Redbooks
ibm.com/redbooks

Mainframe from Scratch
Hardware Configuration and z/OS Build

Keith Winnard
Bertus Bekker
Rafael Carvalho A. Lima
Nilkanth Patwardhan
Zheng Zhao
Hui Zhou

z Systems

IBM

Redbooks

International Technical Support Organization

Mainframe from Scratch: Hardware Configuration and z/OS Build

December 2016

SG24-8329-00

Note: Before using this information and the product it supports, read the information in “Notices” on page ix.

First Edition (December 2016)

This edition applies to Version 2, Release 2, of z/OS (product number 5650 ZOS).

Contents

Notices ix
Trademarks x

Preface xi
Authors xii
Now you can become a published author, too! xiii
Comments welcome xiv
Stay connected to IBM Redbooks xiv

Part 1. Overview and planning 1

Chapter 1. Overview 3
1.1 Introduction 4
1.1.1 Overview of approach 4
1.2 Scenario 4
1.2.1 System scenario 5

Chapter 2. Pre-planning 7
2.1 Where do you start? 8
2.2 Areas to address 9
2.3 Technical implementation plan considerations 9
2.3.1 Hardware pre-planning 9
2.3.2 Software pre-planning 11
2.3.3 Operational pre-planning 13
2.4 Implementation support plan considerations 13

Chapter 3. Planning 15
3.1 Process overview 16
3.1.1 Milestones 16
3.1.2 Phases 17
3.1.3 Summary 20

Part 2. Configuration and Builds 23

Chapter 4. Phase 1: IBM z13 preparation 25
4.1 Goals 26
4.2 Requirements 26
4.3 Related documents 26
4.4 Scenario 27
4.4.1 SE and HMC connection 27
4.5 Workflow 28
4.5.1 Defining SE to HMC 28
4.5.2 POR by using IOCDS D0 35

Chapter 5. Phase 2: Stand-alone hardware configuration 45
5.1 Goals 46
5.2 Requirements 46
5.2.1 Documentation 46
5.2.2 Resources 47
5.3 Related documents 47

5.4 Scenario 48
5.5 Workflow 48
5.5.1 Creating IOCS file 49
5.5.2 Building IOCDS A0 57
5.5.3 POR IOCDS A0 74
5.5.4 Defining and activating COD z/OS driving system image profile 75

Chapter 6. Phase 3: DS8000 logical configuration 89
6.1 Goal 90
6.2 Requirements 90
6.2.1 Documentation 90
6.2.2 Tasks 90
6.3 Related resources 91
6.4 Scenario 91
6.5 Workflow 91
6.5.1 Preparing logical configuration worksheet 91
6.5.2 Accessing the DS8000 Storage Management GUI 92
6.6 Creating CKD storage extent pools 94
6.7 Creating CKD LCUs with volumes 98
6.8 Configuring parallel access volumes 103
6.9 Downloading and filing the configuration file from GUI 106

Chapter 7. Phase 4: OSA-ICC and TN3270 configuration 109
7.1 Goals 110
7.2 Requirements 110
7.3 Related documents 111
7.4 Scenario 111
7.5 OSA-ICC setup workflow 111
7.5.1 Preparing IOCDS definition of OSA-ICC for COD load 112
7.5.2 Accessing OSA-Express Advanced Facilities 113
7.5.3 Configuring OSA-ICC server 117
7.5.4 OSA-ICC sessions configuration 120
7.5.5 Validating the OSA-ICC configuration 124
7.5.6 Activating the OSA-ICC configuration 126
7.6 Configuring Personal Communications for NIP consoles 128
7.6.1 Configuring a Personal Communications TN3270 session 129
7.6.2 Defining a TN3270E session from HMC Emulation panel 134

Chapter 8. Phase 5: Customized Offering Driver restore 137
8.1 Goal 138
8.2 Requirements 138
8.3 Related documents 138
8.4 Scenario 139
8.5 Workflow 139
8.5.1 Restoring COD DVDs 140

Chapter 9. Phase 6: Initial program load of the COD system 149
9.1 Goals 150
9.2 Requirements 150
9.2.1 Documentation 150
9.2.2 Resources 150
9.3 Related documents 151
9.4 Scenario 151
9.5 Workflow 151

9.5.1 IPL COD z/OS driving system 152

Chapter 10. Phase 7: Expanding the configuration 161
10.1 Goals 162
10.2 Tasks overview 162
10.2.1 Defining DS8800 volumes 163
10.2.2 New IOCDS 163
10.2.3 Adding 3270 sessions 165
10.2.4 Ready to communicate 168
10.2.5 Adding system volumes 168
10.3 Ready to fully use driver system 170

Chapter 11. Phase 8: ServerPac installation preparation 171
11.1 Goals 172
11.2 Requirements 172
11.2.1 Driving system software requirements 172
11.2.2 Driving system hardware requirements 173
11.3 Related documents 173
11.4 Ordering and receiving the z/OS V2R2 ServerPac 173
11.5 Planning the ServerPac installation layout 174
11.5.1 Volumes 174
11.5.2 Catalog 175
11.6 Checking the z/OS COD driver system 175
11.6.1 SMS subsystem 175
11.6.2 zFS subsystem 175
11.7 Preparing the HFS for ServerPac storage 176
11.8 Transferring DVD content to z/OS host 177
11.9 Running LOADRIM JCL to restore the CustomPac installation dialog 179
11.10 Starting the CustomPac installation dialog 180

Chapter 12. Phase 9: ServerPac Build of z/OS V2R2 183
12.1 Goals 184
12.2 Requirements 185
12.2.1 COD System Readiness checklist 186
12.3 Related documents 186
12.4 Planning the ServerPac installation configuration 186
12.5 Receiving the z/OS V2R2 order 187
12.6 Installing the z/OS V2R2 order 188
12.6.1 Creating the work configuration 188
12.6.2 Specifying variable values 190
12.6.3 Specifying SMP/E zone names 191
12.6.4 Modifying system layout 192
12.6.5 Specifying catalogs for Target Data Set HLQ 198
12.6.6 Specifying temporary aliases for catalogs 200
12.6.7 Saving work configuration 201
12.7 Submitting installation jobs 202
12.7.1 Job stream summary 203
12.7.2 Starting required VOLUMEs 204
12.7.3 Creating RACF profiles on driving system 204
12.7.4 Defining catalogs 204
12.7.5 Defining SSA 205
12.7.6 Allocating and cataloging data sets 205
12.7.7 Restoring data sets 205
12.7.8 Updating default data sets names 205

12.7.9 Defining SMP/E environment 206

Chapter 13. Phase 10: First initial program load of z/OS V2R2 207
13.1 Goals 208
13.2 Requirements 209
13.2.1 Resources 209
13.3 Related documents 209
13.4 Preparing the ServerPac IPL tasks from driver system. 210
13.4.1 Defining I/O configuration 210
13.4.2 Creating data set for Health Checker 210
13.4.3 Initializing LOGREC and creating IPL text 210
13.4.4 Creating stand-alone DUMP IPL text 210
13.4.5 Creating LOAD00 in IPLPARM 211
13.4.6 Running Post-apply Link 212
13.4.7 Copying customized parmlib members from driver to target. 212
13.4.8 Renaming data sets and creating Symlinks for target. 213
13.5 IPL z/OS V2R2 from HMC 213
13.5.1 HMC task 214
13.5.2 Starting address spaces 216
13.5.3 Logging on to z/OS V2R2 219
13.5.4 Enabling products and subsystems 220
13.5.5 Shutting down z/OS V2R2 225
13.6 Running postinstallation from target system 225
13.6.1 Importing the CustomPac Installation Dialog to the target 226
13.6.2 Defining RACF profiles for target system 228
13.6.3 Allocating log streams for logger. 228
13.6.4 Loading and activating Workload Manager policy. 228
13.6.5 Customizing TCP/IP 228
13.6.6 Customizing TN3270 231
13.6.7 Customizing Predictive Failure Analysis 232
13.6.8 Customizing Common Information Model 232
13.6.9 Customizing z/OSMF 232
13.6.10 Customizing IBM Knowledge Center 233
13.6.11 Updating COMMNDxx in parmlib for automatic start 233
13.7 Running installation verification programs 233
13.8 Running clean-up jobs to complete installation 234

Chapter 14. Phase 11: ServerPac DB2 build 237
14.1 Goals 238
14.2 Requirements 238
14.2.1 Related documents 238
14.2.2 Resources 239
14.2.3 Related document 239
14.3 Scenario 239
14.3.1 Transferring Internet order delivery content to z/OS ServerPac system. 239
14.4 Planning DB2 V11 ServerPac installation layout 241
14.5 Planning the ServerPac installation configuration 242
14.6 Receiving the DB2 V11 ServerPac Order 242
14.7 Installing the DB2 V11 order 245
14.7.1 Creating the work configuration 245
14.7.2 Specifying values for variables 246
14.7.3 Specifying SMP/E Zone Names 247
14.7.4 Modifying the system layout 248

14.7.5 Specifying catalogs for HLQ 250
14.7.6 Specify temporary aliases for catalogs 251
14.8 Submitting installation jobs 252
14.8.1 Installation tasks summary 253
14.8.2 Running the installation setup 253
14.8.3 RACF profile comparison and information 254
14.8.4 Defining catalogs and allocating data sets 254
14.8.5 Restoring your order 254
14.8.6 Setting up the SMP/E environment 255

Chapter 15. Phase 12: Customizing and initializing DB2 V11 subsystem 257
15.1 Goals 258
15.2 Requirements 258
15.2.1 Documentation 258
15.2.2 Resources 259
15.2.3 Related document 259
15.3 Performing post-installation tasks 259
15.3.1 Running the DB2 Installation Dialog 259
15.3.2 Starting the CLIST 260
15.3.3 Running the DB2 Installation Jobs 260
15.3.4 Initial start of z/OS 261
15.3.5 Initial program loading z/OS 262
15.4 Installation verification for DB2 263
15.5 Completing the installation 264

Notices

This information was developed for products and services offered in the US. This material might be available from IBM in other languages. However, you may be required to own a copy of the product or product version in that language in order to access it.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:
IBM Director of Licensing, IBM Corporation, North Castle Drive, MD-NC119, Armonk, NY 10504-1785, US

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you provide in any way it believes appropriate without incurring any obligation to you.

The performance data and client examples cited are presented for illustrative purposes only. Actual performance results may vary depending on specific configurations and operating conditions.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to actual people or business enterprises is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided “AS IS”, without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at “Copyright and trademark information” at http://www.ibm.com/legal/copytrade.shtml

The following terms are trademarks or registered trademarks of International Business Machines Corporation, and might also be trademarks or registered trademarks in other countries.

CICS®	IBM z13s™	System Storage®
DB2®	Language Environment®	System z®
DS8000®	MVS™	VTAM®
FFST™	Parallel Sysplex®	z Systems®
GDPS®	RACF®	z/OS®
Global Business Services®	Redbooks®	z/VM®
IBM®	Redbooks (logo)  ®	z13™
IBM z Systems®	Resource Link®	z13s™
IBM z13®	S/390®	

The following terms are trademarks of other companies:

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

Java, and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product, or service names may be trademarks or service marks of others.

Preface

This IBM® Redbooks® publication helps you install, customize, and configure an IBM z13® and build z/OS® environments.

This book is intended for those readers who are new to the platform and are faced with the task of installing a mainframe for the first time. By the term mainframe in this instance, we refer to the hardware and the system software. The intention is to show you how this installation can be done.

Volume 1 shows you how we set up a mainframe and installed z/OS V2R2 and IBM DB2® V11. The starting point is a basic hardware configuration of an IBM z13 and DS8000® as shipped from the factory. Volume 1 also shows you how the following milestones were achieved:

- Creating a configuration for the Customized Offering Driver (COD) system
- Stand-alone restoration of the COD
- Expanding the configuration
- Installing the z/OS V2R2 ServerPac
- Loading and running IVPs for z/OS ServerPac
- Installing DB2 ServerPac and IVPs

This publication includes figures that show you how the initial builds were achieved.

For this book, we designed a scenario and show you how to build that scenario step-by-step. Although your requirements likely differ from our scenario, we intend to provide you with an example to show you how it can be done and samples and downloadable materials that you can choose to modify to bring you closer to meeting your needs.

This book is divided into the following parts:

- Part 1: Overview and Planning

  In this part, we introduce you to how we approached the project:

  - Basic introduction
  - Proposed scenario
  - An outline of the process to building the scenario
  - Planning activities
  - Phases and milestones

- Part 2: Configuration and builds

  In this part, we describe the tasks that must be completed to create the initial build for the scenario that is described in Part 1:

  - Preparation and stand-alone configuration activities
  - Installing and using the COD
  - z/OS V2R2 ServerPac installation
  - DB2 V11 installation

Authors

This book was produced by a team of specialists from around the world working at the International Technical Support Organization, Poughkeepsie Center.

Keith Winnard is the z/OS Project Leader at the International Technical Support Organization, Poughkeepsie Center. He writes extensively and is keen to engage with customers to understand what they want from IBM Redbooks publications. Before joining the ITSO in 2014, Keith worked for clients and Business Partners in the UK and Europe in various technical and account management roles. He is experienced with blending and integrating new technologies into the traditional landscape of mainframes.

Bertus Bekker is a z/OS systems programmer at Business Connexion Data Centre Services, a large provider of managed services in South Africa. He has more than 30 years mainframe experience in the areas of z/OS, IBM z™ Systems processors, storage, configuration design, and implementation of new IBM z Systems®. He holds a BSc(Hons) from UNISA and assists with teaching of mainframe classes as part of the IBM Academic Initiative at Belgium Campus, an ITversity in South Africa.

Rafael Carvalho A. Lima is an IBM Certified IT Specialist in IBM Brazil. He has over eight years of experience in technical support on major z Systems clients. His areas of expertise include z Systems hardware, z/OS, and SMP/E. He holds a Bachelor Degree in Computer Science at Catholic University of Pernambuco and Specialization in System Analysis at Federal University of Pernambuco.

Nilkanth Patwardhan is an IT Specialist from IBM Global Business Services®, India. He works as ServerPac Design and Development team lead. He has 16 years of experience working on IBM z/OS and z/VM® platforms. He has a Bachelors degree in Engineering. His areas of expertise include z/OS ServerPac Installation Support and z/OS based Application Development.

Zheng Zhao is a Thought Leader certified SITS capability professional (System Service Representative) and a member of IBM Academy of Technology from IBM China. He has more than 20 years of experiences in z Systems. He holds a degree in Computer Science from Beijing University of Technology, China. His expertise includes z Systems server and related I/O devices, such as high-end storage problem determination, z Systems high availability management, and configuration design.

Hui Zhou is a Consulting I/T Specialist from Systems Lab Services and Training of IBM China. He joined IBM China in 2005 and has over 10 years of experience in IBM z Systems® and High-End Storage product field. His areas of expertise include z/OS, z/VM, Linux for IBM System z®, IBM Parallel Sysplex®, System z hardware, DS8000, and IBM GDPS® solution design and implementation. He provides technical service to several major China banking clients to deliver the latest System z products and solutions.

Thanks to the following people for their contributions to this project:

John Eells (IBM, Software Designer: z Systems Core Technologies, Poughkeepsie Center) for technical direction, advice, and guidance throughout this project.

Bob Haimowitz (Development Support Team [DST], Poughkeepsie Center) for setting up and maintaining the systems, and providing valuable advice, guidance, and assistance throughout the creation of this IBM Redbooks publication.

Rich Conway (DST, Poughkeepsie Center) for setting up and maintaining the systems, and providing valuable advice, guidance, and assistance throughout the creation of this IBM Redbooks publication.

Boyd Andrews (IBM, Poughkeepsie Center) for setting up and maintaining the systems, and providing valuable advice, guidance, and assistance throughout the creation of this IBM Redbooks publication.

Pasquale A. Catalano (IBM), Poughkeepsie Center) for setting up and maintaining the systems, and providing valuable advice, guidance, and assistance throughout the creation of this IBM Redbooks publication.

Peter Bertolozzi (Systems Management specialist, IBM Redbooks residency support, Poughkeepsie Center) for setting up and maintaining the environments in which residents worked.

John Gierloff (Operations, Poughkeepsie Center) for residency set-up and support.

Don Brennan (DST, Poughkeepsie Center) for setting up and maintaining the systems hardware that was used in the creation of this IBM Redbooks publication.

Ella Buslovich (Graphics specialist, Poughkeepsie Center) for providing guidance and specialist graphics for this IBM Redbooks publication.

Ann Lund (ITSO Administration, Poughkeepsie Center) for administrative support to enable the residency.

Cheryl Gera (ITSO Administration, Poughkeepsie Center) for managing the business operations for this IBM Redbooks publication.

Now you can become a published author, too!

Here's an opportunity to spotlight your skills, grow your career, and become a published author—all at the same time! Join an ITSO residency project and help write a book in your area of expertise, while honing your experience using leading-edge technologies. Your efforts will help to increase product acceptance and customer satisfaction, as you expand your network of technical contacts and relationships. Residencies run 2 - 6 weeks in length, and you can participate in person or as a remote resident working from your home base.

Find out more about the residency program, browse the residency index, and apply online at:

ibm.com/redbooks/residencies.html

Comments welcome

Your comments are important to us!

We want our books to be as helpful as possible. Send us your comments about this book or other IBM Redbooks publications in one of the following ways:

- Use the online **Contact us** review Redbooks form found at:

  ibm.com/redbooks

- Send your comments in an email to:

  redbooks@us.ibm.com

- Mail your comments to:

  IBM Corporation, International Technical Support Organization
  Dept. HYTD Mail Station P099
  2455 South Road
  Poughkeepsie, NY 12601-5400

Stay connected to IBM Redbooks

- Find us on Facebook:

  http://www.facebook.com/IBMRedbooks

- Follow us on Twitter:

  http://twitter.com/ibmredbooks

- Look for us on LinkedIn:

  http://www.linkedin.com/groups?home=&gid=2130806

- Explore new Redbooks publications, residencies, and workshops with the IBM Redbooks weekly newsletter:

  https://www.redbooks.ibm.com/Redbooks.nsf/subscribe?OpenForm

- Stay current on recent Redbooks publications with RSS Feeds:

  http://www.redbooks.ibm.com/rss.html

Part 1

Overview and planning

We assume that you are reading this IBM Redbooks publication because you want to set up a new mainframe environment from scratch and load the IBM z/OS operating system on to it to establish a basic operational environment.

We set up this exact configuration for you.

To help you understand how to achieve building the basic operational environment, we created a basic scenario. This Redbooks publication covers the tasks that we completed to achieve that scenario. We also include practical suggestions to help you along the way.

The content is intended to give you the knowledge and confidence to build your own operational IBM z/OS systems from scratch. The knowledge and experience you take from this book aims to give you the foundation on which to build your own systems.

In Part 1 includes the following chapters:

- Chapter 1, “Overview” on page 3

  In this chapter, the scenario that was created for this book and a high-level view of how it is built are described.

- Chapter 2, “Pre-planning” on page 7

  Preparation for the planning process requires some research. In this chapter, we help you to identify the type of information and resources you need before your planning phase.

- Chapter 3, “Planning” on page 15

  In this chapter, we describe the initial environment that we are building and then produce a sample plan to achieve it.

1

Overview

This chapter is the starting point for providing you with the high-level information to understand the scope of our initial build and how we approach it.

This chapter includes the following topics:

- 1.1, “Introduction” on page 4
- 1.2, “Scenario” on page 4

1.1 Introduction

The simplest way to explain how to set up a mainframe hardware environment from scratch and install z/OS software on it is to show you. To this end, we defined a scenario and used the standard tool sets that are available to build that scenario.

The process of starting from scratch to establishing a single basic operational environment is described in this book. The descriptions are based on the actual design, plan, and build of the scenario by using dedicated hardware and software in a controlled laboratory environment. You see how it is built in practical and real steps.

Throughout the book, we offer hints and tips that can help improve your understanding of the processes, and help you consider what makes it more applicable to your environment.

1.1.1 Overview of approach

The approach that we take is designed to help you in the following ways:

- Design a scenario so you can see what the end solution looks like
- Show you how we created the plan to build the scenario
- Show you the steps that we took to build the scenario

Each step aims at building your confidence and expertise with the following intentions:

- Keep the steps simple; you might be new to the z Systems platform
- Reduce complexity by breaking down the process into manageable phases and steps
- Keep the language simple
- Use the latest hardware and software levels where possible
- Be practical in the approach
- Provide you with references to other materials that help increase your understanding
- Show how a structured approach can help to ease effort and minimize repetition

1.2 Scenario

You are ready to start the process with us. The first topic that we must cover is the destination of this process, which is the active scenario. The process shows you how to build this scenario.

You can use this book to see how certain activities were planned or completed. If you printed a hardcopy of this book, you can make notes in the margins to which you can refer later.

1.2.1 System scenario

The initial build in shown in Figure 1-1. The following logical partitions (LPARs) are used:

- Customized Offering Driver (COD): This LPAR accommodates the driver system. It is a predefined z/OS system that is loaded and used to install the ServerPac.
- COSP: This LPAR is the z/OS V2R2 system that we build by using the ServerPac process. In addition to z/OS, we use a separate ServerPac to install DB2 V11 into this LPAR.

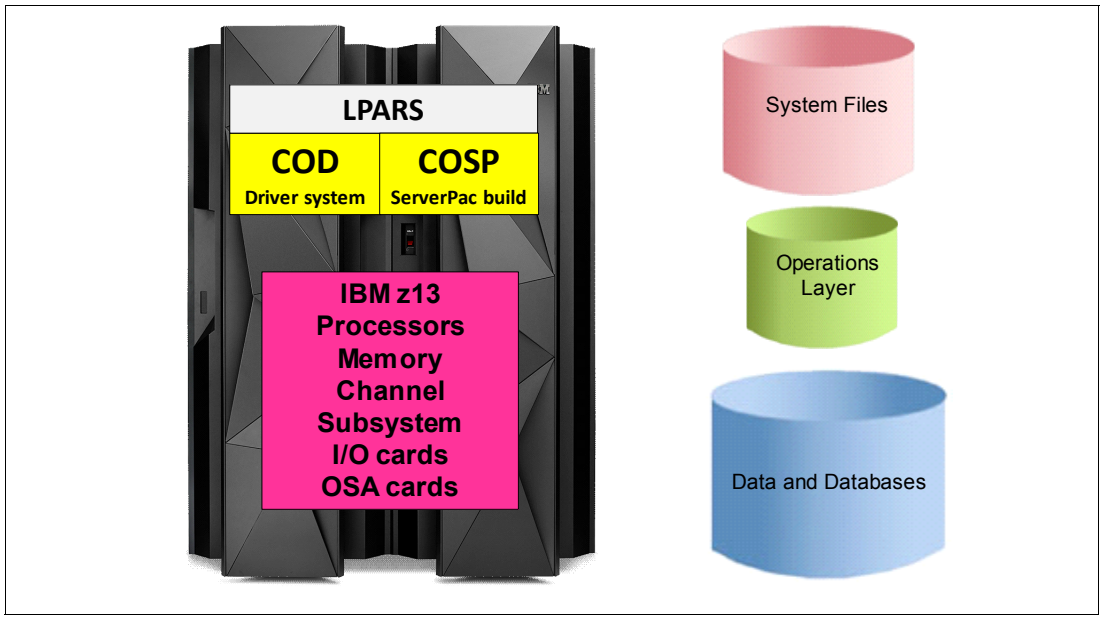

Figure 1-1 Initial build

Consider the following points regarding our scenario:

- All the LPARS run on an IBM z13 N63. No other CPCs are included in this scenario.
- A single DS8000 DASD provides all of the disks for our scenario.
- No tape drives are available.
- One Hardware Management Console (HMC) is used to configure the z13.

You might want to add more LPARs or Coupling Facilities (CFs) later to suit your requirements. However, this scenario is aimed at providing you with a base on which you can develop your infrastructure, as shown in Figure 1-1.

Each z/OS LPAR includes the following layers:

- A System Software layer that consists of z/OS system files, which are critical for the operating system to run.
- A basic Operations layer that contains elements that define the LPAR's role in relationship to its environment.
- A partial Data and Database layer that is unique to the individual LPAR (and Sysplex), which further defines the roles and responsibilities of the environment.

2

Pre-planning

Before planning the actual implementation can begin, sufficient information must be available for consideration because this information shapes the plan's scope and details. This chapter provides you with basic information, pointers to other reference sources, and highlights practical topics that relate to the implementation.

This chapter includes the following topics:

- 2.1, "Where do you start?" on page 8
- 2.2, "Areas to address" on page 9
- 2.3, "Technical implementation plan considerations" on page 9
- 2.4, "Implementation support plan considerations" on page 13

2.1 Where do you start?

Starting from scratch is a unique position and a rare project to undertake. It is also exciting because you might never have as much flexibility again as you have right now. You are defining the configuration of a brand new system for others to follow. Embrace the opportunity and be creative. So, where do you start? Consider the following scenario:

> It is Day 1 of the implementation. There are high expectations from all quarters. Imagine you are in the machine room at the data center. Only you. No one else is there to help. No one is tapping away and making things happen. No conversations. No support. No one to which you can turn. The humming of the new hardware your only distraction from what is otherwise complete silence. You are new to the platform. You hardly have any experience, yet you must make this implementation happen. You must configure hardware that is unfamiliar to you, install operating systems, database software, system software products, and configure an operational environment.

This scenario is a lonely place to be. What are you going to do first?

Let us look at how we can make this scenario more attractive. Consider the following changes to our example:

> It is Day 1 of the implementation. There are high expectations from all quarters. You and the implementation team are gathered in the machine room. The following factors are at your disposal:
>
> – Experienced hardware engineers, systems programmers, network specialists, and a storage support technician are ready to help.
> – You have contact details for of all the vendors' equipment and have support contacts and agreements in place that are aligned with high priority SLAs to respond to help you and the implementation team if you need it.
> – You all have a copy of the plan and the hardware and connecting cables are clearly labeled.
> – Each person knows their responsibilities and there is an agreed schedule of events.
> – The physical environment is protected to stop unauthorized people from entering the data center if they are not actively and directly involved in the implementation.
> – Although you are new to the platform, you are thoroughly prepared and have all information available.
> – You understand how to configure the hardware, engineers are available to assist, and you understand the process to install operating systems, database software, and system software products. You also have a clear understanding of each stage of configuring an operational environment.

The preparation for the second scenario option starts here. The pre-planning and planing phases are critical in determining the success of your implementation. A well-planned implementation reduces the time lost and costs that are incurred on issues that halt or delay the implementation. All parties must agree on their roles and responsibilities and understand their involvement during the implementation schedule.

2.2 Areas to address

In the remainder of this chapter, we suggest areas to address to help you be in a strong position and develop the understanding and confidence to successfully implement the hardware, software, and build the initial environment. The following main areas must be addressed:

- Technical implementation plan considerations
- Implementation support plan considerations

The scope of pre-planning involves determining what information is available and how to access it. The implementation team can discuss the points that arise from each piece of information and decide whether to include it in the technical implementation plan. They also can consider creating a separate implementation support plan to cover activities that relate to the implementation but are not part of the technical implementation activities, as shown in Figure 2-1.

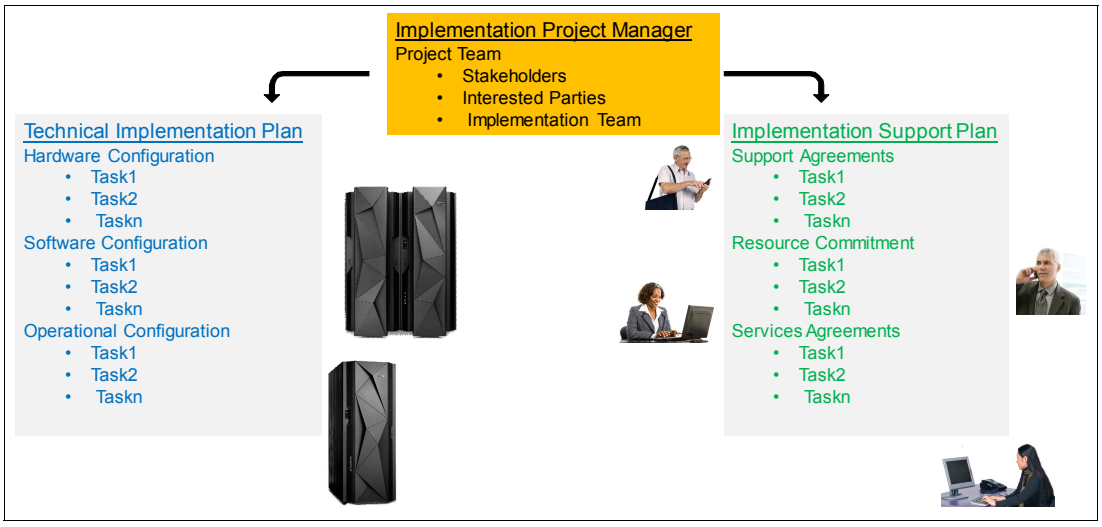

Figure 2-1 Planning for implementation

There can be other areas to address, depending on your circumstances and configuration.

2.3 Technical implementation plan considerations

In this section, we describe the following technical implementation plan considerations:

- Hardware pre-planning
- Software pre-planning
- Operational pre-planing

For more information throughout the planning phase, see *z/OS V2R2 Planning for Installation*, GA32 0889.

2.3.1 Hardware pre-planning

Several sources are available that can help you collect the information that you need to begin your planning. High-level information is provided in this section for you to research.

IBM Resource Link

The IBM Resource Link® provides you with access to various information resources and tools that are necessary for installing your z13 or IBM z13s™. The tools aim to simplify the installation process.

You must register by providing a client site number, ID, and valid email address. Your IBM representative can assist you with the registration process.

After you are logged in, you see the Education and Library tab that displays information about the z Systems hardware. Consider taking the online tutorials. Much of the configuration tasks are related to Channel Path Identifiers (CHPID). A key tool to research is the CHPID Mapping Tool (CMT). We use CMT in the early stages of the configuration.

For more information about IBM Resource Link, see this website:

`http://www.ibm.com/servers/resourcelink`

The website's home page is shown in Figure 2-2.

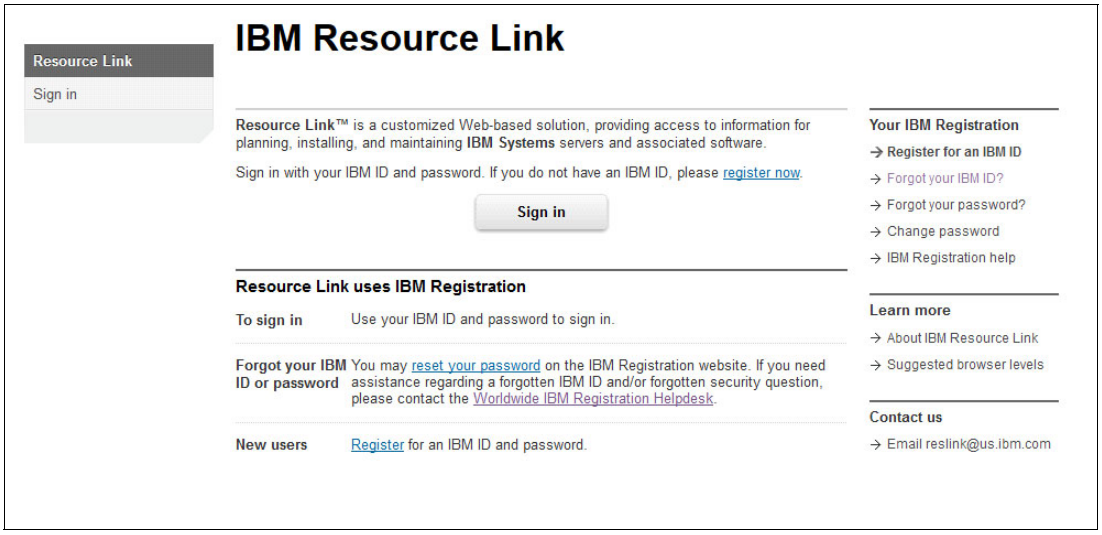

Figure 2-2 Resource Link home page

IBM Redbooks publications

The IBM Redbooks publications website features a dedicated home page for the z13 and the z13s. This site is a valuable source of information that includes content to take you from overviews, planning, and configuration. For more information, see this website:

`http://www.redbooks.ibm.com/Redbooks.nsf/pages/z13?Open`

I/O Control Program

The I/O Control Program (IOCP) is essential for configuration work. This program is used with the Hardware Configuration Definition (HCD), which runs under z/OS. This program also is used for configuration work after a z/OS system is available.

Stand-alone software

Our starting point is a machine without the z/OS operating system. So, how do we configure the machine without an operating system or load software on to it?

The answer is to use the stand-alone software. There is a stand-alone IOCP that can be started by logging on to the Service Element (SE) through the Hardware Management Console (HMC). We show you how to perform this task in the early configuration activities.

There also is a stand-alone version that we start from on the Customized Offering Driver (COD) system's DVD. This version is the stand-alone version of DFSMSdss utility that enables us to load data from the DVDs to the disks.

Remote Service Facility

The HMC Remote Service Facility (RSF) provides communications to a centralized IBM support network to help deal with hardware-related issues. The RSF communications provides the following services:

- Problem reporting and repairing of data
- Delivering fixes to the service processor and HMC
- Hardware inventory data
- On-demand enablement (optional)

Check with your IBM representative in advance to determine whether the RSF link is configured and active. For more information, see *IBM z13 Configuration Setup,* SG24-8260.

2.3.2 Software pre-planning

When considering software pre-planning, focus on the following areas:

- Customized Offering Driver (COD) system
- ServerPacs

You must place a minimum of the following orders for a system that consists of z/OS V2R2 system and the DB2 Version 11:

- COD: This system satisfies minimum driving system requirements for the system. COD is delivered on tape or DVD.
- z/OS System Order: Installs z/OS and products available under z/OS package.
- Subsystem Order: Installs DB2 and products under a subsystem package.

Depending on your Driving System configuration, you might select the Internet Delivery option for system and Subsystem orders. Internet orders are immediately available for download after IBM processes your order. Ensure that you have the appropriate network connectivity and firewall set-up to use this option.

Note: You will receive an email in which it is states how many days you have to download your order before it is removed. Check this date and download accordingly.

If you prefer to receive your order by using tapes, select the highest density tape that is supported by your Driving System. You can also select the DVD option.

For our controlled laboratory, we selected the DVD option.

The ServerPac package is delivered by System (z/OS) or Subsystem (DB2). You receive a separate ServerPac package for each system and subsystem that you plan to install. Although IBM recommends the use of the Internet Delivery option, this option might not be practical to a new site. If you do not have connectivity at the site, you can download the ServerPacs to a notebook elsewhere. After the packages are available to the notebook's file system, the installation is similar to that of using DVDs.

The ServerPac provides you with the following libraries:

- Distribution libraries (DLIBs)
- Target libraries (TLIBs)
- System Management Program Extended (SMP/E) libraries.

For more information and an FAQ about ServerPac, see the following resources:

- *IBM Education Assistance: Introduction to ServerPac*:

  http://www.redbooks.ibm.com/iea/v2r2/pdf/ServerPac_Introduction.pdf

- IBM z Systems z/OS FAQ:

  http://goo.gl/oig6rT

- IBM Redbooks publication: *IBM z/OS V2R2: ServerPac,* SG24-8500:

  http://www.redbooks.ibm.com/abstracts/sg248500.html

- IBM Education Assistant: z/OS V2R2 (see Figure 2-3):

  http://www.redbooks.ibm.com/redbooks.nsf/pages/IBMIEAV22install

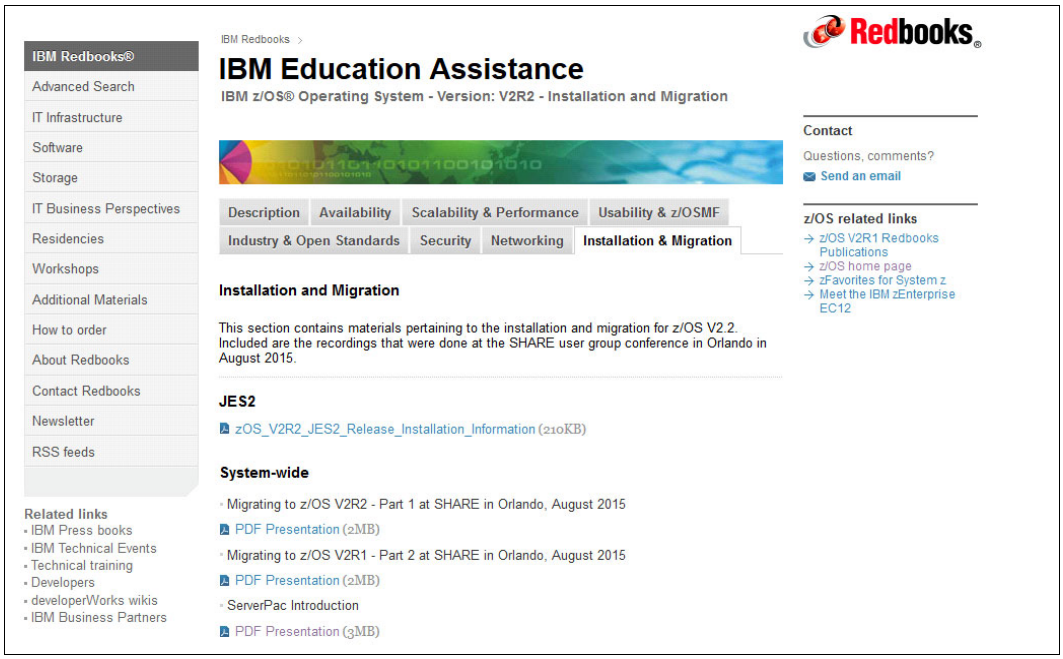

Figure 2-3 IBM Education Assistance

Before you proceed with the initial planning process for building the system, ensure that you obtain the z/OS license for your hardware. You can order any z/OS system or subsystem product that is available on Product catalog by using the license.

After licenses are in place, you can order COD and ServerPacs. If you are choosing physical media, ensure that you allow time for the delivery to arrive. (How long in advance depends on your local situation.) If this installation is your first installation, it is wise to be on the side of caution and we suggest a period of 3 - 4 weeks with which you can check the package and reorder, if necessary. The availability of these packages are essential for you to progress with the initial build.

ServerPac can be ordered by using Shopz or contacting your IBM representative. Orders that are placed on Shopz can be tracked by using the IBM ID that was used to place the order. If this order is your first time ordering, we suggest that you contact your IBM representative.

After your order is delivered, read the related installation material that is delivered with your order. This material consists of information, such as packaging list with your order details, LOADRIM JCL to prepare the Installation Dialog, and the *Install Your Order (IYO)* book that is customized to your order product content. IYO also documents the Service level that is used to build the order.

2.3.3 Operational pre-planning

A key consideration for the operational environment is standards. Operational environments are more easily managed if they have structure and conform to standards. The ServerPac process helps you in this area to complete the initial build.

For more information, see Chapter 6 of *z/OS Planing For Installation*, GA32-0889.

2.4 Implementation support plan considerations

The implementation support plan varies depending on the client's requirements, location, goals, environment, and many other factors. We cannot account for all of those variations, but we did produce a list of topics that came to the fore when we discussed this subject with clients, Business Partners, and IBM internal groups.

Consider the following suggestions that are based on those conversations:

- Environment: Are there access points that require special security cards or equivalent? Will support engineers and others from third-parties access the building?
- Data center environmental aspects

  The following topics must be covered as part of the data center planning:

  - Air conditioning requirements
  - Hot and cold aisles
  - Service clearance
  - Emergency egress
  - Power requirements
  - Emergency power off requirements,
  - Emergency lighting
  - Fire extinguishing systems choices
  - Chilled water requirements if used for machine
  - Raised floor and base floor
  - Overhead cabling requirements
  - On-site fibre routing
  - Position of power points
  - Underfloor cabling tray positioning
  - Any other topics that might be applicable to your environment
- Security: If this data center is a new data center (or existing one), is there a list of all people that are involved in the initial implementation and support tasks that require an on-site presence.

- Contact list: Ensure that you have a contact list of all those people that are involved in providing you with support throughout the initial build phase. Include the following information in contact list details for each person:
  - Telephone number
  - Email ID
  - ID for any online messaging that might be available
  - Escalation contact details for all parties
  - Schedule of availability for on site and remote support
  - Telephones (land line and mobile)
  - Mobile network signal
- Internet access:
  - Firewalls accesses are set up and tested
  - FTP is working to remote support locations
  - Agreed shared repository to store information, such as progress, problems
- Configuration

  An agreed, easy-to-read configuration diagram is available with all channels, ports, addressees, as so on clearly marked.
- Cables
  - All cables are clearly labeled at each end.
  - Directors are clearly mapped.
  - Devices are easily identifiable.
- Management and Reporting

  Mechanism, such as shared external network drive, is available for the following components:
  - Appropriate progress logs (spreadsheets or others) that include the task details, columns to record actual progress, and add comments as appropriate.
  - Incident Reports repository.
  - Agreed points at which these progress logs will be updated so people can access to review progress without disturbing the progress.
- Sign off points from various parties as the build progresses.

3

Planning

This chapter provides you with an outline of the milestones to perform the initial build and the associated activities to achieve them. The tasks are divided into phases. A cross-reference table is provided at the end of the chapter to clarify the process.

3.1 Process overview

The hardware is now officially handed over to us. We stand in front of the hardware, holding a few sheets of paper, DVDs, and manuals.

What is next?

We must define milestones so we can see the journey that leads to us loading the system.

3.1.1 Milestones

An overview of the process we undertook is shown in Figure 3-1. Building more operational environments is described in *Mainframe from Scratch Volume 2 Operational Deployments*, SG24-8337.

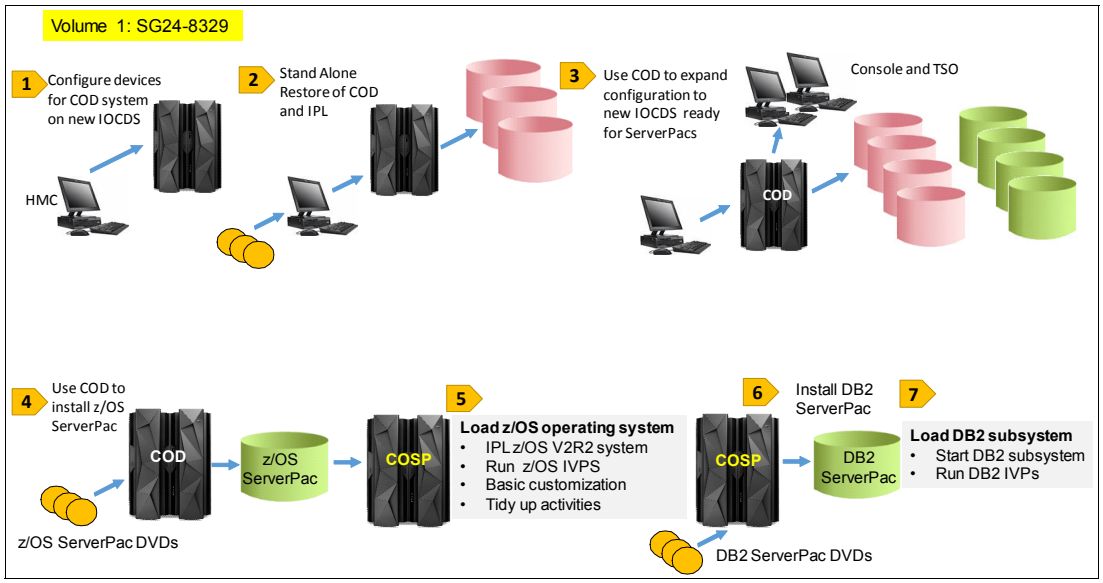

Figure 3-1 Initial build milestones

Milestone 1: Creating a configuration for the COD system

The Customized Offering Driver (COD) system is shipped with a pre-generated configuration. To use the COD, we must configure a few hardware devices to match the COD's pre-generated configuration. We create an input/output configuration data set (IOCDS) and make that data set available for the COD system to use. This task requires us to use the stand-alone IOCP via the Hardware Management Console (HMC).

After the I/O Exerciser Tool is configured, you can use the tool to verify that the physical connections are working. Although the configuration might be correct, the I/Os can fail if a cable was damaged during installation.

Note: Stand-alone activities are not part of every day activities. The more prepared you are, the more likely you are to succeed. We suggest that you read *Stand-Alone Input/Output Program User's Guide*, SB10-7166-00, and have a copy of this publication readily available for reference purposes.

Milestone 2: Stand-alone restore of the COD

The COD system's documentation guides you through the stand-alone restore of the DVDs to three disk drives that you configured for the previous milestone. We also define a console and a terminal on the Open Systems Adapter (OSA) card to initially program load (IPL) and log on to the COD system.

After the COD system is restored and initially loaded, the z/OS operating system provides more tools to make further modifications to the configuration.

Milestone 3: Expanding the hardware configuration

We use the hardware configuration definition (HCD) on the COD's z/OS system to define more devices to the configuration in preparation for the ServerPacs. Initially, we defined sufficient devices to load the COD. We must expand the number of devices to be used for the following components:

- New z/OS we are about to build by using the z/OS ServerPac
- Operational environment
- Extra applications
- New LPARs

Milestone 4: Installing the z/OS ServerPac

We use the COD system to install the z/OS ServerPac. This task requires selecting options from the ServerPac's customization panels. The procedures generate batch jobs to align with the choices. The jobs run on the COD system to build the files that are required to create a full z/OS V2R2 operating system.

