

Introducing Tableau Services Manager (TSM)



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The Benefits

Tableau Services Manager (TSM) is the comprehensive tool for installing and managing Tableau Server. It contains an enhanced user experience with both a command-line interface (CLI) and a web interface for server administrators.

Previously introduced in Tableau Server for Linux 10.5 (CLI Only), with the 2018.2 release it is now available for both Linux and Windows as a web interface, command-line interface (CLI) and a REST API. Both the CLI and Web UI interact with the new TSM REST API.

TSM includes a new distributed architecture that addresses key customer pain points such as eliminating the need for a dedicated backup primary machine. It also adds the ability to dynamically add/remove certain server processes without restarting server.

TSM is designed from the ground up to be a flexible and extensible Java-based platform that will allow us to innovate and add capabilities more rapidly in the future.

- **Tableau Services Manager (TSM)** replaces multiple tools from previous versions of Tableau Server: Tableau Server Configuration, `tabadmin` command line, Tableau Server Monitor, and Manage License Keys.
- **Flexibility & Ease of Automation** – admins can access the TSM via CLI, Web GUI, or directly hit the REST APIs.
- **No more primary + worker(s)** – All nodes in a cluster are peers; backup primary is no longer required for HA.
- **Hot Topology** – Ability to adjust VizQL Server and Backgrounder processes without requiring a restart.
- **Faster Upgrades** – new upgrade paradigm minimizes downtime during an upgrade.

New TSM Web UI

Tableau Server Maintenance page showing process status for node1:

Process	node1
Gateway	✓
Application Server	✓
VizQL Server	✓✓
Cache Server	✓✓
Cluster Controller	✓
Search & Browse	🔄
Backgrounder	✓✓
Data Server	✓
Data Engine	🔄
File Store	✓
Repository	✓
TSM Controller	✓
License Server	✓

Server Crash Reporter section:

Enable crash reporting Daily at

Tableau Server Topology page showing process configurations for three nodes:

Process	node1 (tsm-demo1)	node2 (tsm-demo2)	node3 (tsm-demo3)
Gateway	✓	✓	✓
Application Server	1	1	1
VizQL Server	4	3	2
Cache Server	2	2	2
Cluster Controller	✓	✓	✓
Search & Browse	✓	✓	☐
Backgrounder	2	3	2
Data Server	2	2	2
Data Engine	✓	✓	✓
File Store	✓	✓	✓
Repository	✓	✓	☐
TSM Controller	✓	☐	☐
License Server	✓	☐	☐

Add a Node section:

Step 1
Download the node bootstrap configuration file and locate your Tableau Server installer. The same installer can be used to install multiple nodes. *Having trouble finding the installer?*

Step 2
Run the node installer on the new node, and when prompted, provide the configuration file.

Tableau Services Manager will detect the new node and display it on the Topology page.

Learn more about adding, removing, and managing nodes in Tableau Services Manager.

With the new TSM web interface, you can quickly check the status of your Tableau Server and configure Tableau Server processes – all without logging into the server itself.

Easily configure Run As service account, enable and configure external SSL, and enable and configure repository (internal) SSL, configure Tableau Server to send email notifications about critical events, processes and server health.

Centrally view and manage of Tableau Server licenses, review expiration dates, and activate or deactivate product keys.

