Symantec NetBackup Blueprints

Blueprint for SAN Client

Symantec Backup and Recovery Technical Services

Notice

This NetBackup Blueprint presentation includes example diagrams that contain objects that represent applications and platforms from other companies such as Microsoft and VMware. These diagrams may or may not match or resemble actual implementations found in end user environments. Any likeness or similarity to actual end user environments is completely by coincidence.

The goal of the diagrams included in this blueprint presentation is not to recommend specific ways in which to implement applications and platforms from other companies such as Microsoft and VMware; the purpose of these diagrams is to illustrate NetBackup best practices only.

For guidelines and best practices on installing and configuring applications and platforms from other companies, please refer to best practice documentation and other resources provided by those companies.

Symantec NetBackup Blueprints
How to use ?

These **Blueprints** are designed to show customer challenges and how NetBackup solves those.

- Each Blueprint consists of:
  - **Pain Points**: Explain the current challenges a customer faces.
  - **Whiteboards & Example Diagrams**: Describe the implementation of NetBackup solution.
  - **Best Practices**: Present NetBackup best practices to avoid common pitfalls
- Use these **Blueprints** to present the NetBackup best practice implementation example

Pain Points

NetBackup Blueprints: SAN Client
Today's challenges

- LAN backup and restore no longer meets SLAs
- Availability – Minimize the recovery window in case of downtime.
- Shrinking Backup Windows and increasing amounts of data to protect within those windows.
- High performance data transfer for the client and offloads the LAN with the backup traffic.
- Avoid slow LAN backups and restores and take advantage of high-speed backup and restore to disk and tape over the SAN.
- Replacement of SAN Media Server

NetBackup Advantages

What is SAN Client?

- SAN Client is a NetBackup optional feature that provides high-speed backups and restores of NetBackup clients.
- SAN Client supports both Disk storage and Tape storage. NetBackup allows the storage devices to be connected to the FT media servers by any means.
- SAN Client uses SCSI protocol to send backup and restore data over the FC SAN to/from a Fibre Transport (FT) Media Server – which directs backup and restore traffic to/from storage units.
  - Result is higher backup/restore performance.
  - SAN Client provides all the performance benefits of the SAN Media Server with none of the associated impact on the client system (has smaller footprint, lower resource consumption, and less complex NetBackup upgrade scenarios that SAN Media Server).
  - Supports Multiplexing and Multistreaming.

Whiteboards and Diagrams

White Boards: SAN Client
Terminology

Term	Description
Fibre Transport	NetBackup Fibre Transport (FT) is a method of data transfer. It uses Fibre Channel and a subset of the SCSI command protocol for data movement over a SAN rather than TCP/IP over a LAN. FT connections between NetBackup clients and NetBackup servers are referred to as FT pipes.
SAN client	SAN client is a NetBackup client on which the Fibre Transport service is activated. SAN Client acts as Initiator of FT pipes.
FT media server	FT media server is a NetBackup media server on which the Fibre Transport services are activated. FT media server acts as Target of FT pipes.
FT Service Manager	FT Service Manager (FSM) runs in the same process as EMM. FSM interacts with the FT services that run on SAN clients and on FT media servers. FSM discovers, configures, and monitors FT resources and events.
Target Mode Driver	Target mode driver replaces the default, initiator mode driver. Target mode applies only to QLogic HBAs.

White Boards: SAN Client
Requirements for SAN Client

- Enter an Enterprise Client license key on Master server to activate SAN Client.
- PBX service must run on the SAN clients.
- Only 64bit Solaris SPARC and Linux x86_64 platforms are supported as Fibre Transport servers.
- Define the zones on the switch so that the client(s) and server(s) are in the same zone. The Fibre Transport zone (or backup zone) should include only specific HBA ports of the hosts that use Fibre Transport.
- For the connections to the SAN clients, use a QLogic HBA that NetBackup supports for Fibre Transport. For these HBAs, you must configure them to use the NetBackup target mode driver.
- HBAs and their drivers must support 256K size buffers for data transfer.
- NetBackup master server and all NetBackup media servers that use the feature must be at NetBackup 6.5 or later.

- No special installation is required for the core NetBackup Fibre Transport components.
- Step1: Configure FT media server
  1. Start nbhba mode on the media server(via nbftsrv_config –nbhba)
  2. Mark the HBA ports(via nbhba –modify)
  3. Configure the FT services(via nbftsrv_config)
- Step 2: Configure SAN client
  1. Configure firewalls on SAN clients
  2. Configure SAN client drivers
  3. Configure the SAN client FT service(via bpclntcmd -sanclient 1)
  4. Start the SAN client FT service (via bp.start_all except windows)

Example Diagram : SAN Client
FT Media Servers Configuration

```
root@srtsf2 # nbftsrv_config -nbhba

Installing nbhba driver.
Uninstalled WinDriver for FT Server mode.
Waiting for driver references to ql2300_stub to free up (this may take some time).
......
Done adding driver.
Installed driver for nbhba mode.
MUST REBOOT TO COMPLETE INSTALLATION.
root@srtsf2 #

root@srtsf2 # nbhba -l
1 2312 21:00:00:E0:8B:86:AF:24 "" 0 0 10a
2 2312 21:01:00:E0:8B:A6:AF:24 "" 1 0 10a

root@srtsf2 # nbhba -modify -split -wwn 21:00:00:E0:8B:86:AF:24 -mode target
Modified port with WWN 21:00:00:E0:8B:86:AF:24
root@srtsf2 # nbhba -L

Card #1
 HBA Index #1
  Device ID = 2312
  World Wide Name = 21:00:00:E0:8B:86:AF:24
  Model Name = ""
  Port = 0
  Mode = target (designated for FT Server)(810a)
 HBA Index #2
  Device ID = 2312
  World Wide Name = 21:01:00:E0:8B:A6:AF:24
  Model Name = ""
  Port = 1
  Mode = initiator (designated for other use)(10a)
root@srtsf2 # nbhba -l
1 2312 21:00:00:E0:8B:86:AF:24 "" 0 1 810a
2 2312 21:01:00:E0:8B:A6:AF:24 "" 1 0 10a
```

