

# IBM i Migration to IBM Power Virtual Server using BRMS and Cloud Storage Solutions

VERSION 1.4

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# Chapter 1: Solution Overview

## Introduction

A key question for IBM i clients looking to leverage the benefits of [IBM Power Virtual Server](#) (PowerVS) is: How do I move my existing workloads to PowerVS? At the highest level, the process for most clients involves performing a save on-premises, transferring the save to PowerVS and performing a restore.

This document is positioned for IBM i LPAR that have less than 3 TB of disk usage and have disk available to store backup media files. The actual size of the IBM i LPAR that can be migrated using this methodology will depend on the cutover time, unused disk capacity and network bandwidth to IBM Cloud.

Completing the migration process involves many important details. IBM i, PowerVS and networking skills are required. The goal of this tutorial is to provide a guide for moving an IBM i workload to PowerVS using Backup Recovery Media Services for i (5770-BR1) and Cloud Storage Solutions for i (5733-ICC).

Note that with this document, there is no concept of migrating the operating system (OS) separately from any databases or applications. This document describes migrating an entire IBM i virtual machine (VM), or LPAR (logical partition), which contains the OS, the integrated Db2 for IBM i database and any installed applications.

\*Issues such as licensing on PowerVS or application-specific requirements and tuning are beyond the scope of this tutorial.

## Source System Requirements

1. Installed Licensed Programs:
  - 5770BR1 - Backup Recovery and Media Services for IBM i
    - Options \*BASE, 1 & 2
  - 5733ICC - IBM Cloud Storage Solutions for i
    - Options \*BASE, 1 & 2
2. Program Temporary Fixes (PTFs):
  - Latest program temporary fixes (PTFs) applied, along with Cloud-init [PTFs](#) .
  - Latest Backup Recovery Solutions [IBM i Group PTF](#)
  - Latest [BRMS Service Pack](#)
  - For 7.4 and 7.5, if using advanced software data compression for this migration, ensure all data compression support PTFs are applied:
    - 7.5:
      - 5770SS1-SI84525
      - 5770999-MF71323
      - 5770BR1-SI84629
    - 7.4:
      - 5770SS1-SI84526
      - 5770999-MF71322
      - 5770BR1-SI84643
3. Available disk [storage](#) equal to double the size of system storage used.

*Note: Depending on compressibility of system data, the actual amount needed may be less.*

## Summary of High-Level Steps

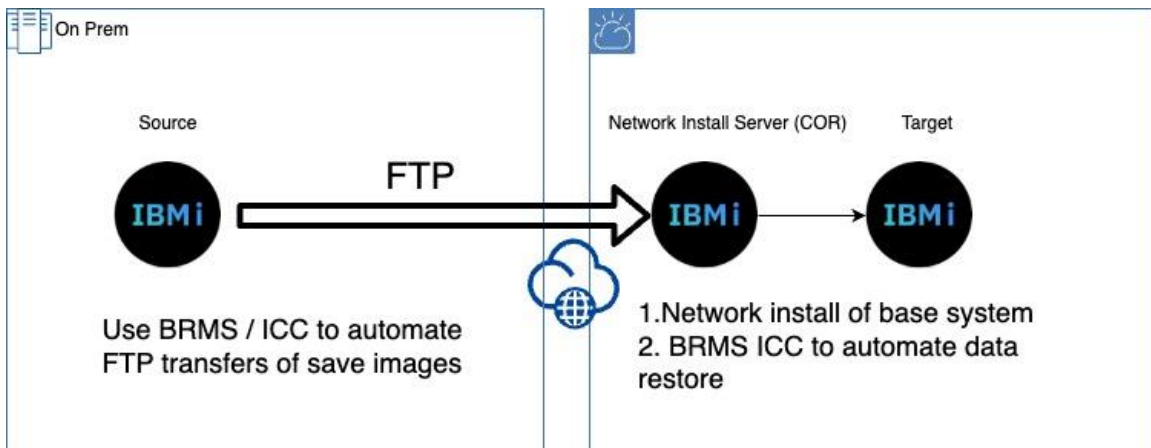
1. Create Network Install Server in PowerVS
2. Create Migration Target Server in PowerVS
3. Prepare Migration Source System
4. Full system save of Migration Source System to image catalog virtual devices
5. Transfer of save media to Network Install Server via an ICC FTP connection.



6. Install LIC and Base OS to Migration Target Server from Network Install Server. This uses virtual optical.
7. Restore the rest of the data from Migration Target Server. This data was transferred from the Network Install Server via an ICC FTP connection. This uses virtual tape.

## Solution Diagrams

### Migrating IBM i to the Cloud using BRMS and Cloud Storage Solutions with FTP



1. Use ICC (5733-ICC) and BRMS (5770-BR1) to transfer VM to PowerVS
2. Requires up to 2x disk used space on-premises
3. Requires reasonable network connection to IBM Cloud

# Chapter 2: Implementation

## Create a Network Install Server in PowerVS

The Network Install Server will be used to install the Migration Target Server in PowerVS using backup media created on the Migration Source System. Use the following steps to create a Network Install Server.

1. On 'Virtual server instances' screen
  - Click on **Create instance**
2. On 'Create virtual server instance' screen
  - General
    - Enter Instance name
    - Click on **Continue**
  - Boot image
    - Select OS – IBM i
    - Select image – Select the latest COR image. For example, IBMi\_COR-74-09-1. The Network Install Server does not have to be the same release as the Migration Source System.
    - Select storage tier
    - IBM i Licenses – Select IBM i Cloud Storage Solution
    - Click on **Continue**
  - Profile
    - Select Machine type
    - Select Core type
    - Select Cores
    - Select Memory (GiB)
    - Click on **Continue**

- Storage volumes
    - Create and attach the recommended additional storage volume(s) for the BRMS backup data.
    - Click on **Create volume**
    - Enter Name in VSI
    - Enter Size
    - Click on **Create and attach**
    - Click on **Continue**
  - Network interfaces
    - Attach Private Network. This network connects the Migration Source System, the Network Install Server, and the Migration Target Server. A Public network may optionally be selected but is not necessary for the migration.
    - Click on **Attach**
    - Select network
    - Click on **Attach**
    - Click on **Finish**
  - Check box – I agree to the Terms and conditions
  - Click on **Create**
  - Verify message – Creating instance ... This will take some time.
3. On the 'Virtual server instances' screen
    - **Refresh** until **Building** status or **Warning** status changes to **Active** status for the new Network Install Server.
    - Click on the new Network Install Server's **name** to get the 'Virtual server instance details' screen.
  4. On the 'Virtual server instance details' screen
    - **Refresh** until System Reference Code SRC is 00000000 or A60050A0. When the SRC is 00000000, **Refresh** for one minute to make sure it stays at SRC 00000000. The Virtual server instance IPLs twice.
  5. Open console. The Cloud provides an IBM i console.
    - Click on Menu **icon**, top right corner of screen.
    - Click on **Open console**, click on **Open console** again.

6. At screen - 'Sign on'
  - User - QSECOFR
  - Password - QSECOFR (default)
  - Press **Enter** to change your password.
  - Change QSECOFR Password. 15 characters minimum.
  - Previous sign-on ... Press **Enter** to continue.
7. At screen - 'Work with Software Agreements'
  - Select Opt **5**=Display for all Licensed Programs in the list. Press **Enter**.
  - **F14**=Accept for each agreement displayed. Press **Enter**.
8. Command Entry screen displays more detailed messages
  - Type command **CALL QCMD**. Press **Enter**.
  - **F10**=Include detailed messages
9. Wait for TCP/IP configuration to complete
  - Type command **CFGTCP**. Press **Enter**.
  - **1**. Work with TCP/IP interfaces
  - **F5**=Refresh until attached network interface(s) are displayed with Line Descriptions CLOUDINITx and Line Type \*ELAN
10. Sign on to Dedicated Service Tools (DST)
  - On 'Virtual server instance details' screen
  - Click on Menu **icon**, top right corner of screen
  - Click on **IBM i operations**
  - **Run action** (21) Activate dedicated service tools
  - On console window – 'Dedicated Service Tools (DST) Sign On' screen
    - Service tools user ID - QSECOFR
    - Service tools password – QSECOFR (default)
  - Change Service Tools User Password
  - **F3**=Exit to screen 'Exit Dedicated Service Tools'
    - **1**. Exit Dedicated Service Tools (DST)
11. At screen - 'Sign On'
  - User - QSECOFR
  - Password – existing password
  - **1**. Attempt to recover previous interactive job
  - Previous sign-on ... Press **Enter** to continue.

12. Change System Value. Run command.
- **CHGSYSVAL SYSVAL(QASTLVL) VALUE(\*INTERMED)**
13. Start FTP Server. Run commands.
- **CHGTCPSVR SVRSPCVL(\*FTP) AUTOSTART(\*YES)**
  - **STRTCPSVR SERVER(\*FTP)**
14. Copy user QSECOFR to create user MIGRATE for FTP sign on
- Run command **WRKUSRPRF QSECOFR**
    - Opt **3**=Copy
    - User profile = MIGRATE
    - User password = <set MIGRATE's password>
    - Status = \*ENABLED
    - Press **Enter**.
15. At SST add additional disk unit(s) to IBM i.
- Type command **STRSST** press **Enter**
  - At screen - 'Start Service Tools (STRSST) Sign On'
    - Service tools user ID - QSECOFR
    - Service tools password - existing password
  - At screen - 'System Service Tools (SST)'
    - **3**. Work with disk units
    - **2**. Work with disk configuration
    - **2**. Add units to ASPs
    - **3**. Add units to existing ASPs
    - Specify ASP **1**. Then Press **Enter**.
    - **F10**=Ignore problems and continue
    - Press **Enter** to confirm your choice for Add units
  - At screen - 'Function Status'
    - You selected to add units
    - % complete
    - Wait for message - 'Selected units have been added successfully'.
  - **F3**=Exit to screen 'Exit System Service Tools'
    - Press **Enter** to continue ending SST.

## Create Migration Target Server in PowerVS

After creating the Migration Target Server it will be scratch installed using the BRMS backup media created on the Migration Source System that was transferred to the Network Install Server.

1. On 'Virtual server instances' screen
  - Click on **Create instance**
2. On 'Create virtual server instance' screen
  - General
    - Enter Instance name
    - Click on **Continue**
  - Boot image
    - Select OS – IBM i
    - Select image – Select image with same release as Migration Source System
    - Select storage tier
    - IBM i Licenses – Select IBM i Cloud Storage Solution
    - Click on **Continue**
  - Profile
    - Select Machine type
    - Select Core type
    - Select Cores
    - Select Memory (GiB)
    - Click on **Continue**
  - Storage volumes
    - Create and attach the size of the storage volume(s) on the Migration Source System.
    - Create and attach the recommended additional storage volume(s) for the BRMS backup data.
    - Click on **Create volume**
    - Enter Name in VSI
    - Enter Size
    - Click on **Create and attach**
    - Click on **Continue**

- Network interfaces
    - Attach Private network. This network connects the Migration Source System, the Network Install Server, and the Migration Target Server. A Public network may optionally be selected but is not necessary for the migration.
    - Click on **Attach**
    - Select network
    - Click on **Attach**
    - Click on **Finish**
  - Check box – I agree to the Terms and conditions
  - Click on **Create**
  - Verify message – Creating instance ... This will take some time.
3. On 'Virtual server instances' screen
- **Refresh** until **Building** status or **Warning** status changes to **Active** status for the new Migration Target Server. This will take some time.
  - Click on the new Migration Target Server's **name** to get the 'Virtual server instance details' screen.
4. Only for IBM i 7.4 - On 'Virtual server instance details' screen
- **Refresh** until System Reference Code is SRC 00000000 or A60050A0. When the SRC is 00000000, **Refresh** for several minutes to make sure it stays at 00000000. (The server IPL's twice).
  - Open console. The Cloud provides an IBM i console.
    - Click Menu **icon**, top right corner of screen.
    - Click **Open console**, click **Open console** again.

5. Only for IBM i 7.5 - On 'Virtual server instance details' screen
  - **Refresh** until System Reference Code is SRC C6004036, A6005008, or 00000000.
  - Open console. The Cloud provides an IBM i console.
    - Click Menu **icon**, top right corner of screen.
    - Click **Open console**, click **Open console** again.
  - At screen - 'Dedicated Service Tools (DST) Sign On'
    - Service tools user ID – QSECOFR
    - Service tools password – QSECOFR (default)
    - Change Service Tools User Password
  - At screen - 'IPL or Install the System'
    - 1. Perform an IPL
    - Licensed Internal Code IPL in Progress
    - Operating System IPL in Progress
    - Blank screen with **X SYSTEM, COMM657**, then **COMM655**
    - Operating System IPL in Progress (2nd IPL)
6. At screen - 'Sign on'
  - User - QSECOFR
  - Password - QSECOFR (default)
  - Press **Enter** to change your password.
  - Change QSECOFR Password. 15 characters minimum.
  - Previous sign-on ... Press **Enter** to continue.
7. At screen - 'Work with Software Agreements'
  - Select Opt **5**=Display for all Licensed Programs in the list. **Page down** to end of list entering **5** on each entry. Press **Enter**.
  - **F14**=Accept for each agreement displayed. Press **Enter**.
8. At screen - 'IBM i Main Menu'
  - Command Entry screen displays more detailed messages
    - Type command **CALL QCMD**. Press **Enter**.
    - **F10**=Include detailed messages



9. Wait for automatic TCP/IP configuration to complete
  - Type command **CFGTCP**. Press **Enter**.
  - At screen - 'Configure TCP/IP'
  - **1**. Work with TCP/IP interfaces
  - **F5**=Refresh until attached network interfaces(s) are displayed with Line Descriptions CLOUDINITx and Line Type \*ELAN
10. Verify connection to Network Install Server
  - Run command **PING 'n.n.n.n'**
11. Remove configured TCP/IP routes and interfaces. This adapter will be reconfigured as the Service Tools Server (STS) LAN adapter.
  - On 'Virtual server instance details' screen
    - **Page down** to 'Network interfaces', 'Private networks'
    - Record - IP address, Gateway, and CIDR
  - On console window – Type command **CFGTCP** press **Enter**
  - **2**. Work with TCP/IP routes
    - **4**=Remove to remove the **\*DFTRROUTE** for the Private network Gateway
  - **1**. Work with TCP/IP interfaces
    - Use the recorded Private network IP address
      - **10**=End to end the interface
      - Record the Line Description Name
      - **4**=Remove to remove interface
  - Type command **WRKLIND** press **Enter**
    - Remove the recorded Line Description Name
      - **8**=Work with status
      - **2**=Vary off
      - **F3**=Exit back
      - **4**=Delete
      - **F3**=Exit the **WRKLIND** command

## 12. Configure Service Tools Server LAN adapter using DST

- On 'Virtual server instance details' screen
- Click on **Menu icon**, top right corner of screen
- Click on **IBM i operations**
- **Run action** (21) Activate dedicated service tools
- Verify message – Operation successful ... (21) Activate dedicated service tools.
- On console window – 'Dedicated Service Tools (DST) Sign On' screen
  - Service tools user - QSECOFR
    - **IBM i 7.4** - Service tools password – QSECOFR (default)
    - **IBM i 7.5** - Service tools password – existing password
  - **For IBM i 7.4** - Change Service tools user password
- At screen – 'Use Dedicated Service Tools (DST) '
  - **5.** Work with DST environment
  - **2.** System devices
  - **F13**=Select STS LAN adapter
- At screen - 'Select Service Tools Server LAN Adapter'
  - Option **1**=Select press **Enter**. Select adapter with the recorded Resource Name. There is only one adapter to select.
    - Internet address = Private network IP address
    - Gateway router address = Private network Gateway
    - Subnet mask = Private Network CIDR /24 is 255.255.255.0
    - **F7**=Store
    - **F17**=Deactivate followed by activate
- **F3**=Exit to screen 'Exit Dedicated Service Tools'
  - **1.** Exit Dedicated Service Tools (DST)
- At screen - 'Sign On'
  - User - QSECOFR
  - Password – existing password
  - **1.** Attempt to recover previous interactive job
  - Previous sign-on ... Press **Enter** to continue.

13. Change System Value. Run command.

- **CHGSYSVAL SYSVAL(QASTLVL) VALUE(\*INTERMED)**
- To avoid console being disconnected by user QSYS
  - **CHGSYSVAL SYSVAL(QINACTIV) VALUE(\*NONE)**

14. Wait until the network install to add additional IBM i disk unit(s).

## Create Jump Server on IBM Cloud

For better console connectivity, create a Windows VM in the IBM Cloud. This VM can be used to download Access Client Solutions and be configured to use LAN Console

## Establish Network Connectivity to Jump Server

If the network between PowerVS and IBM Cloud hasn't been established, create the necessary connection to allow IBM i to communicate to the Windows VM.