Server Architecture

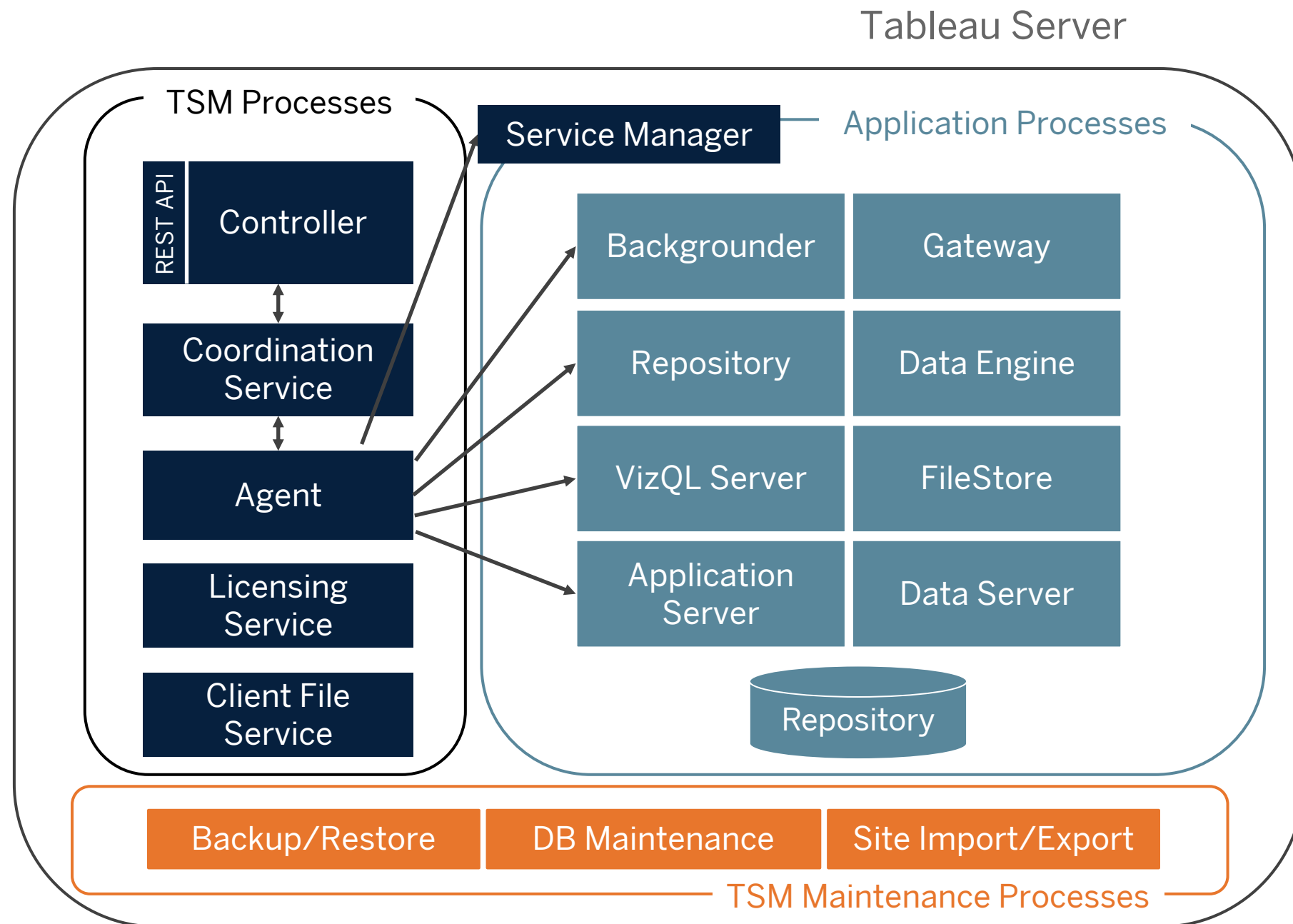
TSM consists of multiple administrative processes which manage Tableau Server.

The six main TSM processes are Controller, Coordination Services, Agent, Licensing, Client File Service, and Service Manager (highlighted in navy blue). These processes run continuously after TSM is initialized, even when the rest of Tableau Server is offline.

The TSM Services interact with the Application Processes (highlighted in teal) to start, stop, restart, configure, and check status of the individual processes running on Tableau Server.

In addition to the always running TSM processes, there are also three new maintenance processes: Backup/Restore, DB Maintenance, and Site Import/Export (highlighted in orange). These processes are usually stopped unless performing maintenance tasks such as Taking a Backup or Restoring a Backup.

For more information, see [Tableau Server Processes](#).

