Dynamic Solutions
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DSI
VTL CONDUCTOR

Service Management for IBM i

V2R5

Dynamic Solutions International
Highlands Ranch, Colorado
www.dynamicsolutions.com

Conductor for IBM i – Service Management - User Guide

Version 2 Release 5

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Terms Used in this Document

The term “SM” refers to the Service Management application.

The term “entity” refers to data created in the Service Management software that represents a resource on a VTL server. There are Server and Library entities created from VTL Client and Library resources.

The terms “resource” and “device” refer to VTL resources that exist on the VTL server. There are client resources, virtual library resources, and deduplication resources.

The following entity/resource associations are applicable:

- The Server Entity is associated with a VTL Client resource type.
- The Library entities are associated with a VTL Server’s virtual library resource type.
- The Deduplication entity is associated with a deduplication policy resource.

What's New in V2R5

The Service Management application has been altered to better match the new multi-tenancy capabilities of the DSI Storsight VTL management software, making it simpler to manage Conductor instances in a multi-tenancy VTL environment.

What's New in V2R4

Support for LT08 and 12,000GB maximum tape capacities for VTL 10.x servers.

Authorization data for managed client LPARs is now automatically provided to Failover servers, where applicable, eliminating the need for the user to transfer this data manually.

Conductor's *IMPORT and *TRANSFER abilities may now be enabled and disabled for managed clients via the Service Management application, allowing the service provider to easily enable or disable these functions for a managed client.

- When enabled, managed clients will be able to register *SIR (dedupe) servers to their EV0, enabling imports to use the "import/dedupe" logical unit of work as well as support Conductor managing *TRANSFER activity, and provides temporary access to other supporting activities for these functions that are otherwise blocked from use by managed clients.

- Upon *IMPORTS and/or *TRANSFERS being disabled for a managed LPAR, any *SIR registrations will be automatically removed from the managed client configuration, and otherwise restricted functions/options are returned to a disabled state.

Creation of replication policies via the service management application now utilizes stored, encrypted passwords for replica servers; these passwords may be captured, encrypted, and stored using the "agentPWD" command provided with the DSI Agent software. For more information see the DSI VTL Agent documentation, your DSI support representative, or section **3.4-The Deduplication/Replication Entity Configuration.**

Virtual resource assignments are now executed using the VTL Target WWPN (instead of the LPAR client WWPN). This allows for creation of Fibre Channel clients in a variety of ways, some of which cannot be completed using the VTL Console (e.g., Multipath where allowed, some logical library configs using multiple fibre paths). See section **3.3.3-Assigning Library and Drive Resources to the VTL Client Resource** section for more information.

What's New in V2R3

Fibre Channel client management has been enhanced to support a variety of client configuration models. See section **3.2.1.1-Creating a Fibre Channel Client Entity** for more information on configuring Fibre Channel clients, and section **3.3.3-Assigning Library and Drive Resources to the VTL Client Entity**.

iSCSI client management is now supported. See section **3.2.1.2-Creating an iSCSI Client Entity** for more information on configuring iSCSI clients, and section **3.3.3-Assigning Library and Drive Resources to the VTL Client Entity.**

Preface

Conductor's Service Management feature offers managed service providers and administrators of other large IBM i networks an intelligent software solution to assist with the management of VTL resources via Conductor in multi-tenancy environments.

Service Management enables multi-tenancy by default, building logical walls around account data be it on primary or replica media and ensures only the account that owns media has access to that media.

By combining the Conductor Service Management capability with Conductor clients on managed IBM i LPARs, virtually all media maintenance and management functions can be automated, relieving the service provider or admin of these responsibilities.

Product Features

Service Management offers a variety of capabilities to the Managed Service provider or large-network administrator:

- SM provides an intelligent, simple-to-use application to manage VTL resources in many LPAR and/or many VTL Server environments.

- SM can manage server/VTL relationships for many datacenters, application servers and VTL servers from a single point in the network.

- SM can include and manage/maintain configurations for captive VTLs (e.g., a VTL device domiciled at an account site) and limit usage of those captive VTL resources to the account hosting the VTL.

- SM allows the service provider or admin to monitor activity from all managed VTLs in a network from the IBM i host. VTL messages may be routed to the QSYSOPR *MSGQ where desired; VTL event log data for all VTLs in the network is available from the SM host application.

- SM enables administrators of managed LPARs to deploy the Conductor application to managed LPARs to allow for local, automatic management of media activities including:

    - Creating and maintaining media inventories.

    - Enabling virtual media movement.

    - Performing media duplications.

    - Auto-correction of discrepancies between the media manager database and the supporting virtual library, ensuring a consistent state between the two.

- SM uses plan data to drive contextually appropriate reporting. A series of device and account reports enable the admin to understand their service environment from both configuration and storage utilization perspectives. Reports are maintained on an hourly basis automatically, with current PDF/CSV output always available via the Integrated File System (IFS).

- SM automatically tracks changes to VTL resources made outside of the Service Management environment. Should VTL Console software be used to alter resources managed by plans, those changes will be captured by Conductor and applied to the applicable plan configurations.

System Requirements

Hardware Requirements

- An IBM POWERX or other compatible server/partition running IBM i version V7R2M0 or higher.

- One or more IBM-compatible DSI Virtual Tape Library Devices
    - Version 9.0 or higher
    - Patch is1052004 required for version 9.0
    - VTL Agent version 2.03.019 or higher
    - Virtual Libraries of type TS3500* emulation (L22, L32)
        - LTOx, TS11xx supported
- A compatible physical media library or libraries (optional)
    - Libraries may be VTL-attached, host-attached, or both

IBM Software Requirements

- Conductor *BASE and Service Management options (opt 3, feature 5004).
- The Service Management option requires the following IBM products to be installed:
    - 5770TS1 – IBM Transform Services for i (*BASE)
    - 5770TS1 – Transforms – AFP to PDF Transform (option 1)

Licensing Requirements

The Conductor application is installed with four product options:

1. *BASE – feature 5001 - DSI Conductor for IBM i
2. Option 1 – feature 5002 - DSI Conductor Enterprise Integration (BRMS Networking integration)
3. Option 2 – feature 5003 - DSI Tracker Media Manager
4. Option 3 – feature 5004 - DSI VTL Service Management

For Service Management operation, licenses for the *BASE and feature 5004 products are required.

- If the Service Management host LPAR is part of a BRMS network, and the Conductor client will be used to manage the VTL resources for the host BRMS network, then the Option 1/Feature 5002 license will also be required.

- If using Tracker to manage media for the host LPAR, the Option 3/Feature 5003 license will be required.

1. Conductor Software Installation

Please see the document "**VTL Conductor for IBM i – User Guide - V2R5.pdf**" for software installation or upgrade instructions. Return to this document and follow the configuration steps from Section 2 below to prepare Conductor for Service Management activities.

To use the Service Management feature of Conductor, both a *BASE and option 3/feature 5004 license will be required.

2. Configuring the Conductor Software for Service Management

Once your Conductor software has been restored to your system and licenses have been applied, Conductor is ready to begin capturing and creating account, server and VTL resource data and entities.

To access the Conductor Software menu, enter the command CONDUCTOR from the command line. The CONDUCTOR command is added to your QGPL library when the product is installed.

2.1 The Conductor Main Menu

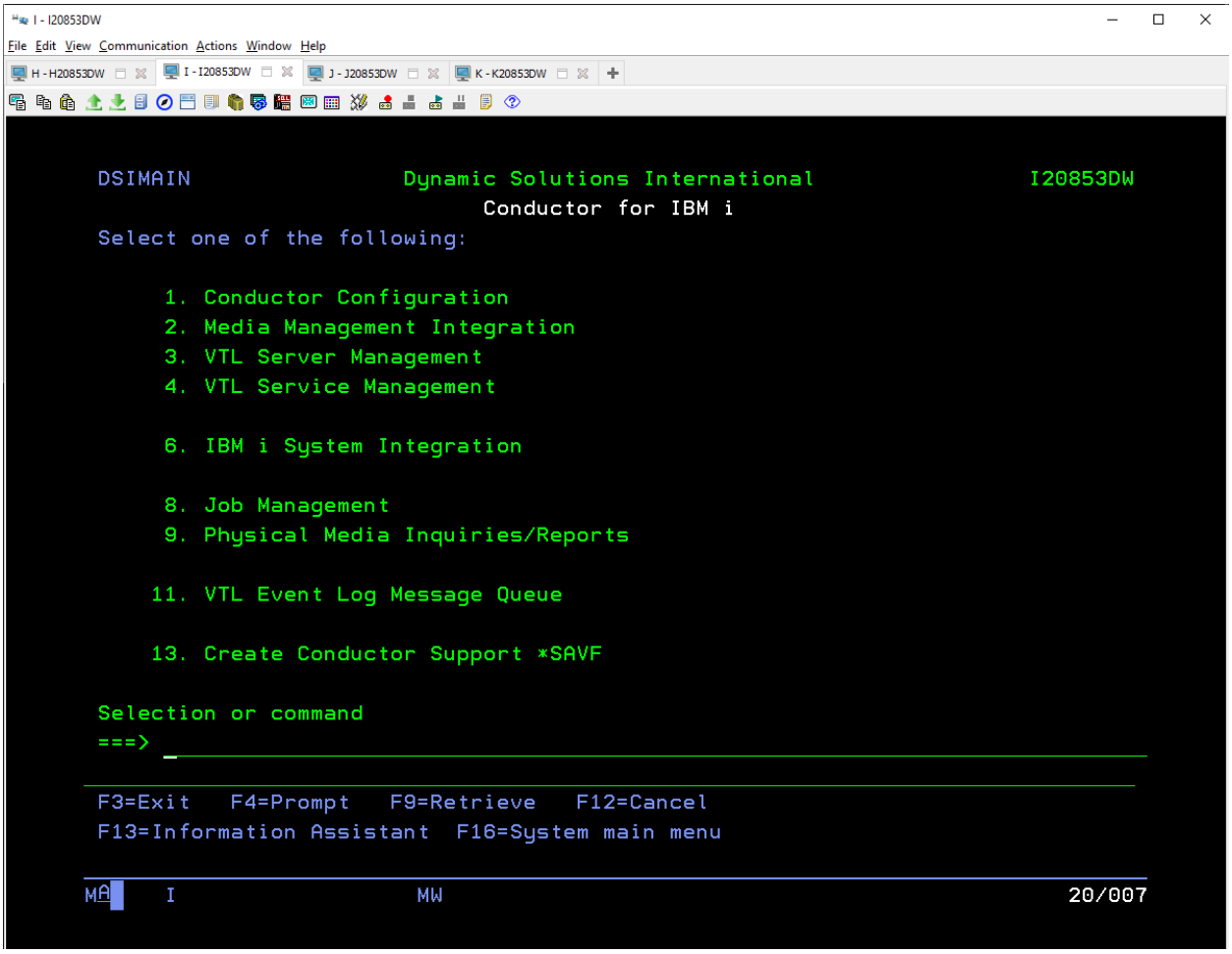


Figure 1: The Conductor Menu

The following options are relevant to the Service Management Host:

Conductor Configuration presents the operating parameters application. These parameters control how Conductor manages its internal data, operations, and communications with users.

Media Management Integration allows the selection of the MMS system (BRMS, Tracker) to integrate with Conductor (when used to manage local media for the Service Management host LPAR). Make this selection if the Service Management host LPAR will be backed up to a virtual library and the Conductor client will be used to manage this library. If using a non-library backup method or Conductor will not be used to manage the SM host's virtual library environment this step can be skipped.

Virtual Server Management provides the ability to import configurations for VTL servers that are to be managed via the software.

VTL Service Management provides the ability to manage accounts/servers and their VTL resources directly from the IBM i host. This is the “service management” option.

IBM i System Integration allows the user to manage media and duplication automation configurations for the host LPAR and/or network, where applicable, when using the Conductor client software.

Job Management allows for management and/or review of Conductor- and VTL-sourced job activity for the host LPAR, where applicable, when using the Conductor client software.

Physical Media Inquiries/Reports allows users utilizing VTL-attached physical libraries to make inquiries as to physical media usage and content and provides an import/unstack function for physical media via a VTL-attached physical library.

VTL Event Log Message Queue allows the user to review Event Log messages from configured VTLs.

2.2 Conductor Configuration

The first step in setting up the Conductor Service Management instance is to provide a few system operating defaults. Use option **1 - Conductor Configuration** to provide values for the properties displayed on the interface presented in the following figure:

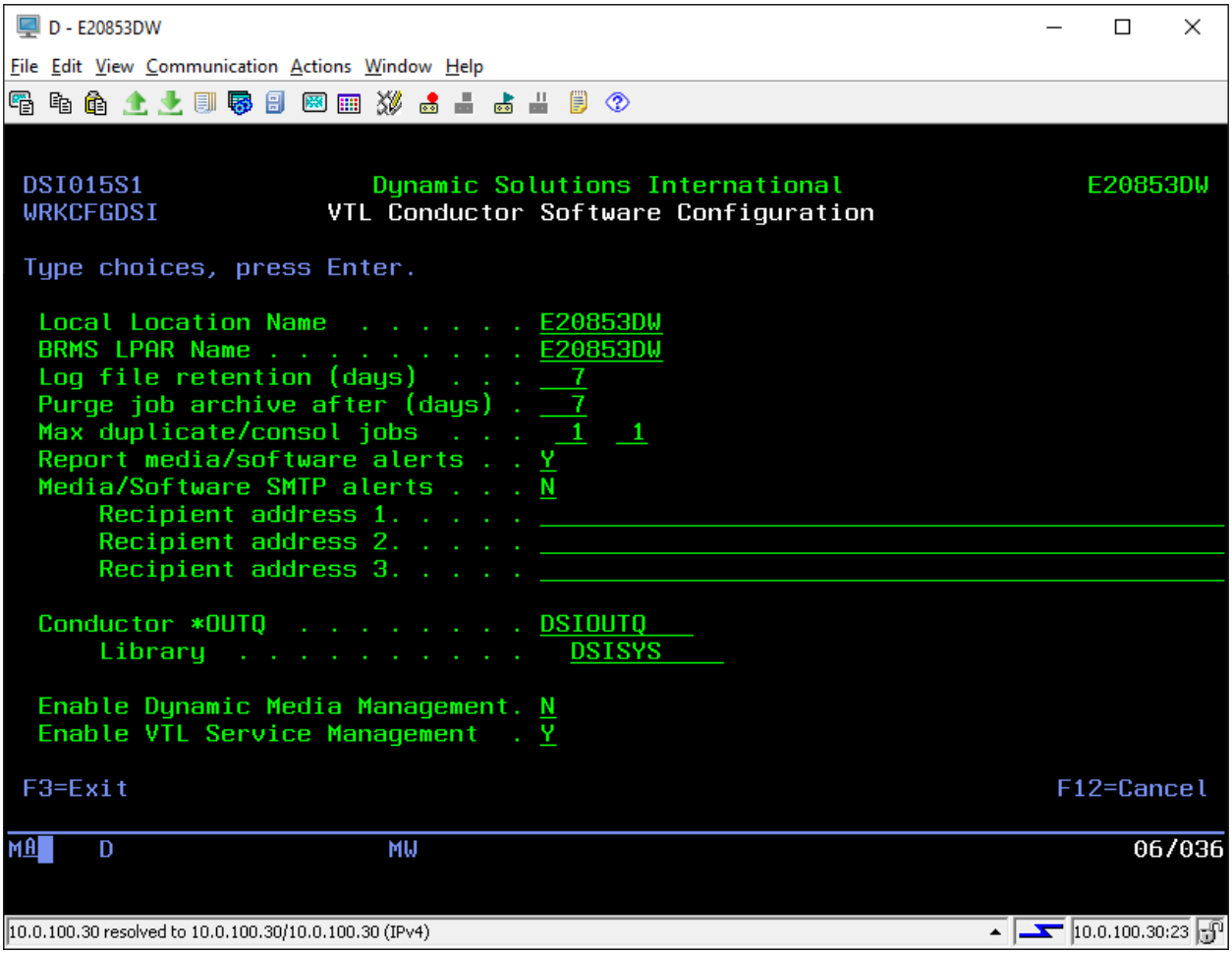


Figure 2: Conductor Properties

Field Descriptions/Values:

Local Location Name: The local location name (DSPNETA) of the partition Conductor is currently executing from. This value will be defaulted to the local location name of the host LPAR.