## Prepare Migration Source System

- Open console. Migration Source System.
- At SST set 'Allow system value security changes'
  - Type command **STRSST** press **Enter**
  - At screen - 'Start Service Tools (STRSST) Sign On'
    - Service tools user ID - QSECOFR
    - Service tools password - existing password
  - 7. Work with system security
  - 'Allow system value security changes' **1=Yes** – press **Enter**
    - Verify message – Security options were changed successfully
  - **F3=Exit** to screen 'Exit System Service Tools'
    - Press **Enter** to continue ending SST.
- Change System Values. Run commands.
  - **CHGSYSVAL SYSVAL(QALWUSRDMN) VALUE(\*ALL)**
  - **CHGSYSVAL SYSVAL(QASTLVL) VALUE(\*INTERMED)**
  - To avoid console being disconnected by user QSYS
    - **CHGSYSVAL SYSVAL(QINACTITV) VALUE(\*NONE)**
- Enable use of BRMS function. Run command.
  - **SETUSRBRM USER(QSECOFR) USAGE(\*ADMIN)**
- Connect to Cloud Private network that has Network Install Server and Migration Target Server attached.

- Start FTP Server. Run commands.
  - **CHGTCP SVR SVRSPCVAL(\*FTP) AUTOSTART(\*YES)**
  - **STRTCPSVR SERVER(\*FTP)**
- Create ICC resource – FTP connection
  - Type command **WRKCFGICC**. Press **Enter**.
    - Opt **1**=Create
    - Name = MIGRATE
    - Type = FTP - press **Enter**
    - Resource description = system migration
    - Login ID = MIGRATE (user id on Network Install Server)
    - Login Password = password of user MIGRATE
    - Use compression \*NO
    - Use encryption \*NO - press **Enter**.
    - Root directory = /INSTALL on Network Install Server - **Page Down**.
    - Resource URI = IP of Network Install Server on Private Network - Press **Enter**.
- Verify ICC connection.
  - Type command **CPYTOCLD** press **F4** to prompt
    - Resource name = MIGRATE
    - Submit to batch = \*NO
    - Local file name = /QIBM/UserData/BRMS/logs/install
    - Cloud file name = test – Press **Enter**
- On Network Install Server remove test file
  - Run command **WRKLNK OBJ('/INSTALL/test\*')** Note '\*'.
    - **4**=Remove – test STMF
    - **4**=Remove – test.mta STMF

- If needed, add additional recommended storage volume(s) for the BRMS backup.
  - Type command **STRSST** press **Enter**
  - At screen – ‘Start Service Tools (STRSST) Sign On’
    - Service tools user ID - QSECOFR
    - Service tools password – existing password
  - **3.** Work with disk units
  - **2.** Work with disk configuration
  - **2.** Add units to ASPs
  - **3.** Add units to existing ASPs
  - Specify ASP **1.** Press **Enter**.
  - **F10**=Ignore problems and continue
  - Press **Enter** to confirm your choice for Add units
  - At screen – ‘Function Status’
    - You selected to add units
    - % complete
    - Wait for message - ‘Selected units have been added successfully’.
  - **F3**=Exit to screen ‘Exit System Service Tools’
    - Press **Enter** to continue ending SST.

## Full-system Migration from IBM i Migration Source System using BRMS and ICC

BRMS provides specific control groups that are used to save data and automatically move it to the Network Install Server. The control groups use different virtual media types to support the different phases of the migration. The entire migration can be accomplished without a need to create physical media.

Control group **QCLDBIPLnn** uses virtual optical media to do a SAVSYS and backups of specific product data which is required for the initial install of the Migration Target Server from the Network Install Server. Virtual optical is used for this control group because it supports network installs, whereas virtual tape does not.

- SAVSYS is required to install the operating system
- Product IBM Backup, Recovery and Media Services for i and BRMS save information is required before automatic recovery can be performed
- Product IBM TCP/IP Connectivity for i and configuration information is required to allow communications with the Network Install Server.
- Product IBM Cloud Storage Solutions for i and configuration information is required to establish connection with the Network Install Server.

Control group **QCLDBSYSnn** uses virtual tape to backup all other data on the system. Virtual tape is used for this control group because of its expanded capacity and limited restrictions versus that of virtual optical.

It is critical to run the cloud control groups in the correct order otherwise all necessary media information will not be available to do a recovery.

- FIRST run BRMS Control Group QCLDBSYS01
- SECOND run BRMS Control Group QCLDBIPL01

Together these control groups represent a full system save.

- **Open console. Migration Source System.**

## **Use the following procedures to perform a full save of the Migration Source System on the Migration Install Server**

### **Before you save any data**

#### **Choosing Compression type for IBM i releases 7.4 and later**

To set Data Compression (DTACPR) for all BRMS backups:

```
CALL PGM(QBRM/Q1AOLD) PARM('PARMOVR' '*ADD' 'DEVDTACPR'  
 '*xxxxxxx')
```

where '\*xxxxxxx' is:

- \*ZLIB
- \*HIGH
- \*MEDIUM
- \*LOW
- \*YES
- \*NO
- \*DEV

To remove the data compression override:

```
CALL PGM(QBRM/Q1AOLD) PARM('PARMOVR' '*REMOVE ' 'DEVDTACPR')
```

To display the data compression override:

```
CALL PGM(QBRM/Q1AOLD) PARM('PARMOVR' '*DISPLAY' 'DEVDTACPR')
```

#### *Notes:*

- Processing time for each backup depends on the size of the system processor, storage device capability, and the amount of data that will be saved.
- Other activities cannot be performed during these backups because the system will be in a restricted state.



- Verify that the ICC FTP resource has been created
  - Type command **WRKCFGICC** press **Enter**
  - Verify resource MIGRATE
  - **5**=Display to view connection details
- Create the BRMS backup control groups for the ICC FTP resource.
  - Run command **INZBRM \*DATA**
- Verify BRMS backup control groups were created
  - Type command **WRKCTLGBRM** press **Enter**
  - Verify control groups QCLDBSYS01, QCLDBIPL01
- Put the Migration Source System in restricted state
  - Run command **ENDSBS SBS(\*ALL) DELAY(120)**
- Verify system is in restricted state
  - Type command **WRKSBS**. Press **Enter**.
  - **F5**=Refresh until message 'System ended to restricted condition.' is displayed.

```

Connected (encrypted) to: null
Work with Subsystems
System: DMSOURCE
Type options, press Enter.
4=End subsystem 5=Display subsystem description
8=Work with subsystem jobs

Opt  Subsystem  Total Storage (M)  -----Subsystem Pools-----
  _  QBASE      .00          2

```

Bottom

```

Parameters or command
====>
F3=Exit  F5=Refresh  F11=Display system data  F12=Cancel
F14=Work with system status
System ended to restricted condition.
MA* A 09/003

```

PF1	PF2	PF3	PF4	PF5	PF6	Enter	PA1	Attn	Insert	Backtab	NewL...
PF7	PF8	PF9	PF10	PF11	PF12	Clear	PA2	SysReq	Delete	FidExit	NextP...

- Note: If a Break Message is seen during the Backup, press **Enter** once to return to the screen where the **STRBKUBRM** was entered to monitor progress of the backup.
- Run the First backup command. QCLDBSYS01 control group is first.
  - **STRBKUBRM CTLGRP(QCLDBSYS01) SBMJOB(\*NO)**
- Check the backup for errors. Its normal to have some errors:
  - Objects not saved. (Some objects are not required for the recovery).
  - Media not transferred to Network Install Server. (This will be completed after the Second backup).

```

Connected (encrypted) to: null
Command Entry                                     DMSOURCE
Request level: 4
All previous commands and messages:
Save of list *LINK complete.
Control group QCLDBSYS01 bypassed automatic save of media information.
Usage limit of 0 exceeded. Grace period expires in 69 days on 12/06/23.
Usage limit of 0 exceeded. Grace period expires in 69 days on 12/06/23.
The protocol required to support the specified address family is not
available at this time.
Open server connection failed.
Calling exit program Q1ACLDXIT in library QBDM.
Unable to establish connection to the FTP server.
Cloud operation failed for volume Q26659.
Cloud operation failed for volume Q26659.
Control group QCLDBSYS01 type *BKU completed with errors.
Bottom
Type command, press Enter.
==> strbkubrm ctlgrp(QCLDBSYS01) sbmjob(*no)

F3=Exit   F4=Prompt   F9=Retrieve   F10=Exclude detailed messages
F11=Display full   F12=Cancel   F13=Information Assistant   F24=More keys
MA*      A                                           18/007

```

- After First backup, verify system is still in a restricted state
  - Type command **WRKSBS**. Press **Enter**.
  - Verify message 'System ended to a restricted condition.'
  - If system not restricted
    - Run command **ENDSBS SBS(\*ALL) DELAY(120)**

**Note:**

**The second backup is using media class QCLDVRTOPT, the BRMS default is to create 10 virtual volumes to backup to optical.**

- Since optical devices do not have an exit program interface to handle media switching while a backup is running, the backup command must provide enough volumes to successfully hold the backup data. A symptom that indicates the backup does not fit on the initial number of volumes provided is the backup will fail with message BRM4301 'Volume list exhausted'.

Set Number of Optical Volumes for Automatic Transfers

- The number of virtual optical volumes to create can be specified by running the following command: where - nn is the number of volumes to auto create. This value must be between 01 and 75.

**CALL PGM(QBRM/Q1AOLD) PARM('NUMOPTVOLS' '\*SET ' 'nn')**

- The number of volumes to create can be displayed by running the following command:

**CALL PGM(QBRM/Q1AOLD) PARM('NUMOPTVOLS' '\*DISPLAY')**

- The number of volumes to create can be reset to the default value of 10 by running the following command:

**CALL PGM(QBRM/Q1AOLD) PARM('NUMOPTVOLS' '\*REMOVE')**

- Run the Second backup command. QCLDBIPL01 is second.
  - **STRBKUBRM CTLGRP(QCLDBIPL01) SBMJOB(\*NO)**
- Check the backup for errors. It's normal to have some errors.
  - Objects not saved. (Some objects are not required for the recovery).
  - Media not transferred. (This will be completed in the following steps).

```

Command Entry                                     DMSOURCE
Request level: 4
All previous commands and messages:
Image catalog entry 8 removed from image catalog Q1ACQ05361.
Image catalog Q1ACQ05361 is already unloaded.
Image catalog entry 10 removed from image catalog Q1ACQ05361.
Image catalog Q1ACQ05361 is already unloaded.
Image catalog entry 7 removed from image catalog Q1ACQ05361.
Usage limit of 0 exceeded. Grace period expires in 69 days on 12/06/23.
Job 014061/QSECOFR/LO00000022 submitted to job queue QICCJOBQ in library
QICC.
Usage limit of 0 exceeded. Grace period expires in 69 days on 12/06/23.
Job 014063/QSECOFR/LO00000023 submitted to job queue QICCJOBQ in library
QICC.
Control group QCLDBIPL01 type *BKU completed with errors.
Type command, press Enter.
====> strbkubrm ctlgrp(QCLDBIPL01) sbmjob(*no)
Bottom

F3=Exit   F4=Prompt   F9=Retrieve   F10=Exclude detailed messages
F11=Display full   F12=Cancel   F13=Information Assistant   F24=More keys

MA*  A 18/007
PF1 PF2 PF3 PF4 PF5 PF6 Enter PA1 Attn Insert Backtab NewLi...
PF7 PF8 PF9 PF10 PF11 PF12 Clear PA2 SysReq Delete FldExit NextP...

```

- After backups are complete, remove the data compression override if this was configured before saving any data.

**CALL PGM(QBRM/Q1AOLD) PARM('PARMOVR' '\*REMOVE ' 'DEVDTACPR')**

CAUTION: If the above command is not run, then data compression override is persistent for ALL future backups done using BRMS and will remain so until removed.

- Check the status of the media transfer. **Success**, **Failed**, or **Active**.
  - Type command **WRKSTSICC STATUS(\*ALL)** press **Enter**
  - If the Status is **Failed**, this is normal. Any **Failed** volumes will be transferred in the next step.
  - **F5**=Refresh until **Active** transfers have successfully completed with status **Success** before proceeding to the next step.

```

Work with ICC Status                                     DMSOURCE

Type options, press Enter.
4=End

----- Job -----
Opt File name/Time  Name      User      Number  Status  Oper      Graphic% /
-----  -----  -----  -----  -----  -----  -----
--- /tmp/sshd.pid    09/27/23 20:43 DSP01     QSECOFR  011828  Failed   TOCLD    0
--- /tmp/sshd.pid    09/27/23 21:03 DSP01     QSECOFR  011841  Success  TOCLD    *****
--- /QIBM/UserData/BRMS/cloud/Q1ACQ26659/Q26659  09/29/23 01:54 DSP01     QSECOFR  013813  Failed   TOCLD    0
--- /QIBM/UserData/BRMS/cloud/Q1ACQ05361/Q05361  09/29/23 02:10 L000000023 QSECOFR  014063  Active   TOCLD    **
--- /QIBM/UserData/BRMS/cloud/Q1ACQ05361/Q07178  09/29/23 02:10 L000000022 QSECOFR  014061  Active   TOCLD    **
                                                    Bottom

Command
====>
F3=Exit      F4=Prompt    F5=Refresh   F9=Retrieve   F10=Command entry
F12=Cancel   F15=Work Subsystem Jobs  F17=Subset
Subset: Age in days:7

MA*  A                                                    08/002
-----
PF1  PF2  PF3  PF4  PF5  PF6  Enter  PA1  Attn  Insert  Backtab  NewLI...
PF7  PF8  PF9  PF10 PF11 PF12  Clear  PA2  SysReq Delete  FidExit  NextP...

```

- Transfer any Failed Volumes to the Network Install Server and complete backup processing.
  - Run command **STRMNTBRM**



- Verify transfer complete.
  - Type command **WRKSTSICC STATUS(\*ALL)** press **Enter**
  - Volume Name, Status, and Complete% will be displayed for each file transfer.
  - **F5**=Refresh until **Active** transfers have successfully completed with status **Success** before proceeding to the next step.

```

Work with ICC Status                                DMSOURCE

Type options, press Enter.
4=End

----- Job -----
Opt File name/Time  Name      User      Number  Status  Oper      Graphic% /
-----|-----|-----|-----|-----|-----|-----|
  /tmp/sshd.pid
09/27/23 21:03 DSP01      QSECOFR   011841  Success TOCLD     *****
/QIBM/UserData/BRMS/cloud/Q1ACQ26659/Q26659
09/29/23 01:54 DSP01      QSECOFR   013813  Failed  TOCLD     0
/QIBM/UserData/BRMS/cloud/Q1ACQ05361/Q05361
09/29/23 02:10 L00000023 QSECOFR   014063  Success TOCLD     *****
/QIBM/UserData/BRMS/cloud/Q1ACQ05361/Q07178
09/29/23 02:10 L00000022 QSECOFR   014061  Success TOCLD     *****
/QIBM/UserData/BRMS/cloud/Q1ACQ26659/Q26659
09/29/23 02:15 L00000024 QSECOFR   014122  Active  TOCLD     ***1
                                                                Bottom

Command
====>
F3=Exit      F4=Prompt    F5=Refresh   F9=Retrieve   F10=Command entry
F12=Cancel   F15=Work Subsystem Jobs  F17=Subset

Subset: Age in days:7

MA*  A          MW          08/002
PF1  PF2  PF3  PF4  PF5  PF6  Enter  PA1  Attn  Insert  Backtab  NewLI...
PF7  PF8  PF9  PF10 PF11 PF12  Clear  PA2  SysReq Delete  FldExit  NextP...

```

- Verify that all the Volumes used for the Full-System Backup no longer have a status of \*TRF. The status should be \*ACT. Location should be **MIGRATE**.
  - Type command **WRKMEDBRM** press **Enter**
  - Record the names of media class QCLDVRTOPT. These optical volumes will be manually added to an image catalog on the Network Install Server.
  - Record the names of media class QCLDVRTTAP. These tape volumes will be manually moved to the Migration Target Server.

```

Work With Media
System: DMSOURCE
Position to . . . . . Starting characters
Type options, press Enter.
1=Add 2=Change 4=Remove 5=Display 6=Work with serial set 7=Expire
8=Move 9=Remove volume error status 10=Reinitialize ...

  Opt  Volume      Status  Creation  Expiration  Location  Move  Media  Dup
      Serial      Status  Date      Date        Location  Date  Class  Sts
  ---  ---
  ---  Q05361 +  *ACT  09/29/23  10/20/23  MIGRATE  09/29/23  QCLDVRTOPT
  ---  Q07178 +  *ACT  09/29/23  10/20/23  MIGRATE  09/29/23  QCLDVRTOPT
  ---  Q26659   *ACT  09/29/23  10/20/23  MIGRATE  09/29/23  QCLDVRTTAP

Parameters or command:
====>
F3=Exit F4=Prompt F5=Refresh F11=Volume system F12=Cancel F17=Top
F18=Bottom F23=More options
(C) COPYRIGHT IBM CORP. 1998, 2007. ALL RIGHTS RESERVED.
MA* A MW 11/002
  
```

PF1	PF2	PF3	PF4	PF5	PF6	Enter	PA1	Attn	Insert	Backtab	NewU...
PF7	PF8	PF9	PF10	PF11	PF12	Clear	PA2	SysReq	Delete	FidExit	NextP...