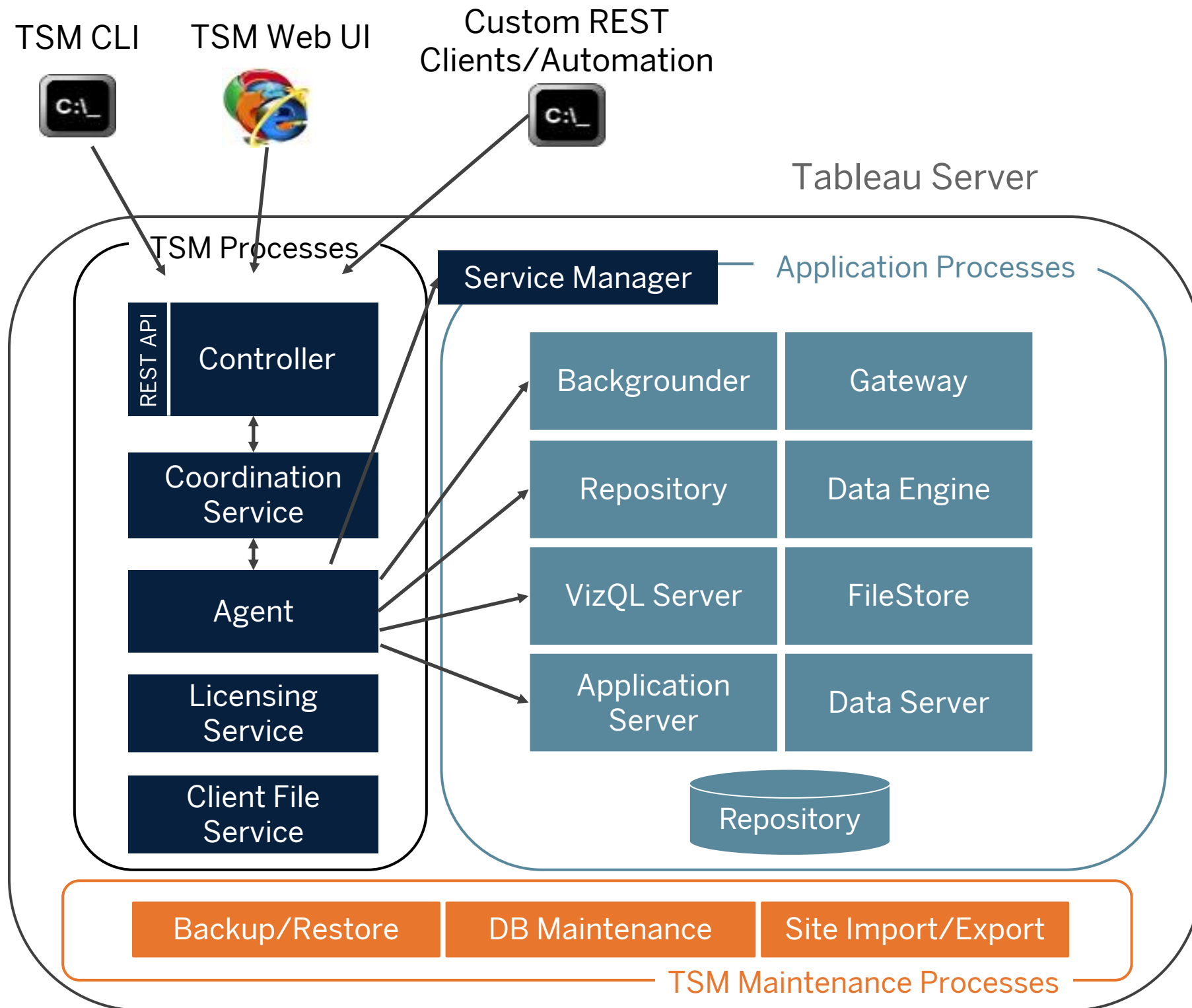


How Does TSM Work?

Clients such as the TSM Web UI, CLI, or custom automation written by Server Administrators connect via the REST API to the Controller which is the “brains” of the TSM services.

Controller will orchestrate the configuration and topology changes. These changes are persisted and stored in the Coordination Service which serves as the single source of truth across the system. For this reason, it is critical to Coordination Service to be redundant and maintain quorum for High Availability (HA).

Agent which runs on each node of the cluster will monitor the Coordination Service for changes and delivers these new configurations or deploy/remove processes. The Agent also monitors the individual processes for status and reports this to the Coordination Service.

