.2 CONTENT MIGRATION TOOL LIMITATIONS	39
4.3 CONTENT MIGRATION PROCESS.....	40
4.4 MIGRATION ROLLBACK	87
4.5 CONTENT MIGRATION TOOL SETTINGS	92
4.6 TABLEAU CONTENT MIGRATION TOOL LOG FILES.....	94
5. ON-PREM TO TABLEAU CLOUD USING STORM (SERVER TO ONLINE REPORT MIGRATION)	97
5.1 WHY STORM?	97
5.2 PLATFORM.....	97
5.2.1 FRAMEWORK.....	97
5.2.2 SOFTWARE.....	98
5.3 PROCESS	99
5.3.1 PLANNING	99
5.3.2 MIGRATION	100
5.3.3 VALIDATION	100
5.4 POD	100
5.4.1 TEAM	101
5.4.2 ROLES.....	101
5.4.3 RESPONSIBILITIES	101
6. WHAT’S NEW IN TABLEAU SERVER 2022.....	103
6.1 WORKBOOK OPTIMIZER	103
6.2 NEW SEARCH ENGINE	104
6.3 ASK DATA PHRASE BUILDER	105

7. TABLEAU ONLINE IS NOW TABLEAU CLOUD.....	106
8. REFERENCES	108

Acknowledgements

This book references several technologies that are trademarked by Salesforce, Tableau, Microsoft, Adobe, Snowflake. Any reference to such commercial software is owned by respective technology vendors. Authors acknowledge that USEReady is not responsible for trademarked software by the third-party vendors.

STORM referenced in this book is created by USEReady as an enabler in the Tableau Cloud migration process. Downloading this book does not provide access to STORM. Please contact USEReady for any questions about STORM.

Copyrighted content: All the content in this document is copyrighted by respective technology vendors and the partner USEReady. Please contact USEReady prior to using the content or images in this document.

Foreword



Scott Smith,
Product Manager
Tableau Cloud

Scott is responsible for Tableau cloud with a mission to make Analytics be available to everyone. He believes that analytics should be about you and your data, not infrastructure. He is helping Tableau build the next generation data experience with Natural Language and democratized data science in the cloud.

For years Tableau customers have been asking for a trusted and proven migration path to our SaaS offering. I speak daily with customers who are anxious to leave infrastructure planning, management, and maintenance behind in search of a solution that will scale with their organization's analytics needs. After months of collaboration and focused effort, I'm very excited that USEReady has developed a solution to help customers reach these goals. STORM will help you reduce risk, minimize migration timelines, and jumpstart your journey into Tableau Cloud. USEReady's expert team will also guide you on your path to a richer data culture. They can help you identify opportunities to maximize a migration's impact and fully capture the value of a cloud-native Tableau solution. This e-book details their expertise on the migration experience and will be helpful for anyone who is considering modernizing their approach to scaling analytics at their organization

INTRODUCTION

1. Introduction

1.1 About the Book

If you are considering moving your Tableau Server from on the premise infrastructure to cloud, Tableau offers two options. Hosted on your cloud or Hosted on Tableau's cloud. Tableau hosted cloud product is called Tableau Cloud formerly known as Tableau Online. This book aims to address considerations to either option based on your choice. At USEReady, we have developed a framework "Plan-Migrate-Validate" to capture this migration process and created a platform called "STORM (Server To Online Report Migration)".

The book discusses different scenarios for the migration that you can choose as per your needs.

Scenario I – Migration within an enterprise to upgrade hardware or another data center

Scenario II – On-prem to Your Cloud migration

Scenario III – On-prem to Tableau Cloud migration

Each scenario is explained in detail starting from preparation for migration to post migration checklist along with useful code snippets.

1.2 When Should You consider Server Migration?

- a. Take advantage of new technology or better service or ensure that the operating system (OS) and the hardware beneath it stay up to date with current technology.
- b. Move from on-premises infrastructure to cloud for increased flexibility or scalability.
- c. Replace aging infrastructure.
- d. Any change in the organization's policy that is not met by present infrastructure.

1.3 Why move to Tableau cloud?

There are many reasons for a firm to move to Tableau Cloud. Before you decide to move to Tableau Cloud, you need to ask a few fundamental questions about your Cloud Readiness and Security Practices. Tableau has several helpful resources online for you to understand this process further.

Below are two case studies that may help your decision.

#1 Why Splunk migrated to Tableau Cloud –

“Eliminate server admin overhead and drive better dashboard performance”

Read more -

<https://www.tableau.com/solutions/customer/splunk-migrates-tableau-cloud-eliminates-server-admin-overhead>

#2 Why Jaguar Land Rover migrated to Tableau Cloud –

“Accelerate its digital transformation with Tableau”

Read more -

<https://www.tableau.com/solutions/customer/jaguar-land-rover-develops-pioneering-data-culture-accelerate-its-digital>

Whatever may be your firm’s decision, migrating to Tableau Cloud needs a careful consideration of several factors. In the remaining chapters, you will read about various migration scenarios and USEReady’s battle tested framework with an automated approach to migration.

Migration Scenarios

2. Different Scenarios for Server Migration

There are 3 different scenarios of Server Migration discussed in this book:

2.1 Migration within an Enterprise

2.1.1 Purpose

This procedure is used to migrate the tableau server from one hardware on premise to another.

There could be many reasons to migrate the tableau server from one computer to another. Whether it is upgrading the current hardware or any compliance and security issue with the current instance, moving tableau server to another server can be the solution. In this type, both the source and destination infrastructure are located on premise.

2.1.2 Approach

Migrating the entire tableau server to another computer includes moving all the content along with users and groups. In this section, we are defining two major processes widely used for migrating server:

- a) Backup and restore
- b) Site export and import.

2.2 On Prem to Your Cloud Migration

2.2.1 Purpose

This procedure is used to migrate the tableau server from one hardware on premise to tableau server hosted on cloud.

Some of the reasons to migrate to cloud are to increase flexibility and scalability, improve security and to reduce IT costs.

2.2.2 Approach

Migrating the entire tableau server to cloud includes moving all the content along with users and groups. In this section, we are defining two major processes widely used for migrating server:

- a) Backup and restore
- b) Site export and import.

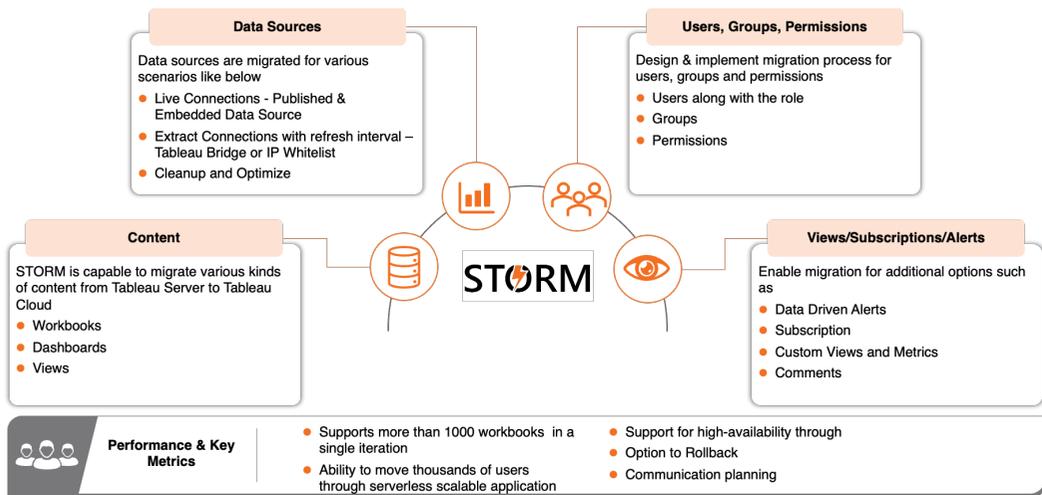
2.3 On-prem to Tableau Cloud

This scenario is more complex as the migration is not just a backup restore process but involves several considerations.

At USEReady, we noticed that quite often our customers have a broader set of components besides Content. These components are Data Sources, Users, Groups, Permissions, Views, Subscriptions, Alerts etc. Additionally, firms need a better framework to manage the migration process.

Hence, we developed a framework called “Plan-Migrate-Validate” to capture this migration process and created a platform called “STORM (Server To Online Report Migration)”.

Below is a diagram to outline comprehensive nature of STORM platform.



First, let us understand Tableau Content Migration Tool (CMT).

2.3.1 Purpose

Tableau Content Migration tool is available as a Server management add-on. It allows you to copy or move content between Tableau Server projects or sites. We can accomplish this between projects or sites on a single Tableau Server installation, or between projects or sites on distinct Tableau

Server installations if we have user-based licensing (for example, between a development instance of Tableau Server and a production installation).

Note: Mostly we use the term migration to describe moving content from one environment, site, or project to another. However, technically the Content Migration Tool copies content and does not automatically delete or archive the original or source content.

2.3.2 Benefits

- No code interface for migrating content
- Reduce the manual work
- Same "migration plan" can be used multiple times
- Migration plans are auditable and works via a batch process so any number of workbooks and data source can be migrated.

Now that we have a brief idea about each scenario of Server Migration, let us deep dive into each one of them.

Let's take up Server Migration for On Prem to On Prem and On Prem to Cloud first.

On Prem to On Prem/ Cloud Server Migration

3. On Prem to On Prem/ Cloud Server Migration:

It is seen that migration procedure is the same for both the server migration scenarios. The only difference is the infrastructure of target server i.e., whether the target server is going to be on-premises or hosted on cloud.

3.1 Steps in Server Migration

Three main steps are involved

- i. Preparation for Migration
- ii. Migration Process
- iii. Post Migration Checklist

Let's discuss each step-in detail.

3.1.1 Preparation for Migration

a) Assumptions

The process defined in this book is based on some assumptions.

- Tableau Server is already installed on the target machine with proper configuration
- All the necessary drivers that are in use in the source server are setup on target server
- The user performing the migration has admin privileges to both the machine where tableau server is installed
- You must have the credentials for one of the tableau server administrators on existing deployment

b) License Check

The target server must have proper licenses applied before proceeding with the migrations. This is done to ensure that the server functions smoothly and the features are not restricted due to licenses.

For instance, if any service is using add on license on the source server, the same license should be present on the new instance for smooth transition.

c) Know About Identity Store

Tableau server uses a repository known as identity store to manage user and group information. There are two types of identity stores: local and external. When you install Tableau Server, you must configure either a local identity store or an external identity store.

- **Local Identity Store**

When tableau server is configured with local identity store, all the users and groups information are stored and managed by tableau server repository

- **External Identity Store**

In case you configure tableau server with external identity store, all the users and groups information are stored and managed by an external directory service. Even if you are using external identity store, tableau server must be in sync with the external directory so that local copy of user and group information is present in tableau server.

d) Perform Backup and Restore

There are broadly two types of data to back up in tableau server. It is recommended to take both backup for the purpose of restoring the server in case of any disaster.

- **Data managed by tableau server:** This consists of Tableau PostgreSQL database or repository and File Store, which contains workbook and user metadata, data extract files, and site configuration data. When a backup is created using tsm maintenance backup command, all this data is stored in a single file with .tsbak extension.

- **Configuration and Topology data:** This includes most of the server configuration information required to fully recover a server. SMTP, alerting, some authentication assets, are all examples of configuration data that are exportable for backup. Topology data defines how your Tableau Server processes are configured in both single-server and multiple node deployments. Such backup is created using tsm settings export command.

i) Platform Compatibility

- You can use a backup created with Tableau Server on Linux to restore Tableau Server on Windows version 2018.2 and later.
- You cannot use a backup created with Tableau Server on Linux to restore earlier versions of Tableau Server on Windows (version 2018.1 and earlier).
- You can use a backup created with Tableau Server on Windows (version 2018.2 and earlier) to restore Tableau Server on Linux.

ii) Backup Strategies

The backup strategy depends on your recovery plan. The snapshot backup process may or may not be sufficient as it only creates a backup of the file store and repository data. There are other configurations and settings that you might need to do a full recovery. Some of the scenarios where snapshot backup may not serve the purpose are as follows:

- You maintain a standby tableau server to use in case your production Server is down. In this scenario, creating a snapshot backup and restoring it to your standby server on a regular schedule might be sufficient. Your backup schedule should be according to your recovery point objective.
- You plan to use a new tableau server installation in case of a disaster, but don't necessarily need to use the configurations and settings from your existing Tableau Server installation. In this case, you can install a new Tableau Server, and use the snapshot to restore the data.
- You don't have a standby Tableau Server but want to be able to create a new Tableau Server installation using the configurations and settings from your existing Tableau Server and restore the data.

In this scenario, you would need more than the snapshot backup to install a new Tableau Server.

To do a full backup including all the configurations and settings, follow these instructions:

1. Export topology and configuration data. This exports the majority of Tableau Server and topology.
2. Create a snapshot of the network share to create a backup of the File Store and Repository data.
3. Document the settings that are not included in the export. These are settings like system user accounts, coordination serviced deployment configuration, customized settings, and such.

iii) Storage Requirements for backup process

The free disk space required to create a backup varies depending on the amount of data in the Tableau Server repository and file store services, and their collocation with the tabadmincontroller service. During backups, the background tasks for cleaning up old extracts are temporarily paused. This means that, for the duration of the backup, extract refreshes will leave extra files in place, adding to disk space usage. If your backup takes a long time, or if your organization uses many extracts that are regularly updated, this can result in a significant amount of temporary disk space usage. These temporary files will be removed after the backup is complete.

The following table lists the disk space requirements for backup based on whether the node hosts the repository, file store, controller, or some combination of them.

Repository	File Store	Controller	Disk Space Required
			<p>3x repository data + 250 MB</p> <p>To obtain an estimate of the repository data, check the size of <data directory>/pgsql/data/base directory.</p> <p>To obtain the exact size of the repository data, open the backup file and use the size of the workgroup.pg_dump file.</p>

	✓		1.5x file store data To obtain an estimate of file store data (extracts, flows, etc.), check the size of <data directory>/dataengine directory.
		✓	3x repository data + 250 MB + 2.5x file store data
✓	✓		3x repository data + 250 MB + 1.5x file store data
	✓	✓	3x repository data + 250 MB + 1.5x file store data
✓		✓	3x repository data + 250 MB + 2.5x file store data
✓	✓	✓	3x repository data + 250 MB + 1.5x file store data

iv) Storage Requirements for Restore

You must have adequate disk space for the database restore process to run successfully.

To restore Tableau Server:

- On controller nodes, you need free space equal to at least the size of the backup archive.
- On repository nodes, you need free space equal to at least three times the size of the repository data in the backup archive, plus 250 MB, plus the size of the postgres data directory.
- On file store nodes, you need free space equal to at least twice the size of the data engine folder in the backup archive.

v) Back up Tableau Server with local file store

To begin with the backup process, check the following permissions are configured correctly:

- For Tableau Server installed on non-default drive: In such scenario, you’ll need to configure the permissions to network drive and run as service account manually.
- When backing up Tableau Server on Windows to a network drive, the Machine account must have write access to the network share where the backup files are written (this is not normally the case and you are responsible for configuring this if you want to back the server up to a network share).

Following steps explains the process to take both types of backups explained above:

- Backup configuration and topology data – The data is exported as JSON file using the command

```
tsm settings export -f <filename>.json
```

This backup contains topology and configuration data.

- Backup Data managed by tableau server – Following command backs up the repository data for tableau server 2018.2 and later:

```
tsm maintenance backup -f <filename>.tsbak -d
```

The backup file is assembled in a temporary location in the data directory and then written to the directory defined in the TSM basefilepath.backupstore variable. By default:

```
C:\ProgramData\Tableau\TableauServer\data\tabsvc\files\backups\<filename>.tsbak
```

Even if the default location is changed, the backup process will still use temporary location in data directory to assemble the backup file.

- For tableau server version 2018.1 or earlier,
 - Navigate to the bin directory for example: `cd "C:\Program Files\Tableau\Tableau Server\10.4\bin"`
 - Run the following command:
`tabadmin backup tabserver -v -d`
Include the -v flag to verify the integrity of the backup. Include the -d flag to include the date in the file name. In the example, tabserver will be used as the base file name of the resulting backup file. The date of the backup will be appended to the file name, for example, `tabserver-2017-12-20.tsbak`.

Note: If the file store is configured outside tableau server, the tsm maintenance backup command cannot be used to back up the data. Then next section will take you through the process of backing up tableau server if you are using external file store.

vi) Restore Tableau Server with Local File Store

This section explains the steps to re-store the tableau server using the backup files generated previously. Keep the following files ready before proceeding with the next steps:

- Topology and configuration data: This is the json file that is generated by the tsm settings export command.
- Repository backup file: This is the file with .tsbak extension that is generated by the tsm maintenance backup command.

The backup files can only be restored on server with the same type of identity store as the running server. For example, a backup from a server using local authentication can be restored to a Tableau Server initialized with local authentication, but a backup from a server using Active Directory authentication cannot be restored to a server initialized with local authentication.

When you use tsm maintenance restore to restore your Tableau data, data extract files and the contents of the PostgreSQL database are overwritten with the content in the backup file (.tsbak). If you are running a distributed installation of Tableau Server, perform the restore on the node running the TSM Controller (this is usually the initial node).

- Backup assets: These assets include the list of documented configurations as noted in the previous section.

Use the tsm maintenance restore command to restore your Tableau Server data. Follow the below steps to restore the tableau server from the backup files:

1. Copy the .tsbak file to the default file location.

The restore command expects a backup file in the directory defined in the TSM `basefilepath.backuprestore` variable.

By default:

```
C:\ProgramData\Tableau\Tableau
Server\data\tabsvc\files\backups\
```

2. Stop the server. At a command prompt, type:

```
tsm stop
```

3. Restore from a backup file. At a command prompt, type:

```
tsm maintenance restore --file
<file_name>
```

In the above line, replace <file_name> with the name of the backup file you want to restore from.

4. Restart the server:

```
tsm start
```

vii) Backup and Restore with External File Store

The backup and restore process is different if the tableau server is configured with an external file store.

- Tableau Server with External File Store

When tableau server is configured with external file store, tsm maintenance backup command does not create its backup.

When you have Tableau Server that is configured with External File Store but is using a local repository, Tableau Server backup operations include a backup of the Repository.

The following steps explains creating snapshot backup:

1. Prepare for snapshot backup: The following command created repository backup file and stores it temporarily in network share.

```
tsm maintenance snapshot-backup prepare
```

This process does not stop the tableau server. Once the process is complete you should see a message "Preparation for snapshot backup succeeded".

2. Create a snapshot of the network share: This snapshot will include both file store data and repository files which was created in previous step.

3. Complete the backup process: Run the following command to complete the backup process:

```
tsm maintenance snapshot-backup complete
```

This should remove the temporary repository backup from network share.

The following steps explains restoring from snapshot created on above step:

1. Stop the tableau server: Run the following command to stop the tableau server:

```
tsm stop
```

2. Restore file store data: Restore the snapshot you want to recover in the shared file system.
3. Restore Repository data: Run the following command to restore the repository data:


```
tsm maintenance snapshot-backup restore
```
4. Restart tableau server:

Run the following command to restart tableau server:

```
tsm start
```

- [Tableau server with External File Store and Repository](#)

When both file store and repository are configured external to tableau server, you can either choose to backup repository separately or include it as a part of preparation step.

Choosing to backup repository separately have following advantages:

1. The backup process can be faster specially if you are using cloud platform that allows taking snapshot backup of the instance.
2. The size of the backup file impacts the time taken in the preparation step of the backup process since it must be copied to the network share.
3. Including repository backup as part of initial preparation step has following advantages:
4. This prevents taking separate backup and thus less management in making sure file store and repository backups are synced.
5. Faster restore process

➤ **Including Repository in Backup**

The steps in this process describes how to keep repository in tableau server backup process.

The following steps explains creating snapshot backup:

1. Prepare for Snapshot Backup: Run the following command to start the backup process:


```
tsm maintenance snapshot-backup prepare --include-pg-backup
```

Make sure to use `--include-pg-backup` option to include repository data in the snapshot.
2. Once you get the success notification, take the snapshot of the network share. This snapshot will include both file store and repository data prepared in the previous step.

3. Complete the backup process: Run the following command to complete the backup process:

```
tsm maintenance snapshot-backup complete
```

The following steps explains restoring the snapshot backup:

1. Run the following command in command prompt to stop the tableau server:

```
tsm stop
```

2. Restore the file store data in network share using desired snapshot.

Once the restore is complete, tableau server will use the restored data.

3. Restore repository data: Use the following command to restore repository data:

```
tsm maintenance snapshot-backup restore
```

4. Restart Tableau server using the command “tsm start”

➤ **Backing up Repository Separately**

This process should be followed if the host platform allows snapshot backup. In case you are using azure, it is recommended to go with the previous option.

The following steps explains creating snapshot backup:

1. Prepare for Snapshot Backup: Run the following command to start the backup process:

```
tsm maintenance snapshot-backup prepare
```

This process does not stop the tableau server.