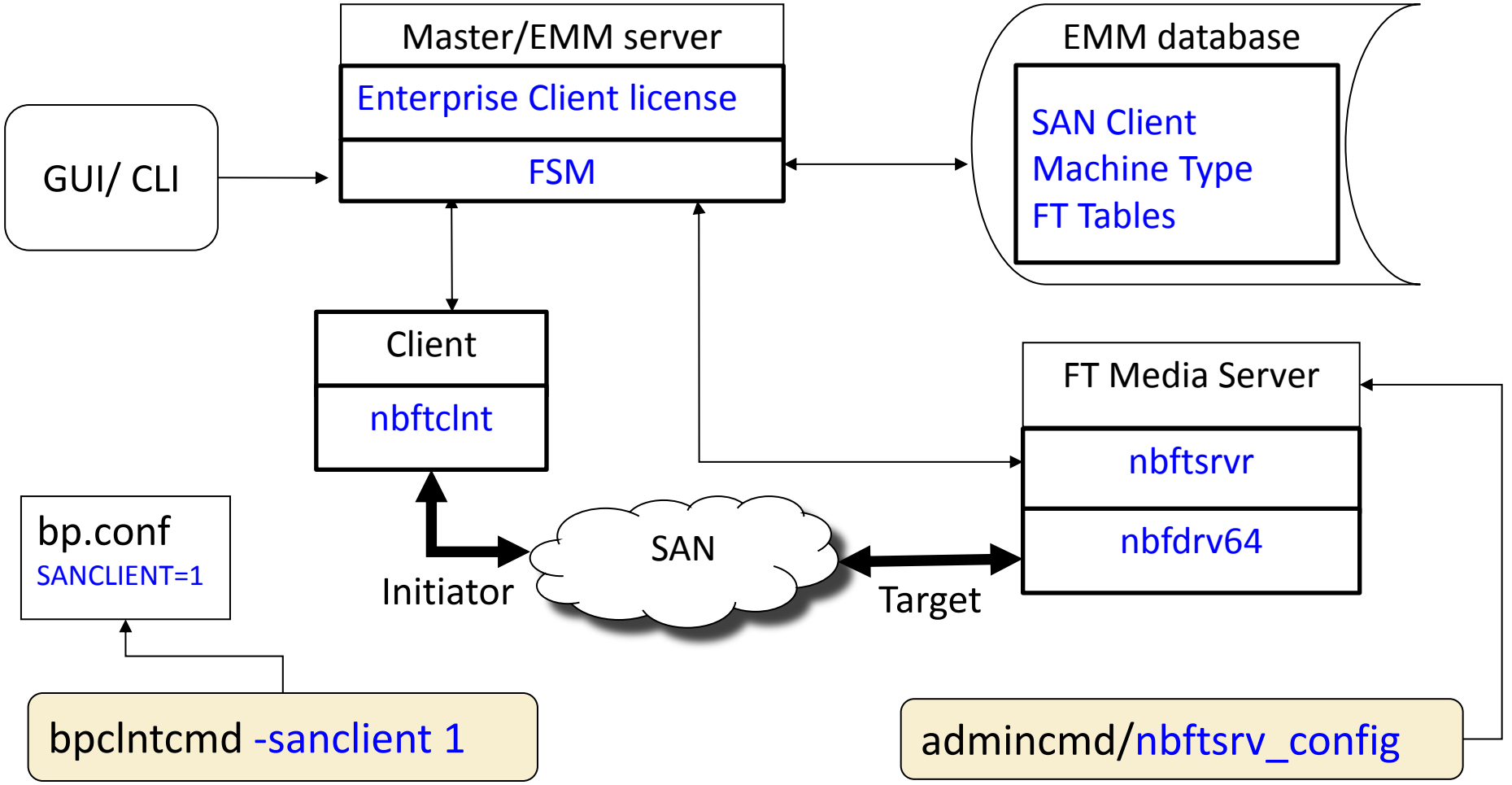
Start nbhba mode on the media server

initiator mode

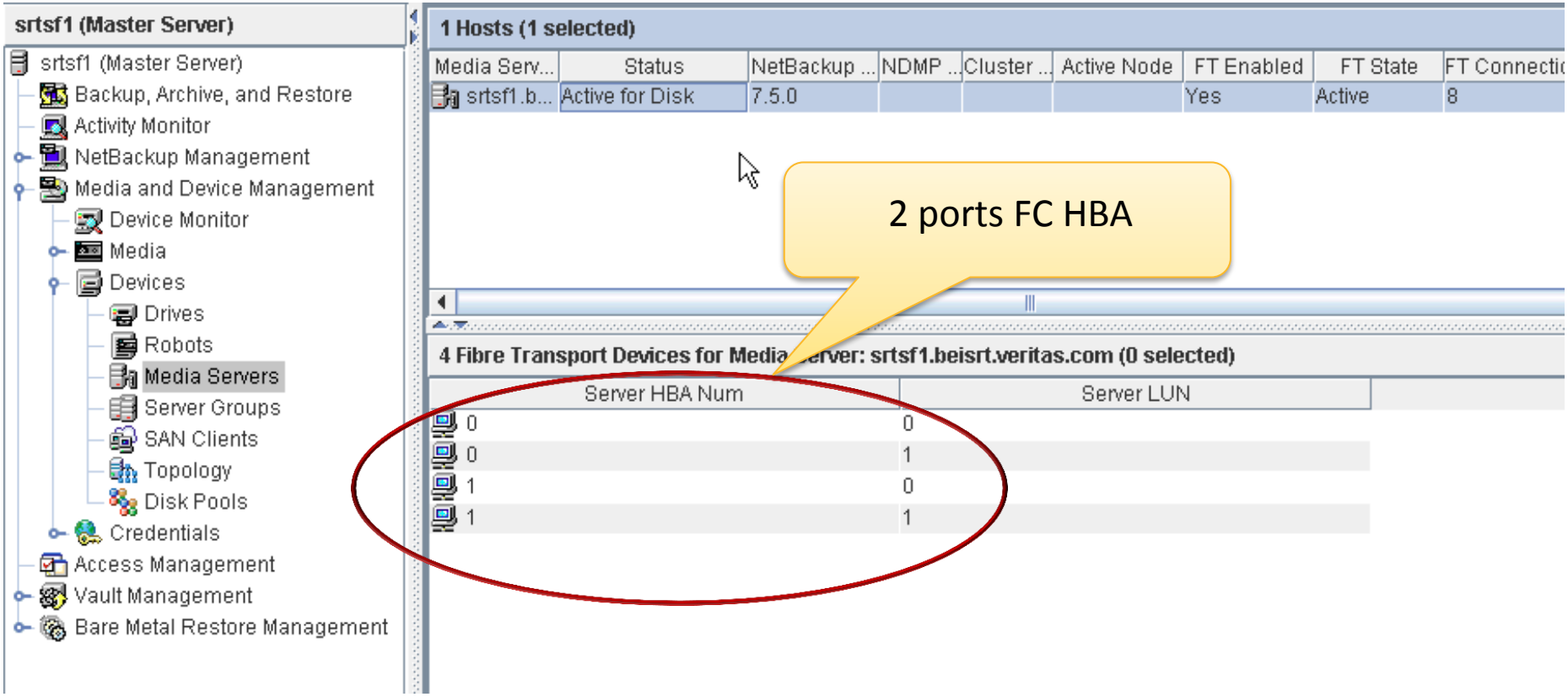
Mark the specific HBA port