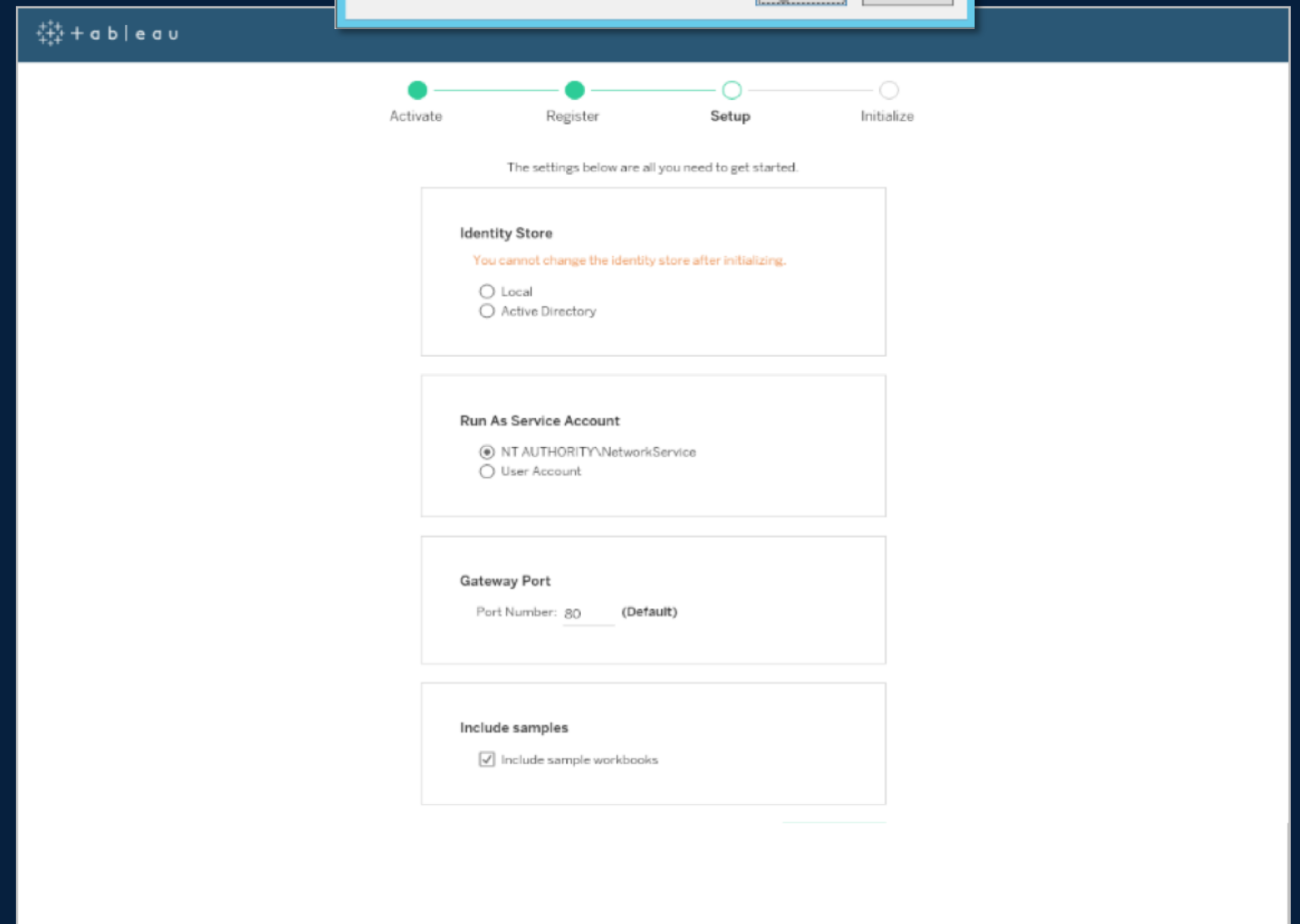
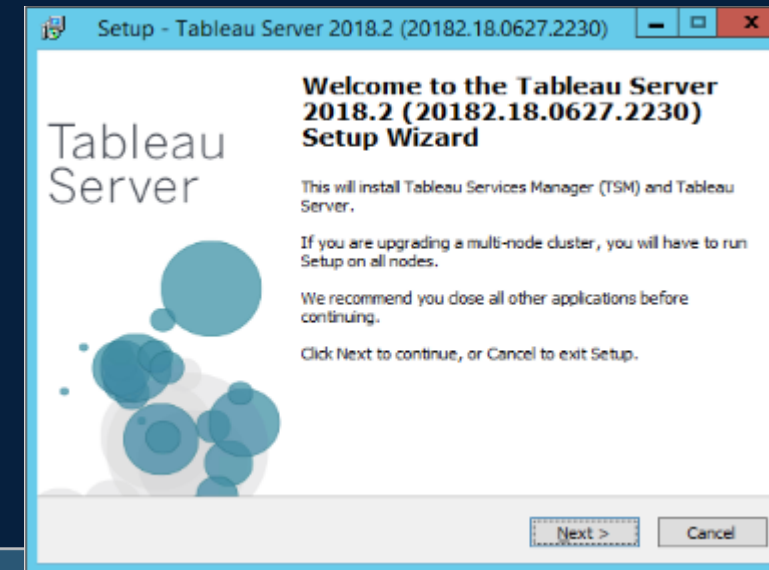


Installation

Installing Tableau Server with TSM is easy as 1-2-3! Whether you are doing a single-node installation or distributed installation, you just have a single installer to download.

1. Download the latest 2018.2 Tableau Server installer from the following URL:
<https://www.tableau.com/support/releases/server/>
2. Launch the installer and follow the prompts to install the bits
3. Login to TSM using your local administrator account (Windows) or member of the tsmadmin group (Linux) and complete the initialization process. This process will take you through registering, activating and configuring Tableau Server.

You will follow these same steps to install Tableau Server on additional nodes to create a distributed installation.



Hot Topology Changes

With TSM, you can add and remove Backgrounder and VizQL processes on Tableau Server dynamically. This can be useful for adjusting the capacity of the server to handle different workloads with the same set of resources.

For example, you can add more VizQL Server processes to handle higher viz load and interaction activities during your core business hours. During the off hours, you can add more Backgrounder processes to get through the scheduled extract refresh jobs faster. This can all be done without restarting Tableau Server, so your users can continue to use Tableau Server without interruption.

The hot topology changes can be made manually through the TSM Web UI or CLI. The changes can also be scripted and scheduled to run automatically.

```
1 #!/bin/bash
2 echo Adding/Removing Processes
3 tsm topology set-process -pr backgrounder -n node1 -c 2
4 tsm topology set-process -pr vizqlserver -n node1 -c 4
5 tsm pending-changes apply
6 echo Done!
```

The screenshot displays the Tableau Server Configuration interface, specifically the 'Topology' section. The interface is divided into three columns for nodes: node2 (tsm-demo2), node3 (tsm-demo3), and node4 (tsm-demo1). Each node configuration includes a list of services with their respective counts and checkboxes for enabled services. For example, node2 has 1 Application Server, 2 VizQL Servers, and 2 Cache Servers. A 'Remove Node' button is present at the bottom of each node's configuration panel.

A 'Confirm Live Changes' dialog box is overlaid on the interface, indicating that pending changes will be applied. The dialog text reads: 'The server will remain in the same state while these changes are applied. Pending changes will be applied.' It includes 'Cancel' and 'Confirm' buttons.

On the right side of the interface, a 'Pending Changes' panel shows the changes being applied: 'Increase VizQL Server' (New: 4, Old: 2) and 'Decrease Backgrounder' (New: 2, Old: 3). At the bottom right, there are buttons for 'Discard All Pending Changes' and 'Apply Live Changes'.