Note that the repository data will not be included in the backup in this case.

2. Create a snapshot of the network share: Once getting the confirmation message from previous step, take a snapshot of the network share containing the file store.

3. Create a backup of the repository: Using the backup process of the platform hosting repository, take a backup.

The backup of file store and repository must be completed within 3 hours 30 mins after the prepare step. This is to ensure the file store and repository backups are in sync for the restore process to work properly.

4. Run the following command to complete the backup process:
`tsm maintenance snapshot-backup complete`

The following steps explains restoring the snapshot backup

1. Use the snapshot backup to restore your external repository.
2. If you are using cloud platform to host the repository, it typically requires you to create a new DB instance to restore the repository. The step in this section assumes the configuration is already in place along with configuration file.
3. Stop the tableau server using command: `tsm stop`
4. If the restore of the external repository creates a new DB instance, use the following command to point Tableau Server to the new DB instance:

```
tsm topology external-services repository
replace-host -f <filename>.json -c <ssl
certificate file>.pem
```

The .json file is the configuration file mentioned in Step 2. The certificate file is the SSL certificate you downloaded from the new DB instance.

5. Restore the file store data in network share using desired snapshot.
Once the restore is complete, tableau server will use the restored data .
6. Run the following command to restore KMS and Asset Keys:
`tsm maintenance snapshot-backup restore`
7. Restart the tableau server using “`tsm start`” command from command prompt.

f) [Limitations when Restoring Tableau Server](#)

1. If you are restoring a backup created using `tabadmin backup`, and you used a custom asset key, you must save a copy of your `asset_keys.yml` file so you can include the file while doing restore.
2. Database backups made in other ways, and virtual machine snapshots are not valid sources for restoring Tableau Server.
3. When you use `tsm maintenance restore` to restore your Tableau data, data extract files and the contents of the PostgreSQL database are overwritten with the content in the backup file (.tsbak). If you

are running a distributed installation of Tableau Server, perform the restore on the node running the TSM Controller (this is usually the initial node).

4. You can only restore from a backup that has the same type of identity store as the running server. For example, a backup from a server using local authentication can be restored to a Tableau Server initialized with local authentication, but a backup from a server using Active Directory authentication cannot be restored to a server initialized with local authentication.
5. You can only restore a backup file to a version of Tableau Server that is the same or newer than the version the backup was created on. You cannot restore to an older version of Tableau.
6. During restore, the restore process will initiate a full re-indexing of the content and external assets managed by Tableau Server. This process consumes CPU resources which may be noticeable during backup and restore

g) Best Practices for Backing up Tableau Server

i) Protect Backup File

While configuration secrets are encrypted when stored on disk internally, when these configurations are exported to a backup file, some secrets are written into the file in plain text. It is up to the administrator to take measures to protect the backup file. There are a variety of options available:

- Write the file to an encrypted file system.
- Write the file to a disk that is physically protected and restricted to specific users.
- Encrypt the backup file.

ii) Maximize Backup Efficiency

There are several ways you can maximize backup efficiency. Your environment can impact how effective each of these is, so test with your data to see what works best.

Optimizing with topology configurations:

- Co-locating File Store on the same node as the Administration Controller can reduce the length of time it takes to back up Tableau Server by reducing or eliminating the need to transfer data between

nodes during the backup process. This is especially true if your organization uses many extracts.

- Co-locating the repository (pgsql) with the Administration Controller node can also help to reduce back up time, but the time savings is less significant than that of the File Store.

The Administration Controller is usually on the initial node, unless you have had an initial node failure and moved the controller to another node.

Optimizing with backup strategies:

Backup is a resource intensive process. If possible, doing your backups during off peak hours is a generally a good strategy. But however, this depends on your requirements and how often Tableau Server data is updated and what you restore requirements.

Here are some backup strategies and adopt them to your requirements

- **Type of storage:** Solid State disks are recommended in general for backups. SSD helps make your backups faster and complete sooner compared to traditional spinning disks.
- **Backup compression:** You have the option of running your backups with or without compression. When you do your backup with compressions, your backup size will be comparatively smaller, but you may see a slower performance. So, if your goal is more focused on speed, choose the --skip-compression option:
Use the --skip-compression option when backing up Tableau Server. This creates the backup without using compression, and results in a larger backup file but can reduce the amount of time it takes for the backup to complete.
- **Snapshot backup:** This option is only available if you have configured your Tableau Server with External File Store. Although the performance of snapshot backups depend on the type of network attached storage, in general snapshot backups are faster than the traditional Tableau Server backups.

h) Site Export and Import

This functionality of tableau can be used to provision new site to a different or same instance and import content from existing site.

An existing site can be migrated to:

- Another site in the same tableau instance
- Different tableau instance
- From tableau in Windows to Linux or vice versa

When a site is exported, it does not retain all the information from source site. Following information is preserved during site export:

- All the workbooks, data sources, users, permission set on content, favorite list, site quotas
- Subscription and extract refresh schedules
- User's custom reports

Following information is not retained during site export:

- Usage data in site's administrative views
- Backgrounder jobs that were in progress when site was exported
- OAuth tokens embedded in the data connection

The steps mentioned below describes the entire process of exporting a site, mapping all the information and importing it to target server.

i) Exporting a site

The user performing this activity should have access to the machine where tableau server is installed. Site can be exported using TSM commands.

On the source computer, run the following command while the server is running:

```
tsm sites export --site-id <source-siteID> --file <filename>
```

For example, if there is a site with ID Sales_Site and the destination file name is Sales_Site_Export.zip, type the following:

```
tsm sites export --site-id Sales_Site --file Sales_Site_Export
```

By default, the generated file will be saved to

```
/var/opt/tableau/tableau_server/data/tabsvc/files/siteexports
```

ii) Generate import mapping files

Once the site is exported, a .zip file will be created after executing the above steps in the source machine. Copy the file to the target machine and follow the steps below:

- Copy the file to the directory where tableau server will look for it. By default, its
- In case tableau is installed in different drive, follow the similar path in the drive where tableau server is installed
- Create the new site on target machine. Before starting the import process, verify the source site is already created because import process does not create any new site.
- Run the following command on target machine while the tableau server is running:

```
C:\ProgramData\Tableau\Tableau
server\data\tabsvc\files\siteimports
```

```
tsm sites import --site-id <target-siteID> --file
<export-file.zip>
```

This command will generate a .csv file with details about the mapping of source site to target site. The mapping details can be confirmed by the users and adjusted as per requirement (described in the next section).

By default, the output .csv file can be located in mappings directory under siteimports:

```
C:\ProgramData\Tableau\Tableau
Server\data\tabsvc\files\siteimports\working\im
port_<id>_<date-time>\mappings
```

iii) Verify the Site Mappings

The .csv file generated in the previous step has all the details about how the resources from source site will be assigned to new site. Items that need to be edited and are unable to map automatically are denoted by “???”. Before going to the next step, make sure to replace the question marks in the mapping file by appropriate values. Following steps describe where to access and make changes in mapping files:

- By default, mapping files can be located in
- Open the .csv file in supported editor and confirm if the mappings are correct. If questions mark (???) is present, replace them with appropriate value and save the file.
- Do not change the format of the mapping file while editing.

- Repeat these steps for all the .csv files present in the mentioned directory.

iv) Import the Mapped Files to Target Site

Once the verification of site settings in the mapping files is complete, it can be imported to new site to complete the migration process. Following steps describe the process to import the mapping file the new site:

- On the target tableau server machine, run the following command:

```
tsm sites import-verified --import-job-dir
<import-id-directory> --site-id <target-
siteID>
```

For example, if the import file is saved as Sales_Site_Import in the default location:

```
tsm sites import-verified --import-job-dir
C:\ProgramData\Tableau\Tableau
Server\data\tabsvc\files\siteimports\workin
g\"Sales_Site_Import" --site-id new-site
```

- On getting success message, login to the new site and verify the contents.

v) Mapping File Reference

This **section explains** the content of all the mapping files generated and which fields can be updated as per the requirement.

File Name: mappingsDomainMapperForGroups

Column title	Can it be edited?	Description
source_name	No	A user group name on the source site.
source_domain_name	No	The identity store type on the source site: either local (for local identity store) or a domain name (for Active Directory or LDAP external identity store).
target_domain_name	Yes*	The identity store type on the target site: either local for local identity store, or a domain name (such as example.com or example.lan)

		<p>for Active Directory or LDAP external identity store.</p> <p>*For the All Users group, keep the target_domain_name value set to local, even if your target server is configured for Active Directory identity store. The All Users group is a special default user group that must exist on every Tableau Server.</p>
--	--	--

File Name: mappingsScheduleMapper

Column title	Can it be edited?	Description
source_name	No	The names of custom and default extract or subscription schedules on the source site.
source_scheduled_action_type	No	The type of schedule, either Refresh Extract, for extract refreshes, or Subscriptions, for subscription deliveries on the source site.
target_name	Yes	The names of custom schedules on the target site. You can edit this value. For example, if the schedule is named Friday Update on the source site you can rename it Friday Refresh on the target site.
target_scheduled_action_type	No*	The type of schedule, either Refresh Extract, for extract refreshes, or Subscriptions, for subscription deliveries on the target site. *In the rare case that you see question marks (???) in this column, replace them with either Refresh Extract or Subscriptions, to match the entry you see under source_scheduled_action_type.

File Name: mappingsSiteMapper

Column title	Can it be edited?	Description
--------------	-------------------	-------------

source_url_namespace	No	The site ID of the source site.
target_url_namespace	No	The site ID of the target site.

File Name: mappingsSystemUserNameMapper

Column title	Can it be edited?	Description
source_name	No	The user name attribute of a user on the source site.
source_domain_name	No	The identity store type on the source site: either local (for local identity store) or a domain name (for Active Directory or LDAP identity store), or external .
target_name	Yes	<p>The user name attribute for users who will be assigned to the target site upon import. Confirm that all the user names in the list exist on the target server, and replace question marks (???) with user names that exist on the target server.</p> <p>You cannot create user names by adding rows to the CSV file. Similarly, you cannot remove user names by deleting rows.</p> <p>You can edit a user name in the target_name column to be different from its source user name, as long as the user already exists on the target server with that name.</p> <p>For example, a user can have a source_name value of agarcia@company.com and a target_name value of ashleygarcia@company.com.</p> <p>You can map a user on the source site to only one user name on the target site.</p>
target_domain_name	Yes	The identity store type on the target site: either local (for local identity store) or a domain name (for Active Directory or LDAP external identity store).

File Name: MappingsScheduleRecurrenceMapperWithAutoCreation

3.1.2 Migration Process

a) Migration Process in case of same Identity Store

This process can be followed in case the user wants to upgrade or migrate to a new hardware.

This section explains the process to be followed to move Tableau Server data from in-production computer to a new computer where Tableau Server is installed. Before proceeding, make sure the steps mentioned in the previous section is completed.

- This method will require the backup file created in earlier section.
- In destination server, copy the backup file(. tsbak) to the location specified by the basefilepath.backuprestore variable. By default, this is C:\ProgramData\Tableau\Tableau Server\data\tabsvc\files\backups, but it could be at a different location based on server settings.
- Stop the server (“tsm stop” command can be used for this)
- Restore the backup file using the command: `tsm maintenance restore -f <filename>`, where filename is the name of backup (. tsbak) file mentioned in step 2.
- Start the server (“tsm start” can be used)
- If the license on the source server is not deactivated, deactivate it post all the checks after migration.

b) Migration Process in case of different Identity Store

It is possible that a business may need to change the identity store of tableau server due to various factors. Two broad identity stores in tableau are local and external.

When tableau is configured with local identity store, login details for all the users are stored and managed in tableau repository.

In case an external identity store is used, all the user and group details is stored and managed by an external directory service. For more detail on identity store, please refer the section 3.1.1 (c).

The following steps define the process for migration in case of different identity store.

- Restore all the content from source server to destination server. “Restore” mentioned here is different from restoring the backup. Backup files works only to restore in case the identity store is same.
 - One of the following methods can be used to restore the content to target server:
 - Use Site export and import
 - Manual transfer of all the content
- i) [Using Site export and Import](#)
- Export all the sites from source server
 - Create new users on new server. There must be a new user corresponding to each user on the source server
 - Import the sites exported in first step to target server. During import process, there will be a prompt to map the new users to existing users
- ii) [Manual transfer of all content](#)
- Create sites, users, groups on the new server
 - All the users should re-publish their content on the new server
- c) [Migration process in case of different OS](#)

It is possible to migrate tableau server from windows to Linux and vice versa. This section explains the process of migrating between different operating system.

Migrate from Windows to Linux

If you are running tableau server on windows, you can migrate to Linux by taking a backup of existing instance and restoring it on the fresh instance on Linux.

The following steps describe the process to move tableau server from windows to Linux:

- Create a backup of existing instance on windows – follow the steps in the section 3.1.1
- Make sure the tableau server is installed on the Linux machine with the same identity store as the existing instance
- Copy the Windows backup file to the computer running Tableau Server on Linux. By default the restore process will look for the file in this location:
`/var/opt/tableau/tableau_server/data/tabsvc/files/backups/`
The location can be changed by changing the value for tsm file paths
- Stop the tableau server – run the following command to stop tableau server, `tsm stop`
- Run the following command to restore the backup file:
`tsm maintenance restore -f <filename.tsbak>`
where filename.tsbak is the name of backup file generated in first step.
- Run the following command to start tableau server:
`tsm start`
- If you are running tableau server on multiple node, make sure to add and configure additional nodes.
- Configure any customizations that was there on previous instance such as images or logo files if applicable

3.1.3 Post Migration Checklist

a) Checks to Perform Post Migration

Once you have installed tableau server on new machine and restored existing tableau, you should perform some checks on the new version of tableau server. As the restore process only restores the content to tableau, you may need to update configurations, topology, and any customizations setup on previous instance. You should check the basic functionality on the new instance specially if you are changing the operating system. Following are few areas of testing to consider:

- **User access:** Confirm that Tableau Server users, including administrators, can sign in. Test your normal user sign in process. Have some of your users participate in the testing to make sure they can sign in as expected, and that they can get to the same

content that they have access to in your production environment.

- **Server Process:** Sign into Tableau Server as a server administrator, and then open the Server Status page to confirm that all services and processes are running as expected (including on all additional nodes if this is a distributed installation).
- **Content count:** Check the number of contents such as projects, workbooks, data sources, users, groups, subscriptions, extract refreshes and subscriptions and make sure they are same as that on the previous instance.
- **Publishing workbooks and data sources:** Have users publish workbooks and data sources from Tableau Desktop to make sure this goes as you expect.
- **Subscriptions and extract refreshes:** Manually run some extract refreshes to confirm that they complete successfully. Run some key scheduled extract refreshes to confirm that they complete as expected.
- **Viewing published workbooks:** Have users who are familiar with the content try to view published workbooks to make sure they appear as expected. Test views embedded in web pages (for example, in SharePoint pages).
- **Permissions:** Confirm that permissions are still set as expected for users and content.
- **Command line utilities and APIs:** If applicable, test the command line utilities (tsm and tabcmd) and programmatic access via APIs.

b) Failover

When you are performing any major operations in tableau server, there must always be a failover plan in place to minimize the impact on business if the process does not turn out as per the expectation.

In case of migration, since the server is already setup on one machine which was already in use, it's advisable to not delete anything from existing machine until you are satisfied with the new setup. Once the

migration process is complete, vigorously test all the scenarios that applies to make sure there won’t be any impact.

In case the new setup has any issues or does not meet the requirements, you should have the option to revert to the existing setup. Once all the tests are successful and the new setup is behaving as per expectation, then you plan about decommissioning the old tableau server.

3.2 Native Service types and Data Connectors

When you want to migrate the server from On Prem to AWS/Azure, Tableau server can take advantage of its services and data connectors.

	Service Types	Data Connectors
	When we migrate the server from On Prem to Cloud, we need to check for the respective services.	Tableau provides native data connectors that enable you to connect to data in the following data sources. We need to enable if any client uses connectors before doing migrations.
AWS	<ul style="list-style-type: none"> • Amazon CloudWatch • Amazon Route53 • AWS Certificate Manager • AWS CloudFormation • Elastic Load Balancing 	<ul style="list-style-type: none"> • Amazon Athena • Amazon Aurora for MySQL • Amazon EMR Hadoop Hive • Amazon Redshift • Amazon Relational Database Service • Amazon Simple Storage Service

Azure	<ul style="list-style-type: none"> • Azure SQL Database • Azure Synapse Analytics • Apache Spark on Azure HDInsight • Azure Active Directory 	<ul style="list-style-type: none"> • Azure Synapse Analytics • Microsoft Access • Microsoft Analysis Services • Microsoft Excel • Microsoft PowerPivot • Microsoft SQL Server
--------------	--	---

On-prem to Tableau Cloud

4. On-Prem to Tableau Cloud using Content Migration Tool

We already had a brief introduction on this tool in earlier section of the book. Now let’s learn in detail, how this tool can be deployed.

4.1 Content Migration Tool Deployment

4.1.1 Installation Prerequisite

- The Content Migration Tool can only be installed on Windows operating systems.
- Both the source Tableau Server (Server that you are moving the content from) and the target Tableau Server (Server that you are moving the content to) must have a valid Server Management Add-on license.

4.1.2 Compatibility with Tableau Server

The Content Migration Tool supports content migration for Tableau Server versions 2019.3 and later. The table below shows which Tableau Server versions are compatible with which versions of Content Migration Tool.

CMT Version	Tableau Server Version
2021.4.x	2020.1.x - 2021.4.x
2021.3.x	2019.4.x - 2021.3.x
2021.2.x	2019.3.x - 2021.2.x
2021.1.x	2019.3.x - 2021.1.x
2020.4.x	2019.3.x - 2020.4.x
2020.3.x	2019.3.x - 2020.3.x
2020.2.x	2019.3.x - 2020.2.x
2020.1.x	2019.3.x - 2020.1.x
2019.4.x	2019.3.x - 2019.4.x
2019.3.x	2019.3.x

Note: At the time of writing this book Tableau Cloud migration using the Content Migration Tool is in pre-release and under active development.

4.1.3 Compatibility with Tableau content

The Content Migration Tool supports migrating workbooks and published data sources. However, only data sources that use the connection types in the table below can be changed and modified during migration.

Action Matrix	HortonWorks Hadoop Hive	PostgreSQL
Action Vectorwise	HP Vertica	Progress OpenEdge
Amazon Athena	IBM DB2	Salesforce
Amazon Aurora	IBM Netezza	SAP HANA
Amazon EMR	Map R Hadoop Hive	SAP Sybase ASE
Amazon Redshift	Microsoft Access	SAP Sybase IQ
Aster Database	Microsoft Analysis Services	Snowflake
Box	Microsoft Excel	Spark SQL
Cloudera Hadoop	Microsoft Excel Direct	Statistical File
Delimited Text File	Microsoft OneDrive	Tableau extracts
EXASOL	Microsoft SQL Server	Teradata
Firebird	MySQL	Text File
Google Analytics	OData	Web Data Connector
Google BigQuery	Oracle	Other Databases
Google Cloud SQL	Oracle Essbase	(ODBC)
Google Drive	Pivotal Greenplum Database	

4.1.4 Hardware requirements

- Microsoft Windows 8 or later (x64)
- Intel Core i3 or AMD Ryzen 3 (Dual Core)
- 4 GB memory or larger.
- 2GB HDD or larger. The drive where the **\temp** folder resides must have enough disk space to hold a copy of all content being migrated in a single migration. All content is stored locally on the disk and deleted when the migration is complete.
- Confirm that the RESTAPI is enabled on Tableau server.

4.1.5 Steps To install:

- Download the Content Migration Tool installer (Tabcmt-64bit-<version>.exe) for your version of Tableau Server from the Tableau Server Management Releases page.
- Run the Content Migration Tool Setup program.
- After reading the EULA (End User License Agreement) select **I agree to the license terms and conditions** and click **Install**.
- If the User Account Control dialog opens, click **Yes** to allow the installer to make changes.

4.2 Content Migration Tool Limitations

There are certain limitations to migrations using the Tableau Content Migration Tool as of July 2022.

4.2.1 Server-level configurations

The following server-level configurations from the source site will not be migrated to the destination site when using the Content Migration Tool:

- Users
- Groups
- Site settings

4.2.2 Workbooks with user configurations

The following user configurations from the source site will not be migrated to the destination site when using the Content Migration Tool:

- Data-driven alerts
- Subscriptions
- Custom views
- Favorites
- Comments

4.2.3 Tableau Prep flows

Tableau Prep flows published to the source site are not migrated to the destination site when using the Content Migration Tool. To run flows on a schedule using Tableau Prep Conductor, users must republish flows to the destination site using **Tableau Prep Builder**.

4.2.4 Content metrics

Metrics created on the source site are not migrated to the destination site when using the Content Migration Tool. The historical values are removed from views, and users must recreate metrics on the destination site.