target mode driver binds to the marked HBA port

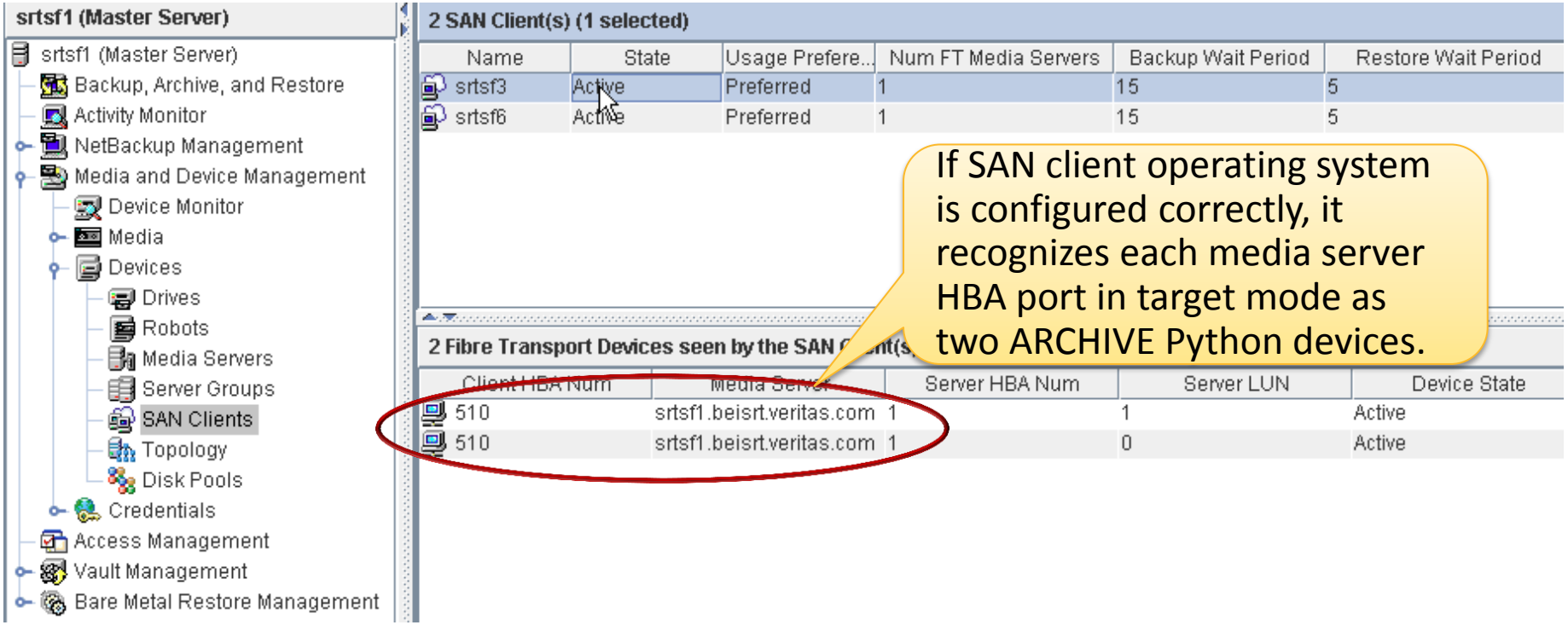
Whiteboards: SAN Client
Components and configuration