Backup & Restore

With TSM, you have more control over what Tableau Server data is backed-up/restored. With this comes a few changes from previous releases.

There are 3 types of data that you will need to backup:

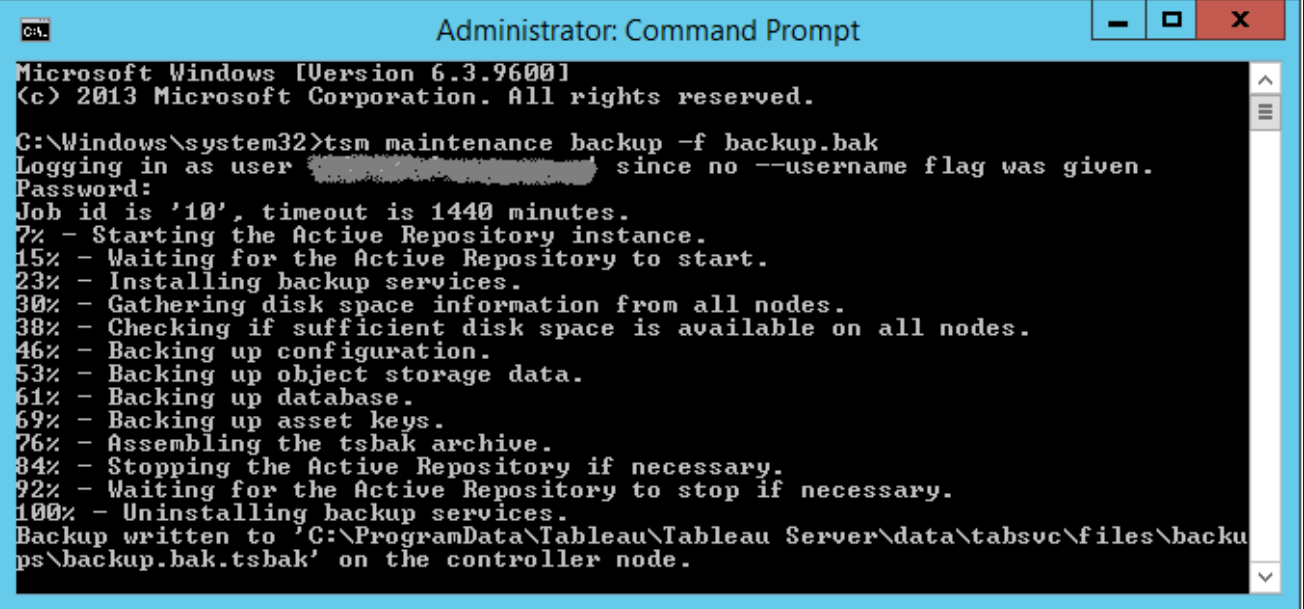
1. **Repository data** such as workbook and user metadata, extract files, etc. This data is backed up with the `tsm maintenance backup` command.
2. **Configuration and Topology data** which can be saved using the `tsm settings export` command.
3. **Configuration Files** including customized logos, certificate files, key files, and keytab files which must be manually backed-up.

To restore, you just need to run the corresponding commands to restore this data (`tsm maintenance restore` and `tsm settings import`).

Also, don't forget to take a backup, export your settings, and save all your files as a precaution prior to upgrading to a new version! This is a recommended best practice in case you hit any issues with the upgrade or need to go back to the previous version.

Learn more about [Performing Backup and Restore on TSM](#).

Taking a backup



```
Administrator: Command Prompt
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Windows\system32>tsm maintenance backup -f backup.bak
Logging in as user [redacted] since no --username flag was given.
Password:
Job id is '10', timeout is 1440 minutes.
 7% - Starting the Active Repository instance.
15% - Waiting for the Active Repository to start.
23% - Installing backup services.
30% - Gathering disk space information from all nodes.
38% - Checking if sufficient disk space is available on all nodes.
46% - Backing up configuration.
53% - Backing up object storage data.
61% - Backing up database.
69% - Backing up asset keys.
76% - Assembling the tsbak archive.
84% - Stopping the Active Repository if necessary.
92% - Waiting for the Active Repository to stop if necessary.
100% - Uninstalling backup services.
Backup written to 'C:\ProgramData\Tableau\Tableau Server\data\tabsvc\files\backu
ps\backup.bak.tsbak' on the controller node.
```