4.2.5 Embedded credentials

For security purposes, Tableau Server removes embedded credentials from data sources during the download process. To include embedded credentials when publishing to the destination site, use the Set Connection Info data source transformation.

4.2.6 Descriptions for workbooks and data sources

Descriptions for workbooks and data sources on the source site are not migrated to the destination site when using the Content Migration Tool. If you own the content item or have the appropriate permissions, you can edit the item's description on the destination site.

4.2.7 Thumbnails for workbooks and views

Workbooks and views that are migrated using the Content Migration Tool will retain their original thumbnails, even if the migration plan includes transformations that result in the views being rendered differently (for example, if data connections change). To update thumbnails, edit the workbook or view on the destination site and re-save it.

4.3 Content Migration Process

Tableau Content Migration Tool creates a streamlined process for Tableau Server migrations. Plan created using CMT is easy to follow, can be audited, is repeatable, and works via a batch process so any number of workbooks and data sources can be migrated in a simple and efficient process.

Required Permission:

Tableau Server user who is signing in should have Explorer role or higher role. To migrate content, you must have View and Download

Workbook/Save a Copy permissions on the source site, and publishing rights for the destination site.

4.3.1 Start

The first step in migration process is to create a plan that can be saved and re-used for future migrations or modified and updated if needed.

- To create a new plan, click **Create New Plan**.
- If migration plan is already created and you want to use it, click **Browse for a Plan**.
- Existing plans can be duplicated, modified, and saved as a new plan

Recent Plans	Last Updated
DefaultToDefault2.tcmx C:\Users\jsmith\Documents\Tableau Content Migration Tool Plans\DefaultToDefault2.tcmx	7/12/2019 6:25 PM



Note: By default, all saved migration plans will be stored locally in the Tableau Content Migration Tool Plans folder in your **My Documents** folder. All migration plans are saved with a .tcmx extension.

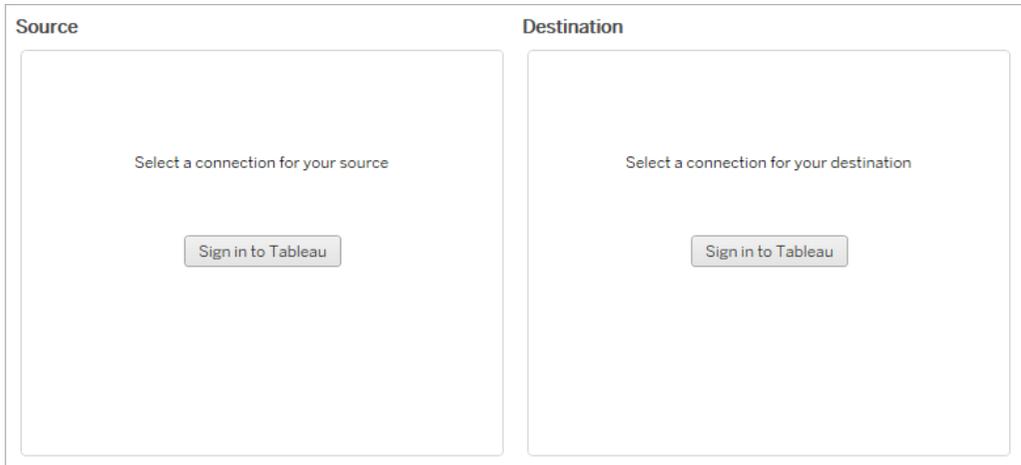
4.3.2 Planning

The Content Migration Tool guides you through building or editing your migration plan in steps mentioned below.

- Migration Plans: Servers
- Migration Plans: Source Projects
- Migration Plans: Workbooks
- Migration Plans: Published Data Sources
- Migration Plans: User Permissions Mapping
- Migration Plans: Migration Scripts
- Migration Plans: Plan Options

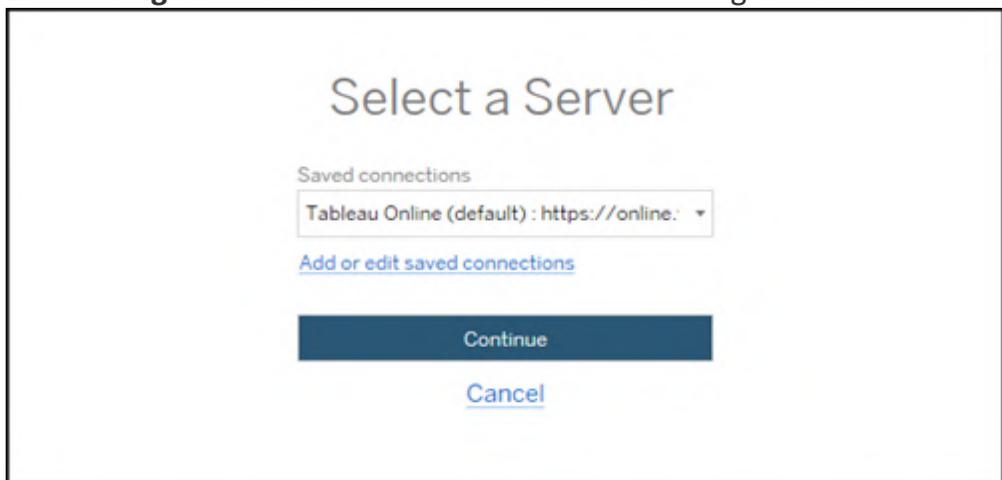
a) Migration Plans: Servers

The first step to create a migration plan is to sign into the source and destination servers and select the site.



Use the steps below to sign into Tableau Cloud or Tableau Server:

1. Click **Sign into Tableau** and **Select a Server** dialog window.



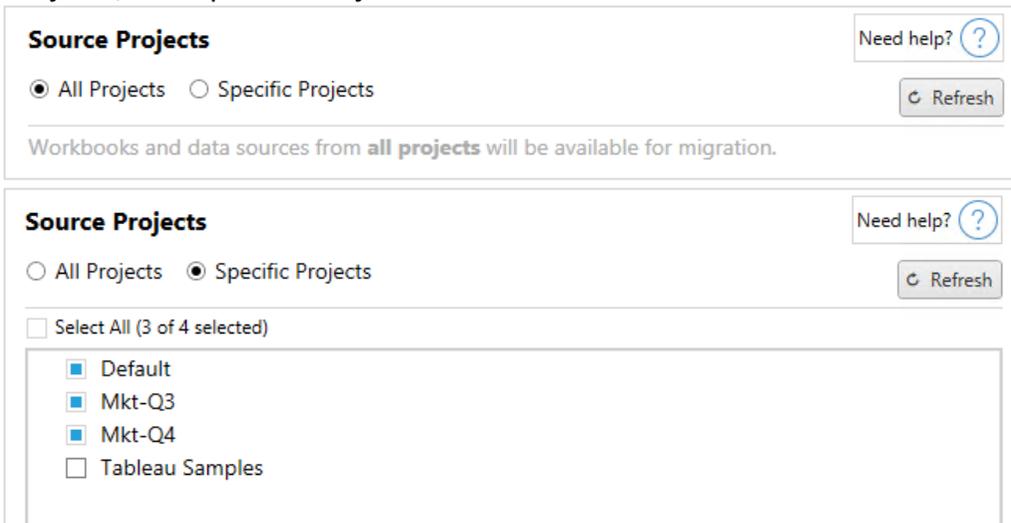
2. Enter your username and password, and click **Sign In**.
If your server is configured for SAML or Single Sign-On, you are redirected to the Identity Provider sign-in page to complete the authentication process.
3. Select the site you want to use.
4. Repeat the same server sign in process for destination server

b) Migration Plans: Source Projects

The next step in creating a migration plan in the Tableau Content Migration Tool is to select the source projects. The projects you choose here determine which workbooks are available to migrate in the next step of the migration plan.

Step 1: Select your source project

There are two options available while selecting source projects, All Projects, and Specific Projects:



Source Projects Need help? ?

All Projects Specific Projects Refresh

Workbooks and data sources from **all projects** will be available for migration.

Source Projects Need help? ?

All Projects Specific Projects Refresh

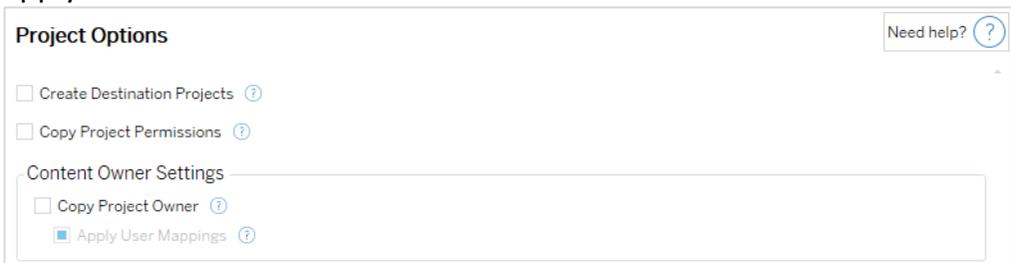
Select All (3 of 4 selected)

- Default
- Mkt-Q3
- Mkt-Q4
- Tableau Samples

Note: Source projects must contain workbooks or data sources. Content Migration Tool will not migrate empty projects.

Step 2: Select project options

Now after selecting the source projects, select which project options to apply for the destination location.



Project Options Need help? ?

Create Destination Projects ?

Copy Project Permissions ?

Content Owner Settings

Copy Project Owner ?

Apply User Mappings ?

- **Create Destination Projects:** Automatically create projects that don't exist in the destination location.
- **Copy Project Permissions:** Copy source project permissions as closely as possible.

- **Copy Project Owner:** Copy project ownership settings from the source location to assign the project owner.
- **Apply User Mappings:** Apply user mappings to assign content ownership of projects in the destination location. Content ownership won't be applied if the destination project already exists.

Step3: Continue to the next step

Once you have selected source projects you are ready to go for the next step of your migration plan, workbooks click next.



c) Migration Plans: Workbooks

Step 1: Workbook Selection

Now that you've successfully signed into both your source and destination servers, you choose sites and projects where your workbooks are stored and where you want them to be migrated. Next, we'll select the workbook to migrate.

All the workbooks in the source site and projects appear on the Workbook Selection screen.

Workbook Selection

Need help?

Specific Workbooks
 Rule Based
 All Workbooks

Refresh

Unselect All (9 of 9 selected)



There are three different ways to select these workbooks.

- **Specific Workbooks Selection:**

You can individually select specific workbooks by clicking on each one or you can select all and then uncheck the specific workbooks.

Select All: For the **specific workbooks selection** option this button will select or clear selection of all the workbooks in the site. If additional workbooks are added to the site after the plan is saved, they will not be automatically added the next time the plan is used.

- **Rule Based Selection:**

You can choose workbooks based on specific criteria. Rule-based options will create workbook selection criteria to be used when the migration plan is run. Be aware that selecting "all" in any of the **Rule Based options** is different than the Specific Workbooks selection. A rule-based "all" selection will always include all workbooks, so any newly added workbooks are included in future migrations.

In projects (None) ▾

Tagged with Click to add tag...

Published by (None) ▾

The Rule Based radio button allow us to select workbooks by using the following options:

- **Workbooks in projects-** Select workbooks from specific projects.
- **Workbooks tagged with-** select workbooks by their tags.
- **Workbooks published by-** select workbooks by their author.

- **All Workbooks Selection**

The last option is to select the **All-Workbooks** button, which selects all workbooks in all projects in the site.

Again, using the **All-Workbooks** button is different than selected all the workbooks using the **Specific Workbook** method, because it will use every workbook in the source site each time the migration plan is used in the future, as well.

Specific Workbooks
 Rule Based
 All Workbooks
 ↻ Refresh

All workbooks in all projects

When you are satisfied with your workbook selections, click **Next**.



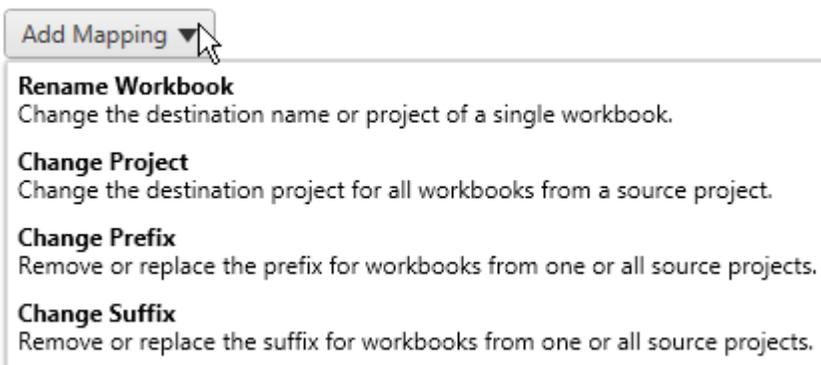
Next

Step 2: Workbook Mapping

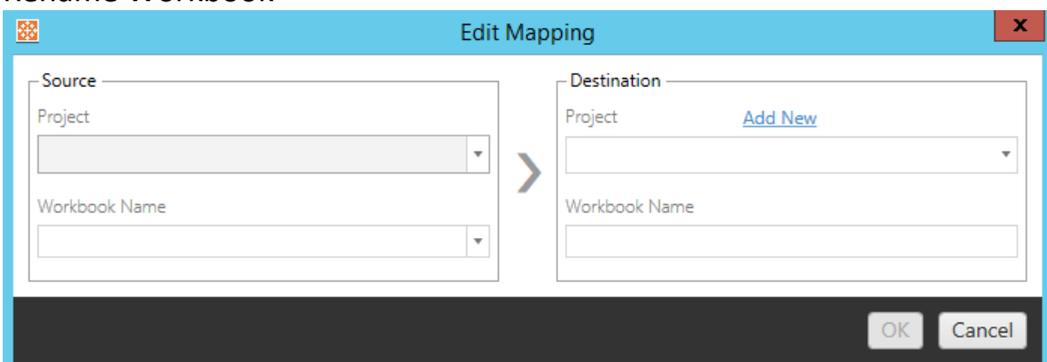
You can now map your selected workbooks from the source file to the destination file. Mapping allows you to rename source workbooks as they are migrated and choose different destinations. You can also add mapping to change the project, prefix, or suffix for the workbooks as well.

If you make no changes here, then the selected workbooks will simply be migrated with the same name and into the same project as the source. If you have not defined in projects in your destination site, then they will be migrated into the Default project.

To add workbook mapping click the **Add Mapping** button. The following options will appear in the mapping area.

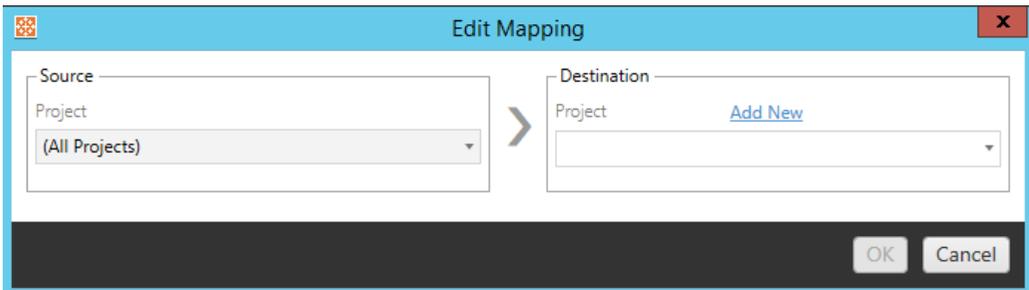


Rename Workbook



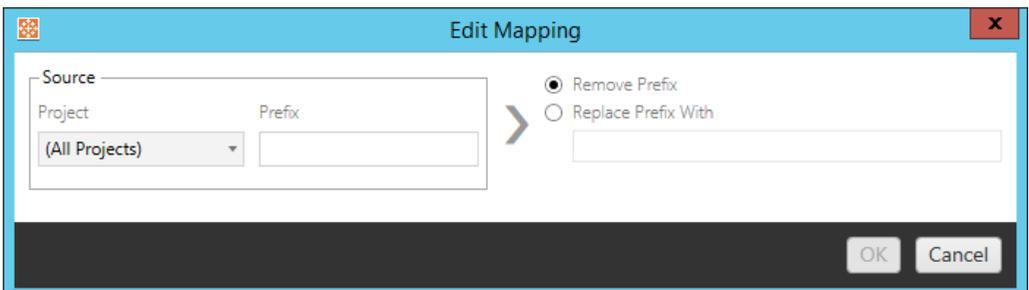
To rename the workbook(s) that are being migrated, this transformation will allow you select the project in the **Source** site and provide a drop-down list to select the desired workbook. In the **Destination** field, select which project you would like the workbook to migrate as well as entering the desired new name or also you can add new destination project for the migrating content by just clicking over **Add New**.

Change Project



By default, the workbooks are migrated to the same project in the destination. This mapping allows you to change the destination project for all workbooks from a source project.

Change Prefix



This allows you to remove or replace the prefix for workbooks from one or all source projects.

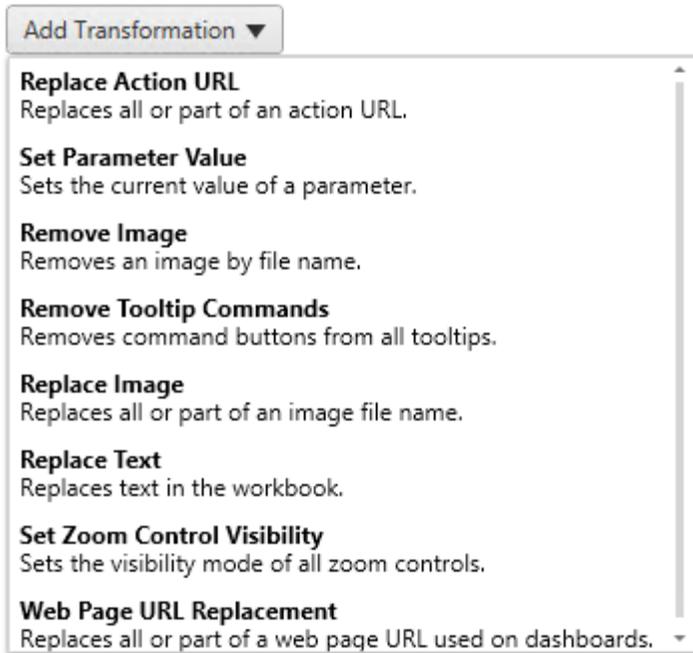
Change Suffix

Like the prefix mapping, you can remove or replace the suffix for workbooks from one or all source projects.

Step 3: Workbook Transformations

You can change and modify your workbooks by using the Transformation steps mentioned below. Click on the **Add Transformation** drop-down menu to see the Transformations options available.

Workbook Transformations



When you select any of these workbook transformations the Edit Transformation window appears, which will allow you to customize the selected workbooks. All transformations will be completed in the order that they are listed from top to bottom.

For all the different types of transformations, there are two basic steps. The first step is to make your selection for the transformation. In this case, select the workbook(s) you want to transform. The selection area is similar to the Workbook Selection section of the Planning phase.

Workbook Selection

Need help?

Specific Workbooks
 Rule Based
 All Workbooks

Refresh

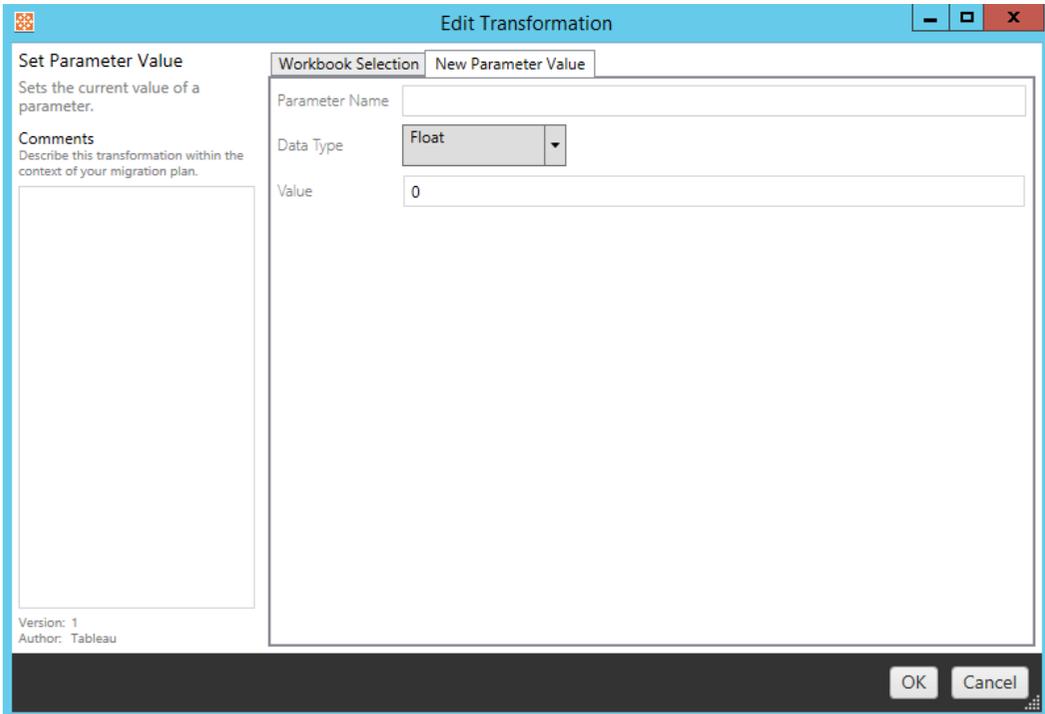
Rectangular Snip

Unselect All (9 of 9 selected)



Back Next

The second step is to use the options tab to enter the specific selections for whichever transformation you select.



