

ASP Considerations

Spool Organizer supports Basic and Independent Auxiliary Storage Pools (ASPs, or Disk Pools). Spool Organizer supports multiple instances per LPAR. The administrator has several choices when deciding which ASP to install Spool Organizer product libraries. This appendix will describe the issues involved in moving Spool Organizer libraries to different ASPs, and installing multiple Spool Organizer instances in an LPAR.

The following containers make up the Spool Organizer product:

- Base Objects Library (**BDSBASE**) – Objects that must remain in the *SYSBAS IASP.
- Programs Library (**BRODERICK**) – Programming objects and temporary data.
- Data Library (**BDSDATA**) – User Data objects (files, etc.)
- IFS subdirectory **/BRODERICK/SPOR40** – Programming objects and temporary data.

The administrator should be familiar with ASPs before moving Spool Organizer libraries to different ASP locations or implementing multiple Spool Organizer instances. For more information on OS/400 ASP capabilities, visit the IBM Knowledge Center:

<https://www.ibm.com/support/knowledgecenter>

Use IBM's search function; search for "disk pools". There are also excellent IBM Redbooks available. Here is a list of some:

Independent ASPs A Guide to Moving Applications to IASPs	SG24-6802
IBM i 6.1 IASPs: A Guide to Quick Implementation of Independent ASPs	SG24-7811

Setup/System Considerations

When planning your ASP selection for your Spool Organizer installation, consider the following:

- Moving Spool Organizer objects to different ASPs is optional. The administrator should consider the advantages and disadvantages before moving. BDS recommends you don't move Spool Organizer product libraries unless you see a clear advantage to moving them.
- The IFS subdirectory **/BRODERICK** must remain in the *SYSBAS ASP's directory system. It cannot be moved to the IFS directory system in an Independent ASP. Multiple instances will share the one **/BRODERICK** IFS directory.
- Library **BDSBASE** must be in the *SYSBAS ASP (ASP 1 – 32). Multiple Spool Organizer instances, along with other BDS products, will share the one **BDSBASE** library.
- Libraries **BRODERICK** and **BDSDATA** can be in the *SYSBAS ASP or an Independent ASP.
- Libraries **BRODERICK** and **BDSDATA** must be in the same ASP Group. Either or both libraries

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can be in *SYSBAS (ASP 1 – 32). One library can be in *SYSBAS and the other can be in an IASP. Both libraries can be in the same IASP. The libraries can be in different ASP Devices within an IASP. For example library **BRODERICK** can be in the primary ASP Device and **BDSDATA** can be in one of the secondary ASP Devices attached to that primary.

You cannot put an instance's libraries **BRODERICK** and **BDSDATA** into two different IASPs. For example, you cannot put an instance's library **BRODERICK** in **IASP1** and **BDSDATA** in **IASP2**. You can, however, put **BRODERICK** in *SYSBAS and **BDSDATA** in **IASP1**, or visa-versa.

- Check application ASP needs. Please note that the ASP Group setting allows only one non-*SYSBAS IASP to be accessed at a time by a user job. Consider a user application that writes reports to an outq in an IASP. If Spool Organizer libraries are in a different IASP, Spool Organizer tasks such as Monitors will not be able to access the outq or its spool entries. This includes Spool Organizer tasks that access spool entries via Job Name/File Name attributes, such as the EMLSPLE command. Only objects and spool entries that reside within the same ASP Group as Spool Organizer can be accessed by Spool Organizer. Also consider that some Spool Organizer functions (i.e. **ARCOUTQ**, **ARCOLE**) can output into a save file. The save file cannot be in a different ASP Group than the Spool Organizer instance's.
- ASP IPL startup delay. Some ASP devices may not automatically vary on during IPL. Even if the devices do automatically vary on during IPL, the time it takes for the ASP devices to become AVAILABLE can be significant, and libraries on the ASPs are not accessible until the ASP is available. If you place Spool Organizer product libraries on ASPs other than ASP 1, you should modify your startup procedures to account for this delay. For example your IPL startup stream should submit a job to start Spool Organizer processes instead of starting them directly. It should test for the existence of library **BRODERICK** or **BDSDATA** (the tested lib should be in an ASP), and delay/loop until the lib is found. Then issue Spool Organizer STRxxx commands.
- Entire System Save. The IBM Save All function (option 21) does not save the contents of IASPs. An instance's libraries **BRODERICK** and **BDSDATA** that exists on an IASP must be saved after the Save All function completes.

