

Multiple Virtual Storage (MVS)

Lesson 8: System
Generation & Initialization

Lesson Objectives

- In this lesson, you will learn the following topics:
 - System Generation & Initialization
 - System Datasets
 - ISRDDN diagnostic utility



System Generation

- System generation is the process of creating a Mainframe system
- Distribution libraries -
 - OS on a series of tapes
- Sysgen
 - In terms of macro instructions
 - hardware configuration
 - OS options to be installed
 - creates a series of system libraries that hold OS code



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The basic components that make up the OS are on a series of tapes, called distribution libraries. System generation selects and assembles the various distribution libraries. To control system generation, normally known as sysgen, a system's programmer codes special macroinstructions that specify how the OS components from the distribution libraries have to be put together.

An installation must have a working OS before it can create a new one since a working OS is required to execute the macroinstructions. Sysgen is usually used to upgrade to a newer version or to make changes to the current version. For installations which does not have already a working OS, a small, limited functional OS is setup that can execute the Sysgen for the complete full functional Mainframe system.

The macroinstructions that Sysgen uses fall under two categories:

The first category of macros defines the system hardware configuration. They are needed because the OS must know about every I/O device that is attached to the system. As a result for every I/O added, the system must be generated again. (Actually smaller, less time-consuming type of Sysgen called an **iogen** can be used to change the device configuration).

The second category of macroinstructions in a sysgen indicates which options of the operating system should be included. They indicate whether JES1 or JES2 is used, what optional access methods are installed, and so on. The output from a sysgen is a set of system libraries that among other things contains the executable code that makes up the operating system.

System Initialization

- System initialization is the process of starting a previously generated system
- Initial Program Load (IPL) from sys control after sysgen
- Initialization can be automated without operator intervention by specifying options in SYS1.PARMLIB



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System initialization is a process by which the OS system code is loaded from selected system libraries into central storage. This process defines the Mainframe system.

The system requires initializing:

- after generating a new system.
- after changes have been made to the system.
- after a system failure.

System Datasets

- **SYS1.NUCLEUS**
 - PDS containing nucleus program
 - One of the members contains a pointer to the Master Catalog
- **SYS1.PARMLIB**
 - Options for initialization
 - Contains about 30 members that specify various options which is used during System initialization.
- **SYS1.LINKLIB**
 - Contains mostly OS executables
 - Contains executable programs that are written by users in COBOL.
 - These are not read into storage until they are required

System Datasets (Contd..)

- **SYS1.LPALIB**
 - Contains executable programs that are part of the operating system.
 - These are always available in storage for any program that needs them.

- **SYS1.PROCLIB :**
 - PDS containing JCL procedures
 - These can be used by any valid JCL user.

- **SYS1.CMDLIB**
 - Commands for TSO mode

ISRDDN diagnostic utility

- ISRDDN is a utility, that provides a list of allocated DD names, a list of system ENQs, a list of data set causing ENQ contention, and a means of viewing storage within a TSO user's address space.
- ISRDDN is also used to provide some facilities to gather information about the environment, that we work on.
- To invoke the ISRDDN program, type TSO ISRDDN on any of the ISPF command line.



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The allocated DD name list shows you all of the DD names allocated to your TSO session. From the list you can perform functions such as Edit or Compress against individual data sets, DD names, or sets of DD names. You can also perform actions against the entire list of displayed DD names.

The ENQ list, which is available by typing ENQ on the allocation list command line, shows you ENQs on your system. You can limit the size of the list by specifying the QNAME, RNAME, job, user or address space name, and system name.

The ENQ contention list, available by typing CON on the allocation list command line, shows you ENQ contentions on your system for data sets (QNAME SYSDSN).

You can Browse storage using the BROWSE primary command from the allocation list. You can only browse storage which an unauthorized program can see (private and common).

Current dataset allocation list

Command ==> _____ Current Data Set Allocations Row 1 of 188 Scroll ==> CSR

Volume	Disposition	Act	DDname	Data Set Name	Actions: B E V M F C I Q
Z14RS4	SHR,KEEP	> -	ADMCFORM	QMFB10.SDSQCHRT	
Z14RS4	SHR,KEEP	> -	ADMGGMAP	QMFB10.SDSQMAPE	
Z14RS1	SHR,KEEP	> -	DITPLIB	DIT.V1R3M0.SDITPLIB	
	MOD,DEL	> -	DSQDEBUG	----- JES2 Subsystem file -----	
ZTS005	NEW,DEL	> -	DSQEDIT	SYS16100.T172912.RA000.DSRP042.R0183382	
Z14RS4	SHR,KEEP	> -	DSQPNLE	QMFB10.DSQPNLE	
	MOD,DEL	> -	DSQPRINT	----- JES2 Subsystem file -----	
ZTS009	NEW,DEL	> -	DSQSPILL	SYS16100.T172912.RA000.DSRP042.SPILL.H01	
	MOD,DEL	> -	DSQDUMP	----- JES2 Subsystem file -----	
Z14RS1	SHR,KEEP	> -	IPCSPARM	SYS1.IBM.PARMLIB	
Z14RS1	SHR,KEEP	> -	ISPILIB	ISP.SISPSAMP	
Z14RS2	SHR,KEEP	> -	ISPLLIB	ABJ.H09F210.SABJMOD1	
Z14RS2	SHR,KEEP	> -		SYS1.SCBDMENU	
Z14RS4	SHR,KEEP	> -		QMFHPO.SRAAISPM	
Z14CAT	SHR,KEEP	> -		QMFHPO.SRAALOAD	
Z14RS2	SHR,KEEP	> -		MQM.SCSQANLE	
Z14RS3	SHR,KEEP	> -		GIM.SGIMLMD0	
Z14RS4	SHR,KEEP	> -		QMFB10.SDSQEXIT	
F1=Help	F2=Split	F3=Exit	F5=Rfind	F7=Up	F8=Down F9=Swap
F10=Left	F11=Right	F12=Cancel			



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When you start ISRRDDN, you will see the Current Data Set Allocations list. On the right side of the display is a list of DD names and their associated data sets. The list of data sets may also contain indicators of DUMMY allocations, subsystem files or allocations to the terminal. The DD name is shown in white unless the first data set in the concatenation is scrolled off the top of the screen. If the first data set in a concatenation is not on the screen, the DD name will be yellow.