Each of the workbook transformations have different values to be entered on the options tab, and the tab will have different names, depending on the transformation you're editing:

Action URL Replacement

Replace part or all an URL action inside of the workbook using this transformation. On the options tab, enter the text that should be matched and its replacement value.

Match

Replacement

Example:

URL: www.exampledev.com

Match: dev

Replacement: Prod

Result: www.exampleProd.com

Set Parameter Value

Define a new parameter. On the options tab, enter the name of the Parameter, the data type from the drop-down menu, and the value.

Parameter Name	<input type="text"/>
Data Type	Float <input type="button" value="v"/>
Value	0

Remove Images

Remove any images (such as a watermark) in the selected workbooks by entering in the file name on the options tab. There is an additional check box to receive a warning during migration if no image is found.

File Name	<input type="text"/>
<input checked="" type="checkbox"/> Warn when no matching images are found in a workbook.	

Remove Tooltip Commands

Remove all the tooltip commands from the selected workbooks. There are no additional options to define for this transformation.

Replace Images

Replace any images in the selected workbooks. On the options tab, enter the file name of the old image and file name of the replacement image. You can use a local file path or URL to replace images.

File Name	<input type="text"/>
Replacement Image URL	<input type="text"/>
<input checked="" type="checkbox"/> Warn when no matching images are found in a workbook.	

Example:

File Name: C:\file\image.png

Replacement Image

URL: http://www.exampledev.com/replacementImage.png

Zoom Control Visibility

Set the visibility mode from the drop-down menu: **Automatic**, **Show on Hover**, or **Hide** on the options tab.

Visibility Mode

Web Page URL Replacement

Replace part or all of a web page URL used on dashboards using this transformation. On the options tab, enter the text that should be matched and its replacement value.

Match

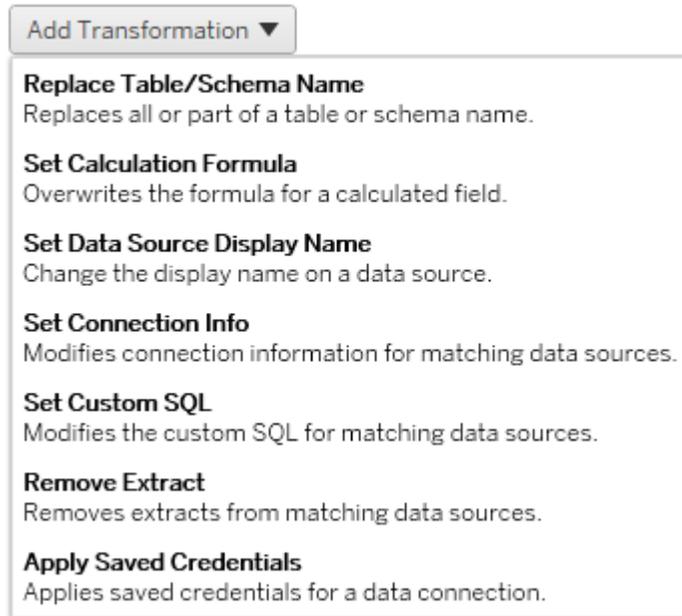
Replacement

Step 4: Data Source Transformations

The next step in planning your workbooks for your enterprise migration are your data source transformations. It is similar in function to the Workbook Transformations step. These are for data sources that are **packaged within the workbooks**. Published data sources are handled in a different step in the process.

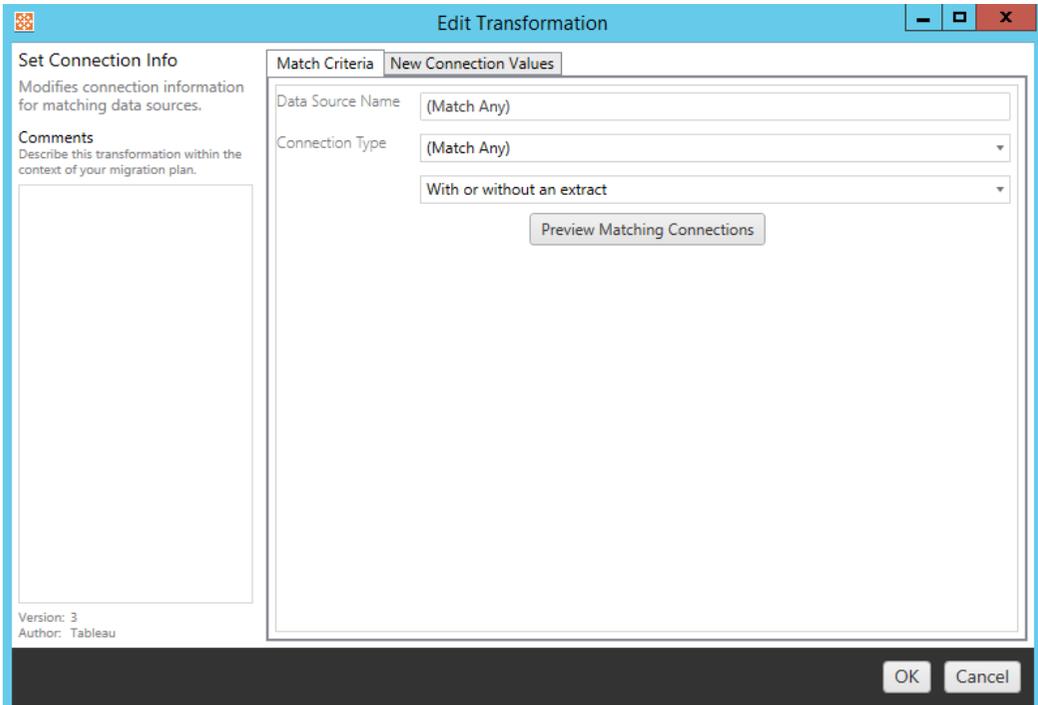
Click on the **Add Transformation** drop-down menu and the following options will appear:

Data Source Transformations



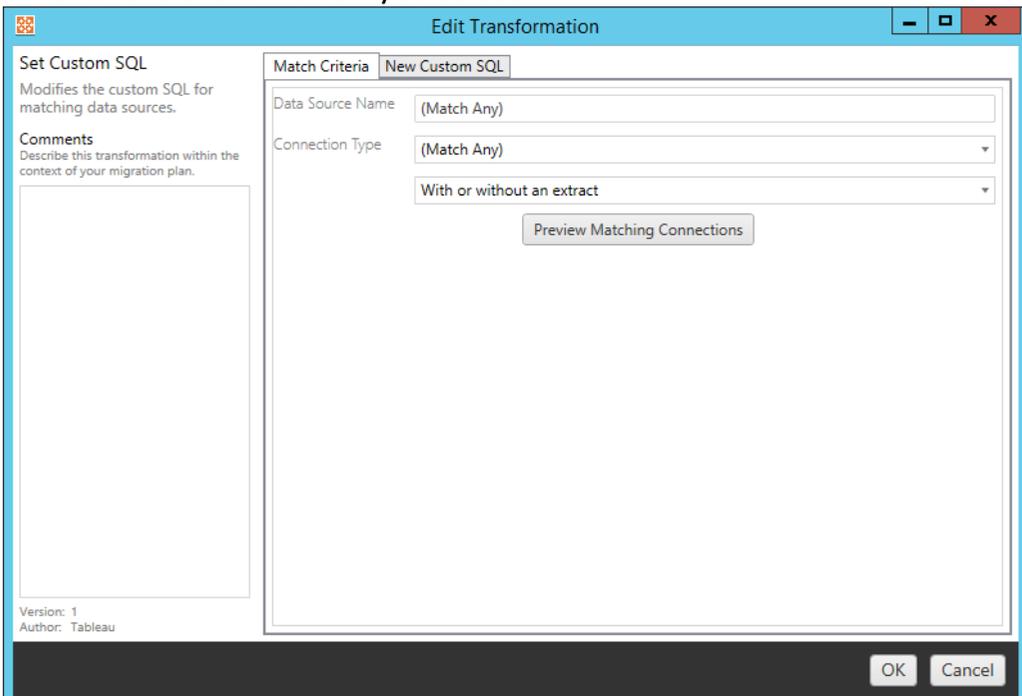
When you select any of the data source transformations that will bring up the Edit Transformation window, which will allow you to customize it to your selected data sources. All transformations will be completed in the order that they are listed from top to bottom.

For all the different types of data source transformations, there are two basic steps. The first step is to enter in the match criteria for the desired data source. Depending on which connection type you select, more fields will appear on the **Match Criteria** tab.



Click on the **Preview Source Connections** to find any connections that match the criteria entered.

The second step is to use the options tab to enter the specific selections for whichever transformation you select.



Each of the data source transformations have different values to be entered on the options tab:

Set Calculation Formula

On the options tab, you can replace the calculation for a column.

Column Name	<input type="text"/>
Formula	<input type="text"/>

Set Connection Info

On the options tab, enter in the file path for the new data source.

File Path	<input type="text"/>
-----------	----------------------

Set Custom SQL

On the New Custom SQL tab, enter the name of the custom SQL query you want to modify for **Match Query Name**. The query name must match the custom SQL query name from the physical layer of the data source. If these names don't match, the transformation will fail.

After entering the query name, enter the desired **Custom SQL** in the text field.

Match Query Name	<input type="text"/>
Custom SQL	<input type="text"/>

Remove Extract

No options tab available for this transformation, simply enter in the **Match Criteria** information and the extract will be removed during migration.

Apply Saved Credentials

On the options tab, enter the **Tableau Username** and corresponding **Saved Credentials Username** for the data connection. You can only apply saved

credentials for existing data connections on the Account Settings page in Tableau Server or Tableau Cloud.

Tableau Username 

Saved Credentials Username

Step 5: Publish Options

The final step in the Workbooks phase is to select publish options and create transformations for tags, extract refresh schedules, and permissions.

Workbook Publish Options

- Reset Dashboard Selections 
- Overwrite Newer Workbooks 
- Copy Workbook Permissions 
- Copy Extract Refresh Schedules 

Content Owner Settings

- Copy Workbook Owner 
- Apply User Mappings 

Add Option ▼

No additional publish options.

Reset Dashboard Selections

This option deselects all objects on dashboards.

Overwrite Newer Workbooks

If checked, a workbook will be migrated even if it will overwrite a workbook that has been created at the same time or more recently than the moved workbook

Copy Workbook Permissions

When selected, the migration tool will attempt to match source workbook permissions as closely as possible.

Copy Extract Refresh Schedules

When selected, the migration tool will attempt to set the destination workbook extract refresh schedule(s) to schedules matching the source’s name.

Copy Workbook Owner

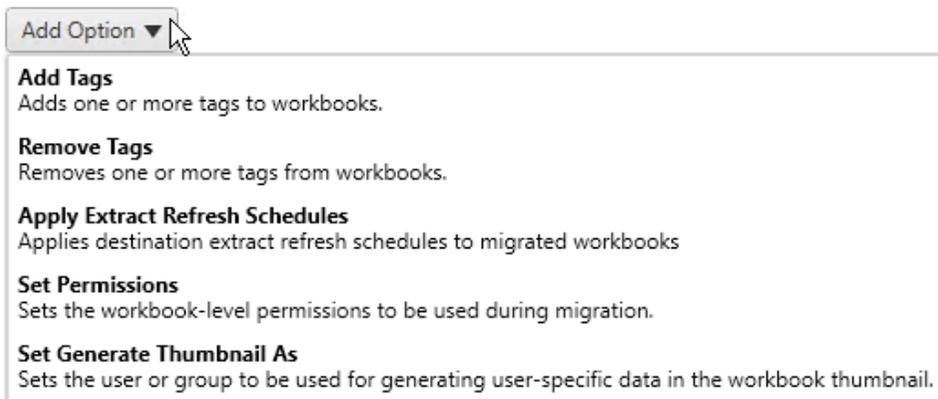
Copy workbook owner settings from the source location to assign the workbook owner. If unselected, the Content Migration Tool user is given ownership of the workbook in the destination location.

Apply User Mappings

Apply user mappings to assign content ownership. Select this option if there are differences in username syntax in the destination location.

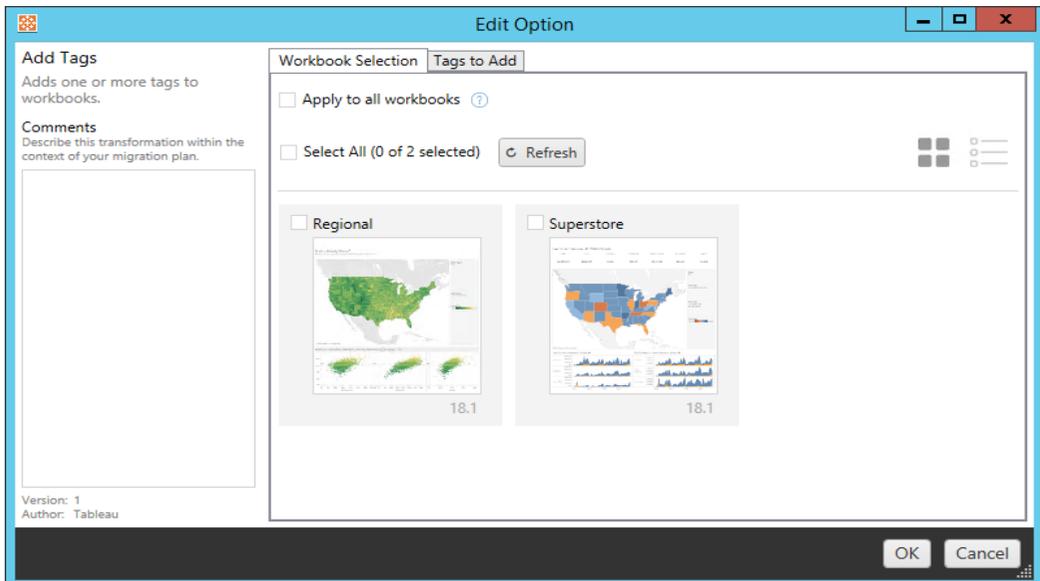
Add Option

Click on the **Add Option** drop-down menu for the different types of transformations you can add:



For all the different types of transformations, there are two basic steps. The first step is to make your selection for the transformation. In this case, select the workbook(s) you want to transform. The selection area is similar

to the Workbook Selection section of the Planning phase. At the top of the list, you can select **Select All** workbooks, which is an option to automatically select all workbooks for future transformations.

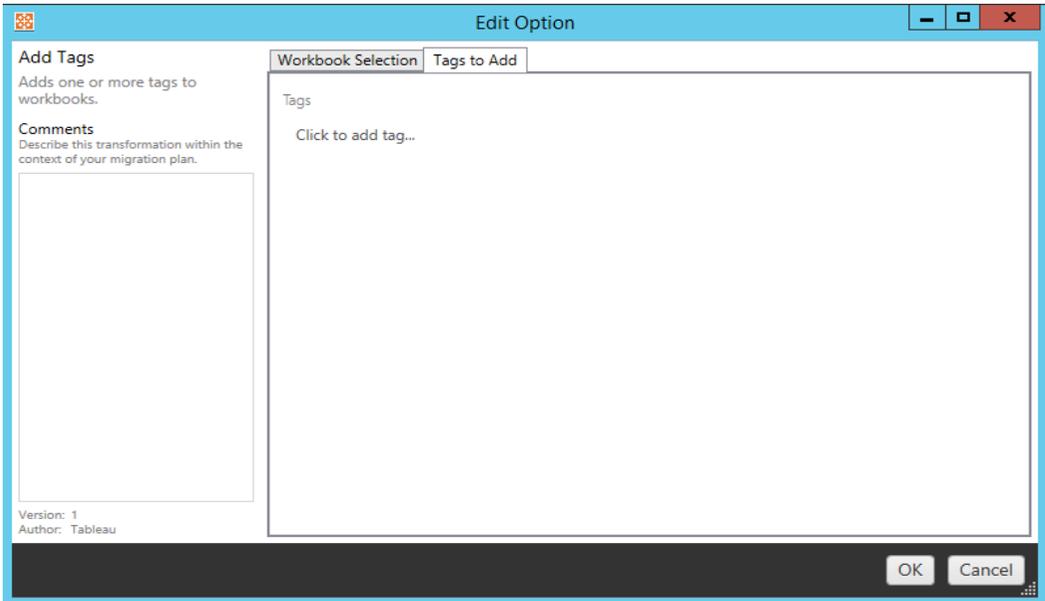


The second step is to use the options tab to enter the specific selections for whichever transformation you select.

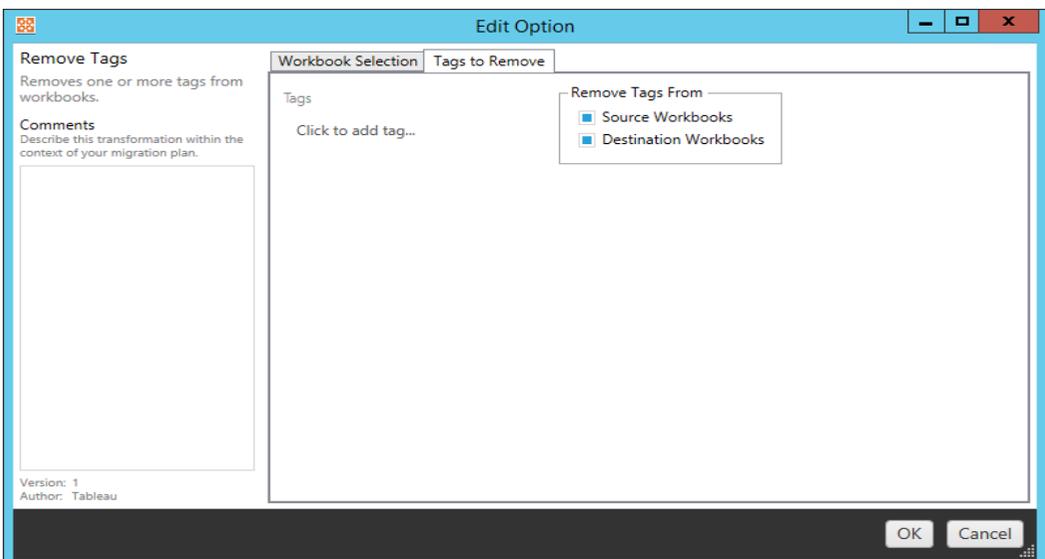
Note: The options tab will have different names, depending on which transformation you are editing.

Add Tags

This allows you to add one or more tags to the workbook.



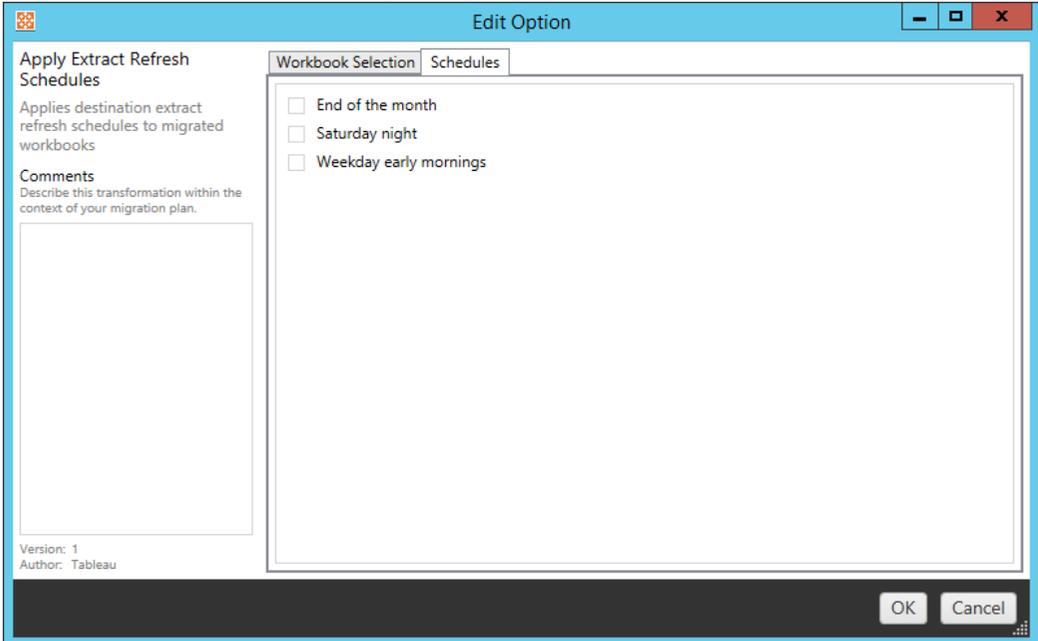
Remove Tags: You can also choose here to remove the tag from the source or destination workbooks.