Example Diagram : SAN Client
Media Servers View



Example Diagram : SAN Client
SAN Client View



Whiteboards: SAN Client

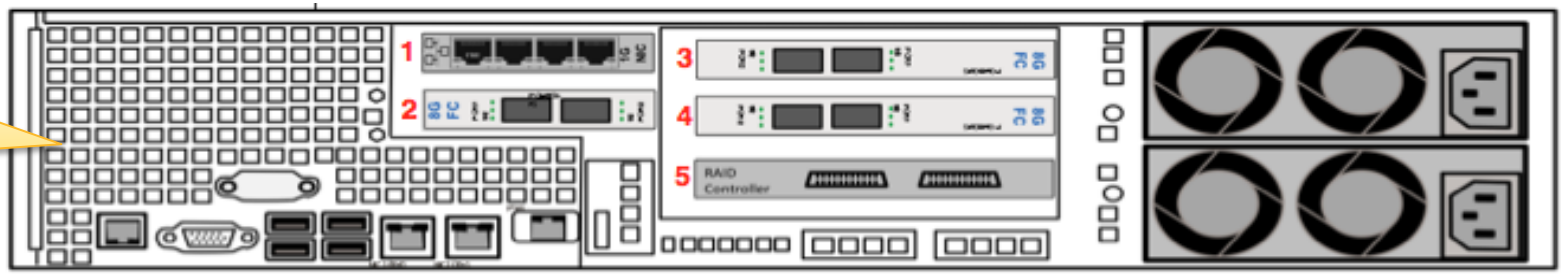
Converting SAN media server to SAN client

1. Delete the SAN media server on Master
2. Uninstall the SAN media server software
3. Prepare for Fibre Transport
4. Connect the storage to the FT media server host
5. Install the NetBackup media server software
6. Configure the FT media servers
7. Install the NetBackup client software
8. Configure the SAN client
9. Configure alternate server restore

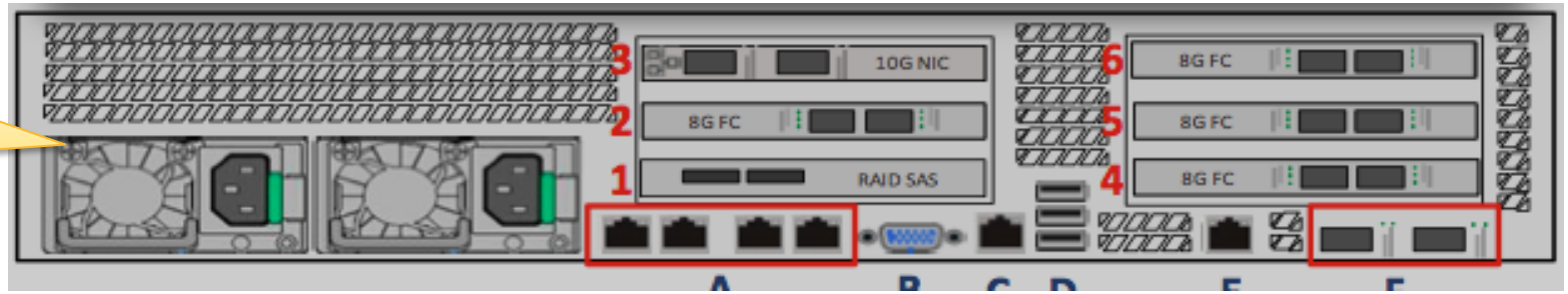
Note： For detailed information, please refer to the NetBackup 7.6 SAN Client Guide.

- 52x0 Appliances support Fibre Transport.
  - In 5220, this feature requires fibre channel HBAs to be installed in slot 2 or slot 4
  - In 5230, HBAs should be installed in slot 5 or slot 6.
  - Port 1 of the FC HBA in these slots must be configured for the Target mode ; Port 2 will remain in initiator (normal) mode.
- Fibre Transport pipes are not storage-style multipath links. Supported job types will automatically use any available FT pipe.