Restoring a backup



```
Administrator: Command Prompt
C:\Windows\system32>tsm maintenance restore -f backup.bak.tsbak
Restoring 'backup.bak.tsbak'...
Using server-side file name 'backup.bak.tsbak'
Job id is '14', timeout is 2880 minutes.
 4% - Checking backup compatibility.
 8% - Generating manifest.
13% - Disabling all services.
17% - Waiting for the services to stop.
21% - Installing restore services.
26% - Determining required files for individual nodes.
30% - Checking available disk space on all nodes.
34% - Transferring required files to remote nodes.
39% - Restoring data for services.
43% - Restoring database.
47% - Restoring asset keys.
52% - Restoring data to object storage.
56% - Committing data for services.
60% - Committing restored data to database.
65% - Committing asset keys.
69% - Committing data to object storage.
73% - Deleting temporary backup file.
78% - Cleaning up restore data on all nodes.
82% - Uninstalling restore services.
86% - Enabling the services required for indexing.
91% - Connecting to Vizportal Maintenance.
95% - Rebuilding the search index.
100% - Disabling the services used for indexing.

The backup 'backup.bak.tsbak' was successfully restored.
```

Server Upgrades

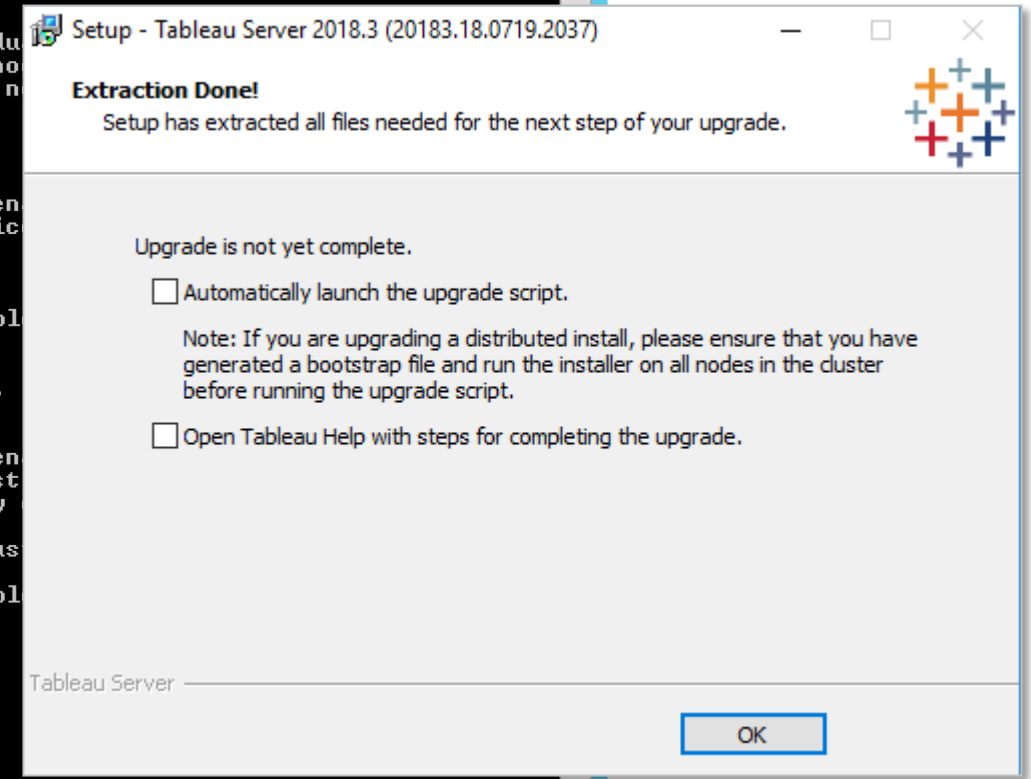
When upgrading to 2018.2, from a prior version, you will uninstall first, then install 2018.2 on each node individually. As a final step to initialize TSM, you will run an upgrade script to complete the upgrade.

For subsequent versions, TSM introduces a new way to do upgrades of Tableau Server. You can run the new TSM installer to lay down the bits on to the Tableau Server nodes ahead of time while Tableau Server is running. Then, when you are ready to proceed with the upgrade, you can just run the upgrade script to complete the upgrade process; this is the only part of the upgrade process that will require taking downtime.