Milestone 5: Loading the new z/OS system and running the IVPs

We load the z/OS V2R2 system and run the supplied Installation Verification Programs (IVP). We now have a running z/OS V2R2 system with which to work.

Milestone 6: Installing the DB2 ServerPac

We install the DB2 ServerPac system, but we use the new z/OS system that we just built to run the jobs.

Milestone 7: Loading the new DB2 system and running the IVPs

We load the DB2 subsystem and run the supplied IVPs. We now have a running z/OS V2R2 system with a DB2 subsystem active.

3.1.2 Phases

The tasks to achieve the milestones are divide into 12 phases, which are described next.

Phase 1: Preparing IBM z13

This phase might not be required because it depends on how the z13 is handed over to you. Establish the status of the machine. Ask the z13 installer if the following tasks were successfully completed:

- The z13 had a successful Power-on Reset (POR) by using the IOCDS D0.
- The Support Element (SE) and the HMC are physically connected.
- The SE is defined to the HMC.

Phase 1 is required only if any of these tasks are still outstanding. We show you how to perform the tasks that are necessary to achieve this status.

Phase 2: Configuring stand-alone hardware

There is no operating system available at this point; therefore, we use the stand-alone capabilities of the IOCP to build the initial configuration via the HMC. The following tasks are required:

- Define a minimum z13 input/output configuration to meet the COD requirements.
- Build an IOCDS on SE slot A0 and perform a POR from it.
- Define and activate COD z/OS driving system LPAR.

Phase 3: Setting up DS8000 logical configuration

In our controlled laboratory, we used a DS8000 for the disk configuration. You might have a different disk subsystem; therefore, you must follow the instructions from your supplier. The approach is similar.

The following tasks must be completed:

- Set up a configuration worksheet to plan your disk configuration. Check the supplied COD configuration to ensure address compatibility.
- Configure the disks and control units as per the configuration worksheet.

Phase 4: Configuring OSA-ICC and TN3270

This phase concentrates on communications. The Open Systems Adapter is setup as an Integrated Console Controller (OSA-ICC) in the z13. This configuration provides 3270 emulation to the operating system and TN3270 server functionality to the network. The following tasks must be completed:

- Define and configure the OSA-ICC channel.
- Configure the TN3270 session by using the HMC 3270 emulation function or IBM Personal Communication (PCOMM).

The addresses that are generated must match the addresses within the range of the COD's pre-generated system.

A console for operating system communication is necessary. Also, a terminal must be defined to use for logging on to Time Sharing Option (TSO).

Phase 5: Restoring stand-alone COD

The COD is shipped on three DVDs and each DVD is restored to a disk. Each disk address must be known to the COD's pre-generated configuration.

Restore COD DVDs onto three DASD volumes by using DFSMSdss Stand-Alone Services.

Each COD DVD is shipped in a DFSMSdss physical memory dump format and has a copy of the DFSMSdss stand-alone program, so you can load the stand-alone restore service from the DVD.

Phase 6: IPLing the COD system

We are now in a position to IPL the COD system. The process includes the following key steps:

1. Activate the COD LPAR.
2. IPL the COD.
3. Ensure that the console is working correctly.
4. Establish a TSO session.

Phase 7: Expanding the configuration

The COD system is a z/OS system, but it is to be used as a driver system only. Therefore, it is a small, pre-generated configuration. We are preparing the configuration to receive the ServerPac and build a new z/OS V2R2 system that can be customized to accommodate more software products and a basic operational set-up. The following tasks are required:

- Create more disk volumes that are available on DS8000 DASD subsystem.
- Create and load new IOCDS to match the expanded configuration.
- Make more local 3270 devices available on z13 and z/OS.
- Make TCP/IP connectivity available via TN3270 and TCP/IP
- Add extra SPOOL and Paging space.

You might want to add more devices than we do in our example. How many you add depends on your circumstances and requirements.

Phase 8: Preparing ServerPac installation

Although we include ordering and receiving the z/OS V2R2 ServerPac here, we suggest that you complete these tasks in advance. The ServerPac can be shipped to you on DVD or you can chose to download your order. If your data center is new one, you might not have the network connectivity to download the order. We are using the DVDs in our controlled laboratory environment.

The following steps must be completed:

1. Order and receive the z/OS V2R2 ServerPac.
2. Plan the ServerPac installation option and layout.
3. Prepare the COD installation environment.
4. Prepare the installation media and upload into the COD driver.
5. Connect to the CustomPac Installation Dialog for the next phase.

Phase 9: Building z/OS V2R2 ServerPac

We are processing the ServerPac to build the new z/OS V2R2 system. Each ServerPac is well-documented and is specific to each ServerPac order and shipment. We took a basic software configuration. Although your jobs can differ from ours, they can be similar.

The following steps must be completed:

1. Receive a new ServerPac order.
2. Create the work configuration.
3. Tailor the work configuration for the target system.
4. Generate the installation job stream.
5. Submit the installation job stream and check return code.
6. Save the work configuration after the order is installed.

Phase 10: First IPL and IVPs

The first IPL of the newly built z/OS system is the primary goal. After the IPL is complete, we run the IVPs to provide initial testing and base verification that the ServerPac process worked successfully.

The following tasks must be completed:

- Pre-IPL jobs and tasks: Jobs that prepare the system for IPL such as setting up IODF, parmlib, and stand-alone memory dump.
- IPL your new target system.
- Postinstallation from target system: These postinstallation jobs must run on the target system. They perform initial setup of many of the products that are contained in your order.

- Installation verification: These product-supplied jobs verify a successful installation and must run on the target system.
- Completing the installation: These jobs perform installation cleanup, such as System Specific Alias (SSA) removal, that is run after a successful installation of your new target system.

Phase 11: DB2 ServerPac build

We process the DB2 ServerPac to build an initial DB2 subsystem. We run the installation jobstream on the newly generated z/OS system that does not use the COD system.

The following high level tasks are required:

- Plan the DB2 V11 ServerPac installation layout
- Plan the DB2 V11 ServerPac configuration
- Receive the DB2 V11 ServerPac order
- Submit the installation jobs

Phase 12: Start DB2 subsystem

The focus in this phase is to start the DB2 subsystem. After the subsystem starts, we can verify the environment and complete the DB2 V11 ServerPac process.

The following tasks are required:

- Run the installation start up preparation jobs
- Start DB2
- Run the installation verification programs
- Complete the installation

3.1.3 Summary

The phases and milestones that the phases achieve and in which chapter the phase is described are listed in Table 3-1.

Table 3-1 Phases, milestones, and chapters

Phase	Milestone	Chapter
1 IBM z13 Preparation	1 Creating a configuration for the COD system	Chapter 4, “Phase 1: IBM z13 preparation” on page 25
2 Stand-alone hardware configuration		Chapter 5, “Phase 2: Stand-alone hardware configuration” on page 45
3 DS8000 logical configuration		Chapter 6, “Phase 3: DS8000 logical configuration” on page 89
4 OSA-ICC and TN3270 configuration		Chapter 7, “Phase 4: OSA-ICC and TN3270 configuration” on page 109
5 COD Restore	2 Stand-alone COD restore and IPL	Chapter 8, “Phase 5: Customized Offering Driver restore” on page 137
6 IPL the COD system		Chapter 9, “Phase 6: Initial program load of the COD system” on page 149

Phase	Milestone	Chapter
7 Expand the configuration	3 Expand the configuration	Chapter 10, “Phase 7: Expanding the configuration” on page 159
8 ServerPac installation preparation	4 Installing the z/OS ServerPac	Chapter 11, “Phase 8: ServerPac installation preparation” on page 169
9 z/OS V2R2 ServerPac build		Chapter 12, “Phase 9: ServerPac Build of z/OS V2R2” on page 181
10 First IPL and IVPs	5 Loading the new z/OS system and running the IVPs	Chapter 13, “Phase 10: First initial program load of z/OS V2R2” on page 205
11 DB2 ServerPac build	6 Install the DB2 ServerPac	Chapter 14, “Phase 11: ServerPac DB2 build” on page 235
12 Start DB2 subsystem	7 Loading the new DB2 subsystem and running the IVPs	Chapter 15, “Phase 12: Customizing and initializing DB2 V11 subsystem” on page 255

The tasks are described in more detail in each chapter. We suggest that you read this IBM Redbooks publication, review the content, and create a plan that is based on your requirements and your planning standards.

Part 2

Configuration and Builds

Part 2 describes how we configured the hardware, installed the software, and performed initial verification testing in accordance with our plan.

4

Phase 1: IBM z13 preparation

Your IBM z13 can be handed over to you after the following tasks are completed:

- The z13 had a successful Power-on Reset (POR) by using the IOCDS D0.
- The Support Element (SE) and the Hardware Management Console (HMC) are physically connected.
- The SE is defined to the HMC.

Phase 1 is required only if any of these tasks are still outstanding. If all these tasks are successfully completed, you can move to Phase 2.

This chapter includes the following topics:

- 4.1, “Goals” on page 26
- 4.2, “Requirements” on page 26
- 4.3, “Related documents” on page 26
- 4.4, “Scenario” on page 27
- 4.5, “Workflow” on page 28

4.1 Goals

Phase 1features the following goals:

- Connect the SE and HMC
- Define SE to the HMC
- POR z13 server that uses IOCDS D0 as the configuration data set

Phase 1 is required to achieve Milestone 1: Configure devices for COD system on new IOCDS. Where this phase occurs in the overall process is shown in Figure 4-1.

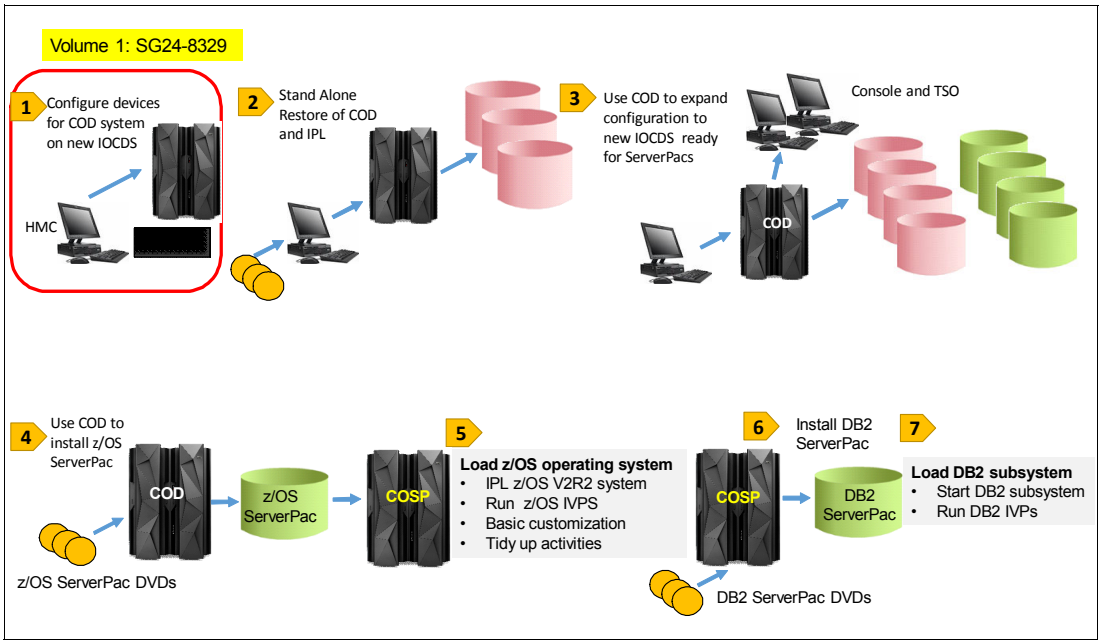

Figure 4-1 Phase 1 Milestone 1

4.2 Requirements

The following resources often are used during Phase 1 tasks:

- z13 server that is installed by IBM Customer Engineer (CE)
- Access to HMC and SE
- User IDs and passwords for using HMC and SE with SYSPROG and ACSADMIN user profiles

4.3 Related documents

The following publications provide relevant information during Phase 1:

- *IBM z13 Technical Guide,* SG24-8251
- *IBM z13s Technical Guide*, SG24-8294
- *Hardware Management Console Operations Guide 2.13.*

4.4 Scenario

The tasks that are described in this chapter assume that a z13 server is installed by IBM CE and it is powered on. It is also assumed that the HMC is used to perform configuration tasks on the z13 (see Figure 4-2).

Figure 4-2 Initial resources for POR

To help you, we assume that you must define the SE to the HMC. We perform the POR from D0 and show you how that process was completed in our environment.

4.4.1 SE and HMC connection

The z13 SE is connected to the HMC through a customer Ethernet switch. For more information about the Ethernet switch installation, see the manufacturer's User's Guide. The Ethernet switch installation and cabling connectivity scheme that shown in Figure 4-3 on page 28 can be performed by a service provider or the customer.

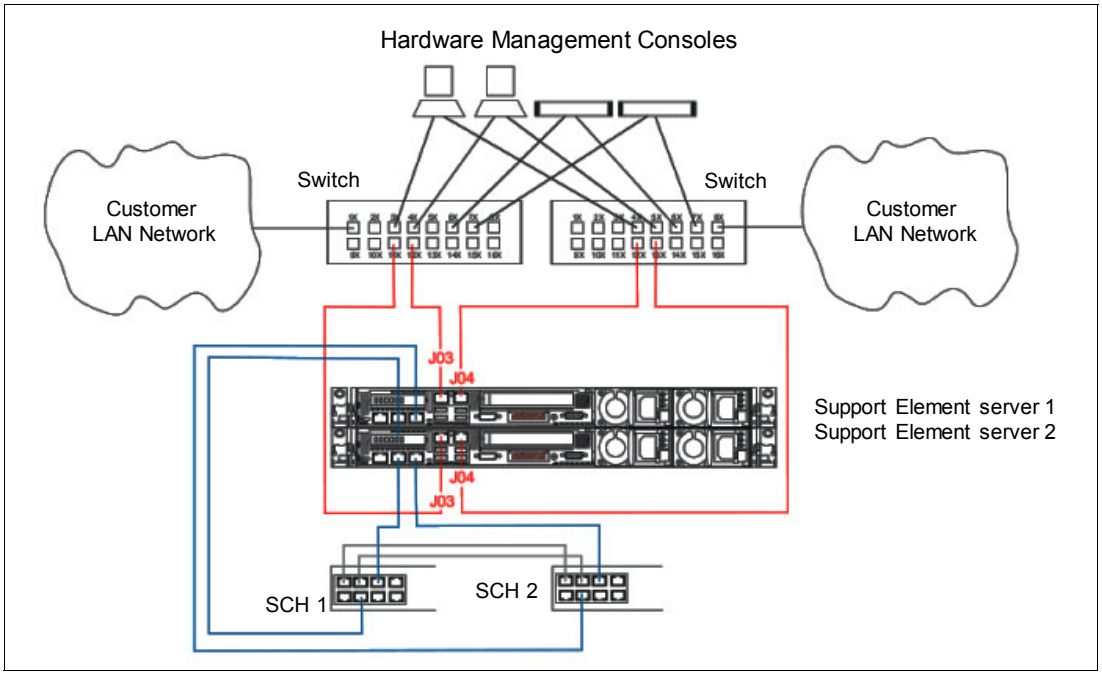

Figure 4-3 Two-switch installation

Check whether the SE to HMC connection is established before you proceed with the tasks that are described in this chapter.

4.5 Workflow

We performed the tasks that are shown in Figure 4-4 based on our scenario.

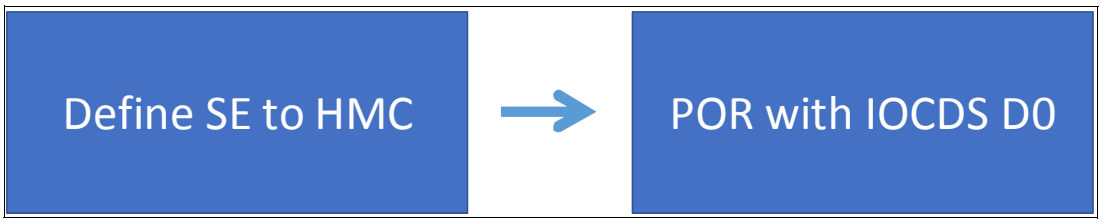

Figure 4-4 Phase 1 tasks

If you defined the SE to the HMC, skip to 4.5.2, “POR by using IOCDS D0” on page 35.

It is also suggested that you use HMC in Tree mode from now on rather than the Classic mode because the Tree mode is the preferred mode to use going forward.

4.5.1 Defining SE to HMC

To operate a z13 server through HMC, z13 SE also must be defined to the HMC.

We complete the following steps:

1. In the HMC Welcome window (as shown in Figure 4-5 on page 29), select **Log on and launch the Hardware Management Console web application**.

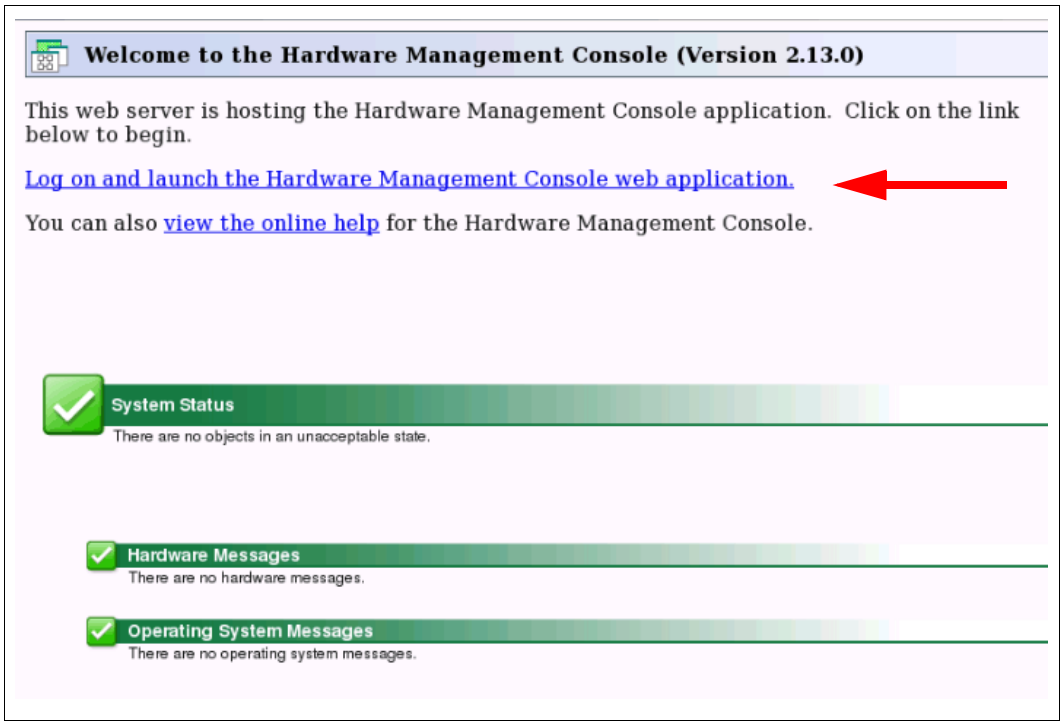

Figure 4-5 HMC Welcome window

2. When the logon window opens, we enter `acsadmin` in the User ID field and `password` in the Password field, as shown in Figure 4-6. Click **Logon**.

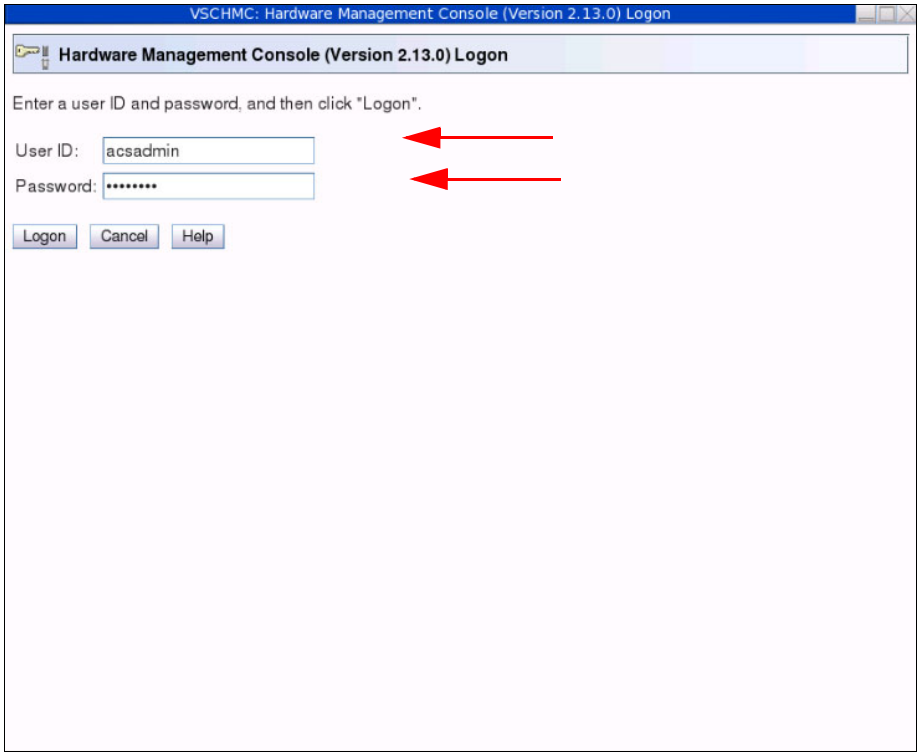

Figure 4-6 HMC logon as acsadmin

After we log on, the HMC Home window that is shown in Figure 4-7 opens.

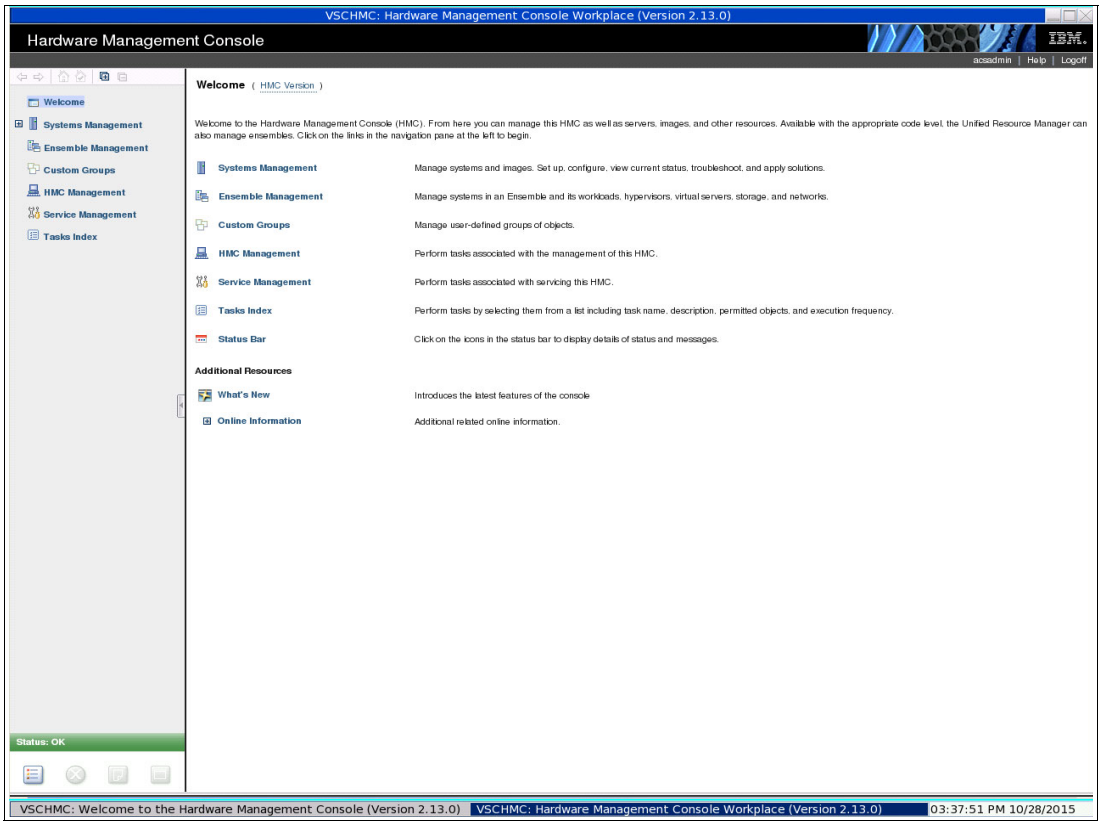

Figure 4-7 HMC Home window

3. To define the SE to the HMC, we locate the system and then browse to Add Object Definition in the Task bar area.
4. In the HMC home window, we select **Systems Management** → **unmanaged resources** → **systems** from the menu in the upper left of the window. We select the Central Processor Complex (CPC) (it appears in the Name field in the table list pane), which is in the center of the window. (You might have only one CPC in your list.) We had more than one name because our HMC is in a laboratory environment and is connected to several systems.

5. In the Tasks tab in the bottom of the window, we select **Object definition**. Then, we select **Add Object Definition**, as shown in Figure 4-8.

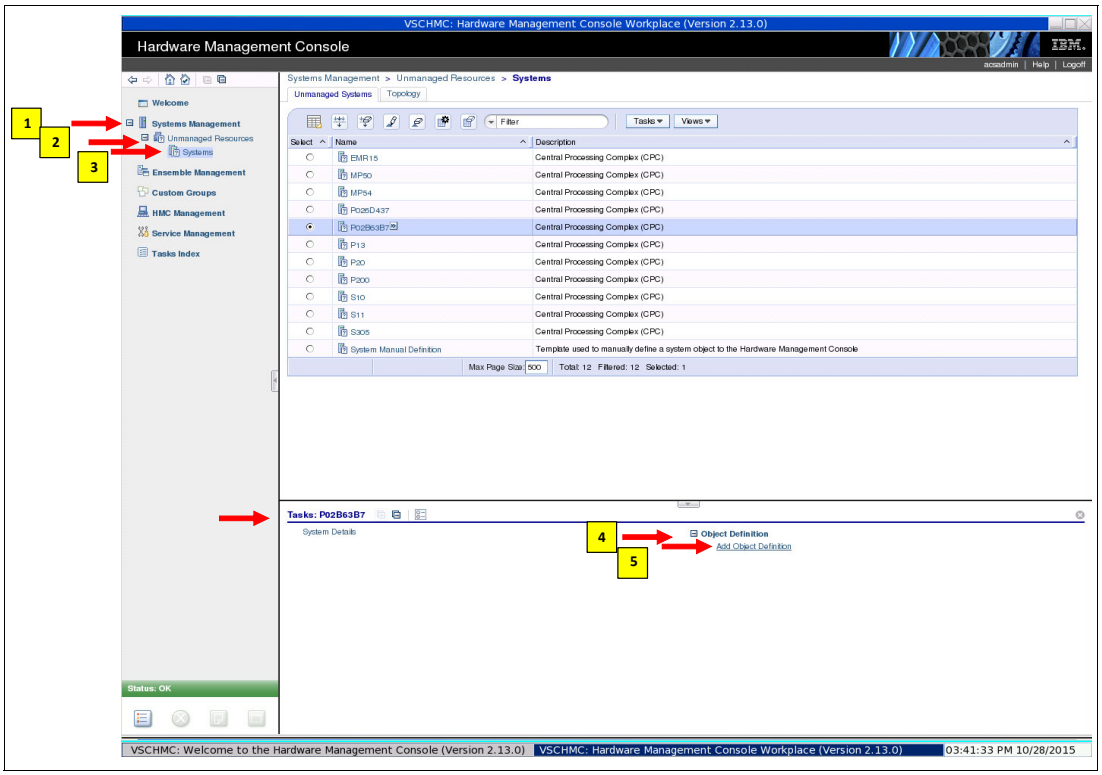

Figure 4-8 Adding CPC to HMC

6. A window opens, as shown in Figure 4-9. We confirm that the information is correct and click **OK**.

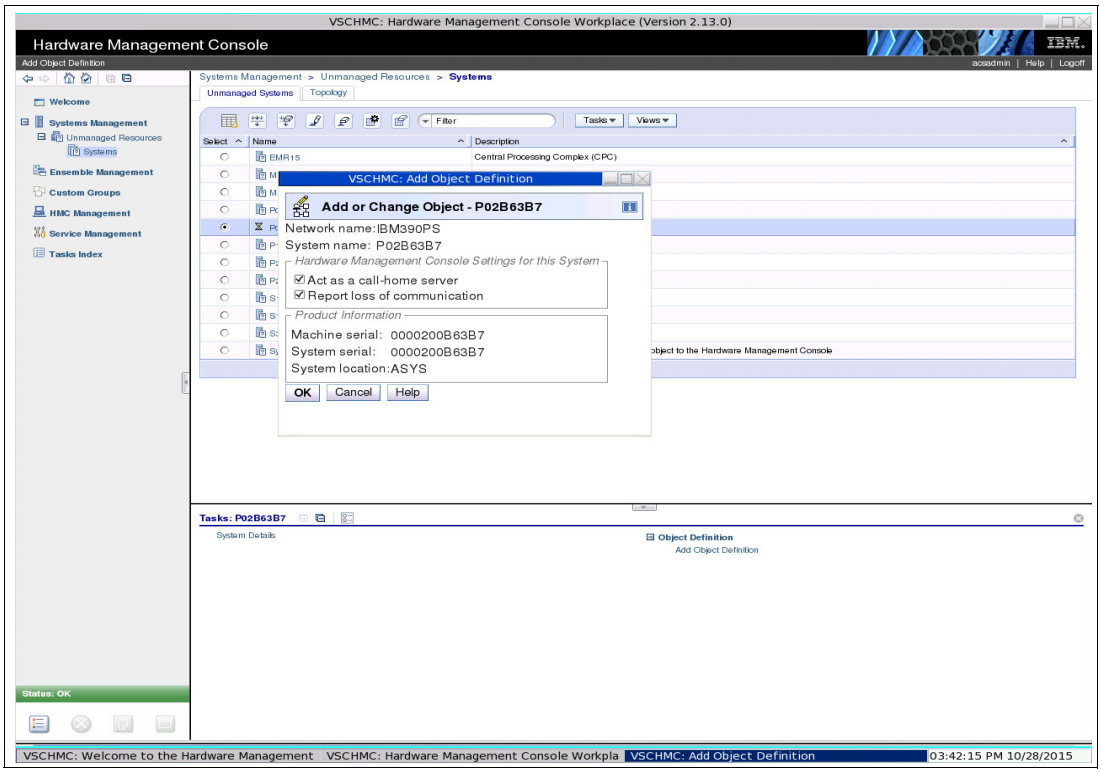

Figure 4-9 Adding CPC confirmation window

7. An Object Definition Warning window opens. We continue by selecting **Yes**, as shown in Figure 4-10.

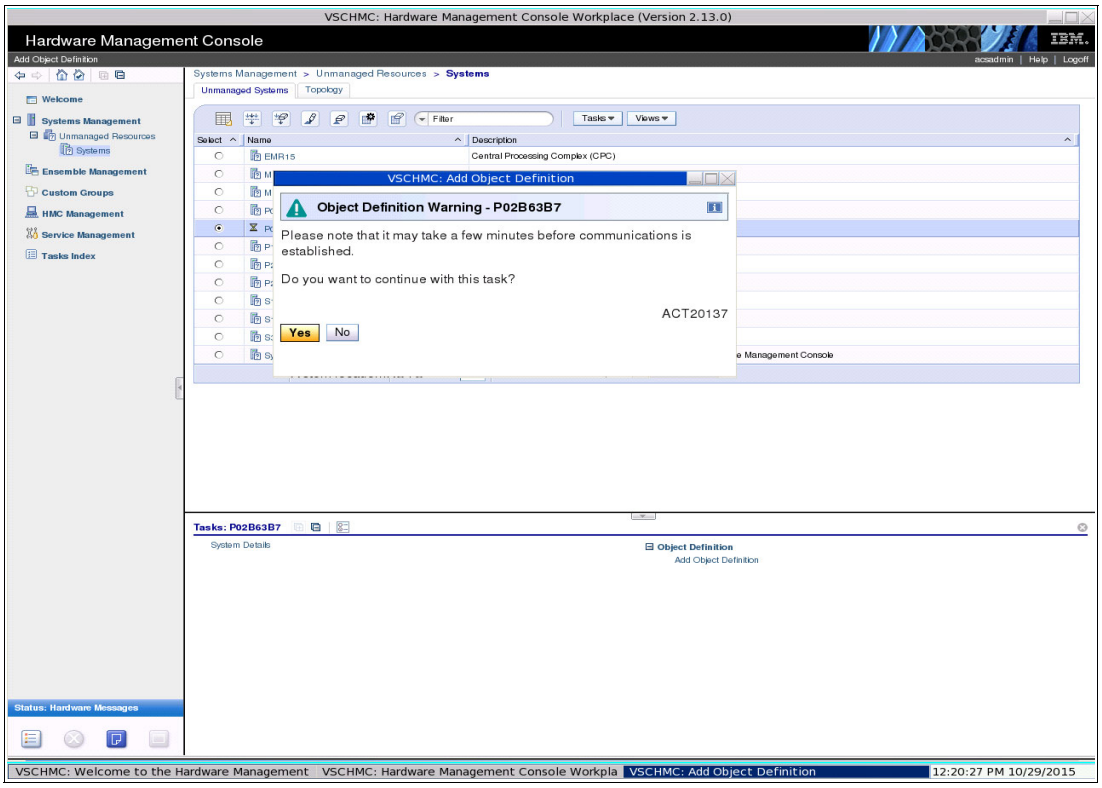

Figure 4-10 Informational window

8. A Replacement Object Confirmation message appears (as shown in Figure 4-11) in which we are prompted to confirm if this object is a replacement object for a machine. Because this object is new, we click **No** and then, click **OK**.

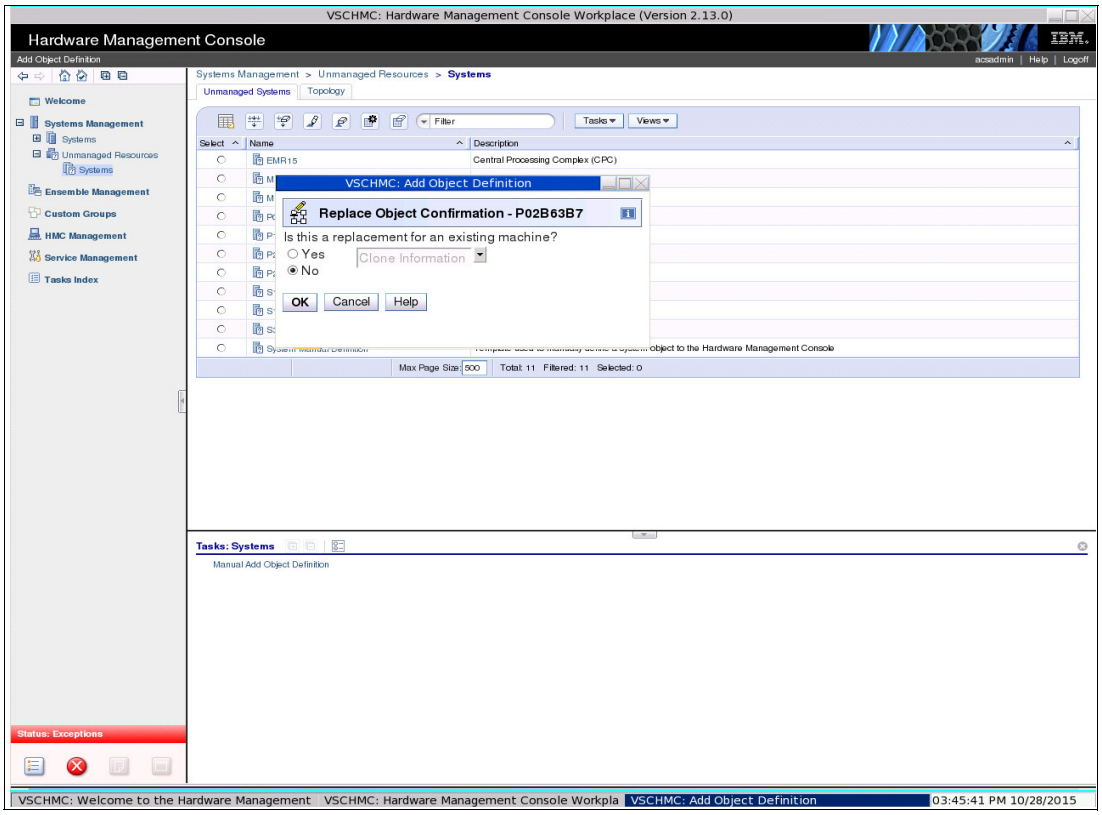

Figure 4-11 Replacement Object Confirmation message

The definition process now proceeds.

After z13 is defined to HMC, it appears in the server list in the center of the window, as shown in Figure 4-12.

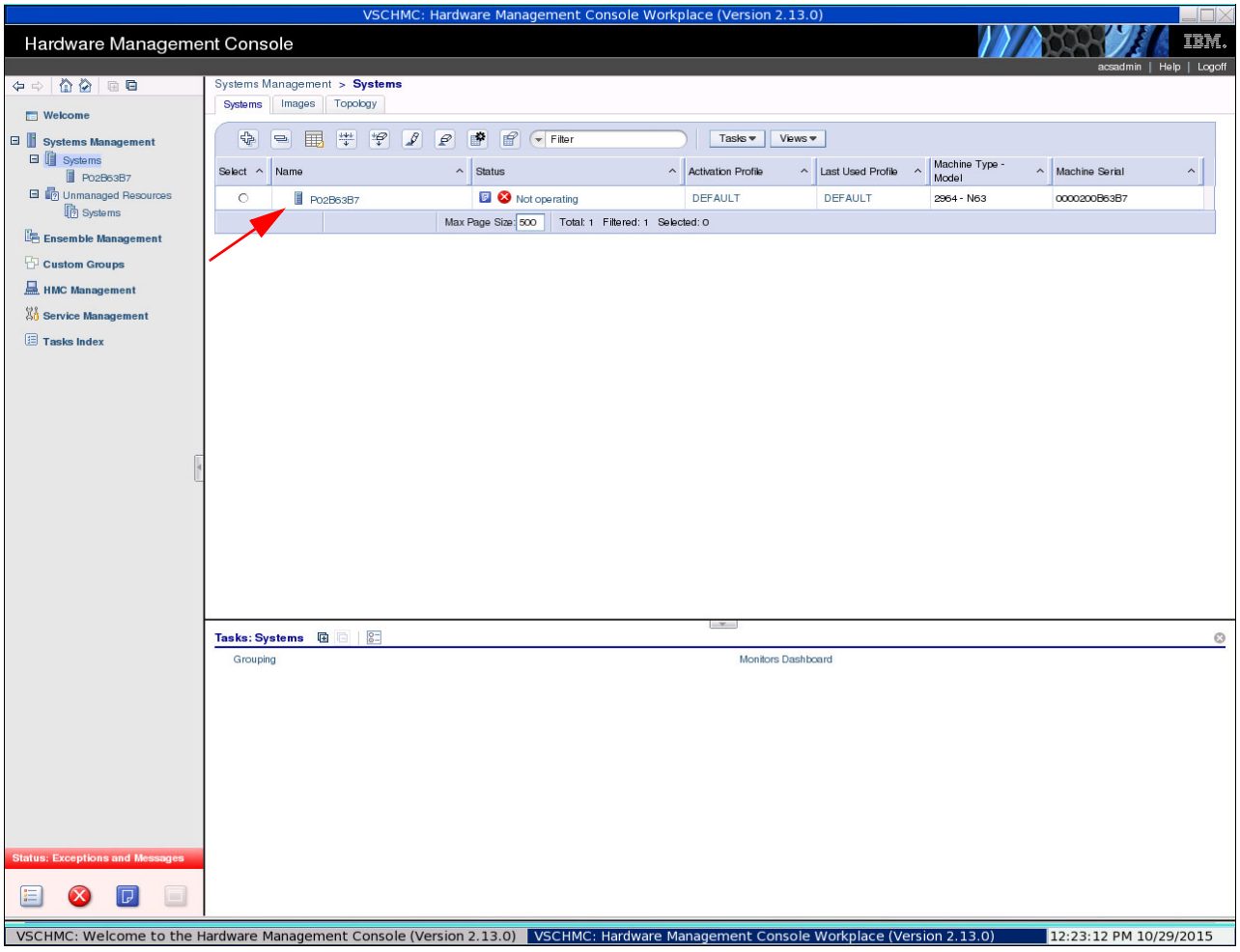

Figure 4-12 Successful z13 SE definition into HMC

9. We log off from the HMC by using the menu option, which is in the upper right corner of the window.

4.5.2 POR by using IOCDS D0

We complete the following steps to POR z13 by using IOCDS D0:

1. With the HMC Welcome window open, we log on by entering `sysprog` in the User ID field and `password` in the Password field.
2. After the HMC Home window opens, we select **Systems Management** → **Systems** → **P02B63B7** (our z13 server name) from the menu in the left of the window.

3. In the Tasks tab in the bottom of the window, we select **Recovery** → **Single Object Operations**, as shown in Figure 4-13. With single-object operations, we want to connect to the SE.

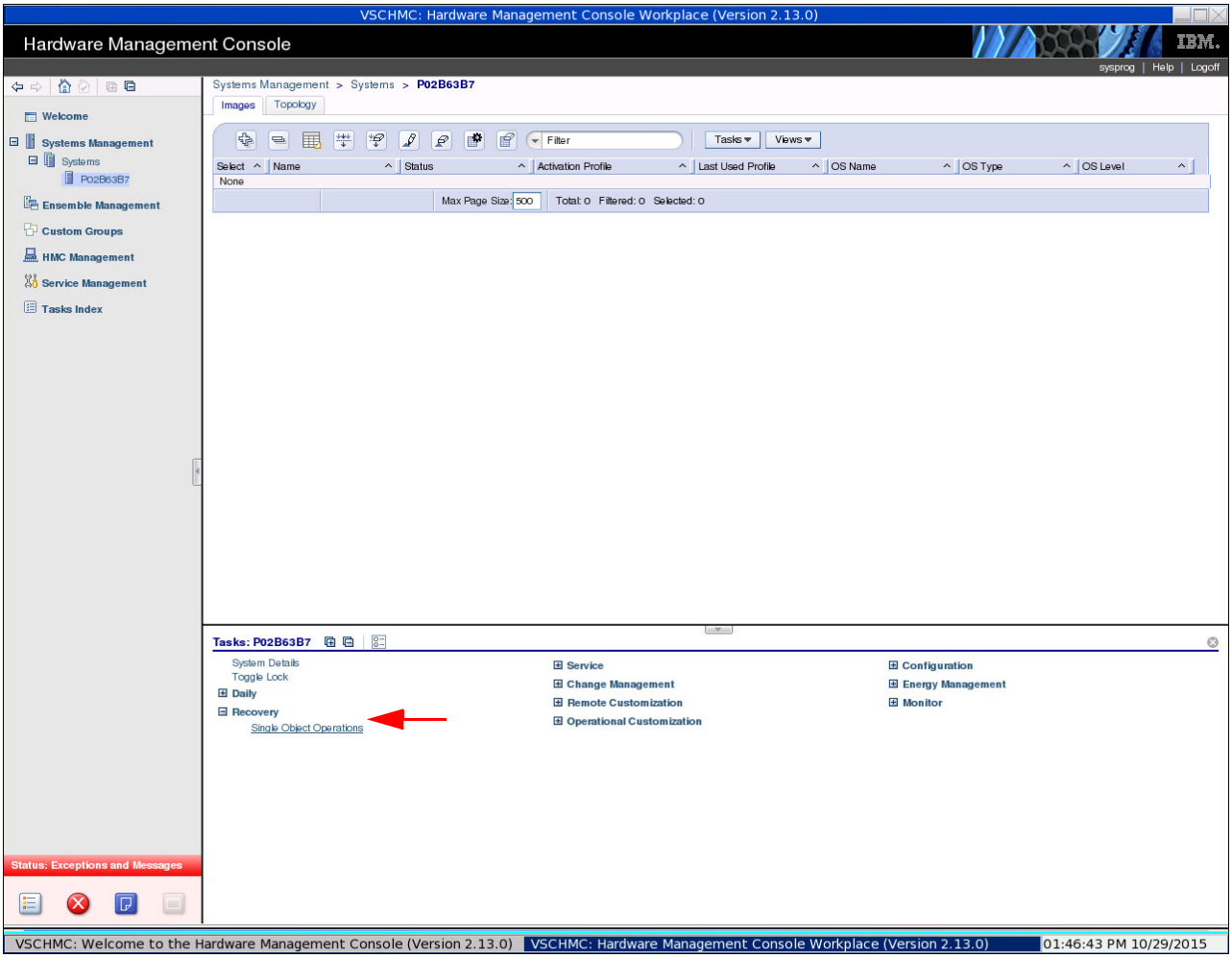

Figure 4-13 Single Object Operations selection

4. A confirmation window opens, as shown in Figure 4-14. We select **Yes**.

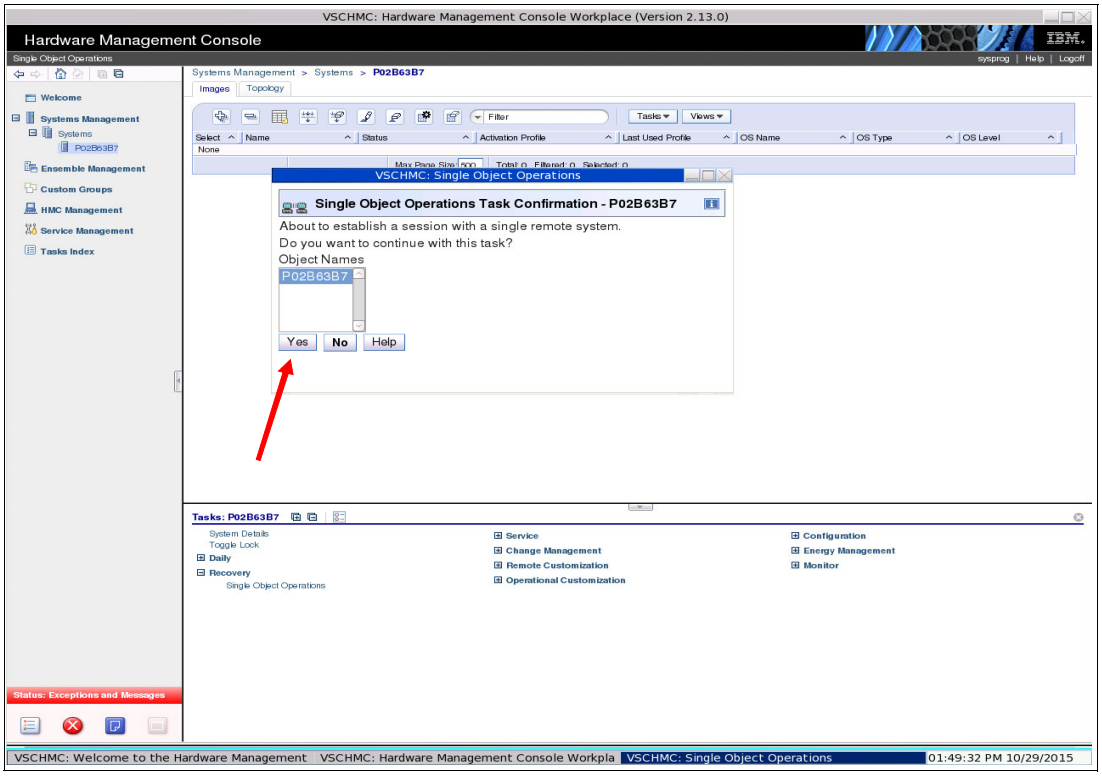

Figure 4-14 Single Object Operations confirmation window

The SE Welcome window opens, as shown in Figure 4-15.