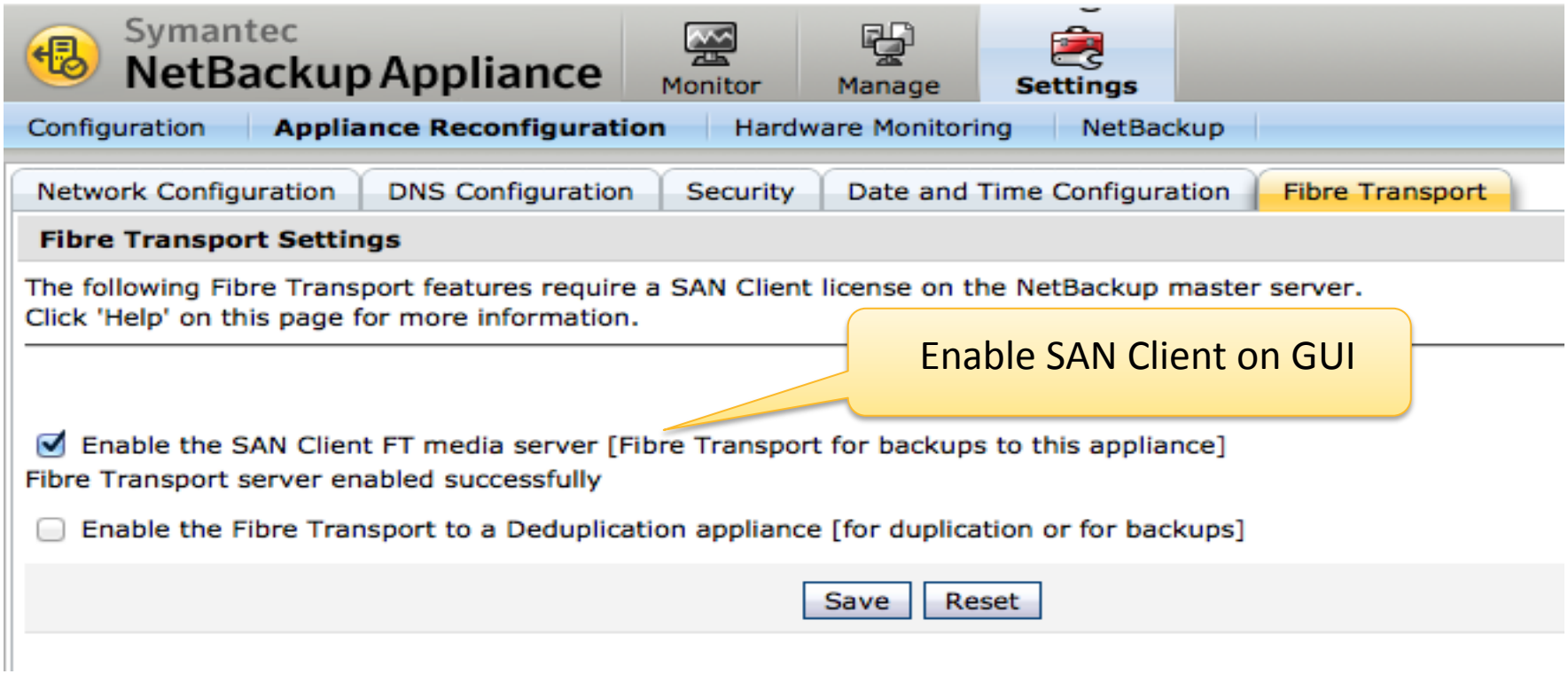
5220



5230



Example Diagram : SAN Client
Fibre Transport Settings on 52x0 Appliance




```
nb5230113.Settings> FibreTransport SANClient Enable
WARNING: Running this operation will restart the NetBackup
daemons, resulting in currently running jobs to fail.
This operation may take up to 10 minutes to complete.>>
Are you sure you want to proceed? (yes/no) yes
Fibre Transport server enabled successfully
```

Enable SAN Client on CLISH

Whiteboards: SAN Client
Cluster Support

- FT client service and Symantec PBX service must run on all failover nodes.
- SAN client OS on every node must detect the FT media server target mode driver.
- SAN client FT service is not a cluster application. To protect a SAN client with a cluster, you must configure NetBackup so that FT connections exist to every node.
- Configuring SAN clients in a cluster:
  - Install NetBackup client software on each failover node
  - Configure the SAN client on each failover node
  - Register the virtual node name with the EMM server

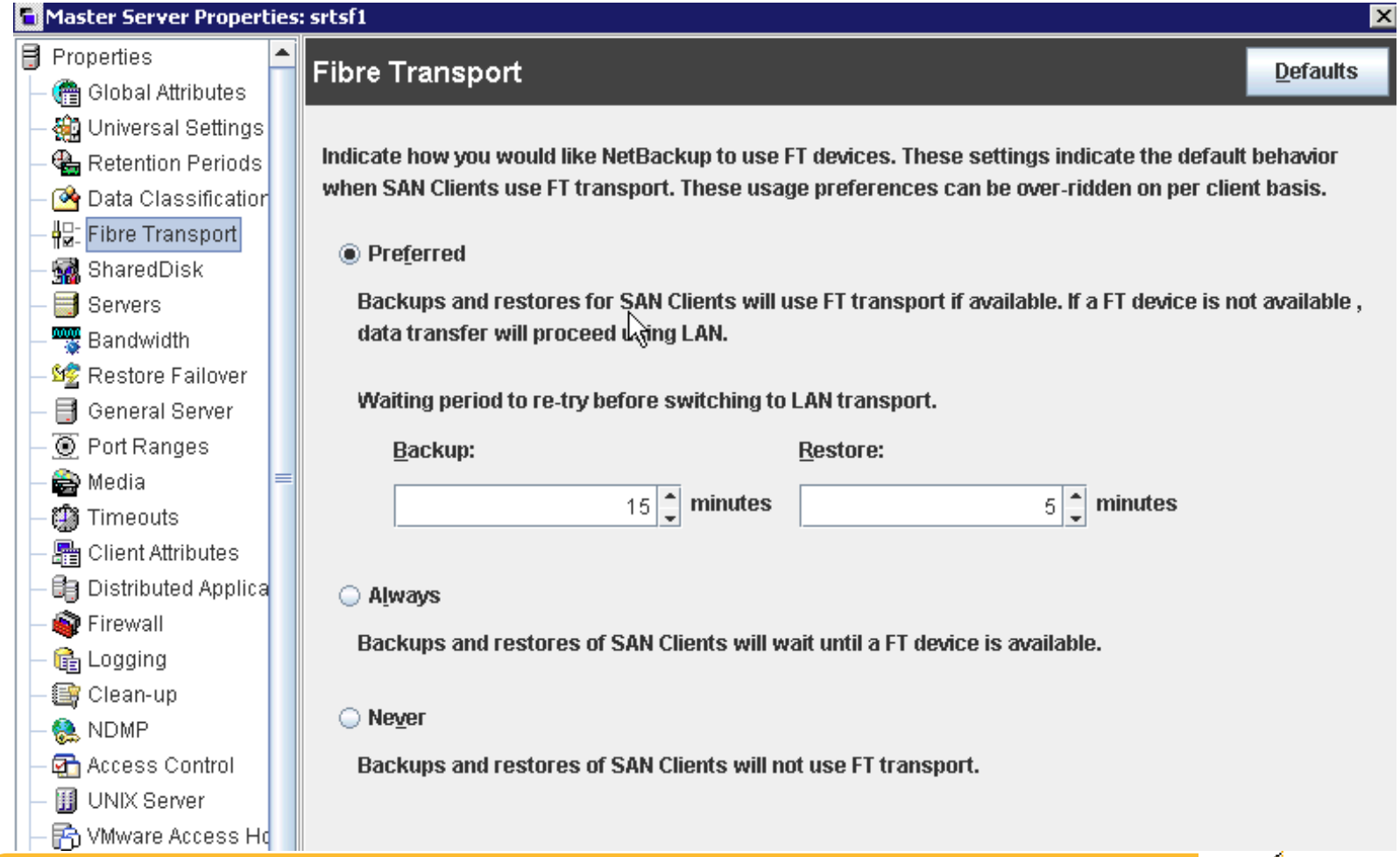
Fibre Transport Logs

- Monitor Fibre Transport activity and status by viewing the log messages that the FT processes generate. Veritas unified log (VxUL) files use a standardized name and file format for log files. An originator ID identifies the process that writes the log messages.

