IBM Tivoli Storage Manager V6

Understanding server-to-server communication

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In this training module, you learn about IBM Tivoli® Storage Manager V6 server-to-server communication.

Objectives

When you complete this module, you can accomplish these tasks:

- Explain the need for server-to-server communication

- Name some of the IBM Tivoli Storage Manager V6 features that rely on server-to-server communication

- Configure server-to-server communication between a source server and a target server

- Configure more IBM Tivoli Storage Manager servers for server-to-server communication as target servers to an established and defined source server

- Reconfigure IBM Tivoli Storage Manager target servers as source servers for server-to-server communication to more target servers

- Verify successful establishment of server-to-server communication connection between IBM Tivoli Storage Manager source servers and target servers

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When you complete this module, you can explain the need for, configure, and implement IBM Tivoli Storage Manager version 6 server-to-server communication.

Why use server-to-server communication

About Tivoli Storage Manager V6 server-to-server communication:

- Allows Tivoli Storage Manager V6 servers to communicate with each other

- Allows administrators to use the many redundancy, backup, and disaster recovery features that come with Tivoli Storage Manager V6:
  - Library Manager
  - Node Replication
  - Command Routing
  - Virtual Volumes

Server to server communication is required by some of the services available in IBM Tivoli Storage Manager version six such as Library Manager, Node Replication, Command Routing, and Virtual Volumes. Server-to-server communication allows all Tivoli Storage Manager servers in your environment to talk to each other and exchange data. With server-to-server communications configured and implemented, administrators can take full advantage of all the node redundancy, storage backup, database backup, and disaster recovery features that come with IBM Tivoli Storage Manager version six.

Two nodes without Library Manager and server-to-server communication

Tape library with four drives and two Tivoli Storage Manager servers that are configured without server-to server communication:

- Each Tivoli Storage Manager server has only dedicated usage of two drives

- No extra storage capacity usage of the other two drives that are connected to the other server

- No availability of the tape library's full storage capacity

TSM Server 1

2 Drives

Tape library with 4 drives

TSM Server 2
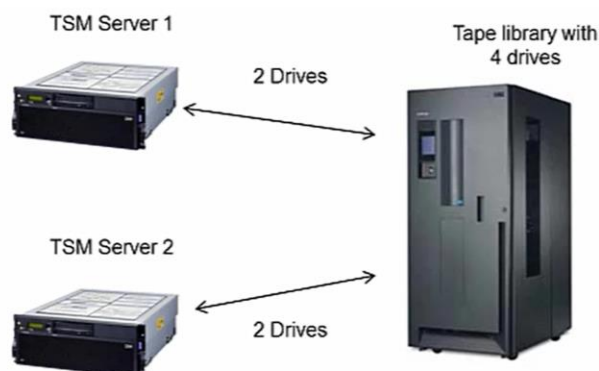
2 Drives

Here you see a tape library with four drives that are allocated to it. Two of the drives are dedicated to Tivoli Storage Manager Server One and the other two are dedicated to Tivoli Storage Manager Server Two. Server-to-server communication must be in place in order for these IBM Tivoli Storage Manager servers to share drives. Unfortunately, server-to-server communication has not been configured between Server One and Server Two. For this reason, each Tivoli Storage Manager server cannot benefit from using the full tape library drive storage space of the two drives that are connected to the other server. The key word is dedicated. Server One and Server Two are each configured for dedicated access to only two drives. If Server Two is idle and while active Server One overloads its two drives, then future Server One data is lost. Migration or reclamation processes can put one server under a heavy load and fill the two drives that are allocated to that server.

Two nodes with Library Manager and server-to-server communication

Tape library with four drives and two Tivoli Storage Manager servers (Library Manager feature configured):

- Each Tivoli Storage Manager server node has usage of all four drives

- One node is configured as a Tivoli Storage Manager Server Library Manager and the other as a Server Library client

- Server Library manager node has dedicated access to tape library, sets how many to the four drives are available to the Server Library client node

TSM Server Library manager

4 Drives

Tape library with 4 drives

TSM Server Library client

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Here you again see a tape library with four drives that are allocated to it. This time however all four of the drives are dedicated to a Tivoli Storage Manager Server Library manager. Server-to-server communication implementation in this scenario provides access for the Server Library client to those four drives through the Server Library manager. Server-to-server communication makes it possible for each Tivoli Storage Manager server in this configuration to have full access to the storage capacity of all four of the drives within the tape library. The number of drives, whether it be one or four, allocated to the Server Library client node is now controlled by the Server Library manager. In this configuration, all four of the tape library drives are dedicated to the Server Library manager node and access to them for the Server Library client is configured through server-to-server communication with the Server Library manager node.