Apply Extract Refresh Schedules

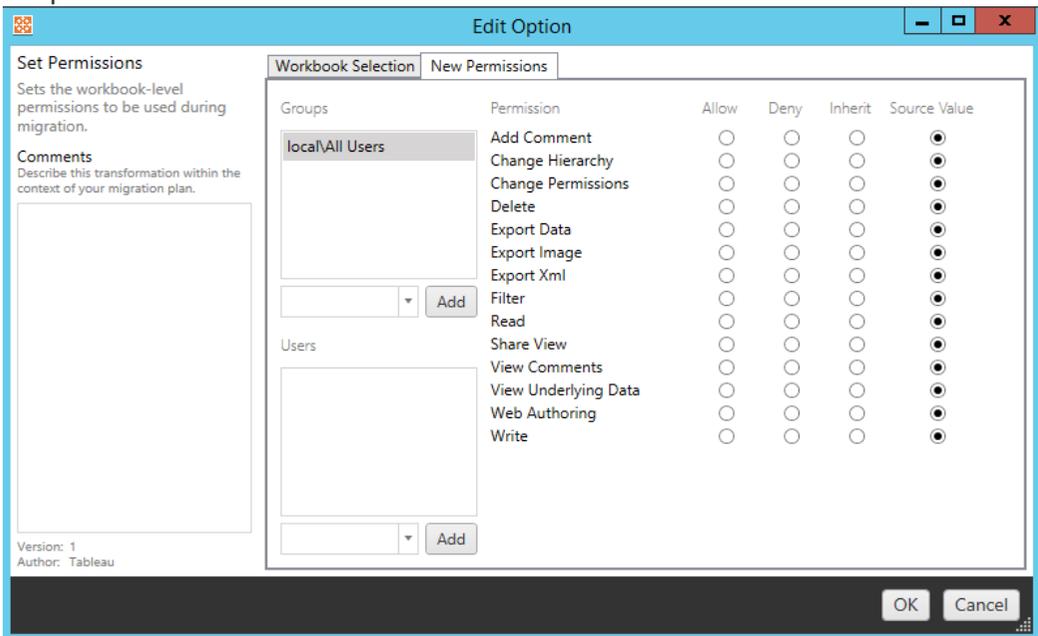
Here you can apply destination extract refresh schedules to migrated workbooks.

Note: The list of schedules generated are from the destination.



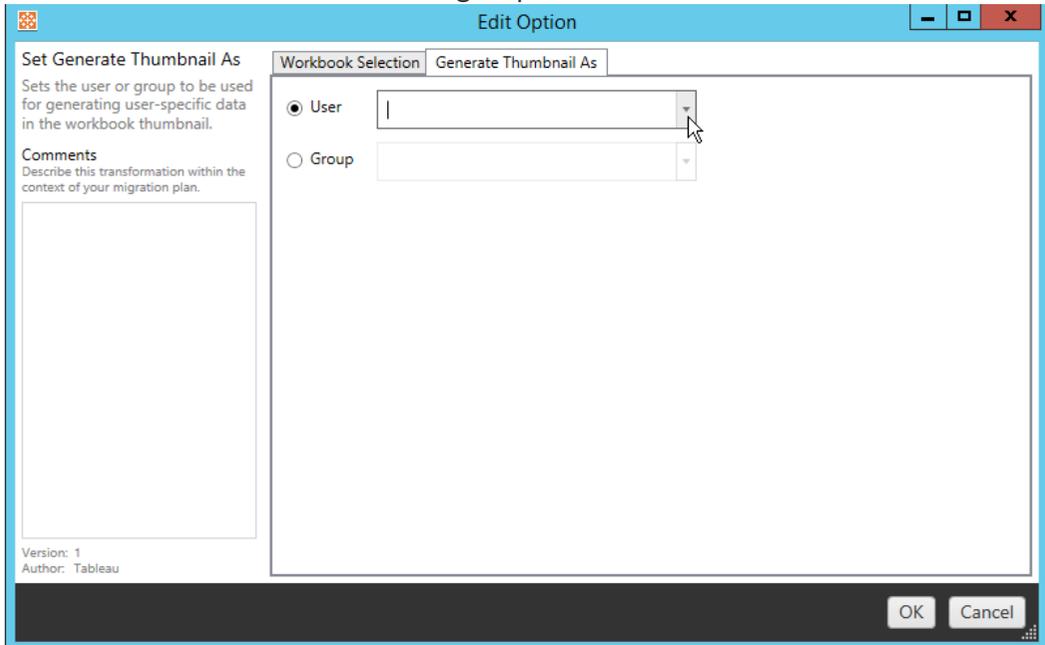
Set Permissions

This transformation is to edit the permissions for the selected workbooks. Enter in a Group or User and then click **Add**. Adjust the permissions as desired. The four different options are to **Allow** the permission, **Deny** the permission, **Inherit**, or to keep the **Source Value**.



Set Generate Thumbnail As

This allows you to set the **User** or **Group** to be used for generating user-specific data in the workbook thumbnail after being migrated. Each option has a drop down to select the desired user or group.



Step 6: Continue to Next Step

You have completed the workbooks section of the planning phase of your migration. Click **Next** to continue.



d) Migration Plans: Published Data Sources

The next step of creating a migration plan in the Tableau Content Migration Tool is to select, map, and add any transformations to your published data sources. The process is very similar to the Workbooks step of the planning phase particularly the data source mapping step.

Step 1: Selection

Starting the Published Data Sources phase of the migration plan, you’ll select any data sources you want to include in the migration plan:

Data Source Selection Need help?

Specific Data Sources
 Rule Based
 All Data Sources
 Refresh

Unselect All (1 of 1 selected)

	Name	Project
<input checked="" type="checkbox"/>	Sheet1 (state_plates)	Mkt-Q3

Step 2: Mapping

The next step is to map your source data sources to the new destination. This is similar in functionality to mapping workbooks.

Data Source Mapping Need help?

Add Mapping

No changes to data source names or projects.

If you make no changes here, then the selected data sources will simply be deployed with the same name and project as the source. To add data source mapping click **Add Mapping**. The following options will appear in the mapping area.

	Name	Project	Destination Name	Destination Project
Delete	(All Selected Data S		(Same As Source)	

The entry has the following options:

- **Delete:** Clicking the **Delete** link will delete this mapping entry.
- **Name:** Use the **Name** menu to select the data source you wish to map. You can select **(All Selected Data Sources)** to choose all the data sources.
- **Project:** The **Project** is the project of the associated data source names.

- **Destination Name:** By default, the Content Migration Tool will use the same **Destination Name (Same as Source)**, keeping the original name in the Source file, but you can type in a new name here for the destination folder.
- **Destination Project:** If projects have been defined in your destination Site, then you can choose which project to place your migrated workbooks or you can click on the **Add New** option to create a new project within the destination site. You can create different project destinations for individual data sources.

	Name	Project	Destination Name	Destination Project
Delete	(id Data Sources) ▾	Default ▾	(Same As Source)	Default ▾
				Add New Accounting Default Sales

In most situations if multiple mapping entries exist for a single data source, a validation error will be displayed and must be fixed to continue. When you have completed all the data source mapping necessary, click **Next** to continue.



Step 3: Data Source Transformations

You can modify your data sources by using the transformation option. Click **Add Transformation** to see the list of transformations available.

Data Source Transformations

Add Transformation ▼

Replace Table/Schema Name
Replaces all or part of a table or schema name.

Set Calculation Formula
Overwrites the formula for a calculated field.

Set Connection Info
Modifies connection information for matching data sources.

Set Custom SQL
Modifies the custom SQL for matching data sources.

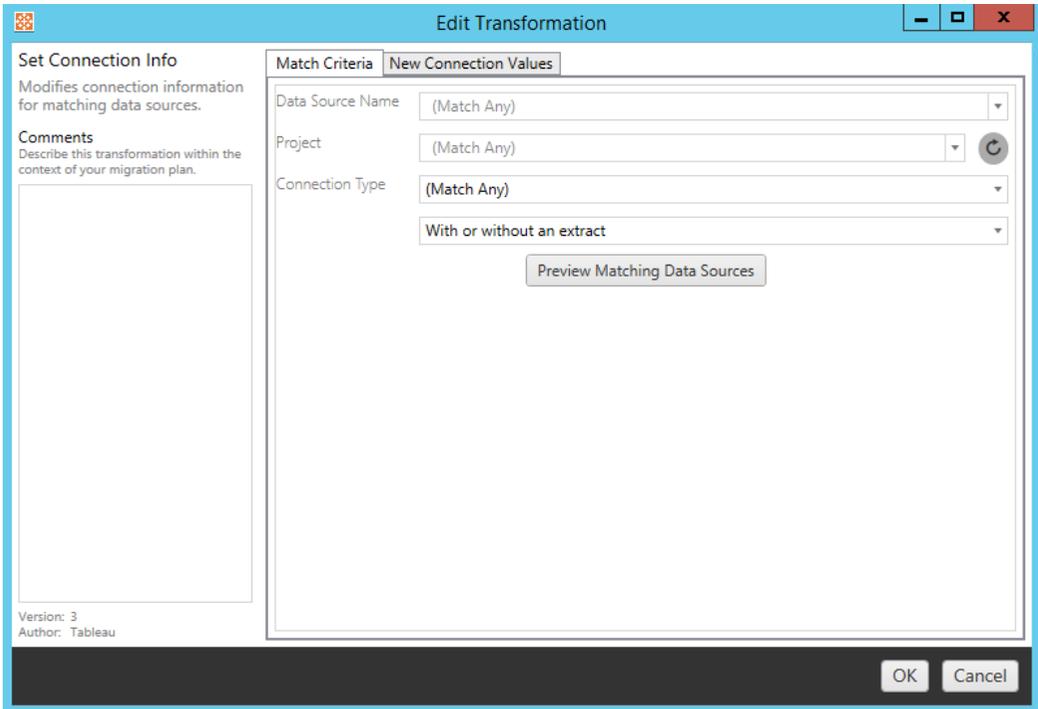
Remove Extract
Removes extracts from matching data sources.

Use Tableau Bridge
Convert to this as a Published Datasource using Tableau Bridge

Apply Saved Credentials
Applies saved credentials for a data connection.

Selecting any of the data source transformations opens the **Edit Transformation** window. Use this to customize your selected data sources. Transformations are executed in the order they are listed, from top to bottom.

For most data source transformations, there are two basic steps. The first step is to enter in the **Match Criteria** for the desired data source. Depending on which connection type you select, more fields will appear on the **Match Criteria** tab.



The second step depends on which transformation type you are adding. Each of the data source transformations have different values to be entered on the second tab.

You can add notes in the **Comments** section on the left side of the **Edit Transformation** window for each of the transformations you add.

Replace Table/Schema Name: On the **Options** tab, you can replace all or part of a table or schema name.

Set Calculation Formula

On the **New Calculation Formula** tab, you can replace the calculation for a column.

Column Name	
Formula	

Set Connection Info

On the **New Connection Values** tab, there will be different fields here based on the Connection Type you selected and perhaps even no fields needed at all.

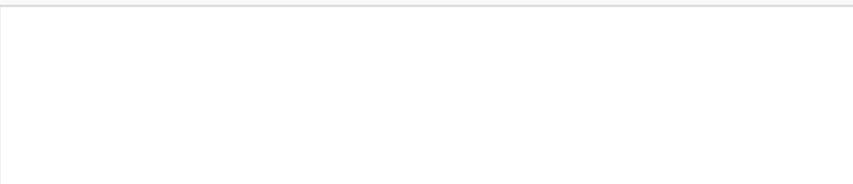
File Path



Set Custom SQL

On the **New Custom SQL** tab, enter the custom SQL in the text area. You should be aware that custom SQL can negatively impact the performance of your workbooks if improperly used.

Custom SQL



Remove Extract

To remove the extract, type the **Match Criteria** information and the extract will be removed during migration.

Use Tableau Bridge

There is no **Options** tab for this transformation. Type the **Match Criteria** information and data sources that are within a private network (inaccessible to the public internet) will be allowed to refresh using Tableau Bridge.

The destination Tableau Cloud site must have Tableau Bridge configured before migrating data sources. After the migration, data sources will need to be assigned a refresh schedule through Tableau Cloud.

Apply Saved Credentials

On the options tab, enter the **Tableau Username** and corresponding **Saved Credentials Username** for the data connection. You can only apply saved credentials for existing data connections on the Account Settings page in Tableau Server or Tableau Cloud.

Tableau Username 

Saved Credentials Username

Step 4: Publish Options

The final step in the Published Data Source phase is to create transformations for permissions and tags and finalize the publish options specific to the data sources.

Data Source Publish Options

Overwrite Newer Data Sources 

Copy Data Source Permissions 

Copy Extract Refresh Schedules 

Content Owner Settings

Copy Data Source Owner 

Apply User Mappings 

Add Option ▼

No additional publish options.

The following checkboxes offer the following additional options:

- **Overwrite Newer Data Sources:** If checked, a data source will be deployed even if it will overwrite a data source that has been updated more recently.
- **Copy Data Source Permissions:** If checked, deployment will attempt to make source published data source permissions as closely as possible.
- **Copy Extract Refresh Schedules:** If checked, deployment will attempt to set the destination data source extract refresh schedules to schedules matching the source’s name.
- **Copy Data Source Owner:** Copy data source owner settings from the source location to assign the data source owner. If unselected, the Content Migration Tool user is given ownership of the data source in the destination location.

- **Apply User Mappings:** Apply user mappings to assign content ownership. Select this option if there are differences in username syntax in the destination location.

Click on **Add Options** for the four different types of transformations you can add:

Add Option ▼

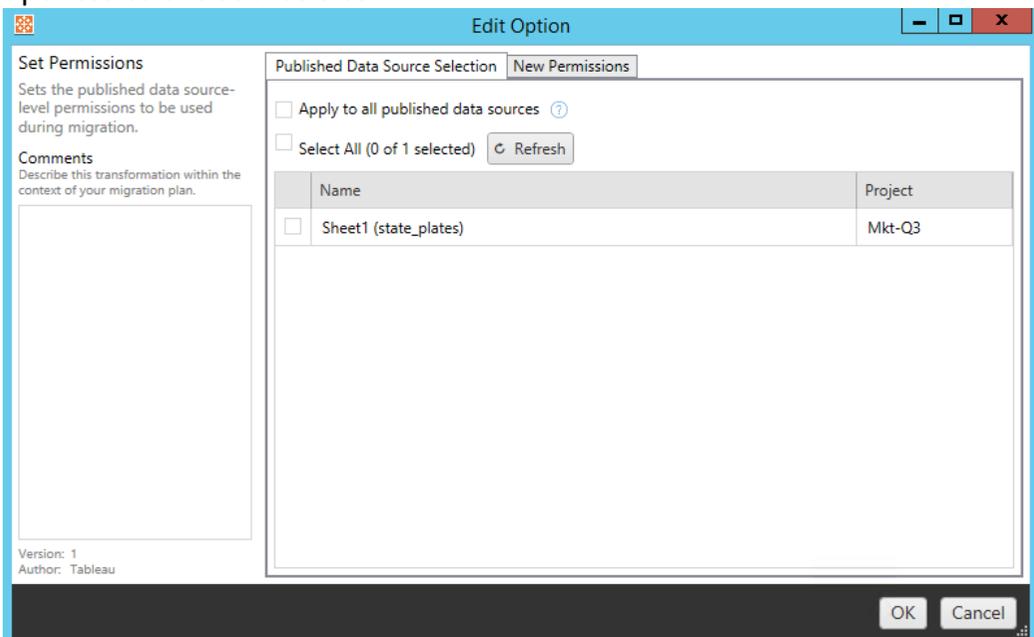
Remove Tags
Removes one or more tags from published data sources.

Add Tags
Adds one or more tags to published data sources.

Apply Extract Refresh Schedules
Applies destination extract refresh schedules to migrated data sources

Set Permissions
Sets the published data source-level permissions to be used during migration.

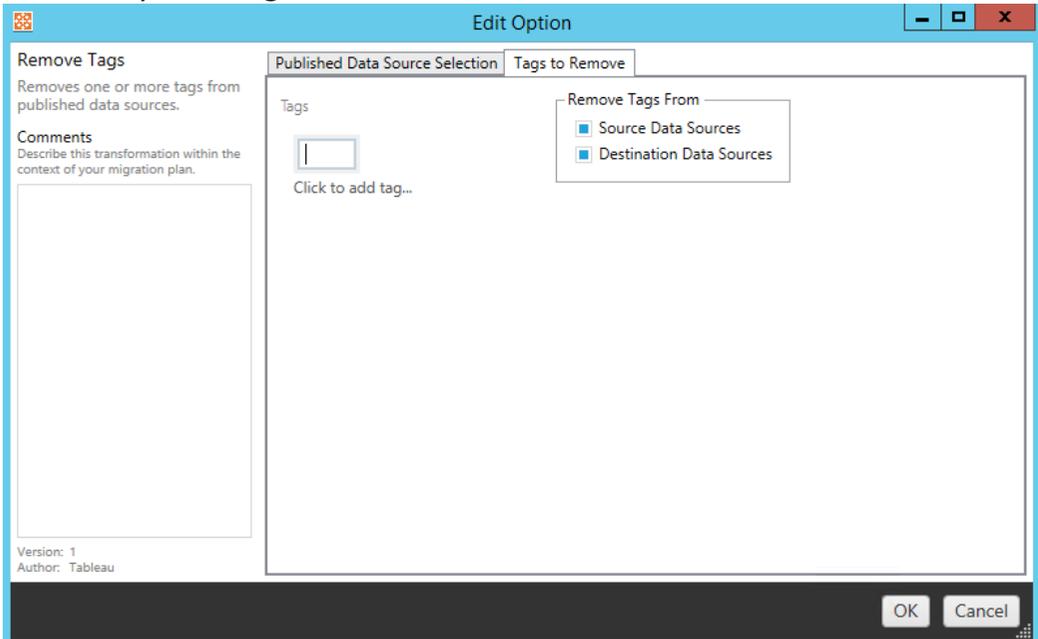
For all the different types of transformations, there are two basic steps. The first step is to make your selection for the transformation. In this case, select the data source(s) you want to transform. At the top of the list, you can select **Apply to all published data sources**, which is an option to automatically select all data sources for future transformations. You can also **Refresh** the data source display window to reflect any changes or updates to the source site.



The second step is to enter the specific selections for the transformation you select.

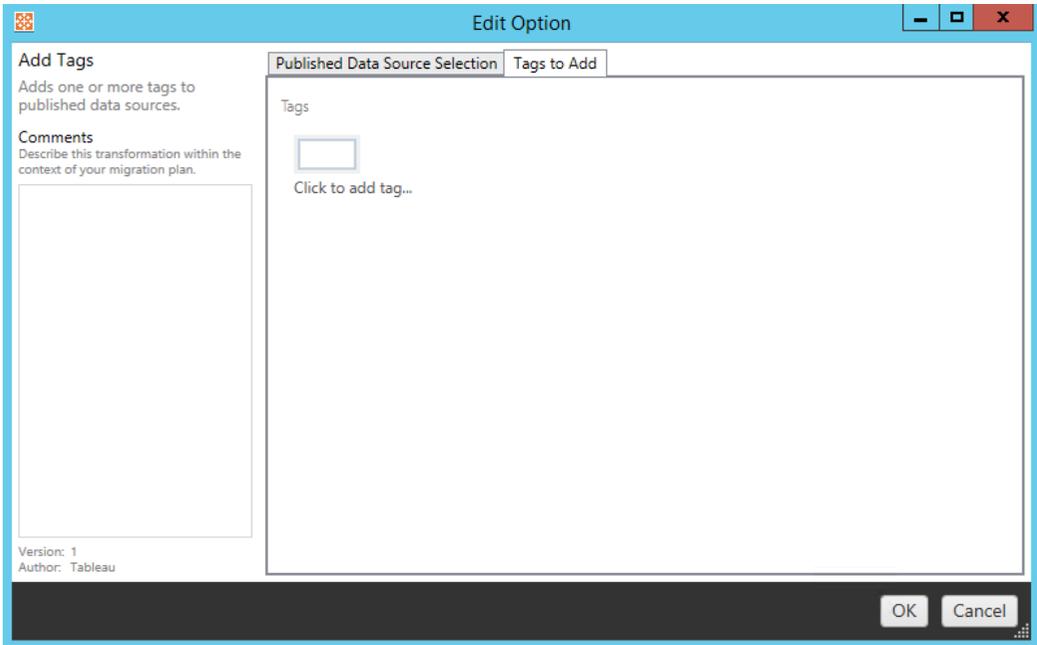
Remove Tags

To remove the tags from selected data source, enter any tags you want to remove by entering them into the field at the bottom and click **Add**.