Originator ID	FT processes that use the ID
199	nbftsrvr and nbfdrv64. The media server Fibre Transport services.
200	nbftclnt. The client Fibre Transport service.
201	The FT Service Manager. Runs in the Enterprise Media Manager service.

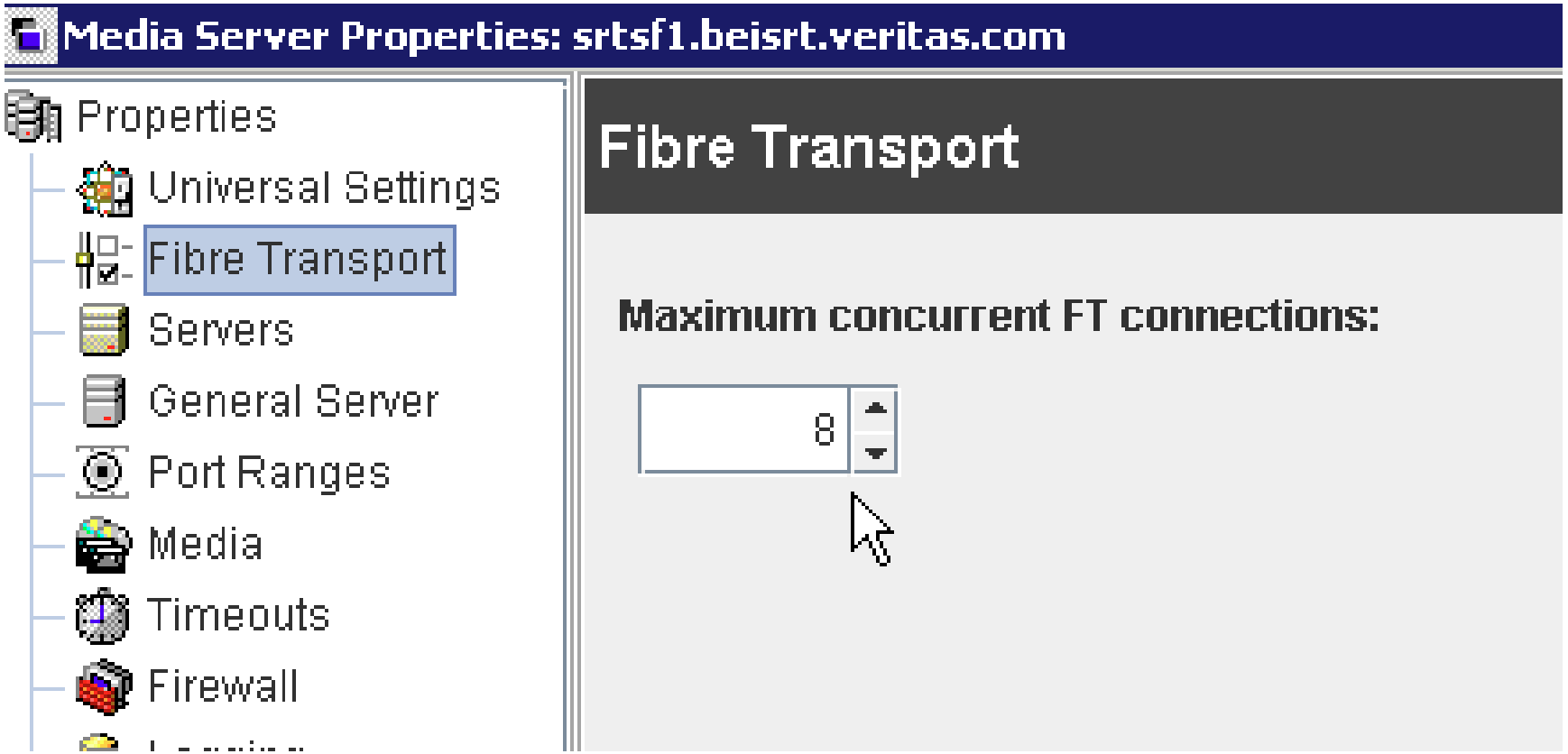
Example Diagram : SAN Client
Fibre Transport Properties – Master server

FT properties control how your SAN clients use the Fibre Transport services for backups. Master properties apply to all SAN clients.