Operational Considerations

When running Spool Organizer commands, consider the following:

- Set the ASP Group before running Spool Organizer commands. There are several different ways to do this, including:
 - The IBM SETASPGRP command.
 - User Profile (via Job Description).
 - Submit Job Command
 - Job Description

ASP Considerations

Note: Do not modify the ASP Group parameters in BDS-supplied objects.

- Spool Organizer asynchronous jobs (Monitors, Bundle Manager, etc.) will retain the ASP Group that was active when the start command was issued. Any jobs submitted by the task will also retain the same ASP Group.
- To determine the ASP Group of a Spool Organizer asynchronous job (or any job), run the WRKACTJOB command and display the job (option 5). Take option 2 (Display job definition attributes).

HTTP Server Considerations

To support ASPs in the Spool Organizer Web Browser Interface using IBM Apache HTTP server, a couple of simple changes to the HTTP configuration are required. Refer to Appendix F, “Web Browser Considerations” while using this section.

In the configuration file, any references to CGI programs running in library **BRODERICK** must be qualified by prefixing the ASP Group containing library **BRODERICK**. These references are identified by the prefix /QSYS.LIB and should be changed to, for example, /IASP1/QSYS.LIB ... In the example configuration file in Appendix F, the lines 34, 43 and 44 need to be changed. Please note that you probably do not need to change references to the IFS root directory (/BRODERICK/SPOR40), unless you have set up your web application in a special way.

If multiple Spool Organizer instances are wanted, multiple HTTP server instances must be configured. Each HTTP instance’s configuration file should be changed to reflect the ASP Group containing the corresponding Spool Organizer’s library **BRODERICK**.

Moving Product Libraries to other ASPs

To move a Spool Organizer instance’s library to another ASP, be aware of the operational considerations listed above. Also, be aware of the following:

- All BDS products within the library(s) are moved during the move operations.
- You can save and restore multiple libraries of an instance with one **SAVLIB** or **RSTLIB** command in some circumstances. For example you can move libraries **BRODERICK** and **BSDATA** from ASP 1 to IASP MYIASP with one **SAVLIB** and one **RSTLIB** command.

The procedure to move the Spool Organizer library(s) is as follows:

- Stop all operations in that instance for all BDS products.

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- Back up the library.
- Remove the library from all active jobs' library lists.
- Perform the following operations on the library: SAVLIB, DLTLIB, RSTLIB.
- Restart BDS product operations.

You can also use the **BDSMOVLIB** command, which automates the Save/Delete/Restore operations for you, and performs some checking/verification. See the “BDS Move Lib Utility” below for more information.

BDS Move Lib Utility

The **BDSMOVLIB** command will move Broderick Data Systems product libraries to another ASP. The Pgm objects library (**BRODERICK**), Data objects library (**BDSDATA**), the Base objects library (**BDSBASE**), or any combination can be moved. All Broderick Data Systems functions must be stopped. No object locks can be on any moved library, including the lock that occurs when the library is in a job's library list. The user should verify no job is locking the intended Libraries by using the **WRKOBJLCK** command. It is recommended that QSECOFR, or a user profile with *SECADM authority perform this command.

In order to move libraries, **SAVLIB** and **RSTLIB** commands are performed. The intermediate save media can be a save file or magnetic tapes (including virtual tape devices). It is recommended to use the Save File option unless disk space is a concern.

The **BDSMOVLIB** command and its associated objects reside in library **BRODERICK**. If you wish to move **BRODERICK**, you will need to make a copy of the following objects in another library (i.e. MYLIB), add that library to your library list (and remove **BRODERICK**) and run the **BDSMOVLIB** command from the new library:

BDSMOVLIB	*CMD
BDS13	*PGM
BDSHELP	*PNLGRP

Following is the screen and parameters of the **BDSMOVLIB** command.

ASP Considerations

```

Move BDS Libs to other ASPs (BDSMOVLIB)

Type choices, press Enter.

Device . . . . . *SAVF _____ Name, *SAVF
      + for more values _____
Volume Identifier . . . . . *MOUNTED _____ Character value, *MOUNTED
      + for more values _____
Base Lib (BDSBASE) ASP Number . *SYS _____ 1-32, *SYS, *NOMOVE
Pgm Lib (BRODERICK) ASP Number . *SYS _____ 1-32, *SYS, *NOMOVE
Pgm Lib (BRODERICK) ASP Device . *SYSBAS _____ Name, *SYSBAS
Data Lib (BRODERICK) ASP Number . *SYS _____ 1-32, *SYS, *NOMOVE
Data Lib (BDSDATA) ASP Device . *SYSBAS _____ Name, *SYSBAS
SAVF for lib objs in transit . . BDSTSAVF _____ Name, *LIBL
                               QTEMP _____ *YES, *NO

Bottom
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display
F24=More keys

```

Device (DEV) Parameter

Specifies the name of the device used to hold objects in transit during the move operations. Specify up to four devices. The device name must exist on the system.