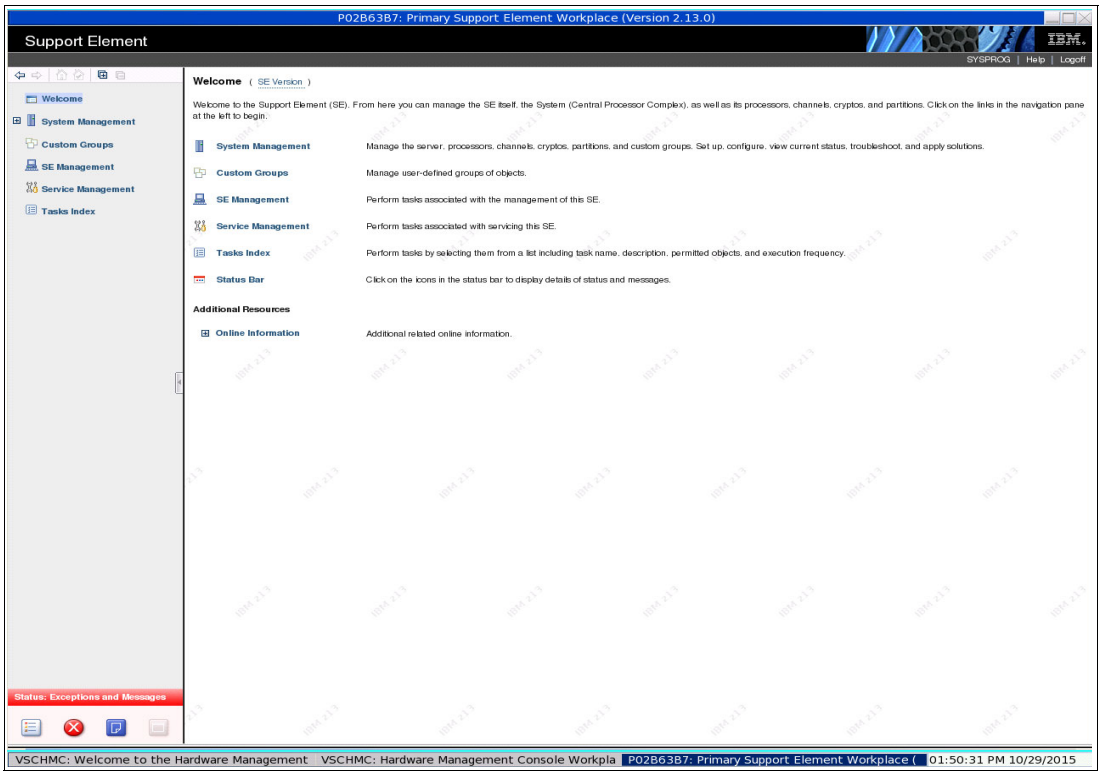

Figure 4-15 SE Welcome window

5. We select **System Management** → **P02B63B7** (our z13 server name) from the menu in the left of the window. Then, in the Tasks tab in the bottom of the window, we select **Recovery** → **Power-on Reset**, as shown in Figure 4-16.

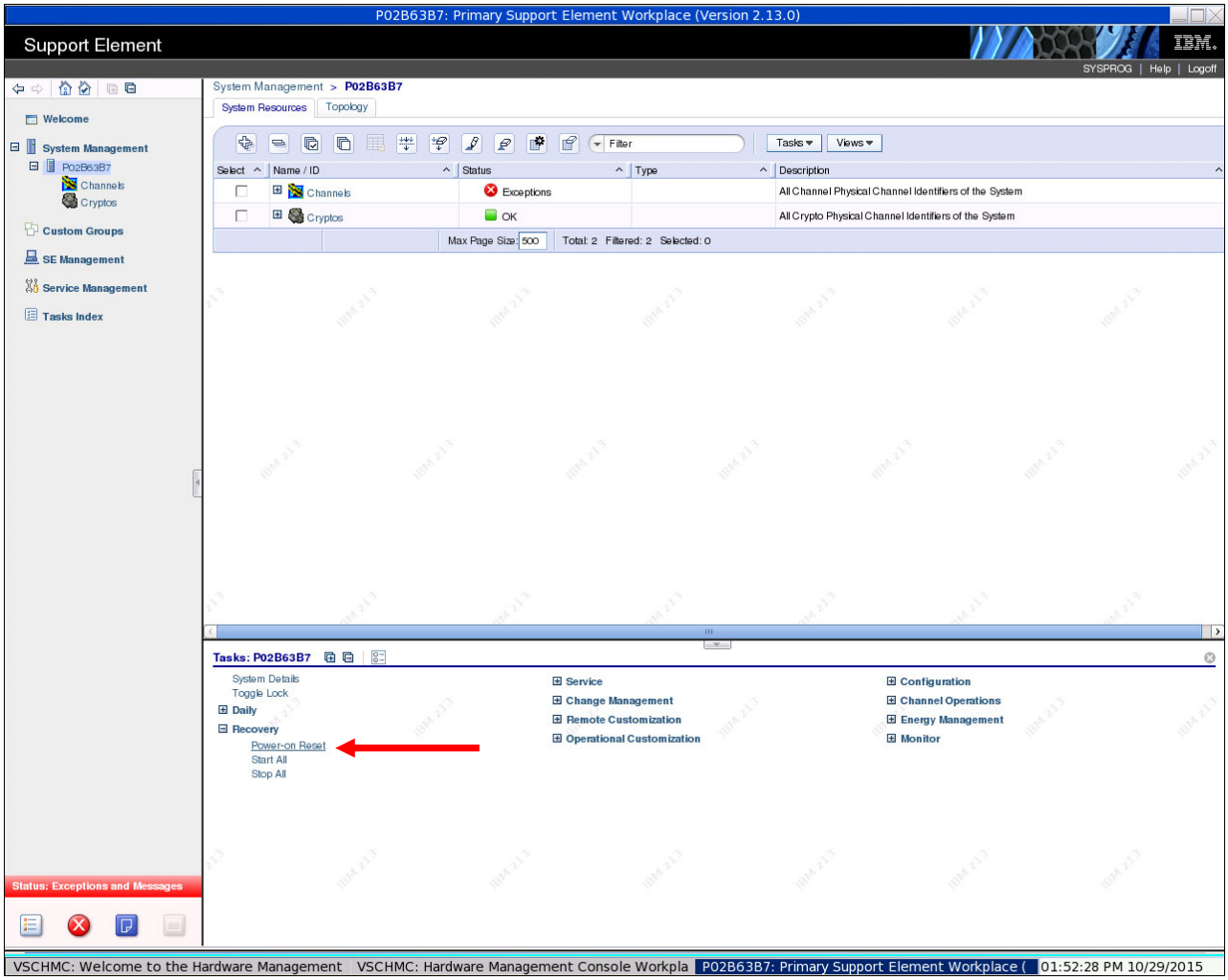

Figure 4-16 Recovery options that show Power-on Reset option

6. The window that is shown in Figure 4-17 opens. We select IOCDS **D0 Diagnose** and then, click **Perform Power on Reset**.

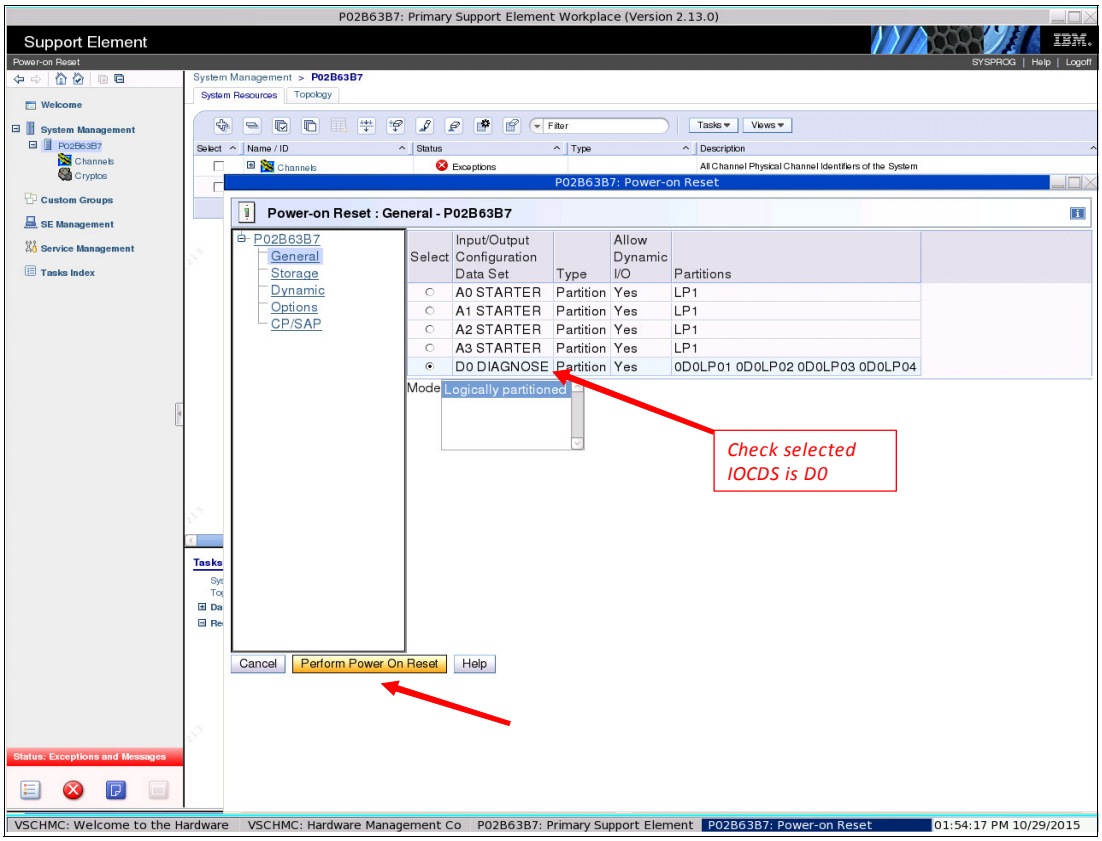

Figure 4-17 POR window

The confirmation window opens, as shown in Figure 4-18.

Note: This task is a disruptive task; therefore, we ensure that this task is performed on the correct server.

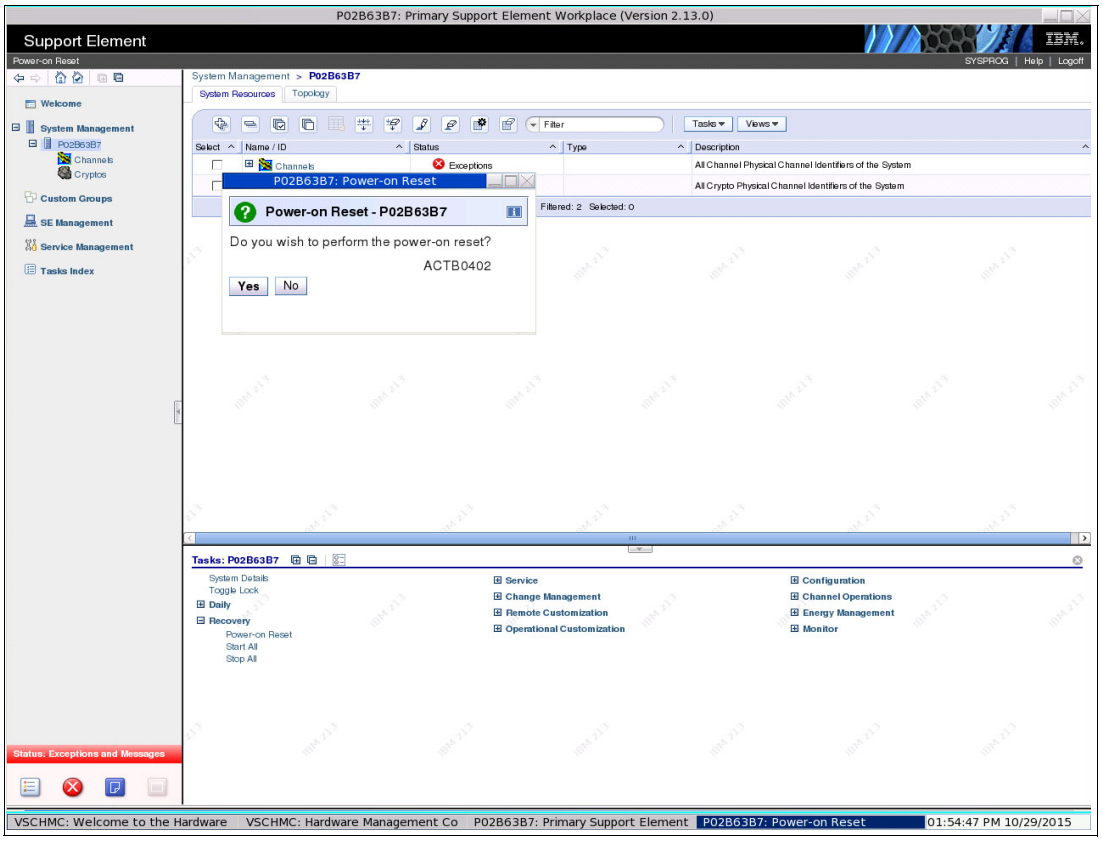

Figure 4-18 POR confirmation window

7. We select **Yes** to continue and the POR progress window opens, as shown in Figure 4-19.

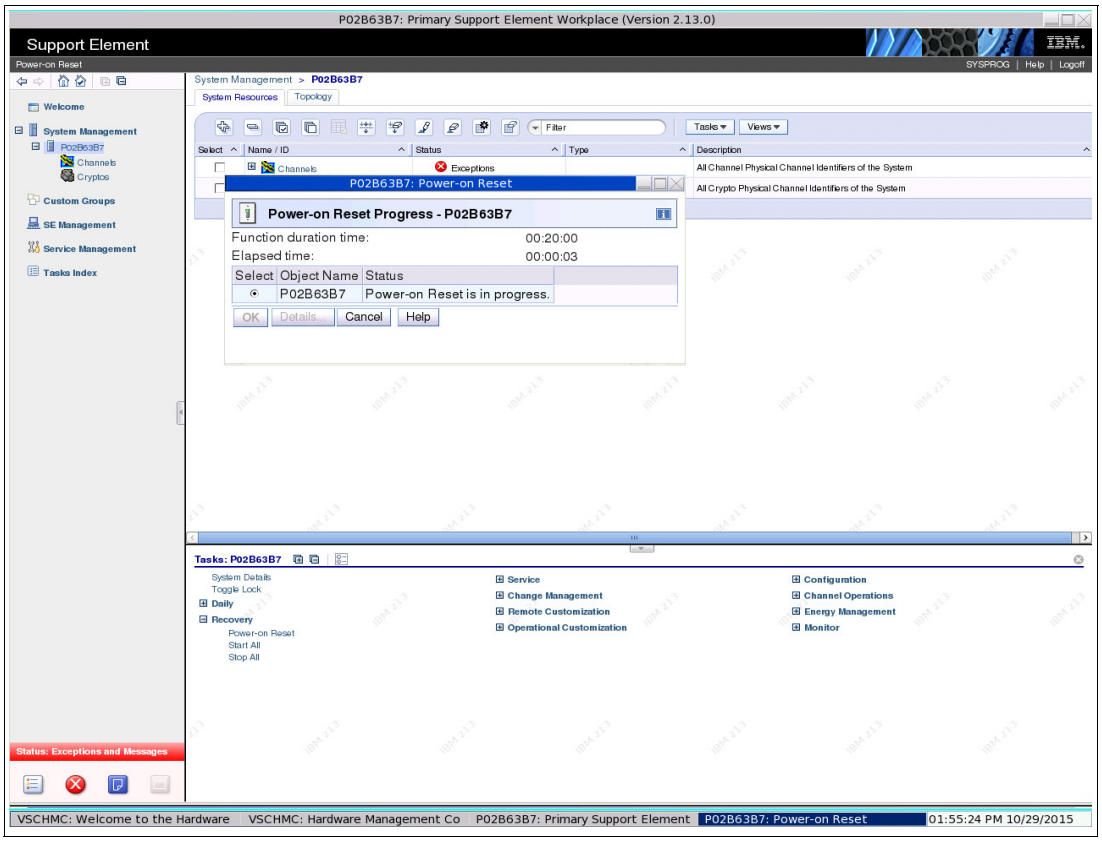

Figure 4-19 POR in progress

8. After the POR is complete, the window that is shown in Figure 4-20 opens. We click **OK.**

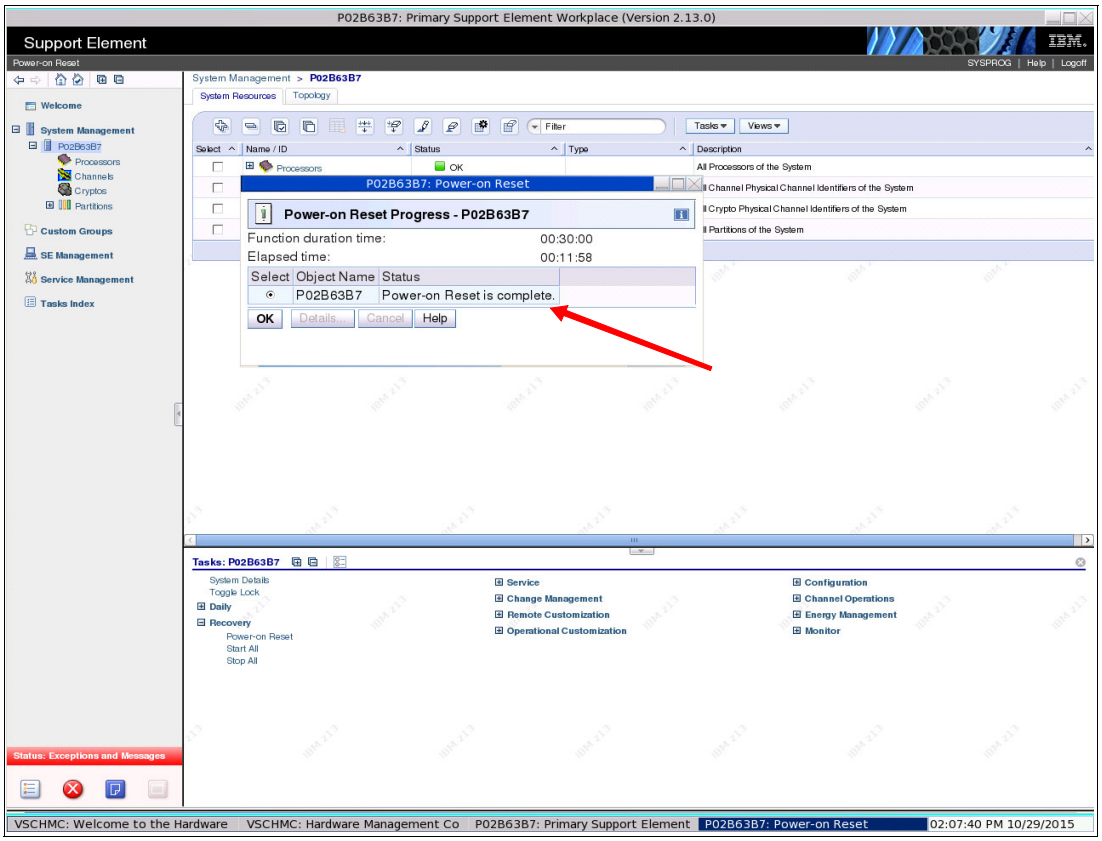

Figure 4-20 POR Complete indication

We now move on to Phase 2.

5

Phase 2: Stand-alone hardware configuration

The z13 must be prepared to receive the Customized Offering Driver (COD) system. The COD system has a pre-generated I/O configuration design; therefore, the z13 must be configured to align with that configuration and define and activate the partition for the COD system after it is restored from DVD.

This chapter includes the following topics:

- 5.1, “Goals” on page 46
- 5.2, “Requirements” on page 46
- 5.3, “Related documents” on page 47
- 5.4, “Scenario” on page 48
- 5.5, “Workflow” on page 48

5.1 Goals

Phase 2 features the following goals:

- Define a minimum z13 input/output (I/O) configuration to meet the COD requirements.
- Build an I/O configuration dataset (IOCDS) on SE slot A0 and Power-on Reset (POR) from it.
- Define and activate COD z/OS driving system logical partition (LPAR).

Phase 2 is required to achieve Milestone 1: Configure devices for COD system on new IOCDS. Where this phase occurs in the overall process is shown in Figure 5-1.

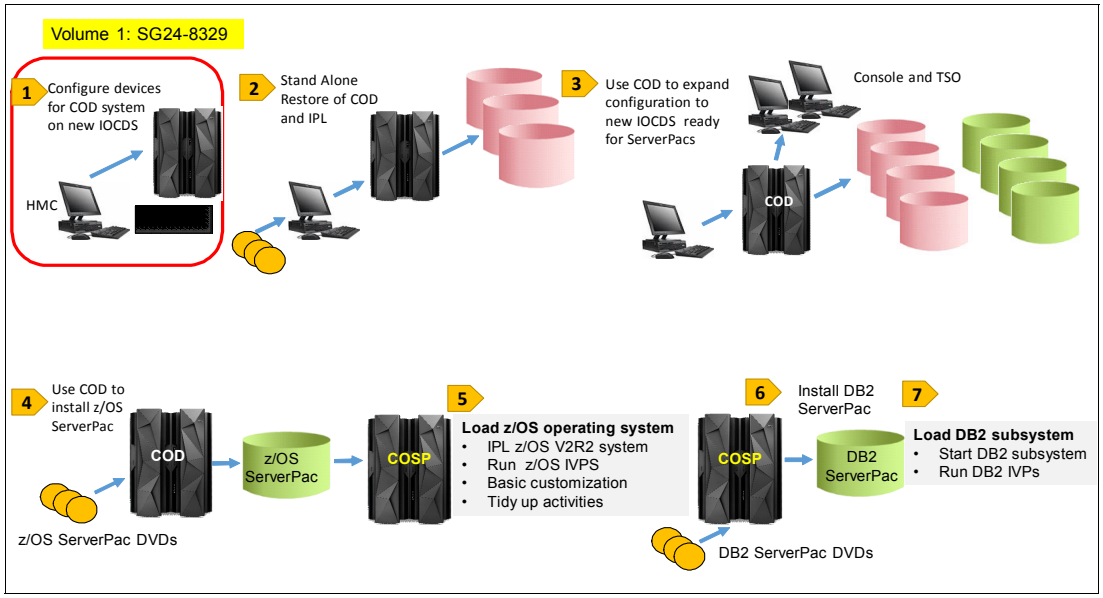

Figure 5-1 Phase 2 Milestone 1

5.2 Requirements

You frequently use the documents and resources that are described in this section during Phase 2 activities.

5.2.1 Documentation

The following documentation is available:

- *Customized Offerings Driver Installation Guide for Program Number 5751-COD*. This document contains the configuration information that is defined with the COD product.
- *z/OS DFSMSdss Storage Administration Guide*, SC23-6868, which includes a chapter about DFSMSdss stand-alone services.
- *z/OS MVS System Messages Volume 1 (ABA AOM)*, SA38-0668, which is the reference for stand-alone DFSMSdss messages.
- Your I/O configuration design that meets the COD configuration requirements.

5.2.2 Resources

The following resources are available:

- z13 server that is installed by IBM Customer Engineer (CE).
- A workstation with CHPID Mapping Tool (CMT) installed, and a simple text editor. For more information about downloading and installing CMT, see *CHPID Mapping Tool User's Guide,* GC28-6947. The workstation also must have a USB port connection.
- z13 configuration report file (`.CFR`), which can be provided by an IBM Service representative or downloaded from IBM ResourceLink website.
- A USB drive to store the I/O configuration source (IOCS) file that contains the I/O configuration program (IOCP) statements of your configuration.
- Access to the Hardware Management Console (HMC) and Support Element (SE).
- User IDs and Passwords for using HMC and SE with SYSPROG user profiles.

5.3 Related documents

The following publications provide relevant information during Phase 2:

- IBM Redbooks publications:
  - *IBM z13 Technical Guide,* SG24-8251
  - *IBM z13s Technical Guide,* SG24-8294
  - *IBM z13 Configuration Setup,* SG24-8260
- Other IBM publications:
  - *CHPID Mapping Tool User's Guide*, GC28-6947
  - *IOCP User's Guide for ICP*, SB10-7163
  - *Hardware Management Console Operations Guide 2.13.0*
  - *Stand-Alone Input/Output Configuration Program User's Guide,* SB10-7166
  - *z/OS DFSMSdss Storage Administration Guide*, SC23-6868
  - *z/OS MVS System Messages Volume 1 (ABA AOM),* SA38-0668

5.4 Scenario

The tasks that are described in this chapter assume that a new z13 server is installed by IBM CE in your data center and the power-on-reset process that uses D0 was successfully completed. It is suggested that an HMC is available to manage the z13 server through its SE, and a separate workstation has CMT software that is installed, as shown in Figure 5-2.

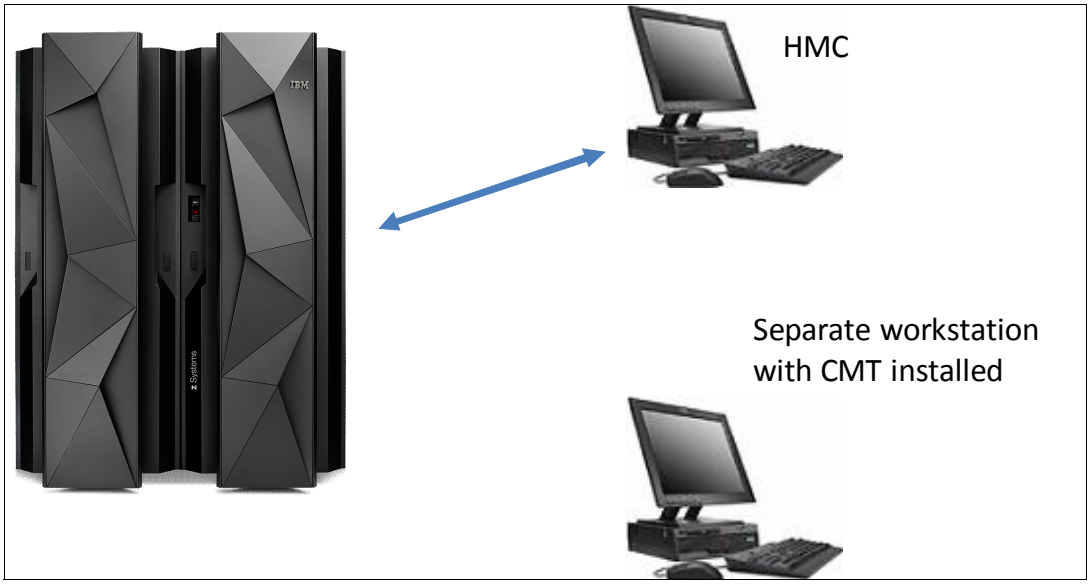

Figure 5-2 Initial scenario for Phase 2

5.5 Workflow

The Phase 2 tasks that are shown in Figure 5-3 are based on our scenario.

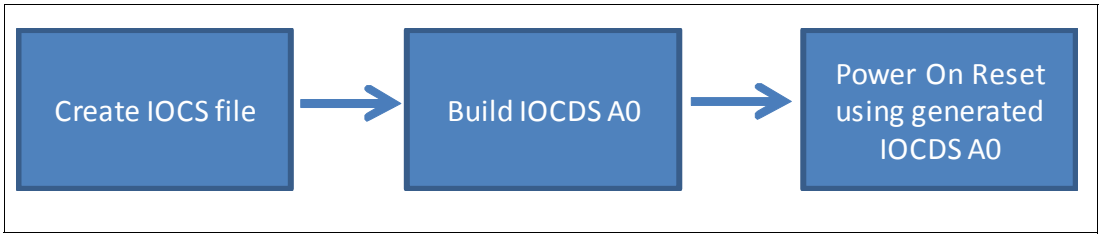

Figure 5-3 Workflow to build and load IOCDS A0

After we select and activate IOCDS A0, the z13 server has the minimum I/O hardware configuration to restore COD DVDs. Before we restore our COD, we also must define and activate the COD z/OS driving system image profile to assign other required system resources, such as processors and memory. In addition, we must connect the physical channel paths (PCHIDs) ports that are used in our IOCS file to our external devices, which can be done by a cabling service provider or by the customer.

Note: Ensure that you can clearly identify your physical cables and which ports they are to be connected in the z13 cards and in the peripheral devices.

5.5.1 Creating IOCS file

We studied the I/O configuration that is in supplied COD documentation and chose a minimum I/O configuration that is adequate to restore COD DVDs and initially load the COD system (see Figure 5-4). We chose a small configuration because at this stage, we are limited in the available tools we can use to define the I/O configuration. We can expand the configuration definitions later after we have the COD z/OS system available.

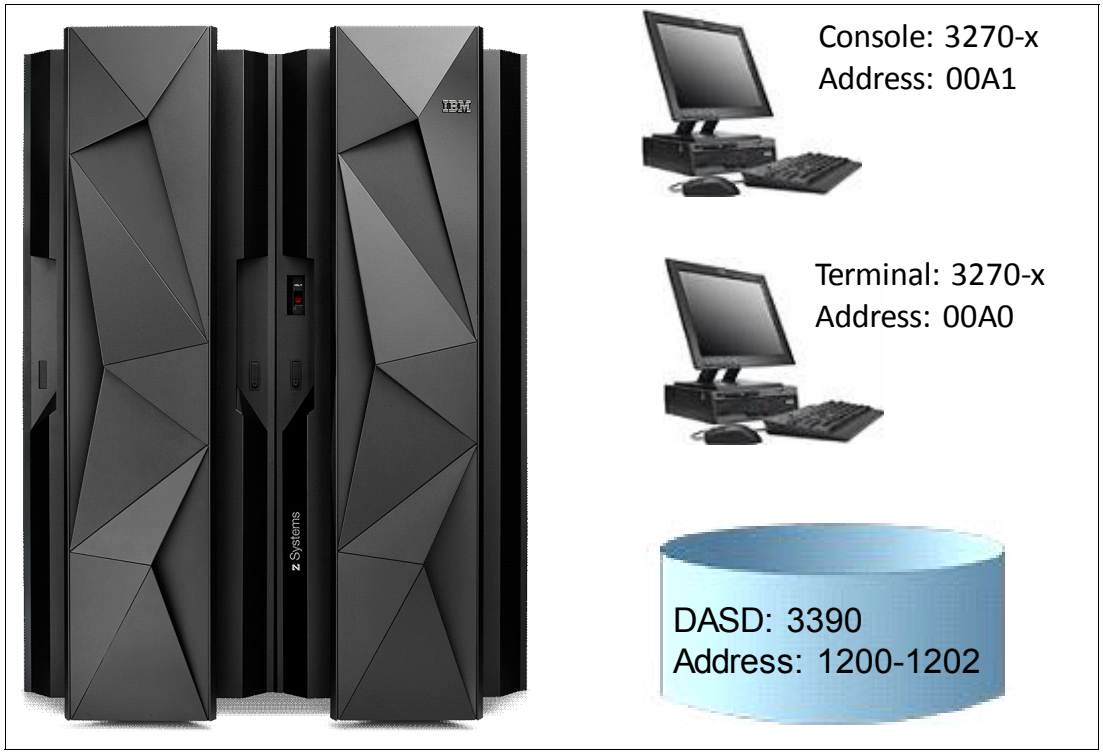

Figure 5-4 Device selection for COD restore

We must create an input file that includes the details of the configuration we want to use. This file, which is called and I/O Configuration Source (IOCS), is read and processed to create the A0 I/Configuration Data Set (IOCDS) that is stored in the SE. We performed the following steps to create the IOCS:

1. Examine the PCHID report.

   The CMT is installed on a workstation. We use the configuration file (`.CFR`) that we downloaded from our Resource link (for more information, see 5.2.2, “Resources” on page 47).

   We examine PCHID Report of our z13 installation to know how to connect to the devices we chose to use. We open the CMT, select **Standard CMT Project** and then, select **Next**, as shown in Figure 5-5.

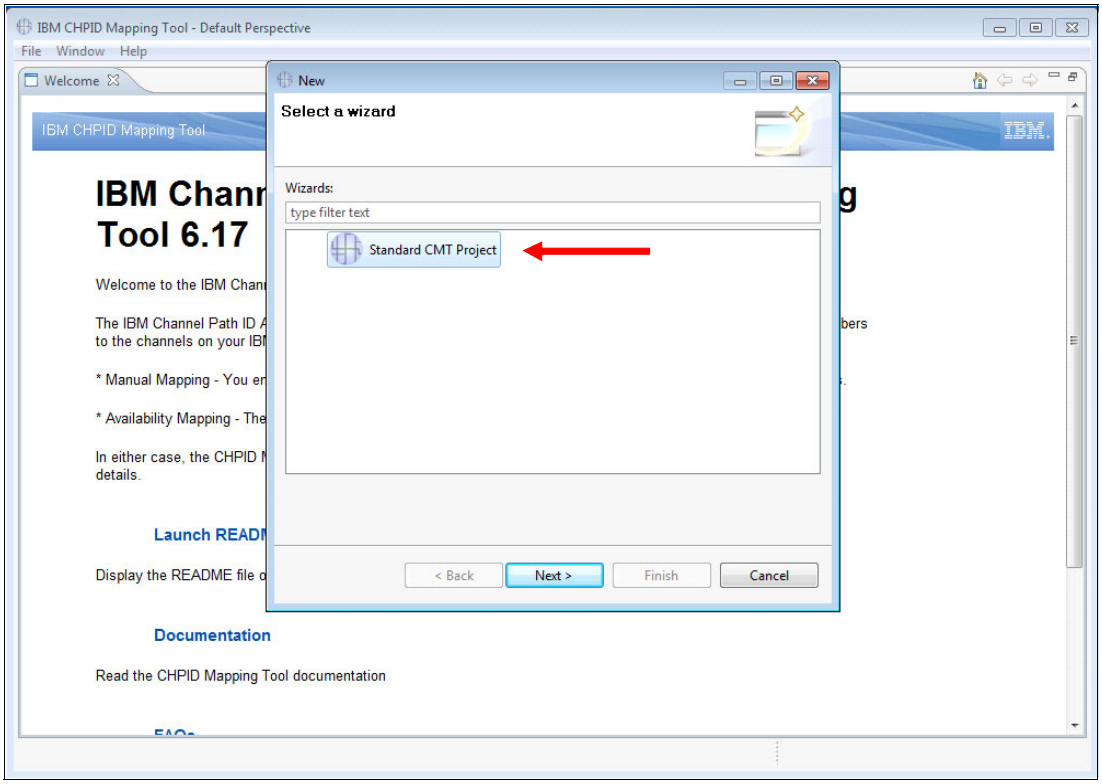

Figure 5-5 Starting a new CMT project

2. Set up the CMT project.

   We provide a project name and select **Next**. We chose **z13**, as shown in Figure 5-6. You might choose to use the z13 server serial number to differentiate each z13 server, if you have more than one.

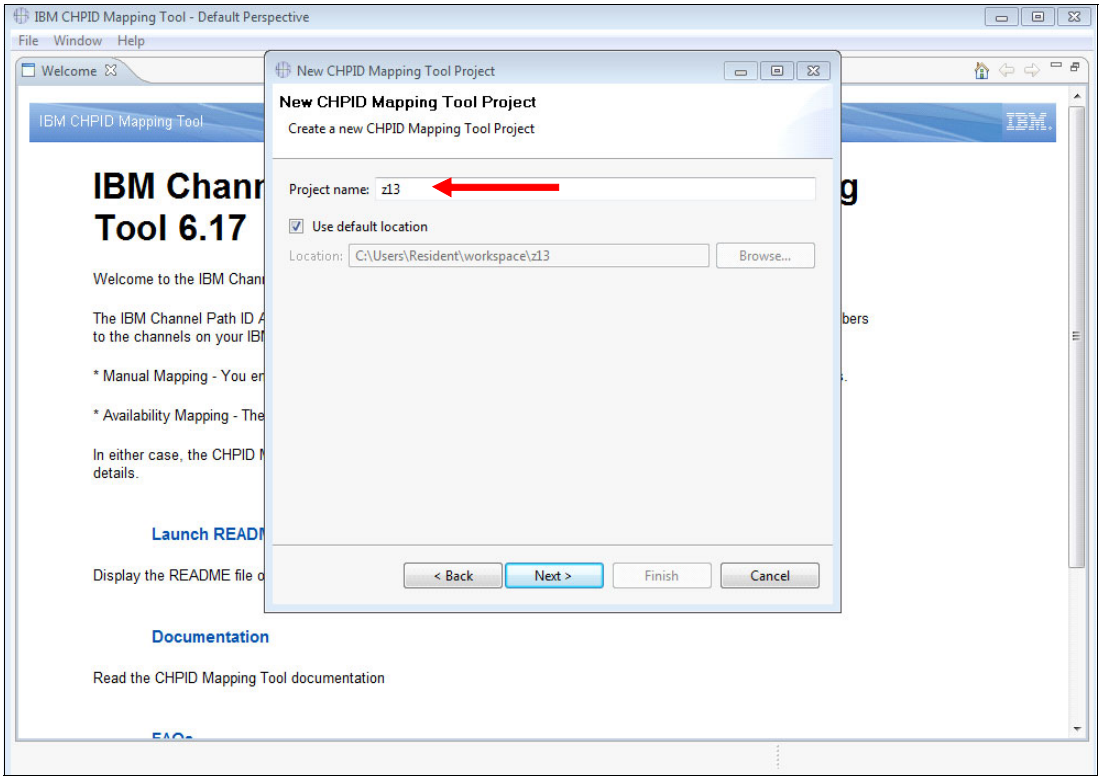

Figure 5-6 Choose Project name

3. Select the configuration file (`.CFR`) file of our z13 server. Figure 5-7 shows where the file name is entered. Then, we select **Finish**.

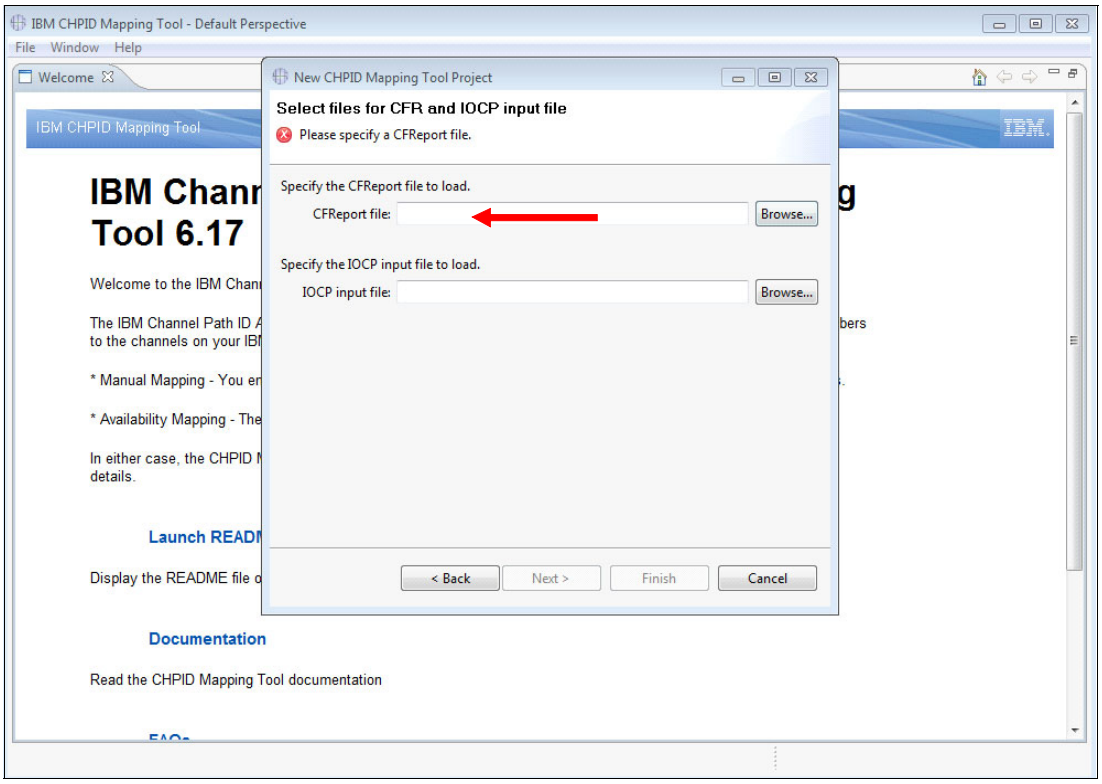

Figure 5-7 Selecting the CFReport file

A message window opens that indicates that no IOCP input file was provided for our project, as shown in Figure 5-8. We select **OK** to proceed.

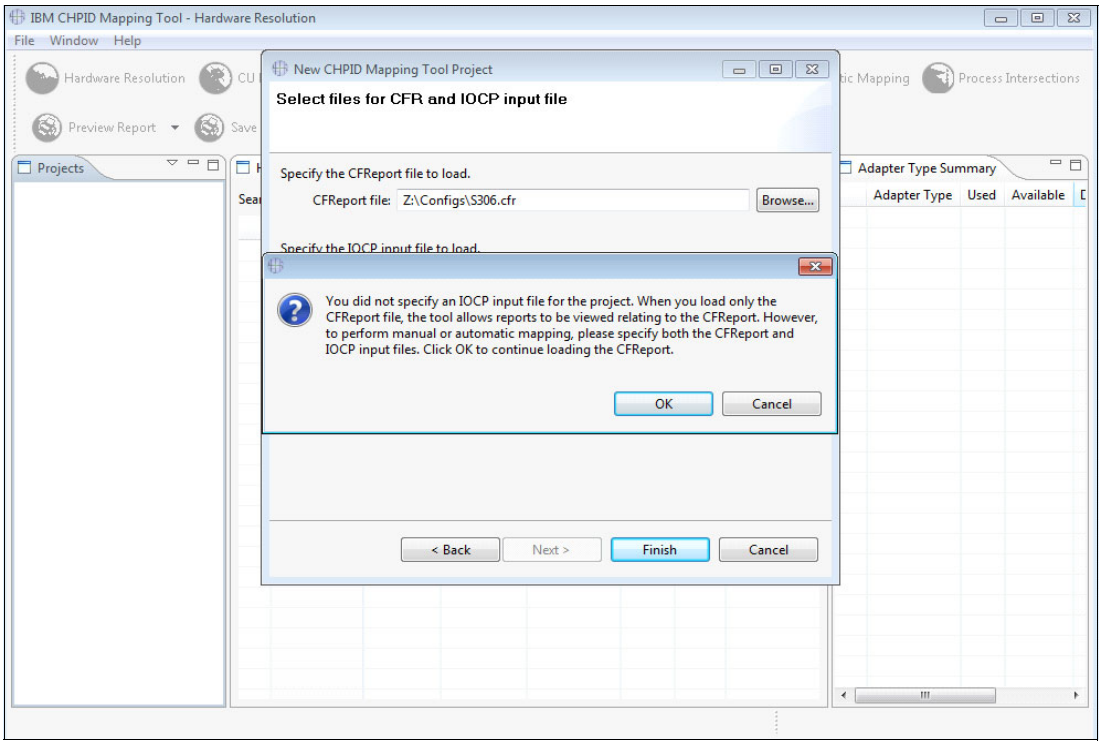

Figure 5-8 Message window when no IOCP file is selected

4. Select PCHIDS.

   From the PCHID Report, we choose the PCHIDs that are associated to PCIe I/O cards that we want to use to connect to our I/O devices. Figure 5-9 shows a subset of what we chose for our setup.