In the center of the display is a column of 1 character input fields preceded by greater-than signs (>). These input fields are used for line commands such as **E** for edit or **I** for information.

The left side of the display contains columns of information about individual data sets. When you scroll right or left, the left side of the screen will change.

Initially the left side of the screen will contain the volume name and disposition. If the disposition is red, then there are other jobs waiting to use this data set as shown. Use the Q line command to see what jobs are waiting. Also, you can view VTOC information for a volume by placing the cursor on the volume name and pressing the Enter key.

Data set attributes in ISRRDN

Command ==> Current Data Set Allocations Row 1 of 188 Scroll ==> CSR

Blksz	Lrecl	RCFM	Org	Act	DDname	Data Set Name	Actions: B E V M F C I Q
27600	400	FB	P0	> -	ADMCFORM	QMF810.SDSQCHRT	
27600	400	FB	P0	> -	ADMGGMAP	QMF810.SDSQMAPE	
8800	80	FB	P0	> -	DITPLIB	DIT.V1R3M0.SDITPLIB	
				> -	DSQDEBUG	----- JES2 Subsystem file -----	
4029	79	FBA		> -	DSQEDIT	SYS16180.T172912.RA000.DSRP042.R0183382	
0	0		VS	> -	DSQPNLE	QMF810.DSQPNLE	
				> -	DSQPRINT	----- JES2 Subsystem file -----	
4096	4096	F		> -	DSQSPILL	SYS16180.T172912.RA000.DSRP042.SPILL.H01	
				> -	DSQDUMP	----- JES2 Subsystem file -----	
6160	80	FB	P0	> -	IPCSPARM	SYS1.IBM.PARMLIB	
8800	80	FB	P0	> -	ISPILIB	ISP.SISPSAMP	
32760	**	U	P0	> -	ISPLLIB	ABJ.H09F210.SABJMOD1	
32760	**	U	P0	> -		SYS1.SCBDHENU	
27920	80	FB	P0	> -		QMFHP0.SRAAISPM	
32760	**	U	P0	> -		QMFHP0.SRAALOAD	
32760	**	U	P0	> -		MQM.SCSQANLE	
32760	**	U	P0	> -		GIM.SGIMLMD0	
32760	**	U	P0	> -		QMF810.SDSQEXIT	

F1=Help F2=Split F3=Exit F5=Rfind F7=Up F8=Down F9=Swap
F10=Left F11=Right F12=Cancel

If you scroll right once, you will see the attributes of each dataset. For some types of allocations, such as subsystem allocations, you may see different information.

Allocation List Line Commands:

Allocation list line commands are entered next to a DD name or data set. By default the allocation list is in *short* format. This means that for concatenations, the DD name is next to the first data set name in the concatenation.

E - Edit

The E line command edits a data set or concatenation. It can be used on any data set or any DD name allocated to a data set (real or VIO). You might want to use the E line command for editing temporary files such as JCL which was created by file tailoring and written to the ISPCTLn DD name.

B - Browse

The B line command browses a data set or concatenation. It can be used on any data set or any DD name allocated to a data set (real or VIO). You can use the B line command for browsing allocated files. For example, the compress option in the PDF utilities, option 3.1, creates a listing data set which is sometimes allocated to the ISPCTL1. When you press the HELP key after compressing a data set in option 3.1, you may see that the listing was saved in a temporary data set. The B line command in ISRDDN is an easy way to browse that data set.

V - View

Use the V command to view a data set or concatenation. This is similar to E (edit) but there is no SAVE command. Use this when you want to view a data set and modify it for easier viewing without risking changes to the data set.

M - Member list

The M command displays an enhanced member list for a data set or concatenation. This allows you greater flexibility in working with allocated data sets. You might use this command when you have several different operations to perform on members.

F - Free

Use the FREE command to free an allocation. The Free command must be specified next to a DD name, although F commands next to data sets in a concatenation with an F next to the DD name are ignored because those data sets are removed from the list before the F commands are processed.

C or Z - Compress

Use the Compress command to compress partitioned data sets. The compress command can be used with data sets that are allocated as shared and can be used next to data set names or DD names.

I - Information

The I command attempts to invoke the PDF data set information utility to display information about a data set. It can be used next to any real data set name. VIO data sets are not supported. This command can provide information such as the number of allocated directory blocks or a data set's SMS management class, or other information that is not shown by scrolling the Current Data Set Allocations list left or right.

Q - Query ENQs

The Q command will show all SYSDSN and SPFEDIT ENQs that exist for a data set. This command is useful when you want to see what other users or jobs are using a data set you have allocated. Using the Q command provides the same information as using the ENQ primary command and selecting an RNAME of the data set name.

Summary

- In this lesson, you have learnt:
 - System generation & initialization
 - System datasets



Review Question: Match the Following

1. _____ is the process of creating a Mainframe system
2. Initialization can be automated by specifying options in _____



1. System Generation
2. SYS1.PARMLIB