IBM Tivoli Storage Manager
Version 7.1.1

Configuring an IBM Tivoli Storage Manager cluster with IBM Tivoli System Automation for Multiplatforms

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Note:
Before using this information and the product it supports, read the information in "Notices" on page 25.

Second edition (September 2014)

This edition applies to version 7 release 1, modification 1 of IBM Tivoli Storage Manager (product number 5608-E01, 5608-E02, 5608-E03), and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Chapter 1. Overview of a two-node Tivoli Storage Manager cluster that is based on Tivoli System Automation

Use the Tivoli® System Automation cluster for higher server and database availability during a failure. By using the Tivoli System Automation failover function, server components such as the database can automatically recover from a failure.

The Tivoli Storage Manager server and the DB2® database are the underlying server components for this two-node cluster. The server is the core component. It is responsible for client and server activity. The DB2 database is an internal component, which is installed as part of the server. The server controls all database activity such as startup and shutdown. When the server detects a server or database component failure, it tries to restart the database. If the restart fails, the server and database are automatically shut down on the primary node and Tivoli System Automation automatically starts these components on the secondary node. Because the functions are restored immediately, server and database availability is higher.

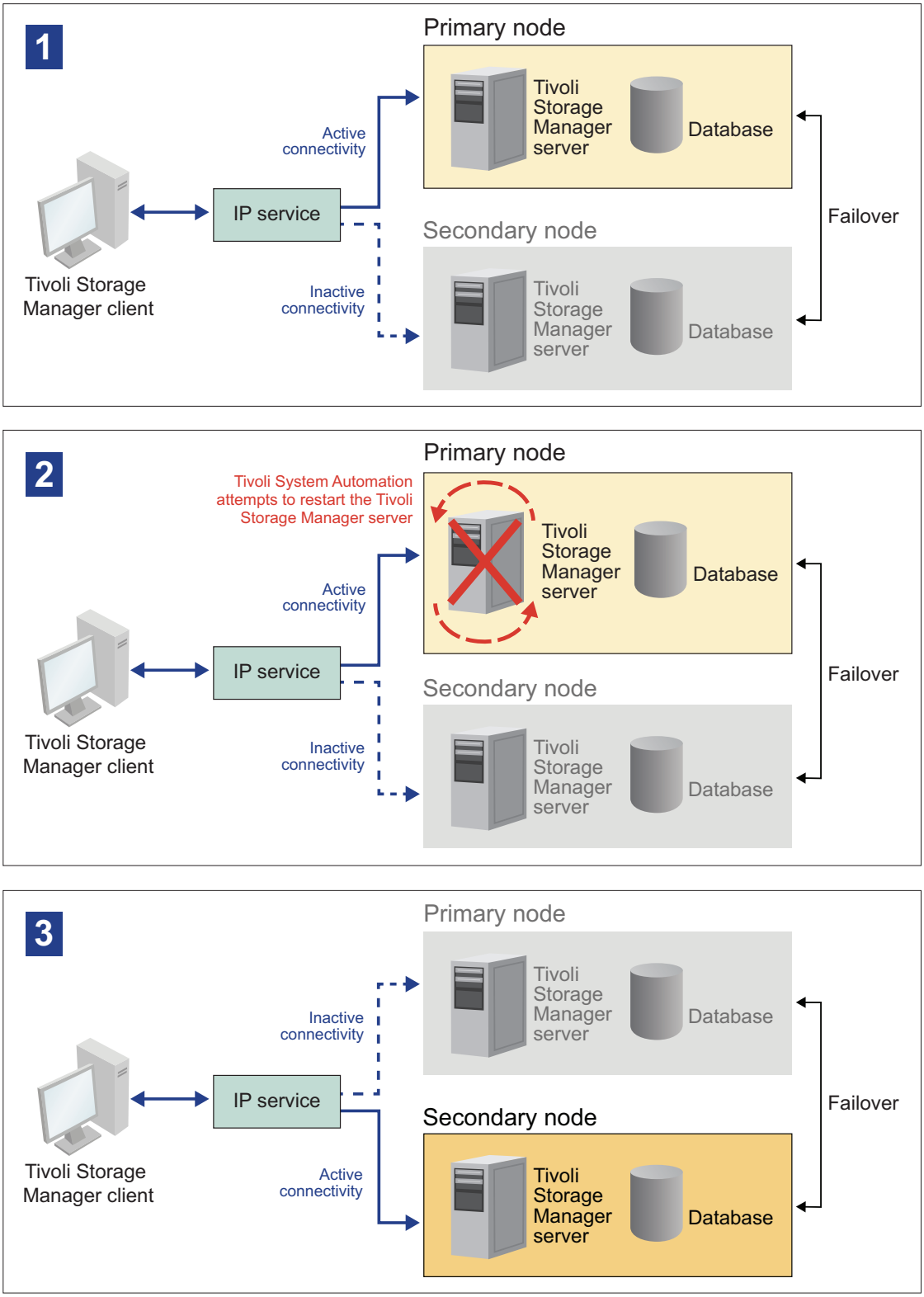


Figure 1. The failover function. The server and database components fail on the primary node. Tivoli System Automation starts these components on the secondary node.