BRMS LPAR Name: The BRMS name for the host partition. This may not match the Local Location Name if BRMS alternate naming is in use. For Tracker or BRMS installations not using BRMS names, this value should match the Local Location Name value. This value will be defaulted to the LPAR name of the host LPAR when applicable.

Log File Retention: The number of days to retain system log information. Log information is not directly accessible to the end user but is helpful to DSI when using X-RAY data to interpret potential software issues.

Purge Job Archive: The number of days to retain or display *COMPLETED job information. Job data for export jobs are retained until the source virtual or target volumes (physical) are re-used; job information for these jobs is suppressed from the Job Management displays once they age past this value. All other

*COMPLETED jobs are purged when they reach the entered age limit. Job information will be presented when the Service Management host LPAR is also a Service Managed client.

Max Concurrent MMS duplication jobs (BRMS): For some activities Conductor clients may utilize the DUPMEDBRM command. This value indicates the maximum number of these DUPMEDBRM jobs the host server can (or should) run at one time. When not applicable, set the value to '1'. This value should not exceed the number of available drives available on the target device.

Max Concurrent MMS consolidation jobs (BRMS): This value will determine how many *CONSOL jobs and/or *DUPLICATE with APPEND jobs can run simultaneously. By keeping this value at 1, you can be sure to generate the fewest number of consolidated tapes, but processing takes longer. By increasing this value multiple tapes can be used by larger consolidations to save processing time. When not applicable, set this value to '1'.

Report Media/Software Alerts: Conductor may or may not deliver informational messages to the QSYSOPR message queue as it encounters various conditions while processing. To have these informational messages delivered to QSYSOPR, enable this option.

Note: *This option must be set to 'Y' to utilize Conductor's "Physical Media Usage Report" (a replacement for BRMS media movement reports for matched-volume exports).*

Media/Software SMTP Alerts: Conductor may deliver media management emails when activities such as tape creation, tape deletion, tape maintenance issues or software issues are detected. Ensure this value is set to 'Y' and at least one valid email address is entered to enable this feature. Only relevant in a service management host environment if Conductor will be managing the virtual media activity for the service management host. This option requires a valid SMTP configuration on the host and may require additional configurations be made for the DSIUSER ID as the local system requires.

Dynamic Virtual Media Management (DVMM): This option is defaulted to 'N' (no). To enable Conductor's automated media management capabilities, change this value to 'Y' (yes). Only relevant if Conductor will be managing the virtual media activity for the service management host.

Note: *Be sure to leave this value in the default "N" (No) position while performing the initial configuration of Conductor. DVMM should not be started until configuration activities have been completed.*

Enable VTL Service Management: This option is defaulted to 'N' (no). To enable Conductor's Service Management capabilities, ensure the option is licensed and set this value to 'Y'.

Conductor OutQ: These values identify where to deliver reports produced by Conductor's service jobs and/or exception logs.

Upon completing value entries, press ENTER and in a few moments a message indicating system initialization is complete will be presented. Use F3 to return to the main menu.

Review figure 2 above. In this case:

1. log file retentions are set to 7 days.
2. job information is kept for 7 days.
3. up to one (1) *DUPLICATE job may be active at any one time.
4. up to one (1) *CONSOL-type or *DUPLICATE w/APPEND jobs may run at any one time.
5. information messages will be delivered to QSYSOPR.
6. email delivery of usage information to the indicated email address is disabled.
7. DVMM is not enabled.
8. Service Management is enabled.
9. System-produced reports are routed to *OUTQ “DSISYS/DSIOUTQ”.

2.3 Media Management Integration

Use option **2-Media Management Integration** from the main menu to select the Media Management software product to which Conductor will be integrated if Conductor will be managing a virtual library/media activity for the service management host. Conductor integrates with IBM’s ***BRMS*** and DSI’s ***Tracker***.

Note: *Only one product can be enabled for use.*

The initial view of this interface is displayed in the figure below:

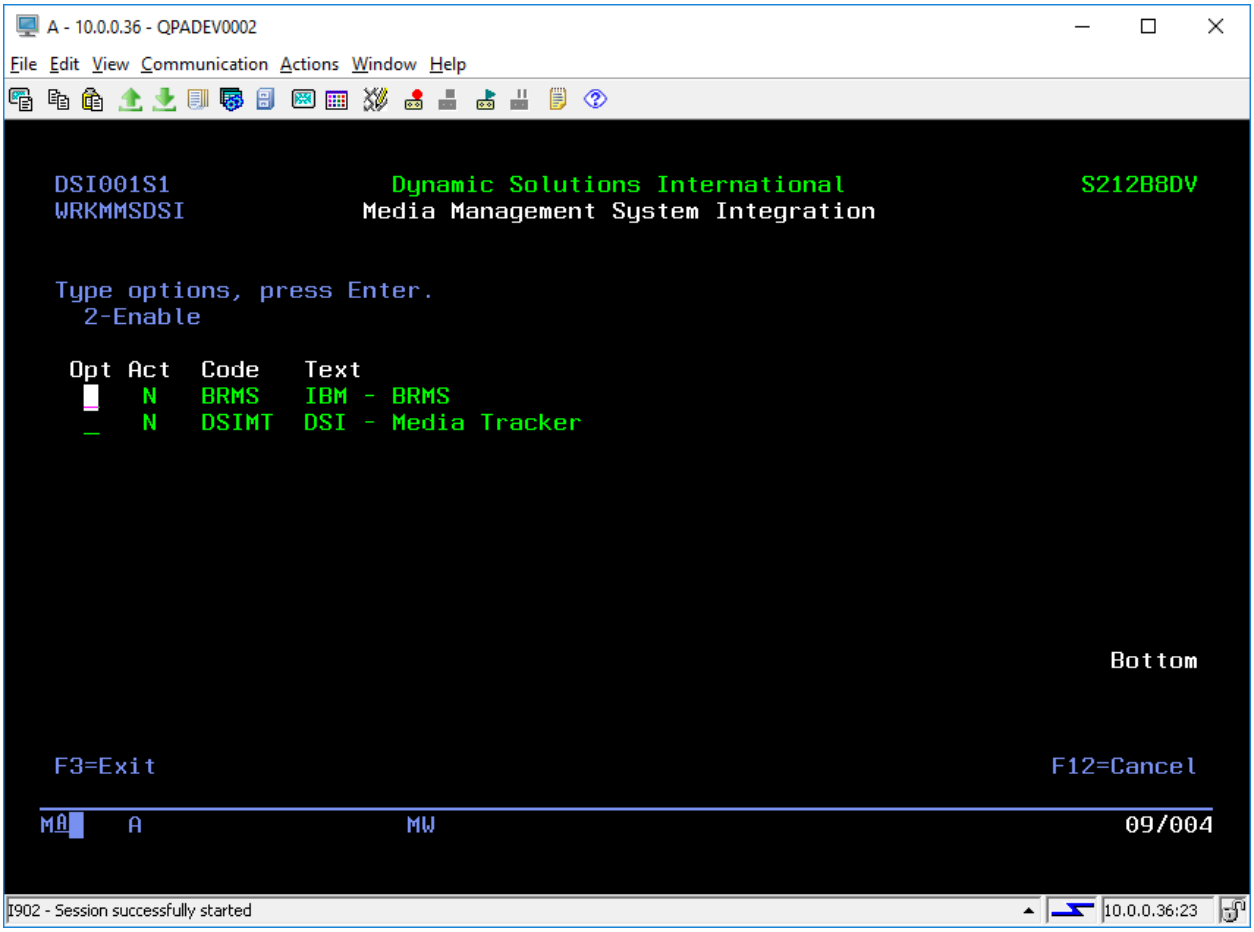


Figure 3: MMS Integration Selection

Press ENTER after entering option '2' on the BRMS list entry; the "Act" (Active) column will change to 'Y', indicating BRMS processing is enabled.

The display presented in the next figure shows the MMS selection after having used option '2' to enable the desired MMS (BRMS) and having pressed ENTER.

Once BRMS has been selected the "F6=Refresh MMS Information" command key is presented. This command key can be used to refresh BRMS configuration data (e.g., Media Classes, etc.) after having altered BRMS configurations. This is not necessary upon MMS selection; refreshing the BRMS control data happens when the BRMS option is enabled.

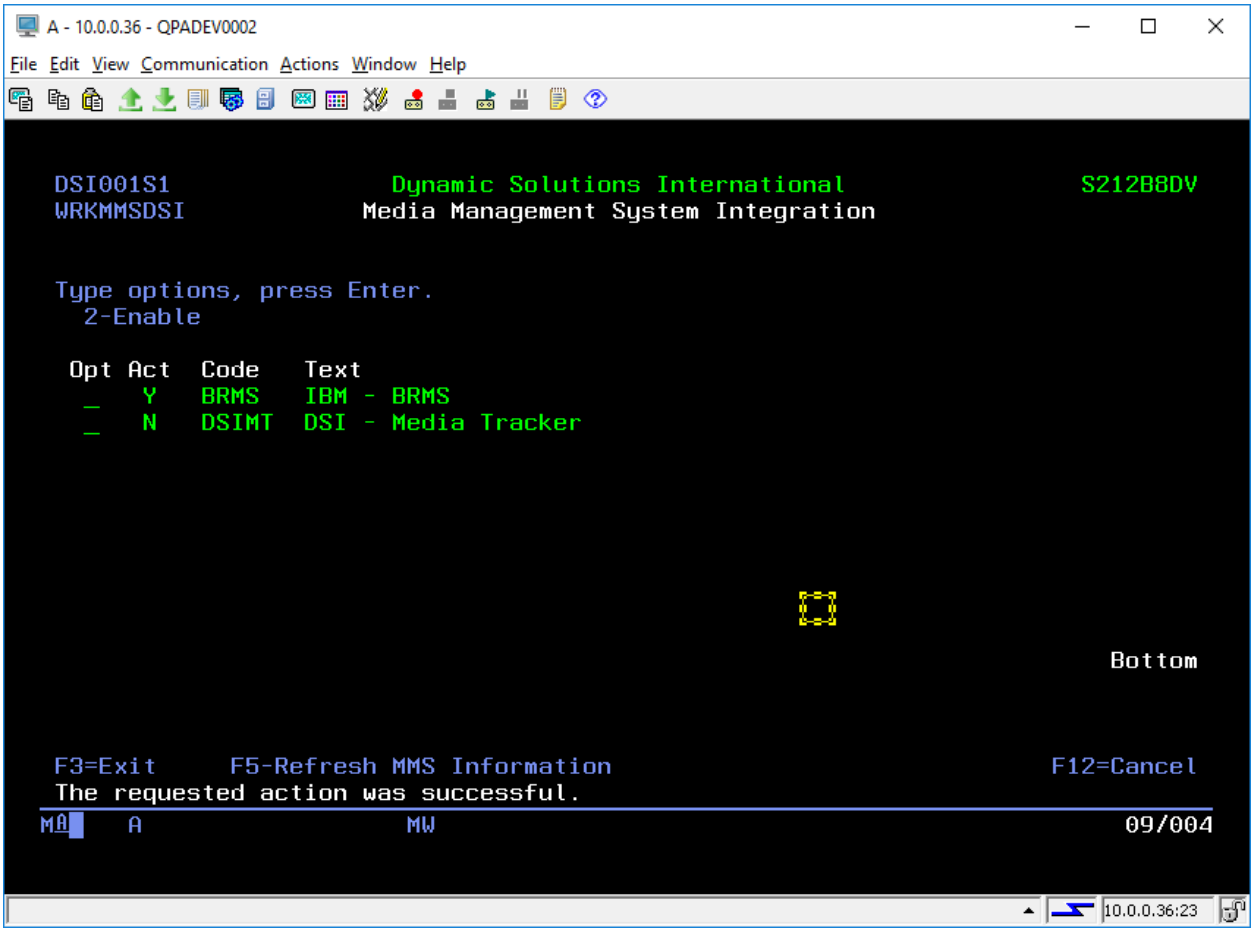


Figure 4: Post-Activation View of the selected MMS

2.4 Virtual Server Management

Using option **3-Virtual Server Management** from the Conductor System Management menu starts an application that manages VTL server configurations.

Conductor qualifies VTL servers by their usage type. There are two classes of VTL that can be configured in Conductor:

- *PRIMARY – a virtual library server used for backup purposes by the host server or by a node in a networked environment, or a replica target server for deduplication hosts, or both.
    - *SIR nodes (separate deduplication servers) may be registered to a *PRIMARY VTL, when applicable. See more on this topic in the subsections below.
- *MONITOR – a virtual server that is not a direct participant in host or network backup/archival activities but where device monitoring from the IBM host is desirable.

Select option **3-VTL Server Configuration** from the Conductor System Manager menu, then follow the steps below to add your VTL servers(s) to the Conductor software configuration.

2.4.1 Adding a Virtual Library Server to your Conductor Software

The initial “Manage Virtual Tape Servers” interface is presented in this figure (server DSI-EV0-A has already been imported into this configuration in this figure):

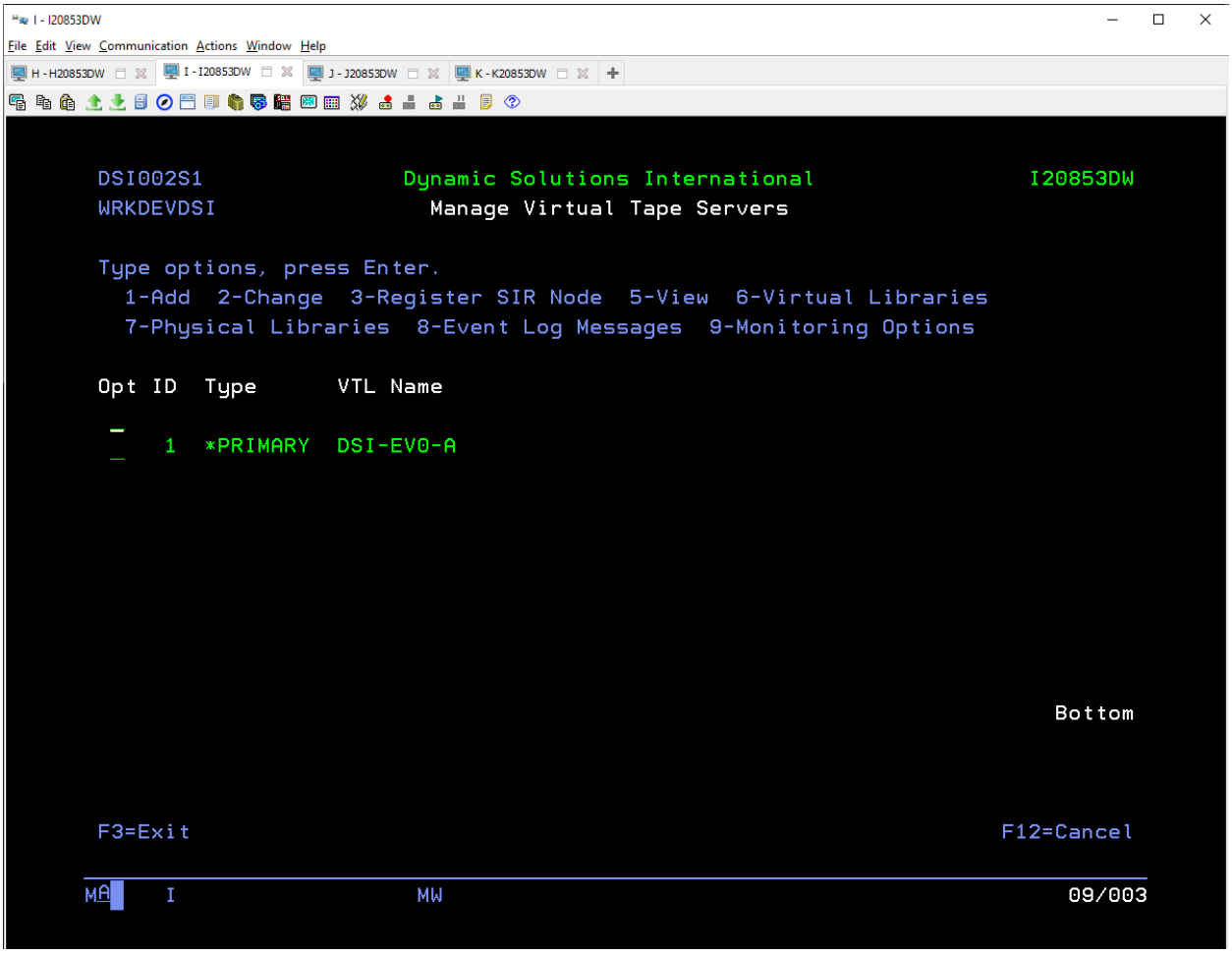


Figure 5: The VTL Device Management Display

To add your *PRIMARY server(s), enter ‘1’ into the list option field and press ENTER; the user interface shown in the next figure is presented. After entering the correct values for your installation, press ENTER.