A Recovery Report is used to assist with successful recoveries from save media that has been transferred to the Network Install Server.

- To generate a Recovery Report run command
  - **STRRCYBRM OPTION(\*CTLGRP) ACTION(\*REPORT)  
CTLGRP((QCLDBSYS01 1) (QCLDBIPL01 2))**
- To review the Recovery Report
  - Type command **WRKJOB** press **Enter**
  - **4.** Work with spooled files
  - **Page down** to find the last instance of spooled file QP1ARCY
  - **5=Display**

#### NOTES:

- It is important to review the Recovery Report to ensure it is complete. **If any of the media produced during the backup has not been successfully transferred to the Network Install Server, it will not be included in the recovery report.**
- The CTLGRP parameter that was specified on the STRRCYBRM command above will help identify objects that were saved to volumes that have not been transferred to the Network Install Server. If objects are on volumes that were not included in the recovery report, they will be listed in a missing objects Attention section near top of the report.
- Once the Recovery Report has been verified, the report should be stored in a safe location so it can be referred to during the recovery on the Migration Target Server.
- IBM i Access Client solutions, option Printer Output, can be used to display and download the Recovery Report as a PDF file.



## On Network Install Server

On the Network Install Server create an image catalog that contains the BRMS created optical media to perform a network install on the Migration Target System.

1. Determine the Directory that BRMS stored the backup information into.
  - Run command **WRKLNK OBJ('/INSTALL/QBRMS\*')**. Note '\*'.  
• QBRMS\_xxxxxxx is used to represent that Directory in this document.

```
Work with Object Links

Directory . . . . : /INSTALL

Type options, press Enter.
 2=Edit  3=Copy  4=Remove  5=Display  7=Rename  8=Display attributes
11=Change current directory ...

Opt  Object link      Type  Attribute  Text
___  QBRMS_KJBRMSX7    DIR
```

2. Create Virtual Optical Device called 'INSTALL'. Run command.

**CRTDEVOPT DEVD(INSTALL) RSRCTYPE(\*VRT) LCLINTNETA(\*NONE)**

```
Create Device Desc (Optical) (CRTDEVOPT)

Type choices, press Enter.

Device description . . . . . > INSTALL      Name
Resource name . . . . . > *VRT           Name, *NONE, *VRT...
Device type . . . . . > *RSRCNAME       *RSRCNAME, 63BC, 63B8, 632A
Local internet address . . . . . > *NONE   *NONE, *SRVLAN
```

Vary on Virtual Optical Device. Run command.

**VRYCFG CFGOBJ(INSTALL) CFGTYPE(\*DEV) STATUS(\*ON)**

3. Create Image Catalog. Run command.

**CRTIMGCLG IMGCLG(SYSIPL) DIR('/INSTALL/QBRMS\_XXXXXXXX')**

```
                Create Image Catalog (CRTIMGCLG)
Type choices, press Enter.
Image catalog . . . . . > SYSIPL          Name
Directory . . . . . > '/install/QBRMS_Q05361'
-----
Image catalog type . . . . . *OPT          *OPT, *TAP
Create directory . . . . . *YES          *YES, *NO
Import image catalog . . . . . *NO        *NO, *YES
Catalog ASP threshold . . . . . *CALC     1-99, *CALC, *MAX
Add virtual volumes . . . . . *NONE       1-256, *NONE, *DIR
```

4. Add Image Catalog Entry for each optical volume that was displayed using the **WRKMEDBRM** command on the Migration Source System. Those optical volume names were recorded.

Run command **ADDIMGCLGE** for each optical volume.

- For example, volume Q06990
- **ADDIMGCLGE IMGCLG(SYSIPL) FROMFILE(Q06990)  
TOFILE(Q06990)**

```
                Add Image Catalog Entry (ADDIMGCLGE)
Type choices, press Enter.
Image catalog . . . . . > SYSIPL          Name
From optical device, or . . . . .          Name, *VOL
From image file . . . . . > Q06990
-----
To image file . . . . . > Q06990
-----
Image catalog index . . . . . *AVAIL     1-256, *AVAIL
Replace catalog entry . . . . . *NO      *NO, *YES, *INSERT
Text 'description' . . . . . *GEN
```

5. Load Image Catalog. Run command.

- **LODIMGCLG IMGCLG(SYSIPL) DEV(INSTALL)**

```
Load or Unload Image Catalog (LODIMGCLG)

Type choices, press Enter.

Image catalog . . . . . > SYSIPL      Name
Option . . . . . > *LOAD          *LOAD, *UNLOAD
Virtual device . . . . . > INSTALL   Name
Write protect . . . . . > *DFT      *DFT, *ALL, *NONE
Library mode . . . . . > *NO        *NO, *YES
```

6. Verify Image Catalog.

- Type command **WRKIMGCLG** press **Enter**
- Select Option **10**=Verify for image catalog "SYSIPL"
  - Verify type = \*LIC
  - Sort image catalog = \*YES
  - Network file server share = \*YES - press **Enter**

```
Verify Image Catalog (VFYIMGCLG)

Type choices, press Enter.

Image catalog . . . . . > SYSIPL      Name
Verify type . . . . . > *LIC          *UPGRADE, *PTF, *OPSYS...
Sort image catalog . . . . . > *YES      *NO, *YES
Network file server share . . . . > *YES      *NO, *YES
Language . . . . . > *DFT          2901-2999, *DFT
```

- Work with Entries
  - Select Option **12**=Work with entries for image catalog “SYSIPL”
  - Verify the Directory
  - Verify the status (Mounted or Loaded)

```

Work with Image Catalog Entries

Catalog . . . : SYSIPL          Status . . . : Ready
Type . . . . : Optical        Device . . . : INSTALL

Directory . . . . : /INSTALL/QBRMS_KJBRMS

Type options, press Enter.
  1=Add   2=Change   4=Remove  6=Mount  8=Load  9=Unload
 10=Initialize volume 12=Work with volume

Opt  Index  Status  Image File Name
---  *AVAIL
---   1  Mounted  Q18883
---   2  Loaded  Q20701

```

Verify image catalog information. Run command.

- **WRKLNK OBJ('/INSTALL/QBRMS\_XXXXXXXX/\*')** Note '/'
- Verify that a BOOTP DIR was created
- Verify that a VOLUME\_LIST STMF was created

```

Work with Object Links

Directory . . . . : /install/QBRMS_KJBRMS

Type options, press Enter.
  2=Edit  3=Copy  4=Remove  5=Display  7=Rename  8=Display
 11=Change current directory ...

Opt  Object link      Type  Attribute  Text
---  ---
---  BOOTP             DIR
---  QIMGCLG           STMF
---  Q30731.mta       STMF
---  VOLUME_LIST      STMF

```

- End NFS Servers. Run command.
  - **ENDNFSSVR SERVER(\*ALL)**
  
- Change Object Authority. Run command.
  - **CHGAUT OBJ('/INSTALL/QBRMS\_XXXXXXXX')**  
**USER(\*PUBLIC) DTAUT(\*RWX) SUBTREE(\*ALL)**
  
- Start NFS Servers. Run command
  - **STRNFSSVR SERVER(\*ALL)**
  
- End TFTP server. Run command.
  - **ENDTCPSVR SERVER(\*TFTP)**
  
- Change TFTP Attributes. Run command.
  - **CHGTFTP AUTOSTART(\*YES) ALTSRCDIR('/INSTALL/QBRMS\_XXXXXXXX')**

Specify the Alternate source directory where the volumes are stored

- Change Object Authority. Run command.
  - **CHGAUT OBJ('/INSTALL/QBRMS\_XXXXXXXX')**  
**USER(QTFTP) DTAUT(\*RX) SUBTREE(\*ALL)**
  
- Start TCP Server TFTP. Run command.
  - **STRTCPSVR SERVER(\*TFTP)**

## Perform Network Install On Migration Target Server

On the Migration Target Server create a virtual optical device to perform a network install using the Network Install Server.

- Create Virtual Optical Device
  - Run command **CRTDEVOPT** press **F4** to prompt
  - Device description = **INSTALL**
  - Resource name = **\*VRT** - press **Enter**
  - Local internet address = **\*SRVLAN** - press **Enter**
  - Remote internet address = IP address of Network Install Server
  - Network image directory = **'/INSTALL/QBRMS\_xxxxxxx'** where xxxxxxxx is the name added by BRMS – press **Enter**

```
Create Device Desc (Optical) (CRTDEVOPT)
Type choices, press Enter.
Device description . . . . . > INSTALL      Name
Resource name . . . . . > *VRT           Name, *NONE, *VRT...
Device type . . . . . > *R SRCNAME      *R SRCNAME, 63BC, 63B8, 632A..
Local internet address . . . . . > *SRVLAN  *NONE, *SRVLAN
Remote internet address . . . . . > '192.168.6.117'
Network image directory . . . . . > '/INSTALL/QBRMS_xxxxxxx'
User ID number . . . . . > 0           0-4294967295
Group ID number . . . . . > 0           0-4294967295
Online at IPL . . . . . > *YES         *YES, *NO
Message queue . . . . . > *SYSOPR      Name
Library . . . . . > *SYSOPR          Name, *LIBL, *CURLIB
Text 'description' . . . . . > *BLANK
```

- Vary on device. Run command.
  - **VRYCFG CFGOBJ(INSTALL) CFGTYPE(\*DEV) STATUS(\*ON)**

- Verify access to the remote image catalog. Run command.
  - **WRKIMGCLGE IMGCLG(\*DEV) DEV(INSTALL)**
  - Verify directory /INSTALL/QBRMS\_xxxxxxx
  - Verify volumes mounted or loaded

```

syd05-console.power-iaas.cloud.ibm.com/console/index.html?path=%3Ftoken%3D6c86ce8d-d3ce-4c29-8112-6ab7522b7ed3
Connected (encrypted) to: null

Work with Image Catalog Entries

Catalog . . . : *RMTCLG           Device . . . : INSTALL
Type . . . . : Remote           Device Status: Active
Directory . . : /INSTALL/QBRMS_DMSX75

System: DMTX75X1

Type options, press Enter.
 6=Mount  12=Work with volume

Opt  Index  Status  Volume  Access
---  ---  ---  ---  ---
   *AVAIL
   1  Mounted  Q13681  *READONLY
   2  Loaded  Q32337  *READONLY

F3=Exit  F5=Refresh  F12=Cancel  F22=Display entire field

Bottom

MA*  A  19/071

```

PF13	PF14	PF15	PF16	PF17	PF18	Enter	Rule	EndFld	ErInp	Reset	DUP ...
PF19	PF20	PF21	PF22	PF23	PF24	Clear	AltCur	ErFld	ErEOF	NextPad	

## Install Licensed Internal Code LIC on Migration Target Server using the Network Install Server

### 1. Start Network Install.

- Type command **STRNETINS** press **F4** to prompt
- Network optical device = **INSTALL**
- Installation option = **\*LIC**
- Keylock mode = **\*MANUAL** - press **Enter**, press **Enter**.

```
Start Network Install (STRNETINS)

Type choices, press Enter.

Network optical device . . . . . > INSTALL      Name
Installation option . . . . . > *LIC           *ALL, *OPSYS, *LNG, *LIC
Keylock mode . . . . . > *MANUAL          *NORMAL, *MANUAL
IPL source . . . . . > B                 B, A
Language . . . . . > *DFT             2901-2999, *DFT
Confirm . . . . . > *YES             *YES, *NO
```

Press **F16** to confirm power down

```
Confirm Power Down of System

System . . . . . : I9TARGET

To confirm power down, press F16.
To cancel, press F12.

F12=Cancel  F16=Confirm

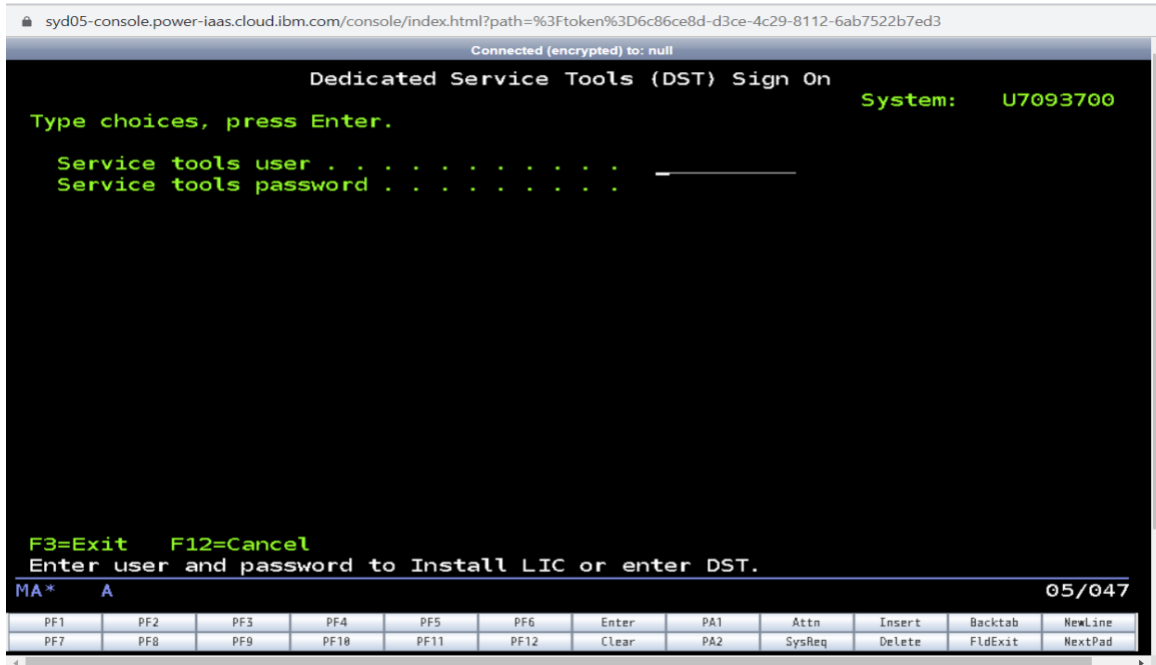
Bottom
```

**X SYSTEM, COMM657**, then **COMM655** displayed for about 10 minutes.



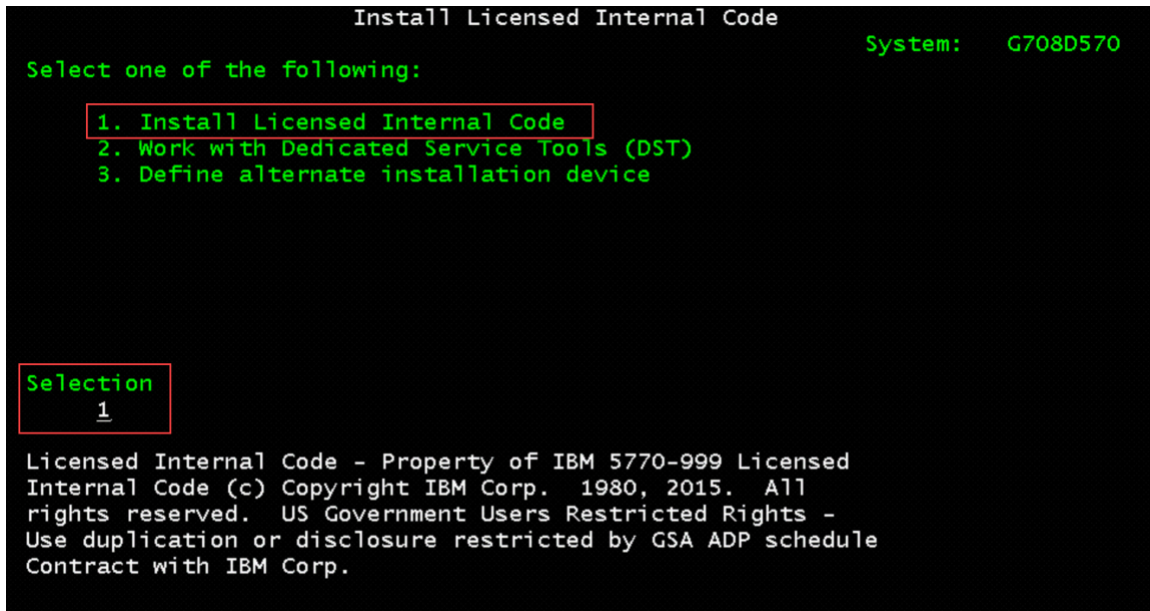
## 2. IBM i 7.5-----At screen – ‘Dedicated Service Tools (DST) Sign On’