The server and the database include the following log directories, which are used for storage:

- Tivoli Storage Manager instance directory
- Active log directory
- Archive log directory
- Database directory

The two nodes in this Tivoli System Automation cluster are configured to access highly available shared storage that protects the data. For example, a two-node topology includes a primary node and a secondary node. These nodes are located are on separate physical systems but they can access the same data by using the shared storage array.

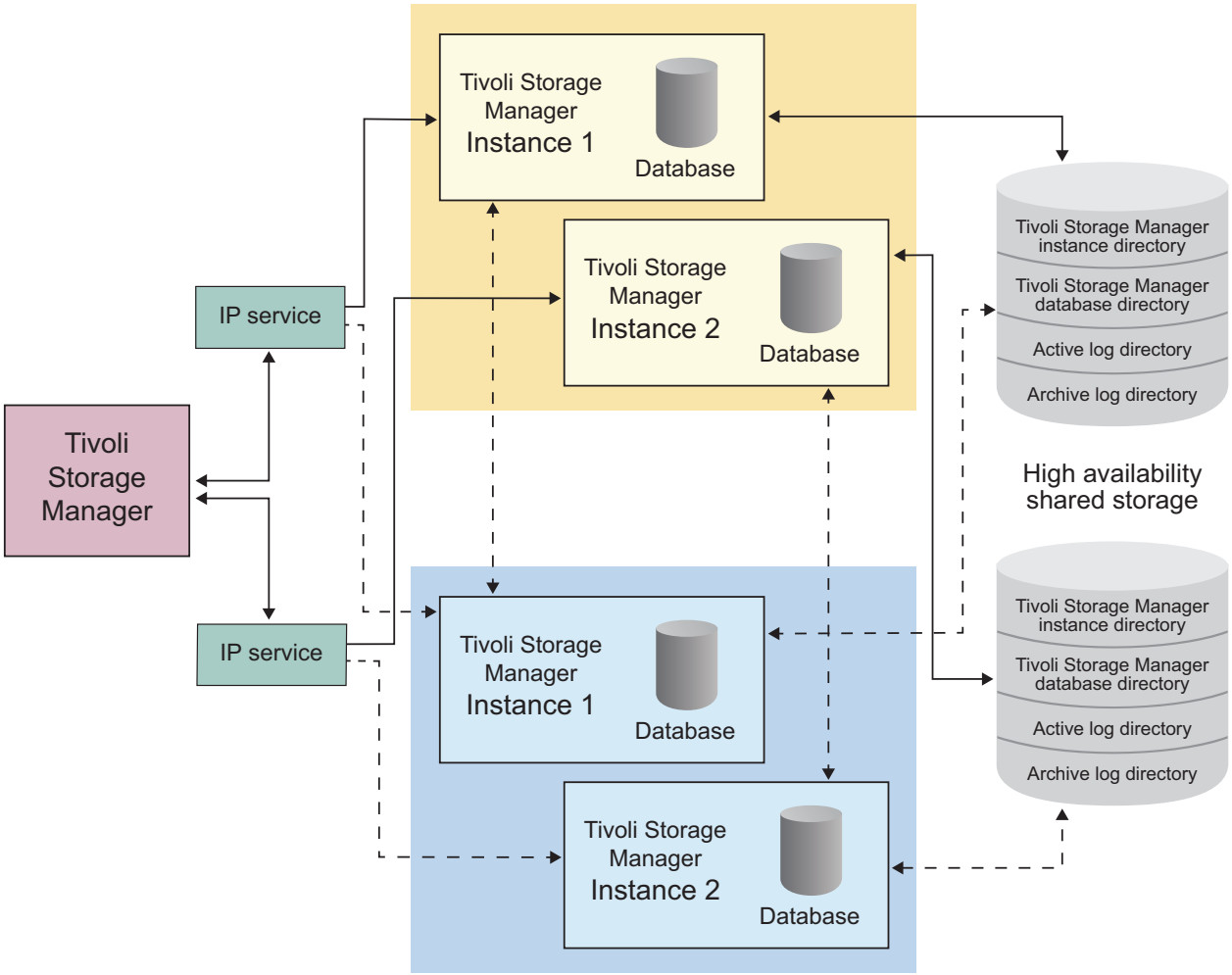
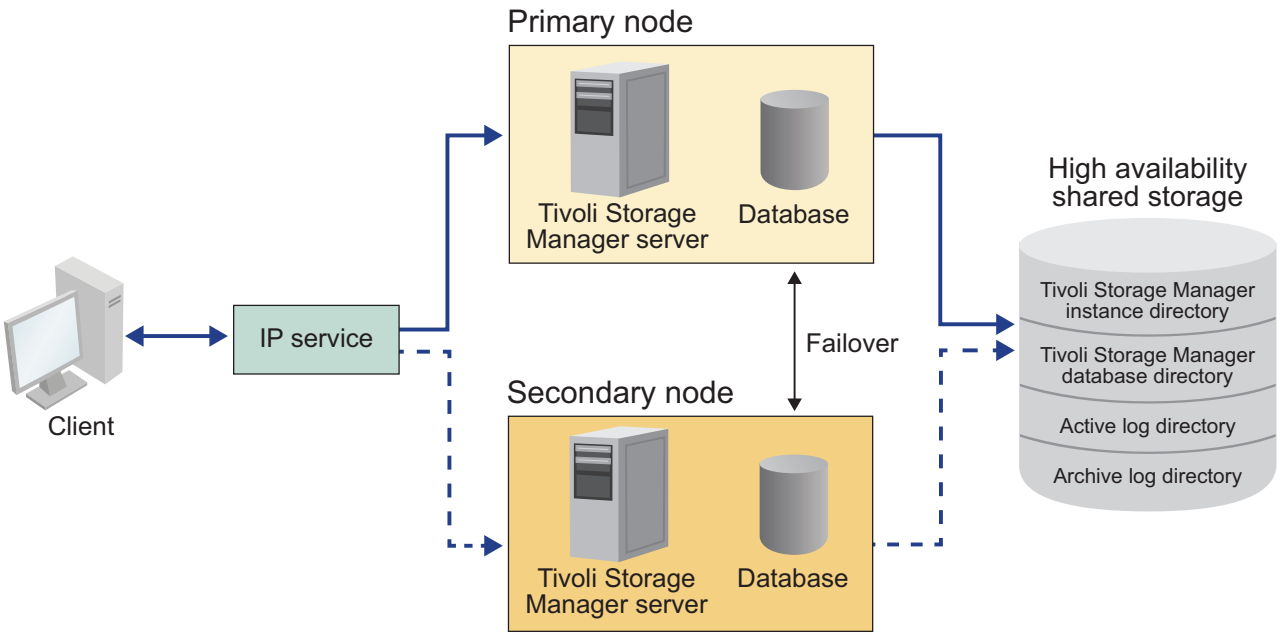