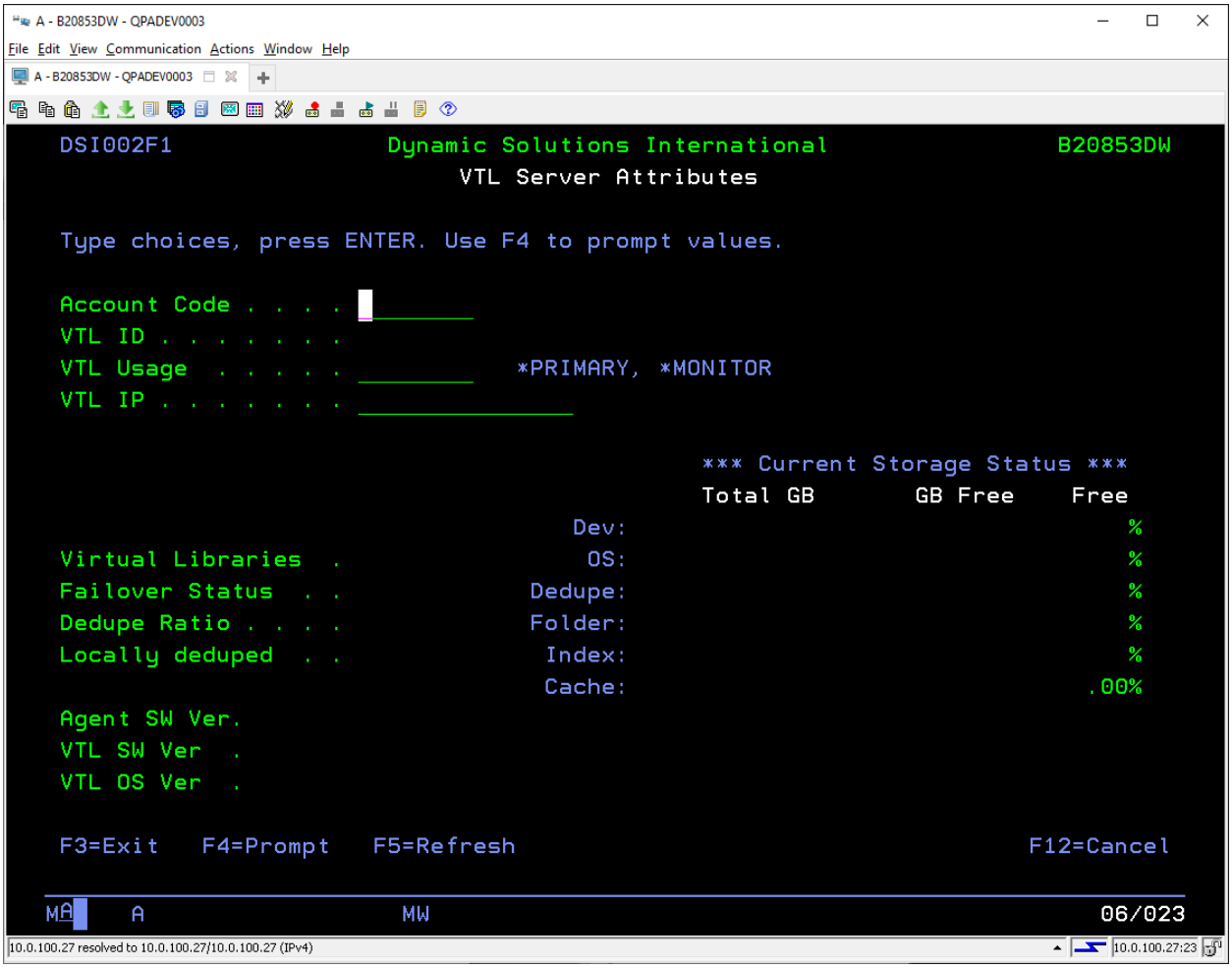


Figure 6: VTL Server information panel

Field Descriptions/Values:

Account Code/ID: Use this field to identify the Service-Managed account that will have exclusive access to this server, where applicable. This value is generally used to isolate account domiciled VTLs to usage within that account's Service Management configuration(s), although it can also be used to designate a locally managed VTL server for a specific account's usage. For general-use VTL servers, leave this value blank (zero).

If assigning the VTL server to an account, the account entity must have been created prior to importing the account's domiciled VTL (see section **3.1.1 Creating a New Account Entity**).

Note: The account code is provided for legacy purposes only; this functionality has been deprecated for use in V2R5 and later versions.

VTL ID: This is a system-generated value that will be assigned to the device upon successful configuration of the device.

VTL Usage: Identifies the type of device being configured. A list of valid entries from which this selection can be made is displayed when F4 is pressed with the cursor in this field.

- *PRIMARY – a library device used for backup purposes.
- *MONITOR – a library device not directly involved in backup/archival activities, but where monitoring of the device status is desired.

IP address: The IPv4 address of the device to be managed.

Once the appropriate fields have been entered, press ENTER. The UI will appear as shown in the below figure as it confirms communication to the IP entered:

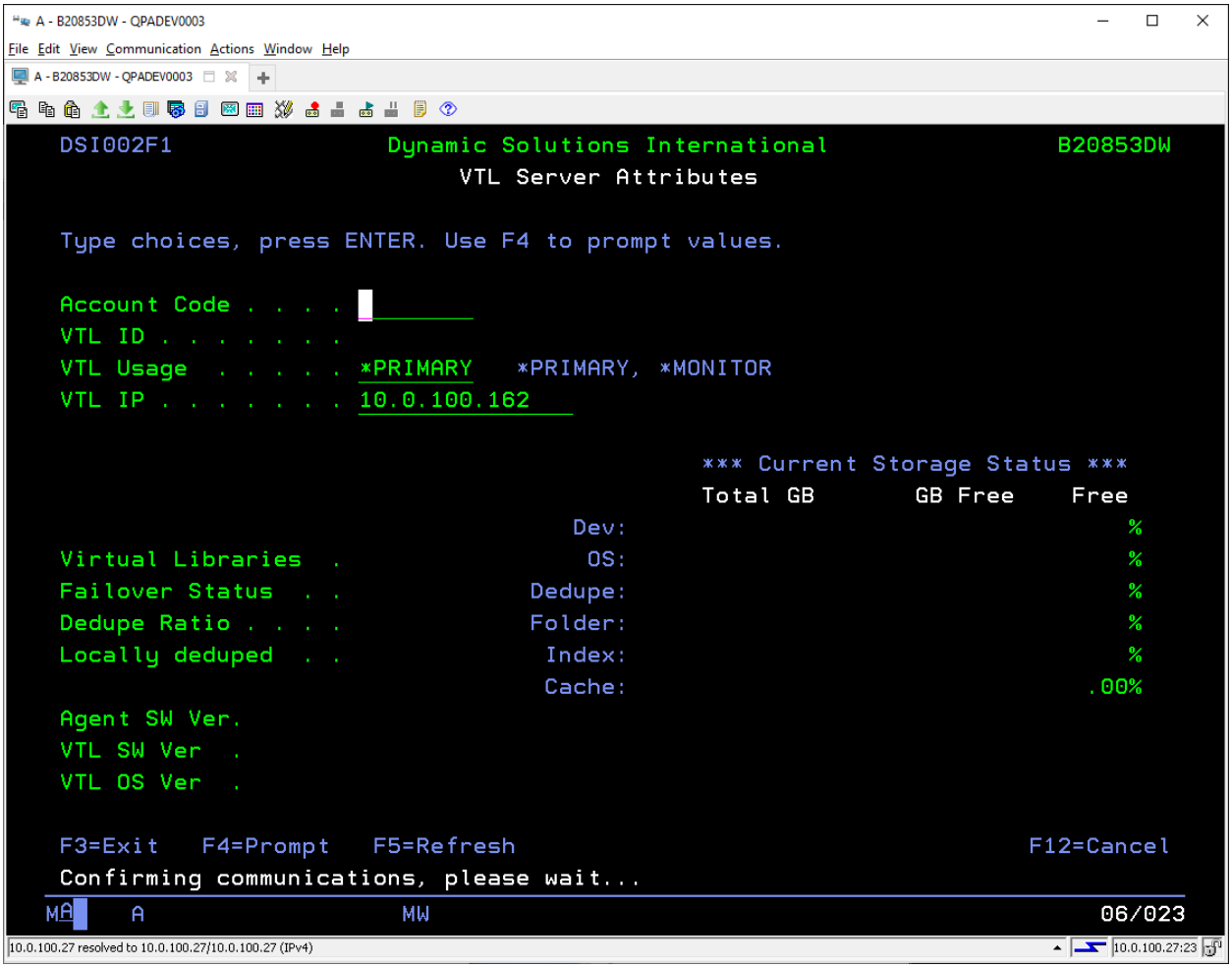


Figure 7: Auto-configuring a VTL Server

Should the software be unable to communicate successfully with a device at the indicated IP, an error message will be displayed after TCP/IP times out.

Upon confirming communications, the UI as shown in the next figure is presented while the software imports and processes device configuration data:

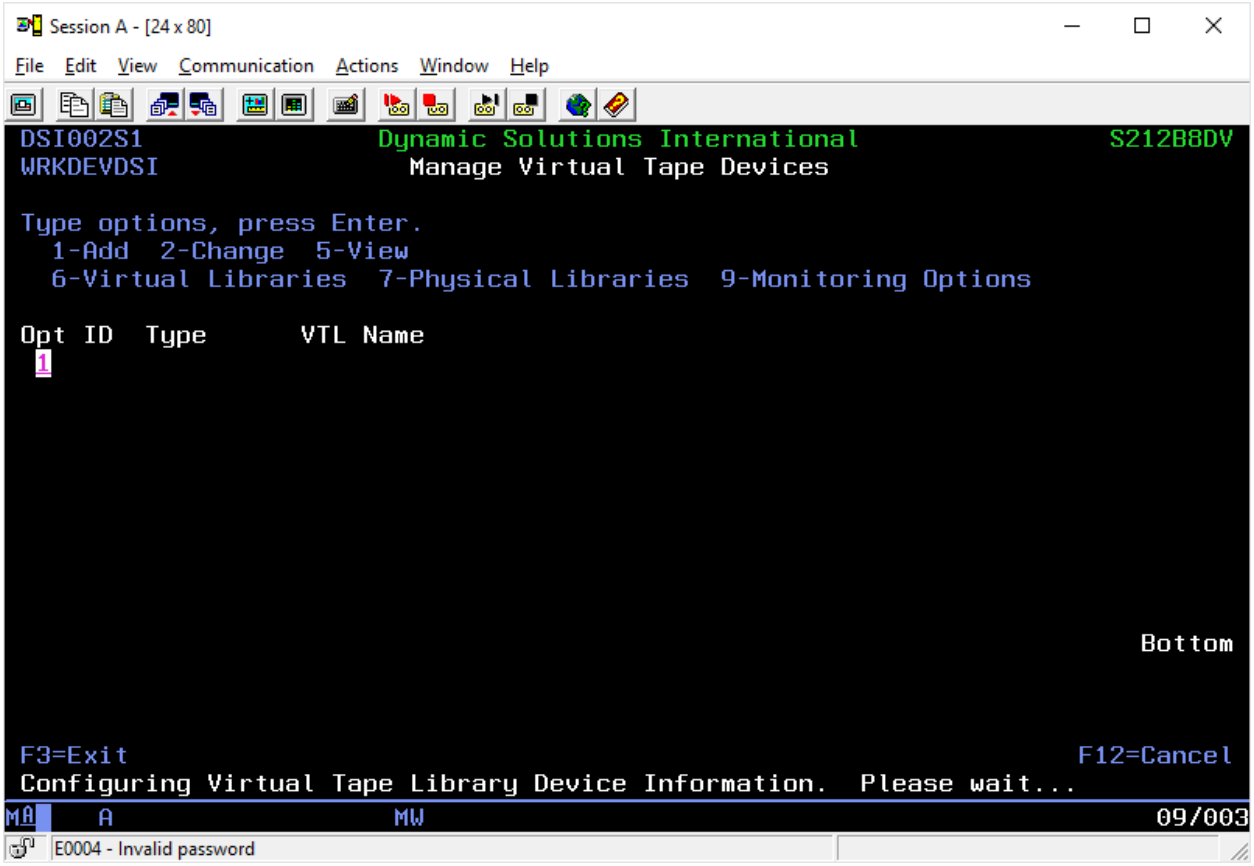


Figure 8: Importing VTL information to Conductor

Once successfully configured the UI will appear as shown in the following figure, showing new VTL server DSI-FSVTLVA-REPL was successfully added to the configuration:

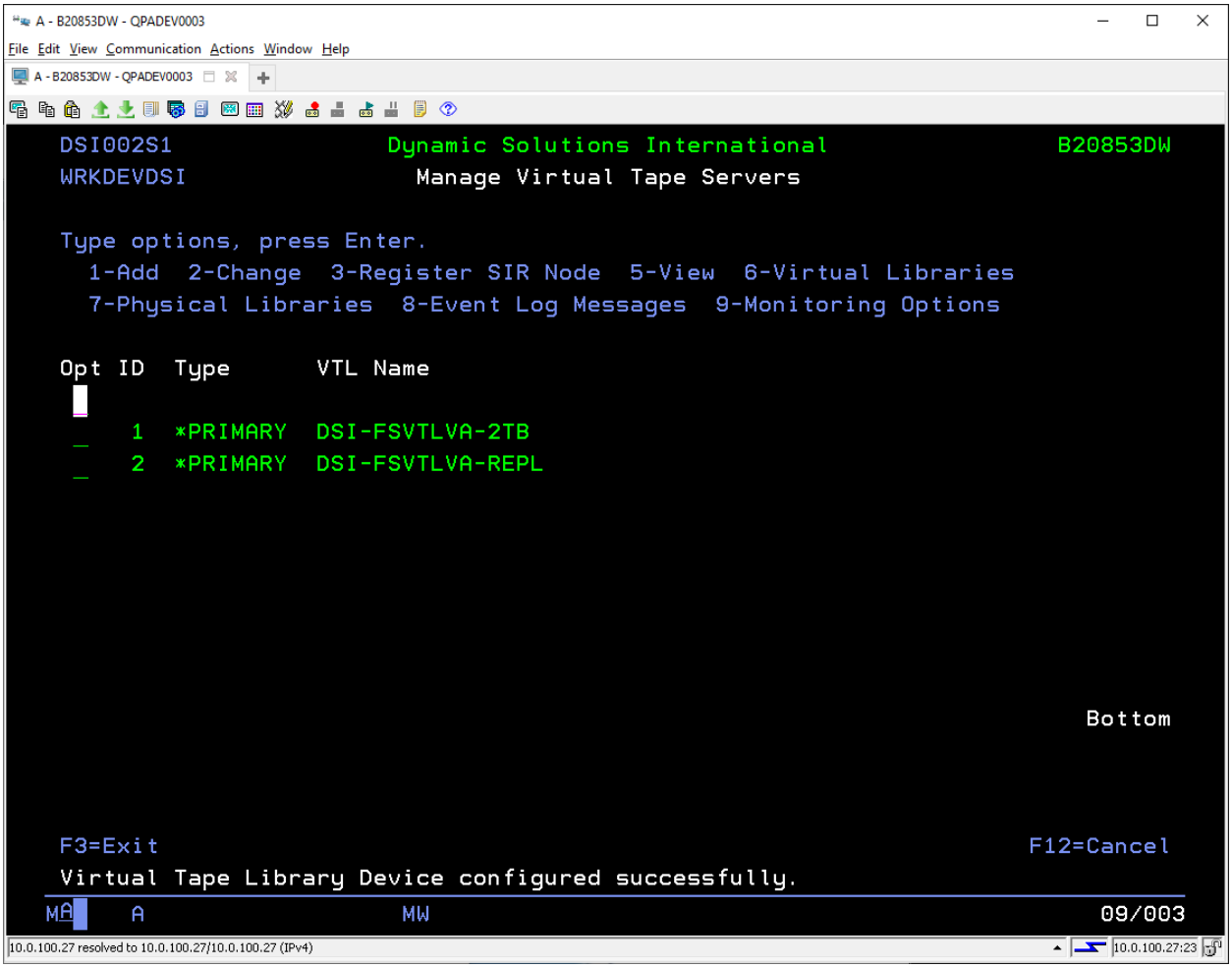


Figure 9: Result of a successful configuration

As each VTL server is imported into the Conductor configuration a virtual library will be created on the server ("_DSI USE ONLY…") and control data will be uploaded telling the VTL software that the VTL is service-managed. The virtual library is a conduit for VTL communications from the Service Management host while the control data ensures that any Conductor clients connecting to the VTL server are properly authorized for VTL usage before allowing access to their assigned resources.