Note: During the move operations, the specified media contains a full SAVLIB instance of the library being moved. In the event of a failure during the restore phase of the move, the specified media may be used to manually move the library. For this reason, if the **BDSMOVLIB** command is submitted to batch and DEV(*SAVF) is specified, a library other than **QTEMP** should be considered.

The possible values are:

***SAVF:** The move operation is done using the save file specified by the SAVF for lib objs in transit.

device-name: Specify the name of the tape device(s) used for the move operation. Specify up to 4 devices.

Volume Identifier (VOL) Parameter

Specifies, for tape devices, the Volume(s) to check for.

The possible values are:

***MOUNTED:** No volume-id checking is performed. The mounted volume is used.

volume-id: Specify the name of the volumes(s) to be checked for during the move operation.

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Specify up to 5 volumes.

Note: If a library's data is expected to continue onto more than one tape, it is recommended to specify the actual volume IDs instead of *MOUNTED.

Base Lib (BDSBASE) ASP Number (BASASP) Parameter

Specifies the destination ASP Number for the Base objects library (BDSBASE). This value must be different than the Base Lib's existing ASP number.

The possible values are:

***SYS:** The System ASP (ASP = 1) is the destination ASP.

***NOMOVE:** The Base objects Lib is not moved.

number: Specify the destination User ASP number, from 1 to 32.

Pgms Lib (BRODERICK) ASP Number (PGMASP) Parameter

Specifies the destination ASP Number for the Pgm objects library (BRODERICK). Use this parameter instead of the PGMASPDEV parameter if you wish to specify a Basic ASP (1 - 32). This value must be different than the Pgm Lib's existing ASP number.

The possible values are:

***SYS:** The System ASP (ASP = 1) is the destination ASP.

***NOMOVE:** The Pgm objects Lib is not moved.

number: Specify the destination User ASP number, from 1 to 32.

Pgms Lib (BRODERICK) ASP Device (PGMASPDEV) Parameter

Specifies the destination ASP Device for the Pgm objects library (BRODERICK). Use this parameter instead of the PGMASP parameter if you wish to specify an Independent ASP (33 - 256).

The possible values are:

***SYSBAS:** The value specified in the ASP Number parameter (PGMASP) is used.

name: Specify the ASP Device name. This name must exist and must be in an AVAILABLE status.

Data Lib (BDSDATA) ASP Number (DTAASP) Parameter

Specifies the destination ASP Number for the Data objects library (BDSDATA). Use this parameter instead of the DTAASPDEV parameter if you wish to specify a Basic ASP (1 - 32). This value must be different than the Data Lib's existing ASP number.

ASP Considerations

The possible values are:

***SYS:** The System ASP (ASP = 1) is the destination ASP.

***NOMOVE:** The Data objects Lib is not moved.

number: Specify the destination User ASP number, from 1 to 32.

Data Lib (BDSDATA) ASP Device (DTAASPDEV) Parameter

Specifies the destination ASP Device for the Data objects library (BDSDATA). Use this parameter instead of the DTAASP parameter if you wish to specify an Independent ASP (33 - 256).

The possible values are:

***SYSBAS:** The value specified in the ASP Number parameter (DTAASP) is used.

name: Specify the ASP Device name. This name must exist and must be in an AVAILABLE status.

SAVE for lib objs in transit (SAVF) Parameter

Specifies the name and library of the save file that contains the objects in transit during move operations.

The possible values are:

BDSTSAVF: File BDSTSAVF will be used.

save-file-name: Specify the name of the save file to use when performing the move operations. If the save file does not exist, it will be created.

The possible Library values are:

QTEMP: The library QTEMP is used to locate the save file.

library-name: Specify the name of the library to be searched.

Running Multiple Spool Organizer Instances in an LPAR

Multiple instances of Spool Organizer can run within an LPAR. Each instance runs independently, though some objects are shared by all instances, including:

- Library **BDSBASE** and its objects
 - Subsystem BDS and its subcomponents.
 - The BDS User profile coordinator (BDSUSRPRF).

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- IFS subdirectory **/BRODERICK/SPOR40**

All instances can be active and running at the same time. Each instance must contain a copy of libraries **BRODERICK** and **BDSDATA** in its own unique IASP.