Figure 2. Multiple Tivoli Storage Manager server instances on separate nodes. These server instances are on separate physical systems. These instances can access the highly available shared storage.

Two-node shared disk typology

This cluster uses a two-node shared disk topology. It includes a primary and secondary node. The primary node hosts the Tivoli Storage Manager server, database, Tivoli Storage Manager instance, and the data. The secondary node, is where the Tivoli Storage Manager resources are moved to if a failure occurs.

The two nodes in this cluster are connected to each other over a single public network and wired to a *shared disk storage* system, which is always available. *Shared disk storage* is where one or more disks are available to both the primary and secondary nodes. These disks are only mounted to one node, the primary node, at any one time. One node can input and output data to the shared storage disks. The following illustration shows a two-node shared topology where automatic failover to the secondary node occurs in the instance of a failure.



Resource groups

You use Tivoli System Automation resources groups with defined automation policies to manage the Tivoli Storage Manager components for this cluster. The only exception is the database server instance resource that is managed by the Tivoli Storage Manager server.

The shared file systems and Tivoli Storage Manager components are defined as resources. Multiple resources make up a resource group. Each resource in a resource group has a resource type. Each Tivoli Storage Manager instance in a cluster includes one resource group. During planned outages, resource groups can be manually moved from the primary node to the secondary node.

The Tivoli Storage Manager resource group includes the following resources. The name of the Tivoli Storage Manager resource group is SA-tsm-inst1-rg, where inst1 is the instance name. The following resources are used for different but mandatory functions in this cluster.

Service IP
The Service IP resource is used for communication. It is called

tsm-inst1-ip-rs, where inst1 is the instance name. Service IP is managed by Tivoli System Automation. This IP is available on the node where the Tivoli Storage Manager server is running. You must create the Service IP logical interface on the same physical interface as the public network interface.

Shared disk storage **resource**
A *shared disk storage* resource is a physical storage device on the Tivoli Storage Manager server where Tivoli Storage Manager and DB2 application data is stored. You must create the following disk storage resources:

- Instance directory - tsm-inst1-instdir-ag
- DB2 directory - tsm-inst1-db2dir-ag
- Active log directory - tsm-inst1-actlog-ag
- Archive log directory - tsm-inst1-archlog-ag

Shared disk storage **for storage pools**
The storage pool resource includes physical storage devices on the Tivoli Storage Manager server where client data is stored.

Volume group resources
If you decide to configure your storage by using volume groups, a volume group resource is available for the proceeding *shared disk storage* resources. Volume group resources are automatically created by Tivoli System Automation.

Application resources for the Tivoli Storage Manager server instance
The Tivoli Storage Manager server instance resource is the server resource that manages the Tivoli Storage Manager application. This resource is managed by Tivoli System Automation control scripts.

Table 1. Tasks that are completed by the Tivoli System Automation control scripts

Tasks	Description	Sample commands
Start	Starts the Tivoli Storage Manager server instance.	The **/opt/tivoli/tsm/server/bin/rc.dsmserv -u db2inst1 –i /tsminst1** command starts the server instance with the db2inst1 user in the `/tsminst1` directory.
Stop	Stops the Tivoli Storage Manager server instance.	**kill –s SIGPRE 345** where `345` is the *PID*. The *PID* can be found in the `/tsminst1/dsmserv.v6lock` file.
Monitor	Checks whether the `/tsminst1/dsmserv.v6lock` file exists. It uses the *PID* to check whether the process is running.	**ps -ef | grep 345** where `345` is the *PID*.

Resource group dependencies

Resource group dependencies are automatically created to control the order in which resources are started. These dependences also control which resources must be restarted or shut down when the specific resource that these resources depend on fails.