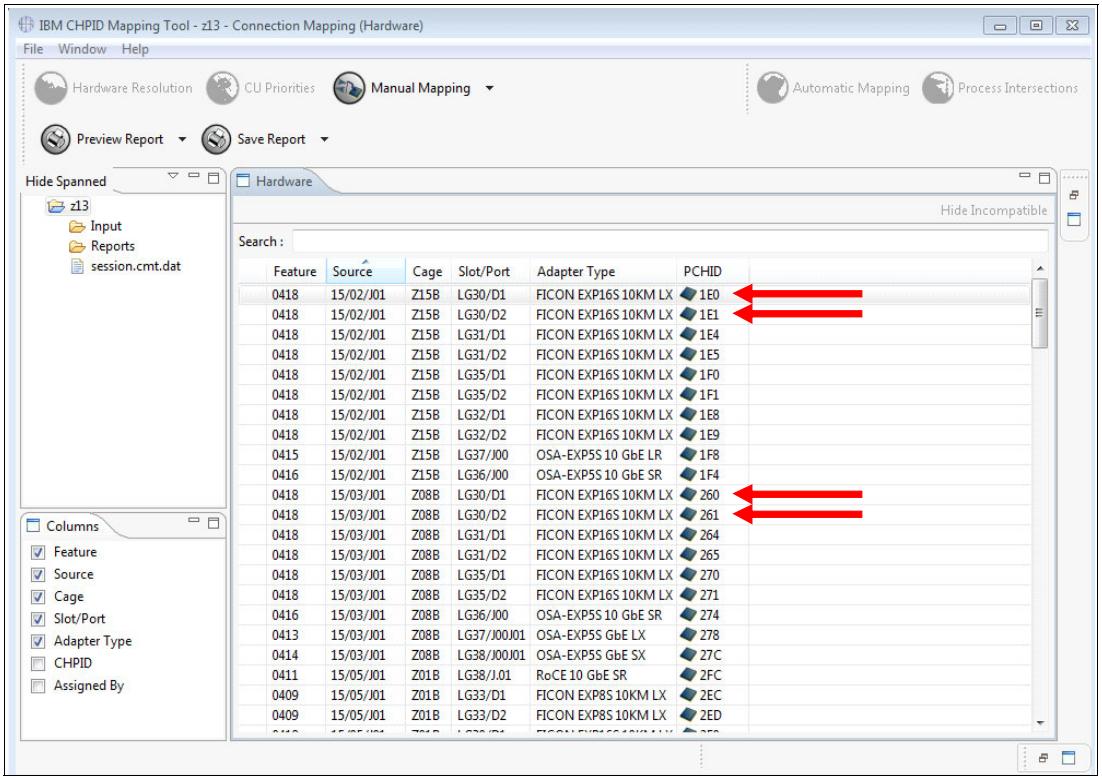

Figure 5-9 Partial PCHID report

For more information about I/O connectivity, see *IBM z13 Configuration Setup,* SG24-8260.

5. Select the channel sub system (CSS), channel path identifiers (CHPIDs), and PCHIDs.

   The CSS must be defined and the CHPIDs must be manually assigned to each selected PCHID port, which are used to produce our I/O configuration design, as shown in Figure 5-10.

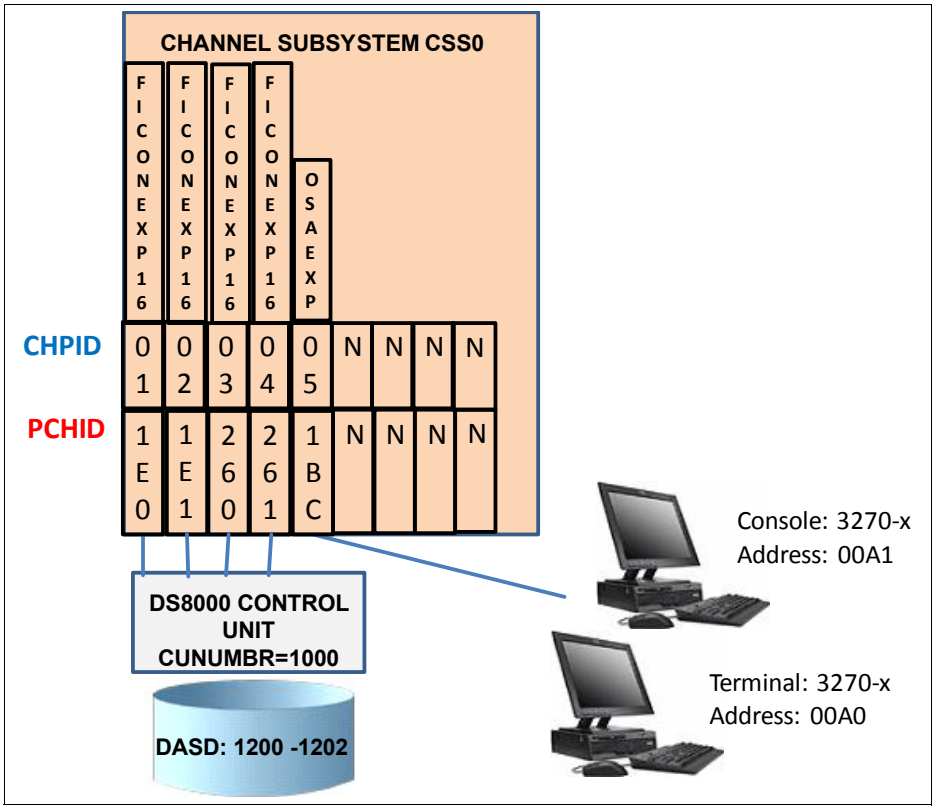

Figure 5-10 I/O configuration design for COD restore

6. Create the IOCS.

   There are several ways to write our IOCS file, but we chose to use a simple text editor on the same workstation that is used with CMT. Our IOCS file is shown in Example 5-1. For more information and for syntax rules about IOCS file statements, see *IOCP User's Guide (ICP),* SB10-7163. After the file is created, we save the IOCS file in ascii format on the USB drive for later use. This method allows IOCS file to be prepared in advance.

Example 5-1 IOCS file

```
*
  ID    MSG1='COD IOCP'
*
*       LPAR DEFINITION
*
        RESOURCE PARTITION=((CSS(0),(COD,1)))
*
*       CHANNEL PATH DEFINITION
*
*       FICON PATH SECTION FOR DS8000 DISKS
  CHPID PATH=(CSS(0),01),PCHID=1E0,                                    X
               TYPE=FC,SHARED
  CHPID PATH=(CSS(0),02),PCHID=1E1,                                    X
               TYPE=FC,SHARED
  CHPID PATH=(CSS(0),03),PCHID=260,                                    X
               TYPE=FC,SHARED
  CHPID PATH=(CSS(0),04),PCHID=261,                                    X
               TYPE=FC,SHARED
*       OSA ICC PATH SECTION FOR CONSOLES
  CHPID PATH=(CSS(0),05),PCHID=1BC,                                    X
               TYPE=OSC,SHARED

*
*       CONTROL UNIT DEFINITION
*
*       OSA ICC CNTLUNIT SECTION
  CNTLUNIT CUNUMBR=0500,PATH=((CSS(0),05)),                            X
               UNIT=OSC
*        DS8000 CNTLUNIT SECTION
  CNTLUNIT CUNUMBR=1200,PATH=((CSS(0),01,02,03,04)),CUADD=0,           X
               UNIT=2107,UNITADD=((00,256))
*
*       I/O DEVICE DEFINITION
*
*       2 3270-X TERMINALS
  IODEVICE ADDRESS=(00A0,2),CUNUMBR=(0500),MODEL=X,UNIT=3270
*       3 HARDDISK DRIVES
  IODEVICE ADDRESS=(1200,3),CUNUMBR=(1200),UNIT=3390
```

5.5.2 Building IOCDS A0

To build the new IOCDS, the stand-alone IOCP reads the IOCS and creates an IOCDS file. There are specific slots for the IOCDS files; we use IOCDS A0. We completed the following steps to build the IOCDS A0:

1. Activate a supplied default partition.

   We log on to SE by using the SYSPROG User ID to activate one of the defined default LPARs that are provided. We load the stand-alone IOCP and build IOCDS A0 by using our IOCS file.

   After we are logged on, we select **System Management** → **P02B63B7** (our z13 server name) → **Partitions** → **0D0LP01** (the default LPAR), which is pre-built and included with our z13 server. In the Tasks tab at the bottom of the window, we select **Daily** and then, **Activate**, as shown in Figure 5-11.

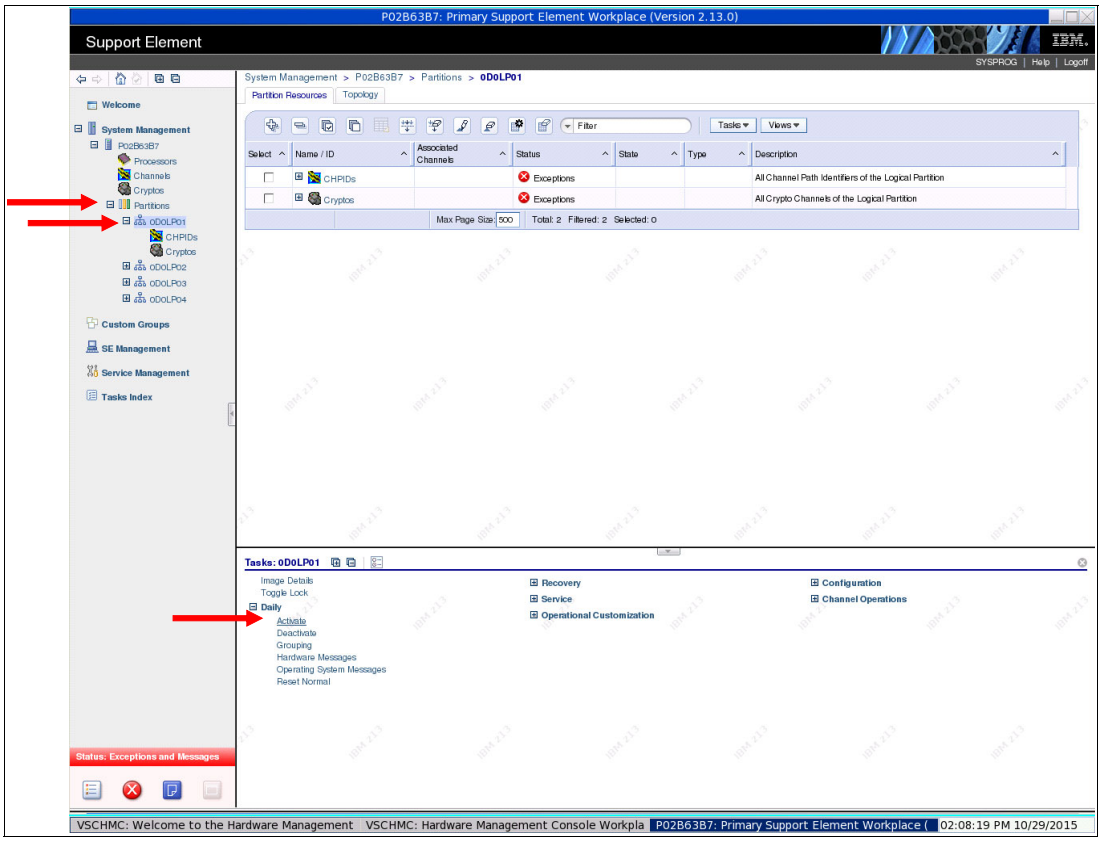

Figure 5-11 Selecting and activating 0D0LP01 partition

A confirmation window opens, as shown in Figure 5-12.

Note: This task is a disruptive task; therefore, we ensure that the correct logical partition is used.

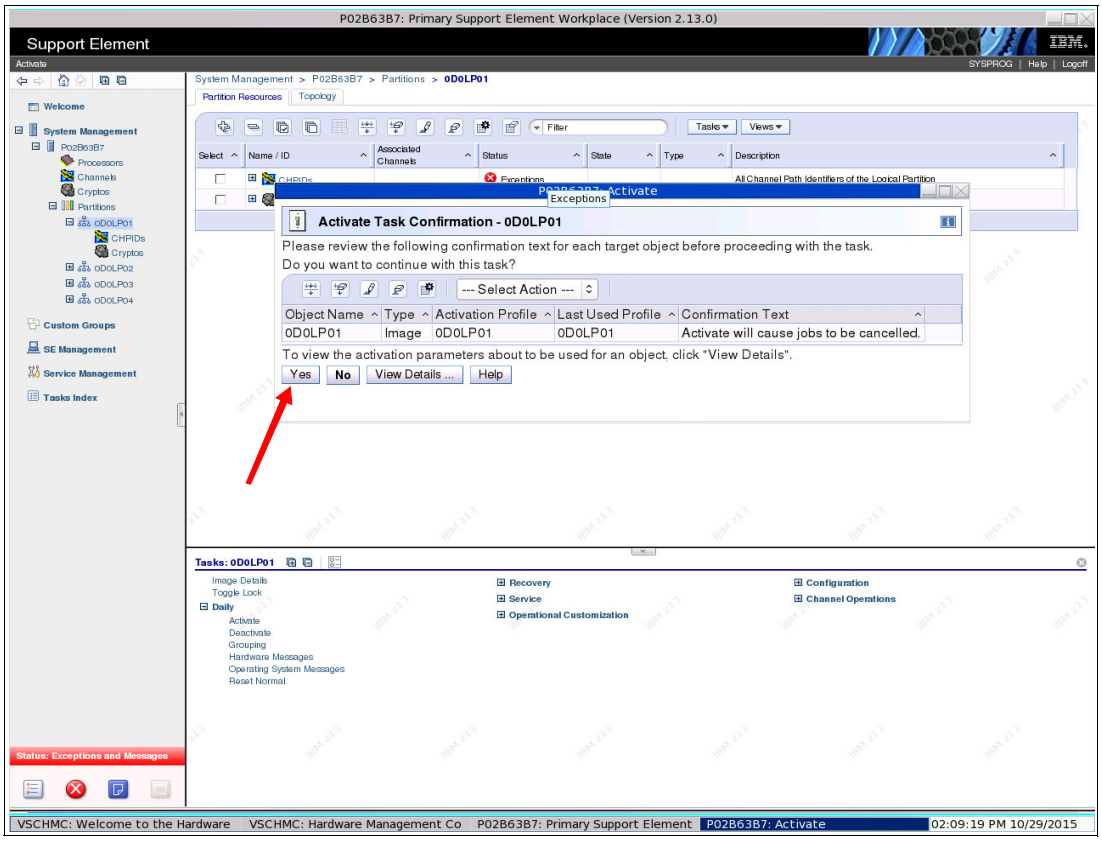

Figure 5-12 Activating task confirmation for 0D0LP01 partition

2. We select **Yes** to continue. A new window opens in which we are informed that the activation is in progress, as shown in Figure 5-13.

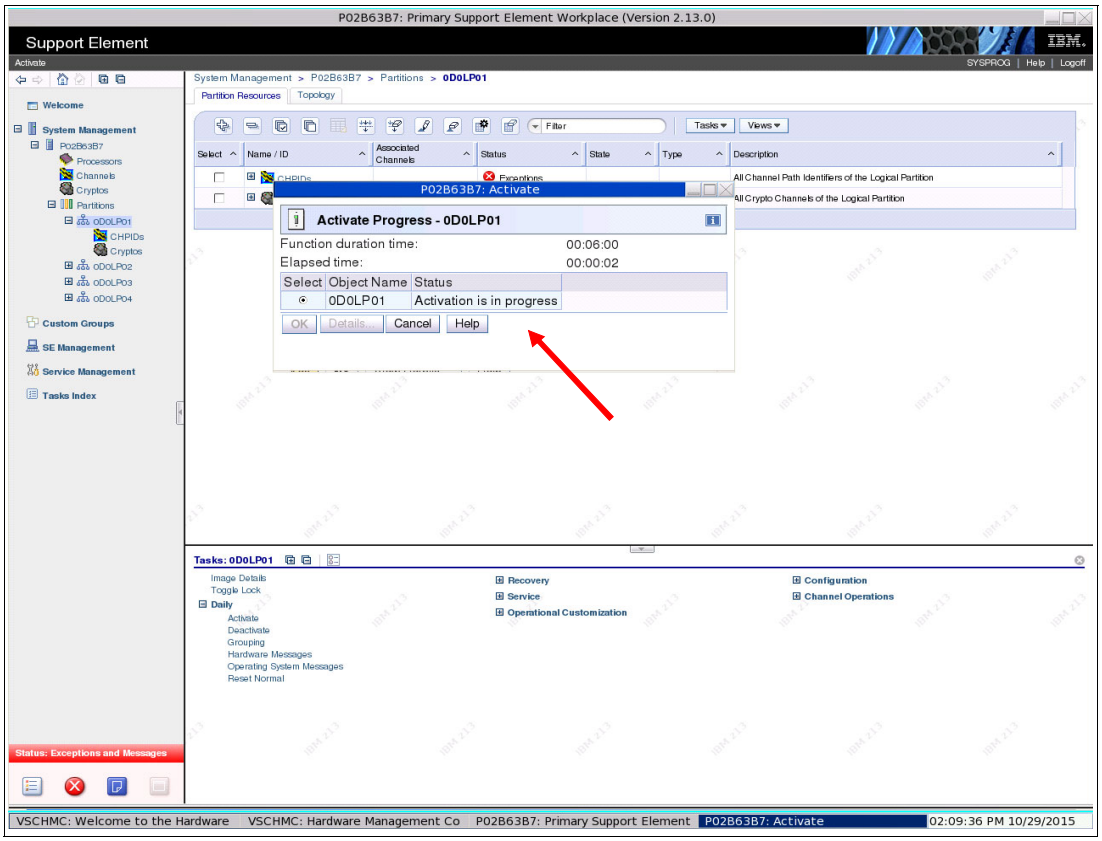

Figure 5-13 0D0LP01 partition activation in progress

3. Upon successful activation, the status changes to Success, as shown in Figure 5-14. We select **OK** to close the window.

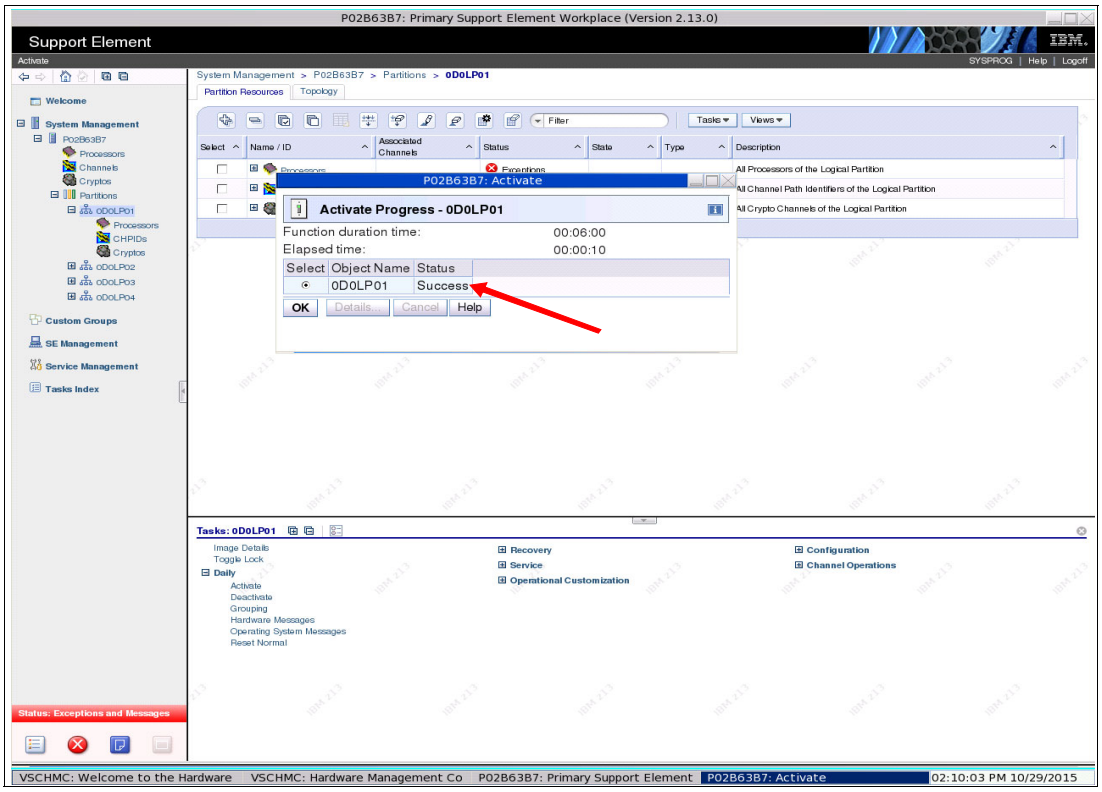

Figure 5-14 Successful logical partition activation

4. With **0D0LP01** partition selected, we select **Configuration** and then **Input/Output (I/O) Configuration** in the Tasks tab in the lower half of the window, as shown in Figure 5-15.

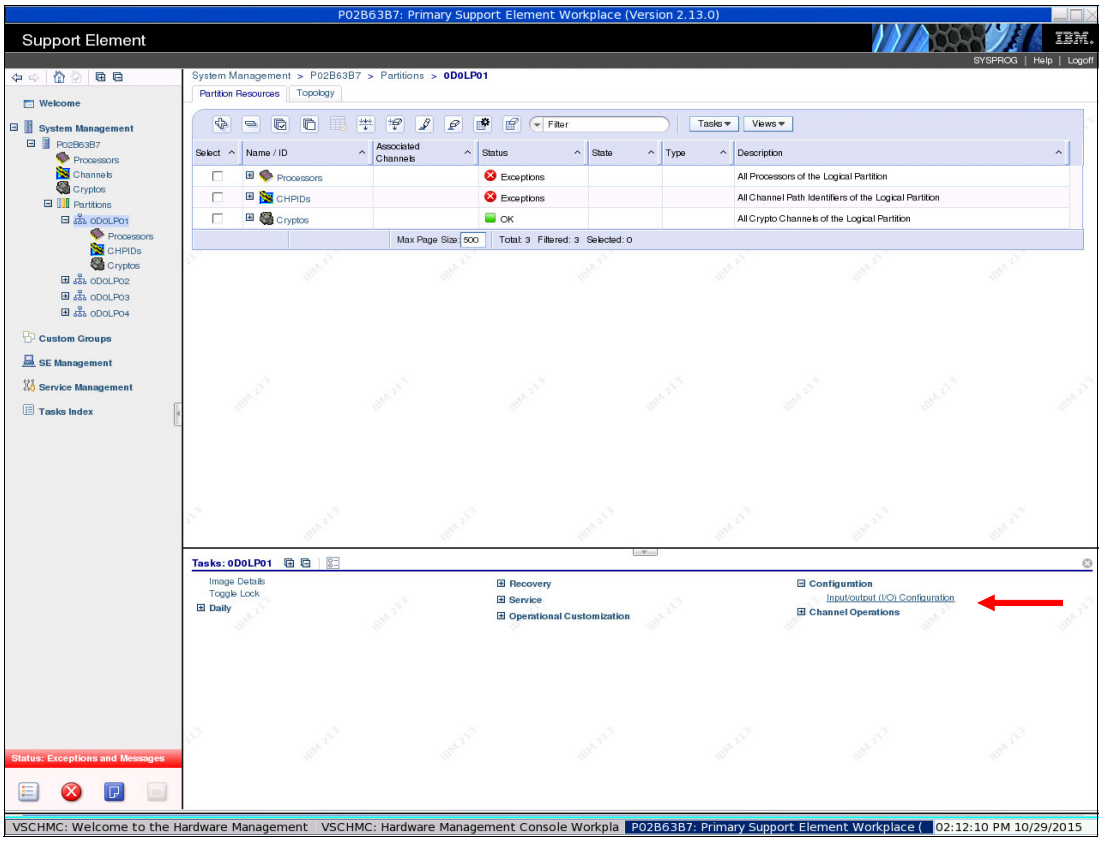

Figure 5-15 Input/Output Configuration selection

A window opens, as shown in Figure 5-16. Consider the following points:

- The active IOCDS and the IOCDS that match the Hardware System Area (HSA) are identified here.
- There is a row for each IOCDS (A0-A3 and D0) and the Data Set Status column confirms that D0 is the active IOCDS.
- IOCDS D0 is Write Protected (“Y” in Write Protected column). This option prevents the IOCDS from being inadvertently overwritten.

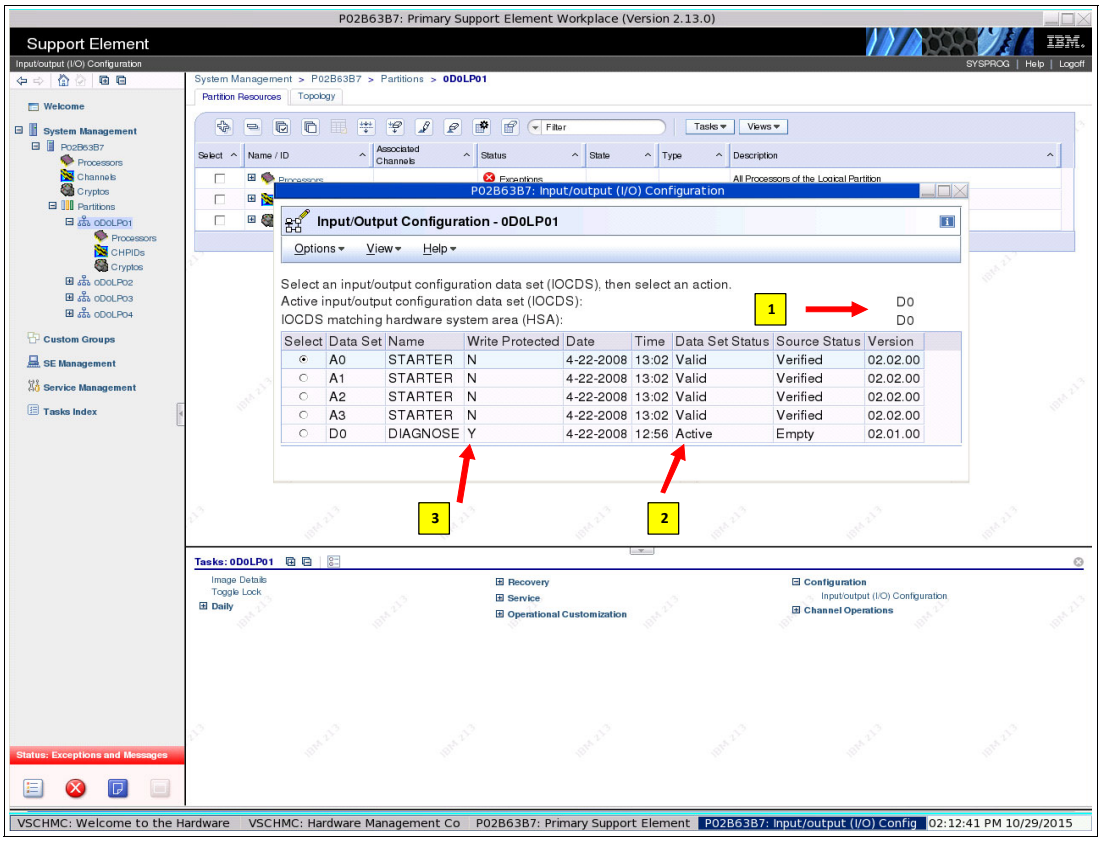

Figure 5-16 Input/Output Configuration window

From the Options drop-down menu, Disable Write Protection (as shown in Figure 5-17) can be selected to allow an IOCDS slot to be modified. In our case, IOCDS A0 was not set as Write Protected, so this action was not needed.

Note: We suggest that you do not perform this action on IOCDS D0 because this IOCDS slot is used for diagnostic purposes and by the IBM Hardware CE for appropriate tasks.

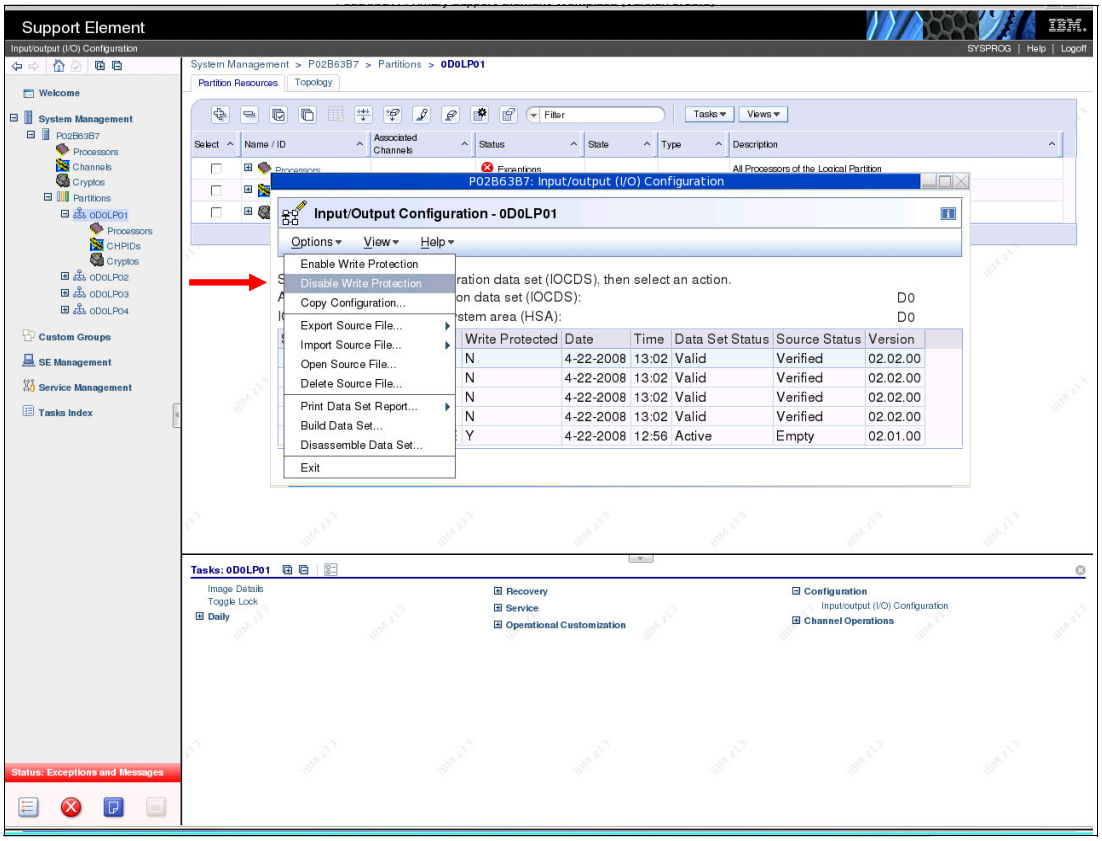

Figure 5-17 Disable write protection option

5. Import the IOCS.

   We insert the USB drive that includes the IOCS file into HMC USB slot. From the Input/Output Configuration window, we select slot **A0** and then, click **Options** → **Import Source File** → **Hardware Management Console USB Flash Memory Drive**, as shown in Figure 5-18.

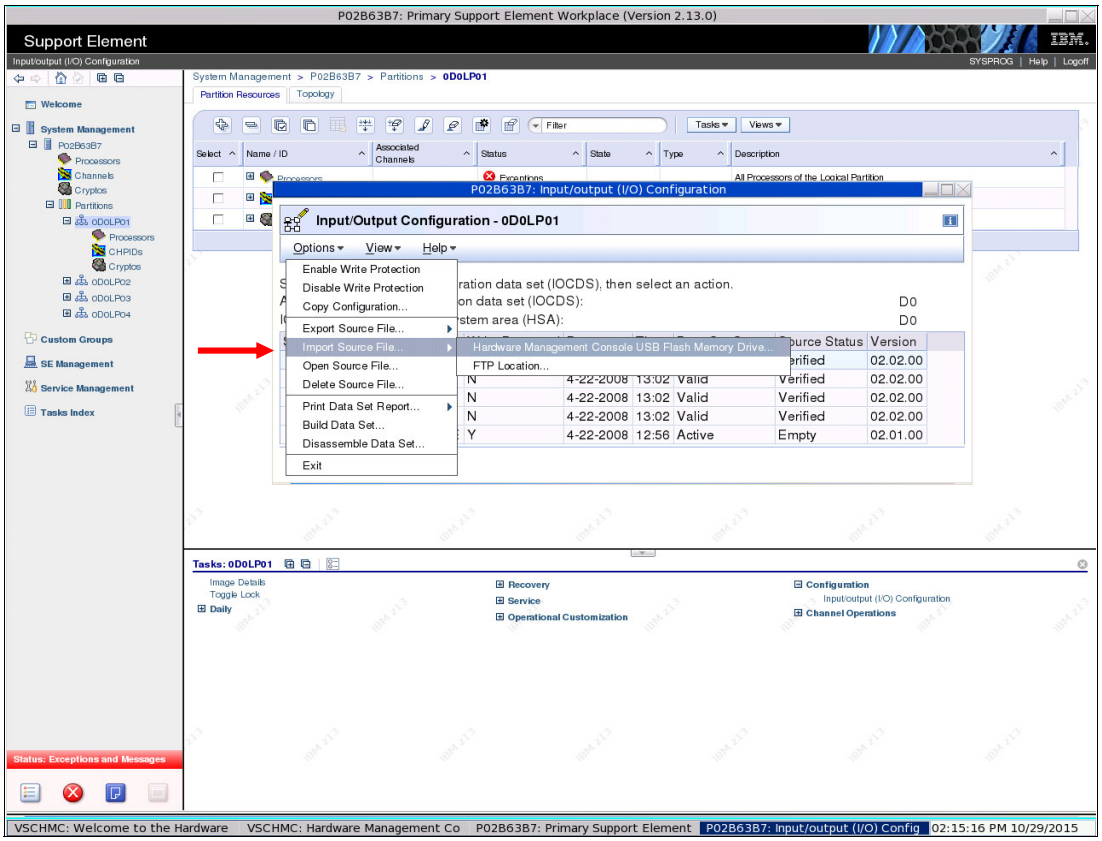

Figure 5-18 Input source file from HMC USB flash memory drive

6. A new window opens that features a file selection list. We select our IOCS file and select **OK**, as shown in Figure 5-19.

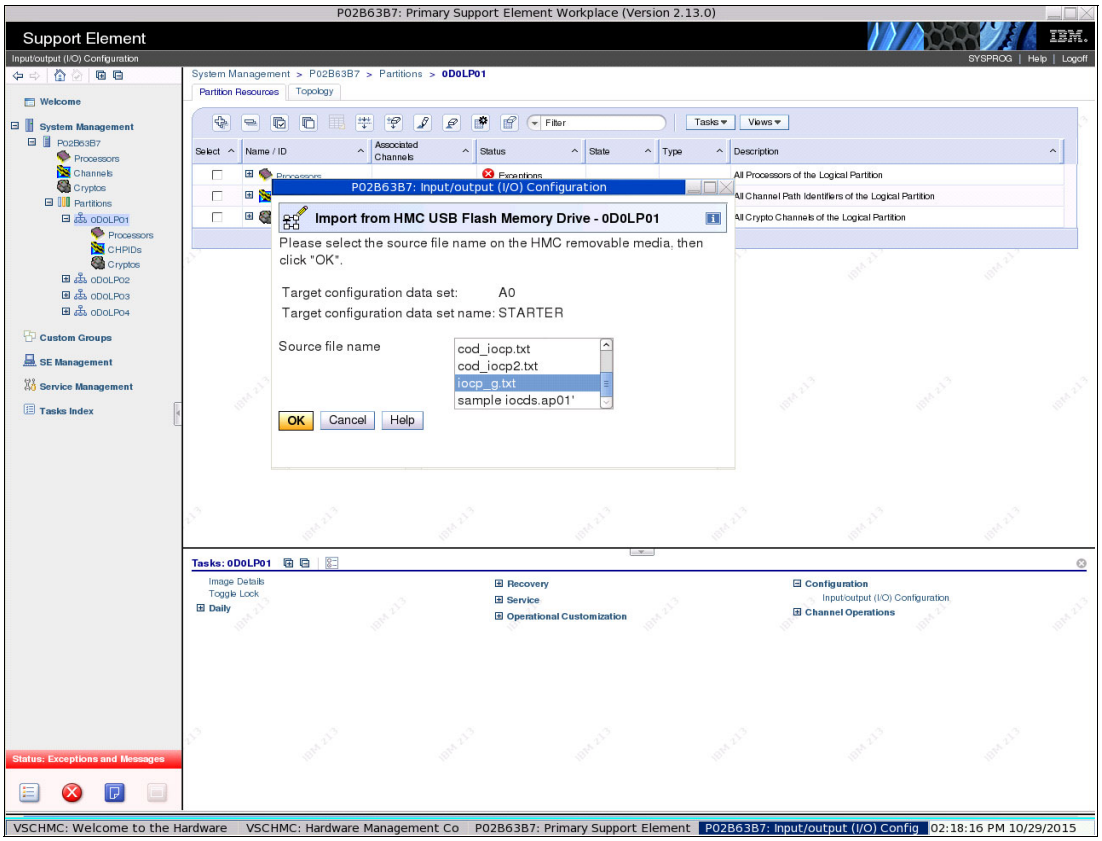

Figure 5-19 IOCS file selection

As shown in Figure 5-20, a window opens after the IOCS file is imported successfully. We select **OK** to close it.

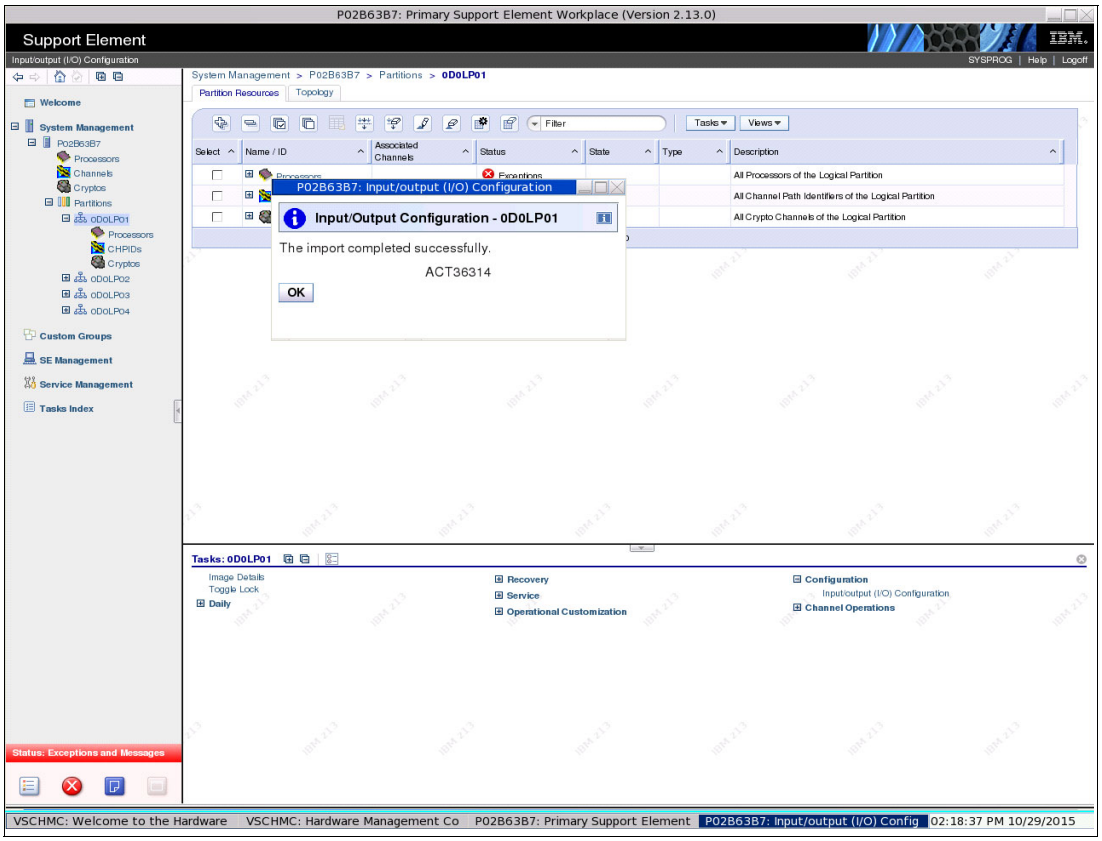

Figure 5-20 Successful import confirmation

7. Build the IOCDS A0.

   After the IOCS is imported into slot A0, we can build the new IOCDS. With IOCDS A0 still selected, we select **Options** → **Build Data Set**, as shown in Figure 5-21.

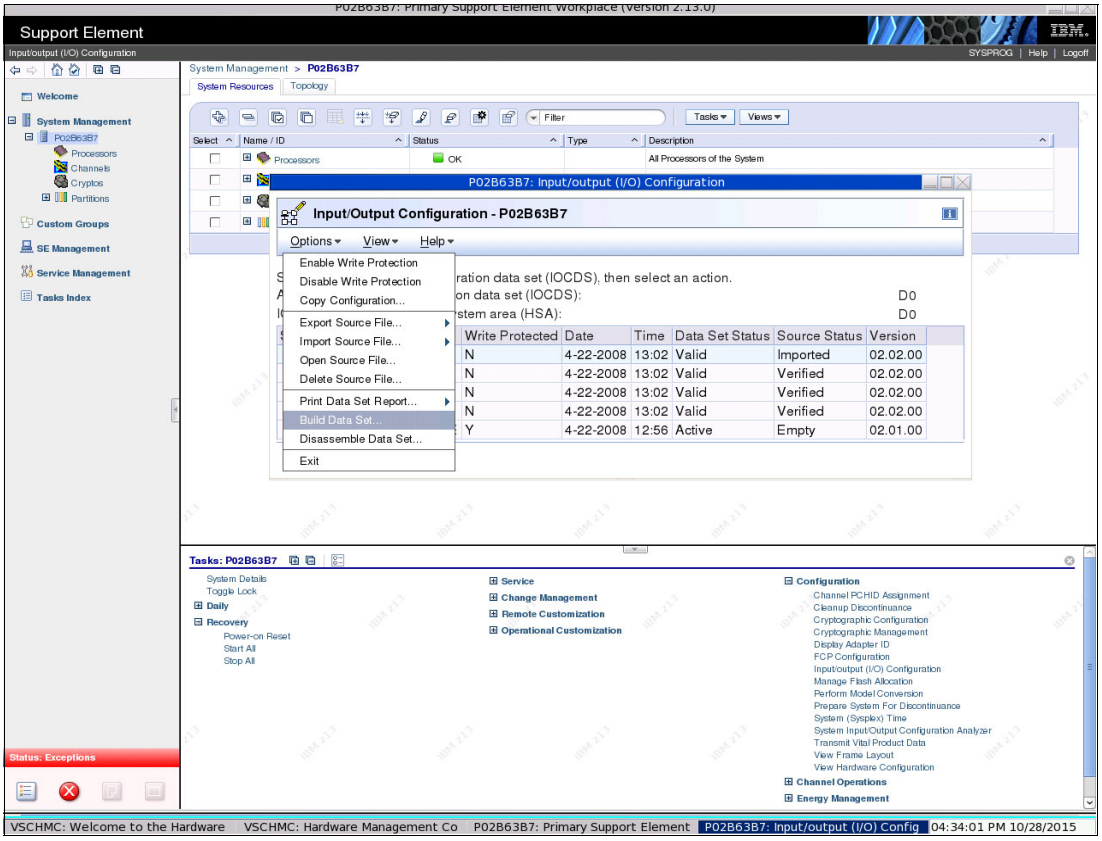

Figure 5-21 Building IOCDS A0

The IOCDS build options window opens, as shown in Figure 5-22. Select **OK** to proceed.

Note: We suggest that the Continue if data check errors occur option is not selected because we must be alerted if there is a data check problem.

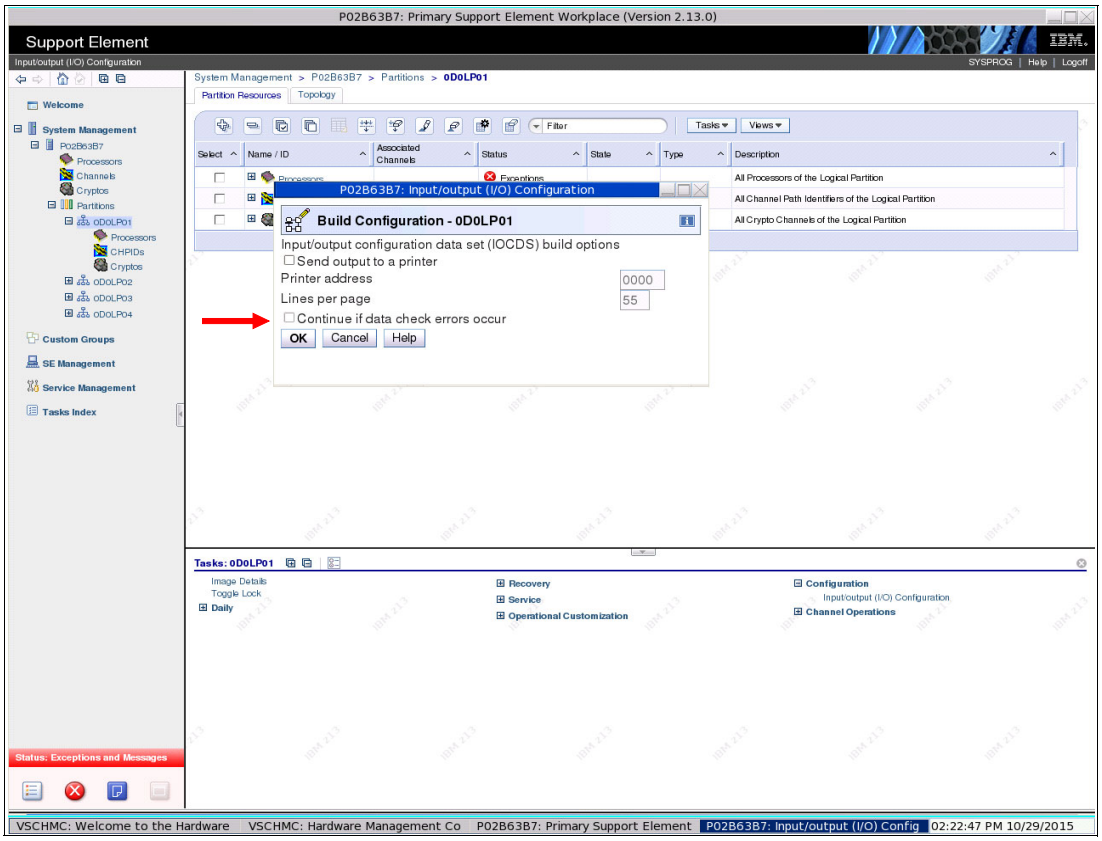

Figure 5-22 IOCDS build options window

The Disruptive Task Confirmation window opens, as shown in Figure 5-23. We confirm the task by entering our password and selecting **Yes**.