- Service tools user – QSECOFR
- Service tools password – existing password



## 3. At screen - ‘Install Licensed Internal Code’

- Select 1. Install Licensed Internal Code



#### 4. Select 2. Install Licensed Internal Code and Initialize System

```
Install Licensed Internal Code (LIC)

Disk selected to write the Licensed Internal Code to:
  Serial Number  Type  Model  I/O Bus  Controller  Device
  Y4331700E0A   2145  050    0      0          0

Select one of the following:

  1. Restore Licensed Internal Code
  2. Install Licensed Internal Code and Initialize system
  3. Install Licensed Internal Code and Recover Configuration
  4. Install Licensed Internal Code and Restore Disk Unit Data
  5. Install Licensed Internal Code and Upgrade Load Source

Selection
  2

F3=Exit      F12=Cancel
```

#### 5. Press **F10** to Continue

```
Install LIC and Initialize System - Confirmation

Warning:
  All data on this system will be destroyed and the Licensed
  Internal Code will be written to the selected disk if you
  choose to continue the initialize and install.

Return to the install selection screen and choose one of the
other options if you want to perform some type of recovery
after the install of the Licensed Internal Code is complete.

Press F10 to continue the install.
Press F12 (Cancel) to return to the previous screen.
Press F3 (Exit) to return to the install selection screen.

F3=Exit      F10=Continue  F12=Cancel
```

It takes about 55 minutes to initialize the load source disk and 5 minutes for the Licensed Internal Code install to complete.

```

-                               Initialize the Disk - Status
The load source disk is being initialized.

Elapsed time in minutes . . . . . :      2.5

Please wait.

Wait for next display or press F16 for DST main menu
```

```

-                               Install Licensed Internal Code - Status
Install of the Licensed Internal Code in progress.

Percent complete |-----+-----+
| ██████████ 60% |-----+-----+
+-----+-----+

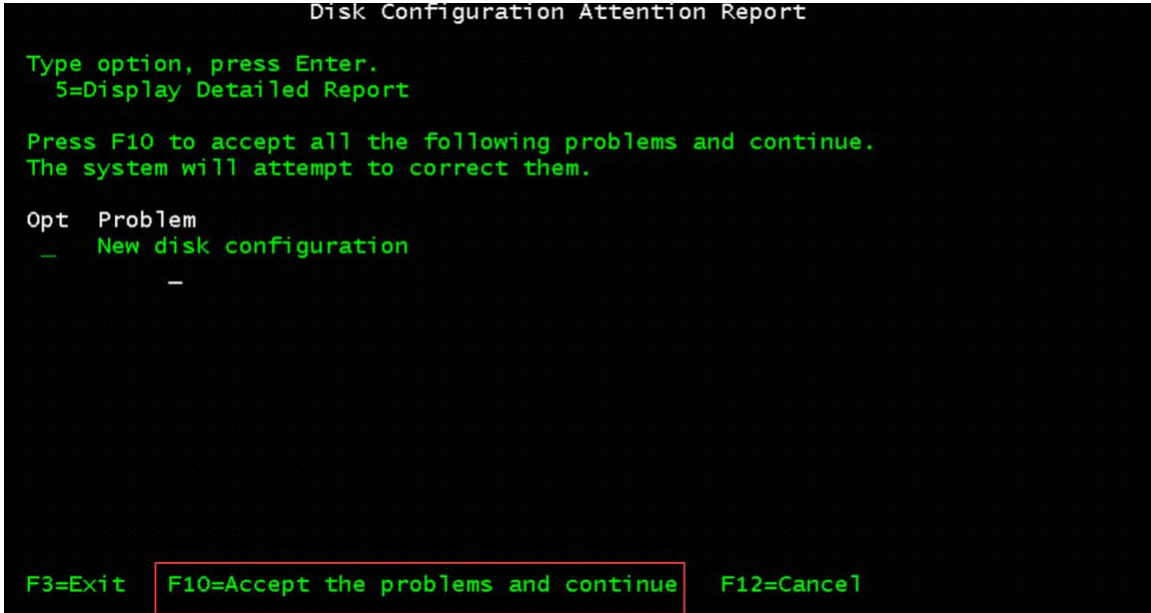
Elapsed time in minutes . . . . . :      0.5

Please wait.

Wait for next display or press F16 for DST main menu
```

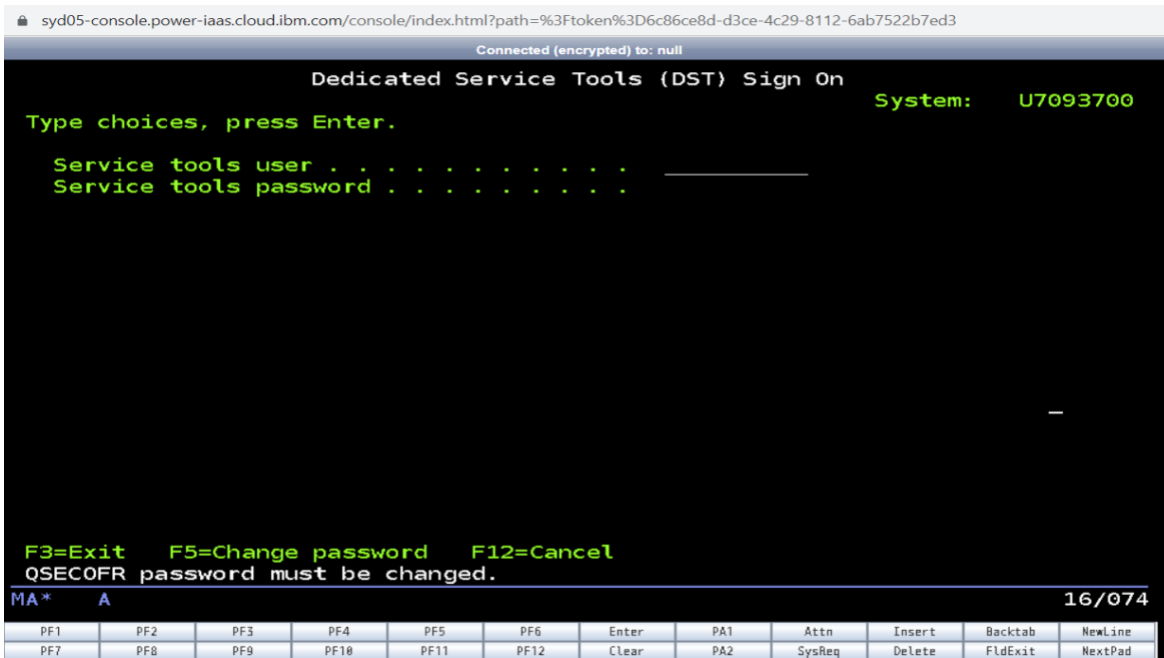
X\_SYSTEM, COMM657, COMM655, then blank screen

6. Press **F10** to Accept the problems and continue



7. IBM i 7.5-----At screen - 'Dedicated Service Tools (DST) Sign On'

- Service tools user – QSECOFR
- Service tools password – QSECOFR (default)
- Change Service Tools User ID Password



8. At screen - 'IPL or Install the System'
- Add additional disk units for BRMS
  - 3. Use Dedicated Service Tools (DST)

```
IPL or Install the System                                     System:  G708D570
Select one of the following:
1. Perform an IPL
2. Install the operating system
3. Use Dedicated Service Tools (DST)
4. Perform automatic installation of the operating system
5. Save Licensed Internal Code

Selection
  3

Licensed Internal Code - Property of IBM 5770-999 Licensed
Internal Code (c) Copyright IBM Corp. 1980, 2015. All
rights reserved. US Government Users Restricted Rights -
Use duplication or disclosure restricted by GSA ADP schedule
Contract with IBM Corp.
```

#### IBM i 7.4-----At screen – 'Dedicated Service Tools (DST) Sign On'

- Service tools user - QSECOFR
- Service tools password – QSECOFR (default)

```
Dedicated Service Tools (DST) Sign On                       System:  G708D570
Type choices, press Enter.
Service tools user . . . . . qsecofr
Service tools password . . . . . _
```



## 9. IBM i 7.4-----At screen - 'Change Service Tools User Password'

- Change the service tools user ID QSECOFR password

```
Change Service Tools User Password
System: G708D570
Service tools user ID name . . . . . : QSECOFR
Password last changed . . . . . : 06/01/20

Type choices, press Enter.
Current password . . . . . _

New password . . . . .

New password (to verify) . . . . .

F3=Exit F12=Cancel
Password is correct but set to expired
```

## 10. At screen - 'Use Dedicated Service Tools (DST)'

- 4. Work with disk units

```
Use Dedicated Service Tools (DST)
System: G708D570

Select one of the following:

  1. Perform an IPL
  2. Install the operating system
  3. Work with Licensed Internal Code
  4. Work with disk units
  5. Work with DST environment
  6. Select DST console mode
  7. Start a service tool
  8. Perform automatic installation of the operating system

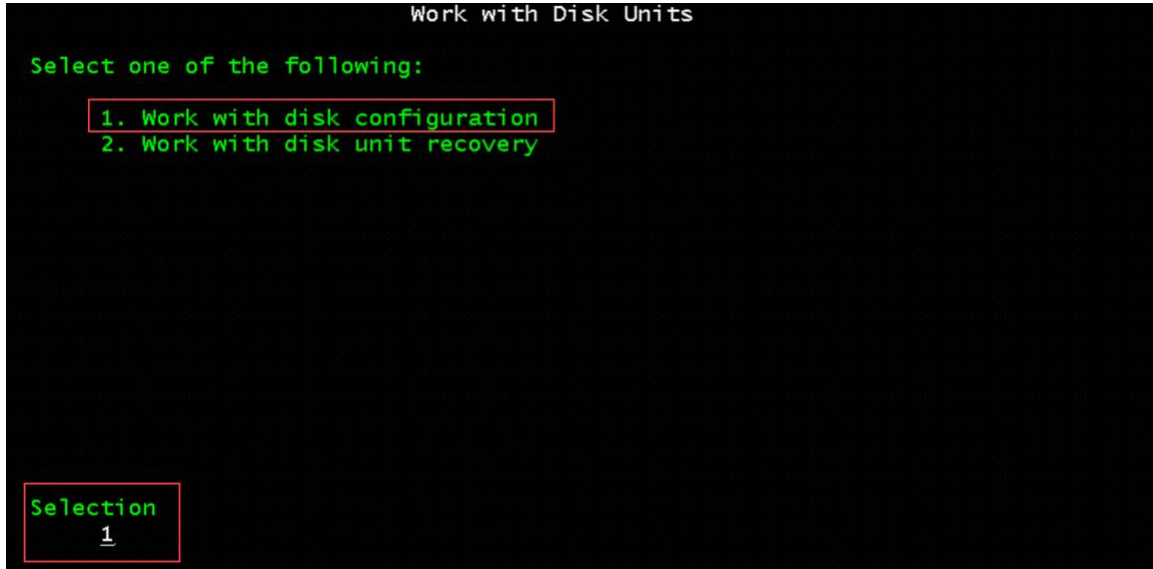
 10. Work with remote service support

 13. Work with system security
 14. End batch restricted state

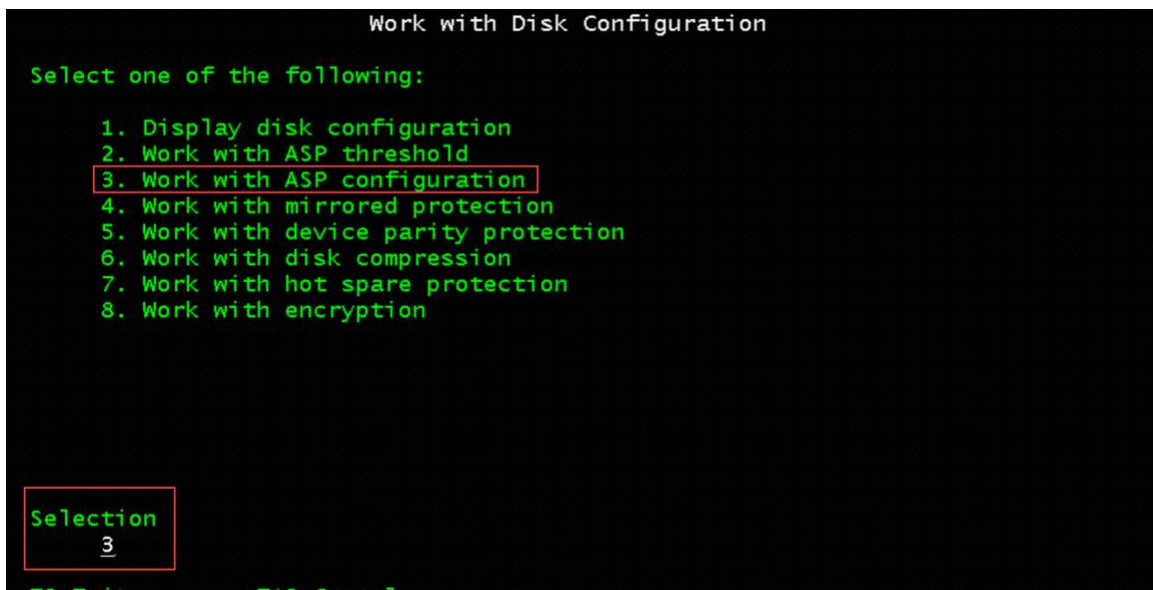
Selection
  4_

F3=Exit F12=Cancel
```

11. Select 1. Work with disk configuration



12. Select 3. Work with ASP configuration



13. Select 3. Add units to ASPs

```
Work with ASP Configuration

Select one of the following:

1. Display disk configuration capacity
2. Delete user ASP
3. Add units to ASPs
4. Delete ASP data
5. Change ASP storage threshold
6. Move units from one ASP to another
7. Work with removing units from configuration
8. Add units to ASPs and balance data

Selection
3
```

14. Select 3. Add units to existing ASPs

```
Add Units to ASPs

Select one of the following:

1. Create unencrypted ASPs
2. Create encrypted ASPs
3. Add units to existing ASPs

Selection
3
```



15. Specify ASP 1 for each unit to add – then press **Enter**

```
Specify ASPs to Add Units to
Specify the existing ASP to add each unit to.
Specify ASP 1
Serial Number      Type Model Capacity Resource Name
Y43317000E0D      2145 050 114532 DMP003
```

16. Press **F10** to Ignore problems and continue

```
Problem Report
Note: Some action for the problems listed below may need to
be taken. Please select a problem to display more detailed
information about the problem and to see what possible
action may be taken to correct the problem.
Type option, press Enter.
5=Display Detailed Report
OPT Problem
_ Unit possibly configured for Power PC AS
F3=Exit F10=Ignore problems and continue F12=Cancel
```

17. Press **Enter** to confirm the choice for Add units

```

-                                     Confirm Add Units
Add will take several minutes for each unit. The system will
have the displayed protection after the unit(s) are added.
Press Enter to confirm your choice for Add units.
Press F9=Capacity Information to display the resulting capacity.
Press F10=Confirm Add and Balance data on units.
Press F12=Cancel to return and change your choice.

ASP Unit   Serial          Type Model  Resource      Protection      Hot Spare
1          Number              Name          Name          Protection      Protection
1          1  Y43317000E0A   2145  050  DMP001   Unprotected      N
2          2  Y43317000E0D   2145  050  DMP003   Unprotected      N

F9=Resulting Capacity          F10=Add and Balance
F11=Display Encryption Status  F12=Cancel

-                                     Function Status
You selected to add units.

                                     7 % Complete

```

Wait for message – ‘Selected units have been added successfully’

```
                Add Units to ASPs

Select one of the following:

    1. Create unencrypted ASPs
    2. Create encrypted ASPs
    3. Add units to existing ASPs

Selection
    -

F3=Exit      F12=Cancel
Selected units have been added successfully
```