With the importation of the first device, Conductor will automatically start the DSISYS subsystem. This subsystem should be running anytime the host LPAR is running. Take appropriate action to add the command "QSYS/STRSBS DSISYS/DSISYS" to the host's startup program after TCP has started or to the applicable job scheduler to ensure the subsystem starts after IPL or restricted state activities.

To add additional *PRIMARY or *MONITOR servers, repeat the above steps.

Shortly after the DSISYS subsystem has been successfully started, the current usage statistics of the VTL device and VTL software information can be reviewed via option "5 – View" as shown in the next figure.

Note this figure indicates the “Account Code” for this server has been assigned to account 100002. This ensures that only configurations created for account ID 100002 can reference this VTL server. By leaving the account code blank (zero), the VTL server can be included in any account configuration.

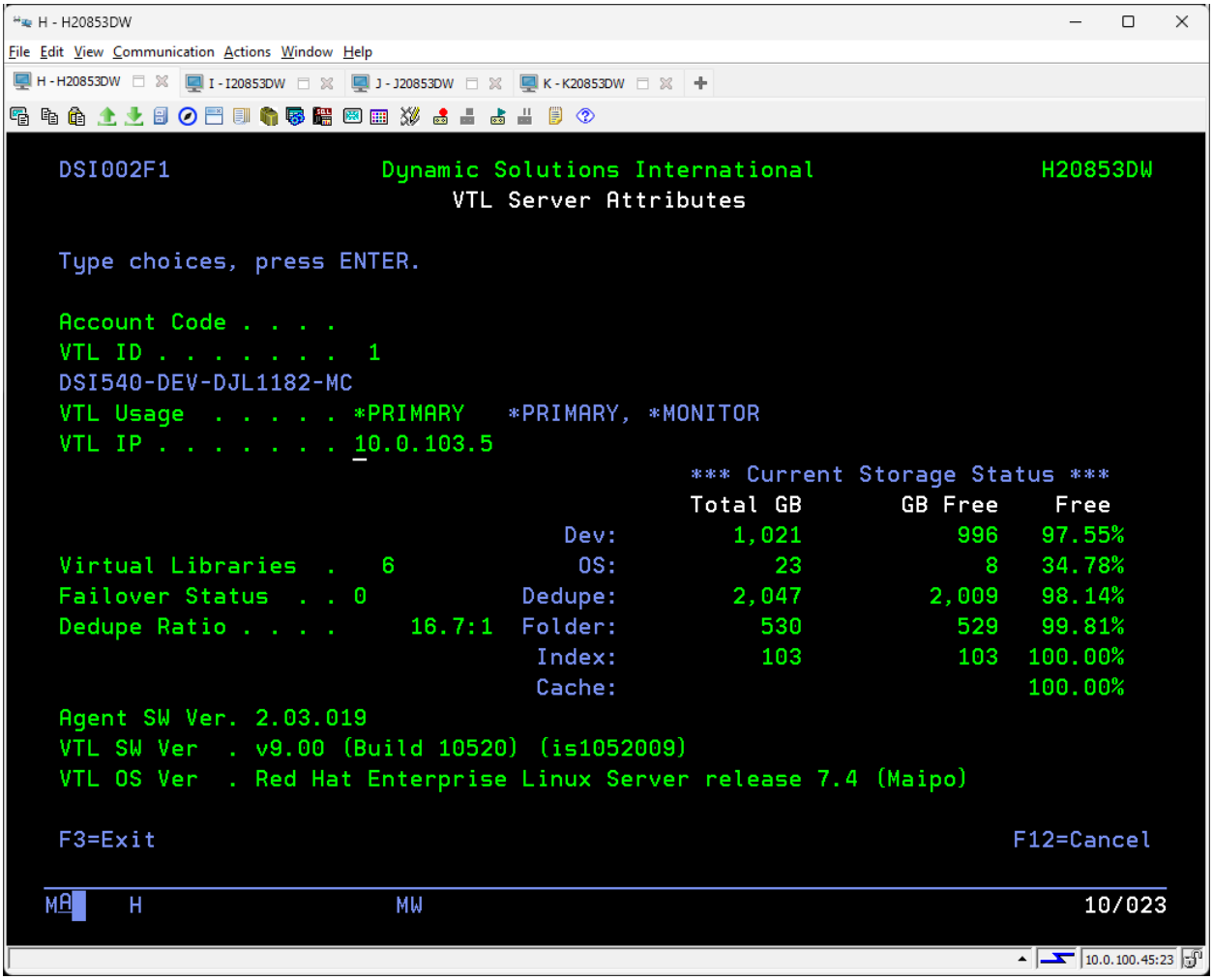


Figure 10: VTL Information Display

2.4.2 Registering Deduplication (*SIR) Nodes to *PRIMARY VTL Server Nodes

Upon successful import of a VTL Server that is part of a node system (EV0/EVD configurations), each of the primary EVD nodes may be registered to the *PRIMARY server they support if local tracking of deduplication jobs and/or local access to the nodes’ EVENT LOG data is desired.

Registering SIR nodes is strongly recommended if media migrations from legacy devices into the DSI Virtual library system are desired. This registration allows Conductor to manage landing space usage more accurately during import activities.

To register a *SIR node to a *PRIMARY VTL, perform the following activities.

From the server entry in figure 9, use option '3-Register SIR Node' on the VTL server to which the node will be registered. The following panel is displayed (shown with the IP entry made):

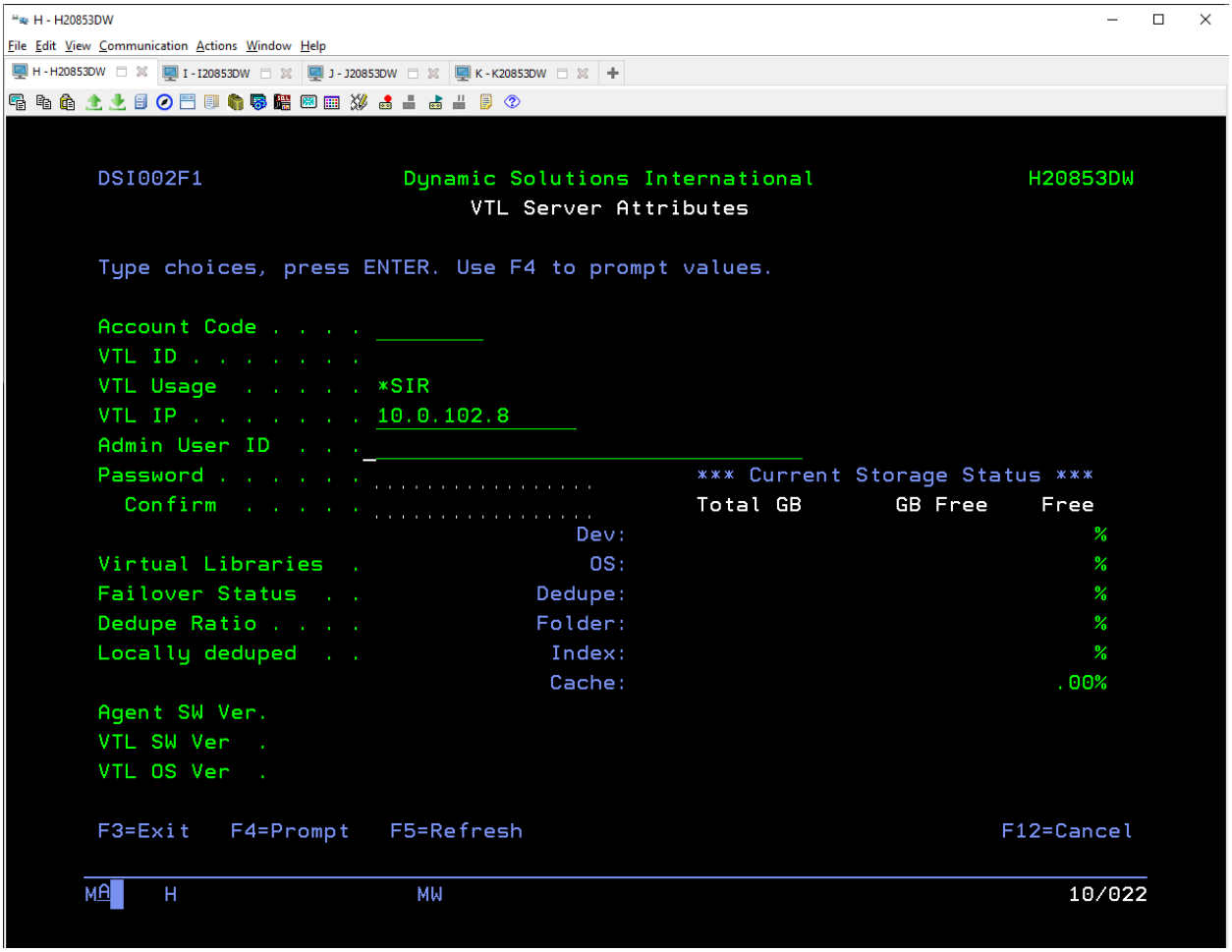


Figure 11: Registering a *SIR node

Press Enter upon entering the node IP address.

Upon pressing Enter, Conductor will attempt to communicate with the node server's Agent software. If successful, a new server entry of type *SIR will be created. If there is an error, confirm the IP address is reachable from the IBM host and ensure Agent is running on the *SIR server.

Repeat this process once for each SIR node associated with a VTL server.

Note: When utilizing SIR nodes that have been configured to Fail-Over to backup *SIR nodes, only the main *SIR nodes need be registered. The FO nodes may be ignored; Conductor will automatically connect to FO servers as necessary using the primary server IP(s) when servers are running in FO mode.

The figure below shows two *SIR nodes (DSI-EVD-x) having been registered via the VTL server entry (DSI-EV0-A), as well as two other VTLs (IDs 4/5) having been added to the configuration. As the VTLs referenced by IDs 4 & 5 are not DSI enterprise node systems, no SIR nodes exist to be registered.

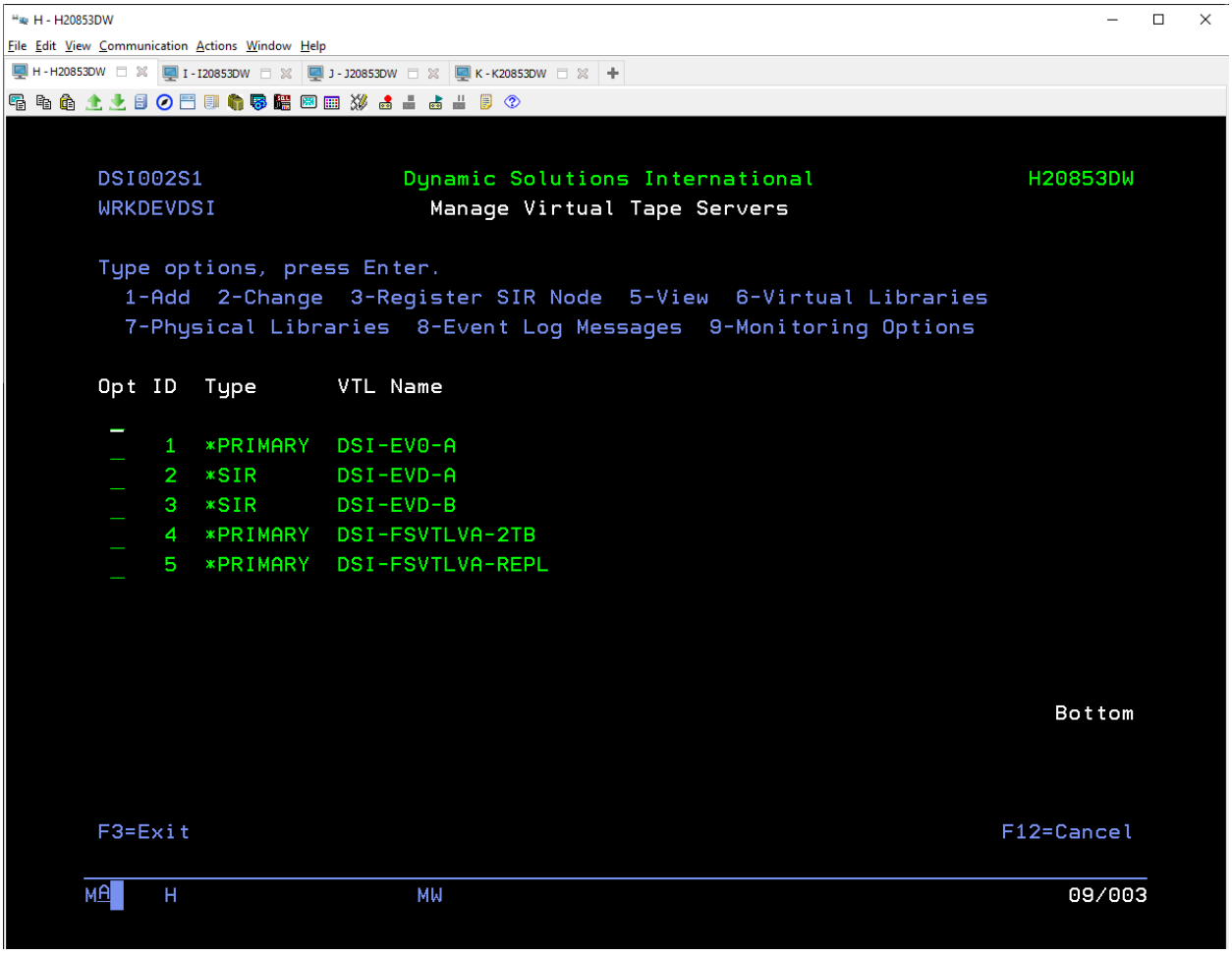


Figure 12: Registered SIR nodes

2.5 Running a Conductor Client on the Service Management Host

The Conductor Service Management host LPAR may also be a managed Conductor client. Capturing and executing a resource plan for the host LPAR is the same process used to for managed client LPARs and must be completed before configuring the host, or any other LPAR, as a client.

For information on using the service management software to configure the required resources to support an LPAR/server, see the next section, "**3. Service Management**".

Once VTL resources have been configured, assigned to the service management LPAR and the LPAR has had the new library device made available, the LPAR may be configured for Conductor client operation.

Please review the **VTL Conductor for IBM i – User Guide – V2R5** documentation sections **3.4.2 – Selecting Virtual Libraries to Manage** thru section **3.5.3 – Configuring Managed Classes and Nominal Requirements for DVMM** for information on configuring the Conductor application for use on a client LPAR.

3. Service Management

Conductor makes it simple to import existing client resource configurations that exist on the VTL Server(s) for which customer access will be managed and to control which of Conductor's features will be made available to client LPARs or networks.

3.1 The Account Entity Management Interface

Creating the Account entity is the first step in creating a VTL resource plan. Conductor's MSP software captures only two properties per account – an Account ID and an Account Name. Follow the instructions below to use Conductor to create an Account entity.

From the Conductor Main Menu, select the "4. Service Management" option. The initial presentation of the Service Management application is the list of configured accounts. The example panel below indicates that three accounts are currently configured.