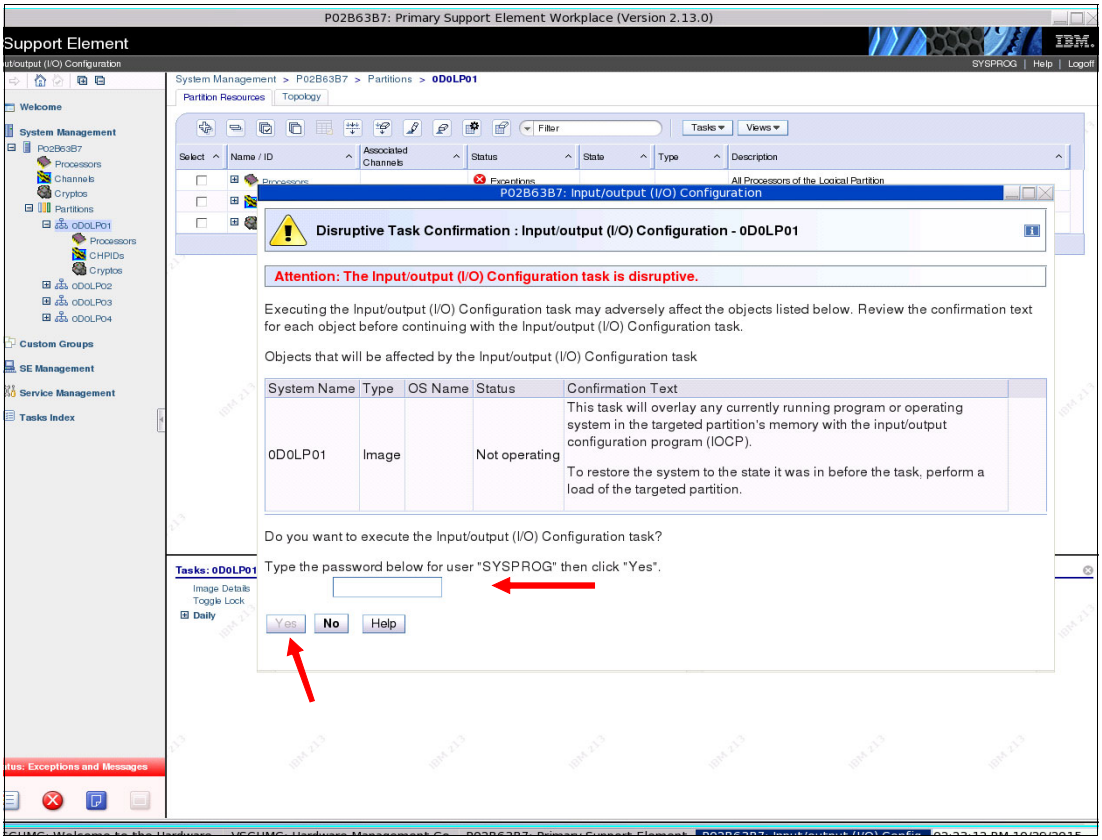

Figure 5-23 Disruptive Task Confirmation window

If there is any problem with our IOCS file during the build process, we see an error message, as shown in Figure 5-24. If there were no errors, we see a message that indicates that the process was completed.

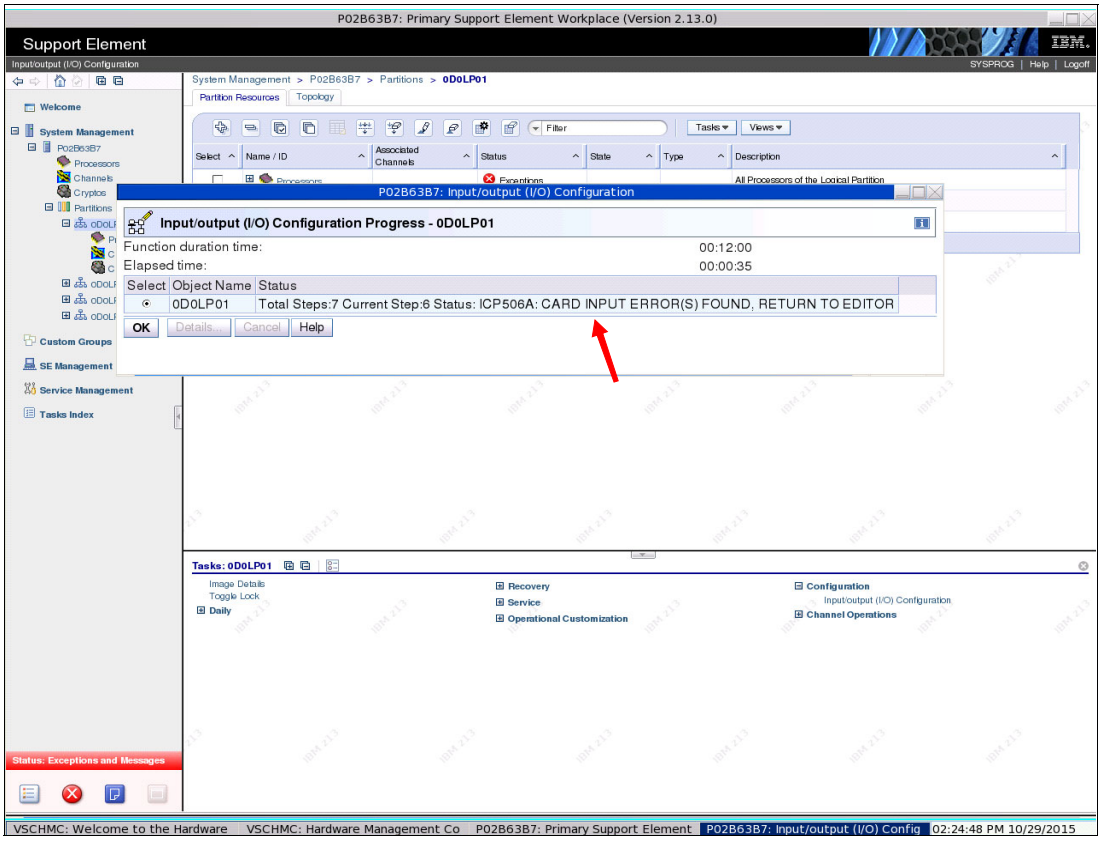

Figure 5-24 Error messages that are found during the build process

8. We select **OK**, which returns us to the Input/Output Configuration window. We select **Options** → **Open Source File** to display the source file with the error messages, as shown in Figure 5-25.

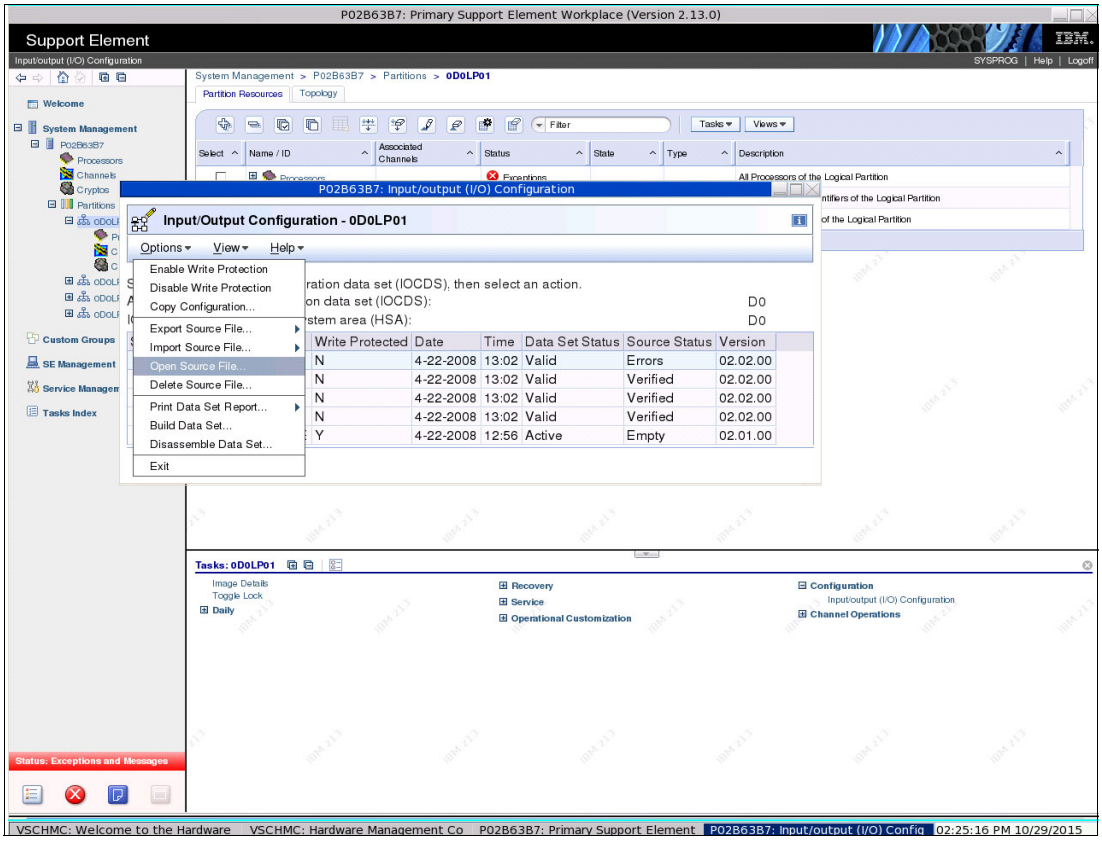

Figure 5-25 Open source file to examine error messages

The source file is displayed, as shown in Figure 5-26. We search for “*ICP” to find each IOCP message. In our example, we produced the following deliberate errors:

– An invalid PCHID number. Acceptable values are hexadecimal numbers (number 1 in Figure 5-26).

– Unbalanced parentheses for CNTLUNIT statement (number 2 in Figure 5-26).

– These errors provide more information about the build process (number 3 in Figure 5-26).

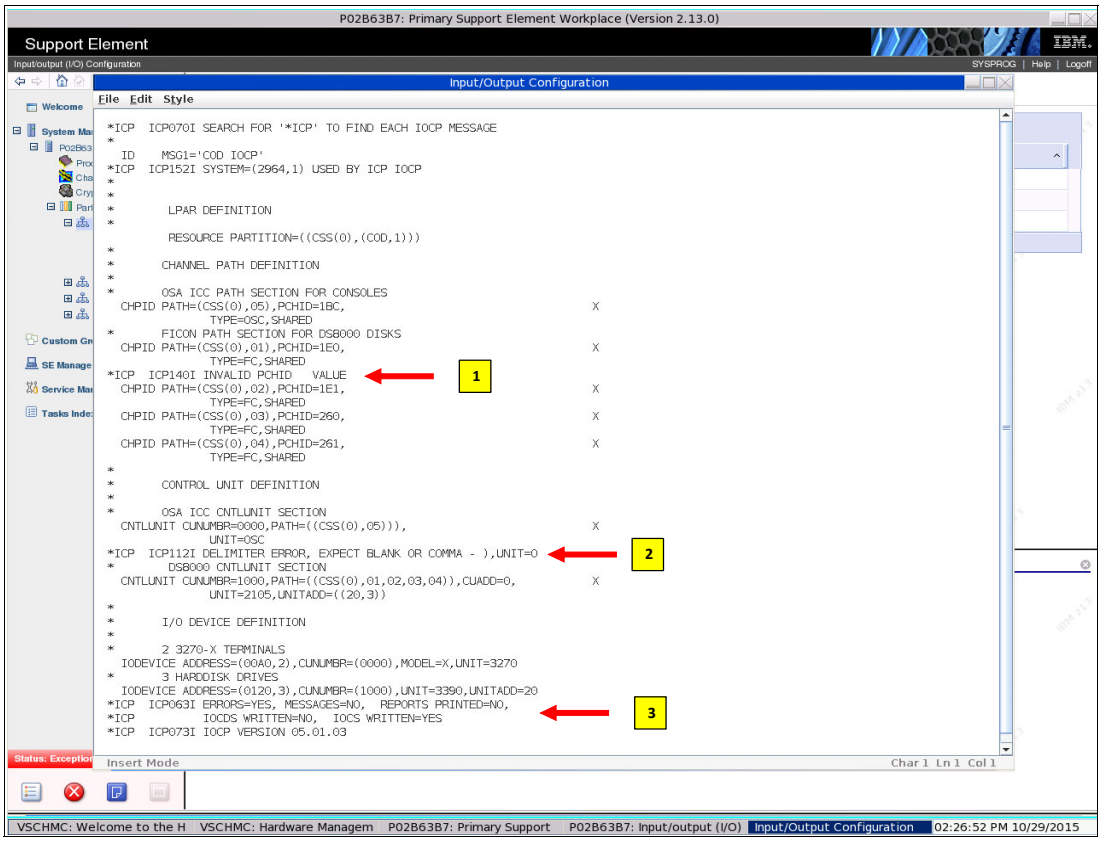

Figure 5-26 Source file and error messages

We fix any error message on our source file and select **File** → **Save and Exit**. We repeat the process to build the IOCDS A0 until the build is successful (see Figure 5-27).

Note: It is not necessary to delete *ICP messages because these messages are discarded during the build process.

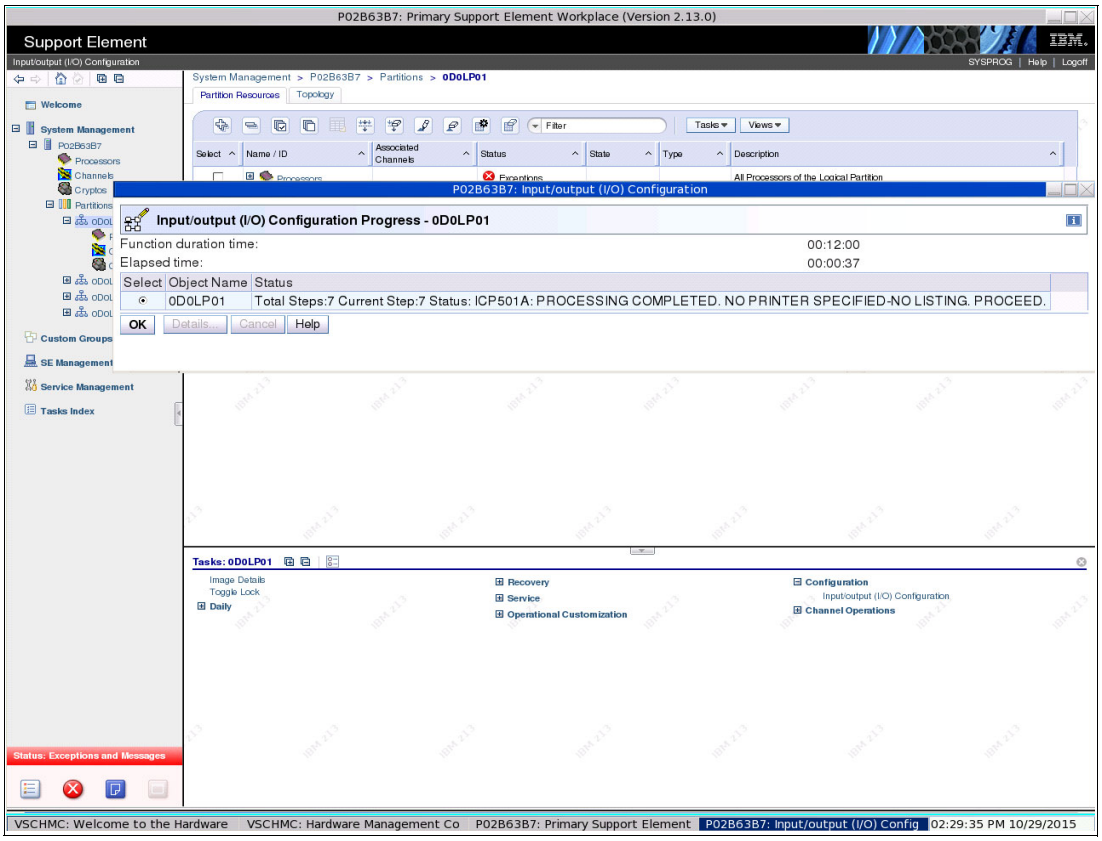

Figure 5-27 Build process completed

9. We select **OK** and then see in the Input/Output Configuration window that the IOCDS slot A0 is updated with a valid and verified status and features updated time stamps, as shown in Figure 5-28.

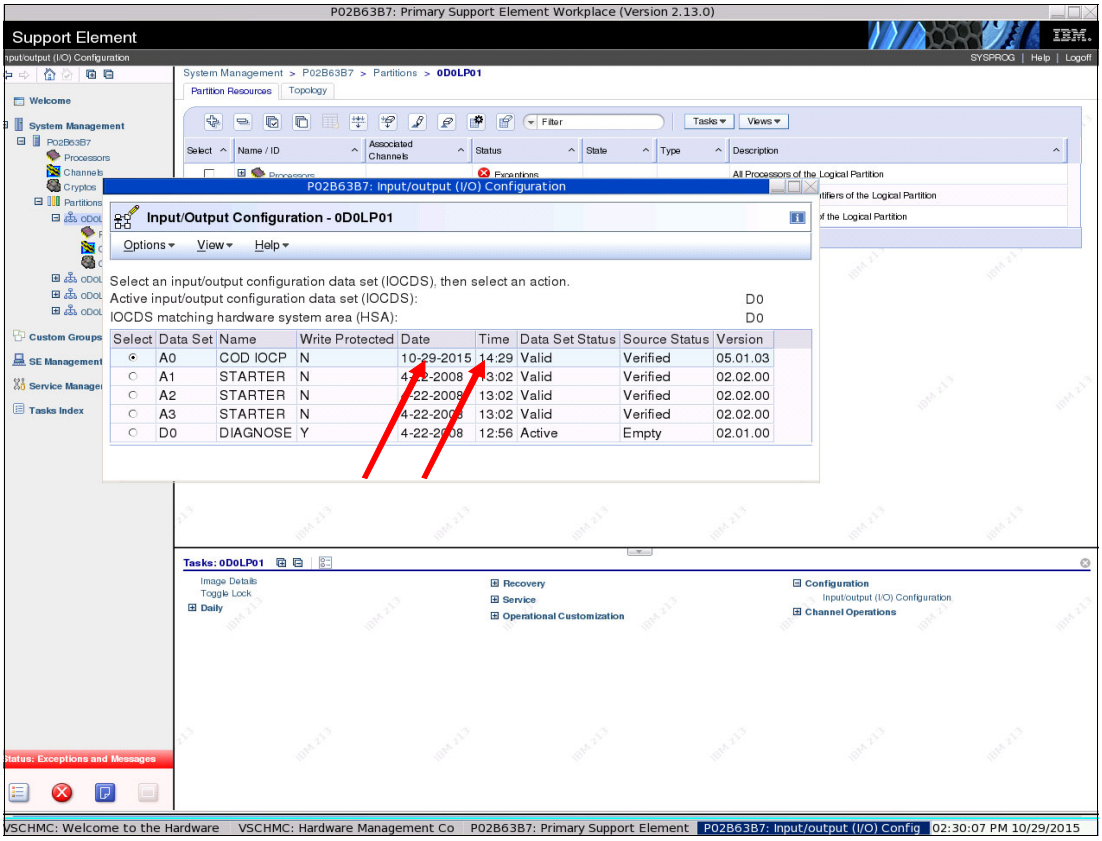

Figure 5-28 Updated status and time stamps after build process

10. We select **Options** → **Exit** to leave the Input/Output Configuration window.

The IOCDS A0 was successfully built.

5.5.3 POR IOCDS A0

The next step is to activate the new IOCDS configuration. For more information about the use of IOCDS slot A0 instead of D0 to perform the activation, see Chapter 4, “Phase 1: IBM z13 preparation” on page 25.

5.5.4 Defining and activating COD z/OS driving system image profile

Having completed the POR process by using IOCDS A0, we define and activate the COD z/OS driving system image profile to assign other required system resources, such as processors and memory. This activation allows us to load an operating system into this LPAR. We completed the following steps:

1. Create an Image Profile for the COD system.

   Logged on to SE with the SYSPROG profile, we select **System Management** → **P02B63B7** (our z13 server name) from the menu in the left of the window and then, in the Tasks tab we select **Operational Customization** → **Customize/Delete Activation Profiles**, as shown in Figure 5-29.

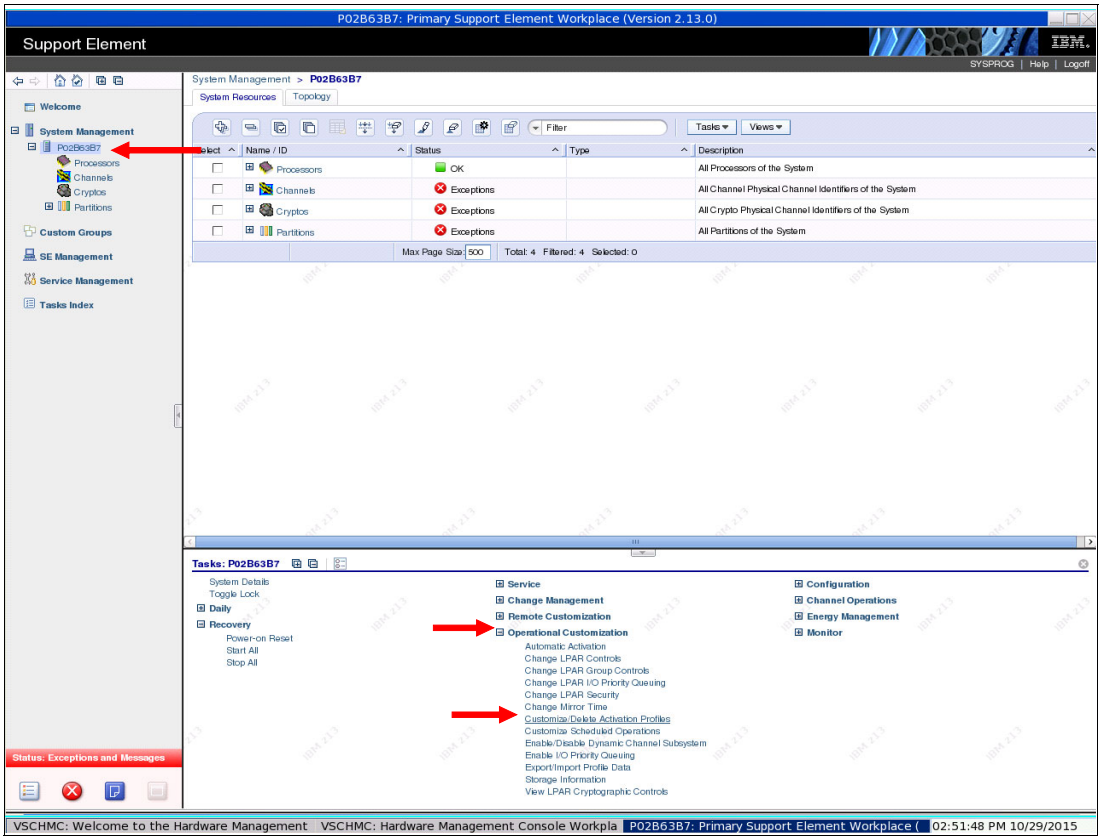

Figure 5-29 Customizing or deleting activation profiles

2. We select **COD** LPAR and **New Image Profile**, as shown in Figure 5-30.

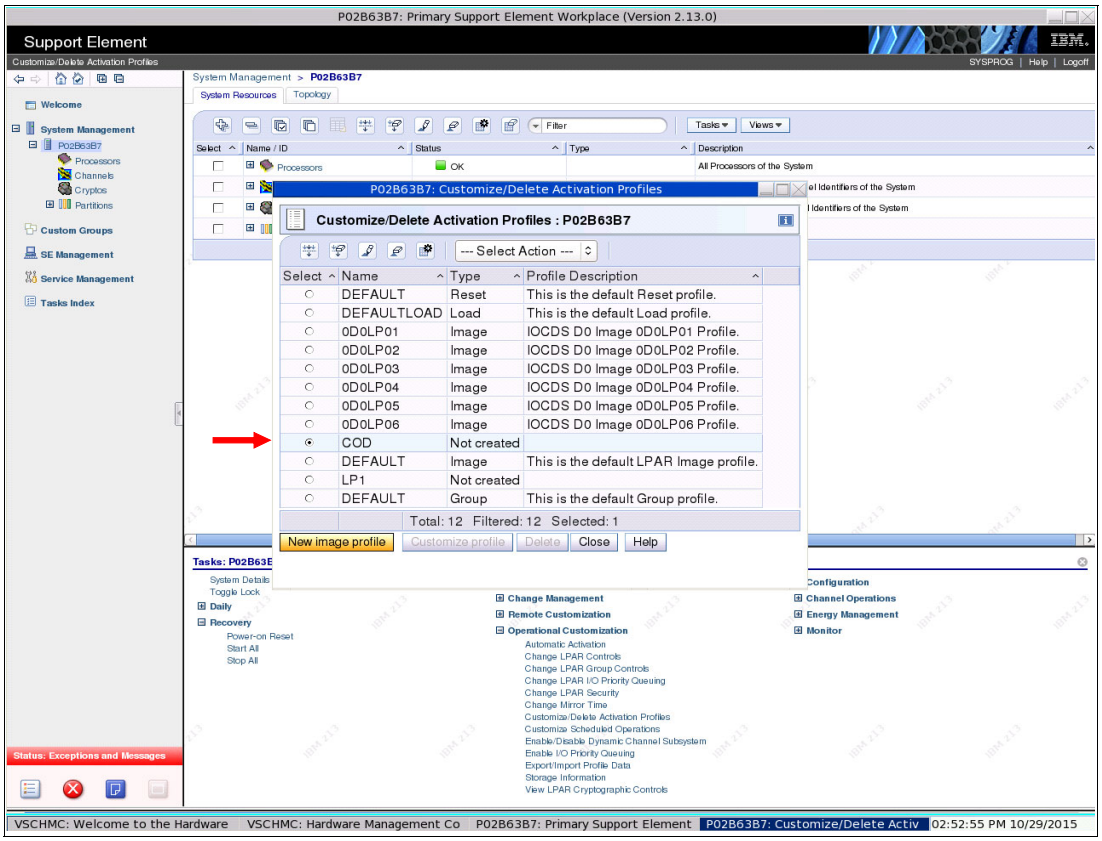

Figure 5-30 New Image Profile definition

3. A new image profile window opens, as shown in Figure 5-31. We select **Next** to continue.

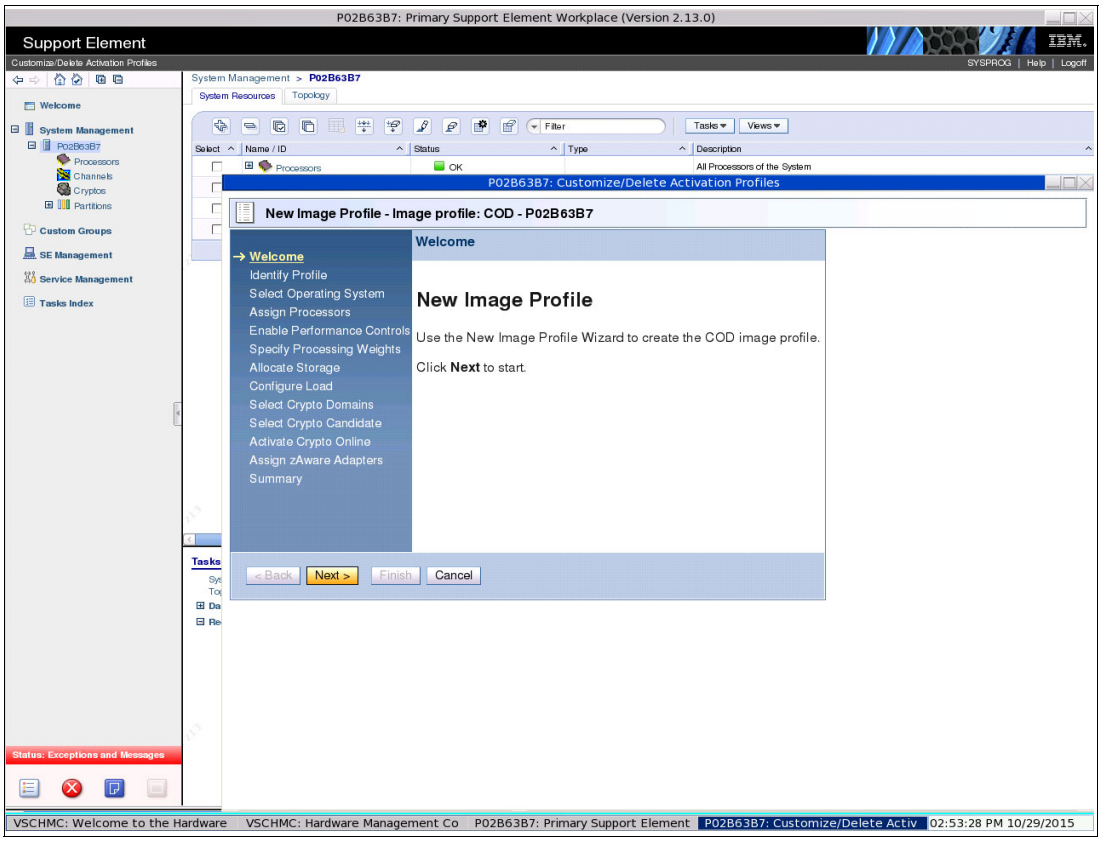

Figure 5-31 New Image Profile window

4. We enter the Partition Identifier that matches the value that was used on our IOCS file and a brief description for this LPAR image profile. Then, we select **Next**, as shown in Figure 5-32.

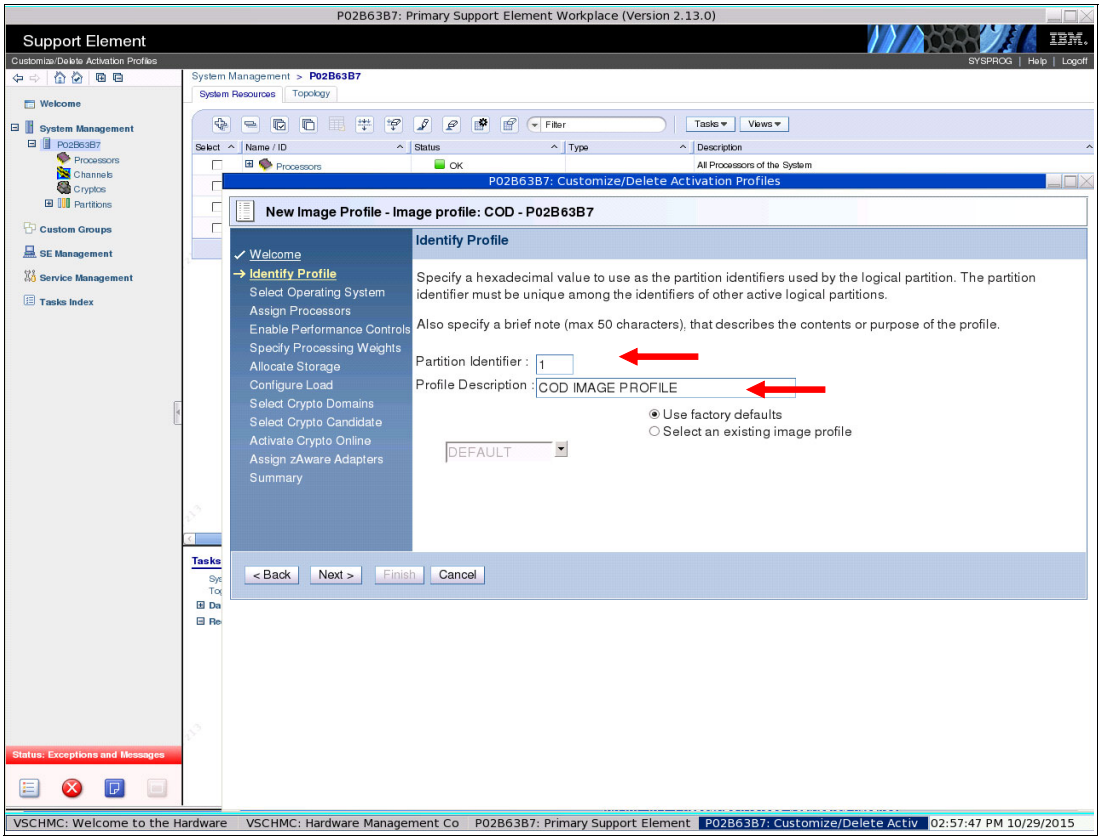

Figure 5-32 New Image Profile window

5. We select an operating system to run on the COD z/OS driving system LPAR (in this case, **z/OS**), as shown in Figure 5-33. We select **Next**.

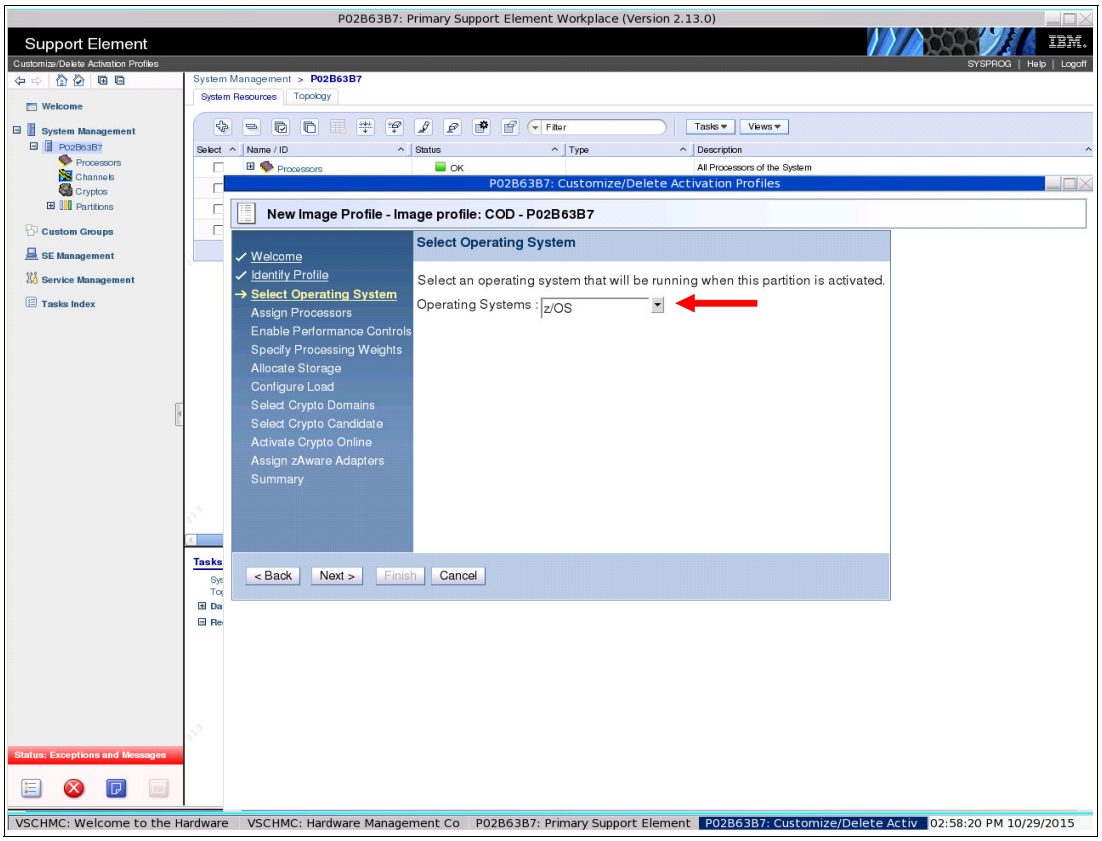

Figure 5-33 Operating system selection

6. We assign processors to the LPAR and then, select **Next**.

   In your situation, the selections depend on the available processors of your machine model and operating system that is selected. In our example, there are no System z Integrated Information Processors (zIIPs) available. We define five non-dedicated central processors (CPs) with an extra five for reserved capacity. The COD z/OS driving system scope is limited to z/OS ServerPac installation; therefore, it does not require high processor capacity (see Figure 5-34).

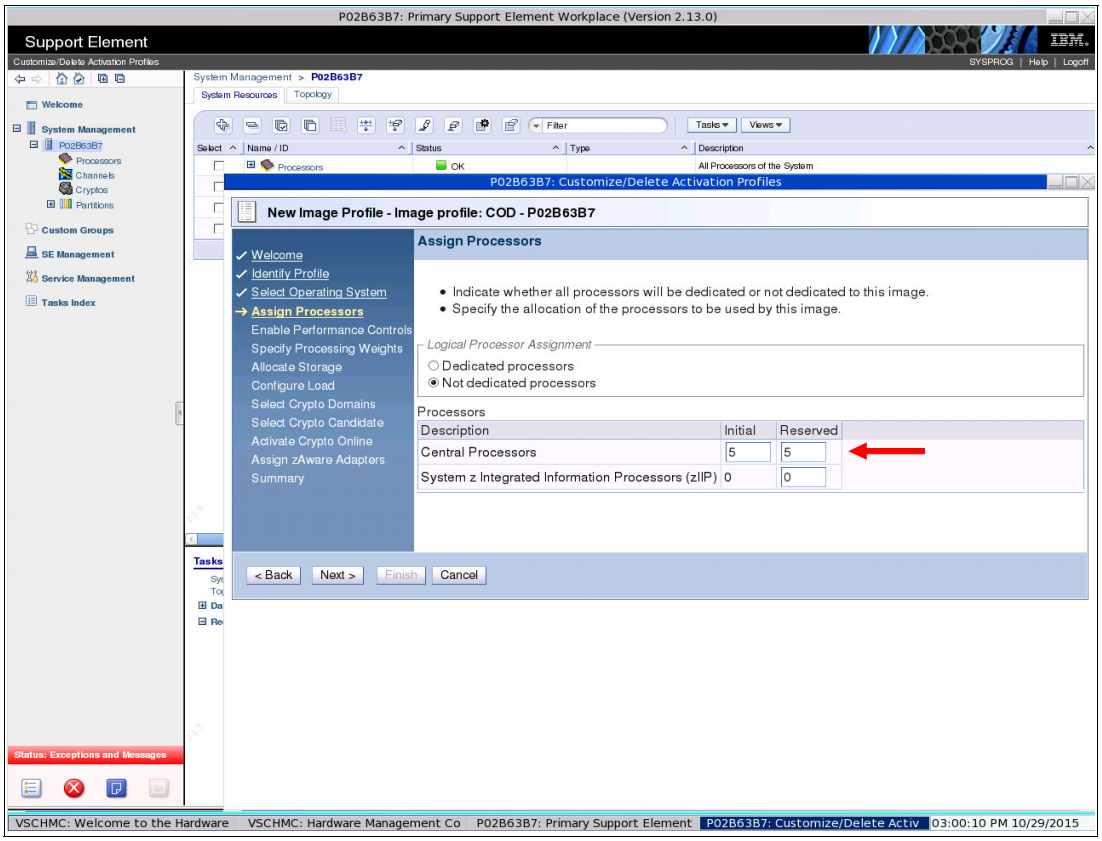

Figure 5-34 Processors assignment

7. For Enable Performance Controls, we use the default value for the COD z/OS driving system LPAR and select **Next**, as shown in Figure 5-35.

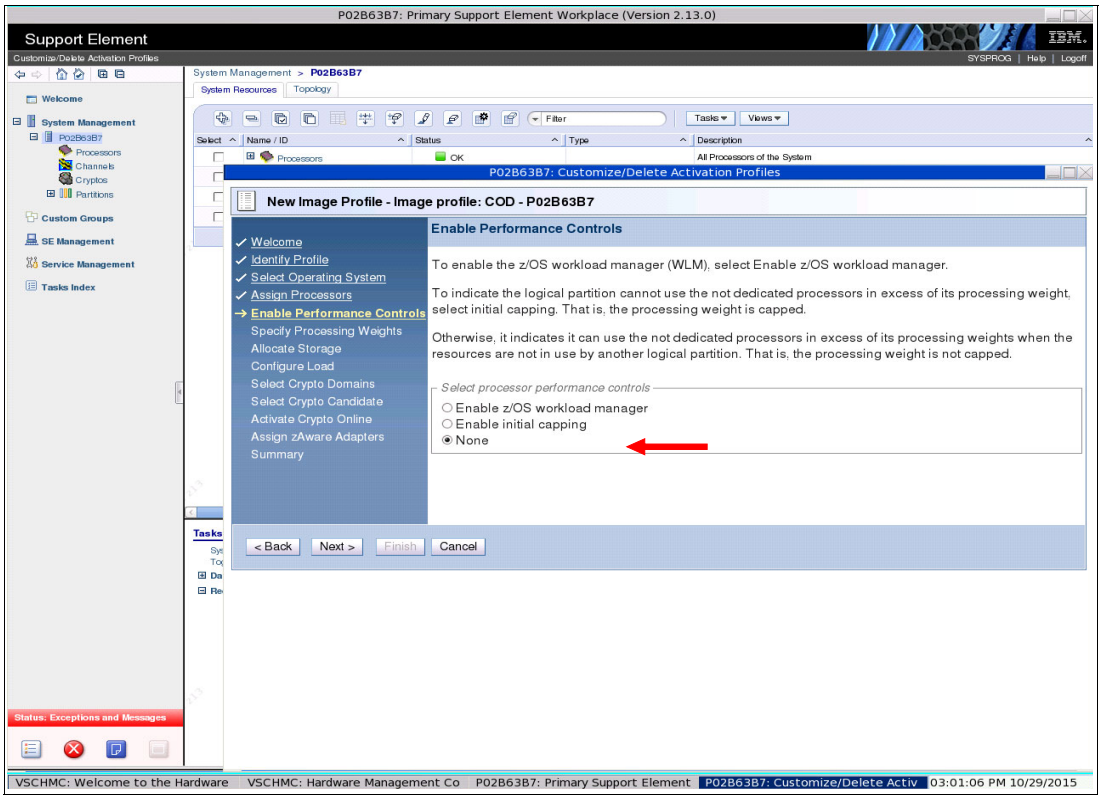

Figure 5-35 Enable performance controls

8. We select **High** for the initial processing weight and **None** for default absolute capping. Then, we select **Next**, as shown in Figure 5-36. (This system is a limited system; therefore, no performance consideration is made now.)

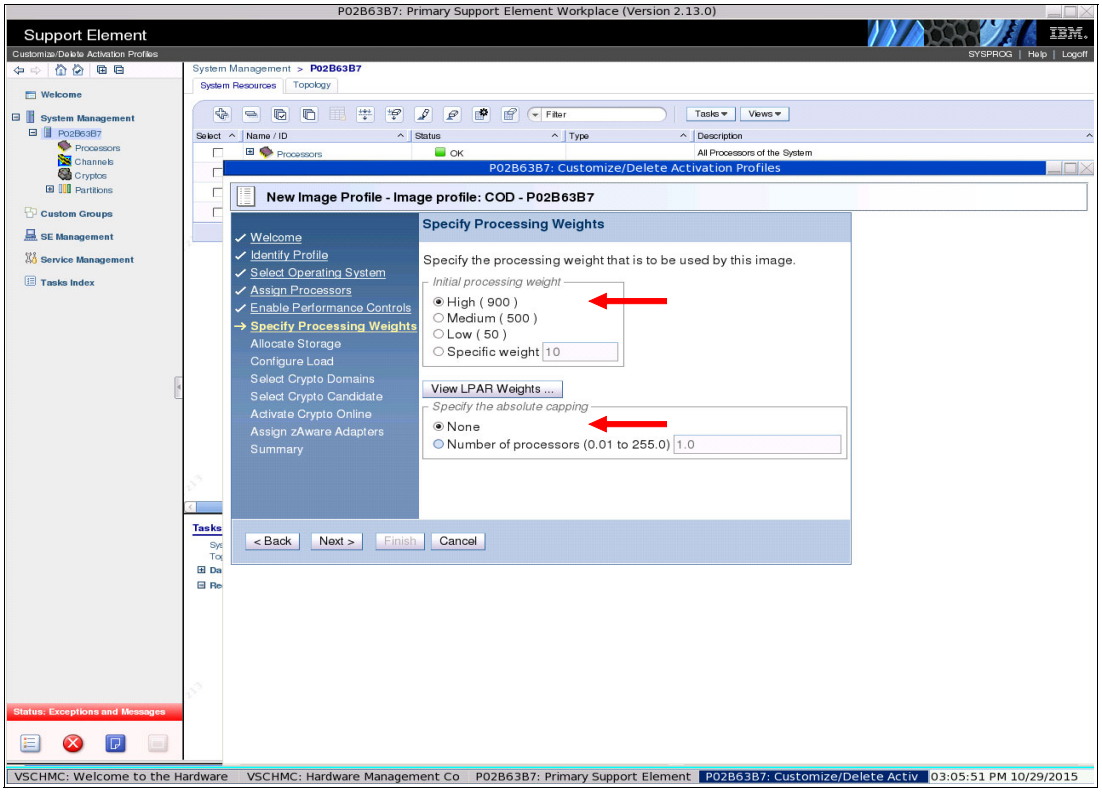

Figure 5-36 Specify processing weights

9. We allocate memory to the LPAR and then, click **Next**. For your configuration, this allocation depends on the available memory on your machine and the system requirement. In our example, 8 GB was allocated to our small COD z/OS driving system LPAR, as shown in Figure 5-37. It is suggested you define at least 8 GB of memory for every LPAR defined.