Tivoli Storage Manager does not restrict running two or more Tivoli Storage Manager server instances on the same system. In this scenario, multiple resource groups can run, and failover to another system is independent of one another. The resource dependencies for the Tivoli Storage Manager resource group are shown in the following figure.

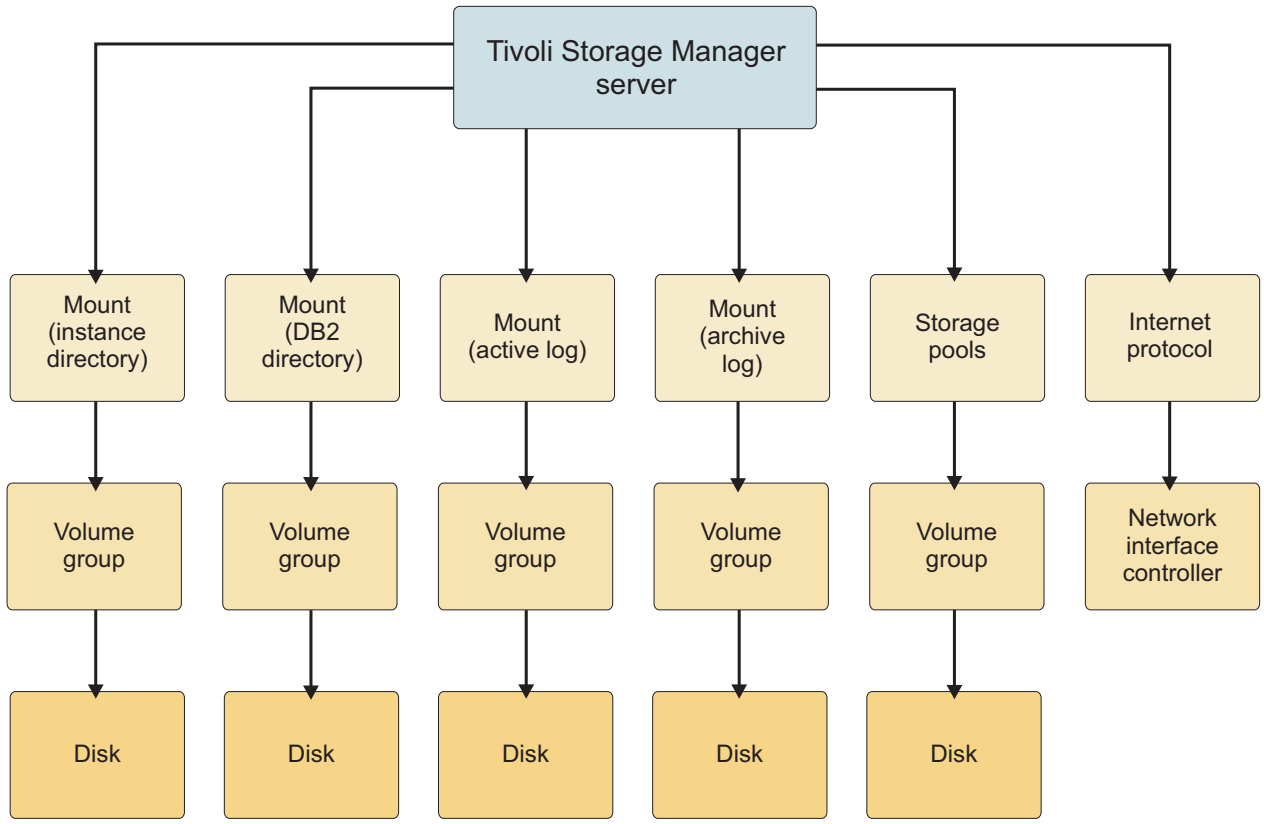


Figure 3. The resource dependences for the Tivoli Storage Manager resource group

Chapter 2. Setting up a two-node cluster that is based on Tivoli System Automation

To set up this cluster to use Tivoli System Automation on an AIX® system, you must first install and configure the Tivoli Storage Manager components. Then, you install and configure Tivoli System Automation to manage these components. Finally, you must configure the required resources.

Procedure

1. Install and configure the Tivoli Storage Manager components by following the procedure in Chapter 4, "Installing and configuring Tivoli Storage Manager components on the primary and secondary nodes," on page 11.
2. Install Tivoli System Automation and by following the procedures in Chapter 5, "Installing Tivoli System Automation on the primary and secondary nodes," on page 15.
3. Configure the storage resources by following the procedures in Chapter 6, "Configuring storage resources," on page 19.
4. If you must upgrade the Tivoli Storage Manager server for the Tivoli System Automation cluster, complete the steps in Chapter 7, "Upgrading the server that is configured with Tivoli System Automation," on page 21.

Chapter 3. Prerequisites

Before you install and configure Tivoli Storage Manager in a clustered environment with Tivoli System Automation, you must check the prerequisites.

Check that the following prerequisites are met.