18. Verify disk units have been added

- F3=Exit to screen ‘Work with Disk Units’
- 1. Work with disk configuration

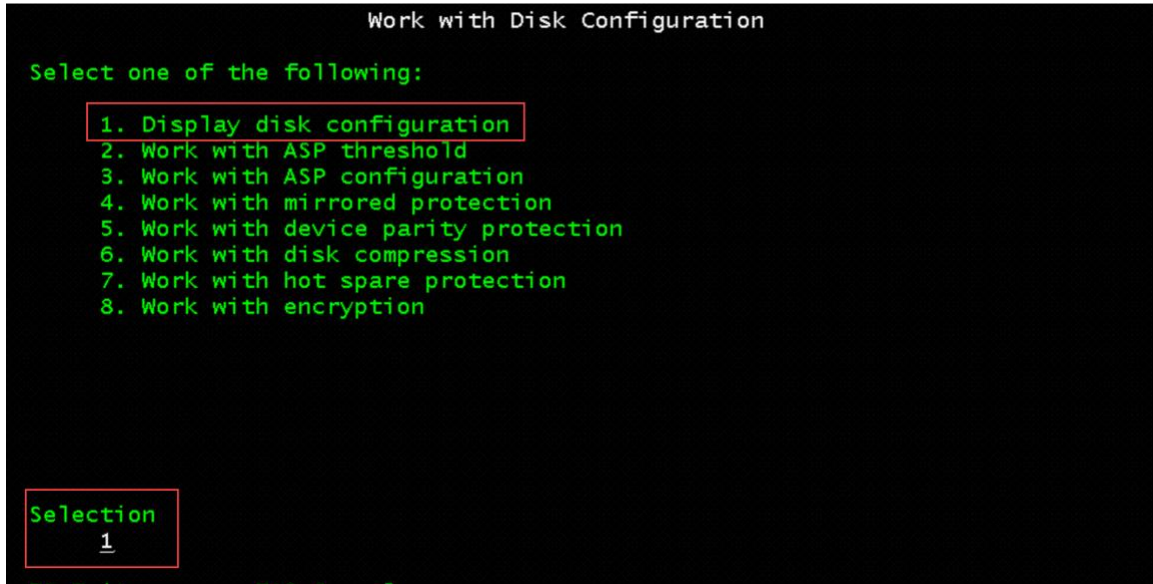
```
                Work with Disk Units

Select one of the following:

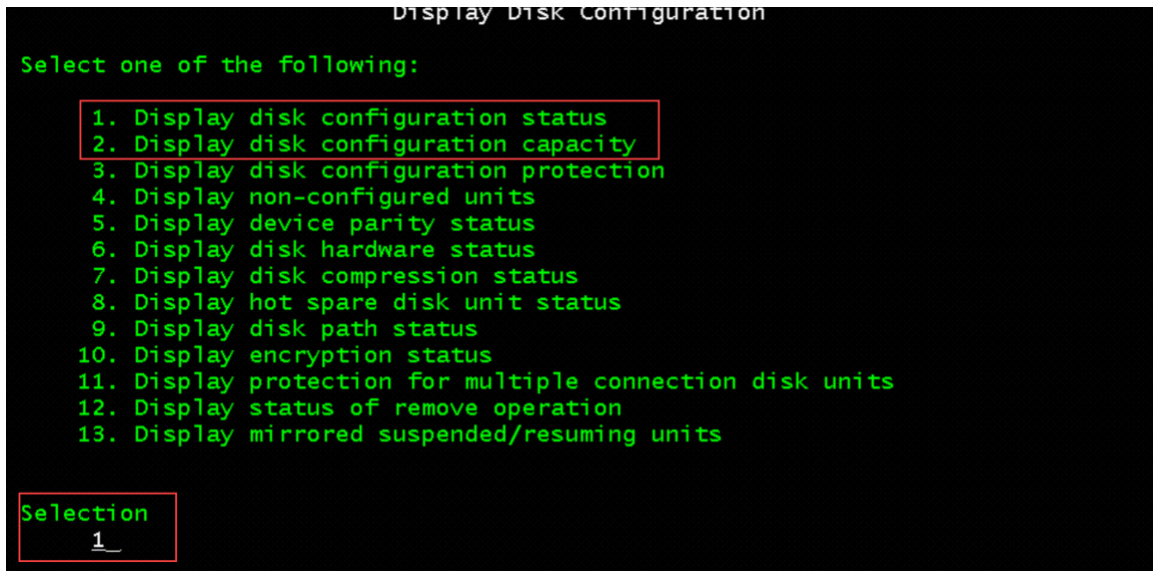
    1. Work with disk configuration
    2. Work with disk unit recovery

Selection
    1
```

19. Select 1. Display disk configuration



20. Select 1. Display disk configuration status.



Display Disk Configuration Status

ASP Unit	Serial Number	Type	Model	Resource Name	Status	Hot Spare Protection	
1					Unprotected		
	1	Y43317000E0A	2145	050	DMP001	Configured	N
	2	Y43317000E0D	2145	050	DMP003	Configured	N

## 21. Press F3=Exit to screen 'Exit Dedicated Service Tools'

- 1. Exit Dedicated Service Tools (DST)

```
Exit Dedicated Service Tools                                     System: G708D570
Select one of the following:
1. Exit Dedicated Service Tools (DST)
2. Resume Dedicated Service Tools
```

## 22. IBM i 7.5-----At screen - 'Dedicated Service Tools (DST) Sign On'

- Service tools user – QSECOFR
- Service tools password – existing password

```
syd05-console.power-iaas.cloud.ibm.com/console/index.html?path=%3Ftoken%3D6c86ce8d-d3ce-4c29-8112-6ab7522b7ed3
Connected (encrypted) to: null
Dedicated Service Tools (DST) Sign On                          System: U7093700
Type choices, press Enter.
Service tools user . . . . .
Service tools password . . . . .

F3=Exit  F5=Change password  F12=Cancel
Enter user and password to IPL or Install the System
MA* A 05/047
```

PF1	PF2	PF3	PF4	PF5	PF6	Enter	PA1	Attn	Insert	Backtab	NewLine
PF7	PF8	PF9	PF10	PF11	PF12	Clear	PA2	SysReq	Delete	FldExit	NextPad



## Install the Base Operating System on the Migration Target Server using the Network Install Server

1. Select 2. Install the operating system

```
IPL or Install the System                                     System:  G708D570
Select one of the following:
1. Perform an IPL
2. Install the operating system
3. Use Dedicated Service Tools (DST)
4. Perform automatic installation of the operating system
5. Save Licensed Internal Code

Selection
  2

Licensed Internal Code - Property of IBM 5770-999 Licensed
Internal Code (c) Copyright IBM Corp. 1980, 2015. All
rights reserved. US Government Users Restricted Rights -
Use duplication or disclosure restricted by GSA ADP schedule
Contract with IBM Corp.
```

2. IBM i 7.4 Select 5. Network device

```
Install Device Type Selection                               System:  G708D570
Select the installation device type:
1. Tape
2. Optical
3. Virtual device - preselected image catalog
4. Current alternate selected device                       None
5. Network device
6. Optical Container

Selection
  5

F3=Exit  F12=Cancel
```

### 3. IBM i 7.5-----Select 5. Network optical

```
Connected (encrypted) to: null
Install Device Type Selection
System: U7093700
Select the installation device type:
1. Tape
2. Optical
3. Virtual device - preselected image catalog
4. Current alternate selected device
5. Network optical
6. Optical container
7. Network tape

Selection
-
F3=Exit F12=Cancel

MA* A 20/007
PF1 PF2 PF3 PF4 PF5 PF6 Enter PA1 Attn Insert Backtab NewLine
PF7 PF8 PF9 PF10 PF11 PF12 Clear PA2 SysReq Delete FldExit NextPad
```

#### 4. Verify the Network Device/Optical Configuration

- Server IP = the IP address of the Network Install Server
- Path Name = the name of the Directory where the image volumes are located. /INSTALL/QBRMS\_xxxxxxx.
- Press **F10**=Continue

```
Network Optical - Configuration
System: I70BC7A0

Server IP : 172.1.1.213
Path Name : /INSTALL/QBRMS_KJBRMSX7

NOTE: It is required that the service tool lan adapter is
configured and active.

Press F10 to continue install with the present configuration

F3=Exit F10=Continue
```

5. Press **Enter** to confirm

```

_ Confirm Install of the Operating System                               System:  G708D570
Press Enter to confirm your choice to install the operating
system.

Press F12 to return and cancel your choice to install the
operating system.
```

6. Press **Enter** again

```

_ Select a Language Group                                           System:  G708D570
Note: The language feature shown is the language feature
installed on the system.

Type choice, press Enter.

Language feature . . . . . 2924
```

Press **Enter** to confirm

```

_ Confirm Language Feature Selection                               System:  G708D570
Language feature . . . . . : 2924
Press Enter to confirm your choice for language feature.
Installing the system will continue.

Press F12 to return to change your choice for
language feature.
```

```

_ Licensed Internal Code IPL in Progress                          07/08/20 12:29:55
IPL:
Type . . . . . : Attended
Start date and time . . . . . : 07/08/20 12:29:49
Previous system end . . . . . : Abnormal
Current step / total . . . . . : 16 16
Reference code detail . . . . . : C6004065

IPL step                               Time Elapsed  Time Remaining
Commit Recovery                        00:00:01      00:00:00
Data Base Initialization                00:00:01      00:00:00
Journal IPL Clean up                   00:00:01      00:00:00
Commit Initialization                  00:00:01      00:00:00
>Start the operating system

Item:
Current / Total . . . . . :

Sub Item:
Identifier . . . . . :
Current / Total . . . . . :
```



Select Option **2**=Change install options – press **Enter**

```
Install the Operating System

Type options, press Enter.

Install option . . . . . 2
                                1=Take defaults (No other
                                options are displayed)
                                2=Change install options

Date:
  Year . . . . . 20          00-99
  Month . . . . . 07         01-12
  Day . . . . . 08          01-31

Time:
  Hour . . . . . 12         00-23
  Minute . . . . . 29       00-59
  Second . . . . . 56       00-59
```

7. At screen – ‘Specify Install Options’

- Select Option **1**=Restore programs and language objects from the current media set (this will restore system information from the Migration Source System backup)
- Select Option **2**=Keep for Job and output queues
- Select Option **1**=Yes for distribute operating system on available disk units
- Press **Enter**

```
Specify Install Options

Type options, press Enter.

Restore option . . . . . 1
                                1=Restore programs and language objects
                                from the current media set
                                2=Do not restore programs or
                                language objects
                                3=Restore only language objects
                                from current media set
                                4=Restore only language objects
                                from a different media set using the
                                current install device

Job and output
  queues option . . . . . 2    1=Clear, 2=Keep

Distribute operating system
  on available disk units. . 1  1=Yes, 2=No
```

8. At screen - 'Specify Restore Options'
  - Select System information 1=Restore
  - Press **Enter**

```

Specify Restore Options

Type options, press Enter.

Restore from the installation media:

System information . . . . 1 1=Restore, 2=Do not restore
Edit descriptions . . . . 1 1=Restore, 2=Do not restore
Message reply list . . . . 1 1=Restore, 2=Do not restore
Job descriptions . . . . . 1 1=Restore, 3=Keep customization
Subsystem descriptions . . 1 1=Restore, 3=Keep customization

```

9. Sign On. User = QSECOFR. No password required.

```

Sign On

System . . . . . : I922BRMC
Subsystem . . . . : QCTL
Display . . . . . : QCONSOLE

User . . . . . : QSECOFR__

Program/procedure . . . . . : _____
Menu . . . . . : _____
Current library . . . . . : _____

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```

10. Change the following:

- System date
- System time
- Start print writers = **N**
- Start system to restricted state = **Y**
- Set major system options = **Y**
- Define or change system at IPL = **Y**
- Press **Enter**

```

IPL Options

Type choices, press Enter.

System date . . . . . 07 / 08 / 20  MM / DD / YY
System time . . . . . 12 : 42 : 00  HH : MM : SS
System time zone . . . . . QN0600CST2  F4 for list
Clear job queues . . . . . N  Y=Yes, N=No
Clear output queues . . . . . N  Y=Yes, N=No
Clear incomplete job logs . . . . . N  Y=Yes, N=No
Start print writers . . . . . N  Y=Yes, N=No
Start system to restricted state . . . . . Y  Y=Yes, N=No

Set major system options . . . . . Y  Y=Yes, N=No
Define or change system at IPL . . . . . Y  Y=Yes, N=No

Last power-down operation was ABNORMAL
    
```

11. Verify: Enable automatic configuration = **Y**

```

Set Major System Options

Type choices, press Enter.

Enable automatic configuration . . . . . Y  Y=Yes, N=No
Device configuration naming . . . . . *NORMAL  *NORMAL, *S36
Default special environment . . . . . *NONE  *DEVADR
                                          *NONE, *S36
    
```

## 12. Select 3. System value commands

```
Define or Change the System at IPL                                     System:  I922BRMC
Select one of the following:
  1. Configuration commands
  2. Change user profile
  3. System value commands
  4. Network attribute commands
  5. General object commands
  6. Work with shared pools
  7. Change IPL attributes

Selection
  3
```

## 13. Select 3. Work with system values

```
System Value Commands                                             System:  I922BRMC
Select one of the following:
  1. Display system value
  2. Change system value
  3. Work with system values

Selection
  3
```

14. Select Option **2**=Change for each of the System Values to change
- Change and document any changes made from the list below:

```

Work with System Values
System: I922BRMC
Position to . . . . . Starting characters of system value
Subset by Type . . . . . *ALL F4 for list

Type options, press Enter.
 2=Change 5=Display

Option System Value Type Description
- QABNORMSW *SYSCTL Previous end of system indicator
- QACGLVL *MSG Accounting level
- QACTJOB *ALC Initial number of active jobs
- QADLACTJ *ALC Additional number of active jobs
- QADLSPLA *ALC Spooling control block additional storage
- QADLTOTJ *ALC Additional number of total jobs
- QALWJOBITP *SYSCTL Allow jobs to be interrupted
 2 QALWBJRST *SEC Allow object restore option
- QALWUSRDMN *SEC Allow user domain objects in libraries
- QASTLVL *SYSCTL User assistance level

More...
F3=Exit F4=Prompt F5=Refresh F11=Display names only F12=Cancel

```



----- Attention -----

To prevent the recovery from failing, change the following system values to the new settings.

Record the current setting for use after the recovery is complete.

System value	Current setting	New setting
QALWOBJRST	_____	*ALL
QFRCCVNRST	_____	0
QINACTITV	_____	*NONE
QJOBMSGQFL	_____	*PRTWRAP
QJOBMSGQMX	_____	30 (minimum, 64 recommended)
QLMTDEVSSN	_____	0
QLMTSECOFR	_____	0
QMAXSIGN	_____	*NOMAX
QPFRADJ	_____	2
QPWDEXPITV	_____	*NOMAX
QSCANFCTL	_____	*NOPOSTRST
QVFYOBJRST	_____	1

F3=Exit to screen 'Define or Change the System at IPL'

- F3=Exit and continue IPL

```
System Value Commands                                     System:  I922BRMC
Select one of the following:
1. Display system value
2. Change system value
3. Work with system values

Selection
-
F3=Exit  F12=Cancel
```

15. Press **Enter** to change your password.

```
Sign-on Information                                     System:  I922BRMC
Password has expired. Password must be changed to continue sign-on
request.