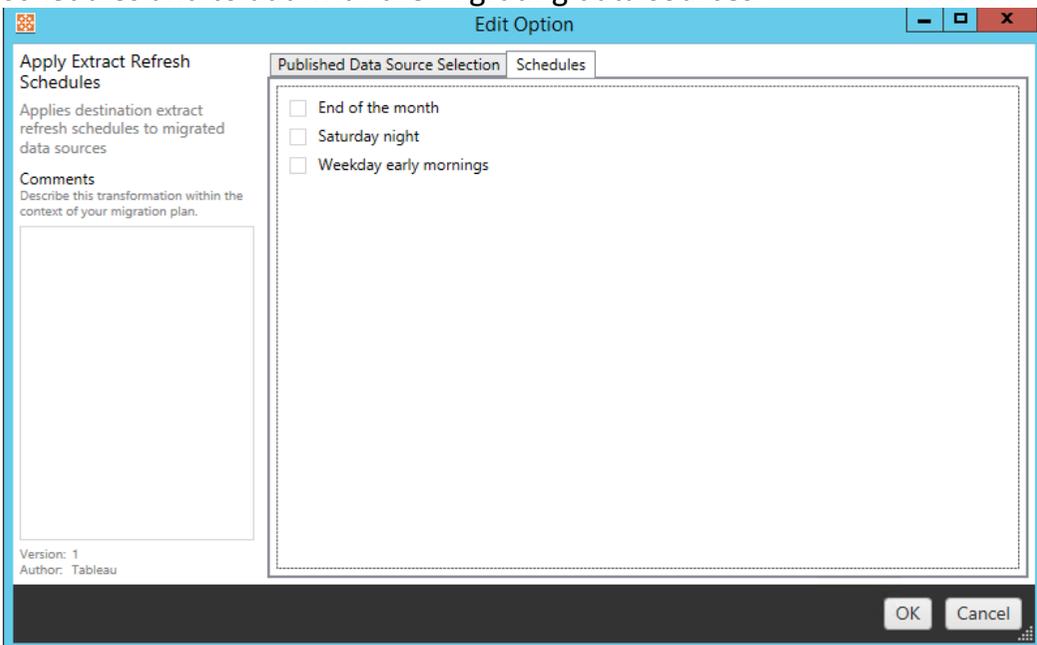
Add Tags

After selecting the data sources, enter any tags you want to assign by entering them into the field at the bottom and click **Add**.



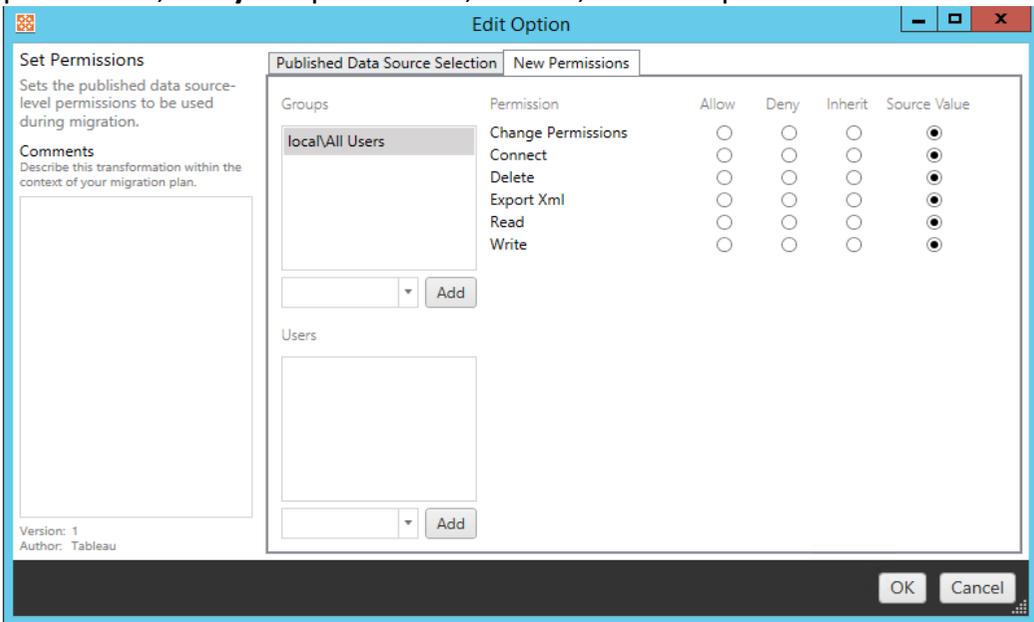
Apply Extract Refresh Schedules

This transformation will allow you to select the destination extract schedules and to add with the migrating data sources.



Set Permissions

The last type of transformation is to edit the permissions for the selected data sources. Enter in a Group or User and click **Add**. Adjust the permissions as desired. The four different options are to **Allow** the permission, **Deny** the permission, **Inherit**, or to keep the **Source Value**.



Step 5: Continue to Next Step

Now click next to continue to the Migration Plans: User Permission Mapping section of the planning phase.

e) Migration Plans: User Permissions Mapping

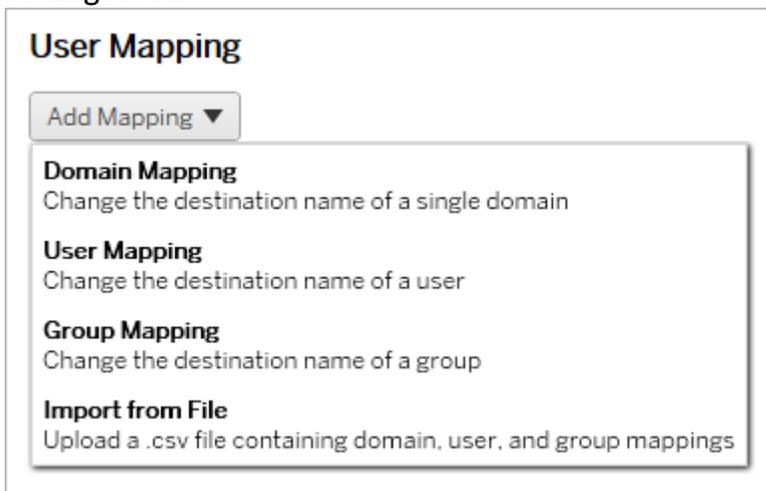
The Content Migration Tool allows you to replicate workbook and data source permissions to Tableau Server environments in different network domains or have differences in username or group syntax. You can create user permissions mappings to customize and secure content after it has been published to the destination location. Mappings are applied if **Copy Project Permissions**, **Copy Workbook Permissions**, or **Copy Data Source Permissions** have been selected earlier in the planning phase, along with **Apply User Mappings**.

Mapping limitations

- Content Migration Tool will stop the migration process if it fails to find the mapped user or group in the destination location. Subsequent user or group permissions mappings are not checked after the first failure, and the plan must be run again.
- Content Migration Tool cannot replicate permissions if the source content has permissions for multiple users and groups with identical names. This only occurs when there are duplicate user or group names sourced from separate domains.

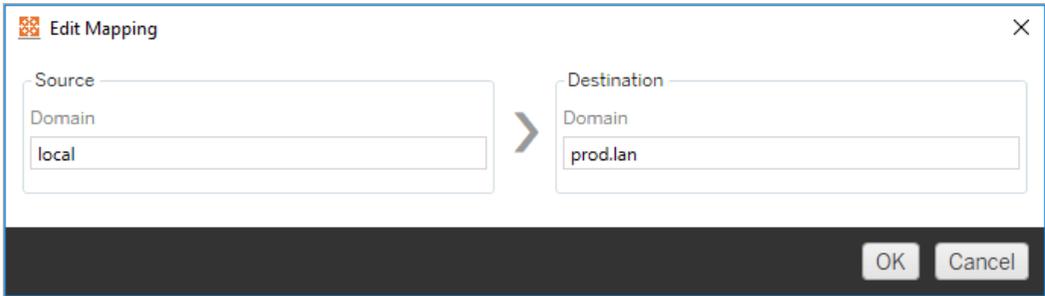
Step 1: Add mapping

To add user permissions mapping, click **Add Mapping** and select whether to change the name of a domain, user, group or to import mappings from a comma-separated values (CSV) file. If Content Migration Tool is unable to match a permission in the destination location, the source content will not be migrated.



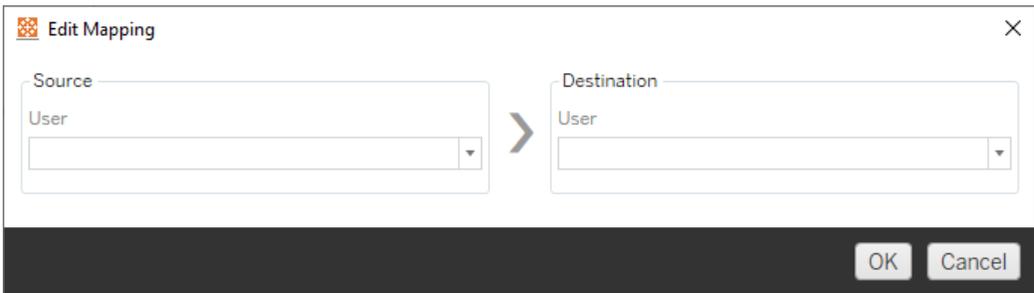
Domain Mapping

Domain permissions mapping applies to all users and groups in the destination location. If you are unsure about the source or destination domain, you can check the user and group pages in Tableau Server. If local user provisioning has been selected, the domain must be specified as local.



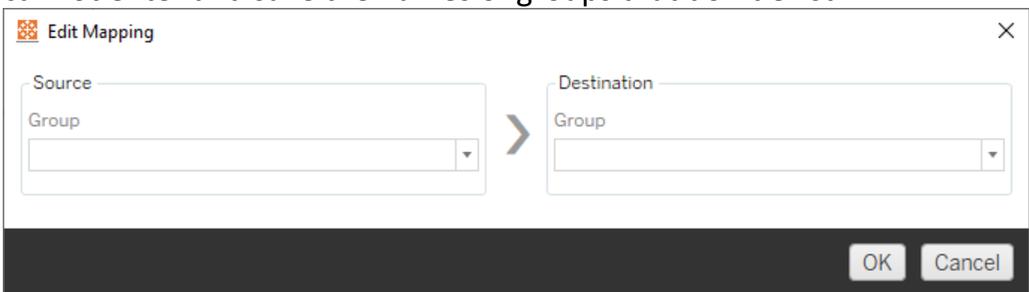
User Mapping

User permissions mapping automatically populates a list of users from the source and destination locations using the syntax domain\user. You cannot enter and save the names of users that don’t exist.



Group Mapping

Group permissions mapping automatically populates a list of users from the source and destination locations using the syntax domain\group. You cannot enter and save the names of groups that don’t exist.



Import mappings from a CSV file

Starting in version 2021.4, you can import a CSV file with domain, user, and group mappings to quickly prepare your data for migration. Importing mappings can reduce the manual steps required to run a migration plan by allowing you to create and edit your mappings in bulk outside of Content

Migration Tool. To import mappings, select **Import from File** from the Add Mapping menu.

CSV file format requirements

When you create a CSV file to import mappings, make sure that the file meets the following requirements:

- The file does not include column headings. Tableau assumes that every line represents a mapping.
- The file contains three comma-separated values per row: mapping type, source domain/user/group, and destination domain/user/group.
- Include the domain for usernames and groups if the server uses Active Directory authentication or "local" if the server uses a local identity store.

You must specify "domain," "user," or "group" for mapping type, as shown in the following table. The source and destination columns provide example syntax for Active Directory and a local identity store. Actual values in the CSV file will vary depending on your organization.

Mapping Type	Source	Destination
domain	<domain>	<domain>
user	<domain>\<username> local\<username>	<domain>\<username> local\<username>
group	<domain>\<group name> local\<group name>	<domain>\<group name> local\<group name>

CSV import example

The following example shows a CSV file that contains multiple mapping types.

```
user,local\hwilson,companyx.lan\henry.wilson
user,local\jjohnson,companyx.lan\janna.johnson
user,local\mkim,companyx.lan\michele.kim
user,local\fsuzuki,companyx.lan\fred.suzuki
user,local\awang,companyx.lan\alan.wang
user,local\snguyen,companyx.lan\susan.nguyen
user,local\lrodriguez,companyx.lan\laura.rodriguez

user,local\agarcia,companyx.lan\ashley.garcia
```

```
group,local\\All Users,companyx.lan\\All Users
group,local\\Finance Team,companyx.lan\\Finance
Group
domain,dev.mycompany,prod.mycompany
```

Content Migration Tool will validate the mappings for errors when importing the file. If errors are detected, you must fix each error in the CSV file and then import again. A preview mapping dialog window is displayed while importing if the CSV contains more than ten rows of data. Review the mapping descriptions and click **Accept**.

Step 2: Change mapping order

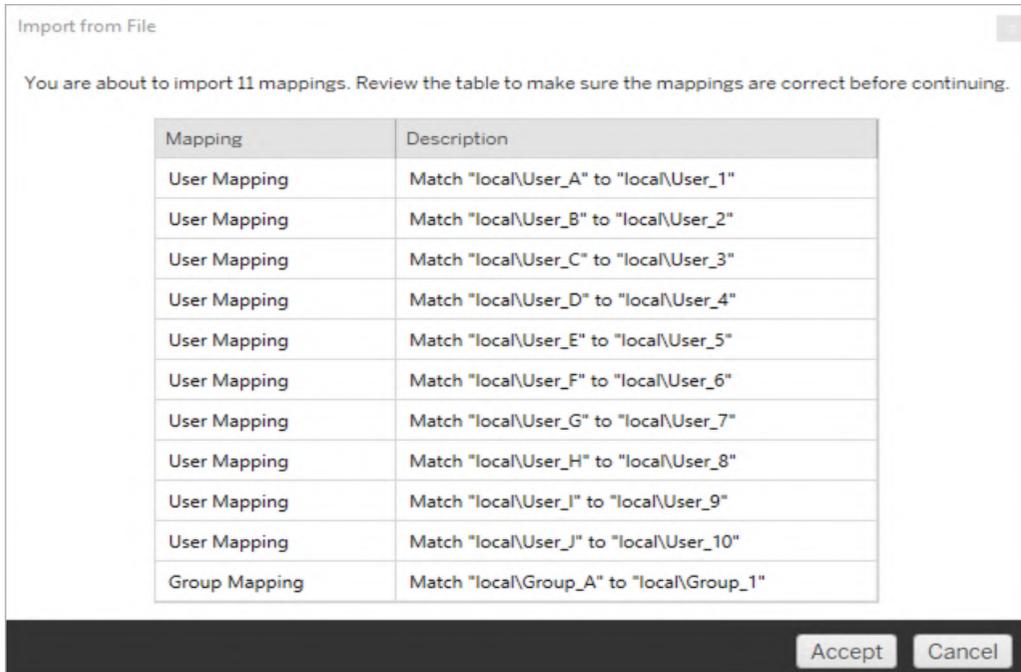
After a permissions mapping is created, you can change the order using the **Up** or **Down** options to determine when it will be handled during the migration. When a domain, user, or group is handled in a permissions mapping, any subsequent permissions mappings for the source domain, user, or group will be ignored.

In the example below, permissions for User_A are mapped to User_B. Content Migration Tool will ignore the second permissions mapping because User_A has already been handled.

	Mapping	Description
Edit Delete Up Down	User Mapping	Match "local\\User_A" to "local\\User_B"
Edit Delete Up Down	User Mapping	Match "local\\User_A" to "local\\User_C"

In the example below, the first permissions mapping associates the domain for all users to prod. Content Migration Tool will ignore the second permissions mapping because the domain for User_A has already been handled.

	Mapping	Description
Edit Delete Up Down	Domain Mapping	Match "local" to "prod"
Edit Delete Up Down	User Mapping	Match "User_A" to "dev\\User_B"



Once the mappings are imported successfully, you can edit, delete, or change the mapping order as described in Step 2.

Step 3: Continue to next step

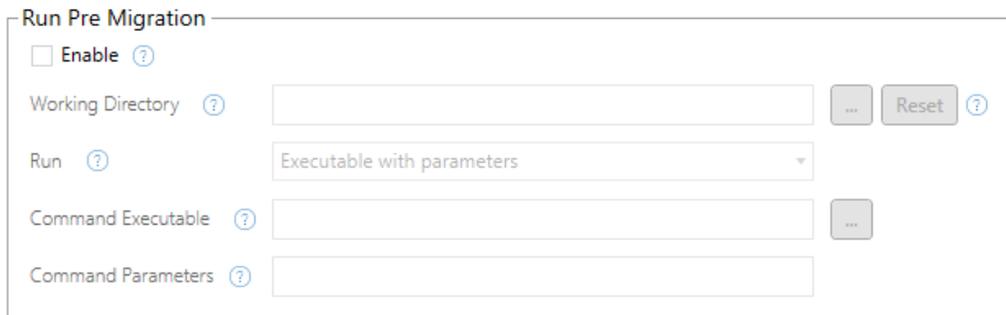
When you are ready, click **Next** to continue to the **Migration Plans: Migration Scripts** section of the planning phase.

f) [Migration Plans: Migration Scripts](#)

The next step of creating a migration plan in the Tableau Content Migration Tool is to create any scripts you want to run with your plan before or after migration.

Step 1: Pre-Migration

The **Run Pre-Migration** section of the screen is dedicated to scripts that will run prior to migration.



To start with your pre-migration scripts, select **Enable**, which will then activate the fields below.

Working Directory

This is the working directory for the script. The default directory is the same folder as the migration plan. Click on the browse button to select a different folder. The **Reset** button will restore the current folder as the plan as the working directory.

Run

This drop down allows you to choose either to run a custom script or an executable with parameters.

Command Executable

If you selected **Executable with Parameters** from the **Run** menu, this field would appear. This is the file path to the command executable to run prior to migration. Type it in directly or use the browse button to find the executable. This is a required field.

Command Parameters

If you selected **Executable with Parameters** from the Run drop-down menu, this field will appear. Enter in command line parameters here to use with the command executable.

Script

If you selected **Custom script** from the **Run** menu, enter in your pre-migration script here. It will be executed as a *.cmd file. This is a required field.

Step 2: Post-Migration

The **Run Post Migration** half of the screen is dedicated to scripts that will run after migration. This section is similar and has same option available as **Run Pre-Migration**.

Step 3: Continue to Next Step

When you are ready, click **Next**.



g) Migration Plans: Plan Options

The last step of creating a migration plan in the Tableau Content Migration Tool is configuring the **Options** section.

Each option on this screen has a question mark that will provide contextual assistance for that option.

Step 1: Options

There are five options.

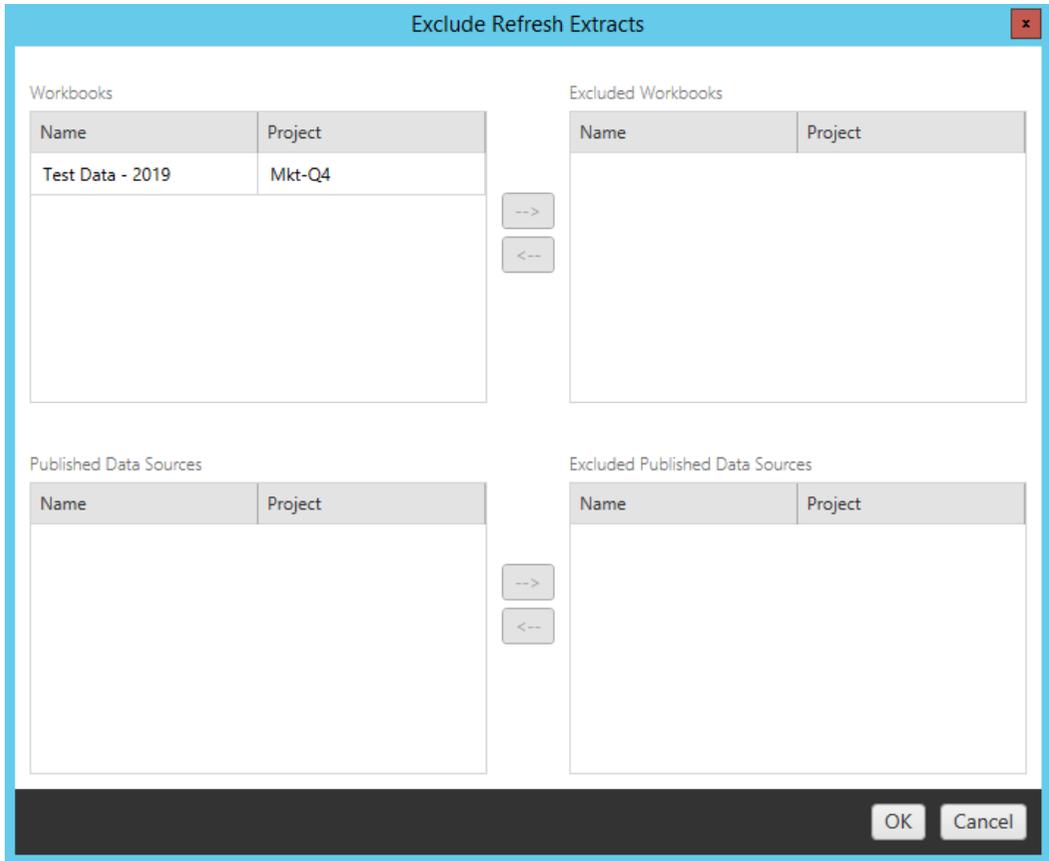


The **Plan Name** is the name of the plan as it will appear in Content Migration Tool. We recommend using a user-friendly name for your plan name. The following checkboxes offer the following additional options:

- **Refresh Extracts After Migration:** If selected, any data extracts will be refreshed immediately after migration if Content Migration Tool detects that they might have been modified during migration. Click the **Filter** link for more options.
- **Continue Migration if Workbook or Data Source Fails:** If checked, errors migrating a workbook or data source will not cause the migration to stop. The errors will be logged, and the migration will continue. Errors during version control will always stop the migration.
- **Automatically create Extract Refresh Schedules that do not Exist:** Automatically creates destination extract schedules that do not exist. If not checked source schedules that do not exist on the destination server will not be copied.