- To plan the installation of the Tivoli Storage Manager server, go to the Tivoli Storage Manager V7.1.1 product information at http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_inst_overvu-aix.html and follow the instructions.
- After you install Tivoli Storage Manager, verify the following items:
  - Ensure that the DB2 database is installed on the same node as the server.
  - Check that the server can control database recovery.
  - Verify that shared storage devices are available. Tivoli Storage Manager requires highly available shared storage devices to protect data integrity.
  - Verify that each node in the cluster can contain multiple instances of the server.
- To prepare for the Tivoli System Automation installation, go to theTivoli System Automation product information at http://www-01.ibm.com/support/knowledgecenter/SSRM2X_3.2.2/com.ibm.samp.doc_3.2.2/welcome.html and search for *Preparing for installation*.
- After you install Tivoli System Automation, check that Tivoli System Automation can process failover such as IP failover and data failover for the database, instance data, active and archive logs, and storage pools.

Chapter 4. Installing and configuring Tivoli Storage Manager components on the primary and secondary nodes

You must install the Tivoli Storage Manager server and database components on the primary and secondary nodes in the cluster. Then, configure the primary node first followed by the secondary node.

Installing Tivoli Storage Manager server components

After you check and verify the prerequisites, you must install the required components on the primary and secondary nodes on the system.

Before you begin

To understand the underlying concepts for this cluster, review Chapter 1, "Overview of a two-node Tivoli Storage Manager cluster that is based on Tivoli System Automation," on page 1.

Procedure

To install the Tivoli Storage Manager components, go to the Tivoli Storage Manager V7.1.1 product information at http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_inst-aix.html and follow the instructions.

Configuring the primary node on the Tivoli Storage Manager server

To set up the two-node topology, configure the Tivoli Storage Manager components on both nodes. First, you must configure the Tivoli Storage Manager instance on the primary node.

Before you begin

- Verify that the Tivoli Storage Manager instance owner has the same user and group ID for all of the nodes in the cluster domain.
- Verify that the Tivoli Storage Manager instance owner has the same password for all of the cluster nodes.

Procedure

1. To create the directories and the user ID for the server instance, go to Tivoli Storage Manager V7.1.1 product information at http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_1ststeps-aix.html and follow the instructions.
2. Verify that the Tivoli Storage Manager server, DB2 instance, and the active and archive log directories are shared.
3. Define the mount points by adding entries in the `/etc/filesystems` file. Use the `mount = false` option to add the mount points on the cluster nodes.
4. Set the following permissions on each of the mount points:
   - 755. For example, the following command sets the 755 permission on the `/tsminst1` mount point.

     ```
     chmod -R 755 /tsminst1
     ```

- Tivoli Storage Manager server instance owner. For example, the following command sets the permissions for the instance owner.

  ```
  chown -R  tsminst1  /tsminst1
  ```

- Tivoli Storage Manager server group that the instance owner belongs to. For example, the following command sets the permissions for the instance owner's group.

  ```
  chgrp tsmsrv_1_group /tsminst1
  ```

5. Mount the shared volumes to the mount points.
6. To configure the Tivoli Storage Manager server by using the configuration wizard, go to the Tivoli Storage Manager V7.1.1 product information at http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_instconfig_overvu-aix.html and follow the instructions. Check that all of the shared directories are mounted on the primary node.
7. Start the Tivoli Storage Manager server by using the **DSMSERV** utility. For example, the following command starts the server for normal operation.

   ```
   /opt/tivoli/tsm/server/bin/dsmserv
   ```

8. Verify that the Tivoli Storage Manager components are started without any errors.
9. Shut down the Tivoli Storage Manager server.
10. Unmount the shared drives.

Configuring the secondary node on the Tivoli Storage Manager server

After you configure the primary node, you must configure the secondary node so that Tivoli System Automation can move the Tivoli Storage Manager server components to the secondary node if the server fails on the primary node.

Procedure

1. To create the directories and the user ID for the server instance, go to the Tivoli Storage Manager V7.1.1 product information at http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_1ststeps-aix.html and follow the instructions.
2. Verify that the Tivoli Storage Manager server, DB2 instance, and the active and archive log directories are shared.
3. Define the mount points by adding entries to the `/etc/filesystems` file.

   Use the `mount = false` option to add the mount points on the cluster nodes.
4. Set the following permissions on each of the mount points:

   - 755. For example, the following command sets the 755 permission on the `/tsminst1` mount point.

     ```
     chmod -R 755 /tsminst1
     ```

   - Tivoli Storage Manager server instance owner. For example, the following command sets the permissions for the instance owner.

     ```
     chown -R  tsminst1  /tsminst1
     ```

   - Tivoli Storage Manager server group that the instance owner belongs to. For example, the following command sets the permissions for the instance owner's group.

     ```
     chgrp tsmsrv_1_group /tsminst1
     ```

5. Mount the shared volumes to the mount points.
6. Create the Tivoli Storage Manager server instance by issuing the **db2icrt** command. Go to the Tivoli Storage Manager V7.1.1 product information at

http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_config_man-aix.html and follow the instructions. Check that all of the shared directories are mounted on the secondary node.

7. Catalog the database by issuing the **catalog db** command. For example, the following command catalogs the `tsmdb1` database.

   ```
   db2 catalog db tsmdb1
   ```

8. To prepare the database for backup, go to the Tivoli Storage Manager V7.1.1 product information at http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_prep_dbmgr-aix.html and follow the instructions.
9. Start the Tivoli Storage Manager server by using the **DSMSERV** utility. For example, the following command starts the server for normal operation.