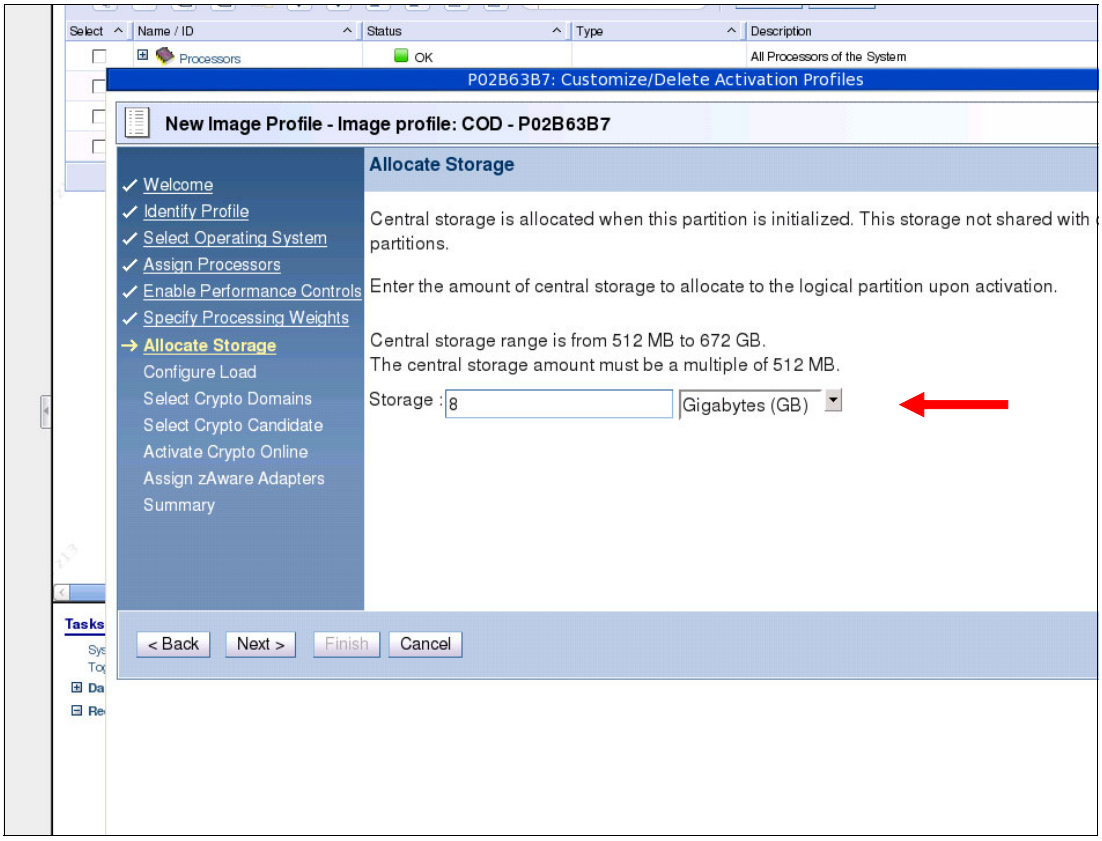

Figure 5-37 Memory allocation

10. For the Load configuration, we use the default value because there is no operating system that is installed on any I/O device (see Figure 5-38). Then, we select **Next**.

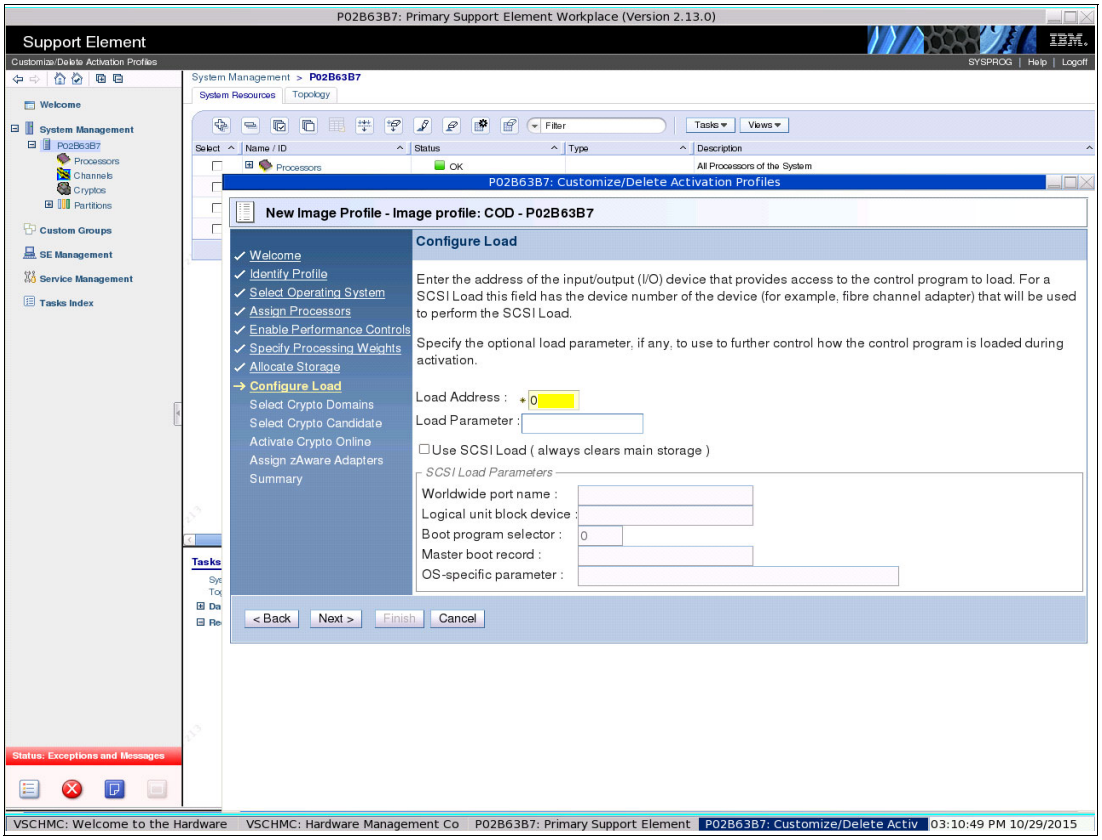

Figure 5-38 Load configuration

11. We do not specify any Crypto domains for the COD z/OS driving system LPAR because it is not required now (see Figure 5-39). Then, we click **Next**.

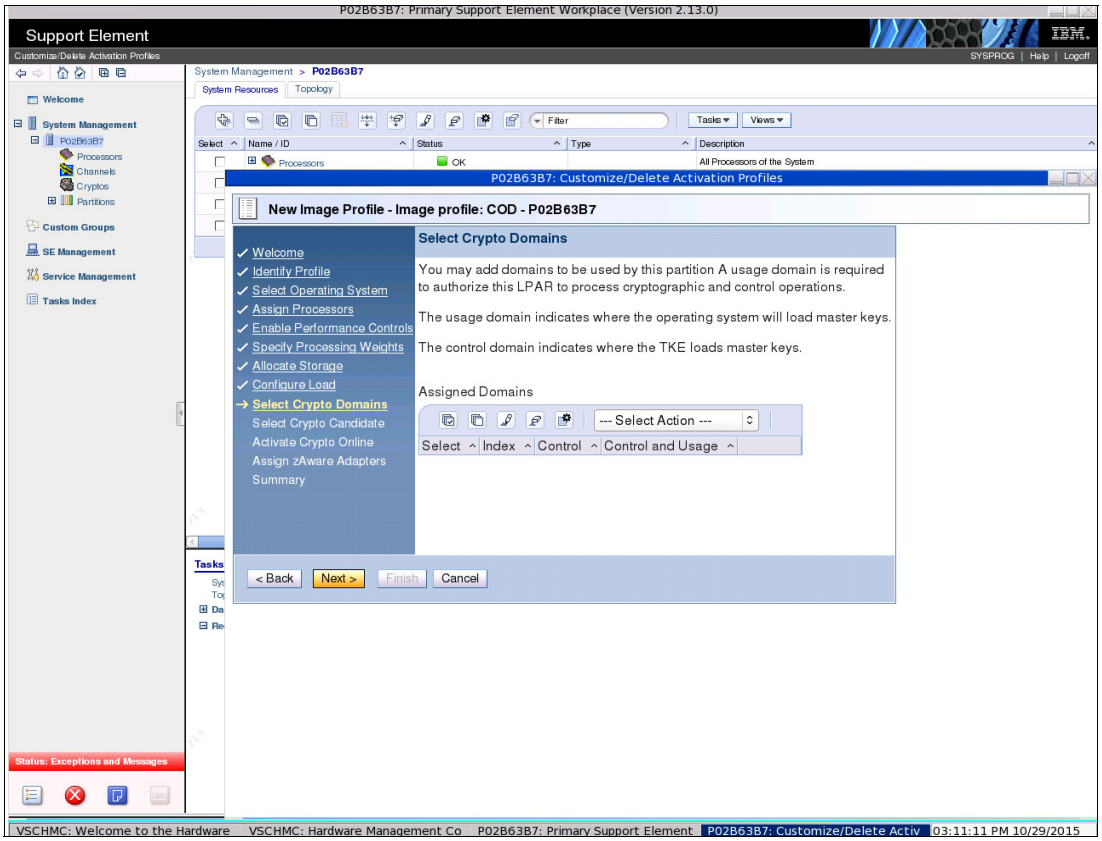

Figure 5-39 Crypto domains selection

12. A summary information window opens, as shown in Figure 5-40. We review our image profile configuration and confirm by clicking **Finish**.

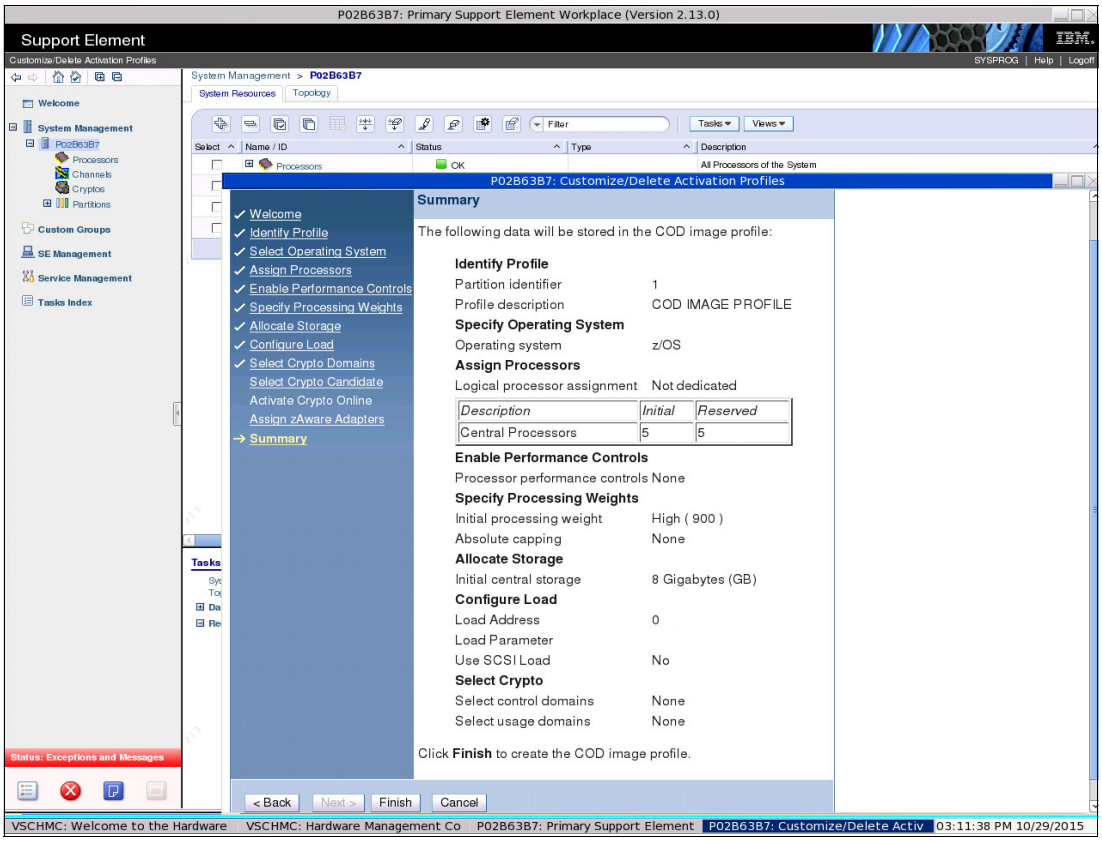

Figure 5-40 Image profile summary information

13. On the Customization/Delete Activation Profiles window, we click **Close** to exit.
14. We activate COD z/OS driving system LPAR as described in Step 1 of 5.5.2, “Building IOCDS A0” on page 57.
15. Connect the channels.

    Before connecting the cables at the processor end, we can make it easier to find the correct places to plug them into by changing the state of the LEDs on each of the channel cards that are associated with the PCHIDs. After plugging in the end of each cable, we revert the status of the LED to as it was and repeat the process for each channel card.

    We can log on to SE by using the SYSPROG profile, then select **System Management** → **P02B63B7** (our z13 server name) → **Channels** from the menu in the left side of the window, select one PCHID that is defined on your I/O configuration from the list that is in the center of the window.

In the Tasks tab in the bottom of the window, we select **CHIPD Operations** → **Show LED**, as shown in Figure 5-41.

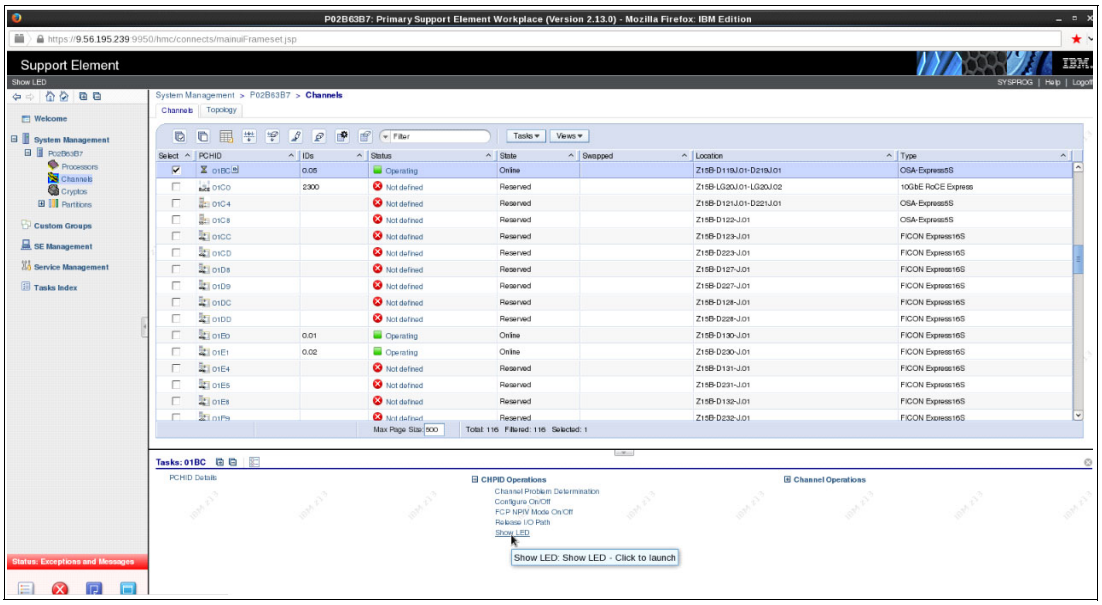

Figure 5-41 Show LED selection

16. The LED window opens, as shown in Figure 5-42. We can now see the PCIe I/O card on the z13 server with the LED turned on. We select **OK** to turn off the LED. This step can be repeated for each PCHID of the I/O configuration.

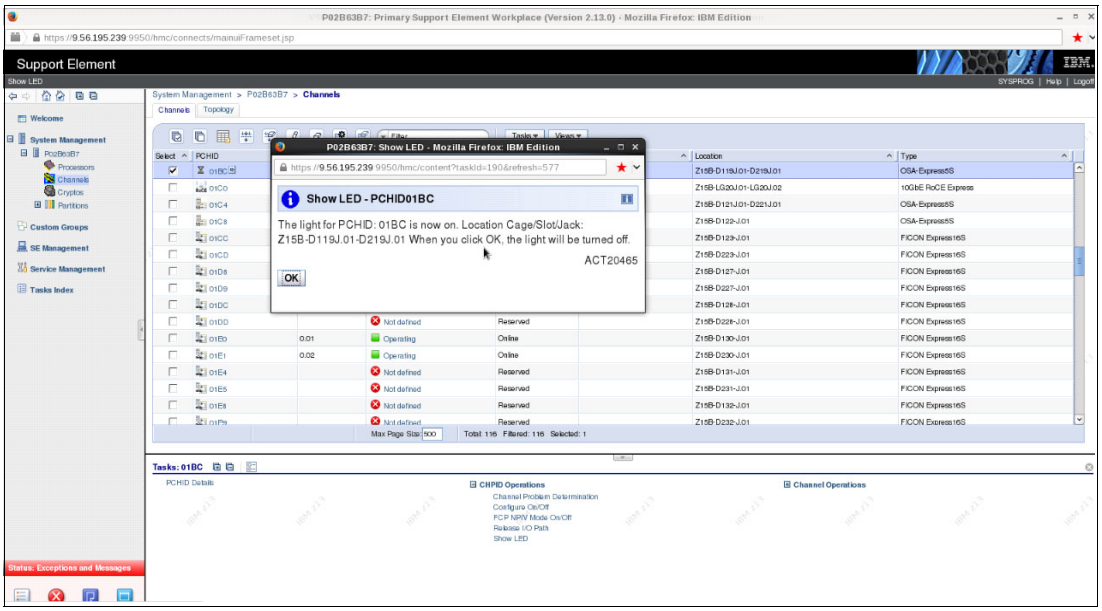

Figure 5-42 Show LED pop-up window

After plugging all the cables in at both ends, we move on to Phase 3.

6

Phase 3: DS8000 logical configuration

Although our laboratory environment has a DS8000, you might have a different disk subsystem. Therefore, your steps likely differ from ours. For completeness, we are showing you the steps in this chapter that we completed to configure our DS8000.

If you have a different subsystem and you are unfamiliar with it, we suggest that you have the appropriate support in place to help you configure your subsystem.

This chapter includes the following topics:

- 6.1, “Goal” on page 90
- 6.2, “Requirements” on page 90
- 6.3, “Related resources” on page 91
- 6.4, “Scenario” on page 91
- 6.5, “Workflow” on page 91
- 6.6, “Creating CKD storage extent pools” on page 94
- 6.7, “Creating CKD LCUs with volumes” on page 98
- 6.8, “Configuring parallel access volumes” on page 103
- 6.9, “Downloading and filing the configuration file from GUI” on page 106

6.1 Goal

The Phase 3 goal is to configure the DS8000 with sufficient direct access storage devices (DASD) to accommodate the Customized Offering Driver (COD) system.

Phase 3 is required to achieve Milestone 1: Configure devices for COD system on new IOCDS. Where this phase occurs in the overall process is shown in Figure 6-1.

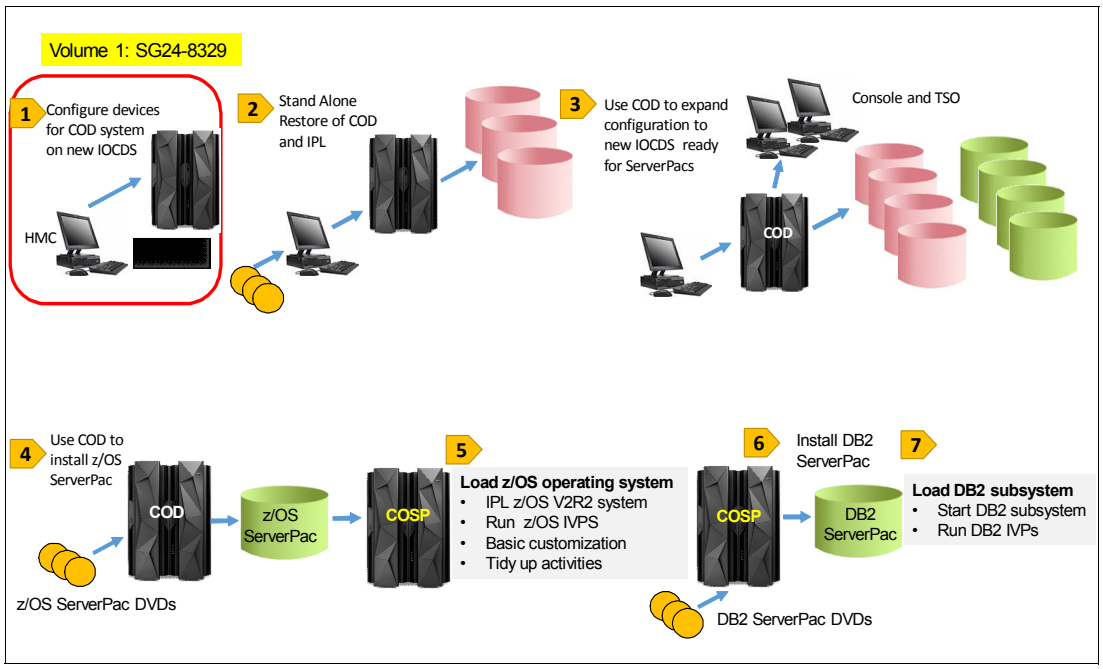

Figure 6-1 Phase 3 Milestone 1

6.2 Requirements

We suggest you have the documentation and resources that are listed in this section available to you.

6.2.1 Documentation

For more information, see the following sources:

- The I/O configuration that we defined to meet the COD requirements.
- The physical channel ID (PCHID) report from the CHPID Mapping Tool (CMT).

6.2.2 Tasks

Before starting the configuration, the following tasks were successfully completed regarding the DS8000:

- Installed and Tested DS8000, with the all of the licensed keys activated.
- PC connected to the DS8000 Hardware Management Console (HMC), and management console network settings. The IP address and local area network (LAN) settings for connect to the management console.

- Create a DS8000 logical planning configuration worksheet.

The following methods can be used to perform the DS8000 logical configuration:

- GUI
- DSCLI (a command-line interface)

We choose to use the GUI option for our example.

6.3 Related resources

For more information, see the following resources:

- *IBM System Storage DS8000 Architecture and Implementation*, SG24-8886
- *IBM DS8870 Architecture and Implementation (Release 7.5),* SG24-8085
- IBM Knowledge Center Access, which is available at this website:

  http://www.ibm.com/support/knowledgecenter/?lang=en

6.4 Scenario

There are two Control Units (CUs) in the DS8000: CUO and CU1. We are configuring a few disks onto CU0 to satisfy the COD system's pre-generated configuration. The configuration is expanded in Phase 7 to meet the ServerPacs' requirements.

6.5 Workflow

Phase 3 features the following tasks:

- Prepare the IOCDS definition for DS8000 logical configuration.
- Prepare the Logical Configuration worksheet.
- Create a count key data (CKD) disk extend pool pair.
- Create CKD logical control units (LCUs) and volumes.
- Configure parallel access volumes.
- Download and file the logical configuration files from DS8000.

These tasks are described next.

6.5.1 Preparing logical configuration worksheet

The DS8000 logical configuration worksheet can be defined with a spreadsheet or other format. A completed worksheet is needed before the logical configuration process starts to ensure that the logical configuration completes smoothly. The spreadsheet that we use is shown in Figure 6-2 on page 92.

Note: At this point in the process, a simple configuration is made for the COD system to be installed only. More volumes for the ServerPac installation are added later.

		Pool 0	Pool 1	M1	M9	M27	M54	BASE (SAS)	M1 Addr	M9 Addr	M27 Addr	M54 Addr	Alias	Pav. Addr
CU0	Ext. Pool	P0		0	128	32	0	160	0	00-7F	80-9F	0	64	C0-FF
	Cap.													
	M1	0												
	M9	128												
	M27	32												
	M54	0												
CU1	Ext. Pool		P1	0	0	0	0	0	0	0	0	0	0	0
	Cap.													
	M1		0											
	M3		0											
	M27		0											
	M54		0											
Total				0	128	32	0	160	N/A				64	N/A

Figure 6-2 Sample logical configuration worksheet

6.5.2 Accessing the DS8000 Storage Management GUI

We must identify the current DS8000 code level. We can use the GUI or consult the hardware CE to find the information.

This chapter is based on DS8800, Code Level 6.3, Bundle 177 displays, as shown in Figure 6-3.

```
  Package: SEA.sfi , MTMS: 9117-MMA*75E5EE6-V1
  Date: 2015/09/03-09:48, Bundle VRMF: 86.31.177.0 , Package Level:
7.6.31.3070, Mode: CCL


  Package: SEA.sfi , MTMS: 9117-MMA*75E5FC6-V1
  Date: 2015/09/03-10:10, Bundle VRMF: 86.31.177.0 , Package Level:
7.6.31.3070, Mode: CCL
```

Figure 6-3 DS8800 code level display

In Figure 6-3, we can see the code level is `86.31.177.0` and is called `R6.3`.

Note: The GUI might include differences in information, depending on the code level. You must check the code level and corresponding implementation guide before performing the logical configuration. Also, check the code level with IBM service professionals and use the correct guide.

The Storage Management GUI can be accessed by using a browser that is connected to the DS8800 HMC. On a new storage system, the user must log in as an administrator.

The login ID and password are both `admin`.

When we log in, the password expires and we must change it, as shown in Figure 6-4.

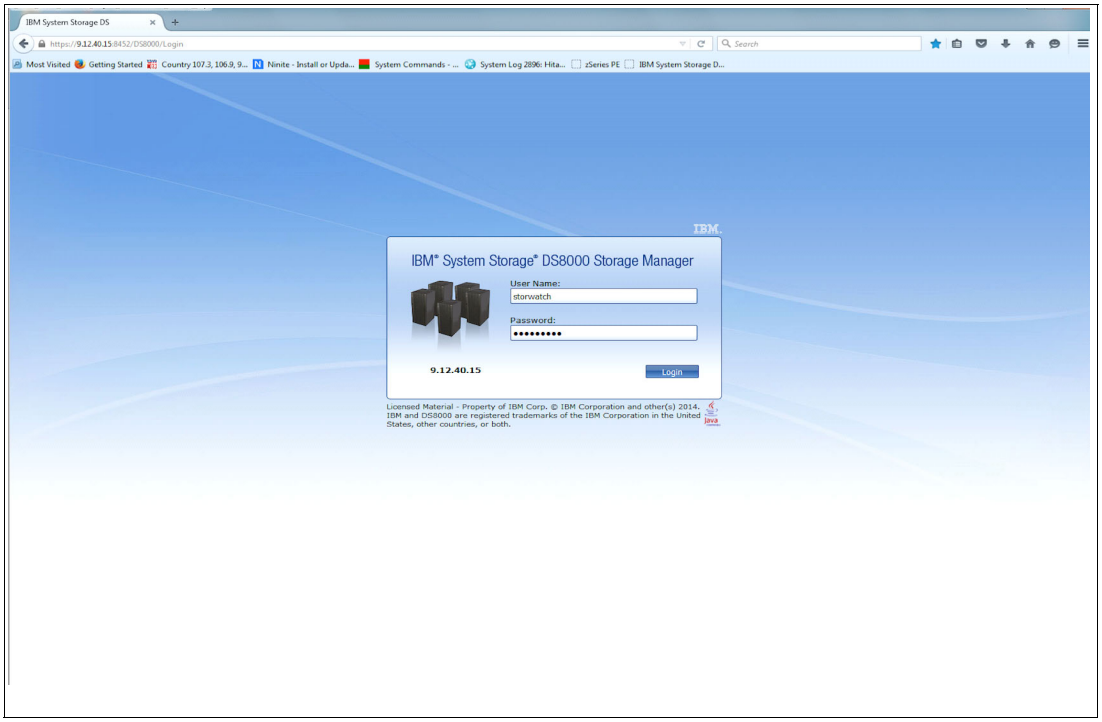

Figure 6-4 GUI Login panel

The GUI navigation interface display is shown in Figure 6-5.

Figure 6-5 GUI navigator main panel

6.6 Creating CKD storage extent pools

We must complete the following steps to create CKD storage extend pools:

1. From main menu, we select **Pools** → **Internal Storage**. The Internal storage menu displays, as shown in Figure 6-6.

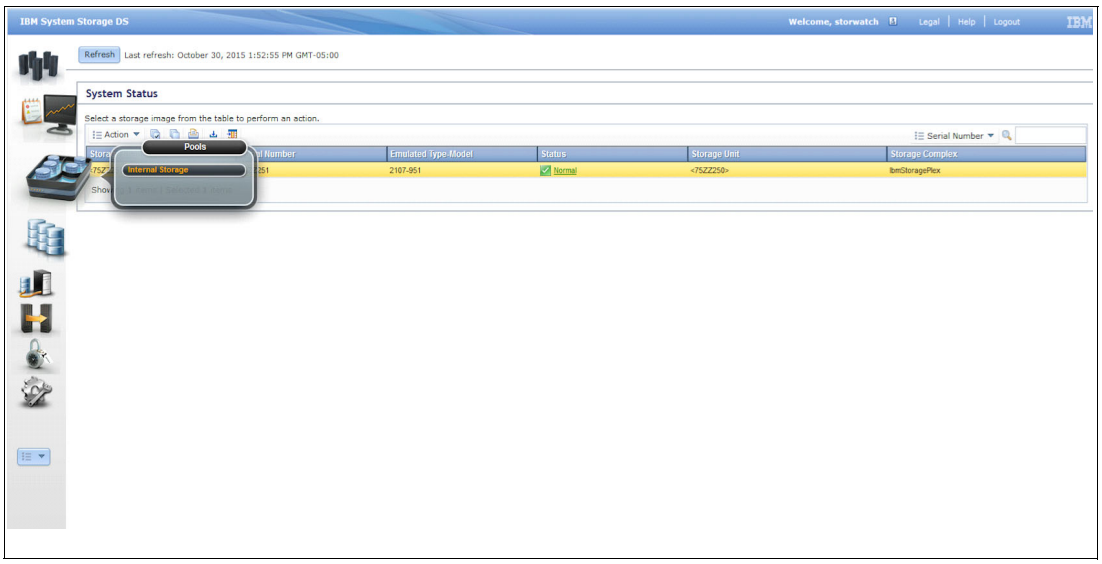

Figure 6-6 Internal Storage menu

2. We select **Internal Storage** and the management panel displays, as shown in Figure 6-7.

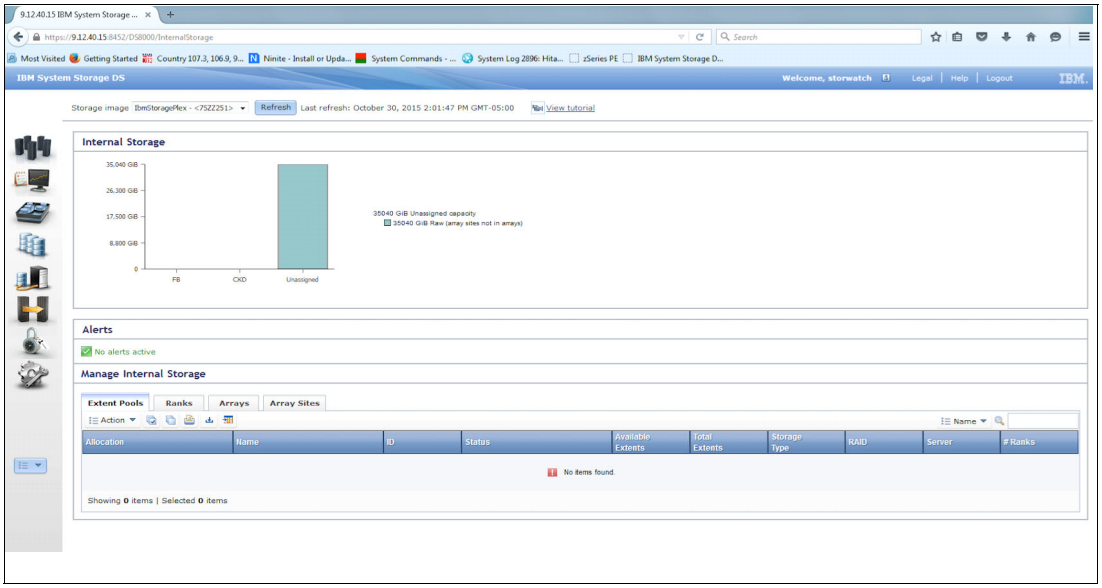

Figure 6-7 Internal Storage Management panel

3. We select **Action** → **Create Extent Pools**, as shown in Figure 6-8.

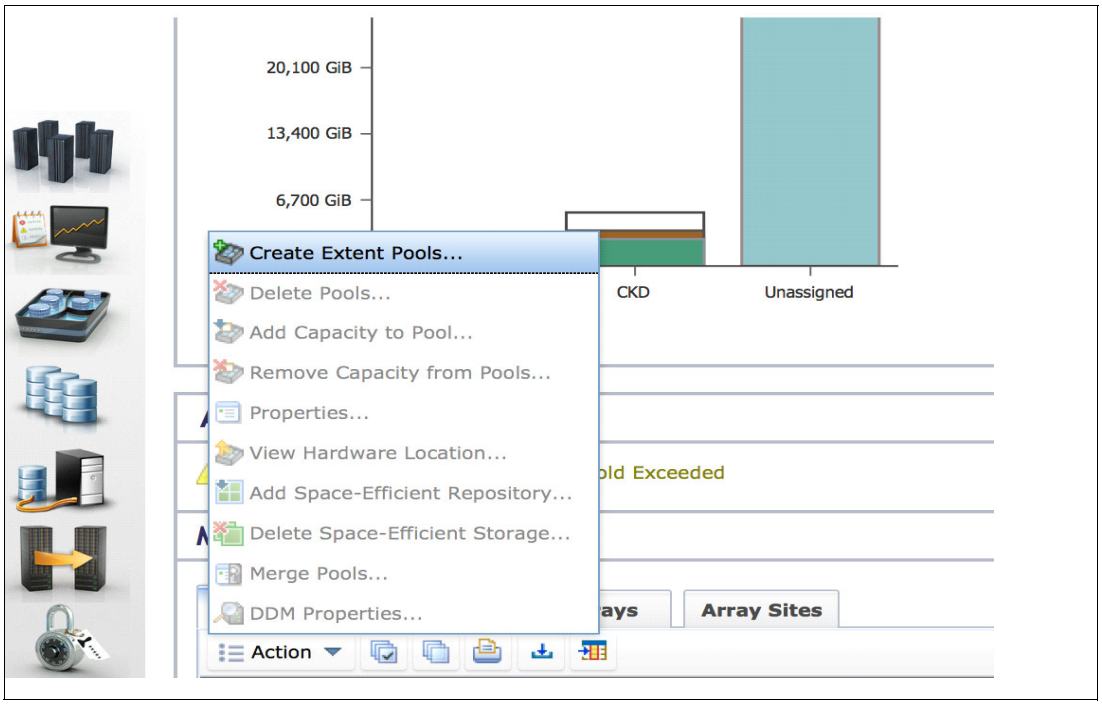

Figure 6-8 Selecting Create Extent Pools option

The first half of the Create Extent Pools panel displays, as shown in Figure 6-9.

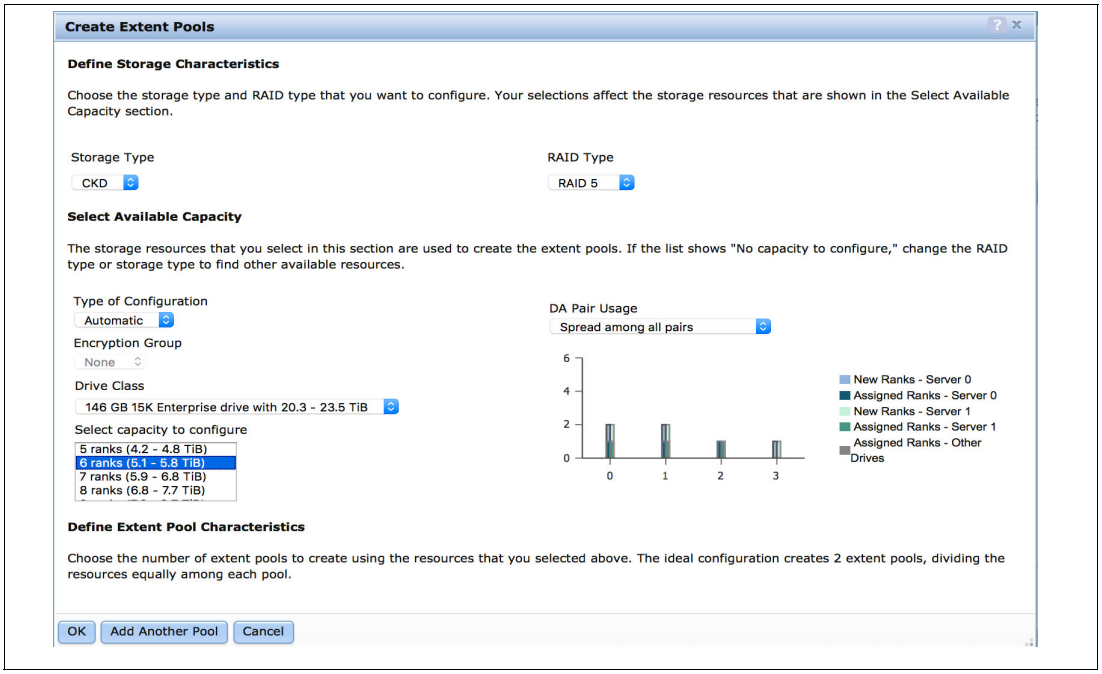

Figure 6-9 First half of the Extent Pool Creation menu

4. We enter the following information:
   - Storage Type: CKD for z/OS installation
   - RAID Types: RAID 5, 6, or 10 depending on the data integrity requirements

- Type of Configuration: Leave as Automatic
- DA Pair Usage: Select one of the following choices from the drop-down list:
  - Spread among all pairs
  - Spread among least used pairs
  - Sequentially fill all pairs

For our purposes, we selected the default settings.

The bar graph displays the results of our choice in real time. This information is used to analyze the best configuration selection for the system.

5. We choose **Encryption Group: None**. If **yes** is selected, more options are available.
6. For the Drive Class, we select the class from drop-down menu. In the example, only 146 GB 15 K Enterprise Drive can be selected.
7. We select **Capacity to Configure** and choose the capacity from the drop-down menu. If the total capacity is not selected the first time that the logical configuration is done, it can be selected later.
8. We scroll so that we can see the next half of the panel, as shown in Figure 6-10.

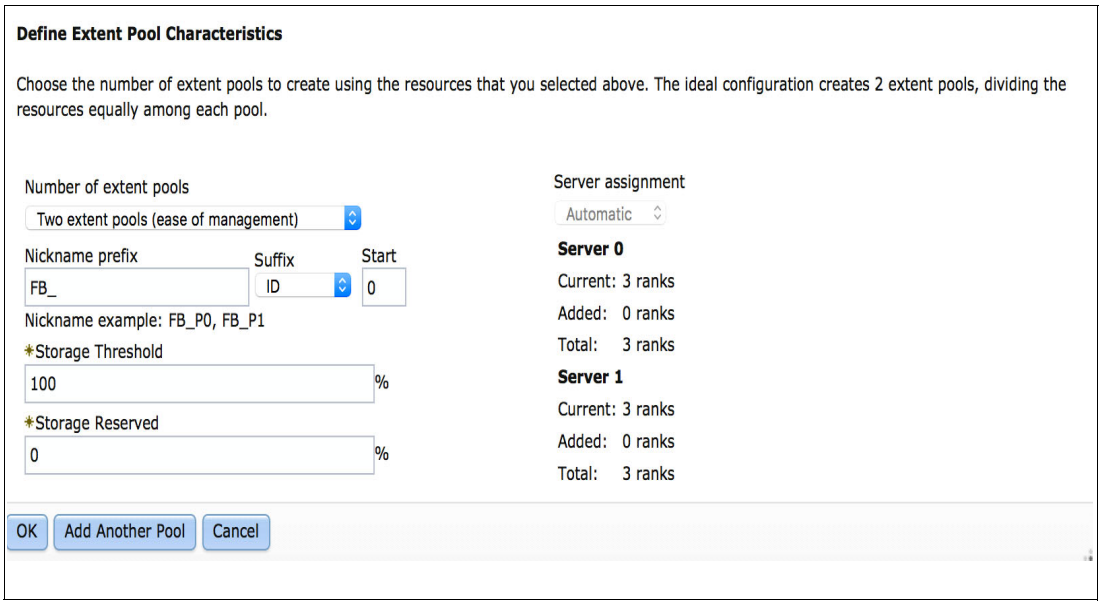

Figure 6-10 Second half of Extend Pools Creation menu

9. For the Number of Extent Pools option, we select **Two extent pools (ease of management)**. This option has one pool per server. Often, the pair pool mode is used for better storage management.
10. We enter an extent pool name prefix that consists of 1 - 12 characters as a value for the Nickname prefix field. The prefix allows us to supply a unique identifier for the extent pool.
11. We select the type of suffix from the Suffix drop-down menu. Use the suffix ID start from 0.
12. The default values for Storage Reserved and Storage Threshold can be used or we can enter new values (0 - 100). We suggest the use of the default value.
13. We select the server assignment from the Server Assignment drop-down list. We suggest the use of the default value.

    For all the values, the use of the default is recommended because there was no reason to change the value for a special purpose.

14. We select **OK** when all of the selections are made. The confirmation panel displays, as shown in Figure 6-11.

Figure 6-11 Create extent pool verification panel

15. We select **Create All,** wait the progress complete, and the pool with ranks and arrays is created, as shown in Figure 6-12.

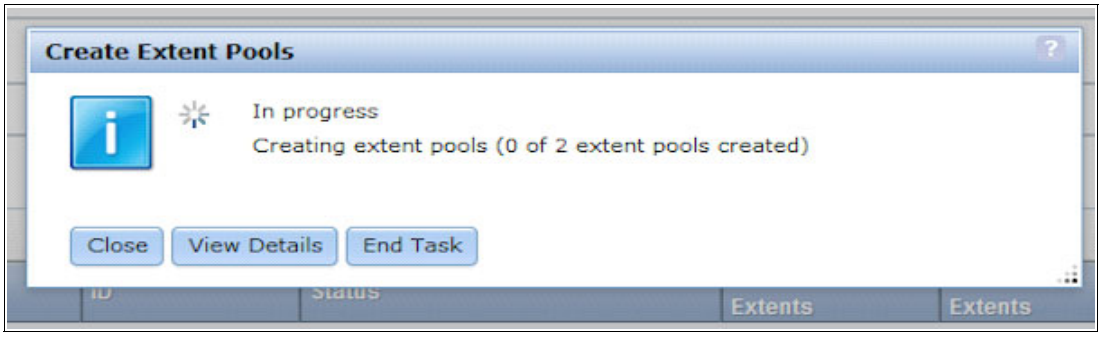

Figure 6-12 Extent pool creation in progress

The window that is shown in Figure 6-13 opens.

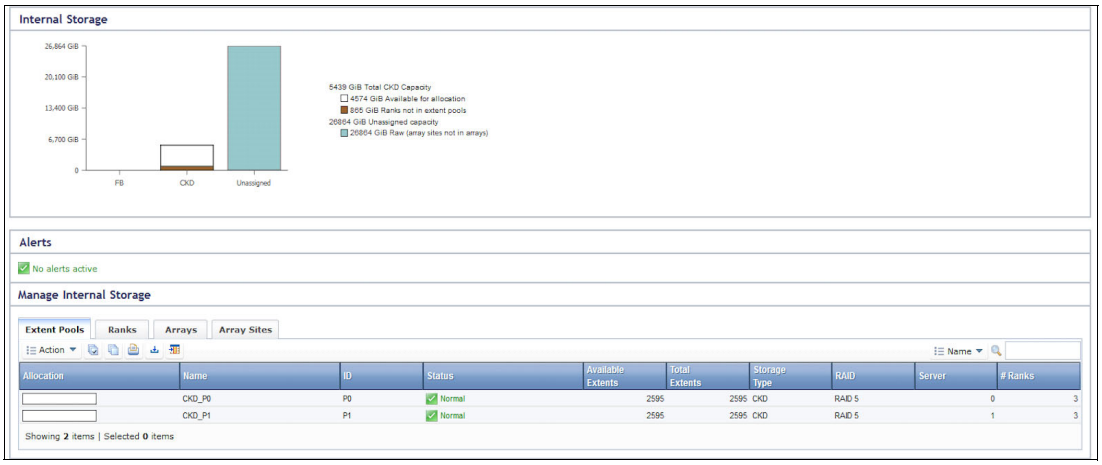

Figure 6-13 Extent pools creation completed

16. We select **Ranks and Arrays**. The status can be displayed as shown in Figure 6-14. The ranks and arrays are created when the extent pool is created.