Press Enter to change your password.
```

## Change Password

- Current password = QSECOFR
- New password 15 character minimum

```
Change Password
User profile . . . . . : QSECOFR
Password last changed . . . . . : 07/08/20
Type choices, press Enter.
Current password . . . . .
New password . . . . .
New password (to verify) . . . . . _
```

## 16. At screen - 'IBM i Main Menu'

- Notice the System name changed

```
MAIN                                IBM i Main Menu                                System: I922BRMC
Select one of the following:
1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
11. IBM i Access tasks
90. Sign off
Selection or command
===> _
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F23=Set initial menu
```



17. At the command line type **GO LICPGM** press **Enter**

- 10. Display Installed Licensed Programs

Notice the Base IBM i installed and Library QGPL and QUSRSYS are \*BACKLEVEL

```

_                               Display Installed Licensed Programs                               System:  I922BRMC
Licensed Program  Installed Status  Description
5770SS1           *BACKLEVEL Library QGPL
5770SS1           *BACKLEVEL Library QUSRSYS
5770SS1           *COMPATIBLE IBM i
```

## Recover the BRMS Product and Associated Libraries on the Migration Target Server using the Network Install Server

1. On the Migration Target Server Create Optical Device
  - Type command **CRTDEVOPT** press **F4** to prompt
  - Device description = **INSTALL**
  - Resource name = **\*VRT** - press **Enter**
  - Local internet address = **\*SRVLAN** - press **Enter**
  - Remote internet address = Network Install Server IP address
  - Network image directory = **'/INSTALL/QBRMS\_xxxxxxx'** where xxxxxxxx is the name assigned by BRMS – press **Enter**

```
Create Device Desc (Optical) (CRTDEVOPT)
Type choices, press Enter.
Device description . . . . . > INSTALL      Name
Resource name . . . . . > *VRT           Name, *NONE, *VRT...
Device type . . . . . > *RSRCNAME       *RSRCNAME, 63BC, 63B8, 632A..
Local internet address . . . . . > *SRVLAN  *NONE, *SRVLAN
Remote internet address . . . . . > '192.168.6.117'
Network image directory . . . . . > '/INSTALL/QBRMS_xxxxxxx'
User ID number . . . . . > 0           0-4294967295
Group ID number . . . . . > 0           0-4294967295
Online at IPL . . . . . > *YES         *YES, *NO
Message queue . . . . . > *SYSOPR      Name
Library . . . . . > *LIBL           Name, *LIBL, *CURLIB
Text 'description' . . . . . > *BLANK
```

2. Vary on optical device. Run command.

**VRYCFG CFGOBJ(INSTALL) CFGTYPE(\*DEV) STATUS(\*ON)**

3. Verify access to the remote image catalog. Run command.

**WRKIMGCLGE IMGCLG(\*DEV) DEV(INSTALL)**

- Directory - **/INSTALL/QBRMS\_xxxxxxx**
- Volumes should be Mounted or Loaded

NOTE: The following steps reference the BRMS Recovery Report. The Report is a spooled file named "QP1ARCY" on the Migration Source System. Information about the virtual optical and virtual tape volume(s) are in the Report.

4. Follow Step 004 in the BRMS Recovery Report. Use the specific information in the Recovery Report. The information shown in this document is just an example.

**STEP 004 : Recover the BRMS Product and Associated Libraries**

Change the QSYSOPR message queue to prevent messages not related to the recovery from interrupting the recovery process.

Run command.

- **CHGMSGQ MSGQ(QSYSOPR) DLVRY(\*NOTIFY) SEV(99)**

Recover the libraries listed below, specifying the saved-item, the name of the standalone device or media library being used, and the volume identifiers and sequence numbers listed.

Run command.

- **RSTLIB SAVLIB(saved-item) DEV(device-name)**

**VOL(volume-identifier) OPTFILE("")**

The following are examples, the Recovery Report has the specific information.

Item	Type	Name	Number	Date	Time	Saved	Saved	Number
QBRM	*FULL	*SYSBAS	00001	7/06/20	10:37:08	1184	0	48
OPTFILE('/BRMSOPTSAV2248801200706103706I922BRMC/QBRM')								
QMSE	*FULL	*SYSBAS	00001	7/06/20	10:37:09	8	0	49
OPTFILE('/BRMSOPTSAV2248801200706103706I922BRMC/QMSE')								
QUSRBRM	*FULL	*SYSBAS	00001	7/06/20	10:37:41	264	0	58
OPTFILE('/BRMSOPTSAV2248801200706103708I922BRMC/QUSRBRM')								

```

Restore Library (RSTLIB)

Type choices, press Enter.

Saved library . . . . . > QBRM           Name, generic*, *NONSYS...
      + for more values
Device . . . . . > INSTALL           Name, *SAVF, *MEDDFN
      + for more values
Volume identifier . . . . . > Q06990
      + for more values > Q07898
End of media option . . . . . *REWIND      *REWIND, *LEAVE, *UNLOAD
Optical file . . . . . > '/BRMSOPTSAV2248801200706103706I922BRMC/QBRM
'

```

```

Selection or command
==> RSTLIB SAVLIB(QMSE) DEV(INSTALL) VOL(Q07898) OPTFILE('/BRMSOPTSAV224880120
0706103706I922BRMC/QMSE')
F3=Exit F4=Prompt F9=Retrieve F12=Cancel F23=Set initial menu

```

```

Selection or command
==> RSTLIB SAVLIB(QUSRBRM) DEV(INSTALL) VOL(Q08807) OPTFILE('/BRMSOPTSAV224880
1200706103708I922BRMC/QUSRBRM')
F3=Exit F4=Prompt F9=Retrieve F12=Cancel F23=Set initial menu

```

5. Follow Step 005 in the BRMS Recovery Report
  - STEP 005 : Initialize BRMS Functional Authority Information
    - Run command **INZBRM OPTION(\*SETAUT)**
    - Run command **SETUSRBRM USER(QSECOFR) USAGE(\*ADMIN)**
6. Follow Step 008 in the BRMS Recovery Report
  - STEP 008 : Initialize BRMS Device and Media Library Information
    - Run command **INZBRM OPTION(\*DEVICE)**
    - Run command **WRKDEVBRM**
  - Verify the virtual optical device "INSTALL \*OPT" is in the list

```

Work with Devices I922BRMC

Position to . . . . . Starting characters

Type options, press Enter.
  1=Add  2=Change  4=Remove  5=Display
  8=Work with status

Opt  Device      Category  Type/Model  Text
--  -
_   INSTALL      *OPT      632B/003    Entry created by BRM configuration

```

Follow Step 009 in the BRMS Recovery Report. Use the specific information in the Recovery Report. The information shown in this document is just an example.

- 009 : Recover User Profiles STEP

----- Attention -----

THIS REPORT CONTAINS ITEMS FROM A CLOUD BACKUP.

PLEASE RUN THE FOLLOWING PROGRAM CALL TO SET UP THE CLOUD VOLUMES:

- CALL QBRM/Q1AOLD PARM('CLOUD ' 'FIXDRVOL ' 'Qxxxxx' 'Qxxxxx' 'Qxxxxx' 'Qxxxxx' 'Qxxxxx')

The 'FIXDRVOL ' parameter requires 2 blanks at the end.

**Note:**

Find the VOLUMES from the BRMS Recovery Report. Step 009.

```
==> CALL PGM(QBRM/Q1AOLD) PARM('CLOUD ' 'FIXDRVOL ' 'Q06990' 'Q07898' 'Q08807' 'Q13692' 'Q32656')
F3=Exit F4=Prompt F9=Retrieve F12=Cancel F23=Set initial menu
```

Restore a current version of the user profiles.

Run command.

- **STRRCYBRM OPTION(\*SYSTEM) ACTION(\*RESTORE)**

Press **F9**=Recovery defaults - make the following changes

- Device - INSTALL
- Data base member option - \*ALL
- Allow object differences - \*COMPATIBLE

```
Restore Command Defaults
Type information, press Enter.
Device . . . . . INSTALL Name, *MEDCLS
Parallel device resources:
  Minimum resources. . . . . *SAV 1-32, *NONE, *AVAIL
  Maximum resources. . . . . 1-32, *AVAIL, *MIN
  End of media option . . . . . *REWIND *REWIND, *LEAVE, *UNLOAD
  Option . . . . . *ALL *ALL, *NEW, *OLD, *FREE
  Data base member option . . . . . *ALL *MATCH, *ALL, *NEW, *OLD
  Restore spooled file data . . . . . *NONE *NONE, *NEW
  Allow object differences . . . . . *COMPATIBLE *NONE, *ALL, *COMPATIBLE,
  *AUTL, *FILELVL, *OWNER,
  *PGP
More...
```

7. **Page down** once and make the following change
  - System resource management - \*NONE

```

Restore Command Defaults
Type information, press Enter.

Restore to library . . . . . *SAVLIB      Name, *SAVLIB
Auxiliary storage pool . . . . . *SAVASP    Name, *SAVASP, 1-32...
Document name generation . . . . . *SAME      *SAME, *NEW
System resource management . . . . . *NONE      *ALL, *NONE, *HDW, *TRA
Apply journaled changes:
Restore journal receivers . . . . . *YES       *YES, *NO
Apply option . . . . . *NONE          *NONE, *APPLY, *REMOVE
Ending date . . . . . *CURRENT       Date, *CURRENT
Ending time . . . . . *CURRENT       Time, *CURRENT
Lotus point-in-time:
Ending date . . . . . *CURRENT       Date, *CURRENT, *FULL
Ending time . . . . . *CURRENT       Time, *CURRENT, *FULL
Create parent directories . . . . . *NO        *NO, *YES
Parent directories owner . . . . . *PARENT     Name, *PARENT
Key store file . . . . . *SAV         Name, *SAV, *NONE
Key store library . . . . . *SAV         Name, *SAV, *NONE
More...

```

Press **Enter** to return to the Select Recovery Items screen

8. Option 1=Select “\*SAVSECDTA” and press Enter

```

Select Recovery Items                                     I922BRMC
Select action . . . . . : *ALL
Select volume . . . . . :
Type options, press Enter.
  1=Select  4=Remove  5=Display  7=Specify object

Opt  Saved      Save      Save      Save      Parallel  Volume      File      Expire
   Item      Date      Time      Type      Devices   Serial      Sequence  Date
  1  *SAVSECDTA  7/06/20  10:36:12 *FULL
   -  *SAVCFG     7/06/20  10:36:12 *FULL
   -  QSYS2       7/06/20  10:37:12 *FULL
   -  QGPL        7/06/20  10:37:13 *FULL
   -  QUSRSYS    7/06/20  10:37:08 *FULL
   -  QICC       7/06/20  10:37:12 *FULL
   -  QUSRIIC   7/06/20  10:37:12 *FULL
   -  QIWS       7/06/20  10:37:13 *FULL
   -  QSYSDIR   7/06/20  10:37:13 *FULL
   -  QTCP       7/06/20  10:37:13 *FULL
   -  QCLDIPL   7/06/20  10:37:39 *FULL
                                           Bottom
  
```

```

Select Recovery Items                                     I922BRMC
- Display Recovery Items                                 I922BRMC
                                                    17:36:40
: Remaining items . . . . . : 1
: Remaining objects . . . . : 78
: Remaining size . . . . . : 66.0275 M 100.0 %
: Saved
: Item      Date      Time      Save  Volume  Exp  Objects
: *SAVSECDTA 7/06/20  10:36:12 *FULL Q06990 45 7/27/20 78
:
:
: Press ATTN key to cancel recovery after current item completes.
: Waiting for reply to message on message queue QSYSOPR.
:
  
```



Note:

If a message “Waiting for reply to message on message queue QSYSOPR.” is received, Select SysReq and type 6 to display QSYSOPR system messages.

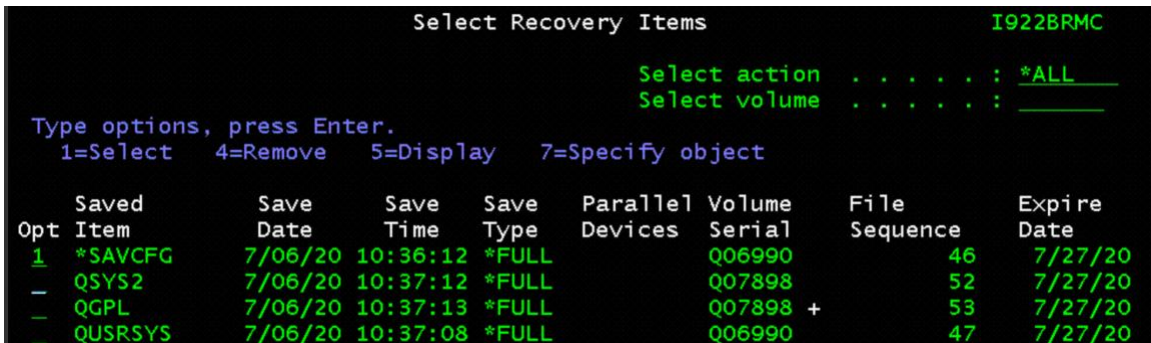
If asked to Load volume Qxxxxx on INSTALL (C G).

Type C to cancel and to continue with the restore.



### 9. Follow Step 011 in the BRMS Recovery Report

- STEP 011 : Recover Configuration Data
  - Select Option 1=Select “\*SAVCFG” and press Enter



10. Follow Step 012 in the BRMS Recovery Report

- STEP 012 : Recover Required System Libraries
  - Select Option 1=Select for all of the Saved Item's on optical volume(s). **Page down** to look through list. Press **Enter**

```

Select Recovery Items                                     I922BRMC
Select action . . . . . : *ALL
Select volume . . . . . :

Type options, press Enter.
1=Select  4=Remove  5=Display  7=Specify object

  Saved      Save      Save      Save      Parallel  Volume      File      Expire
Opt Item     Date      Time      Type      Devices    Serial      Sequence  Date
  1  QSYS2     7/06/20  10:37:12 *FULL
  1  QGPL      7/06/20  10:37:13 *FULL
  1  QUSRSYS   7/06/20  10:37:08 *FULL
  1  QICC      7/06/20  10:37:12 *FULL
  1  QUSRICC   7/06/20  10:37:12 *FULL
  1  QIWS      7/06/20  10:37:13 *FULL
  1  QSYS DIR  7/06/20  10:37:13 *FULL
  1  QTCP      7/06/20  10:37:13 *FULL
  1  QCLDIPL   7/06/20  10:37:39 *FULL
                                     Q07898      52
                                     Q07898 +    53
                                     Q06990      47
                                     Q07898      50
                                     Q07898      51
                                     Q08807      55
                                     Q08807      56
                                     Q08807      54
                                     Q08807      57
                                     7/27/20
                                     7/27/20
                                     7/27/20
                                     7/27/20
                                     7/27/20
                                     7/27/20
                                     7/27/20
                                     7/27/20
                                     7/27/20
                                     7/27/20

F3=Exit  F5=Refresh  F9=Recovery defaults  F11=Object View
F12=Cancel  F14=Submit to batch  F16=Select
68 objects restored.  2 objects excluded.
    
```

```

Select Recovery Items                                     I922BRMC
Display Recovery Items                                   I922BRMC
17:57:35
Remaining items . . . . . : 8
Remaining objects . . . . . : 2,511
Remaining size . . . . . : 4,967.2540 M 98.7 %

  Saved      Volume      Exp      Objects
  Item       Serial      Date     Saved
  QGPL      Q07898 +    7/27/20  165
  QUSRSYS   Q06990      7/27/20  1680
  QICC      Q07898      7/27/20  108
  QUSRICC   Q07898      7/27/20  36
  QIWS      Q08807      7/27/20  138
  QSYS DIR  Q08807      7/27/20  73
  QTCP      Q08807      7/27/20  281
  QCLDIPL   Q08807      7/27/20  30

Press ATTN key to cancel recovery after current item completes.
    