   ```
   /opt/tivoli/tsm/server/bin/dsmserv
   ```

10. Verify that the Tivoli Storage Manager components are starting without any errors.
11. On the secondary nodes, shut down the Tivoli Storage Manager server and unmount the shared directories.

Chapter 5. Installing Tivoli System Automation on the primary and secondary nodes

After you install and configure Tivoli Storage Manager on the primary and secondary nodes in the cluster, you must install and configure Tivoli System Automation on these nodes. Then, you must activate these nodes for the domain, configure the resources, and activate the base policy. Finally, you must add the mount points to the Tivoli Storage Manager directories.

Before you begin

To understand the underlying concepts for this cluster, review Chapter 1, "Overview of a two-node Tivoli Storage Manager cluster that is based on Tivoli System Automation," on page 1.

Installing and configuring Tivoli System Automation on the cluster nodes

You must install Tivoli System Automation on the primary and secondary nodes in the system.

Procedure

1. To install and configure Tivoli System Automation, go to the topics in the *Installation and Configuration Guide* in the Tivoli System Automation V3.2.2 product information at http://www-01.ibm.com/support/knowledgecenter/SSRM2X_3.2.2/com.ibm.samp.doc_3.2.2/welcome.html.
2. To create the cluster domain and the cluster nodes, go to the topics in the *Administrator's and User's Guide* in the Tivoli System Automation V3.2.2 product information at http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/index.jsp?topic=%2Fcom.ibm.samp.doc_3.2.2%2Fwelcome.html.
3. Download the `TSM-25072011-1015.zip` file from the Integrated Service Management Library at: https://www-304.ibm.com/software/brandcatalog/ismlibrary/details?catalog.label=1TW10SM35#tab-overview. Extract the compressed file on each cluster node.
4. After you extract the compressed file, verify that the new Tivoli System Automation directory that was created during the installation includes the `/TSM/HA` directory and subdirectories.

Preparing to activate the cluster nodes for the domain

After you install Tivoli System Automation on the primary and secondary nodes in the cluster, you must prepare these nodes so that you can activate the cluster and start the cluster domain.

Procedure

1. Prepare each node for the domain by issuing the **preprpnode** command. Issue this command for all the cluster nodes in the domain. For example, the following command prepares the HOST1.ibm.com and HOST2.ibm.com nodes.

   ```
   preprpnode HOST1.ibm.com HOST2.ibm.com
   ```

2. Create a domain for each node by issuing the **mkrpdomain** command. For example, the following command creates the tsm_domain for the HOST1.ibm.com and HOST2.ibm.com nodes.

   ```
   mkrpdomain tsm_domain HOST1.ibm.com HOST2.ibm.com
   ```

3. Start the domain for each node by issuing **startrpdomain** command. For example, the following command starts the tsm_domain.

   ```
   startrpdomain tsm_domain
   ```

Configuring volume group resources

You must configure the resources for the cluster. Tivoli System Automation automatically finds and defines the shared disk volume resources.

Procedure

To configure the volume group resources for the shared Tivoli Storage Manager directories and mount points that you created previously, complete the following steps on the primary node.

1. Import the volume groups. For example, the **importvg X** command imports the X volume groups.
2. Activate the volume groups. For example, the **varyonvg X** command activates the X volume groups.
3. Mount the file system by issuing the **mount** command. The following example mounts the X file system.

   ```
   mount X
   ```

4. Restart the domain by issuing the **stoprpdomain** and **startrpdomain** commands. For example, the following commands restart the tsm_domain.

   ```
   stoprpdomain tsm_domain
   startrpdomain tsm_domain
   ```

5. Unmount the file system by issuing the **umount** command. For example, the following command unmounts the X file system.

   ```
   umount X
   ```

6. Deactivate the volume groups. For example, the **varyoffvg X** command deactivates the X volume groups.
7. Verify that all the IBM®.AgfileSystem storage resources are harvested by Tivoli System Automation by issuing the following command:

   ```
   lsrsrc –s "Name=='Resource_Name' && ResourceType=1" IBM.AgFileSystem
   ```

Configuring resources that are not in the volume group

If you created your *shared disk storage* resources by using ext2, ext3, or reiserfs resource types in one of the nodes in the cluster, then you must configure these resources.

Procedure

Complete the following steps on the primary node.

1. Mount the file system by issuing the **mount** command. For example, the following command mounts the X file system.

   ```
   mount X
   ```

2. Restart the domain by issuing the **stoprpdomain** and **startrpdomain** commands. For example, the following command restarts the tsm_domain.

```
stoprpdomain tsm_domain
startrpdomain tsm_domain
```

3. Unmount the file system by issuing the **umount** command. For example, the following command unmounts the X file system.

   ```
   umount X
   ```

4. Verify that all the IBM.AgfileSystem storage resources are harvested by Tivoli System Automation by issuing the following command:

   ```
   "Name=='Resource_Name' && ResourceType=1" IBM.AgFileSystem
   ```

Activating the base policy

After you configure the resources, you must activate the policy on the primary and secondary nodes to create any remaining resources and the resource group.

About this task

To activate the base policy, you must create the Service IP resource and Tivoli Storage Manager application resources for the Tivoli Storage Manager server instance. Then, you must create the resource group and the policies to manage the cluster.