Exclude Extract Refreshes

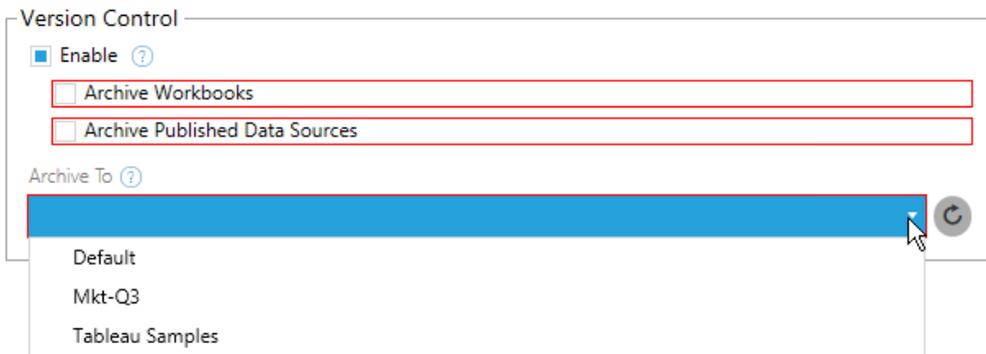
By clicking on the **Filter** link after the **Refresh Extracts After Migration** option, you will be able to choose which workbooks or published data sources will be excluded from being refreshed.



Use the back-and-forth arrow buttons to select which items you want excluded and then click **OK**.

Step 2: Version Control

These options allow you to avoid losing the existing workbooks in the destination site that might be replaced by the migrated workbooks.



Click **Enable** to save your previous versions. You can choose to archive workbooks and/or published data sources. You’ll need to select an option from the **Archive To** menu which lists all the projects in your destination server. We recommend creating a special archive project just to store your versioned workbooks.

Step 3: Save Plan

Once you have completed all your selections on the **Plan Options** screen, you can save your plan for future use. Click **Save Plan**.



Save Plan

Your plan will be saved to Tableau Content Migration Tool folder in the **My Documents** folder on your local machine.

Step 4: Continue to Next Step

When you are ready, click on **Verify & Run** to end the Planning phase of your migration and prepare to run your plan.



Verify & Run

- h) Migration Plans: Migrating Workbooks and Data sources that uses extracts

When you use the Tableau Content Migration Tool to migrate a workbook or data source that contains an extract, that extract is migrated along with the workbook or data source that contains it. The Content Migration Tool gives you a couple options for controlling this behaviour:

- **Switching to a Live Connection**

You can add the **Remove Extract** transformation to your migration plan to remove the extract from your workbook or data source during migration and this effectively switches the data connection back to a live connection.

- **Refreshing Extracts after Migration**

You can enable the **Refresh Extracts After Migration** option in your migration plan to have an immediate extract refresh task scheduled after the workbook or data source is migrated.

We don't recommend using the **Refresh Extracts After Migration** option if your migration plan also uses the **Set Connection Info** transformation to change the data connections to point to a different set of data (for example, a different database server or database). When you change the connection information to point to different data and use the **Refresh Extracts After Migration** option, this can unintentionally expose data in a way that is a potential security issue.

- **Changing data connections that use extracts**

Tableau data connections are either live connections that directly query a data source, or they are extracts of a data source.

Commonly, you'll want to modify the data source connection during the migration so that it points to a different database on the destination server than it did on the source server.

For example, if you are migrating a workbook from your staging server to your production server, you will likely want to update the data connections inside the workbook to connect to your production database. You can implement this by using the Content Migration Tool **set ConnectionInfo** transformation in your migration plan. Now you have a migration plan which copies a workbook from staging to production and updates the data connections to point to the production database.

If your workbook's data source uses an extract, then you need to do a bit more work. In the current scenario, the workbook will be migrated, and the live data connection updated, but the workbook's views will still be showing the data from the staging database because the workbook still contains same extract of the staging database which it was using when it was copied from the source (staging) server. There are a few ways to address this.

Option 1: Use Published Data Sources

You can change your workbooks so that they use published data sources instead. This way, the extract will be managed as part of the published data source and migrating updates to the workbooks that use that data source can be simplified by not having to worry about the connection to the live database or the data extract.

Option 2: Remove the Extract During Migration

You can add a **Remove Extract** transformation to your migration plan. This will remove the extract from your workbook, effectively switching the data source to a live connection.

Option 3: Refresh the Extract After Migration

You can use the **Refresh Extracts After Migration** option in your migration plan. This will migrate the extract along with workbook but will schedule an immediate extract refresh task for that workbook after the migration is complete.

This option is usually not recommended when used in combination with a **Set Connection Info** transformation because of potential security issues that it can introduce.

The issue is that the migrated workbook on your destination server will still show the old (source) extract data for the period of time between the completion of migration and the completion of the extract refresh task. If the extract refresh task fails, then the old/source extract data will remain until the extract is refreshed.

In a scenario like we've outlined above, migrating from a staging to production environment, this may be acceptable, but you should be aware that the users of your workbooks may not be aware that the workbook is showing old/staging data due it being recently migrated and the extract not being refreshed yet.

In other scenarios where you may be using **Set Connection Info** to change data connections to point to a different set of customer or client data, this could introduce serious security issues where the workbook’s extract contains data from a different client or customer until the extract has been refreshed post-migration.

One way to mitigate this issue is to implement a 2-stage migration. This approach requires you to create two migration plans, one for each step described below and ensures the workbooks and data sources have an up-t-o-date extract before they are accessible.

- **Stage 1:** Migrate your content to a project on your destination site that only administrators have access to. This migration allows you to use the **Refresh the Extract After Migration** option along with the **Set Connection Info** transformation to update the data connection, because no unauthorized users will have an opportunity to see the old data, even if the extract refresh fails.
- **Stage 2:** After stage 1 is complete and you confirm there is a successful extract refresh, run a second migration plan to migrate the content from the stage 1 destination to the final destination where it is visible to end-users.

4.3.3 Migration

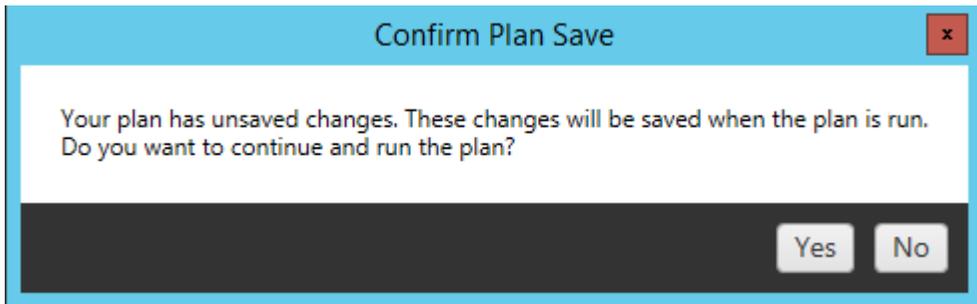
Once you have completed your plan, you are now ready to run the batch process for migration. When you reach the final step of the migration, a plan summary displays for your verification:

Review
Need help? 

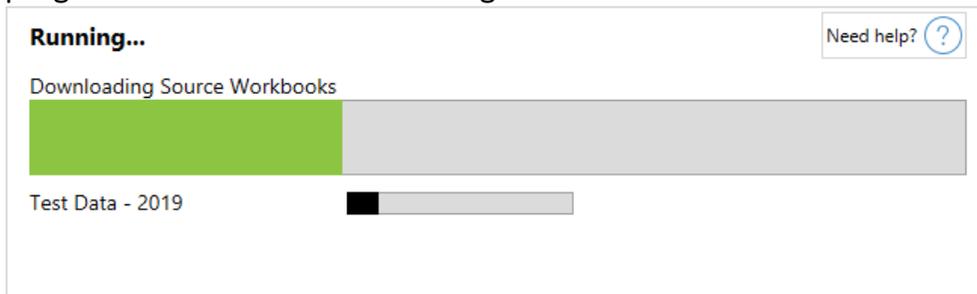
Source:	http://admin@win-vj23dhvudie:80/#/site/Accounting-sandbox
Destination:	http://admin@win-vj23dhvudie:80/#/site/Accounting
Projects:	Default Mkt-Q3 Mkt-Q4
Workbooks:	Test Data - 2019 [Project: Mkt-Q4]
Published Data Sources:	All data sources
Auto Archive:	No

If you want to change any aspects of your plan, you can click on a section in the left sidebar to go directly to that phase. When you are ready, click **Run** to begin your migration.

When you click **Run**, the migration tool will prompt you about any unsaved elements of your plan. By default, any unsaved elements will be saved when you click **Yes**.



Your migration plan will run and a status bar displays for the overall plan progress and each workbook being sent to the destination server.



When the plan finishes running, you can click the tabs at the bottom of the screen for more information about the migration.

Published workbooks

Published Workbooks details the newly published workbooks and the projects where they were migrated.

Published Workbooks		Published Data Sources	Output	Errors and Warnings
Workbook	Project			
Test Data - 2019	Mkt-Q4		View on Tableau Server	

Published data sources

Published Data Sources details the newly published data sources and the projects where they were migrated.

Output

The **Output** tab details the migration log of your plan.

Published Workbooks	Published Data Sources	Output	Errors and Warnings
<pre> ----- Tableau Content Migration Tool Version 2019.3.0 Build 20193.19.0712.1501+165d952 ----- Started : 7/15/2019 10:23:52 PM Plan : DefautToDefault2.tcmx File : C:\Users\jsmith\Documents\Tableau Content Migration Tool Plans\DefautToDe Migration ID : 1d60b6bb-9eaf-48a7-878d-53f1887009ee Source : http://admin@win-vj23dhvudie:80/#/site/Accounting-sandbox Destination : http://admin@win-vj23dhvudie:80/#/site/Accounting </pre>			

You can save this log by clicking **Save Log**.



Save Log

4.4 Migration rollback

You can use the rollback feature of the Tableau Content Migration Tool when you have workbooks or data sources that have been archived during migration. To initiate a rollback, click **Rollback** on the Start screen.



Roll Back

You will be guided through four preparatory steps before starting the rollback.

Step 1: Server

The first step is to sign into server.

Tableau Server

Server

Import from Saved Connection ▼

Server URL

Username

Password

Save password ?

Site:

Sign In and Select a Site

[Add or edit saved connections](#)

Here you need to enter the connection information once, for the server on which you want to roll back the migration.

Click **Import from Saved Connection** to select a stored connection. Click **Add or edit saved connections** to create or update your sign in information. When you are ready, click **Sign in** and **Select a Site**.

If you used stored connection information, the default site will be automatically listed. You can change the site by clicking **Change Site**. Click **Next** when you are ready to continue.



Step 2: Migration

The next step is to choose which migration and archived workbooks and data sources you want to restore.

Migration	
Date	Summary
7/16/2019 5:22 PM	ACCT-archive: 2 workbooks, 0 data sources

The historical migration are listed by date with a summary of each. The summary shows how many workbooks and published data sources were archived. Select the migration you want to roll back to and click **Next**.



Step 3: Workbooks

The next step is to select which of the archived workbooks you want to restore from the selected migration.

Workbooks Need help?

Showing 2 workbook(s) from the 7/16/2019 5:22 PM migration

Select the workbooks you want to roll back Refresh

Select All (0 of 2 selected)

Regional [Project: Table...]

18.1

Superstore [Project: Tabl...]

18.1

Once you have made your selections, click **Next**.



Step 4: Published Data Sources

For this step, choose the archived published data sources that you want to restore from your selected migration. The selection process is identical to the data source selection screen from the migration plan process.

Published Data Sources Need help?

Showing 1 published data source(s) from the 7/17/2019 11:18 PM migration

Select the published data sources you want to roll back Refresh

Select All (0 of 1 selected)

	Name	Project
<input type="checkbox"/>	Sheet1 (state_plates)	Mkt-Q3

When you have made your selections, click **Next**.



Step 5: Run Rollback

The final step of the rollback process is to verify that all of your selections are accurate for the workbooks and published data sources that you want to restore.

Verify

Source: `http://win-vj23dhvudie /#/site/Accounting-sandbox`

Archive Date: 7/16/2019 5:22:35 PM

Workbooks: Regional [Project: Tableau Samples]
Superstore [Project: Tableau Samples]

Published Data Sources: No selections

When you are ready to continue, click **Roll Back** run the rollback.



Roll Back

A status bar indicator shows the progress of each step of the rollback. Depending on how many files you are restoring, this process may take several minutes.

Running... Need help? 

Discovering Source Published Data Sources

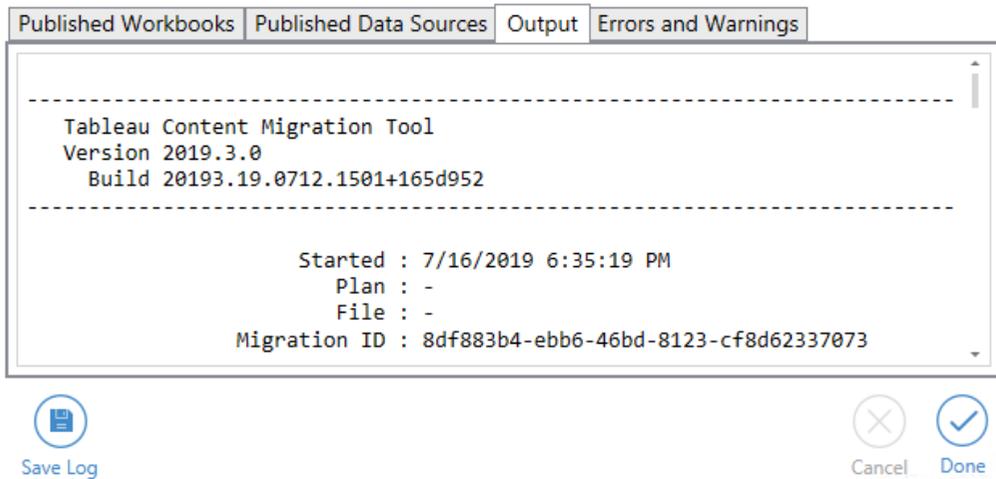
When the rollback is complete, you will be alerted with a completed status bar.

Finished Need help? 

Migration Complete

Beneath the status bar is a multi-tabbed text area with more information. This is similar to the finish screen of an actual migration. The first tab will indicate archived workbooks that were successfully restored. The second tab will list published data sources. The third tab is an output log that details

the rollback. Finally, any errors or warnings will be listed in the final fourth tab.



When you are finished, click **Done** to return to the main screen.

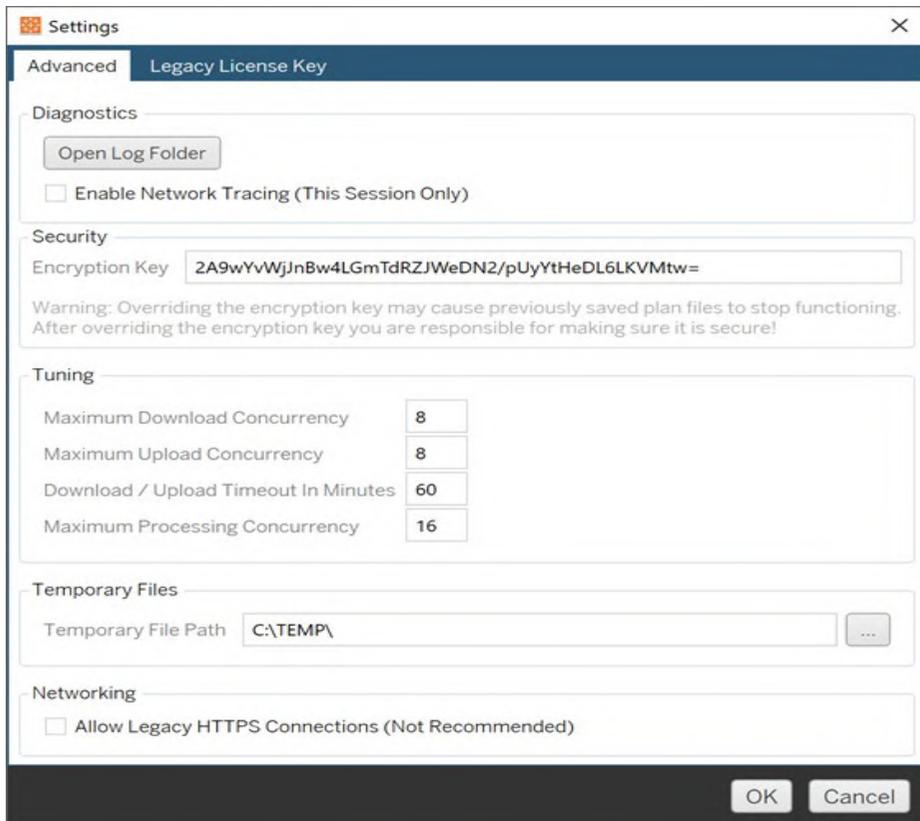


4.5 Content Migration Tool Settings

The default settings for Tableau Content Migration Tool work in most cases, but you can change these if you need to, or if you are working with Tableau Support and they request you to do so.

To view or update the Content Migration Tool settings:

1. Open Content Migration Tool.
2. Click **Help** and **Settings**. The **Settings** dialog opens:



3. **Diagnostics**—Click **Open Log Folder** to open the logs location. Here you can view the logs, and zip them up if you need to send them to Tableau.
Select **Enable Network Tracing** if you are working with Support and they ask you to include a network trace in the logs. This applies until you clear the option or restart the Content Migration Tool.
4. **Security**—The encryption key is automatically generated on installation. If you change the encryption key, any migration plans with embedded passwords that were created with the previous key cannot be opened. If you have multiple installations of Tableau Content Migration Tool and want to share migration plans, you need to make sure the encryption key used by each instance of the tool is the same.
5. **Tuning**—In almost all cases you can leave these set to the defaults. If you are working with Support, they may ask you to change these settings.

6. **Temporary Files**—Select a location for temporary files if you want to change the default. This is the location where content is copied during a migration. You may want to change this if the default location does not have enough space to temporarily hold migrated content.
7. **Networking**—Selecting **Allow Legacy HTTPS Connections** gives you the ability to connect to Tableau Server installations running with older HTTPS configurations (for example, SSL v3). This is not recommended.

Who can do this?

Typically, the tasks listed above can only be done by a user with Administrator access on the machine.

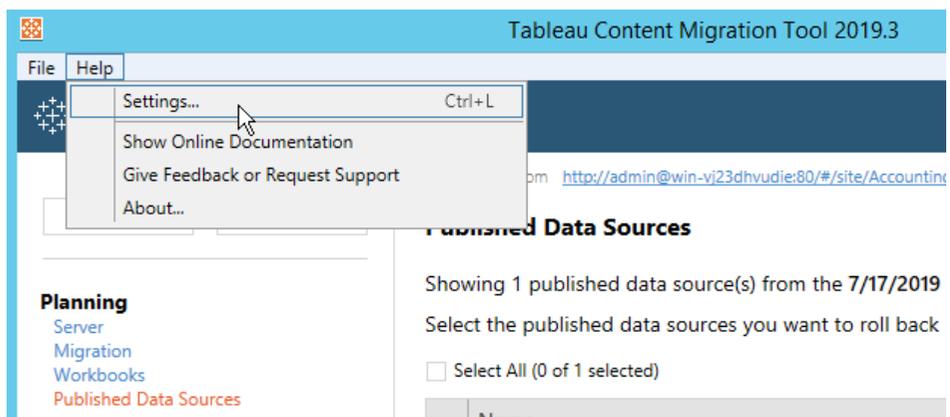
4.6 Tableau Content Migration Tool log files

Tableau Content Migration Tool generates log files when you run the migrations. These can be helpful for troubleshooting problems.