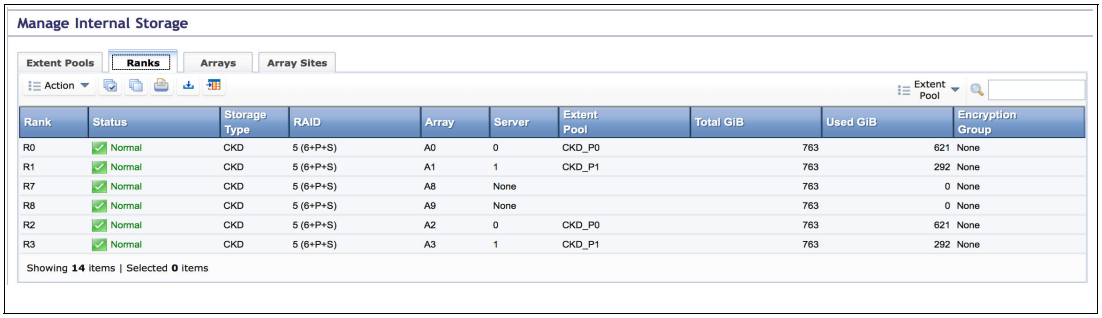

Figure 6-14 Displaying rank status

The Array status is shown in Figure 6-15.

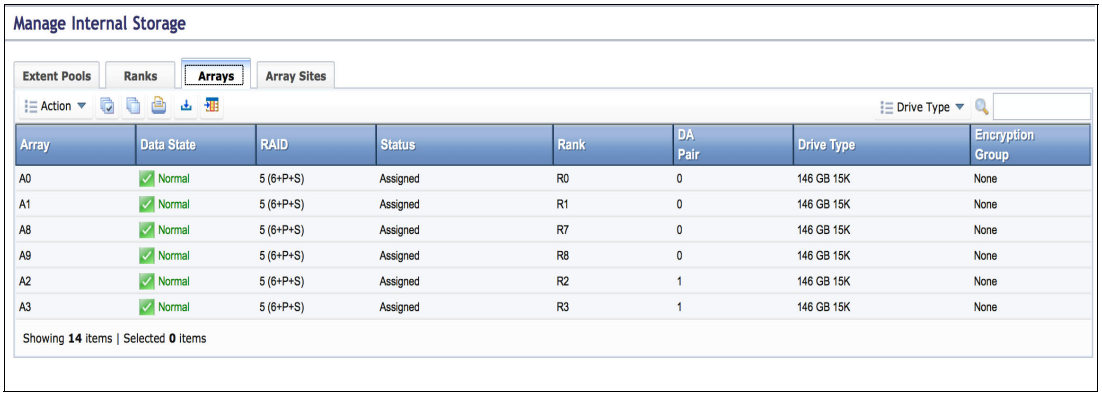

Figure 6-15 Displaying array status

From the Pool Actions drop-down menu, other functions, such as add capacity to pool, add pool, and delete pool, can be performed later, if needed.

6.7 Creating CKD LCUs with volumes

We complete the following steps to create CKD LCUs with volumes:

1. We select **Volumes** → **CKD LCUs** and **Volumes**, as shown in Figure 6-16.

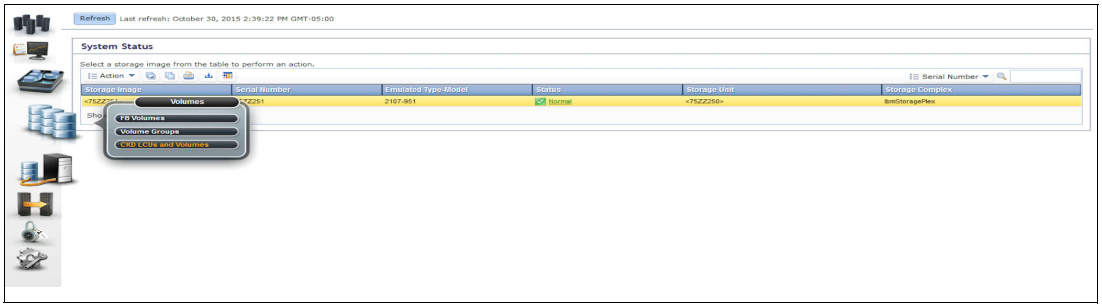

Figure 6-16 Selecting CKD LCUs

2. We select **CKD LCUs and Volumes** and main panel displays, as shown in Figure 6-17.

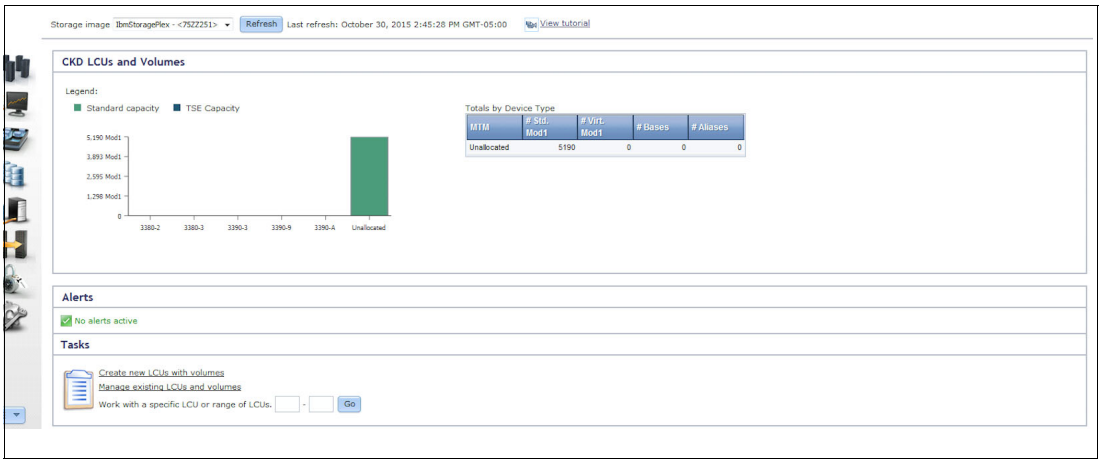

Figure 6-17 CKD LCUs and Volumes Panel

3. In the Tasks section, we click **Create new LCUs with volumes**. The Create LCUs - Define LCUs panel displays, as shown in Figure 6-18.

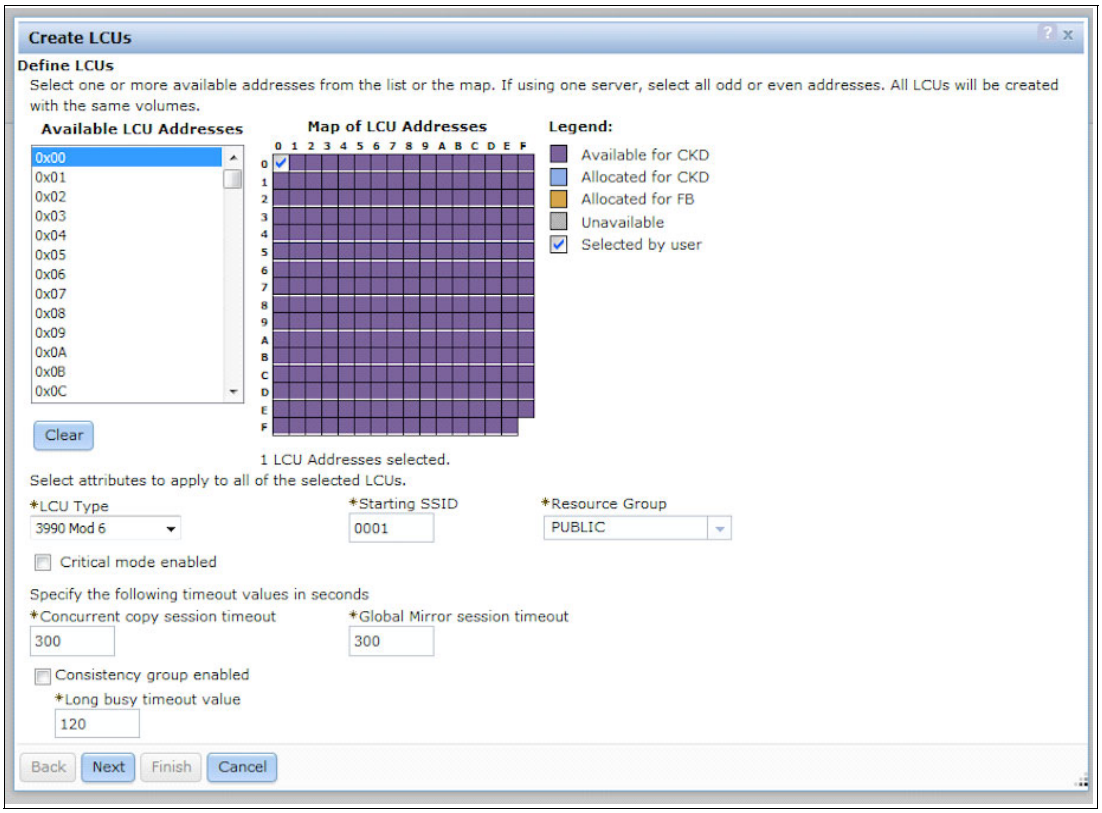

Figure 6-18 Creating LCU panel

4. We enter the following configuration information (one or more LCUs can be created at this page at one time):
   - We specify the LCU type; use 3990-mod 6.
   - We use the default SSID or overwrite it with another number 0001 - 9999. No duplication is allowed in the whole channel subsystem. Default value is starting from 0001, and ascending.
   - The enable critical mode can be used to control the behavior of the peer-to-peer remote communication PPRC pairs that have a primary logical device on this LCU in a consistency group.

     If this option is enabled, write operations to the source remote mirror and copy volume are not allowed if data cannot be copied to the target volume of the volume pair. Otherwise, leave this selection with blank.

     Note: This option is available for administrators only.

   - We use the default value for concurrent copy session timeout, Global Mirror session timeout, and long busy timeout.
   - We leave the consistency group blank.
5. We select **Next** and the Create Volumes panel displays, as shown in Figure 6-19.

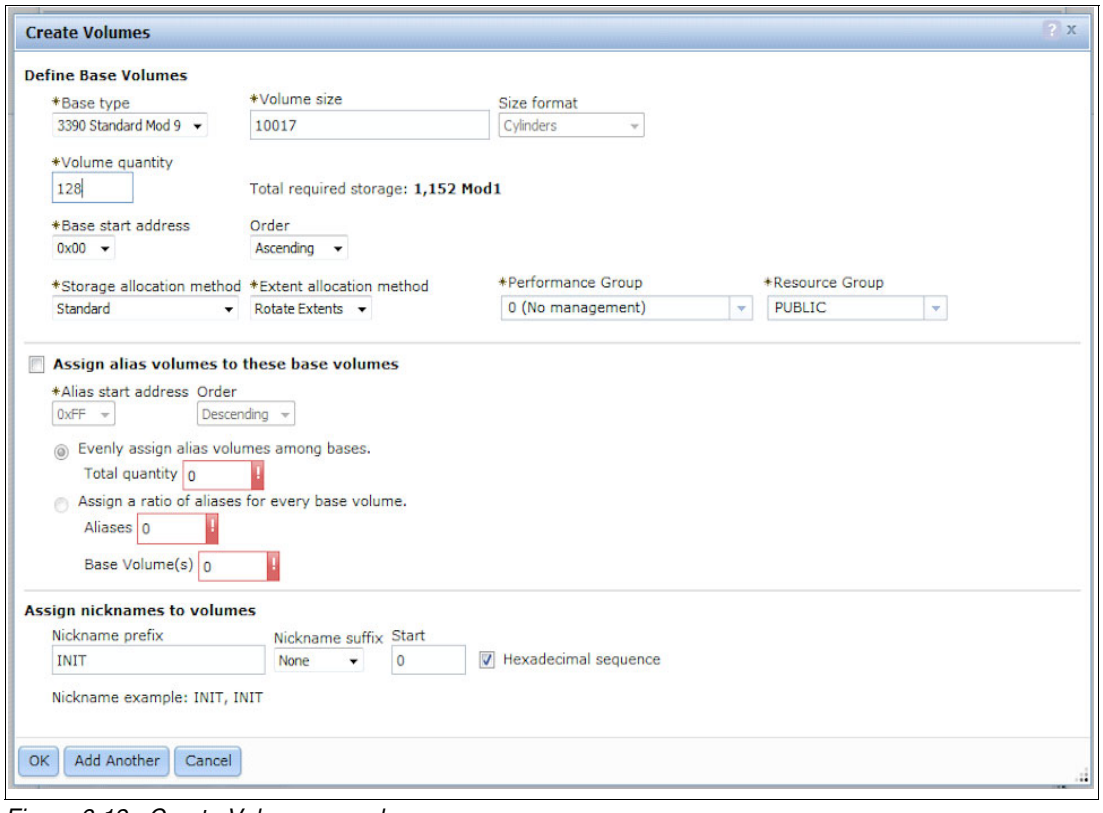

Figure 6-19 Create Volumes panel

6. We select the Base Type **3390 mod 3** or **mod 9**. If another type is needed, define the type with mod 3390 Custom and input correspond volume size that is specified in cylinders, as shown in Figure 6-20.

   The IBM suggested cylinder size is Mod 1: 1113, mod 27:32760, mod 54: 66520. The volume size can be larger than required for the COD, but cannot be any smaller.

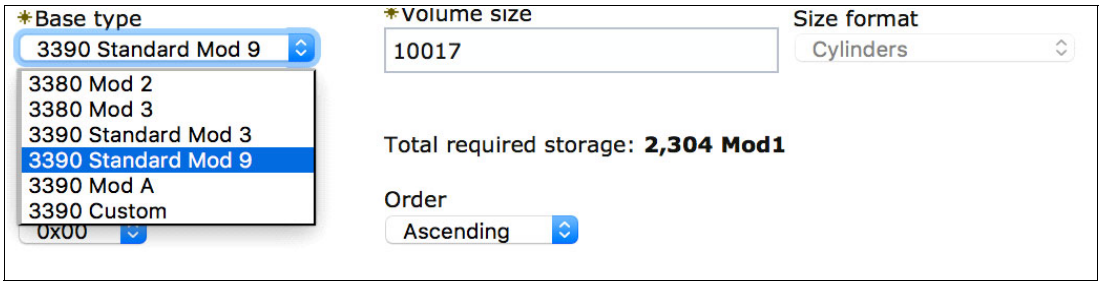

Figure 6-20 3390 Type selections

7. We enter the volume numbers that are needed for this 3390 mod type.
8. We select base start address and order type.
9. We leave other input as the default values.
10. We select **add another** until all types of 3390 planned are created.
11. We select **OK** and the Create Volumes panel displays, as shown in Figure 6-21.

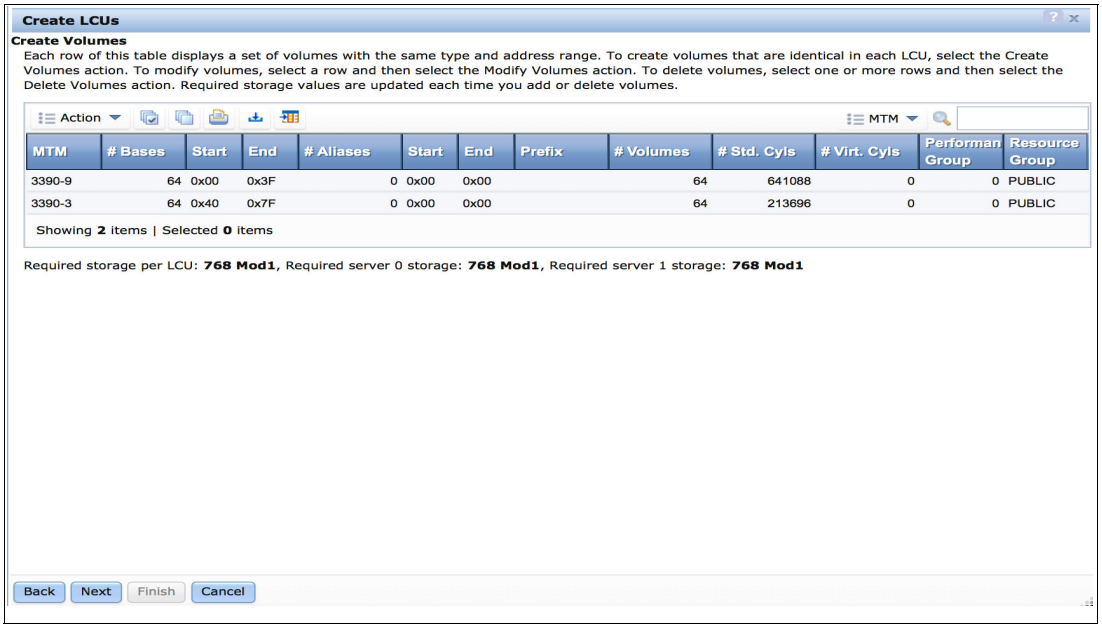

Figure 6-21 Create Volumes panel

12. We select **Next**. The LCU to Extent Pool Assignment panel displays, as shown in Figure 6-22.

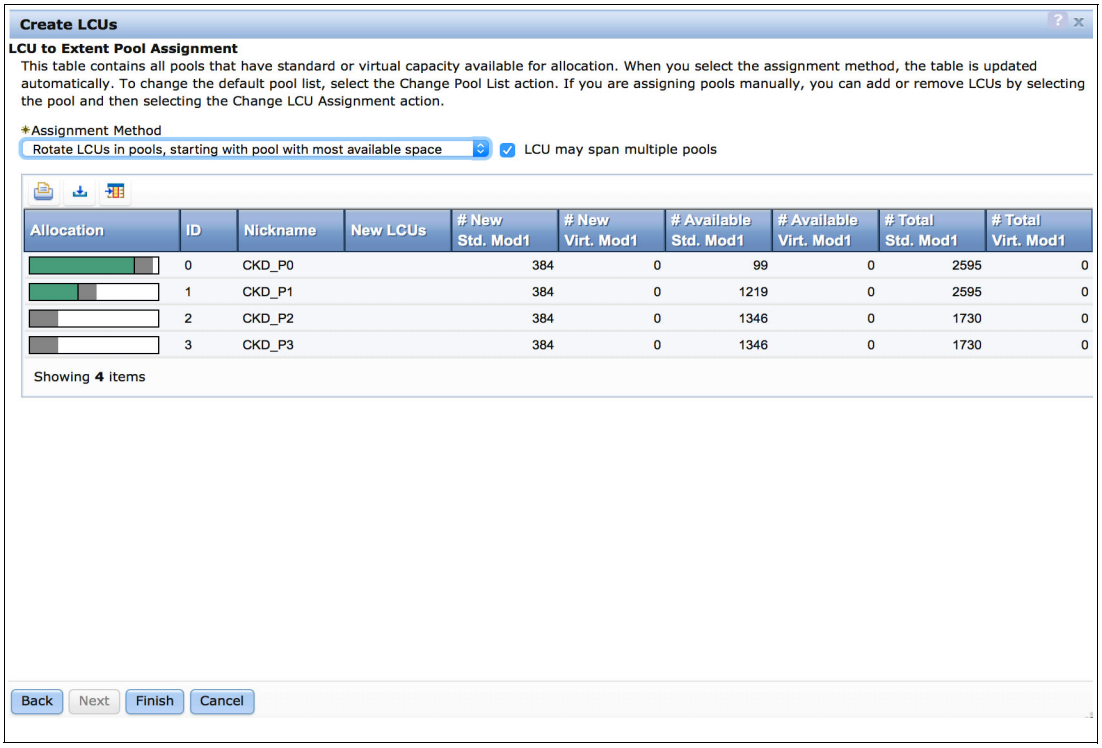

Figure 6-22 LCU to Extent Pool Assignment panel

13. We leave the default values and click **Finish**. The Create LCUs Verification panel displays, as shown in Figure 6-23.

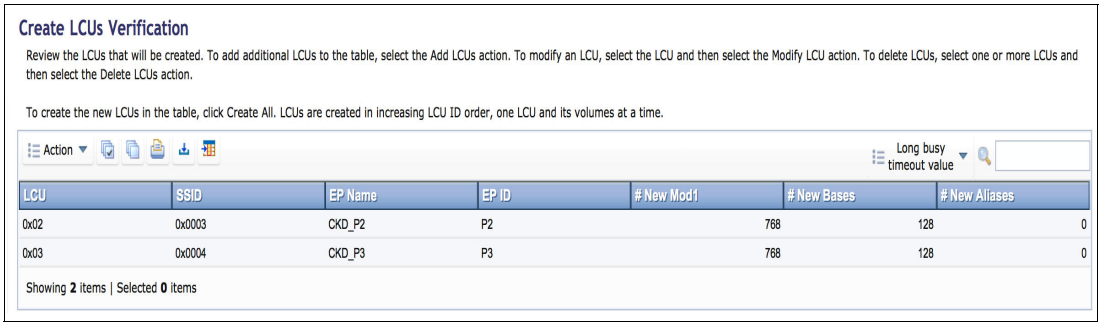

Figure 6-23 Create LCU Verification panel

14. We select **Create All**. The GUI system creates the LCUs in increasing LCU ID order, All LCUs, and their volumes at the same time, as shown in Figure 6-24.

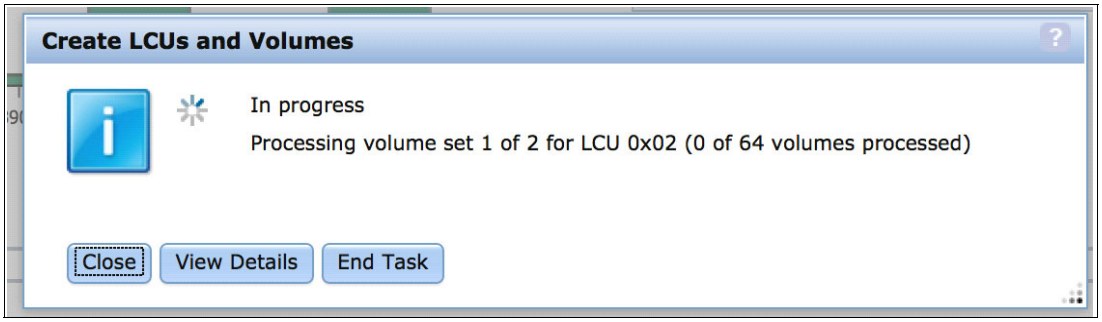

Figure 6-24 Creation in progress

6.8 Configuring parallel access volumes

Parallel Access Volumes (PAVs) are used to improve the DS8000 performance during large I/O transactions. It is recommend that the necessary PAV aliases are created at configuration time.

Note: This step can be done now or later during the ServerPac preparation phase. Ensure that there is enough volume space available for PAV configuration later.

We complete the following steps to configure PAVs:

1. From the CKD LCUs and Volumes main page, we select **Volumes** → **CKD LCUs and Volumes**. Then, we select **Manage LCUs**. The manage LCU panel is displayed, as shown in Figure 6-25.

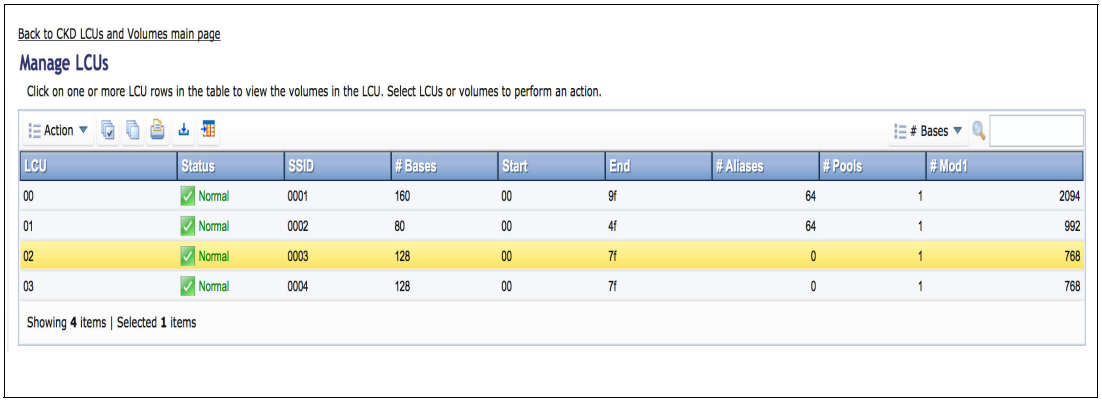

Figure 6-25 Manage LCUs panel

2. We select the LCU for which PAVs are needed. Click **Action** → **Add Alias**, as shown in Figure 6-26.

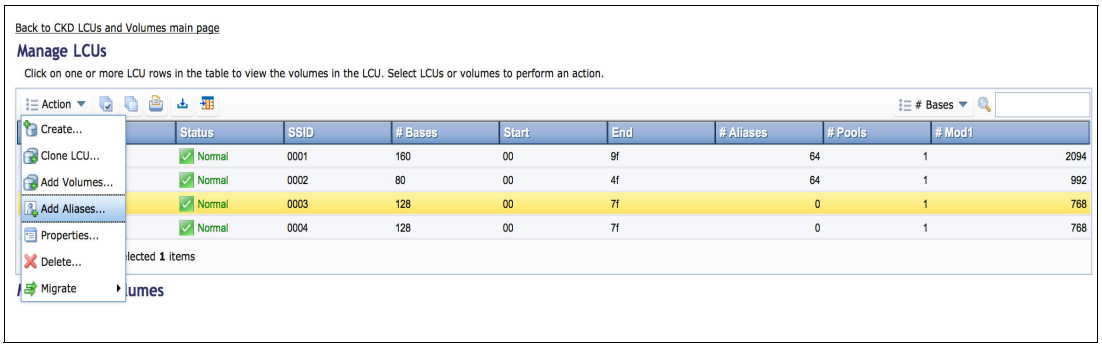

Figure 6-26 Manage LCUs panel

The Add Alias panel displays, as shown in Figure 6-27.

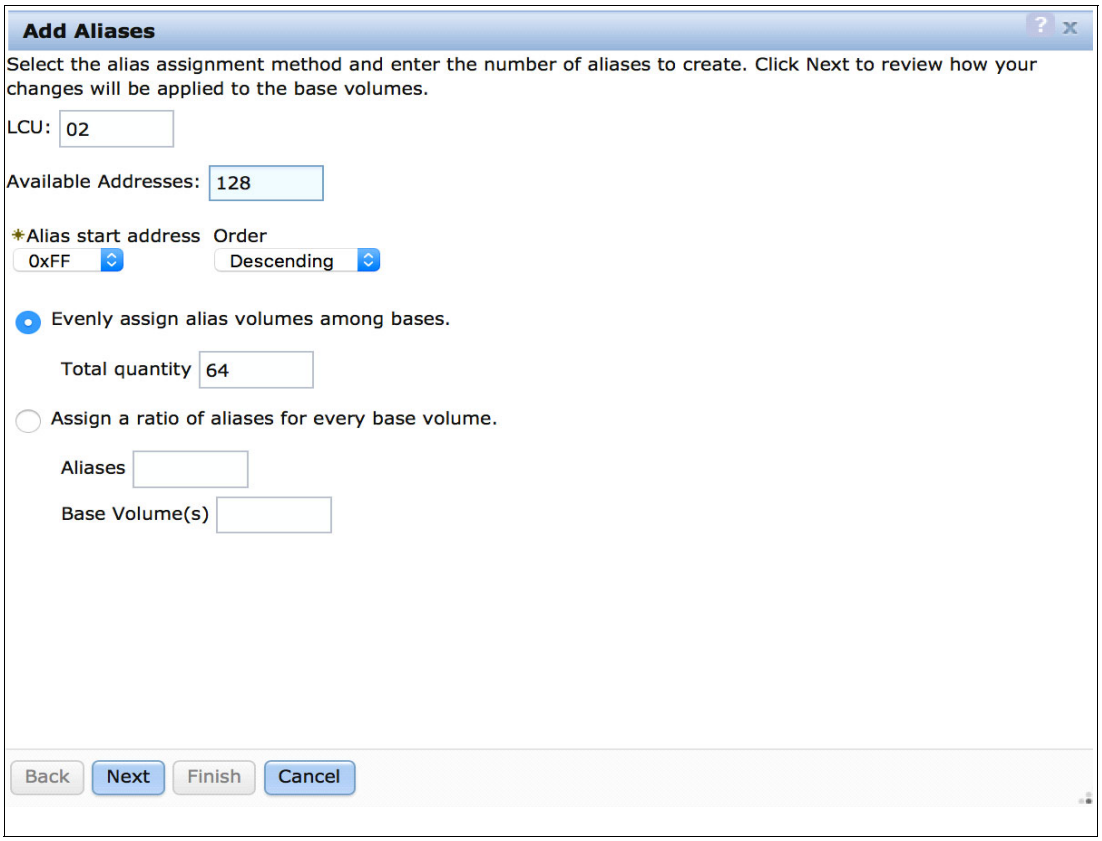

Figure 6-27 Add Alias panel

3. We select the planned Alias volume number, leave the starting address and order as default, and click **Next**. The Add Aliases Verification panel displays, as shown in Figure 6-28.

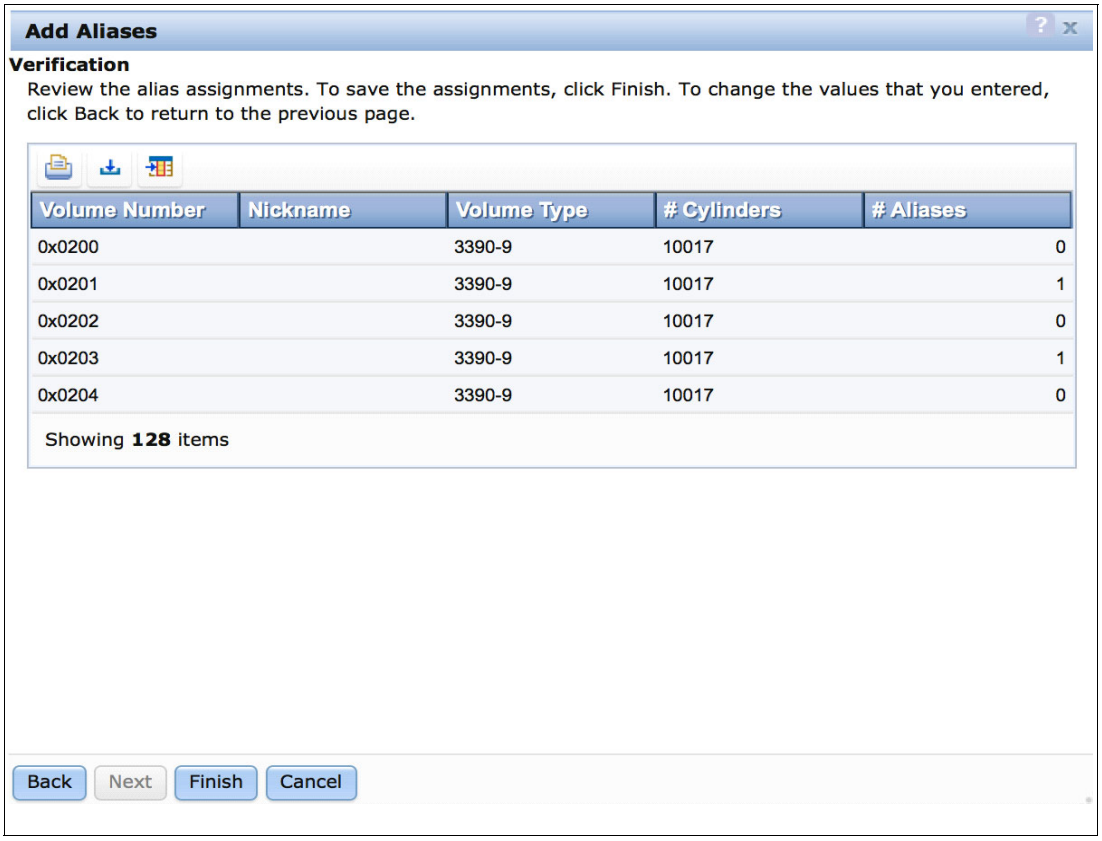

Figure 6-28 Add Aliases Verification panel

4. We select **Finish**. The Add Aliases progress panel displays, as shown in Figure 6-29.

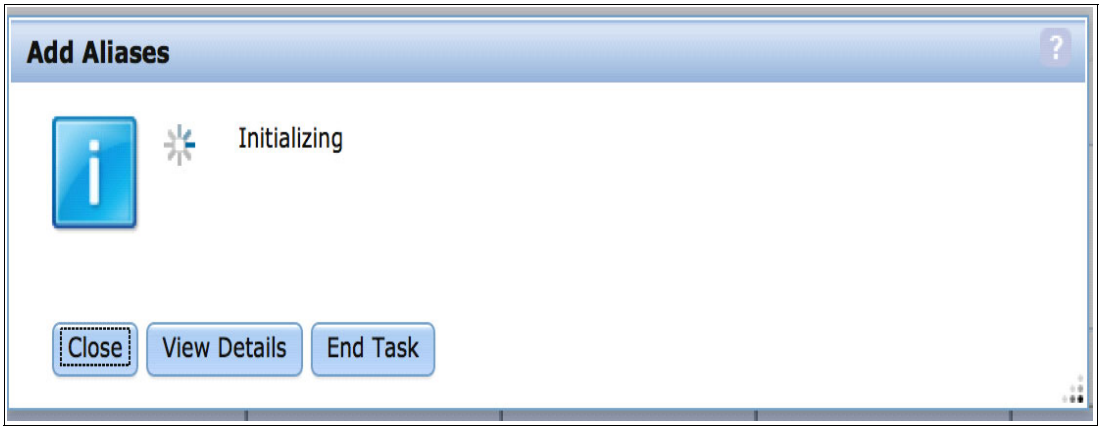

Figure 6-29 Alias initialization in progress

5. We repeat these steps until all of the LCUs include defined aliases.

6.9 Downloading and filing the configuration file from GUI

We complete the following steps to download and file the configuration file from the GUI:

1. We download the extent pool configuration spreadsheet file, as shown in Figure 6-30.

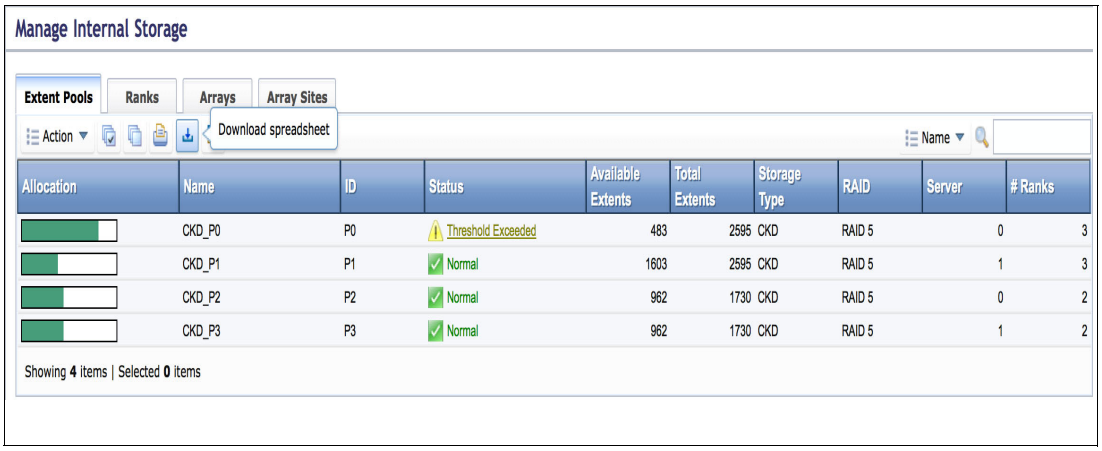

Figure 6-30 Download extent pool spread sheet

2. A file that is named `ExtentPools_IbmStoragePlex-&lt` is created. We save the file, rename it to a `.txt` file, and open the file by using our spreadsheet tool. The extent pools configuration is displayed, as shown in Figure 6-31.

ExtentPools_IbmStoragePlex-<75ZZ251>									
Allocation	Name	ID	Status	Available I	Total Extents	Storage Type	RAID	Server	# Ranks
	CKD_P0	P0	Threshold	483	2595	CKD	RAID 5	0	3
	CKD_P1	P1	Normal	1603	2595	CKD	RAID 5	1	3
	CKD_P2	P2	Normal	962	1730	CKD	RAID 5	0	2
	CKD_P3	P3	Normal	962	1730	CKD	RAID 5	1	2

Figure 6-31 Extent Pools spreadsheet

3. In the Manage LCUs panel, we select **Download spreadsheet**, as shown in Figure 6-32.

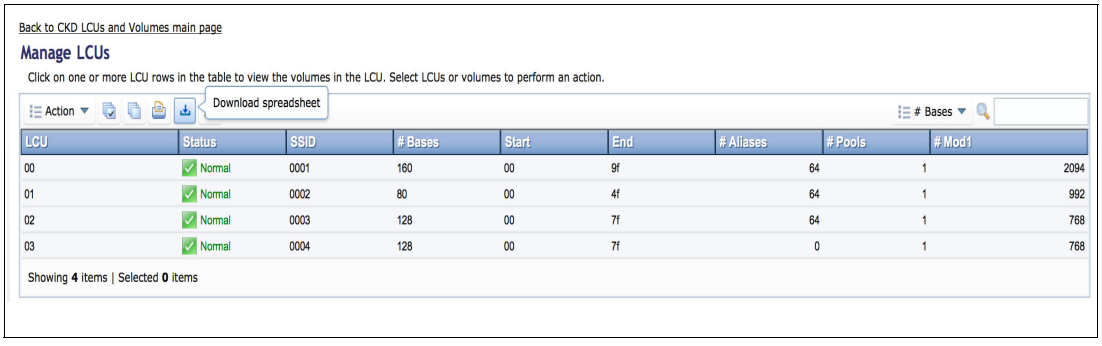

Figure 6-32 Download LCUs spreadsheet

4. A file that is named `AvailableLcus_IbmStoragePlex-&lt` is created. We save the file, rename it to a `.txt` file, and open the file by using our spreadsheet tool. The extent pools configuration is displayed, as shown in Figure 6-33.

AvailableLcus_IbmStoragePlex-<75ZZ251>

LCU	Status	SSID	# Bases	Start	End	# Aliases	# Pools	# Mod1
0	Normal	1	160	0	9f	64	1	2094
1	Normal	2	80	0	4f	64	1	992
2	Normal	3	128	0	7f	64	1	768
3	Normal	4	128	0	7f	0	1	768

Figure 6-33 LCU spreadsheet

5. In the Manage CKD Volumes panel, we click **Download spreadsheet**, as shown in Figure 6-34.

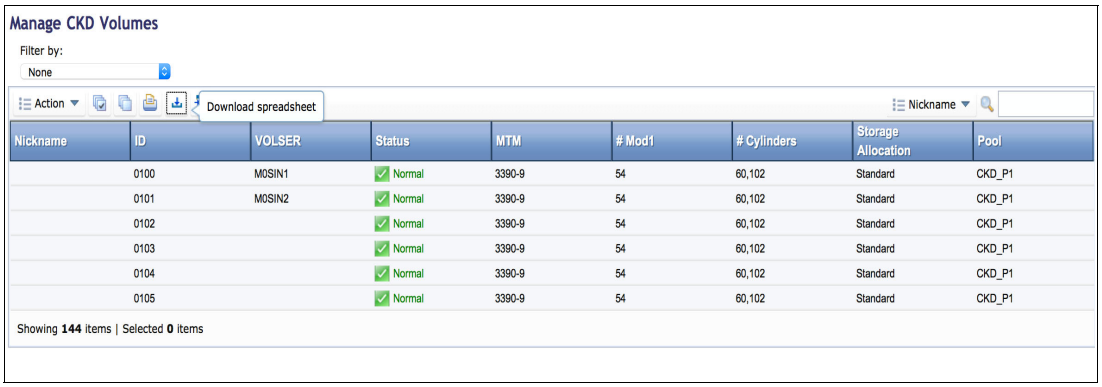

Figure 6-34 Download spreadsheet

6. A file that is named `Volumes_IbmStoragePlex-&lt` is created. We save the file, rename it to a `.txt` file, and open the file by using our spreadsheet tool. The extent pools configuration is displayed, which includes all of the volume information that is defined in this LCU.

7. Repeat Step 6 for all of the LCUs so that all volume configuration spreadsheets are filed, as shown in Figure 6-35.

Volumes_IbmStoragePlex-<75ZZ251>								
Nickname	ID	VOLSER	Status	MTM	# Mod1	# Cylinders	Storage Al	Pool
	100	MOSIN1	Normal	3390/9/1	54	60102	Standard	CKD_P1
	101	MOSIN2	Normal	3390/9/1	54	60102	Standard	CKD_P1
	102		Normal	3390/9/1	54	60102	Standard	CKD_P1
	103		Normal	3390/9/1	54	60102	Standard	CKD_P1
	104		Normal	3390/9/1	54	60102	Standard	CKD_P1
	105		Normal	3390/9/1	54	60102	Standard	CKD_P1
	106		Normal	3390/9/1	54	60102	Standard	CKD_P1
	107		Normal	3390/9/1	54	60102	Standard	CKD_P1
	108		Normal	3390/9/1	54	60102	Standard	CKD_P1
	109		Normal	3390/9/1	54	60102	Standard	CKD_P1

Figure 6-35 Volumes spreadsheets

We now move on to Phase 4.

7

Phase 4: OSA-ICC and TN3270 configuration

This chapter describes how to configure the Open Systems Adapter - Integrated Console Controller (OSA-ICC) for the operator console and terminal setup before the Customized Offering Driver (COD) system is initially loaded.

This chapter includes the following topics:

- 7.1, “Goals” on page 110
- 7.2, “Requirements” on page 110
- 7.3, “Related documents” on page 111
- 7.4, “Scenario” on page 111
- 7.5, “OSA-ICC setup workflow” on page 111
- 7.6, “Configuring Personal Communications for NIP consoles” on page 128

7.1 Goals

Phase 4 has the following goals:

- Defining and configuring the OSA-ICC PCHID
- Configuring the TN3270 session by using the HMC 3270 emulation function or IBM Personal Communication

Phase 4 is required to achieve Milestone 1: Configure devices for Customized Offering Driver (COD) system on new IOCDS. Where this phase is positioned in the overall process is shown in Figure 7-1.

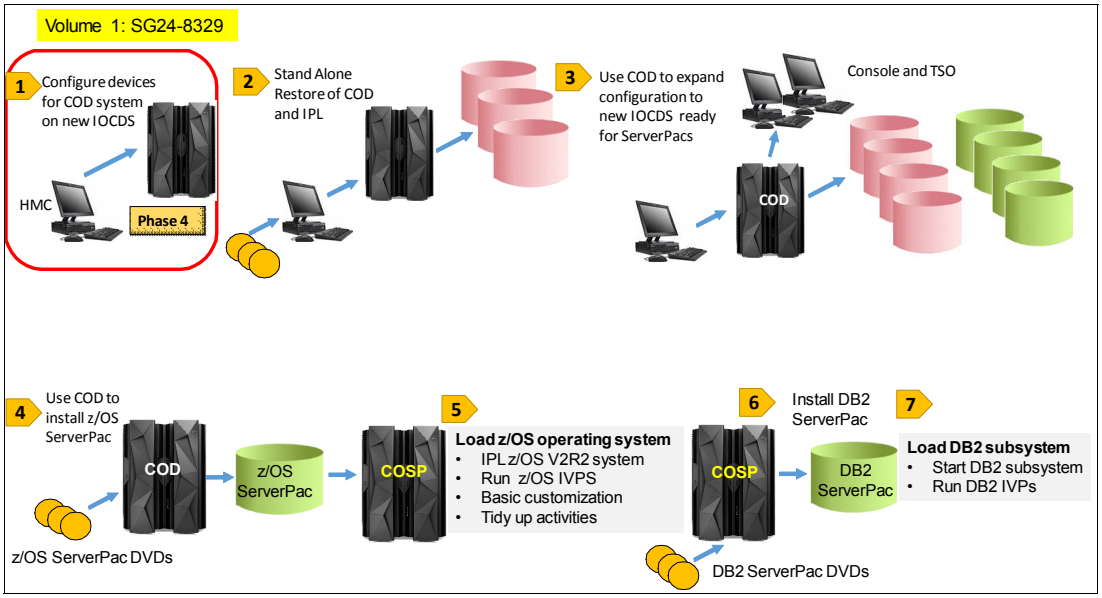

Figure 7-1 Phase 4 Milestone 1

7.2 Requirements

The following documents and resources often are used during Phase 4 tasks:

- Our I/O configuration design meets the COD requirements.
- z13 with Power-on Reset (POR) is complete with OSA-ICC channels defined.
- Hardware Management Console (HMC) and Support Element (SE) access with SYSPROG authority is in place.
- A workstation-based 3270 emulator, such as PCOMM. The minimum recommended level of IBM Personal Communications for use with TLS connections is 6.0.16 (build date 20151006).
- Configuration file that contains parameters in Advanced Facility and TN3270 setup.