Procedure

Complete the following steps first on the primary node and then on the secondary node.

1. Go to the directory where you extracted the contents of the TSM-25072011-1015.zip file.
2. Set the file permissions on the scripts in the bin directory by issuing the **chmod** command. For example, the following command sets the file permissions for all of the scripts in the bin directory. XXX is the name of the extracted folder.

   ```
   chmod 755 /XXX/TSM/HA/bin/*
   ```

3. Go to the bin directory by issuing the **cd** command.
4. Update the following variables in the base_cluster_variables.sh script:
   - *HOSTNAME1* specifies the host name for node 1 (primary node) in the cluster.
   - *HOSTNAME2* specifies the host name for node 2 (secondary node) in the cluster.
   - *GATEWAY of SERVICE IP* specifies the gateway of the Service IP.
   - *SUBNET MASK of SERVICE IP* specifies the subnet mask of the Service IP.
   - *NETWORK INTERFACE* specifies the network interface name of a specific node in the cluster. This name must be the same for all the nodes in the cluster.
5. Run the configureHA.sh configuration script by issuing the **./configureHA.sh** command on all of the nodes in the cluster.
   a. If the configureHA.sh script fails with the `-bash: ./configureHA.sh: /bin/bash^M: bad interpreter: No such file or directory` error, issue the **dos2unix** command on all of the scripts in the bin directory.
6. Verify that the configuration is a success by verifying that the configuration script runs successfully.
7. **Attention:** Complete this step on the primary node only.
   Run the setup script by issuing the **./setup.sh** command. For example, the following command runs the setup script on the inst1 Tivoli Storage Manager

server instance for the dbinst1 instance user in the /tsminst1 Tivoli Storage Manager server instance directory with 9.11.142.129 as the service IP.

```
./setup.sh inst1 dbinst1 /tsminst1 9.11.142.129
```

8. Repeat step 5 for all of the Tivoli Storage Manager instances that you have in your Tivoli Storage Manager server environment.
9. Complete all of the previous steps on the secondary node.

Adding mount points to the Tivoli Storage Manager directories

Before you can start the cluster, you must add the mount points that you created for the Tivoli Storage Manager components.

Procedure

To add the shared disk mount points to the cluster resource group and bring the cluster online, complete the following steps:

1. Identify mount points for the following directories:
   - Instance
   - Database
   - Active log
   - Archive log
   - Storage pool
2. Add resources to each mount point:
   a. Check whether the tsm-$INST_NAME-rg resource group is online by issuing the **lssam** command.
   b. If the tsm-$INST_NAME-rg resource group is online, take it offline by issuing the following command:

      ```
      chrg –o offline tsm-$INST_NAME-rg
      ```

   c. Move to the bin directory by issuing the **cd** command.
   d. To add shared disk resources to each mount point, run the **./update_setup.sh** script. For example, the following command adds the /tsminst1 mount point to the inst1 Tivoli Storage Manager server instance.

      ```
      ./update_setup.sh inst1 /tsminst1
      ```

3. Bring the tsm-$INST_NAME-rg resource group online by issuing the following command:

   ```
   chrg –o online tsm-$INST_NAME-rg
   ```

Chapter 6. Configuring storage resources

Use the Tivoli System Automation user interface or command line to add or delete storage resources and to delete mount points that are no longer required. If you add a storage pool to the cluster, you must add it to the resource group. If you remove a storage pool from the cluster, you must also delete it from the resource group.

Adding a storage pool

If your Tivoli Storage Manager configuration stores data on disks, then you must add the shared disk mount point for the storage pool to the resource group.

Procedure

To add the shared disk mount point for the storage pool to the resource group, complete the following steps:

1. Lock the resource group by issuing the **rgreq -o lock** command. For example, the following command locks the `Sample_Resourcegroup_X` resource group.
   ```
   rgreq -o lock Sample_Resourcegroup_X
   ```
2. Move to the bin directory by issuing the **cd** command:
3. To add a storage pool resource to a resource group, run the `update_setup.sh` script by issuing the **./update_setup.sh** command. For example, the following command adds the `/inst1stg1` storage pool mount point to the `inst1` Tivoli Storage Manager server instance.
   ```
   ./update_setup.sh inst1 /inst1stg1
   ```
4. Unlock the resource group by issuing the **rgreq -o unlock** command. For example, the following command unlocks the `Sample_Resourcegroup_X` resource group.
   ```
   rgreq -o unlock Sample_Resourcegroup_X
   ```

Deleting a storage pool

You can delete a Tivoli Storage Manager storage pool that is no longer required. If a storage pool is removed from the Tivoli Storage Manager server instance, it must be deleted from the resource group.

Procedure

To delete a storage pool, complete the following steps:

1. Lock the resource group by issuing the **rgreq -o lock** command. For example, the following command locks the `Sample_Resourcegroup_X` resource group.
   ```
   rgreq -o lock Sample_Resourcegroup_X
   ```
2. Move to the `bin` directory by issuing the **cd** command.
3. To delete a storage pool resource from a resource group, run the `delete_mount.sh` script by issuing the **./delete_mount.sh** command. For example, the following command deletes the `/inst1stg1` mount point from the `inst1` Tivoli Storage Manager server instance.
   ```
   ./delete_mount.sh /inst1stg1 inst1
   ```

4. Unlock the resource group by issuing the **rgreq -o unlock** command. For example, the following command unlocks the Sample_Resourcegroup_X resource group.