```

- The restore from virtual optical media is complete. **F3**=exit.

## Add Internet Address for Migration Target Server After Network Install and Restore from Virtual Optical Media

1. At SST remove Service Tools Server (STS) LAN adapter configuration that was used for network install and restore from virtual optical media.
  - Type command **STRSST** press **Enter**
  - At screen - 'Start Service Tools (STRSST) Sign On'
    - Service tools user ID - QSECOFR
    - Service tools password – existing password
  - **8**. Work with Service Tools Server Security and Devices
  - **F13**=Select STS LAN adapter
  - At screen - 'Select Service Tools Server LAN Adapter'
    - **1**=Select Resource Name that is currently selected. Note '\*'
    - Record - Resource name, Internet address, Gateway router address, and Subnet mask.
    - **F13**=Deactivate
    - **F6**=Clear
    - **F7**=Store
    - **F3**=Exit to screen 'Exit System Service Tools'
      - Press **Enter** to continue ending SST.
2. Remove existing TCP/IP routes and interfaces. These are actually the configuration from the Migration Source System.
  - Type command **CFGTCP** press **Enter**
  - **2**. Work with TCP/IP routes
    - **4**=Remove - to remove all \*DFTRROUTE's
  - **1**. Work with TCP/IP interfaces
    - **4**=Remove - to remove all, except 127.0.0.1 \*LOOPBACK
2. Remove existing line descriptions. These are actually the configuration from the Migration Source System.
  - Type command **WRKLIND** press **Enter**
    - **4**=Delete - to delete all
3. Add line description for Migration Target Server. Use Resource name recorded above.
  - **CRTLINETH LIND(MIGRATE) RSRNAME(CMNxx)**

4. Add TCP/IP interface for Migration Target Server. Use Internet address and Subnet mask recorded above.
  - **ADDTCPIFC INTNETADR('n.n.n.n') LIND(MIGRATE) SUBNETMASK('n.n.n.n')**
5. Add TCP/IP route for Migration Target Server. Use Gateway router address recorded above.
  - **ADDTCPRTE RTEDEST(\*DFTRROUTE) NEXTHOP('172.1.1.2')**
6. TCP/IP must be started so BRMS can transfer virtual tape media required for the recovery from the Network Install Server.
  - Continue the recovery in restricted state. NOTE: Use of restricted state TCP/IP requires that 5770SS1 option 3 was installed when the backups were run on the Migration Source System.
    - Run commands:
      - **STRTCP STRSVR(\*NO) STRIFC(\*NO) STRPTPRF(\*NO) STRIP6(\*YES)**
      - **STRTCPIFC INTNETADR('n.n.n.n')** Use Internet address recorded above.
    - If restricted state TCP/IP is not available, start all subsystems by running the following commands:
      - **STRSBS SBS(D)QCTL**
      - **STRTCP**
7. Find the Resource URI used for the Network Install Server, this is where the virtual tape volume(s) were stored by BRMS.
  - Type command **WRKCFGICC** press **Enter**
  - Select Option **5**=Display for MIGRATE
  - Ping the Resource URI to verify the connection.
    - Run command **PING 'n.n.n.n'**

## Create Virtual Tape and Retrieve Virtual Tape Media from Network Install Server

1. Create a virtual tape device. Run command.
  - **CRTDEVTAP DEVD(MIGRATETAP) RSRCTYPE(\*VRT)**
2. Vary on the virtual tape device. Run command.
  - **VRYCFG CFGOBJ(MIGRATETAP) CFGTYPE(\*DEV) STATUS(\*ON)**
3. Setup the cloud tape volume(s)
  - Only specify the tape volume(s) in the command.
  - **CALL QBRM/Q1AOLD PARM('CLOUD ' 'FIXDRVOL ' 'Qxxxxx')**
4. Move tape volume(s) from the Network Install Server to the Migration Target Server
  - **WRKMEDBRM** press **Enter**
  - Find the tape volume(s) from the BRMS Recovery Report.
  - Notice the Location of the tape volume(s), they should still be in the Network Install Server. Location = **MIGRATE**. Media Class = **QCLDVRTTAP**.
  - Select Option **8**=Move (all the tape volume(s) with Location **MIGRATE** at the same time) press **Enter**
  - Change the Storage location to \*HOME and press **Enter**
  - Wait for message – Volume Qxxxxx moved.
    - **F3**=Exit

5. Check the ICC Status of the tape volume(s) transfer
  - **WRKSTSICC STATUS(\*ALL)**
  - Check Status is **Active** or **Success** for Oper=FRMCLD (From Cloud)
  - Status of **Failed** is ok for Oper=TOCLD (To Cloud)
  - Once all the jobs with Oper = FRMCLD have a Status of **Success**, continue with the BRMS restore.
  - **F3=Exit**

```

Work with ICC Status                                I922BRMC

Type options, press Enter.
4=End

----- Job -----
Opt File name/Time  Name      User      Number  Status  Oper      Graphic% /
-----|-----|-----|-----|-----|-----|-----|-----|
  QBRMS_I922BRMC/Q31632
07/09/20 11:01 L000000215 QSECOFR  000521  Success  FRMCLD    *****
  QBRMS_I922BRMC/Q13692
07/09/20 16:33 L000000216 QSECOFR  000528  Active   FRMCLD    ****3    43
  QBRMS_I922BRMC/Q32656
07/09/20 16:33 L000000217 QSECOFR  000529  Active   FRMCLD    ****3    43
  QBRMS_I922BRMC/Q15277
07/09/20 16:33 L000000218 QSECOFR  000530  Active   FRMCLD    ****3    43
  QBRMS_I922BRMC/Q31632
07/09/20 16:33 L000000219 QSECOFR  000531  Active   FRMCLD    *****8  68
Bottom

```

6. Follow Step 013 in the BRMS Recovery Report
  - STEP 013 : Reset BRMS Device and Media Library Information
  - **INZBRM OPTION(\*DEVICE)**
  - **WRKDEVBRM**
  - Verify Virtual Tape Device 'MIGRATETAP \*VRTTAP' is listed
  - 4=Remove to remove Virtual Optical Device 'INSTALL \*OPT'
  - **F3=Exit**

## \_\_ STEP 015 : Recover All Remaining System and User Data

TCP/IP has already been started. Do not use STEP 015 instructions to start TCP/IP.

You may now select to recover all of the data on the Migration Target Server using tape volume(s) moved from the Network Install Server. Otherwise, skip to the next recovery step, Recover IBM Product Libraries.

To recover all of the data, type the following command and press **Enter**.

- **STRRCYBRM OPTION(\*RESUME)**

Press **F9** on the 'Select Recovery Items' screen to go to the 'Restore Command Defaults' screen.

- Ensure \*MEDCLS is specified for the Device prompt.
- Ensure \*SAVLIB is specified for the Restore to library prompt.
- Ensure \*SAVASP is specified for the Auxiliary storage pool prompt.

Press **Enter** to return to the 'Select Recovery Items' screen.

Use **F16** to select all recovery items and press **Enter**. After all saved items are recovered, continue with the step following "Recover Directories and Files".

Otherwise you can recover individually, starting with Recover IBM Product Libraries.

Recover IBM Product Libraries on the Migration Target Server using tape volume(s) moved from the Network Install Server.

1. Follow Step 016 in the BRMS Recovery Report
  - STEP 016 : Recover IBM Product Libraries

- **STRRCYBRM OPTION(\*IBM) ACTION(\*RESTORE)**

-----

The Restore Command Defaults should be used to specify the correct Device parameter and change the Create parent directories prompt back to \*NO.

Press **F9** on the Select Recovery Items display to go to the Restore

Command Defaults display.

- Ensure \*MEDCLS is specified for the Device prompt.
- Ensure \*NO is specified for the Create parent directories prompt.
- Press **Enter** to return to the Select Recovery Items display.



2. Review the list of Recovery Items and Remove any that have already been restored.
  - Select Option **4=Remove** and press **Enter**
    - Note that the “Volume Serial” is from the optical media
    - Once the items are removed, they will drop off the list

```

Select Recovery Items                                     I922BRMC
Select action . . . . . : *ALL
Select volume . . . . . : _____

Type options, press Enter.
 1=Select  4=Remove  5=Display  7=Specify object

 Saved      Save      Save      Save      Parallel  Volume      File      Expire
Opt  Item    Date      Time      Type      Devices     Serial     Sequence  Date
-----
 4  QICC      7/06/20   10:37:12 *FULL      Q07898      Q07898      50        7/27/20
 4  QUSRICC   7/06/20   10:37:12 *FULL      Q07898      Q07898      51        7/27/20
 4  QIWS      7/06/20   10:37:13 *FULL      Q08807      Q08807      55        7/27/20
 4  QSYSDIR   7/06/20   10:37:13 *FULL      Q08807      Q08807      56        7/27/20
 4  QTCP      7/06/20   10:37:13 *FULL      Q08807      Q08807      54        7/27/20
-   #CGULIB   7/06/20   9:23:31  *FULL      Q13692      Q13692      1         7/27/20
-   #COBLIB   7/06/20   9:23:31  *FULL      Q13692      Q13692      2         7/27/20
-   #DFULIB   7/06/20   9:23:32  *FULL      Q13692      Q13692      3         7/27/20
-   #DSULIB   7/06/20   9:23:32  *FULL      Q13692      Q13692      4         7/27/20
-   #RPGLIB   7/06/20   9:23:32  *FULL      Q13692      Q13692      5         7/27/20
-   #SDALIB   7/06/20   9:23:33  *FULL      Q13692      Q13692      6         7/27/20
More...

F3=Exit  F5=Refresh  F9=Recovery defaults  F11=Object View
F12=Cancel  F14=Submit to batch  F16=Select

```

### Change the Recovery Defaults

- Select **F9=Recovery defaults**
- Device = MIGRATETAP
- Option = \*ALL
- Data base member option = \*ALL
- Restore spooled file data = \*NEW
- Allow object differences = \*COMPATIBLE

### 3. Page down

- System resource management = \*NONE
- Create parent directories = \*NO
- Press **Enter** to return to “Select Recovery Items”

```
Restore Command Defaults
Type information, press Enter.
Restore to library . . . . . *SAVLIB      Name, *SAVLIB
Auxiliary storage pool . . . . . *SAVASP    Name, *SAVASP, 1-32...
Document name generation . . . . . *SAME      *SAME, *NEW
System resource management → *NONE      *ALL, *NONE, *HDW, *TRA
Apply journaled changes:
  Restore journal receivers . . . . . *YES      *YES, *NO
  Apply option . . . . . *NONE      *NONE, *APPLY, *REMOVE
    Ending date . . . . . *CURRENT    Date, *CURRENT
    Ending time . . . . . *CURRENT    Time, *CURRENT
Lotus point-in-time:
  Ending date . . . . . *CURRENT    Date, *CURRENT, *FULL
  Ending time . . . . . *CURRENT    Time, *CURRENT, *FULL
Create parent directories . → *NO      *NO, *YES
  Parent directories owner . . . . . *PARENT    Name, *PARENT
Key store file . . . . . *SAV      Name, *SAV, *NONE
Key store library . . . . . *SAV      Name, *SAV, *NONE
```

4. Select the saved items
  - Review the list again
  - Select Option 1=Select for each item
  - or
  - Select **F16**= Select (this will select all the items)
  - Press **Enter** to recover the saved items

```

Select action . . . . . : *ALL
Select volume . . . . . :

Type options, press Enter.
 1=Select  4=Remove  5=Display  7=Specify object

Opt  Saved      Save      Save      Save      Parallel Volume  File  Expire
 1  Item        Date      Time      Type      Devices Serial  Sequence Date
 1  #CGULIB     7/06/20   9:23:31  *FULL     Q13692  1      7/27/20
 1  #COBLIB     7/06/20   9:23:31  *FULL     Q13692  2      7/27/20
 1  #DFULIB     7/06/20   9:23:32  *FULL     Q13692  3      7/27/20
 1  #DSULIB     7/06/20   9:23:32  *FULL     Q13692  4      7/27/20
 1  #RPGLIB     7/06/20   9:23:32  *FULL     Q13692  5      7/27/20
 1  #SDALIB     7/06/20   9:23:33  *FULL     Q13692  6      7/27/20
 1  #SEULIB     7/06/20   9:23:33  *FULL     Q13692  7      7/27/20
 1  QADVSEC     7/06/20   9:23:34  *FULL     Q13692  8      7/27/20
 1  QAFPLIB1    7/06/20   9:23:34  *FULL     Q13692  9      7/27/20
 1  QAFPLIB2    7/06/20   9:23:34  *FULL     Q13692  10     7/27/20
 1  QAFPLIB3    7/06/20   9:23:34  *FULL     Q13692  11     7/27/20
                                         More...

F3=Exit  F5=Refresh  F9=Recovery defaults  F11=Object View
F12=Cancel  F14=Submit to batch  F16=Select
  
```

```

.....
-                               Display Recovery Items                               I922BRMC
:                                                                                   22:00:05
:
: Remaining items . . . . . : 114
: Remaining objects . . . . : 96,133
: Remaining size . . . . . : 6,911.6764 M 99.4 %
:
: Saved      Volume  Exp  Objects
: Item        Date      Time  Type  Serial  File Seq  Date  Saved
: QCAEXP     7/06/20  9:23:37 *FULL Q13692  15  7/27/20  9
: QCA400W    7/06/20  9:23:37 *FULL Q13692  16  7/27/20  11
: QCBLE     7/06/20  9:23:37 *FULL Q13692  17  7/27/20  74
: QCBLLLE   7/06/20  9:23:37 *FULL Q13692  18  7/27/20  9
: QCBLLLEP  7/06/20  9:23:37 *FULL Q13692  19  7/27/20  7
: QCCA      7/06/20  9:23:37 *FULL Q13692  20  7/27/20  179
: QCICS     7/06/20  9:23:37 *FULL Q13692  21  7/27/20  503
: QCICSSAMP 7/06/20  9:23:38 *FULL Q13692  22  7/27/20  74
:
:                               Continued
:
: Press ATTN key to cancel recovery after current item completes.
: Restoring library QCAEXP from volume Q13692 sequence number 15.
:
.....
  
```

Recover User Libraries on the Migration Target Server using tape volumes moved from the Network Install Server.

1. Follow Step 017 in the BRMS Recovery Report
  - STEP 017 : Recover User Libraries
    - **STRRCYBRM OPTION(\*ALLUSR) ACTION(\*RESTORE)**
2. Review the list of Recovery Items and Remove any that have already been restored.
  - Select Option 4=Remove and press **Enter**
    - Notice that the “Volume Serial” is from the optical media
    - Press **F11**=Object View (will show which Control Group created the saved item)
    - Remove items created by “QCLDBIPL01”
    - Once the items are removed, they will drop off the list

```

Type options, press Enter.
  1=Select  4=Remove  5=Display  7=Specify object

Select action . . . . . : *ALL
Select volume . . . . . :

----- Objects -----
Saved   Not Saved  Control Group Encrypted
Opt Item   Date      Time      Type
---
  Q$36F   7/06/20   9:25:14  *LIB          1          0 QCLDBSYS01
  QUSRDIRCF 7/06/20   9:25:14  *LIB          3          0 QCLDBSYS01
  QUSRDIRDB 7/06/20   9:25:14  *LIB        191          0 QCLDBSYS01
  QUSRIJS   7/06/20   9:25:14  *LIB        104          0 QCLDBSYS01
  SYSIBM   7/06/20   9:25:16  *LIB          66          0 QCLDBSYS01
  SYSIBMADM 7/06/20   9:25:16  *LIB          17          0 QCLDBSYS01
  SYSPROC   7/06/20   9:25:16  *LIB           3          0 QCLDBSYS01
  SYSTOOLS  7/06/20   9:25:16  *LIB          60          0 QCLDBSYS01
  4 QUSRSYS  7/06/20  10:37:08  *LIB       1680          0 QCLDBIPL01
  4 QSYS2    7/06/20  10:37:12  *LIB        343          0 QCLDBIPL01
  4 QGPL     7/06/20  10:37:13  *LIB        165          0 QCLDBIPL01
  
```

Bottom

3. Select the saved items
  - Review the list again
  - Select Option 1=Select for each item
  - or
  - Select **F16**=Select (this will select all the items)
  - Press Enter to recover the saved items



```

Select action . . . . . : *ALL
Select volume . . . . . :
Type options, press Enter.
  1=Select  4=Remove  5=Display  7=Specify object

  Opt  Saved      Save      Save      Save      Parallel  Volume    File      Expire
   Item  Date       Time      Type      Devices   Serial     Sequence  Date
  1 #LIBRARY  7/06/20  9:25:10 *FULL
  1 CESARLIB  7/06/20  9:25:10 *FULL
  1 CESARLIBBK 7/06/20  9:25:11 *FULL
  1 CESAROBJ  7/06/20  9:25:11 *FULL
  1 CLDLIB   7/06/20  9:25:11 *FULL
  1 CLDTSTCS1 7/06/20  9:25:12 *FULL
  1 QDSNX    7/06/20  9:25:12 *FULL
  1 QMGTC    7/06/20  9:25:13 *FULL
  1 QMGTC2   7/06/20  9:25:13 *FULL
  1 QRCL    7/06/20  9:25:13 *FULL
  1 QSRVAGT  7/06/20  9:25:13 *FULL
More...