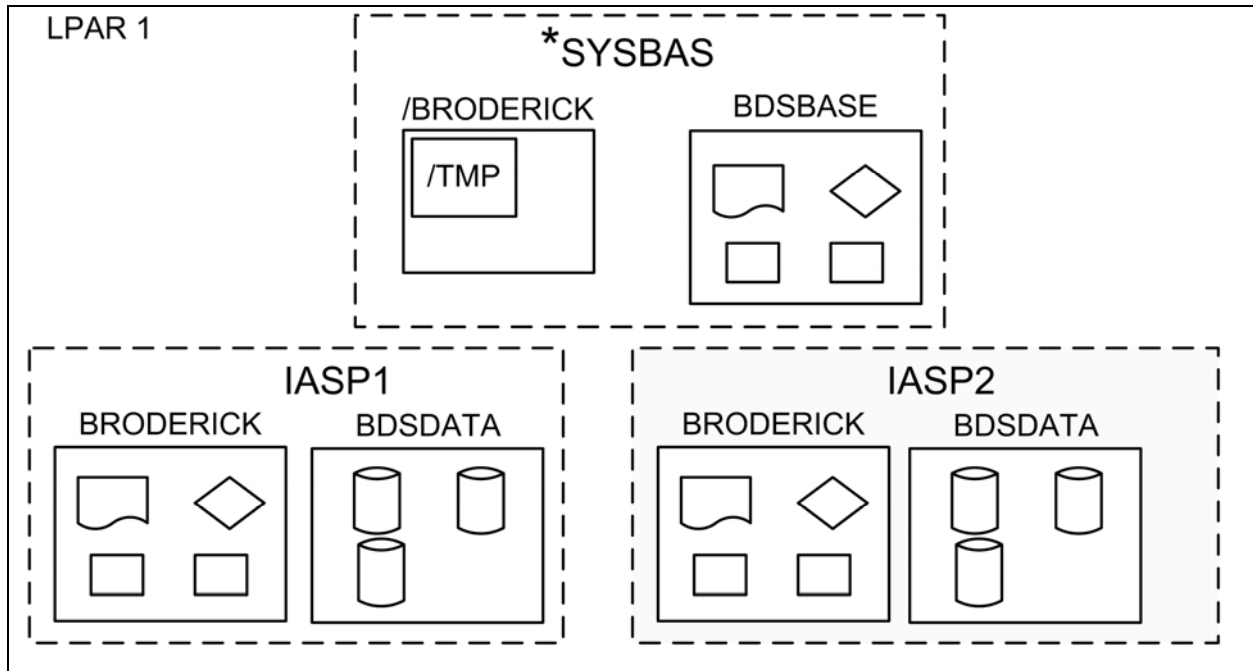


Figure 1-1: Multiple Spool Organizer Instances

When running multiple Spool Organizer instances, consider the following:

- Libraries **BRODERICK** and **BDSDATA** cannot reside in ***SYSBASE**. See “Moving Product Libraries to other ASPs” in this appendix for more information on moving libraries **BRODERICK** and **BDSDATA** to an IASP.
- Library **BDSBASE** must remain in the ***SYSBAS** IASP, ASP (1 – 32).
- The IFS subdirectory **/BRODERICK** must remain in the ***SYSBAS** IASP’s directory space.
- You must install and update each instance separately. For example, if you have Spool Organizer instances installed in IASPs IASP1 and IASP2, you must run the update procedure twice.
- To update or install an instance of Spool Organizer, all instances in the LPAR must be stopped.
- For each instance, libraries **BRODERICK** and **BDSDATA** must be backed up and restored as a separate entity. For example if you have 2 instances, you must back up both instances of libraries **BRODERICK** and **BDSDATA** in order to be able to recover data if needed.

ASP Considerations

Note: You can restore an instance's **BRODERICK** and **BDSDATA** libraries into another IASP to create another instance.

- If you are Mirroring our product, each instance must be mirrored as a separate entity. Please note that we recommend mirroring libraries **BDSBASE** and **BRODERICK** but it is not a requirement. You must, however, mirror ALL objects in **BDSDATA** in order for a recovery to be successful.
- Monitor names should be unique across the LPAR. For example you cannot have a monitor named MON1 in 2 different instances within the same LPAR running at the same time.

To work with an instance of Spool Organizer, you simply set your job's ASP Group. For example:

```
SETASPGRP IASP1  
STRSOMON MON1  
SETASPGRP IASP2  
STRSOMON MON2
```