   ```
   rgreq -o unlock Sample_Resourcegroup_X
   ```

Deleting mount points

You might want to delete a mount point that is no longer required.

Procedure

To delete a mount point, complete the following steps:

1. Check whether the tsm-$INST_NAME-rg resource group is online by issuing the **lssam** command.
2. If the tsm-$INST_NAME-rg resource group is online, take it offline by issuing the following command:

   ```
   chrg –o offline tsm-$INST_NAME-rg
   ```

3. Move to the bin directory by issuing the **cd** command.
4. To delete a mount point, run the **delete_mount.sh** script. For example, the following command deletes the /tsminst1 mount point from the inst1 Tivoli Storage Manager server instance resource group.

   ```
   ./delete_mount.sh /tsminst1 inst1
   ```

5. Bring the tsm-$INST_NAME-rg resource group online by issuing the following command:

   ```
   chrg –o online tsm-$INST_NAME-rg
   ```

Chapter 7. Upgrading the server that is configured with Tivoli System Automation

You can upgrade the Tivoli Storage Manager server that is configured with Tivoli System Automation. You can upgrade from Tivoli Storage Manager server V6.2 or V6.3 to V7.1.

Procedure

To upgrade Tivoli Storage Manager on each node in the cluster, log in to the Tivoli Storage Manager and complete the following steps. These steps start the upgrade on the primary node and then the latter part of this procedure upgrades the secondary node.

1. Stop the Tivoli Storage Manager resources by issuing the **chrg -o Offline** command. For example, the following command stops the resources in the tsm-tsminst1-rg resource group.

   ```
   chrg -o Offline tsm-tsminst1-rg
   ```

2. Stop the Tivoli System Automation domain by issuing the **stoprpdomain** command. For example, the following command stops the tsm_domain.

   ```
   stoprpdomain tsm_domain
   ```

3. Mount the Tivoli Storage Manager mount points on the primary node.
4. To upgrade the Tivoli Storage Manager server, go to the Tivoli Storage Manager V7.1.1 product information at http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_upgrade.html and follow the instructions.
5. After the upgrade is complete, complete the post upgrade steps to verify that the upgrade is successful on the primary node.
6. Stop the Tivoli Storage Manager server and unmount the Tivoli Storage Manager mount points on the primary node.
7. Mount the Tivoli Storage Manager mount points on the secondary node.
8. Uninstall the Tivoli Storage Manager AIX server. For instructions to uninstall the server, see the following information:
   - To uninstall Tivoli Storage Manager server V6.2, go to the Tivoli Storage Manager V6.2 product information at http://www-01.ibm.com/support/knowledgecenter/SSGSG7_6.2.0/com.ibm.itsm.srv.install.doc/t_srv_uninst_overvu.html and follow the instructions.
   - To uninstall Tivoli Storage Manager server V6.3, go to the Tivoli Storage Manager V6.3 product information at http://www-01.ibm.com/support/knowledgecenter/SSGSG7_6.3.4/com.ibm.itsm.srv.install.doc/t_srv_uninst_overvu.html and follow the instructions.
9. To upgrade the Tivoli Storage Manager server on the secondary node, go to the Tivoli Storage Manager V7.1.1 product information at http://www.ibm.com/support/knowledgecenter/SSGSG7_7.1.1/com.ibm.itsm.srv.install.doc/t_srv_upgrade.html and follow the instructions.
10. After the upgrade is complete, complete the post upgrade steps to verify that the upgrade is successful on the secondary node.
11. Unmount the Tivoli Storage Manager mount points on the secondary node.
12. Start the domain by issuing the **startrpdomain** command. For example, the following command starts the tsa_domain.

```
startrpdomain tsa_domain
```

13. Start the Tivoli Storage Manager resources by issuing the **chrg -o Online** command. For example, the following command starts the resources in the tsm-tsminst1-rg resource group.

```
chrg -o Online tsm-tsminst1-rg
```

Appendix. Accessibility features for the Tivoli Storage Manager product family

Accessibility features help users who have a disability, such as restricted mobility or limited vision to use information technology products successfully.

Accessibility features

The IBM Tivoli Storage Manager family of products includes the following accessibility features:

- Keyboard-only operation using standard operating-system conventions
- Interfaces that support assistive technology such as screen readers

The command-line interfaces of all products in the product family are accessible.

Tivoli Storage Manager Operations Center provides the following additional accessibility features when you use it with a Mozilla Firefox browser on a Microsoft Windows system:

- Screen magnifiers and content zooming
- High contrast mode

The Operations Center and the Tivoli Storage Manager Server can be installed in console mode, which is accessible.

The Operations Center help system is based on IBM Knowledge Center, which is enabled for accessibility.

Vendor software

The Tivoli Storage Manager product family includes certain vendor software that is not covered under the IBM license agreement. IBM makes no representation about the accessibility features of these products. Contact the vendor for the accessibility information about its products.

IBM and accessibility

See the IBM Human Ability and Accessibility Center (http://www.ibm.com/able) for information about the commitment that IBM has to accessibility.

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