Configuring server-to-server communication

You perform these three steps to configure server-to-server communication:

1. Configure server name, server password, high-level address, low-level address, and turn on crossdefine on the target server

2. Configure server name, server password, high-level address, and low-level address on the source server

3. Run define server command on the source server to establish communication

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In order for two IBM Tivoli Storage Manager V6 servers to exchange data, you must have server-to-server communication between a source IBM Tivoli Storage Manager server node and a target IBM Tivoli Storage Manager server node. Generally, a target server node is where data is being sent to while a source server node is where data is being sent from. In a replication scenario, the target server is the node where data is being backed up to while the source server is the node where data was originally stored. Configuring such server-to-server communication requires that you accomplish the three steps that are displayed on this slide. Each of the two IBM Tivoli Storage Manager server nodes requires a server name, server password, high-level address, and a low-level address. As you can see, the target server node requires turning on crossdefine and the source server node requires that you run the define server command. This process is straightforward and does not require a restart of the source and target IBM Tivoli Storage Manager servers. Perform a query on your Tivoli Storage Manager servers to locate their assigned server names. In this case, the server password is unique. It is only used for access to server-to-server communication functions. Server-to-server communication password assignment does not affect any other passwords such as administrator or client passwords. The high-level address is an Internet Protocol or IP address and the low-level address is the Transmission Control Protocol or TCP port that is used in communication for that IP address. Having crossdefine on allows configuration of server-to-server communication in one easy step.

Target server configuration commands

These five commands are used on the target server to configure the target server:

- set servername *target_server_name*
- set serverpassword *target_server_password*
- set serverhladdress *target_server_ip_address*
- set serverlladdress *target_server_tcp_port*
- set crossdefine on

You run these five commands that are shown on this slide on the Tivoli Storage Manager target server to configure that server. You simply plug in the server name, server-to-server communication password, IP address, and TCP port for each command variable that is shown in red. Next, you run the displayed command to set crossdefine to on for that target server.

Source server configuration commands

- These four commands are used to configure the target server:
- set servername *source_server_name*
- set serverpassword *source_server_password*
- set serverhladdress *source_server_ip_address*
- set serverlladdress *source_server_tcp_port*

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Now run the four commands that are shown on this slide to configure your source server. The command to set crossdefine on needs to be run on only one server if a pair is being configured for server-to-server communication. In this scenario, you already set crossdefine to on for the target server node.

Establish and verify connectivity between the source and target servers

Perform these actions to establish and verify connectivity between source and target servers

1. Run the define server command on the server that is chosen to be the source server but use target server information (see command syntax illustration)

   define server *target_server_name* hladdress=*target_sever_ip_address*
   lladdress=*target_server_tcp_port* serverpassword=*target_server_password*
   crossdefine=*yes*

2. Run the Query SERver command to verify that server-to-server communication was established successfully

```
                      .-*-----------.   .-Format--=--Standard-----.
  >>-Query SERver--+-------------+--+------------------------+--><
                   '-server_name-'  '-Format--=--+-Standard-+-'
                                                 '-Detailed-'

  Server   Comm.   High-level   Low-level Days  Server   Virtual  Allow
  Name     Method  Address      Address   Since Password Volume   Replace-
                                          Last  Set      Password ment
                                          Access         Set
  -------- ------- ------------ --------- ----- -------- -------- --------
  SERVER_A TCPIP   9.115.35.6   1501         11 Yes      No       No
```

To establish server-to-server communication, you must now run the define server command. This command is run from the source server but uses target server information. Notice that the parameter crossdefine=yes is run on the source server in this step. This parameter not only commits the crossdefine for the target server to the source server, but it also places a definition for the target server onto the source server. To verify successful establishment of server-to-server communication connectivity, you run the Query SERver command. A sample command entry syntax and output response to the Query SERver command is displayed on this slide. Run the Query SERver command on both the source server and the target server. View both command outputs to verify that server-to-server communication is established between the source server and the target server. Running the Query SERver command on the source server provides information about the connection to the target server. Running the Query SERver command on the target server provides information about the connection to the source server.

Configuring more servers for server-to-server communication

- To configure more servers for server-to-server communications, repeat these steps:

1. Configure source server name, server-to-server communication password, high-level IP address, and low-level TCP port on the source server:
   - Set servername *source_server_name*
   - Set serverpassword *source_server_password*
   - Set serverhladdress *source_server_ip_address*
   - Set serverlladdress *source_server_tcp_port*

2. Run the define server command on the source server to establish communication:
   define server target_server_name hladdrress=target_server_ip_address
   lladdress=target_server_tcp_port serverpassword=target_server_password crossdefine=yes

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For environments with more than two IBM Tivoli Storage Manager servers, you can easily configure more server nodes for server-to-server communications. Follow the target node server-to-server communication configuration that is provided in the previous slides for scenarios where you want to add more target servers to a single pre-existing source server connectivity. In this scenario, the source node has already been successfully configured and implemented.

Follow the instructions that are shown in step one and step two on this slide for environments where another source server node is to be configured for server-to-server communications. Running the Query SERver command verifies the successful establishment of connectivity for server-to-server communication.

Summary

Now that you have completed this module, you can accomplish these tasks:

- Explain the need for server-to-server communication

- Name some of the IBM Tivoli Storage Manager V6 features that rely on server-to-server communication

- Configure server-to-server communication between a source server and a target server

- Configure more IBM Tivoli Storage Manager servers for server-to-server communication as target servers to an established and defined source server

- Reconfigure IBM Tivoli Storage Manager target servers as source servers for server-to-server communication to more target servers

- Verify successful establishment of server-to-server communication connection between IBM Tivoli Storage Manager source servers and target servers

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