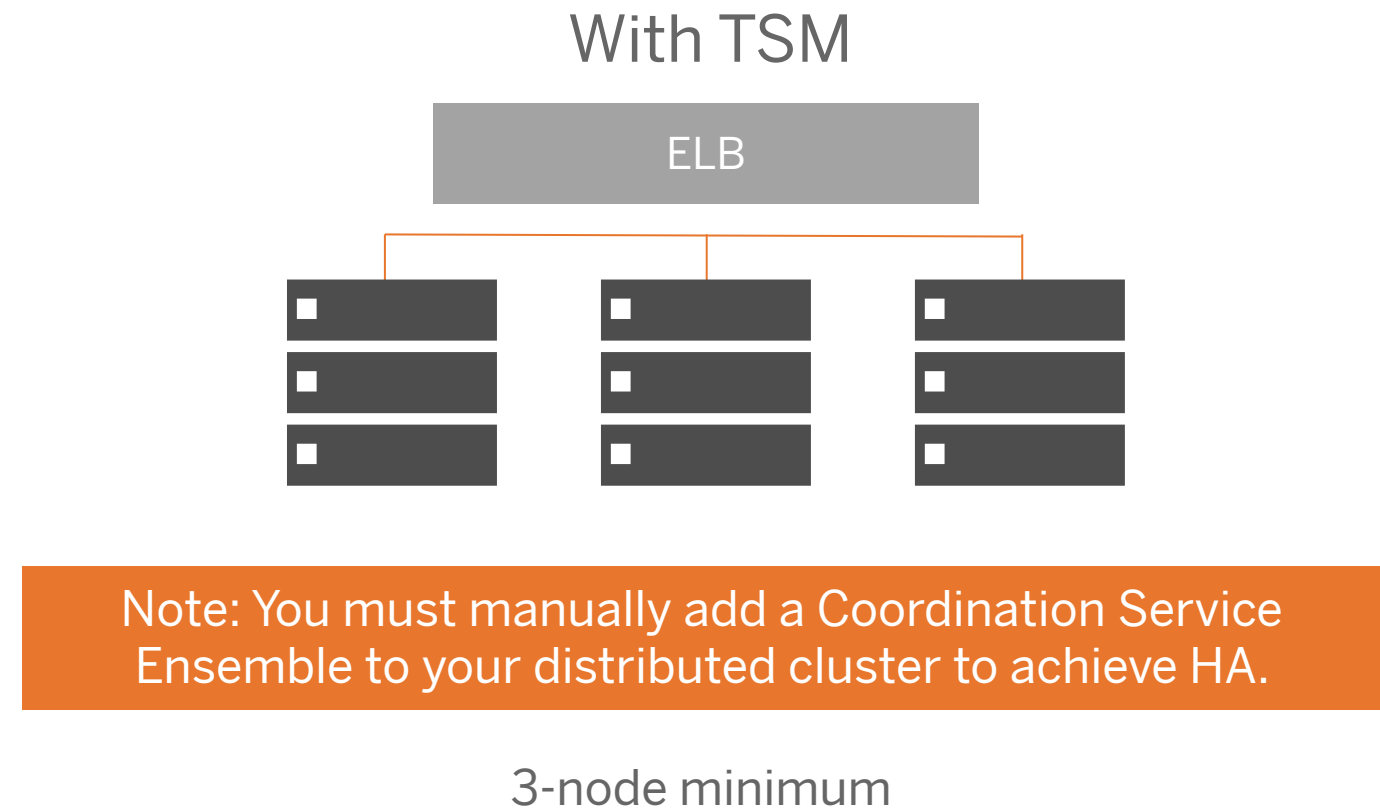
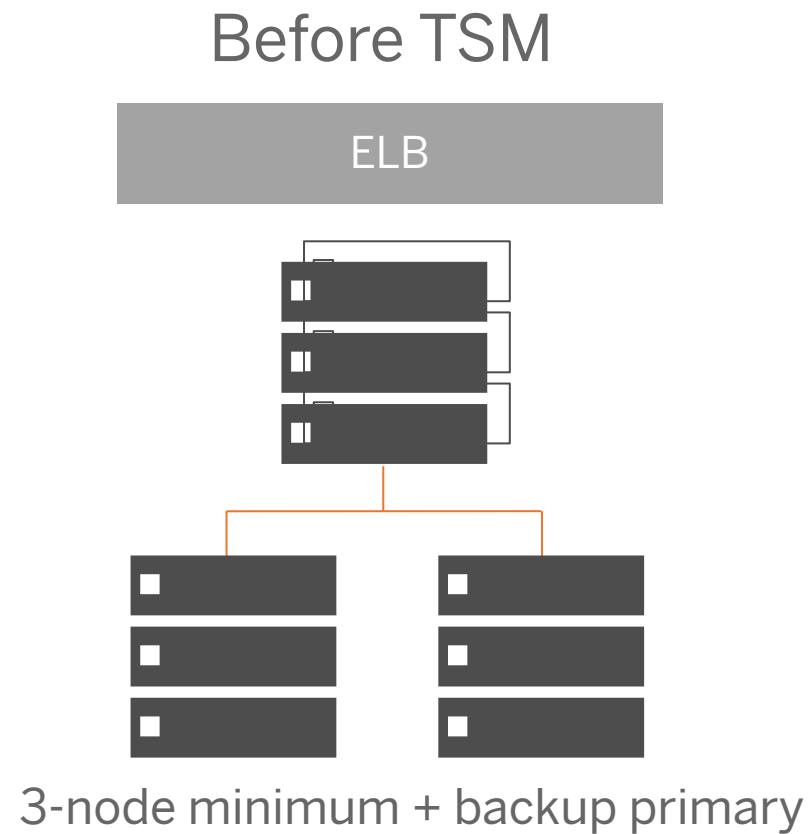
On one of our own internal 5-nodes clusters, an upgrade that use to required 75 minutes of downtime could now be completed in about 15 minutes with TSM.