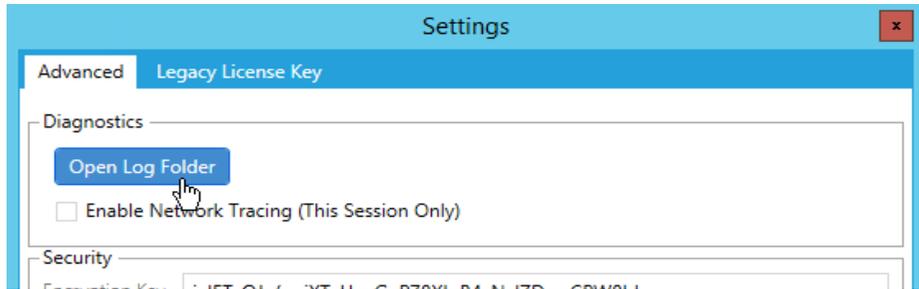
Content Migration Tool Log File Location

To find the Content Migration Tool log files from within the Content Migration Tool:

- Start Content Migration Tool.
- Click **Help** and **Settings**:



- In the **Settings** dialog, click **Open Log Folder**:



A window opens with the log files.

If you are working with Tableau Support and they ask you to send log files, zip the files up before you send them.

Who can do this?

Typically, the tasks listed above can only be done by a user with Administrator access on the machine.

On-prem to Tableau Cloud using STORM

5. On-prem to Tableau Cloud using STORM (Server To Online Report Migration)

5.1 Why STORM?

While Tableau CMT is designed for Content Promotion, we designed STORM for Content Migration. Large enterprises have complex setup and needs. A mere lift and shift or backup restore process is very inadequate in ensuring a complete migration job. Hence, we developed a platform, process, and pod centric approach to Tableau cloud migration.

Platform consists of a framework and a software to achieve the goals. Process consists of planning, migration and validation steps of the migration and Pod consists of team composition and key roles to implement the process.

5.2 Platform

STORM platform is developed using two components. A repeatable process that we call “Plan Migrate Validate” and a software that enables a migration steward to perform specific tasks in the migration process.

5.2.1 Framework

We developed this three-step framework called “Plan Migrate Validate”.



Step 1: PLAN –

Plan step involves planning for various components to be migrated. List of components include Topology, Data Source Planning, Security Planning, Governance Planning, Add-on Planning, Third-party extensions, and any optimization opportunities.

Step 2: MIGRATE –

Migrate step involves deciding the best path for migration, mapping the source and destination paths per the planned topology and schedule the migration per the plan.

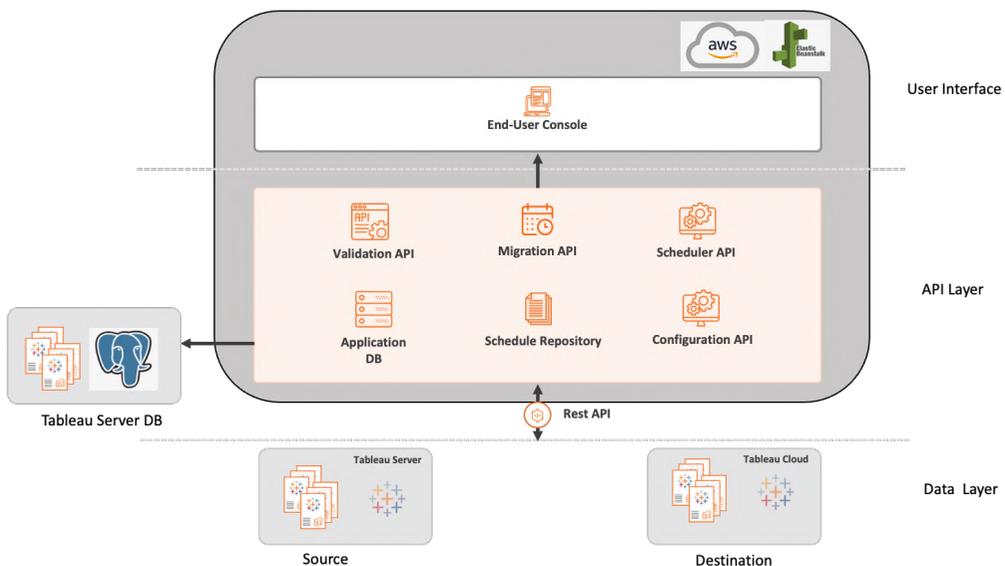
Step 3: VALIDATE –

Validate is a critical step in the migration to ensure the process went smoothly and every component is ready for use.

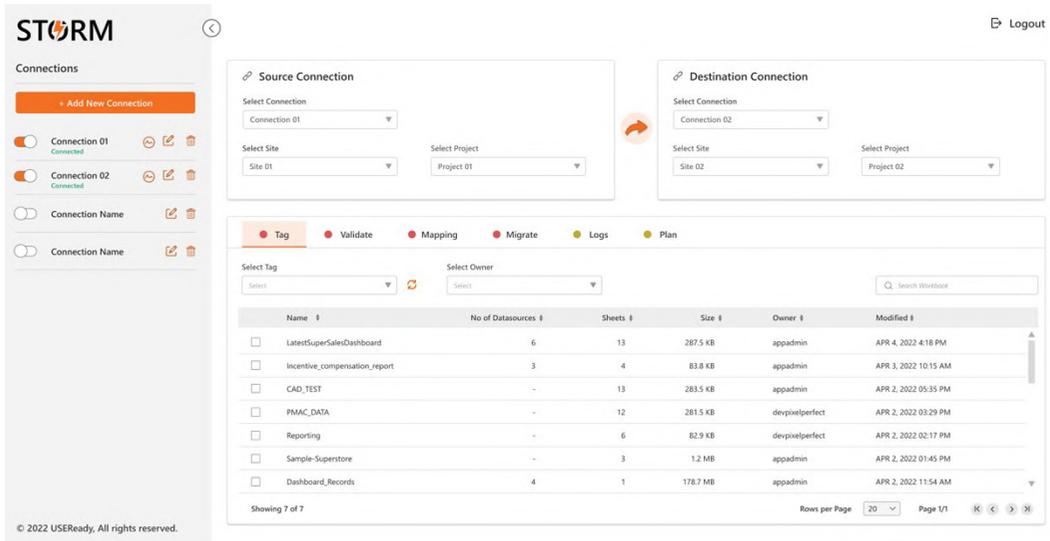
5.2.2 Software

To facilitate the successful implementation of the framework, we created a web-based portal for STORM.

STORM portal can be installed on either client hosted AWS or USEReady hosted AWS instance. STORM portal is a serverless application leverages Tableau API to communicate to Tableau and perform migration.



Portal has a web interface with ability to connect to Tableau On-prem instance and Tableau cloud.



5.3 Process

Three step process starts with extensive planning. STORM “Plan” option has semi-automated functions for identifying complexities in the migration, “Migrate” option has fully automated migration and “Validate” option has semi-automated functions to perform post migration validation.

5.3.1 Planning

Planning process is a semi-automated module within STORM. It involves

- Topology Planning (Site, Project, Folder Mappings)
- Data Source planning (Live connections, extract connections, embedded passwords)
- Security Planning (Users, groups, roles, Enterprise user security configuration)
- Governance Planning (Data/BI stewards, certified data sources, catalog)
- Add-on planning (Server management and data management)
- Third-party Extensions
- Optimization opportunities (unused data sources, users, content not being used for long time etc.)

Planning process creates a plan document with specific deliverables and resources with target dates. Below is an example of such deliverable.

Engagement Stages	Engagement Activities	Resources	Deliverables
KickOff	Kick Off, team alignment, onboarding, plan review	All	
Current Tableau Implementation Discovery	Current State Environment Discovery	Migration Lead Consultant BI Lead Consultant Tech Analyst/PM	Current State Findings
	- Review Current Tableau Ecosystem and Inventory & Scope Migration Workbad		
	- Analyze Current Resource Requirements for TOL Config Reqs		
	- Review Tableau Data Sources, Design, Pipelines and Extracts		
	- Review and Define Tableau Security, Authentication Reqs		
- Review Current Dashboard and Reporting for Document Visualization Best Practices			
COE Tableau Online Pre-Reqs	COE Foundational Pre-requisites Implementation	BI Lead Consultant BI Consultant Tech Analyst/PM	Tableau Online Pre-reqs
	- Define and document platform topology and site capacity requirements for Tableau Online		
	- Define and design data source integration and Tableau Bridge requirements		
- Define and design platform security, role-based access control model, provisioning, project & permission structure			
Tableau Online Implementation Definition and Prep	Tableau Online Definition, Prep, Implementation	BI Lead Consultant BI Consultant Tech Analyst/PM	<ul style="list-style-type: none"> Security and Auth Defined/Implemented Data Connectivity Implemented Admin Insights Enabled Tableau License Monitoring Implemented
	Security and Authentication		
	User mapping, Single sign-on		
	Tableau Online and Multi-factor authentication		
	https://help.tableau.com/current/online/en-us/security_auth.htm		
	Data Connectivity		
	Tableau Online Direct Connectivity / Tableau Bridge		
	Tableau Bridge		
	Administrative Responsibilities		
	Admin Insights – an exclusive Tableau Online-only project for Administrators		
Tableau Licensing			
Transitioning from Core-based to Role-based licensing			
License and usage monitoring for COE			
Tableau Content Migration	Tableau Content Migration Process	Migration Lead Consultant Migration Engineer Tech Analyst/PM	Tableau Content Migrated
	Pre-migration checks / Discovery		
	Migration artifacts and process automation document		
	Validate-Migrate tool customization and deployment		
	CI / CD for Tableau roll-out		
	Content synchronization with on-prem and online instances		
Iterative UAT			
COE Foundation Standards Implementation & Org Enablement	COE Initial Foundation - Standards and Best-Practice Implementation	BI Lead Consultant BI Consultant Tech Analyst/PM	<ul style="list-style-type: none"> COE Org Design Data Mgt and Modeling Standards Governance Framework Defined Process Mgt Processes Defined Visualization Best Practices Document Shared Training(Optional)
	- COE Org Design - Define and Identify – Skills, Roles, Responsibilities, Processes		
	- Define and document data model standards		
	- Define and Implement Governance - data, process, security, responsibility(s), accountability(s)		
	- Define and Implement process management - onboarding, business request intake and prioritization, stakeholder engagement		
	- Provide and Introduce Visualization Best Practices		
	- Analyze and enhance 1 non-performant dashboard per, visualization and performance best practices		
	- Initial Programmatic Training and Adoption Plan for Creators, Explorers and Viewers (Optional addition)		

5.3.2 Migration

Migration process is fully automated module within STORM. A migration steward runs the process per the planning outline. Some of the activities that stewards can perform are Full v/s partial migration, Map the source and destination objects based on planning activity, Schedule.

5.3.3 Validation

Validation process is a semi-automated module within STORM. Validation rules like user access, rendering time etc., Post-migration Inventory report and Performance testing

5.4 Pod

Pod is a team of professionals that are responsible for the migration process.

5.4.1 Team

A team of 2-5 members consists of a standard Pod. A Program Architect oversees such team and be responsible for the overall architecture, topology, and rollout.

5.4.2 Roles

Roles that are in the team are Program Architect Tableau Server Developer, Migration Steward, Tableau Dev, and Program Coordinator.

5.4.3 Responsibilities

Team is responsible for implementing the migration process i.e. Planning, Migration and Validation. Usually, we restrict any content optimization work being part of migration effort as the content optimization work may severely delay the migration work.

We highly recommend considering STORM in its entirety rather than just a single component. Framework, Platform, Process and POD offer you the full value that is designed for.

What's new in Tableau Server 2022

6. What’s new in Tableau Server 2022

6.1 Workbook Optimizer

Workbook Optimizer is a new feature which optimizes the performance of the dashboard by suggesting the best practices. The Workbook Optimiser currently checks against twelve design elements as in the below picture.

Check Best Practices ● 12/12 Passed
Select an item to see the best practices guidelines and information on resolving issues.

✓ 12 Passed	Passed items follow best practice guidelines.
> Number of data sources	The workbook follows best practices for this guideline.
> Unused data sources	The workbook follows best practices for this guideline.
> Number of views in a dashboard	The workbook follows best practices for this guideline.
> Calculation uses multiple data sources	The workbook follows best practices for this guideline.
> Unused fields	The workbook follows best practices for this guideline.
> Number of visible workbook sheets	The workbook follows best practices for this guideline.
> Number of hidden workbook sheets	The workbook follows best practices for this guideline.
> Calculation length	The workbook follows best practices for this guideline.
> Number of LOD calculations	The workbook follows best practices for this guideline.
> Multiple connections in a data source	The workbook follows best practices for this guideline.
> Number of filters	The workbook follows best practices for this guideline.
> Non-materialised calculations	The workbook follows best practices for this guideline.

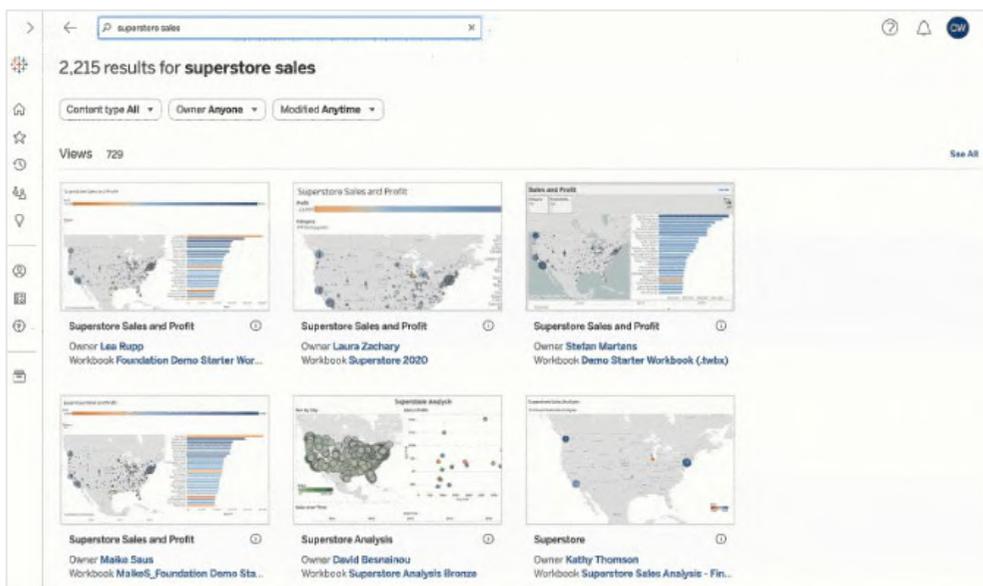
The Workbook Optimiser uses a traffic light warning system to indicate
 1) Take action 2) Needs review 3) Passed



The Workbook Optimiser lives under the Server menu or can be run when you publish a Dashboard to Server or Tableau Online. Workbook Optimiser remembers the last score for your workbook. If you update the workbook, and then re-run the optimiser, you can see how much your workbook has improved.

6.2 New Search Engine

This new feature has helped to find content that matters faster. Tableau search has reimagined from the ground up to ensure the most useful content bubbles to the top when you search in Tableau. Results are ranked based on signals like text relevance, popularity, and recency to ensure everyone can find the data they need to make faster, smarter data-driven decisions.

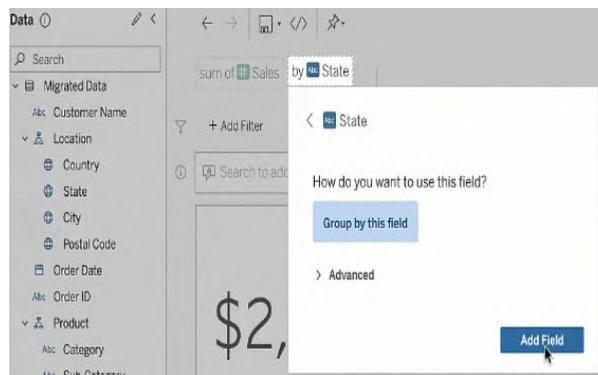
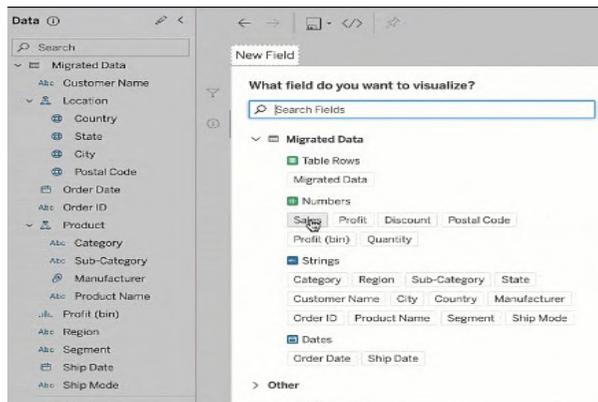


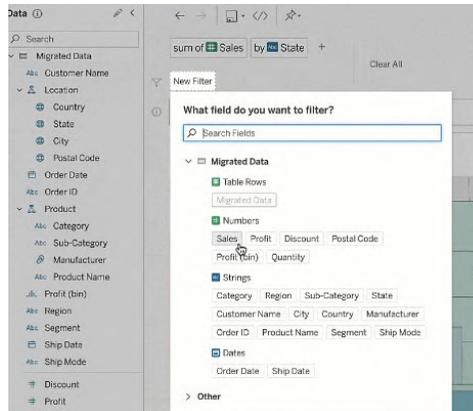
6.3 Ask Data Phrase Builder

Does typing a question feel like staring at a blank page when using Ask Data? Sometimes you might not know what to ask just yet, or you may want to familiarize yourself with the data a little more.

Tableau has your back!

The new Add Field and Add Filter buttons in Ask Data provide an intuitive click-through workflow to help you get the answers you need. The guided workflow provides visual prompts and suggested actions to build your queries (as phrases) with fields and filters relevant to you. The results of your questions or phrases come as rich data visualizations that enable you to get the insights you want from your data. Follow the below example to see how you can add Sum of Sales by State and a filter on Sales using this new feature.





7. Tableau Online is now Tableau Cloud

Tableau Online is now Tableau Cloud with many new features for better ease of use, governance and security. Here are some of the major features:

- Tableau Accelerators – These are ready to use, fully customizable templates to help organization get insight from their data quickly. It helps to Jumpstart analytics with expert-

built dashboards for a variety of use cases across departments, industries, and enterprise applications.

- Publicly share tableau dashboard – Tableau now allows users to easily embed their dashboard in public web pages and let share it with unlicensed users.
- Advanced Management Features – Tableau provides better management features with tableau cloud for better governance and tighter security. These features include:
 - Multi-Site Management - Tableau Cloud now allows Site Administrators to manage Tableau Sites across their Tableau Cloud Environment
 - Extract Encryption - provides an extra level of encryption with administrators having full control of managing and rotating encryption keys
 - Admin Insights - with Tableau Cloud helps admins in better diagnosis, content management, and performance optimization
- Integration with Slack for better collaboration

8. References

<https://help.tableau.com/current/server/en-us/cmt-install.htm>
<https://help.tableau.com/current/server/en-us/cmt-getting-started.htm>
https://help.tableau.com/current/server/en-us/cmt-migration_limitations.htm
https://help.tableau.com/current/server/en-us/cmt-depl_plan_overview.htm
https://help.tableau.com/current/server/en-us/cmt-plan_servers.htm
https://help.tableau.com/current/server/en-us/cmt-plan_source_projects.htm
https://help.tableau.com/current/server/en-us/cmt-plan_workbooks.htm
https://help.tableau.com/current/server/en-us/cmt-plan_datasources.htm
https://help.tableau.com/current/server/en-us/cmt-plan_users.htm
https://help.tableau.com/current/server/en-us/cmt-plan_scripts.htm
https://help.tableau.com/current/server/en-us/cmt-migration_extracts.htm
<https://help.tableau.com/current/server/en-us/cmt-settings.htm>
https://help.tableau.com/current/server/en-us/sites_exportimport.htm
https://help.tableau.com/current/server/en-us/db_backup.htm
<https://resources.useready.com/blog/product-innovations-from-tableau-conference-2022/>



About USEReady

USEReady's mission is to empower people to succeed with data.

We achieve this mission with fanatical customer centricity, humility, and integrity. At USEReady, we love to solve customer problems, contribute to community and continue to improve. We aim to build a strong learning culture and have fun doing it together.

We have harnessed modern Business Intelligence solutions with cutting edge Artificial Intelligence (AI) platforms to unlock the power of data. Our result-oriented solutions ensure that our customers are successful in adopting self-service technologies.

We have partnered with the best in class BI, Data and Cloud products such as Tableau, Snowflake, Alteryx, Informatica, Alation, Collibra, AWS and Microsoft. We have delivered proven success across Financial Services, Insurance, Retail and Media verticals.

We have been nominated and won several awards along this journey. Check us out at www.useready.com

Authored By

Aishwarya Gupta | Atul Verma | Lokendra Singh | Rohan S

Santhosh Shavukaru | Sayed Muzammil | Utkarsh Raj

GET IN TOUCH: www.useready.com | contact@useready.com

@2022 USEReady. All rights reserved.