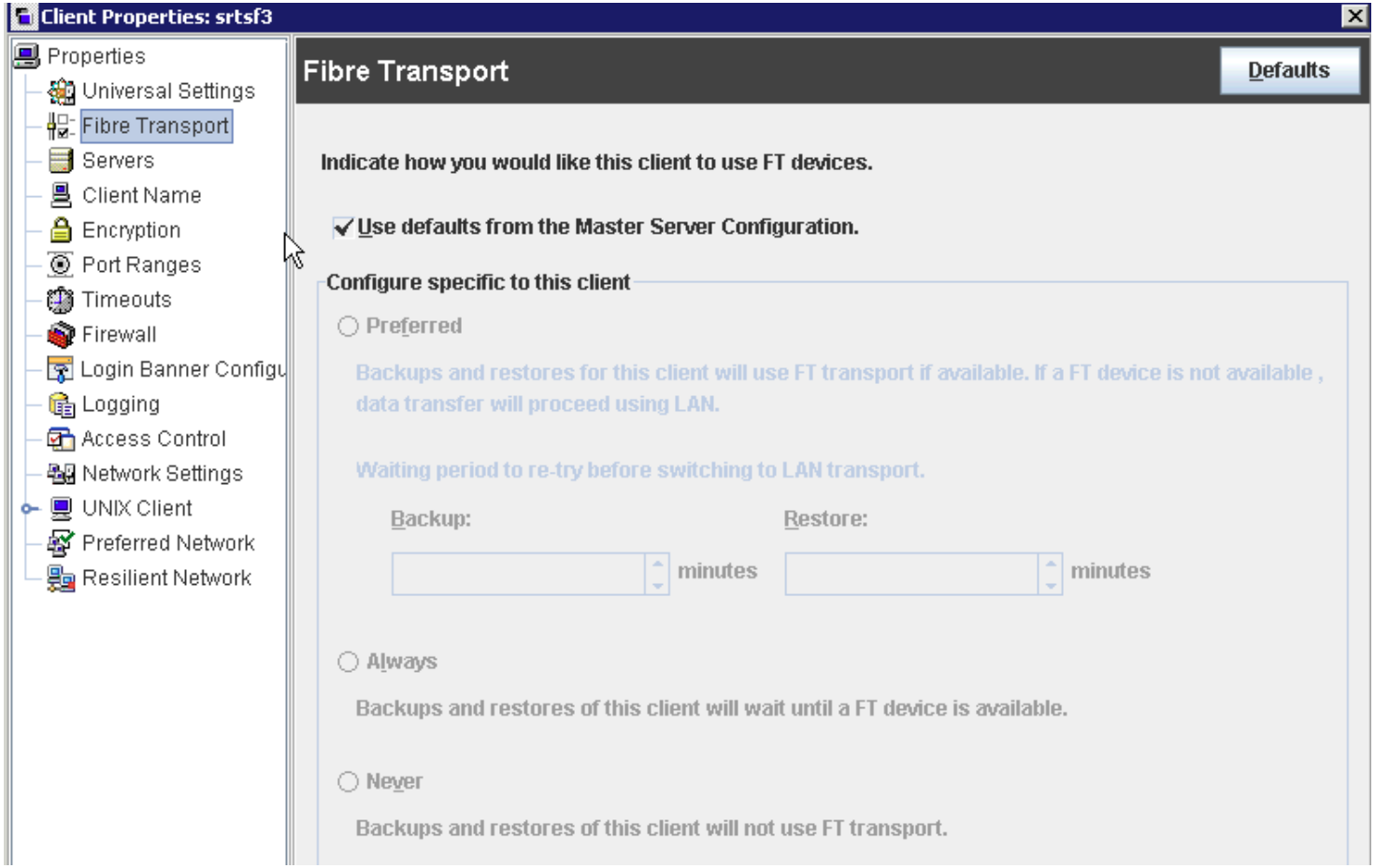
Example Diagram : SAN Client
Host Properties – FT Media server

Fibre Transport properties apply to the SAN client or clients that the selected media servers back up.

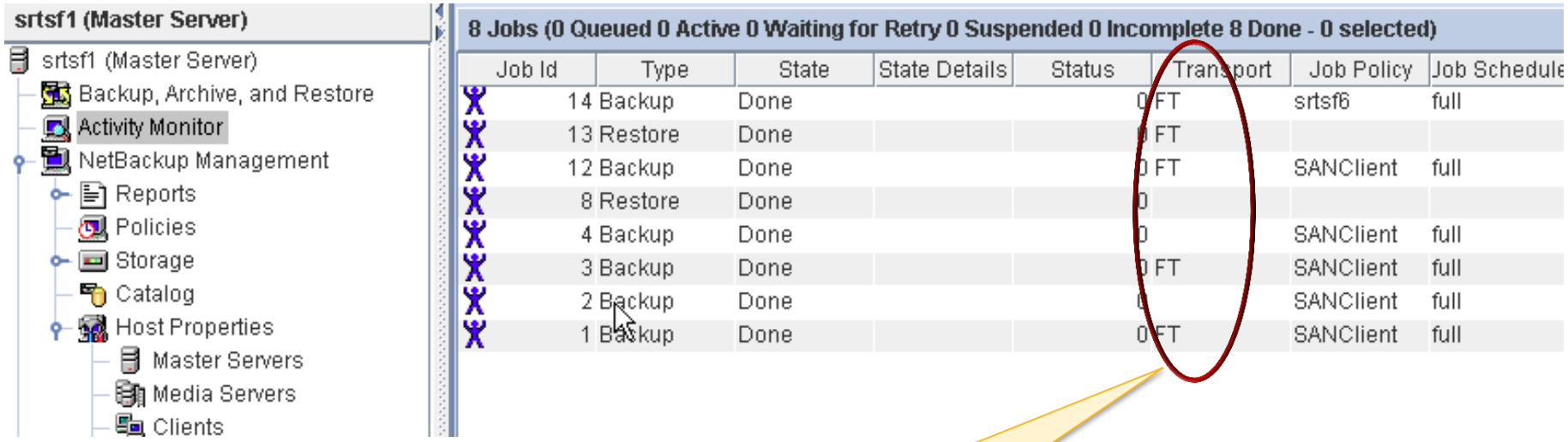


Example Diagram : SAN Client
Host Properties – SAN Client

Fibre Transport client properties apply to the selected SAN clients.