Learn more about [Upgrading to TSM](#).

```
Administrator: C:\Windows\system32\cmd.exe
Verifying runas user credentials.
Running cluster upgrade job. This may take several minutes to complete.
Reconnecting to asynchronous job...
Job id is '1', timeout is 2880 minutes.
2% - Validating that there are no pending changes.
4% - Generating new asset key.
6% - Saving asset key.
8% - Generating passwords.
10% - Promoting configuration.
12% - Installing TSM services on all nodes.
14% - Installing Repository services.
16% - Checking backup compatibility.
18% - Generating manifest.
20% - Disabling all services.
22% - Waiting for the services to stop.
24% - Installing restore services.
26% - Determining required files for individual nodes.
28% - Checking available disk space on all nodes.
30% - Transferring required files to remote nodes.
32% - Restoring database.
34% - Restoring asset keys.
36% - Committing restored data to database.
38% - Enabling the database services.
40% - Waiting for the database services to enable.
42% - Connecting to the Backup/Restore service.
44% - Saving asset key metadata.
46% - Re-encrypting assets.
48% - Disabling database services.
50% - Waiting for database services to disable.
52% - Committing asset keys.
54% - Deleting temporary backup file.
56% - Cleaning up restore data on all nodes.
58% - Uninstalling restore services.
60% - Enabling the database services.
62% - Waiting for the database services to enable.
64% - Putting the repository into local trust.
66% - Running migrations against the primary repository.
68% - Setting the next active repository.
70% - Taking the repository out of local trust.
72% - Disabling database services.
74% - Waiting for database services to disable.
76% - Upgrading database.
78% - Importing port overrides.
80% - Installing remaining services.
82% - Disabling all services.
84% - Waiting for the services to stop.
86% - Reconfiguring services.
88% - Waiting for services to reconfigure.
90% - Enabling all services.
92% - Waiting for the services to start.
94% - Enabling the services required for indexing.
96% - Connecting to Vizportal Maintenance.
98% - Rebuilding the search index.
100% - Disabling the services used for indexing.
102% - Finalizing the initialization.
Updating repository version in Tableau Server Coordination Service.
Running post-upgrade steps on all cluster nodes.
Reconnecting to asynchronous job...
Job id is '2', timeout is 10 minutes.
33% - Installing backup services.
66% - Running post-upgrade.
100% - Uninstalling backup services.
Tableau Server has been upgraded to version 20182.18.0627.2230.
C:\Program Files\Tableau\Tableau Server\packages\scripts.20182.18.0627.2230>
```



High-Availability Configurations



An HA installation of Tableau Server has a minimum of three nodes and multiple instances of key processes (the Repository, File Store/Data Engine (Hyper), and Coordination Service) on different computers. With an HA installation, there is built-in redundancy of those key processes. The goal is to minimize system downtime by eliminating single points of failure, and enabling detection of failures with failover where possible. There are two processes that which can only run on one of the nodes on the server at any time, the License service (License Manager) and TSM Controller (Administration Controller). In the case of a failure of the node where these two processes are running, they can me moved to another node in the cluster.

Learn more about [Distributed and High Availability Tableau Server Installations](#).

Administration Tips

- Are you a long-time Tableau Server administration? You can find a summary of the key changes and differences `tabadmin` and TSM [here](#).
- Do you want to ensure that your distributed install is highly available? You will need to manually deploy a coordination service ensemble. Learn more [here](#).
- On Windows, the new default installation location is now `C:\Program Files\Tableau\Tableau Server\packages`. Log file locations have also changed from the previous releases. Learn more [here](#).
- Having trouble with your installation or upgrade? Check out our Troubleshooting Tips [here](#).

Additional Resources

Online Help Documentation:

- https://onlinehelp.tableau.com/current/server/en-us/tsm__overview.htm
- <https://onlinehelp.tableau.com/current/server/en-us/tabadmin-to-tsm.htm>
- https://onlinehelp.tableau.com/current/server/en-us/tabadmin_to_tsm_cli.htm

TSM Blog: <https://www.tableau.com/about/blog/2018/5/server-management-just-got-easier-new-improved-tableau-services-manager-88607>

TSM Webcast Replay: <https://www.tableau.com/learn/webinars/simplify-deployment-with-tableau-services-manager-2018-08-22>

Start Your Free Trial

Tableau Services Manager is the comprehensive tool for installing and managing Tableau Server. It contains an enhanced user experience for both a command-line interface (CLI) and a web interface for server administrators.

If you're not using Tableau Server already, start your trial of Tableau Server or Tableau Online with Tableau Prep and Tableau Desktop today to experience governed data access using Data Server and Published Data Sources.

<https://www.tableau.com/products/trial>



Tableau Server



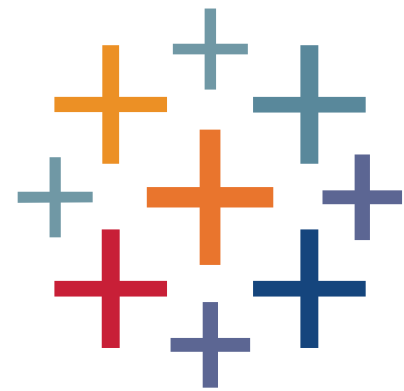
Tableau Online



Tableau Prep



Tableau Desktop



+ a b l e a u[®]