F3=Exit  F5=Refresh  F9=Recovery defaults  F11=Object View
F12=Cancel  F14=Submit to batch  F16=Select

MA*  A          MW          10/002
PF13  PF14  PF15  PF16  PF17  PF18  Enter  Rule  EndFld  Erinp  Reset  DUP ...
PF19  PF20  PF21  PF22  PF23  PF24  Clear  AltCur  ErFld  ErEOF  Next...

```

```

.....
:      Display Recovery Items                                I922BRMC
:                                                         22:20:32
:
:   Remaining items . . . . :                6
:   Remaining objects . . . :               441
:   Remaining size . . . . :      51.0239 M   60.8 %
:
:   Saved      Volume      Exp      Objects
:   Item       Date       Time      Type      Serial   File Seq  Date      Saved
: QUSRDIRDB   7/06/20  9:25:14 *FULL   Q32656   151     7/27/20  191
: QUSRISJ    7/06/20  9:25:14 *FULL   Q32656   152     7/27/20  104
: SYSIBM     7/06/20  9:25:16 *FULL   Q32656   154     7/27/20   66
: SYSIBMADM  7/06/20  9:25:16 *FULL   Q32656   155     7/27/20   17
: SYSPROC    7/06/20  9:25:16 *FULL   Q32656   156     7/27/20    3
: SYSTOOLS   7/06/20  9:25:16 *FULL   Q32656   157     7/27/20   60
:
:   Press ATTN key to cancel recovery after current item completes.
:
: .....

```

Recover Document Library Objects on the Migration Target Server using tape volumes moved from the Network Install Server.

1. Follow Step 018 in the BRMS Recovery Report
  - STEP 018 : Recover Document Library Objects

**STRRCYBRM OPTION(\*ALLDLO) ACTION(\*RESTORE)**

2. Select the saved item
  - Select Option 1=Select
  - Press **Enter** to recover the saved items

```

                                     Select action . . . . . : *ALL__
                                     Select volume . . . . . : _____
Type options, press Enter.
  1=Select  4=Remove  5=Display  7=Specify object
 Saved      Save      Save      Save      Parallel Volume  File  Expire
Opt  Item   Date      Time      Type      Devices Serial Sequence Date
  1  *ALLDLO  7/06/20  9:25:34  *FULL     Q32656      159    7/27/20
```

Recover Directories and Files on the Migration Target Server using tape volumes moved from the Network Install Server.

1. Follow Step 019 in the BRMS Recovery Report
  - STEP 019 : Recover Directories and Files

- **STRRCYBRM OPTION(\*LNKLIST) ACTION(\*RESTORE)**

2. Review the list of Recovery Items and Remove any that have already been restored.
  - Select Option 4=Remove and press **Enter**
    - Notice that the “Volume Serial” is from the optical media
    - Press **F11**=Object View (will shows which Control Group created the saved item)
    - Remove items created by “QCLDBIPL01”
    - Once items are removed, they will drop off the list

```

                                     Select action . . . . . : *ALL
                                     Select volume . . . . . :
Type options, press Enter.
  1=Select  4=Remove  5=Display  7=Specify object

```

Opt	Item	Saved	Save Date	Save Time	Item Type	----- Objects -----	Control Group	Encrypted
						Saved	Not Saved	
4	QCLDIPL		7/06/20	10:37:39	*LNK	30	0	QCLDBIPL01
-	*LINK		7/06/20	9:25:35	*LNK	185918	0	QCLDBSYS01
-	*LINK		7/06/20	9:25:35	*LNK	1	0	QCLDBSYS01

2. Select the saved items

- Select Option 1=Select
- Press Enter to recover the saved items

```
                                Select action . . . . . : *ALL
                                Select volume  . . . . . :
Type options, press Enter.
  1=Select  4=Remove  5=Display  7=Specify object

Opt  Saved      Save      Save      Save      Parallel Volume  File      Expire
Item  Date       Time      Type      Devices  Serial   Sequence  Date
  1  *LINK      7/06/20  9:25:35  *FULL    Q32656  +        160      7/27/20
  1  *LINK      7/06/20  9:25:35  *FULL    Q32656  +        160      7/27/20
```

3. View the progress of the “processing objects” and “completed objects” as they get restored

```
----- Display Recovery Items ----- I922BRMC
                                         22:36:21
Remaining items . . . . . :                2
Remaining objects . . . . . :            185,919
Remaining size . . . . . :      23,721.8734 M  100.0 %

Saved      Volume      Exp      Objects
Item       Date       Time      Type      Serial   File Seq  Date     Saved
*LINK      7/06/20  9:25:35  *FULL    Q32656  +        160      7/27/20  185918
*LINK      7/06/20  9:25:35  *FULL    Q32656  +        160      7/27/20   1

Press ATTN key to cancel recovery after current item completes.
Started processing 9000 Objects, completed 2000 objects.
```



## Complete Final Recovery Steps on the Migration Target Server

1. Follow Step 023 in the BRMS Recovery Report
  - STEP 023 : Update Program Temporary Fix Information
    - Run command **UPDPTFINF**
2. Follow Step 024 in the BRMS Recovery Report
  - STEP 024 : Recover Authorization Information
    - Run command **RSTAUT USRPRF(\*ALL)**

```
Restore Authority (RSTAUT)
Type choices, press Enter.
User profile . . . . . *ALL_____ Name, generic*, *ALL
      + for more values _____

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cance
F13=How to use this display  F24=More keys
Authorities processed for 3 of 65 user profiles.
```

3. Follow Step 027 in the BRMS Recovery Report
  - STEP 027 : Reset System Values
  - Use the recorded system values and the **WRKSYSVAL** command to change the system values to their original settings.
  
4. Follow Step 028 in the BRMS Recovery Report
  - STEP 028 : Print Job Log
    - Run command **DSPJOBLOG JOB(\*) OUTPUT(\*PRINT)**
  
5. Change System Value for QIPLTYPE
  - **WRKSYSVAL QIPLTYPE** press **Enter**
  - Select Option **2=Change**
  - Select **0=Unattended IPL**. Press **Enter**. **F3=Exit**.

```

Work with System Values
System: I922BRMC
Position to . . . . . _____ Starting characters of system value
Subset by Type . . . . . _____ F4 for list

Type options, press Enter.
  2=Change  5=Display

Option  System Value      Type      Description
  2      QIPLTYPE      *SYSCTL   Type of IPL to perform

```

```

Change System Value

System value . . . . . : QIPLTYPE
Description . . . . . : Type of IPL to perform

Type choice, press Enter.

Type of IPL . . . . .  0      0=Unattended IPL
                          1=Attended IPL with dedicated service
                          tools
                          2=Attended IPL, console in debug mode

```

7. Sign on to Dedicated Service Tools (DST)
  - On 'Virtual server instance details' screen
  - Click on Menu **icon**, top right corner of screen
  - Click on **IBM i operations**
  - **Run action** (21) Activate dedicated service tools
  - Verify message – Operation successful ... (21) Activate dedicated service tools.
  - On console window – 'Dedicated Service tools (DST) Sign On' screen
    - Service tools user ID – QSECOFR
    - Service tools password – existing password
8. At screen - 'Use Dedicated Service Tools (DST)'
  - 7. Start a service tool

```
Use Dedicated Service Tools (DST)                                System:  TARGET
Select one of the following:
  1. Perform an IPL
  2. Install the operating system
  3. Work with Licensed Internal Code
  4. Work with disk units
  5. Work with DST environment
  6. Select DST console mode
  7. Start a service tool
  8. Perform automatic installation of the operating system
 10. Work with remote service support
 13. Work with system security
 14. End batch restricted state

Selection
  7
F3=Exit  F12=Cancel
```

## 9. Select Option 7=Operator panel functions

```
Start a Service Tool                                     System:  TARGET
Attention: Incorrect use of this service tool can cause damage
to data in this system. Contact your service representative
for assistance.

Select one of the following:

  1. Display/Alter/Dump
  2. Licensed Internal Code log
  3. Trace Licensed Internal code
  4. Hardware service manager
  5. Main storage dump manager
  6. Product activity log
  7. Operator panel functions
  8. Performance data collector

Selection
  7

F3=Exit  F12=Cancel
```

## 10. At screen – ‘Operator Panel Functions’

- IPL source: 2=B
- IPL mode: 2=Normal
- Press Enter to change the IPL attributes and return to the main DST menu.

```
Operator Panel Functions                               System:  DMSX75X0
IPL source:  2   (1=A, 2=B or 3=D)
IPL mode:    2   (1=Manual, 2=Normal, 3=Secure or 4=Auto)
Press Enter to change the IPL attributes and return
to the main DST menu.
Press F8 to set the IPL attributes and restart the system.
Machine processing will be ended and the system will be
restarted.
Press F10 to set the IPL attributes and power off the system.
Machine processing will be ended and the system will be
powered off.
Press F12 to return to the main DST menu without changing
IPL attributes.

F3=Exit  F8=Restart  F10=Power off  F12=Cancel
```

- F3=Exit to ‘Exit Dedicated Service Tools’ screen
  - 1. Exit Dedicated Service Tools (DST)
- Close console window

## Capture Image of Migration Target Server

The captured image will be used to create a new Virtual server instance of the Migration Target Server. This allows the TCP/IP network to be configured.

1. Power off Migration Target Server
  - On 'Virtual server instance details' screen
  - Click on Menu **icon**, top right corner of screen
  - Click on **Immediate shutdown**
  - Click on **Shutdown**
  - Verify message – Starting immediate shutdown ...
  - **Refresh** until status is **Shutoff**
2. Capture image
  - On 'Virtual server instance details' screen
  - Click on Menu **icon**, top right corner of screen
  - Click on **Capture and export**
  - Check box – all Attached volume(s)
  - Click on **Next**
  - Export destination – Check box **Image catalog**
  - Enter Catalog image name
  - Click on **Capture and export**. Click on **Capture and export**.
3. Verify captured image
  - On 'Virtual server instance details' screen
  - Click on **Boot images**, left side of screen
  - **Refresh** images until image is in list and status is **Active**

## Create New Migration Target Server

1. On 'Virtual server instances' screen
  - Click on **Create instance**
2. On 'Create virtual server instance' screen
  - General
    - Enter Instance name
    - Click on **Continue**
  - Boot image
    - Select OS – IBM i
    - Select image – Captured image
    - Select storage tier – Set by captured image
    - Select any IBM i Licenses
    - Click on **Continue**
  - Profile
    - Select Machine type
    - Select Core type
    - Select Cores
    - Select Memory (GiB)
    - Click on **Continue**
  - Storage volumes
    - Create any additional volume(s)
    - Click on **Create volume**
    - Enter Name in VSI
    - Enter Size
    - Click on **Create and attach**
    - Click on **Continue**
  - Network interfaces
    - At least one private or public network is required
    - Click on **Finish**
  - Check box – I agree to the Terms and conditions
  - Click on **Create**
  - Verify message – Creating instance ... This will take some time.
3. On the 'Virtual server instances' screen

- **Refresh** until **Building** status or **Warning** status changes to **Active** status for the new Migration Target Server.
  - Click on the new Migration Target Server's **name** to get the 'Virtual server instance details' screen.
4. On the 'Virtual server instance details' screen
    - **Refresh** until System Reference Code SRC is 00000000 or A60050A0. When the SRC is 00000000, **Refresh** for one minute to make sure it stays at SRC 00000000. The Virtual server instance IPLs twice.
  5. Open console window. The Cloud provides an IBM i console.
    - Click on Menu **icon**, top right corner of screen.
    - Click on **Open console**, click on **Open console** again.
  6. At screen – 'Sign On'
    - User – QSECOFR
    - Password – existing password
    - Previous sign-on ... Press **Enter** to continue.
  7. Wait for TCP/IP configuration to complete
    - Type command **CFGTCP**. Press **Enter**.
    - 1. Work with TCP/IP interfaces
    - **F5**=Refresh until attached network interface(s) are displayed with Line Description(s) CLOUDINITx and Line Type \*ELAN
  8. Verify system

## Chapter 3: Troubleshooting

### Media status \*TRF

Each BRMS volume has a status. The status how the volume is currently being used. Status \*TRF has been added to indicate a volume has pending transfer operations. Run the following command to see all media that has a status of \*TRF:

#### WRKMEDBRM TYPE(\*TRF)

Opt	Volume Serial	Status	Creation Date	Expiration Date	Location	Move Date	Media Class	Dup Sts
—	Q03276	*TRF	05/21/20	06/11/20	BRMSCLD	05/21/20	QCLDVRTTAP	
—	Q15373	*TRF	05/20/20	06/10/20	CLDTEST	05/20/20	QCLDVRTTAP	
—	Q16559	*TRF	05/20/20	06/10/20	BRMSCLD	05/20/20	QCLDVRTTAP	
—	Q28330	*TRF	05/21/20	06/11/20	BRMSCLD	05/21/20	QCLDVRTTAP	
—	Q31739	*TRF	05/21/20	06/11/20	BRMSCLD	05/21/20	QCLDVRTTAP	

Most transfers will be started by BRMS but run in jobs in subsystem QICCSBS. To determine which jobs have been used to process transfers for BRMS run the following command:

#### WRKSTSICC STATUS(\*ALL)

Use the job information from the failed transfer to work with the job. The job log will contain information about the transfer:

#### WRKJOB JOB(015970/QSECOFR/L000000010)

option 4=Work with spooled files

option 5=Display



## Resolving transfer problems

When a transfer to the Network Install Server fails, the volumes may be left in \*TRF status. Once the transfer problem has been understood and fixed, if the volume still has a status of \*TRF and the location is the MIGRATE location, do the following recovery on the source system:

- Use **WRKMEDBRM** option 8 'Move' to change the Storage location to \*HOME
- Run **STRMNTBRM MOVMED(\*YES)** or **MOVMEDBRM** to retry the transfer

## ICC Flight Recorder Directory

The ICC flight recorder is used to further diagnose file transfer to and from the Cloud.

## WRKLNK OBJ('/QIBM/ProdData/QICC')

```
Work with Object Links
Directory . . . . : /QIBM/ProdData/QICC
Type options, press Enter.
 2=Edit  3=Copy  4=Remove  5=Display  7=Rename  8=Display attributes
11=Change current directory ...

Opt  Object link          Type  Attribute  Text
--  -
 1_  QICC-2020-07-29-11 >  STMF
 2_  QICC-2020-07-29-11 >  STMF
 3_  QICC-2020-07-29-11 >  STMF
 4_  QICC-2020-07-29-11 >  STMF
 5_  QICC-2020-07-29-11 >  STMF
 6_  QICC-2020-07-29-11 >  STMF
 7_  QICC-2020-07-29-11 >  STMF
 8_  QICC-2020-07-29-11 >  STMF
 9_  QICC-2020-07-29-11 >  STMF
10_  QICC-2020-07-29-11 >  STMF
11_  QICC-2020-07-29-11 >  STMF
More...
```

Select the most current STMF file. Option **5=Display**

```
Work with Object Links
Directory . . . . : /QIBM/ProdData/QICC
Type options, press Enter.
 2=Edit  3=Copy  4=Remove  5=Display  7=Rename  8=Display attributes
11=Change current directory ...

Opt  Object link          Type  Attribute  Text
5_  QICC-2020-07-29-11 >  STMF
```

Verify the MIGRATE resource is functioning correctly

**CPYTOCLD** and press **F4** to prompt

- The ICC resource must be created.
- IBM® i Read (\*R) authority is required on the file that will be copied, and Execute (\*X) authority on all directories in the path leading to the file. For example, if copy the file /home/user/jdoe/file.txt, the profile must have Execute authority on the home, user, and jdoe directories, and Read authority on file.txt.
- Example: Using “/tmp/lpume.log”
  - Resource name = MIGRATE (was created earlier)
  - Submit to batch = \*NO (should be a small text file)
  - Local file name = /tmp/plume.log (verify it is in the directory path)
  - Cloud file name = test1cs (this can be any name, don't forget to cleanup file in the Network Install Server if successful after the test)

```

Copy ICC File to Cloud (CPYTOCLD)

Type choices, press Enter.

Resource name . . . . . > TORICLD      Name
Submit to batch . . . . . > *NO        *NO, *YES
Local file name . . . . . > '/tmp/lpume.log'

Cloud file name . . . . . > test1cs

```

“File copied.” message confirms it was copied

```

Parameters or command
==>
F3=Exit   F4=Prompt   F5=Refresh   F9=Retrieve   F12=Cancel   F17=Position to
F22=Display entire field   F23=More options
File copied. ←

```

## Restore problems

CPF41B0 – Incorrect image catalog name specified.

Check the current location of the volume BRMS is trying to restore from in **WRKMEDBRM**. If the volume does not have a status of \*ACT and the location is not the MIGRATE location, run **STRMNTBRM MOVMED(\*YES)** on the source

and remote system and verify the volume has a status of \*ACT and the location is MIGRATE. Retry the restore.

## Chapter 4: Additional Resources

IBM i Migration Strategies

<https://cloud.ibm.com/docs/power-iaas?topic=power-iaas-migration-strategies-power-migration-ibmi>

How to Download Required Software  
Start with My Entitled Systems Support at:

<https://www.ibm.com/servers/eserver/ess/index.wss>

IBM Cloud Storage Solutions for IBM i User's Guide

[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwjypYrCkMXpAhUCH80KHV69D5wQFjABegQIAxAB&url=https%3A%2F%2Fwww.ibm.com%2Fsupport%2Fknowledgecenter%2Fssw\\_ibm\\_i\\_73%2Ficc%2Ficcumstpdf.pdf&usg=AOvVaw01p3eqw7Tu0eqXHGMqWLSX](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwjypYrCkMXpAhUCH80KHV69D5wQFjABegQIAxAB&url=https%3A%2F%2Fwww.ibm.com%2Fsupport%2Fknowledgecenter%2Fssw_ibm_i_73%2Ficc%2Ficcumstpdf.pdf&usg=AOvVaw01p3eqw7Tu0eqXHGMqWLSX)

BRMS and Cloud Storage Solutions

<https://helpsystemswiki.atlassian.net/wiki/spaces/IWT/pages/165642270/BRMS+and+Cloud+Storage+Solutions>