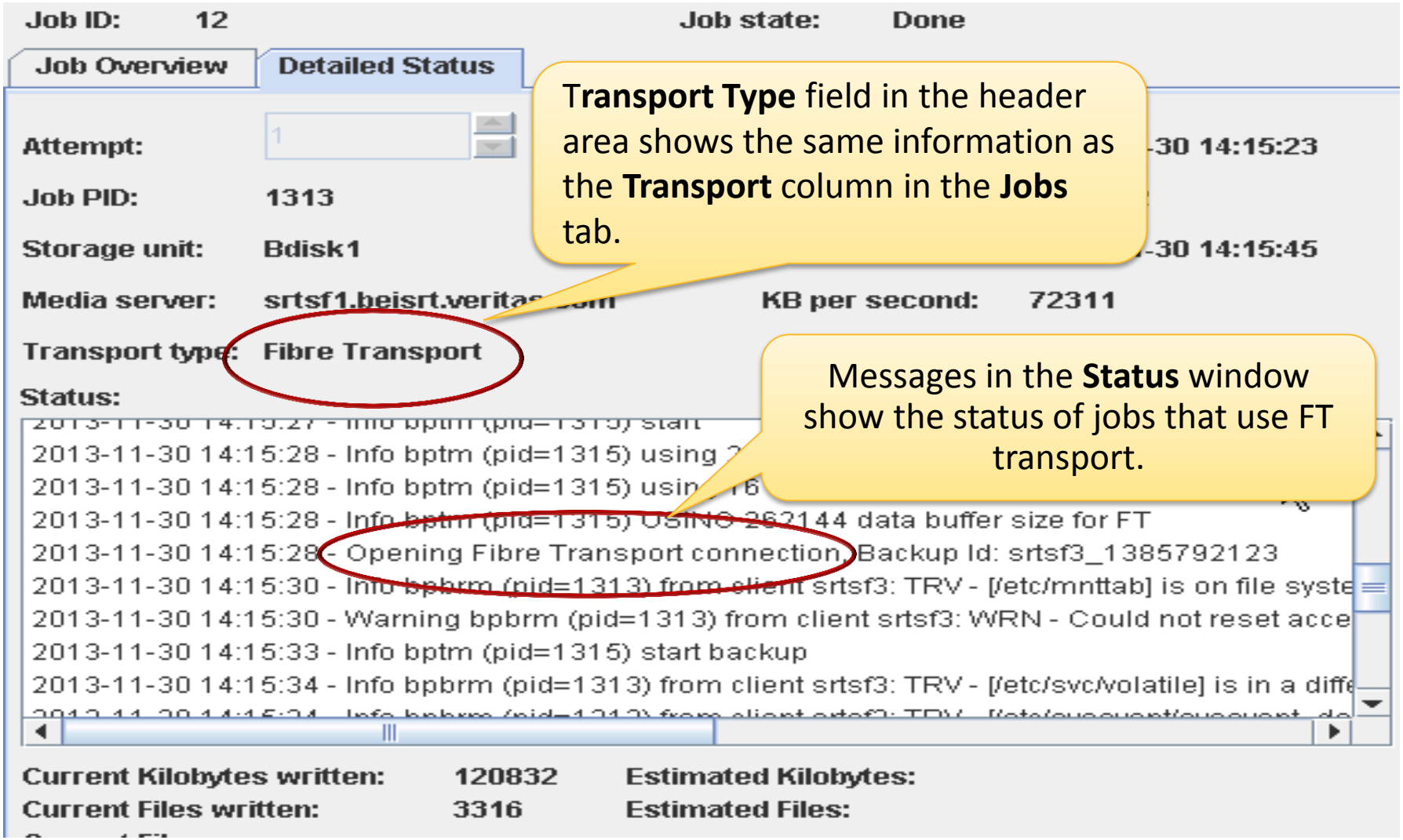


Example Diagram : SAN Client
Jobs Display



Transport column in the **Jobs** tab window shows the type of transport between the SAN client and the NetBackup media server: FT for Fibre Transport or blank for inactive or for a LAN.

Example Diagram : SAN Client
Job Details Display



Transport Type field in the header area shows the same information as the **Transport** column in the **Jobs** tab.

Messages in the **Status** window show the status of jobs that use FT transport.

Best Practices

Best Practices: SAN Client
General best practices

- Do not use the UNIX kill -9 command and option to stop the nbfdrv64 process.
- SAN clients cannot also be NetBackup servers.
- FlashBackup and Windows Hyper-V do not support FT restores.
- Do not use the NetBackup master server as an FT media server. Data transfer consumes system resources and severely degrades NetBackup management performance.
- Client-side deduplication not supported by SAN client.
- The minimum optimal number of data streams between a SAN Client and a FT Media server is 2 streams per available FT target port.
- Maximum number of FT pipes supported per appliance / media server is 32.
- On the Linux x86_64 computers that host FT media servers, Symantec recommends that you use 20 or fewer pipes concurrently.
- Maximum recommended simultaneous client connections per target port is 4 or 5. Default value is 2.

Best Practices: SAN Client
Best practices for SAN zone configurations

- FT Backup Zone should include only the Fibre Transport traffic between the SAN clients and FT media servers.
- Symantec recommends creating zones with only a single initiator per zone. Multiple targets in a single zone are acceptable, only if all of the targets are similar.
- Be aware of performance degradation when a port is configured for multiple zones.
- For fault tolerance, spread connectivity across HBA cards and not ports.
- It is recommended to perform SAN zoning based on WWN.
- To promote multistream throughput, each SAN client should detect all target mode devices of HBA port or ports in the zone.
- Whenever possible avoid using ISLs between SAN Clients and the Fibre Transport Media Servers with which they communicate.

Best Practices: SAN Client
Top Support Technotes

- Best practices: NetBackup SAN Client

http://www.symantec.com/docs/DOC6469

- NetBackup SAN Client and Fibre Transport Troubleshooting Guide

http://www.symantec.com/docs/TECH51454

- SAN Client Deployment - Best Practices and Performance Metrics

http://www.symantec.com/docs/TECH54778

- About protecting against SAN client failures

http://www.symantec.com/business/support//index?page=content&pmv=print&impressions=&viewlocale=&id=HOWTO90003

Thank You!

Symantec Backup and Recovery Technical Services