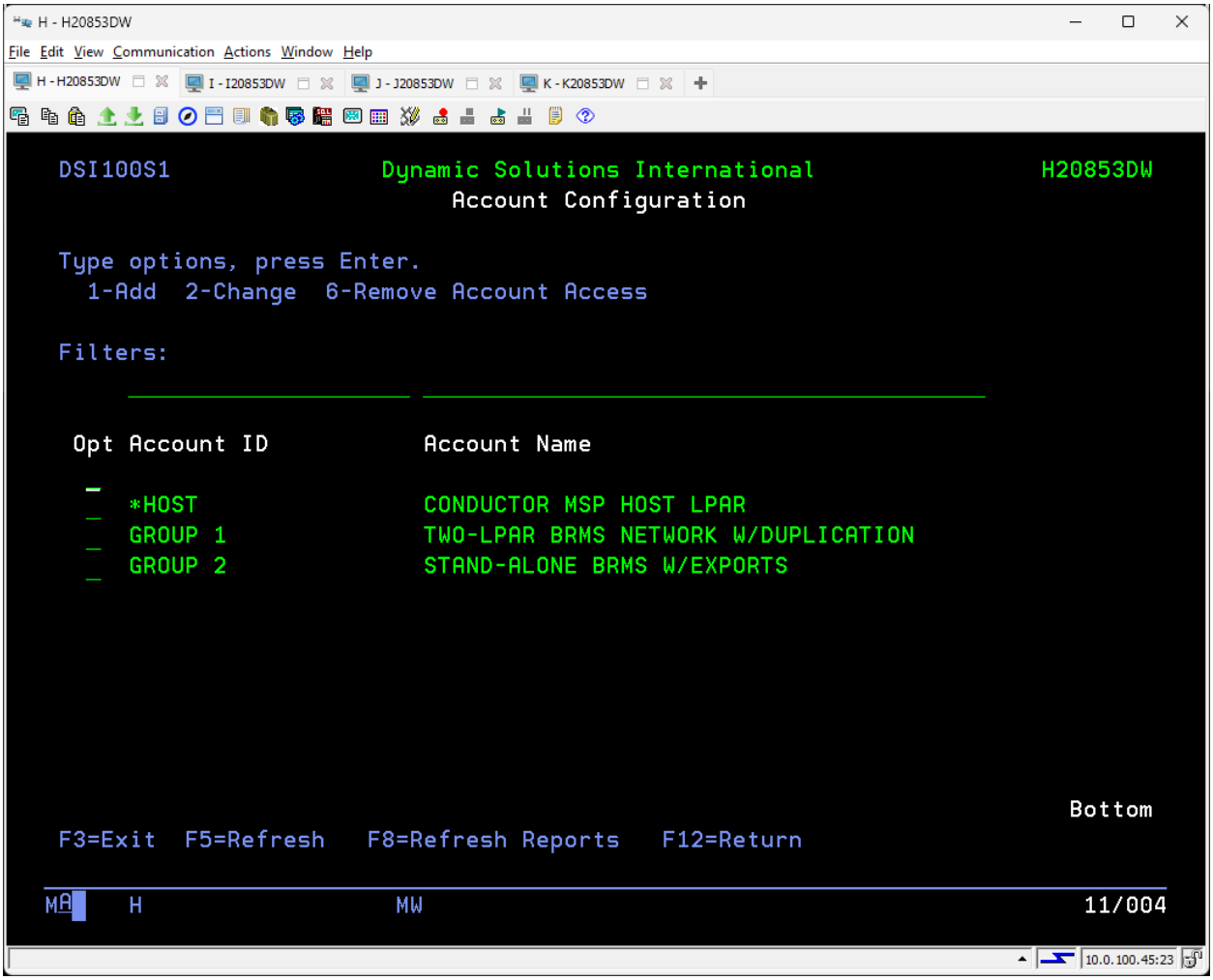


Figure 13: The Account Configuration UI

Field Descriptions/Values:

Filters: The two filter fields allow the user to restrict the account list to those accounts that match the search string value(s) entered. Either one or both fields may be used to limit or to search the account list. To subset the presented list, enter one or both filter values and press Enter. To return the list to the full account display, clear the filter values and press Enter.

List Options:

1 -Add. This option presents a panel which captures new account information.

2-Change. Use this option to either alter the name of an existing account or to access server/library/deduplication configurations for the account.

6-Remove Account Access. Use this option to remove an account from your MSP configuration. Removing an account will cause Conductor instances for LPARs within the account to be inoperative.

Function Keys:

F3=Exit: This option terminates the Service Management configuration application.

F5=Refresh: Use this option to refresh the presentation. Filter values will be utilized, when provided.

F8=Refresh Reports: Conductor's Service Management application maintains current storage and configuration reports in the IFS, produced once an hour. To force a refresh of the configuration data and immediately produce new reports, use F8. Storage report data is updated from the VTL hourly and will not be refreshed via this option.

F12=Return: Backs the application up one display. From this panel, it is the same as pressing F3.

3.1.1 Creating a New Account Entity

To create a new Account entity, use the "1" option on the first list line and press Enter. The following display is presented (sample values provided).

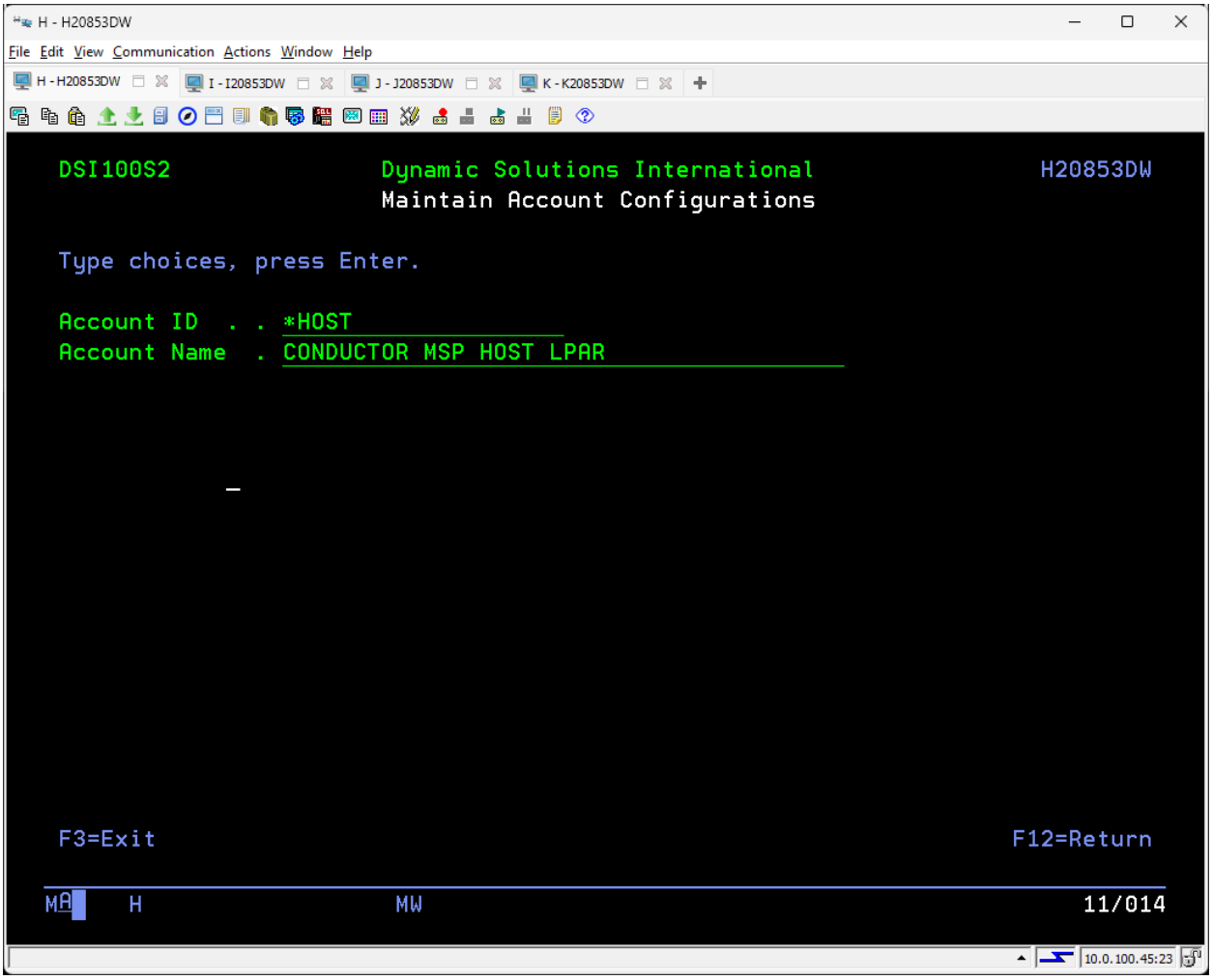


Figure 14: Creating an Account Entity

Upon pressing Enter, the values will be validated; if either of the values is rejected, the field in error will be highlighted and the applicable error message will be displayed on the message line, as show below; in this case, the account name has not been provided:

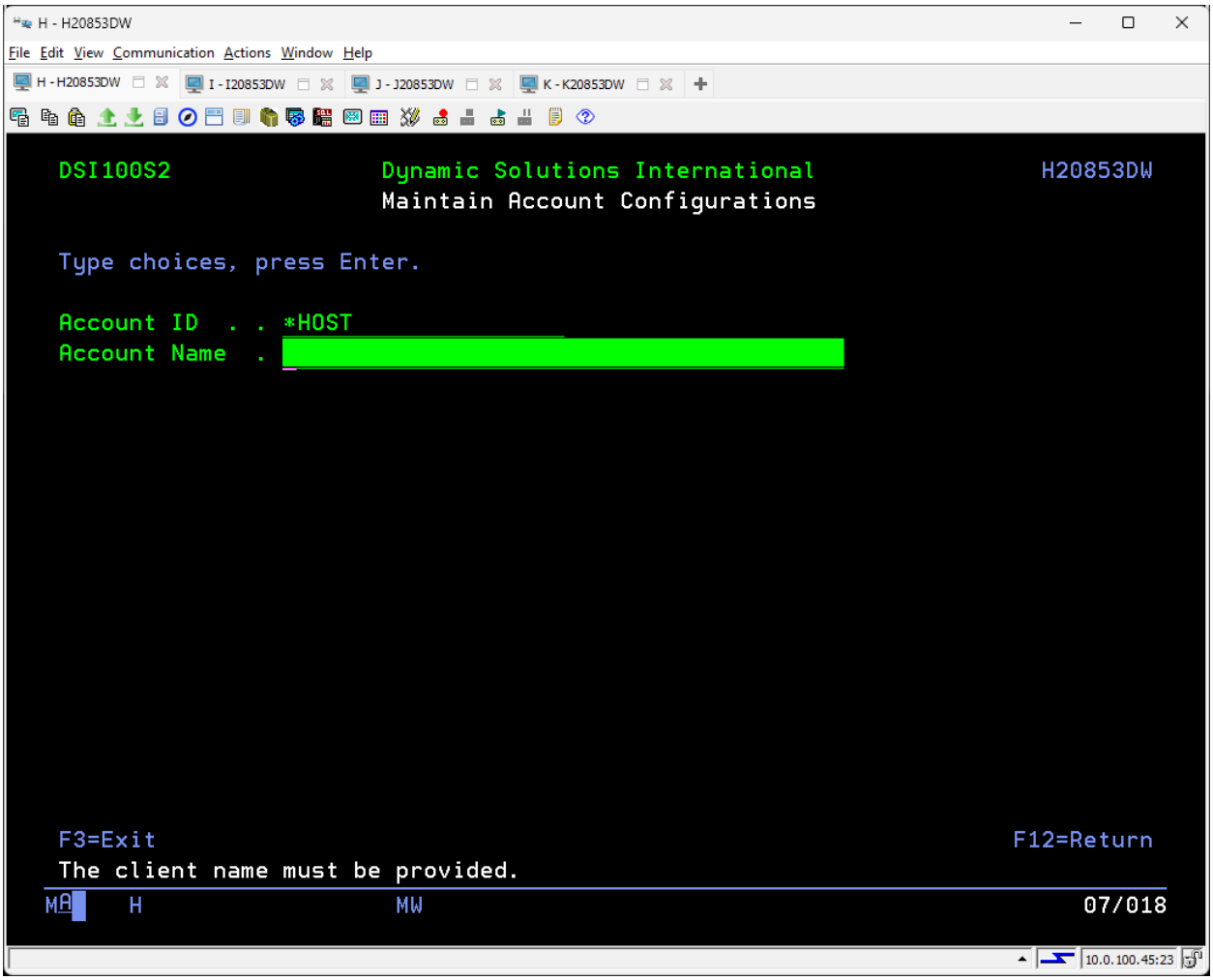


Figure 15: Invalid Data/Error display

Once the values have been validated and a new account has been created, the display will be re-presented to allow for the creation of one or more server entities, as shown in the following figure. This panel may also be accessed by using option 2-Change for an existing account entity:

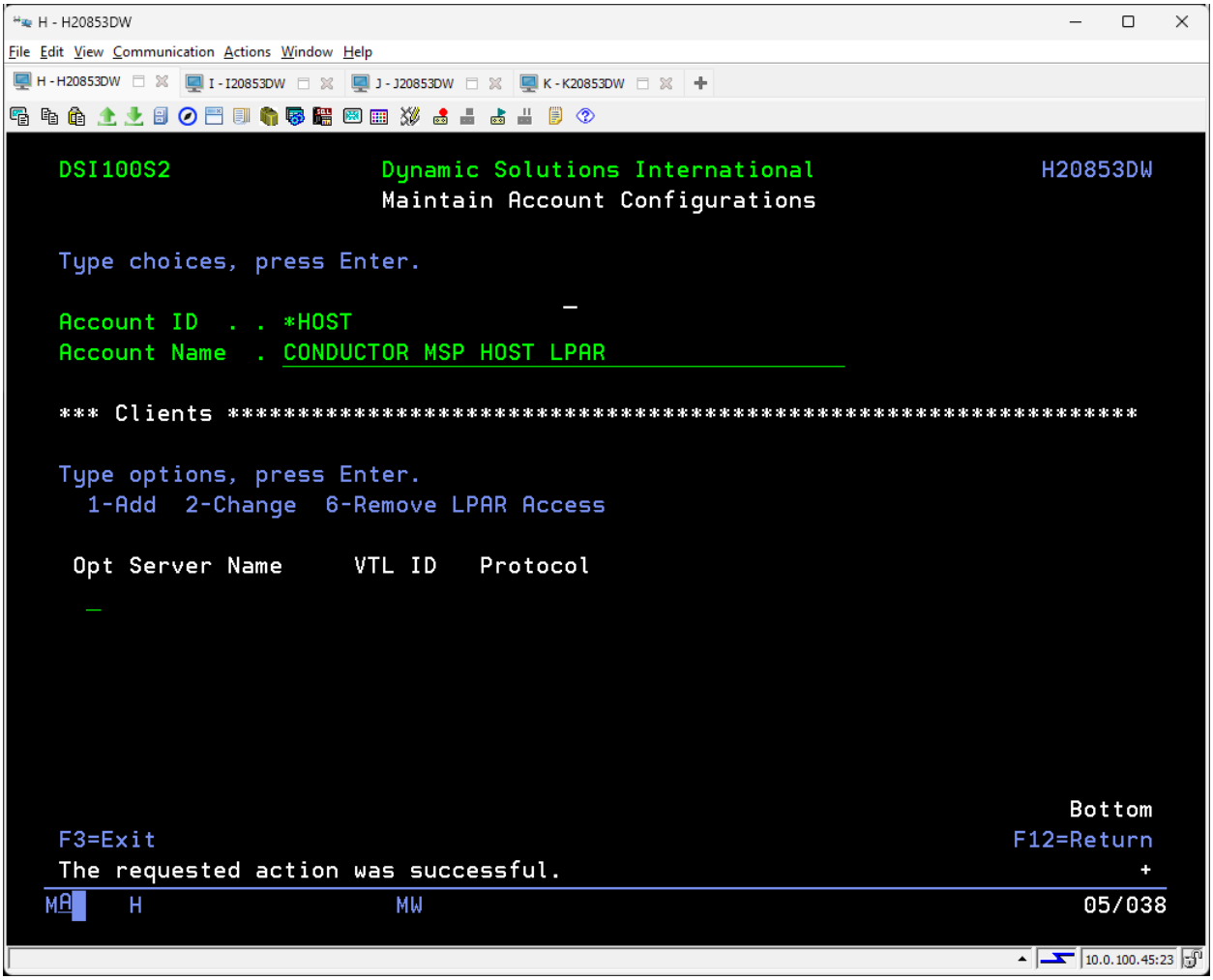


Figure 16: The completed Account configuration

The next section will discuss the creation and maintenance of Account Server entities.

3.2 The Account Server Entity Management Interface

Note: Conductor refreshes its understanding of a server's resource allocations at the start of the DSISYS subsystem and then once an hour while active. To immediately have access to any newly created account resource, this data may be refreshed manually. Follow the instructions below before attempting to create a Server entity when new VTL Clients have been created. Use either option 1 or option 2, not both.

1. End the DSISYS subsystem (*CNTRLD). When the subsystem ends, restart the subsystem.
    a. Wait a minute or two for initialization to complete.
2. Use Conductor:
    a. From the main Conductor menu, select option 3-VTL Server Maintenance.

b. From the server list presented, use option 6-Virtual Libraries for the server that will be refreshed.
c. From the resulting panel, use F6=Refresh from VTL.

Upon completion of either action, any new VTL clients that have been added to the VTL will be available for selection.

Figure 16 above shows the initial state of the Account Server maintenance application.

Field Descriptions/Values:

Account ID: The account ID of the account being managed. This value is read-only.

Account Name: The account name associated with the ID. This value may be changed, as necessary.

List options:

1-Add. Use this option to record a new server/LPAR for the account.

2-Change. Use this option to review or alter the Library/Drive and/or Deduplication resource configurations associated to an existing server.

6-Remove from Configuration: This option removes the Server entity from the account configuration, including any libraries associated with the Server entity. This will prevent Conductor instances on the applicable servers from being operable.

Function Keys:

F3=Exit: Exit the Service Management application.

F12=Cancel: Back up one panel (in this case, to the Account Management interface).

3.2.1 Creating a New Server Entity

From the interface presented in figure 16, use option '1' on the first list line and press Enter. The Account Server Management display is presented as shown in the following figure:

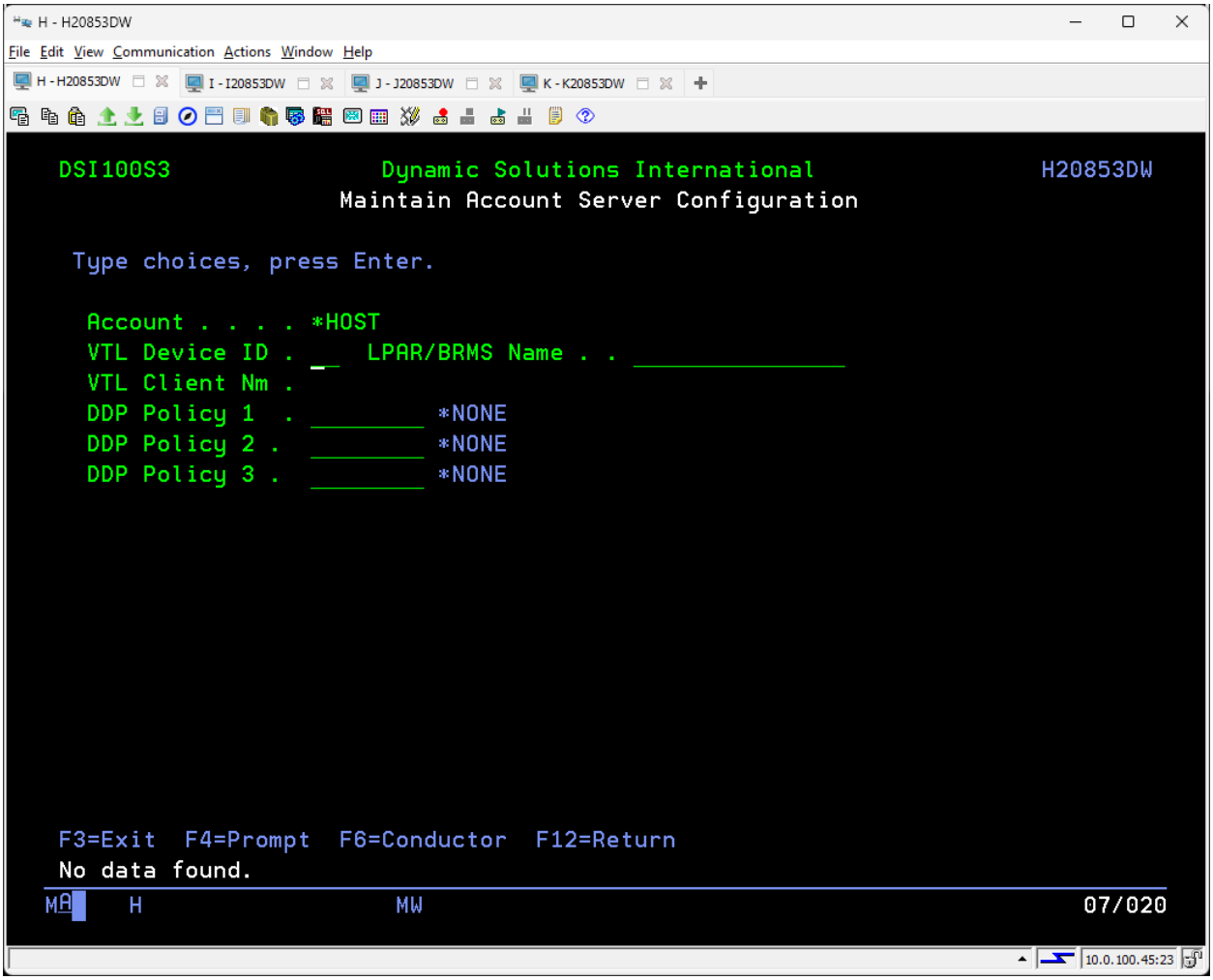


Figure 17: The Account Server Configuration Interface

Field Descriptions/Values:

VTL Device ID: This identifies the VTL server ID from which the Server entity will be created. Use the F4 key to prompt for valid values or enter the ID number of the target VTL server.

LPAR/BRMS Name: A value that uniquely identifies an application server/LPAR.

In the IBM i context, this **MUST** be either the BRMS name associated to the LPAR (where applicable) OR the 8-character LPAR name (local location name), whichever is used by BRMS to identify the LPAR. If the name provided does not match the LPAR's local location name or BRMS name (when applicable), an installed Conductor client instance on the LPAR will not have access to any VTL resources.

VTL Client Name: This value will show the name of the VTL Client resource that has been associated with the server entity.

DDP Policy 1-3: Identifies the IDs of deduplication policies that this LPAR's Conductor configuration shall have access to. If not using deduplication, these fields may be ignored. Use F4 to review a list of deduplication policies available.

Once values have been provided and the Enter key pressed the software will validate the entries. Should any invalid entries be found, the field(s) in error will be highlighted and appropriate messaging will be provided on the message line as discussed in the previous section.

Upon confirmation of valid values, the server entity will be created, and any libraries currently associated with the VTL Client selected will be presented. In the example below, a VTL Client resource named "H20853DW-1" has been imported, the LPAR name associated with this client has been provided ("H20853DW"), a single deduplication policy with ID "19" has been made available to this configuration, and the virtual tape library or libraries associated with the VTL Client resource has been imported giving an instance of Conductor running on the H20853DW LPAR access to it's VTL resources.

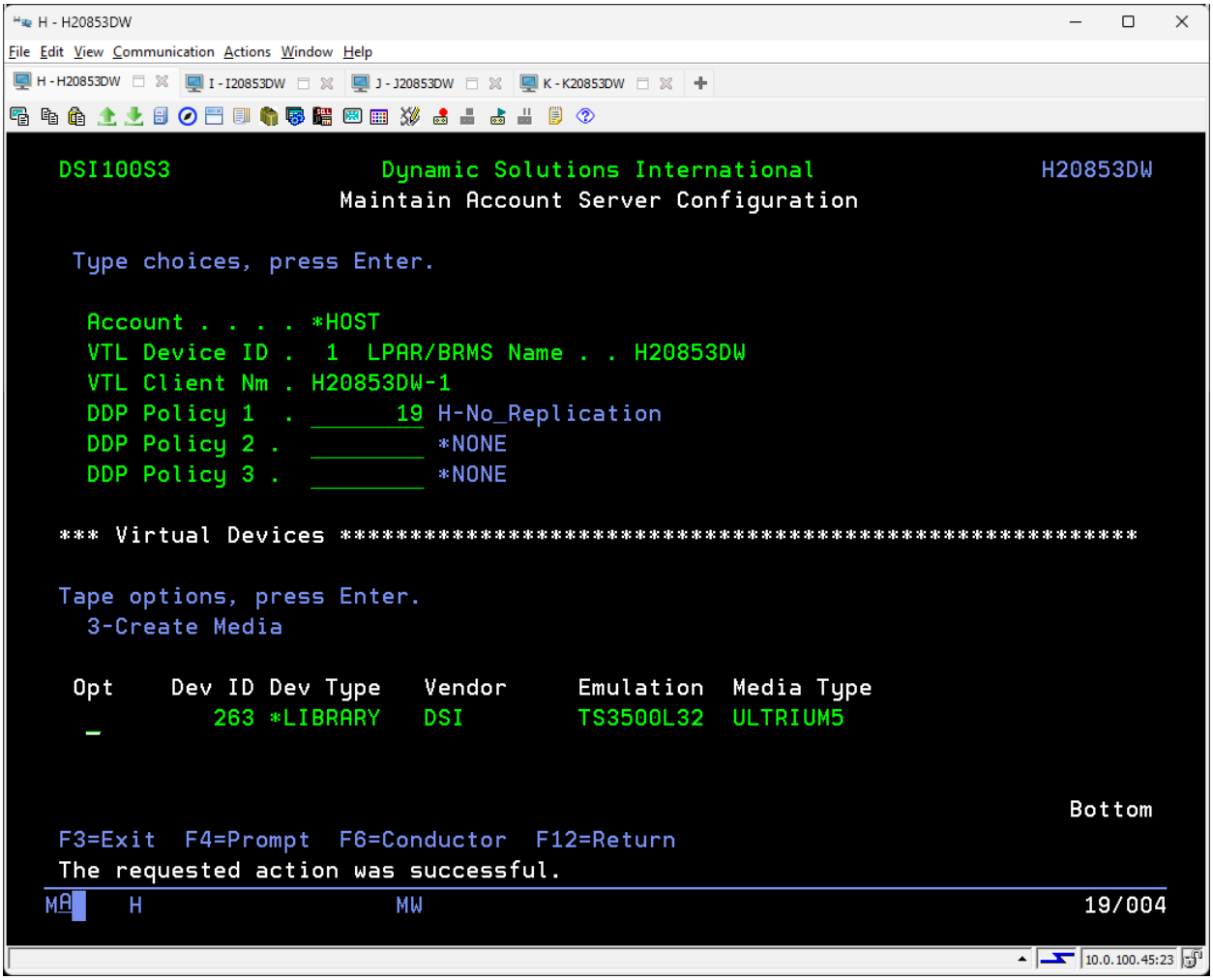


Figure 18: An imported client resource configuration

Note: If different VTL resources are associated with different Fibre Channel initiators on the SAME LPAR, and those initiators are assigned to different VTL client resources, it may be necessary to create multiple Server entities to ensure all VTL library resources are imported into the configuration.

3.2.2 Setting Managed Conductor Client Authorizations

Conductor's Service Management application enables the managed use of the Conductor client software on managed IBM i LPARs. Use of the Conductor client may allow the managed LPAR to take control of many media functions directly via the Conductor client instance.

By allowing the managed instance control over its media inventory activities, the service provider can alleviate themselves of most responsibility and activities related to media management while ensuring the most efficient use of VTL storage is achieved.

Examples of local media management capabilities include all the capabilities of the Conductor client, limited to the resources associated to the managed LPAR. For more detailed information on the media management capabilities of the Conductor client, see the "**VTL Conductor for IBM i - User Guide -- V2R5.pdf**" documentation.

In short, the following capabilities may be enabled on a managed Conductor LPAR:

1. Automatically build inventories for new library environments, either by migrating existing expired media volume serial numbers into DSI virtual tape media or by creating brand-new inventories.
2. Build inventories all-at-once or progressively as needs indicate.
3. Monitor inventories and media usage, creating new media for LPARs/media classes when necessary.
4. Enable media movement; move virtual tapes to/from the secure virtual vault or between compatible library resources on the same VTL server, where libraries are assigned to the same account. Movement is driven by the movement instructions of the media manager (BRMS/Tracker).
5. Media library synchronization – auto corrects errors introduced by human error, replica tapes (re: duplicate media) in BRMS environments or inconsistent media manager instructions leading to location discrepancies. This capability ensures that the media library is always in the state indicated by the media manager.
6. Media duplications and exports, where applicable.

To assign Conductor Client authorities for a server, use the F6=Conductor command key from the Server Configuration interface (see figure 18). Upon pressing CMD6, the Conductor Client configuration interface is presented as shown in the following figure:

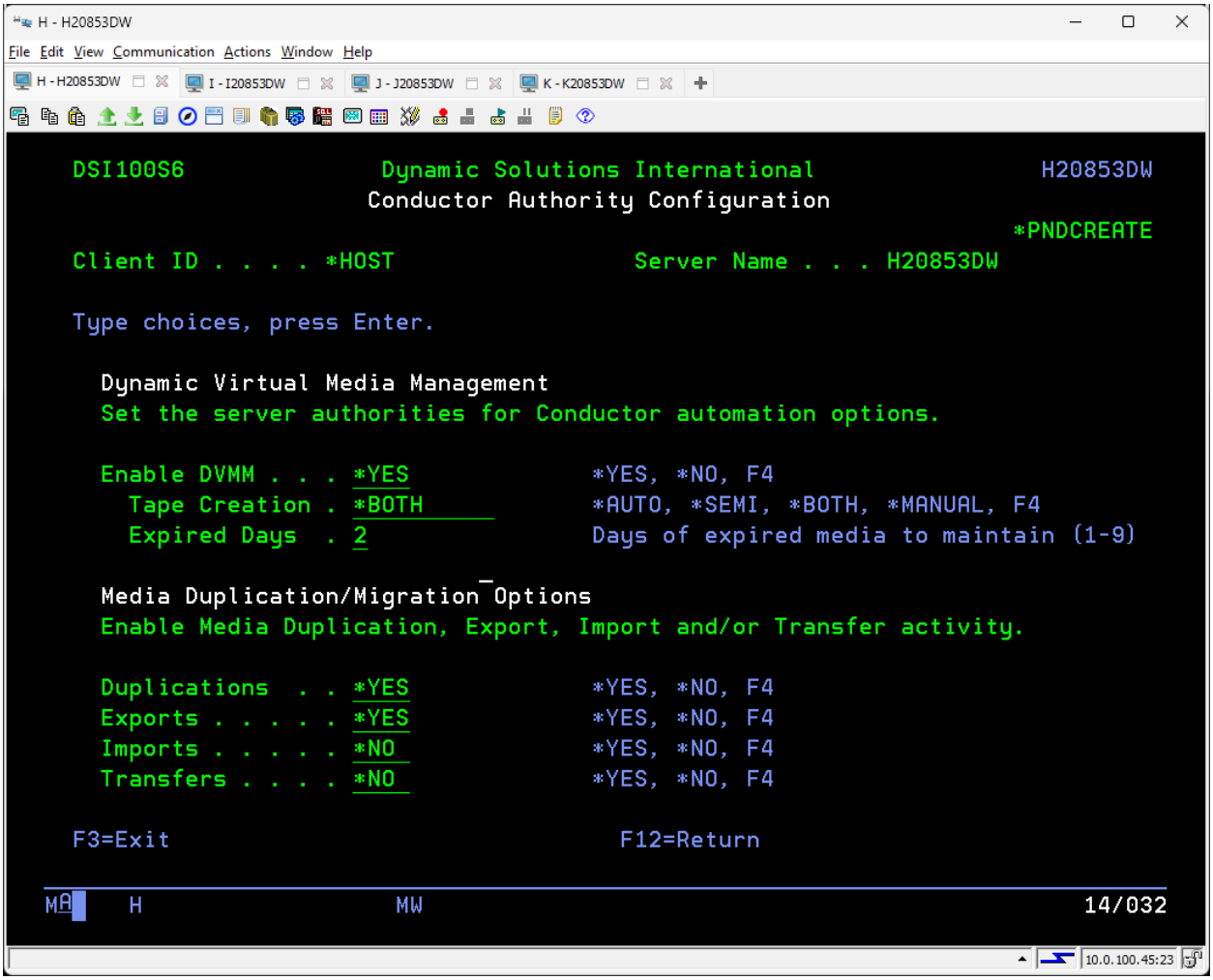


Figure 19: Setting Conductor Client Authorizations

Field Descriptions/Values:

Enable DVMM: This value determines whether the managed Conductor client may enable DVMM on their managed server. DVMM provides automated library synchronization, media movement and error correction capabilities for managed media classes (BRMS) or media categories (Tracker). Enabling DVMM also enables the "Tape Creation" and "Expired Days" options on the managed LPAR (see below).

Tape Creation: When DVMM is enabled, this value determines whether media may be created via the Conductor client and if so, whether full-automation, semi-automation, or both types of media creation automation are allowed.

DSI generally recommends setting this value to *AUTO when in use, ensuring the Conductor software manages local inventories automatically. Setting this value to *SEMI will allow the local Admin to create media on-demand by creating media information in BRMS or requesting new media from the Tracker application.

Setting it to *BOTH allows the local admin to make this determination at an LPAR/class level, selecting some classes for *AUTO management and others for *SEMI.

The *MANUAL setting indicates that while DVMM features are active, media creation is not enabled via the serviced Conductor instance.

Expired Days: This value helps Conductor control how much expired media is maintained automatically for media classes enjoying fully automated management. Conductor will determine the maximum daily usage of media by LPAR/class; the Expired Days value is used to determine a multiple of that daily usage to automatically maintain in expired status.

For example, assume LPAR A/Class 1 has a maximum daily usage of 3 tapes. If the service provider wanted to limit the number of excess media for this class to, say, 3 days' worth of media, this value would be set to '2' (enough media for "today" + two more days/runs). This setting would result in Conductor maintaining a minimum of nine expired volumes of class 1 on LPAR A.

The managed client will allow the local admin to then use a value of 1 or 2 when making this selection; the admin may choose to maintain less than value provided here but cannot exceed this value when making the local value entry.

Conductor will continue to monitor inventory usage and adjust inventory – adding media - when usage levels indicate additional inventory is necessary.

Media Duplication/Migration Options

Conductor includes a policy-driven duplication engine that can allow managed LPARs to perform automated media duplications to either an IBM-device-configured library or to a library attached via the VTL server. The ability to use this duplication engine is controlled by the settings in this section of the interface (Duplications, Exports).

Conductor may also be used to import legacy media into the client environment, or to transfer inventories from one VTL server library to a library on another VTL server. The ability to perform these actions on a client is also managed from this display.

Given the complexities of managing physical inventories in a service-managed environment, it is recommended that these values be set to *YES only under the following circumstances:

1. The LPAR for which settings are made is utilizing a captive VTL (e.g., located at an account site or an MSP-domiciled device exclusively used by the Server entity's account) and the LPAR or the VTL has access to its own physical media library device. In this case, Conductor clients can

manage inventories for physical libraries, thus either duplications or exports may be enabled depending on where the export device is attached (LPAR or VTL).

2. The LPAR for which settings are made has an IBM library device configured and has its own physical media inventory available to the BRMS or Tracker media manager. In this case, duplications can be permitted as BRMS/Tracker maintains its own inventory of physical media usable by the LPAR. Maintaining the physical library inventory remains a human-driven effort, however.

Enabling Duplications and/or Exports for LPARs that are using general-use VTL hardware is not recommended, as managing physical inventory is a challenge that Conductor cannot meet in this scenario. If the service provider or admin is willing to take on that challenge, these options may be enabled.

3.2.3 Deconstructing Server Entities/VTL Client Resources

Deconstruction of Server Entities and/or VTL Client resources is performed when Conductor is no longer required, for example when completing a migration-only effort and removing Conductor software from the LPAR upon completion.

From the Server properties interface, select option 6-Remove LPAR Access on the Server entity representing the VTL Client resource to remove from the VTL, as shown in the figure below. Press Enter and a confirmation message will be presented to allow you to complete or cancel the delete request.

The following images show a server entity being removed from an account configuration. Remember, this will prevent Conductor from access to its VTL resources, so use with care!

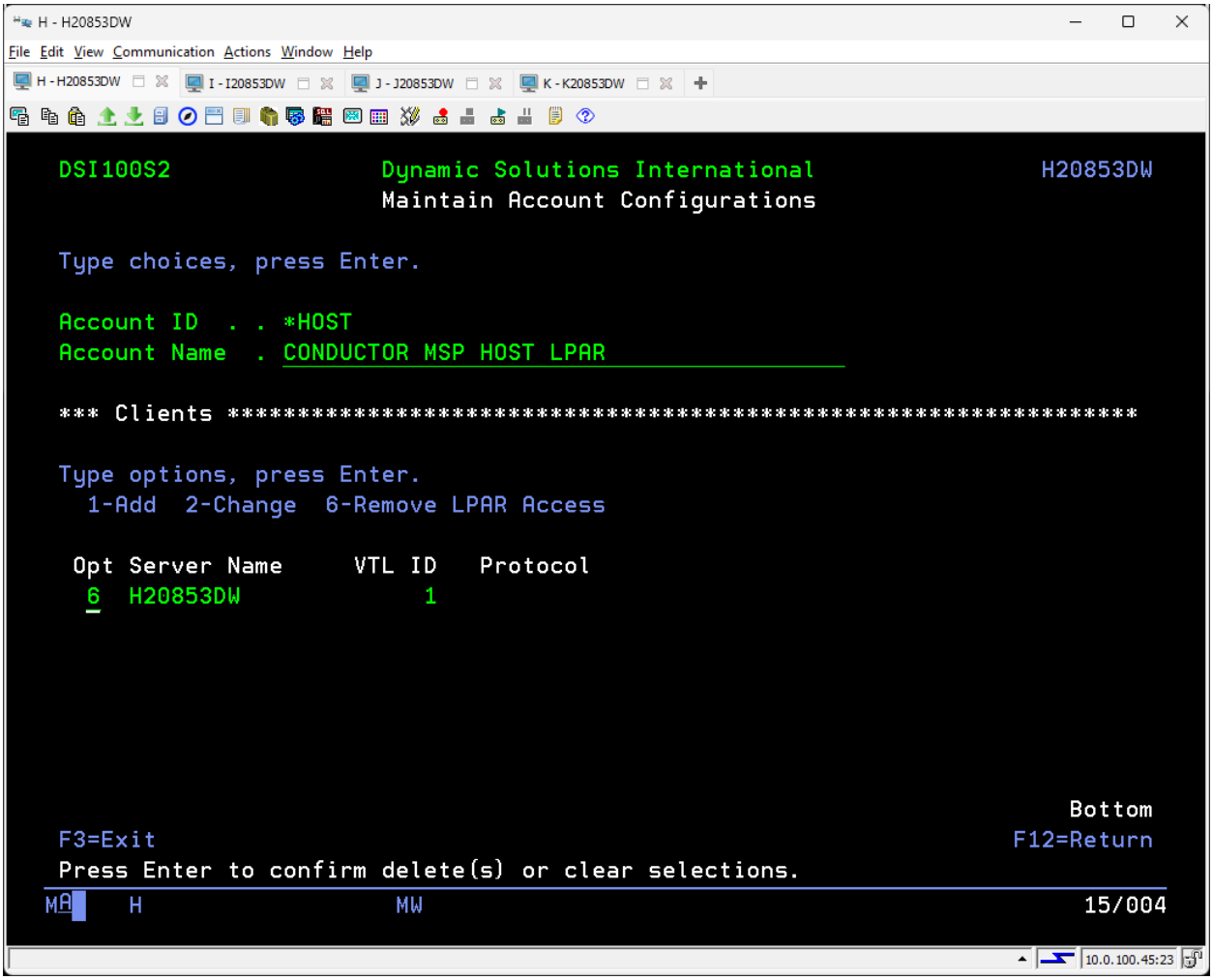


Figure 20: Preparing to remove a server from a client configuration

Upon pressing Enter to confirm, the VTL client and its resources will be removed from the configuration, resulting in any Conductor instances running on the LPAR being blocked from access to those VTL resources.

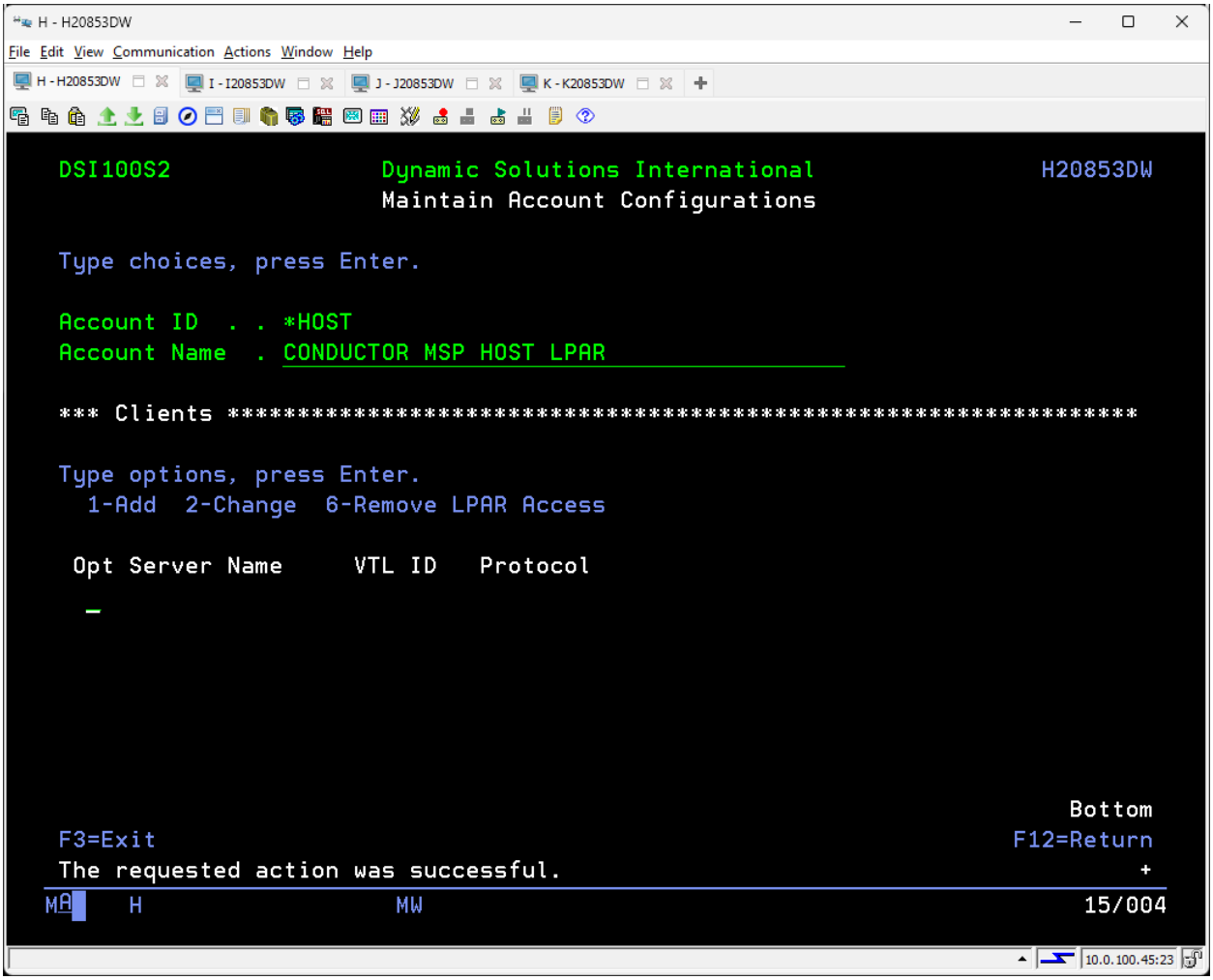


Figure 21: Account configuration, post server entity deletion

4. Service Management Reporting

The Conductor Service Management application uses plan data to drive data collection for a series of context-specific reports. These reports are produced automatically on the hour and are always available via the IFS path /dsi/service/reports/.

Each report is presented in PDF form; Storage accounting reporting may offer CSV output as well.

When the Conductor DSISYS subsystem is left running as directed, these reports allow the MSP or admin to track, in close to real time:

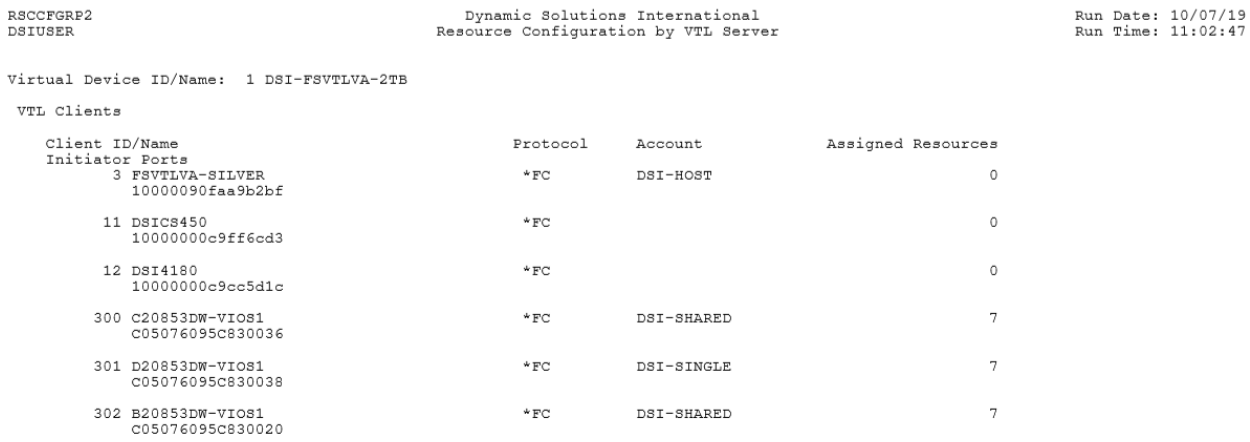
- Resources across all VTLs, either by VTL Server or by Account.
- Storage across all VTLs, either by VTL Server or by Account.
- Miscellaneous information that helps keep the administrator on top of their VTL environments.

The following subsections discuss each of the reports made available by the Service Management Application.

4.1 Resource Configuration by Server.pdf

This report provides information about all managed resources on VTL servers, presented in VTL Device ID order. For each VTL, one section identifying the following VTL resources will be presented:

VTL Clients: For each client, the client name, initiator port(s), comm protocol, the account owning the VTL Client and the number of library/drive resources assigned to the VTL Client are presented.



RSCCFGRP2 Dynamic Solutions International Run Date: 10/07/19
DSIUSER Resource Configuration by VTL Server Run Time: 11:02:47

Virtual Device ID/Name: 1 DSI-FSVTLVA-2TB

VTL Clients

Client ID/Name Initiator Ports	Protocol	Account	Assigned Resources
3 FSVTLVA-SILVER 10000090faa9b2bf	*FC	DSI-HOST	0
11 DSIC8450 10000000c9ff6cd3	*FC		0
12 DSI4180 10000000c9cc5d1c	*FC		0
300 C20853DW-VIOS1 C05076095C830036	*FC	DSI-SHARED	7
301 D20853DW-VIOS1 C05076095C830038	*FC	DSI-SINGLE	7
302 B20853DW-VIOS1 C05076095C830020	*FC	DSI-SHARED	7

Library/Drive Resources: A list of each virtual library, stand-alone drive and physical library defined on the server. For each resource the resource VID, name, type, media emulation (where applicable), number of drives (w/a), tapes (w/a), slots (w/a) and the total storage utilized by virtual library resources are presented.

```
RSCCFGRP2                                  Dynamic Solutions International                              Run Date: 10/07/19
DSIUSER                                 Resource Configuration by VTL Server                            Run Time: 11:02:47


Virtual Device ID/Name:  1 DSI-FSVTLVA-2TB

 Library/Drive Resources

    Resource ID/Name                                                  Rsc Type    Media     Drives  Tapes  Slots  Storage (GB)
      26 SILVER                                                       *VRTLIB    ULTRIUM5      130  1,871 10,000           859
     175 ITEST                                                        *VRTLIB    ULTRIUM5       16     36    100            27
    4592 FWKNOP-Test                                                  *VRTLIB    ULTRIUM6        2              5
    5498 _DSI USE ONLY - DO NOT REMOVE                                *VRTLIB    ULTRIUM1        1              1
    6013 DSI-SHARED_ULTRIUM6_00300000                                 *VRTLIB    ULTRIUM6       12     52    999            78
    6026 DSI-SINGLE_ULTRIUM6_00300002                                 *VRTLIB    ULTRIUM6        6      9    999            10
    4835 IBM-ULT3580-TD7-04835                                        *VRTDRV    ULTRIUM7
    4852 DSI-P7_S212B8DV-HBA1-00300001-04852                          *VRTDRV    ULTRIUM7
    4479 BDT:FlexStor II-1001                                         *PHYLIB                1             23
```

Deduplication Policies: A list of the policies available from the server is presented.

```
RSCCFGRP2                                  Dynamic Solutions International                              Run Date: 10/07/19
DSIUSER                                 Resource Configuration by VTL Server                            Run Time: 11:02:47


Virtual Device ID/Name:  1 DSI-FSVTLVA-2TB

 Deduplication/Replication Policies

    Pcy VID Name
         66 ralphs_dedupe_policy_of_fun
         88 FWKNOP-TEST
        187 DSI-SHARED_*INLINE_*SINGLE_00300000
        188 DSI-SINGLE_*INLINE_*SINGLE_00300002
```

Target Adaptors and Assigned Resources: Identifies each initiator/target pair (iSCSI and/or Fibre Channel), and with each virtual resource assigned to the target.

```
RSCCFGRP2                                  Dynamic Solutions International                              Run Date: 10/07/19
DSIUSER                                 Resource Configuration by VTL Server                            Run Time: 11:02:47


Virtual Device ID/Name:  1 DSI-FSVTLVA-2TB

 Target Adaptors

    HBA ID/Name                                                                                          Target WWPN
        01 QLogic Adapter.101                                                                            2001000e1ed11e14

        VTL Client:   C20853DW-VIOS1
           Rsc VID   Rsc Type/Name                                                    LUN Assignment  Initiator WPPN
              6013   *LIBRARY   DSI-SHARED_ULTRIUM6_00300000                                      0  C05076095C830036
              6020   *LIBDRV                                                                      1  C05076095C830036
              6021   *LIBDRV                                                                      2  C05076095C830036
              6022   *LIBDRV                                                                      3  C05076095C830036
              6023   *LIBDRV                                                                      4  C05076095C830036
              6024   *LIBDRV                                                                      5  C05076095C830036
              6025   *LIBDRV                                                                      6  C05076095C830036

        VTL Client:   D20853DW-VIOS1
           Rsc VID   Rsc Type/Name                                                    LUN Assignment  Initiator WPPN
              6026   *LIBRARY   DSI-SINGLE_ULTRIUM6_00300002                                      0  C05076095C830038
              6027   *LIBDRV                                                                      1  C05076095C830038
              6028   *LIBDRV                                                                      2  C05076095C830038
              6029   *LIBDRV                                                                      3  C05076095C830038
              6030   *LIBDRV                                                                      4  C05076095C830038
              6031   *LIBDRV                                                                      5  C05076095C830038
              6032   *LIBDRV                                                                      6  C05076095C830038

        VTL Client:   B20853DW-VIOS1
           Rsc VID   Rsc Type/Name                                                    LUN Assignment  Initiator WPPN
              6013   *LIBRARY   DSI-SHARED_ULTRIUM6_00300000                                      0  C05076095C830020
              6014   *LIBDRV                                                                      1  C05076095C830020
              6015   *LIBDRV                                                                      2  C05076095C830020
              6016   *LIBDRV                                                                      3  C05076095C830020
              6017   *LIBDRV                                                                      4  C05076095C830020
              6018   *LIBDRV                                                                      5  C05076095C830020
              6019   *LIBDRV                                                                      6  C05076095C830020
```

Unassigned Resources: Identifies virtual library and drive resources that are not assigned to any VTL Clients.

```
RSCCFGRP2                                    Dynamic Solutions International                                    Run Date: 10/07/19
DSIUSER                                   Resource Configuration by VTL Server                                  Run Time: 11:02:47


Virtual Device ID/Name:  1 DSI-FSVTLVA-2TB

 Unassigned Resources

       Vrt ID  Parent Vrt ID  Resource Type   Name
           26                 *LIBRARY        SILVER
           27              26 *LIBDRV         SILVER-MT2000
           28              26 *LIBDRV         SILVER-MT2001
           29              26 *LIBDRV         SILVER-MT2002
           30              26 *LIBDRV         SILVER-MT2003
           31              26 *LIBDRV         SILVER-MT2004
           32              26 *LIBDRV         SILVER-MT2005
           33              26 *LIBDRV         SILVER-MT2006
           34              26 *LIBDRV         SILVER-MT2007
          353              26 *LIBDRV         SILVER-MT2009
          354              26 *LIBDRV         SILVER-MT2010
          355              26 *LIBDRV         SILVER-MT2011
          356              26 *LIBDRV         SILVER-MT2012
          357              26 *LIBDRV         SILVER-MT2013
          358              26 *LIBDRV         SILVER-MT2014
          359              26 *LIBDRV         SILVER-MT2015
          360              26 *LIBDRV         SILVER-MT2016
          361              26 *LIBDRV         SILVER-MT2017
          362              26 *LIBDRV         SILVER-MT2018
```

4.2 Resource Configuration by Account.pdf

The Resource Configuration by Account report provides information about all Account configurations and the VTL resources supporting those configurations.

```
RSCCFGRPT                                    Dynamic Solutions International                                    Run Date: 10/07/19
DSIUSER                                   Resource Configuration by Account                                     Run Time: 11:02:35


Account Code:   100000   ID: DSI-SHARED            Name: 2SI TWO LPAR SHARED LIB CONFIG EXAMPLE

 Virtual Device ID/Name:  1 DSI-FSVTLVA-2TB

  Client ID/Name:       302 B20853DW-VIOS1                  Client Type: *FC

    Initiator Port(s)
    C05076095C830020

    Resource ID/Name                                                  Rsc Type   Initiator WWPN   Target WWPN      Status
    6013 DSI-SHARED_ULTRIUM6_00300000                                 *LIBRARY   C05076095C830020 2001000e1ed11e14 *ACTIVE
    6014 IBM-ULT3580-TD6-06014                                        *LIBDRV    C05076095C830020 2001000e1ed11e14 *ACTIVE
    6015 IBM-ULT3580-TD6-06015                                        *LIBDRV    C05076095C830020 2001000e1ed11e14 *ACTIVE
    6016 IBM-ULT3580-TD6-06016                                        *LIBDRV    C05076095C830020 2001000e1ed11e14 *ACTIVE
    6017 IBM-ULT3580-TD6-06017                                        *LIBDRV    C05076095C830020 2001000e1ed11e14 *ACTIVE
    6018 IBM-ULT3580-TD6-06018                                        *LIBDRV    C05076095C830020 2001000e1ed11e14 *ACTIVE
    6019 IBM-ULT3580-TD6-06019                                        *LIBDRV    C05076095C830020 2001000e1ed11e14 *ACTIVE

    Dedupe/Replica:  Device ID  Rsc VID Resource Name                                                  Type         Status
                            1          DSI-SHARED_*EJECT_*SINGLE_00300005                              *DDPPCY      *PNDCREATE
                            2          DSI-SHARED_ULTRIUM6_00300005_REPL_FROMVTL_01                     *LIBRARY     *PNDCREATE

  Client ID/Name:       300 C20853DW-VIOS1                  Client Type: *FC

    Initiator Port(s)
    C05076095C830036

    Resource ID/Name                                                  Rsc Type   Initiator WWPN   Target WWPN      Status
    6013 DSI-SHARED_ULTRIUM6_00300000                                 *LIBRARY   C05076095C830036 2001000e1ed11e14 *ACTIVE
    6020 IBM-ULT3580-TD6-06020                                        *LIBDRV    C05076095C830036 2001000e1ed11e14 *ACTIVE
    6021 IBM-ULT3580-TD6-06021                                        *LIBDRV    C05076095C830036 2001000e1ed11e14 *ACTIVE
    6022 IBM-ULT3580-TD6-06022                                        *LIBDRV    C05076095C830036 2001000e1ed11e14 *ACTIVE
    6023 IBM-ULT3580-TD6-06023                                        *LIBDRV    C05076095C830036 2001000e1ed11e14 *ACTIVE
    6024 IBM-ULT3580-TD6-06024                                        *LIBDRV    C05076095C830036 2001000e1ed11e14 *ACTIVE
    6025 IBM-ULT3580-TD6-06025                                        *LIBDRV    C05076095C830036 2001000e1ed11e14 *ACTIVE

    Dedupe/Replica:  Device ID  Rsc VID Resource Name                                                  Type         Status
                            1        187 DSI-SHARED_*INLINE_*SINGLE_00300000                         *DDPPCY      *ACTIVE
                            2       5733 DSI-SHARED_ULTRIUM6_00300000_REPL_FROMVTL_01                 *LIBRARY     *ACTIVE
```

4.3 Storage Utilization by Server.pdf

The Storage Utilization by Server report provides both server- and library-level tape and storage information. Each VTL reported has a section for the server itself along with one section for each virtual library on the VTL server, each with relevant storage and media numbers.

This data from this PDF is also provided in two CSV files (one for the server level, one for the library level):

- Storage Utilization by Server.csv
- Storage Utilization by Library.csv

An example of the pdf report follows:

CAPANLRPT — Dynamic Solutions International — Run Date: 10/07/19
DSIUSER — Virtual Device Storage Report — Run Time: 11:02:02

Begin Virtual Device ID	Name	Dedupe Ratio	Local Ratio	Libraries	S/A Drives	Tapes	Replicas	Repl Resources	Repl Rsc Storage
01	DSI-FSVTLVA-2TB	29.0:1	37.9:1	6	2	1,968	0	0	0

Storage Type	Avail	Free	Free %	1 Mo Grw Rate	3 Mo Grw Rate	Annual Grw Rate
Server:	3,399	257	7.56%			
O/S:	25	20	80.00%			
SIR:	1,999	1,956	97.81%			
Folder:	83	82	98.64%			
Index:	16	16	99.20%			

Virtual Library Name: DSI-SHARED_ULTRIUM6_00300000 — Tapes: 52 — Replicas: 0
Account Name: 2SI TWO LPAR SHARED LIB CONFIG EXAMPLE

Storage Type	Local Media	Replica Media	Total	Device Ratio	1 Mo Grw Rate	3 Mo Grw Rate	Annual Grw Rate
Raw Data:	653	0	653	80.42%			
DDP Data:	961	0	961	90.23%			
^VTL Cache:	52	0	52	5.49%			
^DDP Storage:	26	0	26	96.30%			Dedupe growth rates are for locally-deduped tapes only
^Replica Rsrs:	0	0	0	.00%			
^Total Storage:	78	0	78				
DDP Ratio:	35.8:1	N/A	35.8:1				

Virtual Library Name: DSI-SINGLE_ULTRIUM6_00300002 — Tapes: 9 — Replicas: 0
Account Name: DSI SINGLE LPAR LIBRARY CONFIG EXAMPLE

Storage Type	Local Media	Replica Media	Total	Device Ratio	1 Mo Grw Rate	3 Mo Grw Rate	Annual Grw Rate
Raw Data:	78	0	78	9.61%			
DDP Data:	104	0	104	9.77%			
^VTL Cache:	9	0	9	.95%			
^DDP Storage:	1	0	1	3.70%			Dedupe growth rates are for locally-deduped tapes only
^Replica Rsrs:	0	0	0	.00%			
^Total Storage:	10	0	10				
DDP Ratio:	85.2:1	N/A	85.2:1				

4.4 Storage Utilization by Account.pdf

The Storage Utilization by Account report provides information on the actual storage utilized by account resources. A CSV version of this data is also made available (Storage Utilization by Account.csv).

An example of the pdf version follows:

```
STGACCRPT                                   Dynamic Solutions International                     Run Date: 10/07/19
DSIUSER                                    Account Storage Utilization Report                   Run Time: 11:02:20

  Device ID   Virtual ID     Tapes                  VTL Cache (GB)  Replica Rsc (GB)      SIR (GB)      Total Storage (GB)

    Account ID/Name: DSI-HOST
                     DSI SERVICE MANAGEMENT HOST CONFIG

    *** No Data Found ***

    Account ID/Name: DSI-SHARED
                     2SI TWO LPAR SHARED LIB CONFIG EXAMPLE
          1        6013         52                     52                 0             26                     78
          2        5733         53                     53                53             26                    132
                                     Account Totals:  105                53             52                    210

    Account ID/Name: DSI-SINGLE
                     DSI SINGLE LPAR LIBRARY CONFIG EXAMPLE
          1        6026          9                      9                 0              1                     10
          2        5746          8                      8                 8              1                     17
                                     Account Totals:   17                 8              2                     27
```

4.5 Volume Serial Ranges by Device.pdf

This report lists all the virtual library volume serial number ranges in use in starting barcode order.

```
VOLSERRPT                               Dynamic Solutions International                         Run Date: 10/07/19
DSIUSER                               Volume Serial Number Ranges by Device                     Run Time: 11:03:24

  Device: 01 DSI-FSVTLVA-2TB
                                                                                     Begin    End
     Library VID Name                                              Account ID        Volume   Volume

              26 SILVER                                                              PP0001   PP9999
            6026 DSI-SINGLE_ULTRIUM6_00300002                      DSI-SINGLE        P8D000   P8D999
            6013 DSI-SHARED_ULTRIUM6_00300000                      DSI-SHARED        P8S000   P8S999
             175 ITEST                                                               TEST00   TEST99
            5498 _DSI USE ONLY - DO NOT REMOVE                                       ZZZZZ8   ZZZZZ9
            4592 FWKNOP-Test                                                         11F000   11F0ZZ
```

4.6 Account Entities Pending Action.pdf

The Account Entities Pending Action report identifies all Account plan entities that have been captured but are pending some activity.

```
RSCCFGRP4                               Dynamic Solutions International                         Run Date: 10/07/19
DSIUSER                                 Account Entities Pending Action                         Run Time: 11:03:12

  Account ID          Name                                    Device  Server          Gateway          Entity Type  Status


  Virtual Libraries:

  DSI-SHARED          2SI TWO LPAR SHARED LIB CONFIG EXAMPLE       1  XXXXXXXX        TEST             *LIBRARY     *PNDASSIGN

  Dedupe/Replication:

  DSI-SHARED          2SI TWO LPAR SHARED LIB CONFIG EXAMPLE       1  B20853DW        VIOS1            *DEDPCY      *PNDCREATE
  DSI-SHARED          2SI TWO LPAR SHARED LIB CONFIG EXAMPLE       2  B20853DW        VIOS1            *RLIBRARY    *PNDCREATE

*** End of Report ***
```

4.7 Unmanaged VTL Resources.pdf

The Unmanaged VTL Resources report identifies all relevant VTL resources that are not part of a Service Management Configuration (“Orphaned” resources). This report can be used to identify VTL resources that may be removed as well as VTL resources that should be added to Service Management configurations.

Report data is provided in sections for VTL Clients, Virtual Libraries and Drives and Deduplication Policies. Examples of each section follow.

```
RSCCFGRP3                                Dynamic Solutions International                    Run Date: 10/07/19
DSIUSER                                      Unmanaged VTL Resources                        Run Time: 11:03:00


Virtual Device ID/Name:  1 DSI-FSVTLVA-2TB

 Unmanaged VTL Clients

         VID Name                                 Protocol       Assigned Resources
             Initiator Ports


          11 DSICS450                              *FC                            0
             10000000c9ff6cd3

          12 DSI4180                               *FC                            0
             10000000c9cc5d1c
```

```
RSCCFGRP3                                Dynamic Solutions International                    Run Date: 10/07/19
DSIUSER                                      Unmanaged VTL Resources                        Run Time: 11:03:00


Virtual Device ID/Name:  1 DSI-FSVTLVA-2TB

 Unmanaged Library/Drive Resources

         VID Name                                                 Rsc Type   Media      Drives   Tapes   Slots
          26 SILVER                                               *VRTLIB    ULTRIUM5      130   1,871  10,000
         175 ITEST                                                *VRTLIB    ULTRIUM5       16      36     100
        4592 FWKNOP-Test                                          *VRTLIB    ULTRIUM6        2               5
        5498 _DSI USE ONLY - DO NOT REMOVE                        *VRTLIB    ULTRIUM1        1               1
        4835 IBM-ULT3580-TD7-04835                                *VRTDRV    ULTRIUM7
        4852 DSI-P7_S212B8DV-HBA1-00300001-04852                  *VRTDRV    ULTRIUM7
```

```
RSCCFGRP3                                Dynamic Solutions International                    Run Date: 10/07/19
DSIUSER                                      Unmanaged VTL Resources                        Run Time: 11:03:00


Virtual Device ID/Name:  1 DSI-FSVTLVA-2TB

 Unmanaged Deduplication/Replication Policies

         VID Name
          66 ralphs_dedupe_policy_of_fun
          88 FWKNOP-TEST
```