7.3 Related documents

The following IBM publications provide relevant information during Phase 4:

- *OSA-Express Integrated Console Controller Implementation Guide*, SG24-6364
- *IBM z13 Configuration Setup,* SG24-8260

7.4 Scenario

The z13 POR was completed and is using the new IOCDS. Before the COD is restored and the system is initially loaded, the operator console and a system terminal session must be configured on the OSA-ICC card.

7.5 OSA-ICC setup workflow

The setup process for the OSA-ICC includes the following steps:

1. Prepare the IOCDS definition of the OSA-ICC for COD load.
2. Access the OSA-Express Advanced Facilities.
3. Configure the OSA-ICC server.
4. Configure the OSA-ICC sessions.
5. Validate the server and session configurations.
6. Activate the OSA-ICC configurations.

These steps are described next.

7.5.1 Preparing IOCDS definition of OSA-ICC for COD load

The OSA-ICC definition IOCP statements are shown in Figure 7-2. These statements were used when the IOCDS A0 was defined.

```
          ID    MSG1='COD IOCP'
*
*         LPAR DEFINITION
*
          RESOURCE PARTITION=((CSS(0),(COD,1))

*
*         CHANNEL PATH DEFINITION
*

*         OSA ICC PATH SECTION FOR CONSOLES
          CHPID PATH=(CSS(0),05),PCHID=1BC,                              X
                TYPE=OSC,PARTITION=((CSS(0),COD),SHARED

*
*         OSA ICC CNTLUNIT SECTION
*

          CNTLUNIT CUNUMBR=0000,PATH=((CSS(0),05)),CUADD=0,              X
                UNIT=OSC,UNITADD=((00,2))

*
*         I/O DEVICE DEFINITION
*

*         2 3270-X TERMINALS
          IODEVICE ADDRESS=(00A0,2),CUNUMBR=(0000),MODEL=X,UNIT=3270
```

Figure 7-2 IOCDS sample for OSA-ICC configuration

Earlier, we checked the COD system documentation to select our minimum I/O configuration and decided upon the use of the following components:

- 1 x Console ' 00A1 3270-X
- 1 x TSO terminal ' 00A0 3270-X

In this phase, we are defining the required OSA-ICC setup parameters.

7.5.2 Accessing OSA-Express Advanced Facilities

We start with the HMC workplace logged on by using the SYSPROG ID.

We completed the following steps:

1. We select **P02B6B7** and in the Task area, we select **Single object operation**, as shown in Figure 7-3.

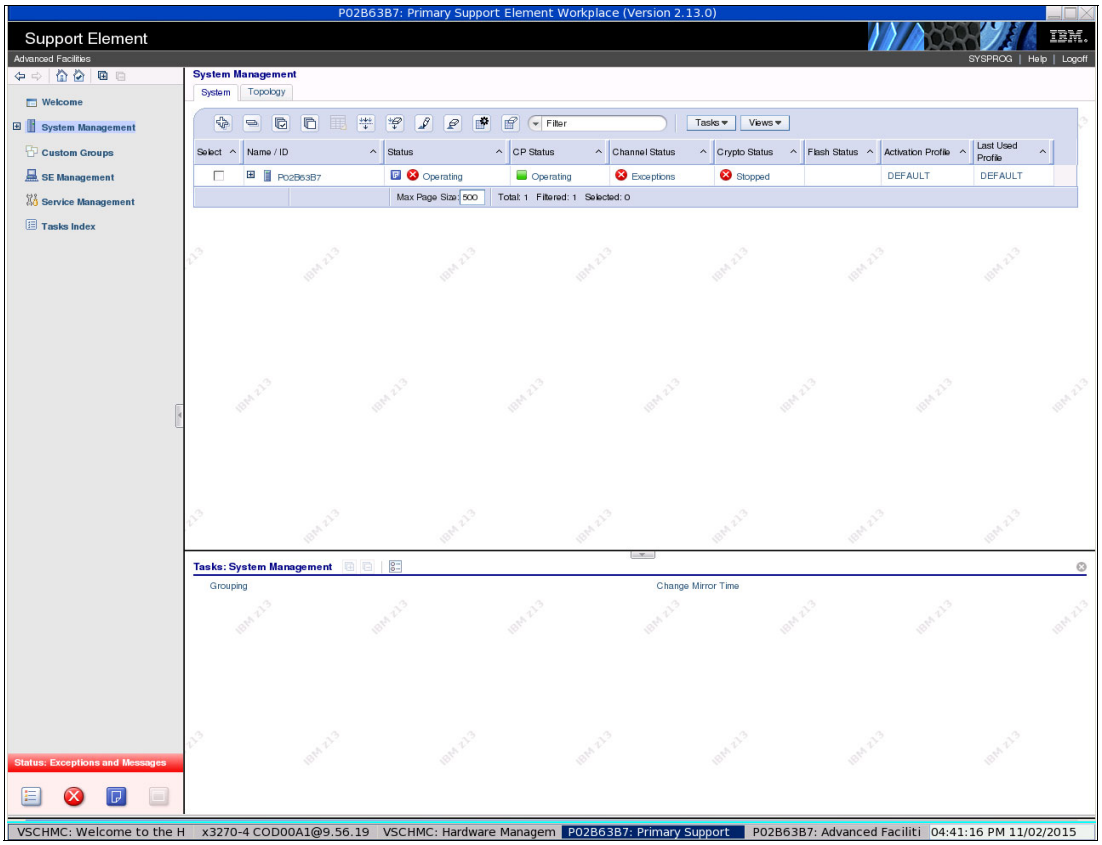

Figure 7-3 Single Object Operations SE panel

2. We select **System Managements** → **P02B6B7 (our server)** → **Channels**. The CPC P02B6B7 channels appear in the right side of the SE panel. Select the **OSA - ICC Channel PCHID 1BC** channel, as shown in Figure 7-4.

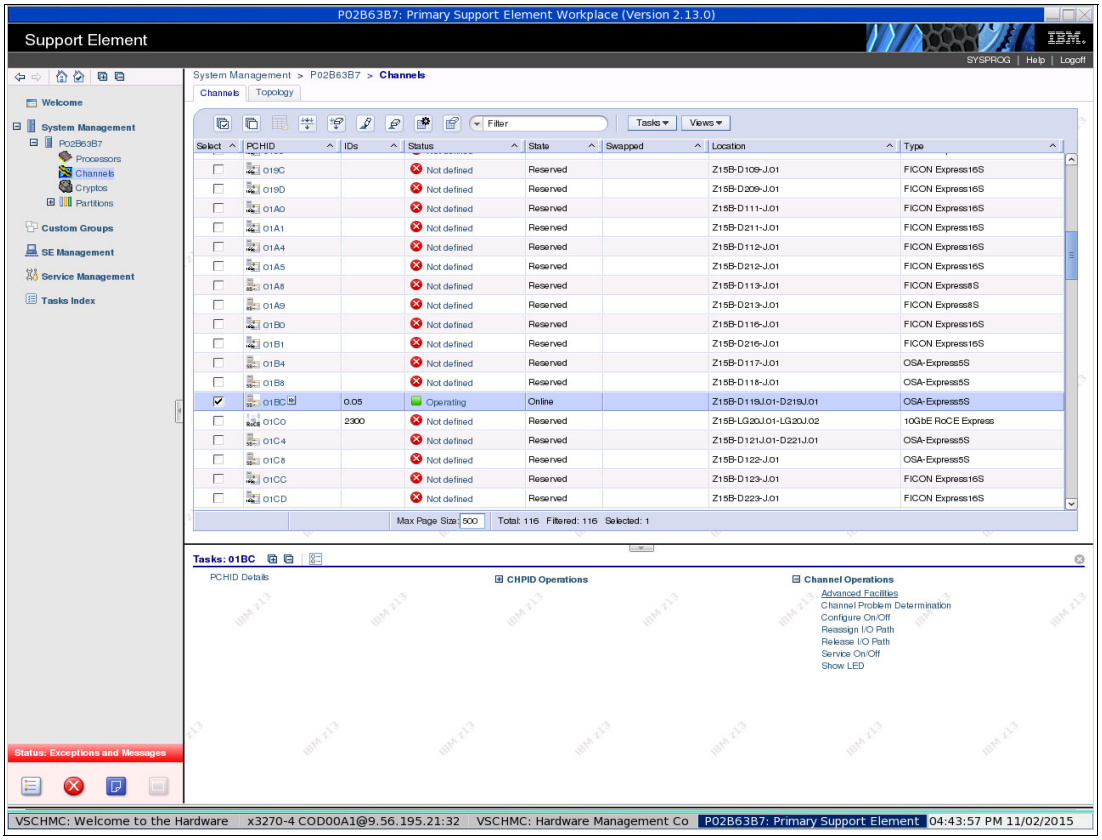

Figure 7-4 Selecting the CPC OSA-ICC channel

3. We select **Advanced Facilities** in the lower right of the panel. The Advanced Facilities panel for PCHID 1BC opens. We select the **Card specific advanced facilities...** option and then, **OK**, as shown in Figure 7-5.

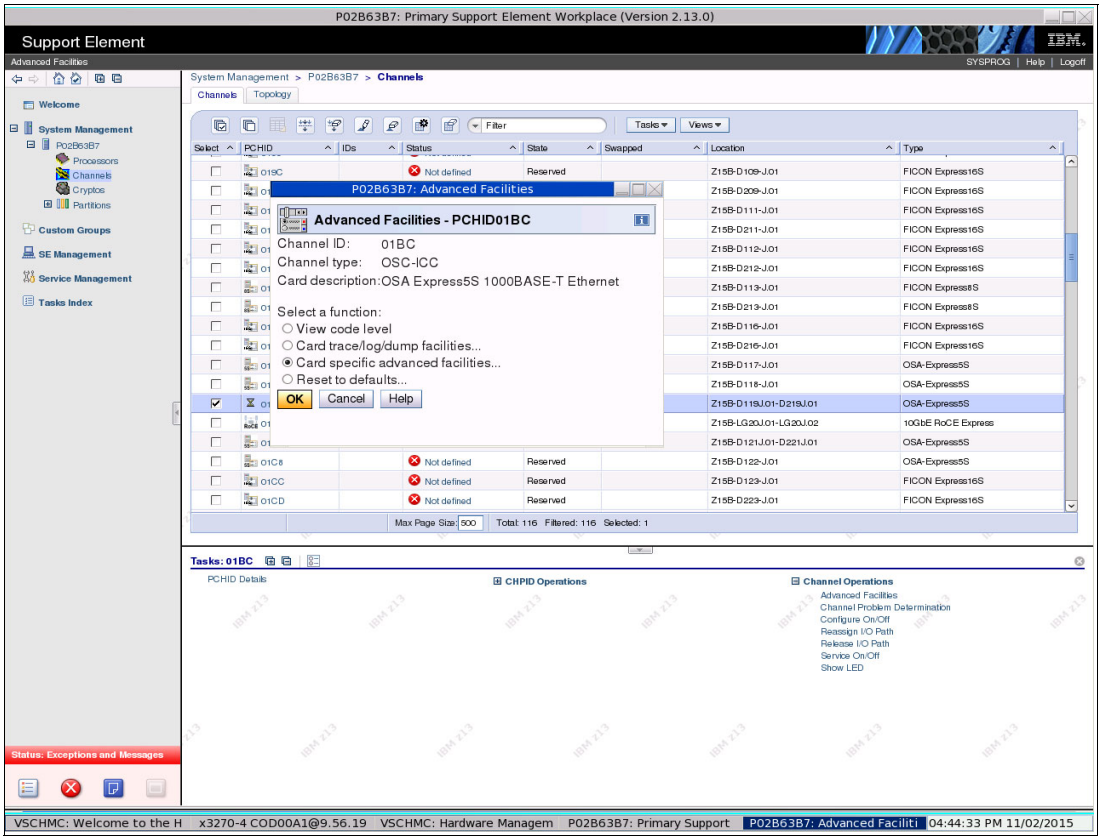

Figure 7-5 Advanced Facilities Panel of PCHID 1BC

4. In this panel, we select **Panel configuration options...** and then, **OK**, as shown in Figure 7-6.

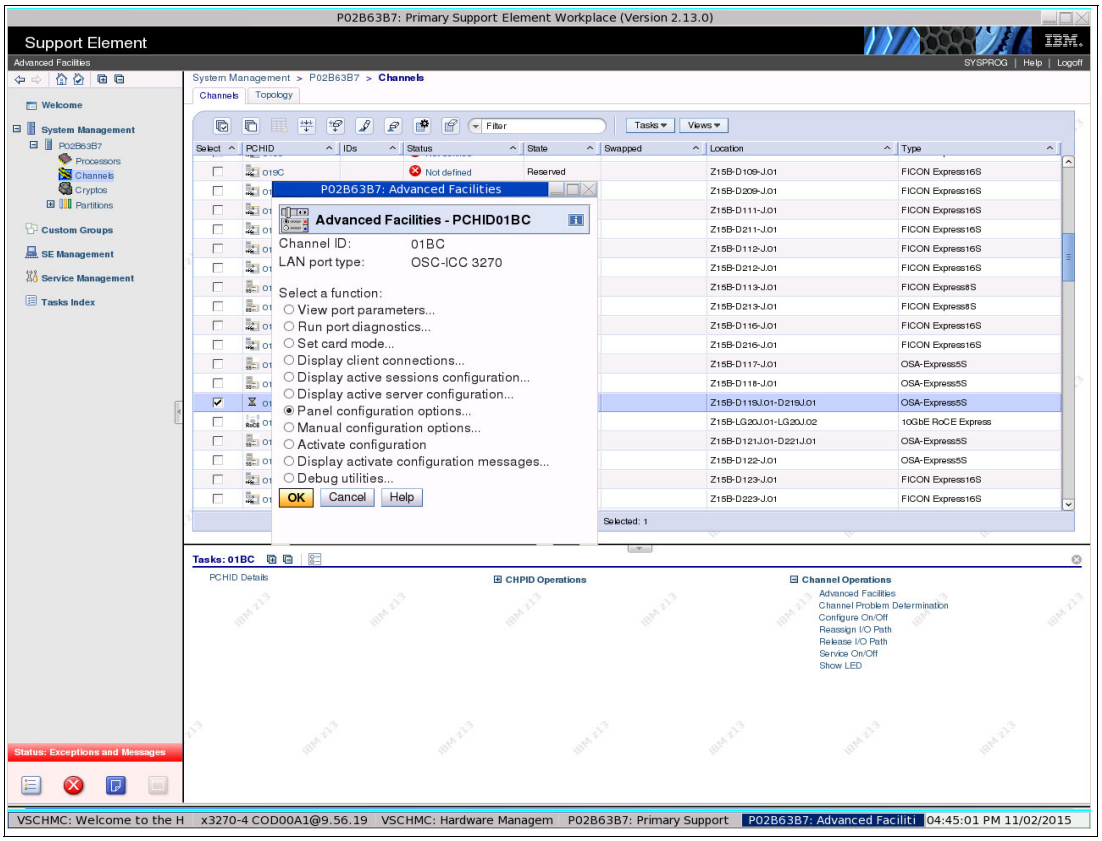

Figure 7-6 Advanced Facility panel of PCHID 1BC

7.5.3 Configuring OSA-ICC server

We completed the following steps to configure the OSA-ICC server:

1. In the Panel Configuration Options window, we select **Edit server configuration**, and then, **OK**, as shown in Figure 7-7.

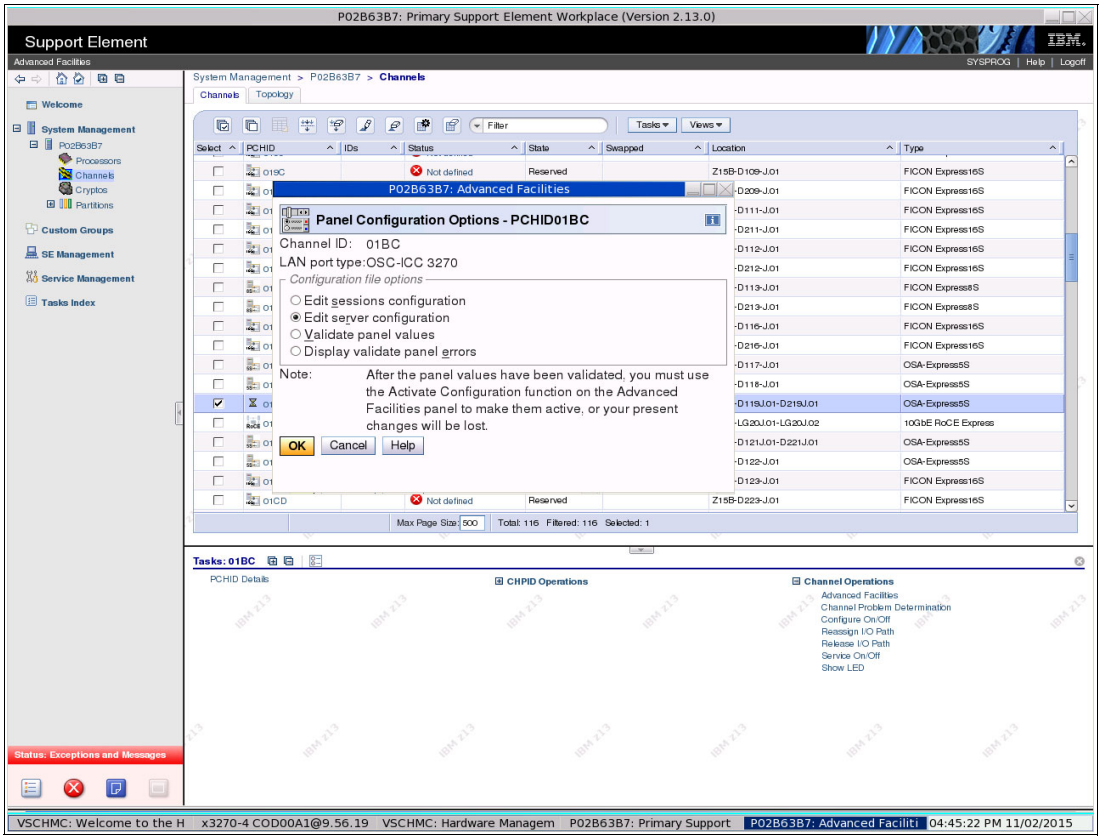

Figure 7-7 Panel configuration options

The Edit Server Configuration panel is displayed, as shown in Figure 7-8.

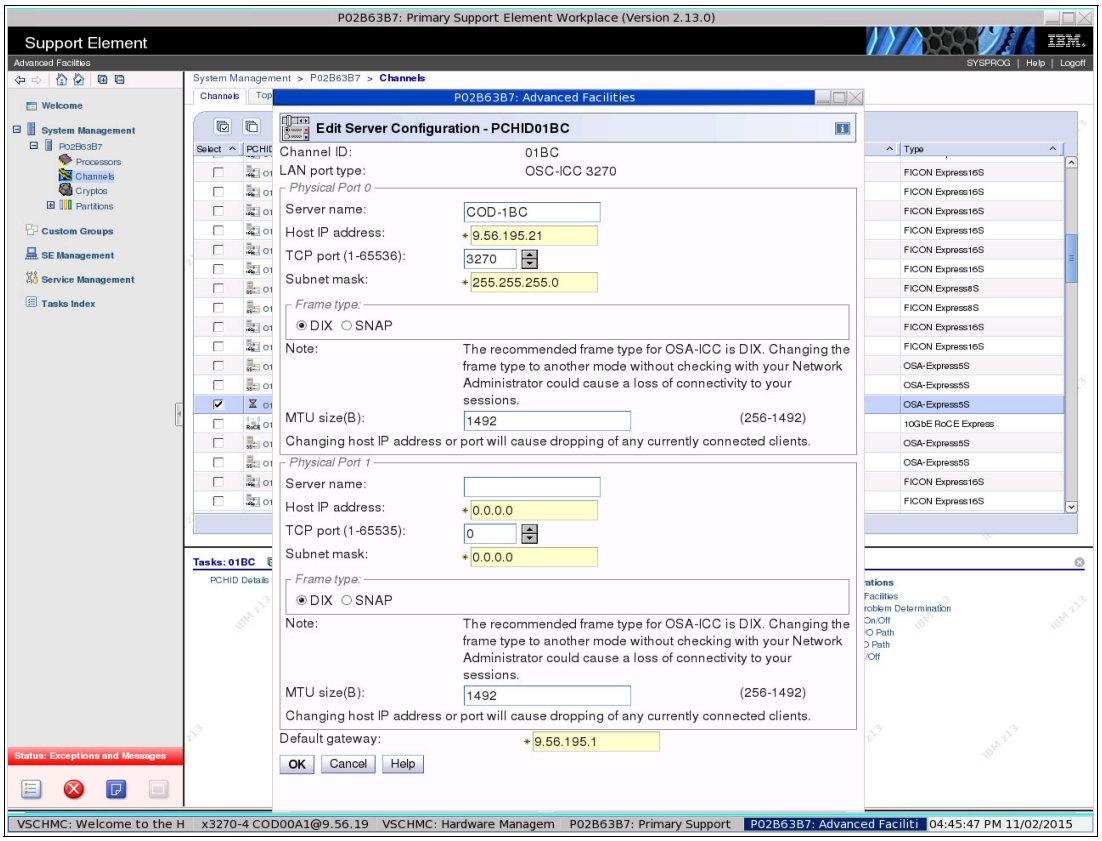

Figure 7-8 Server configuration of PCHID 1BC

2. We enter the following information:
   - Server Name: We use COD and the PCHID ID
   - Host IP address: TN3270 Host IP address should match the IP address that is in the OSA-ICC server configuration
   - TCP Port: TN3270 TCP port number should match the Port number that is in OSA-ICC server configuration
   - Default Gateway and Subnet Mask: Use the predefined IPs
   - Frame Type: Use default setting
   - MTS Size: Use default setting
3. We complete the server definitions in the Edit Server Configuration panel and select **OK**. If there is a port 1 to be configured, this process is repeated.

4. We select **OK**. The Panel Configuration Options panel displays, as shown in Figure 7-9.

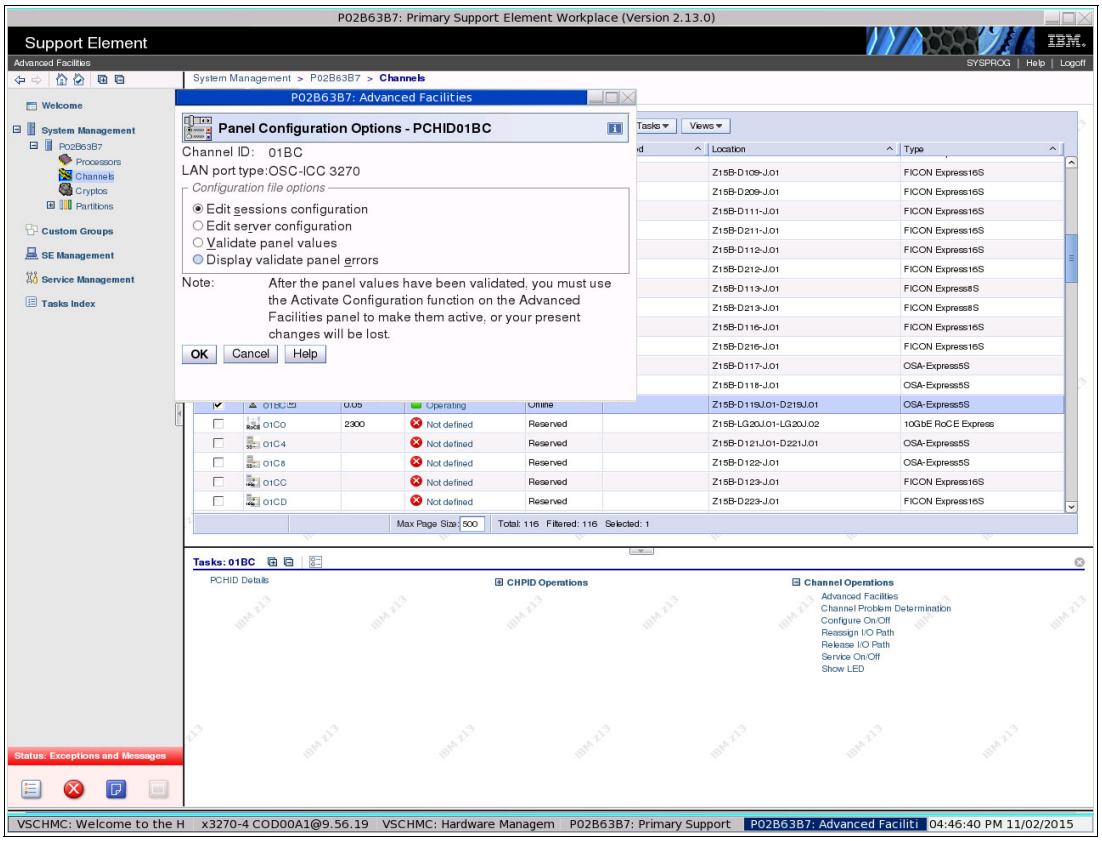

Figure 7-9 Editing session configuration

7.5.4 OSA-ICC sessions configuration

We complete the following steps to configure the OSA-ICC sessions:

1. Starting with the Panel Configuration Options panel (as shown in Figure 7-7 on page 117), we select **Edit Session Configuration** and then, select **OK**. The Edit Sessions Configuration panel is displayed. All the ports show a status of “Not configured,” as shown in Figure 7-10.

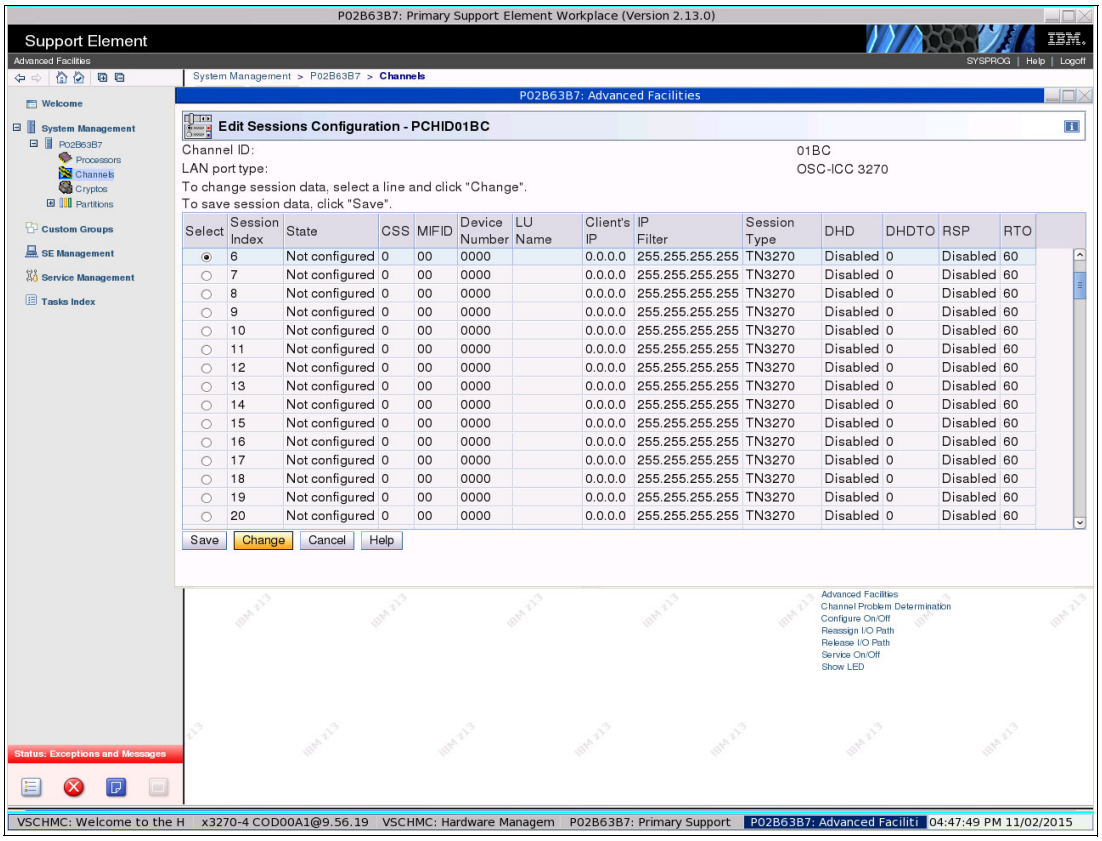

Figure 7-10 Session Configuration Ports panel

2. In the Edit Sessions Configuration panel, we select the top Session Index line and click **Change**. The Edit Session Configuration panel displays, as shown in Figure 7-11.

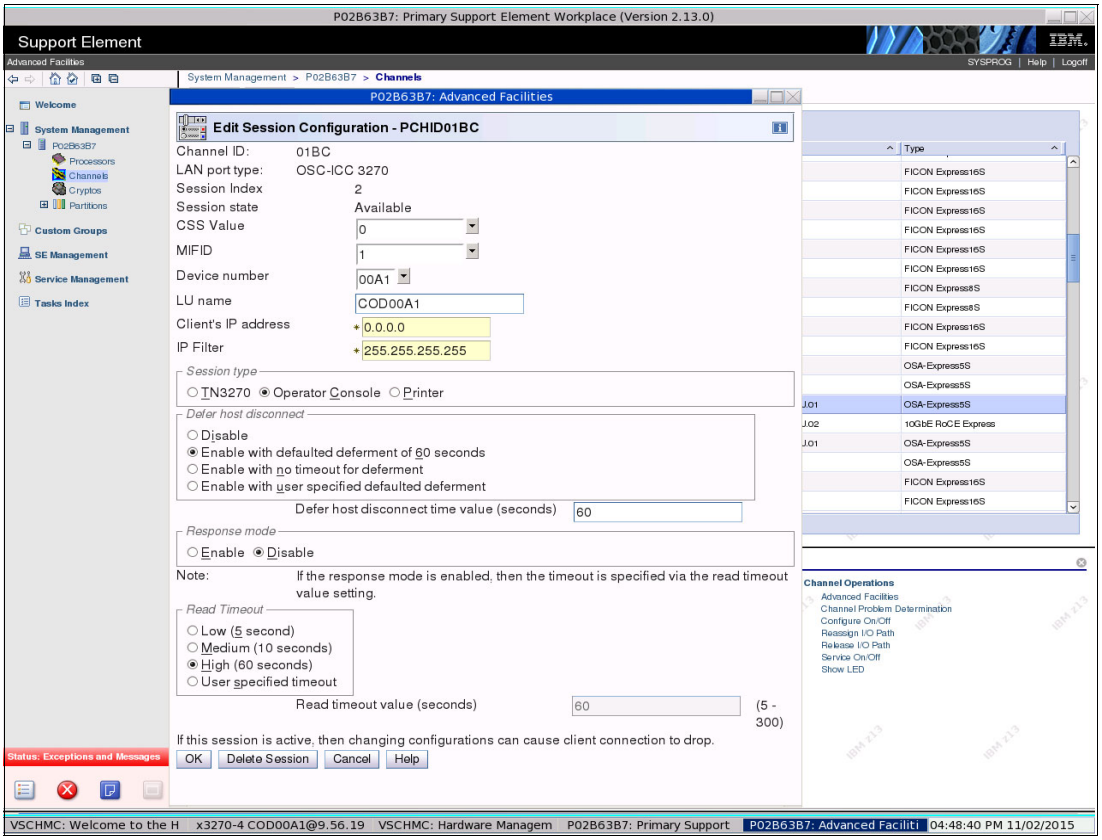

Figure 7-11 Edit Session configuration panel

In the Edit Session Configuration panel, we complete the following tasks:

- Select the CSS Value from the drop-down list. This value should match our IOCDS definition.
- Select the Multiple Image Facility Identifier (MIFID) from the drop-down list. This value should match our ICODS definition. For example, CSS value is 0 and MIFID is 1 in Figure 7-12.

```
LPAR DEFINITION

RESOURCE PARTITION=((CSS(0),(COD,1)))
```

Figure 7-12 IOCDS sample

- Select the Device Number from the drop-down list. This number should match the IOCDS IODEVICE definition.
- Enter the LU name for this session. It must match the LU name that is defined in the workstation TN3270 session configuration.
- Enter the client's IP address. This address must match the static IP address that is configured in the work station platform for its network interface adapter or leave it blank.

– Select the required session type, OP console, or TN3270.

The TN3270 session type is used for local non-SNA TN3270 sessions. For consoles, the Operator Console type is used. At least one OP console and one TN3270 session must be defined.

– Select the required Defer Host Disconnect, Response mode, and Read Timeout options. Default settings can be used.

3. We select the session options and select **OK**. The Edit Sessions Configuration panel that includes the defined sessions is displayed, as shown in Figure 7-13.

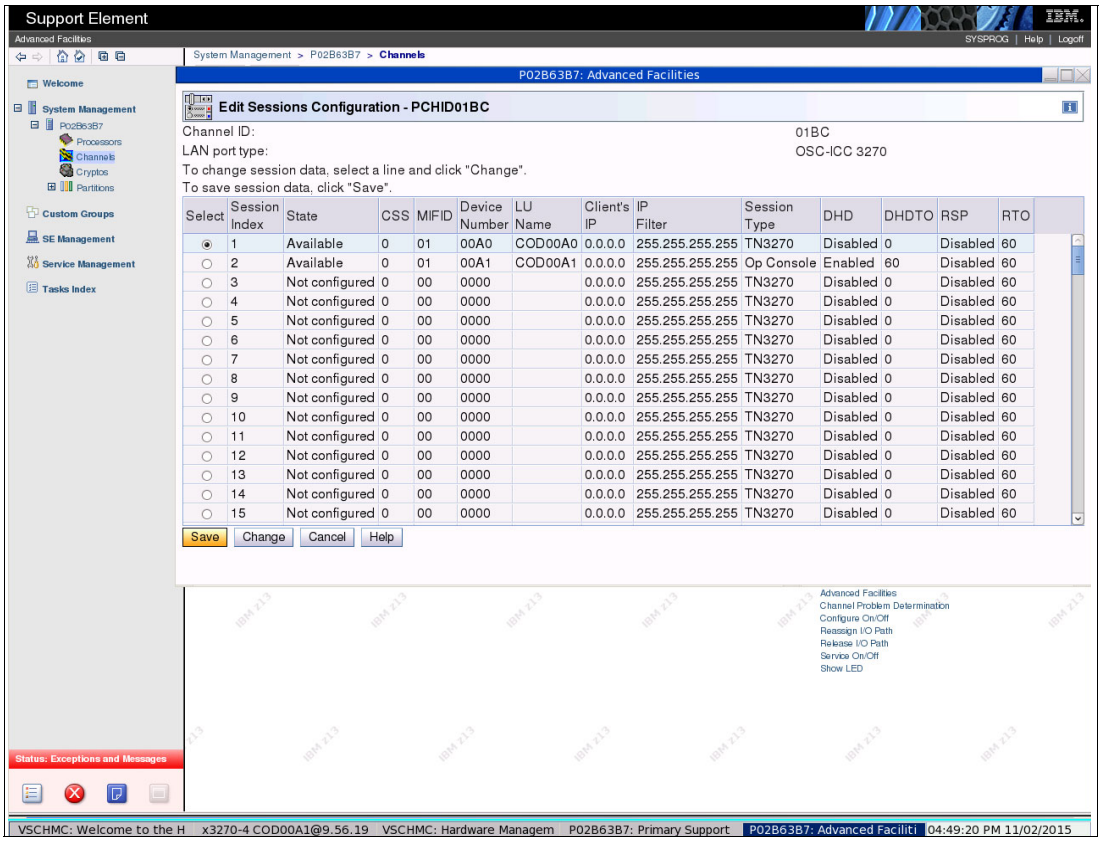

Figure 7-13 Defined Sessions panel

4. In the Edit Sessions Configuration panel, we click **Save**. The Edit Sessions Configuration command completed panel is displayed, as shown in Figure 7-14.

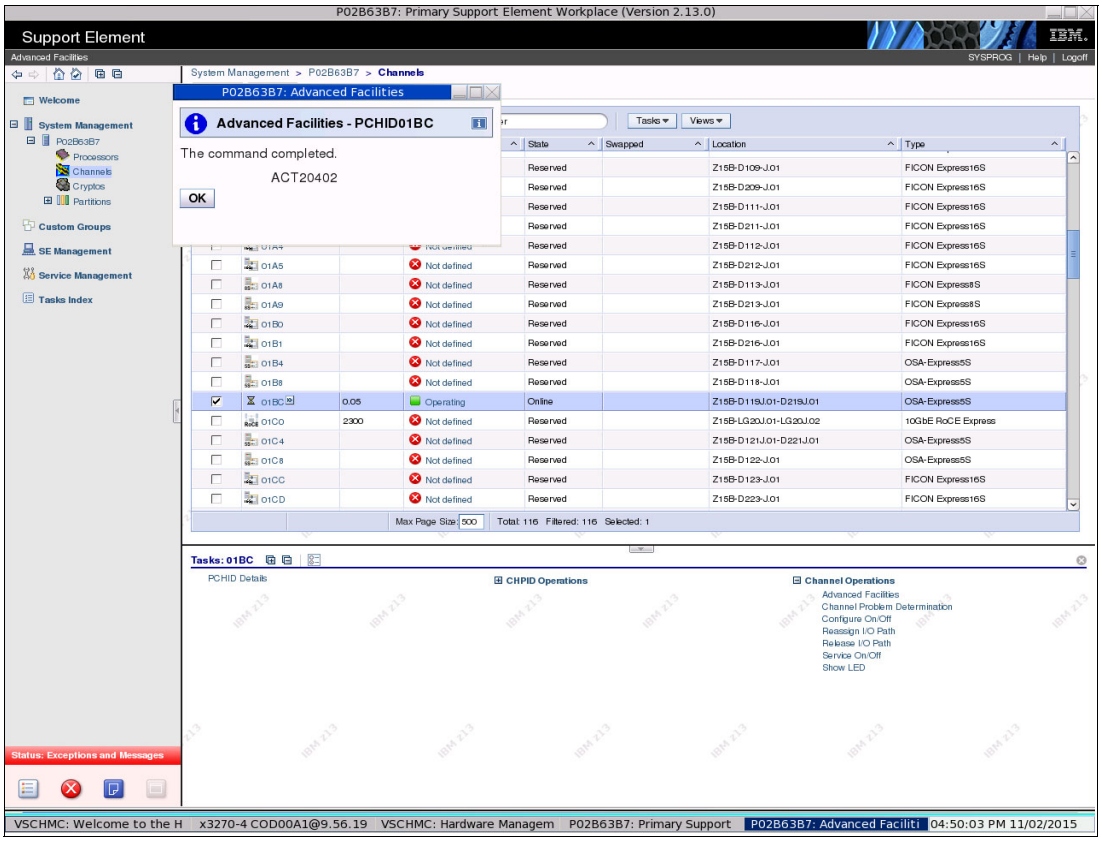

Figure 7-14 Edit Sessions Configuration command completed panel

5. We select **OK**.

7.5.5 Validating the OSA-ICC configuration

Starting in the Panel Configuration Options panel, we click **Validate** and then, click **OK**, as shown in Figure 7-15.

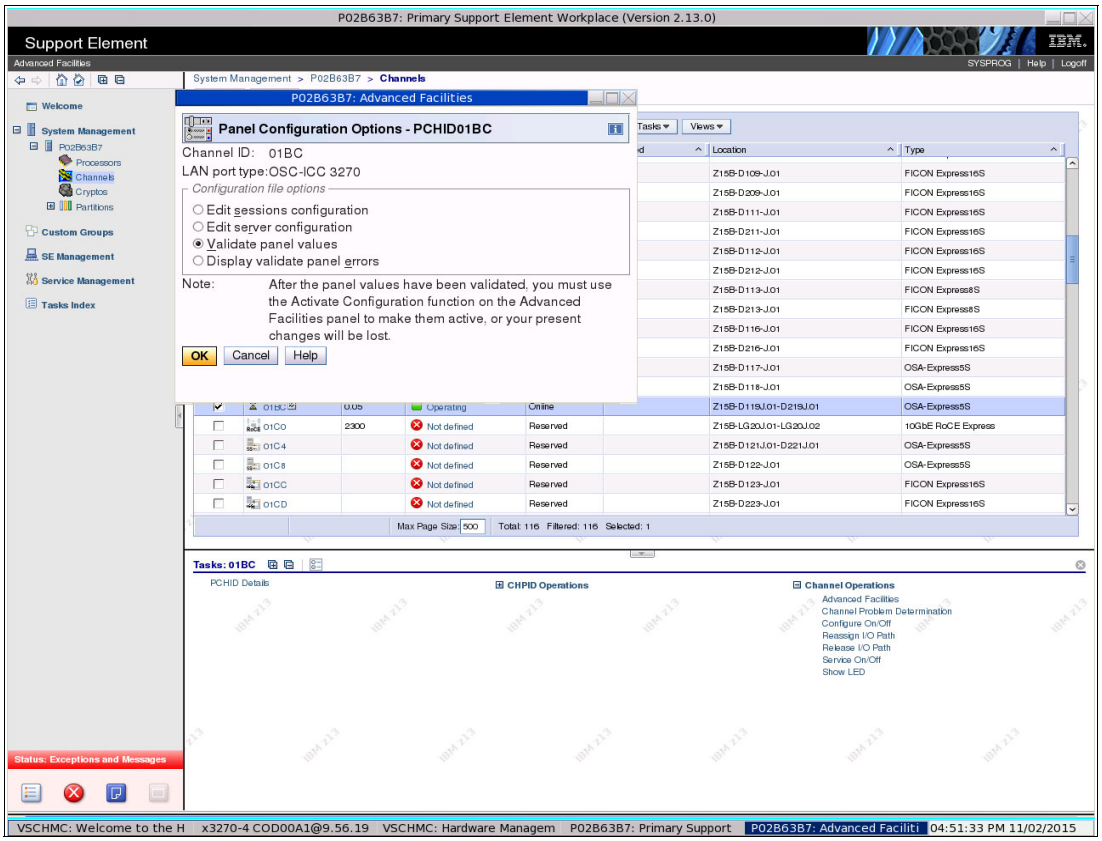

Figure 7-15 Validate panel values

If the validation process completes without errors, the Validate Panel Values “command completed” window displays after a few seconds, as shown in Figure 7-16.

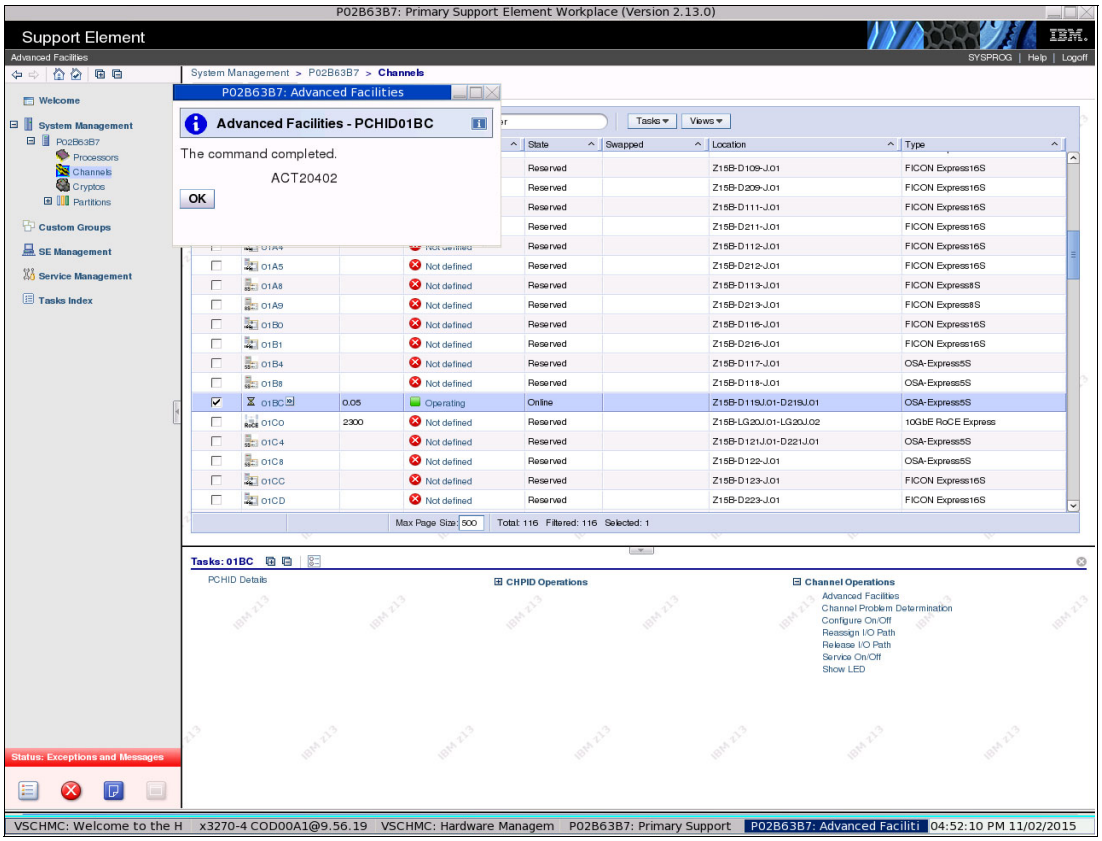

Figure 7-16 Validation Complete without error

If the validation process stops with an error, an error message window opens. We must return to the server or session configuration panel and redefine the session configuration.

7.5.6 Activating the OSA-ICC configuration

We complete the following steps to activate the OSA-ICC configuration:

1. In the Advanced Facilities panel (see Figure 7-17), we click **Activate configuration** and then, **OK**.

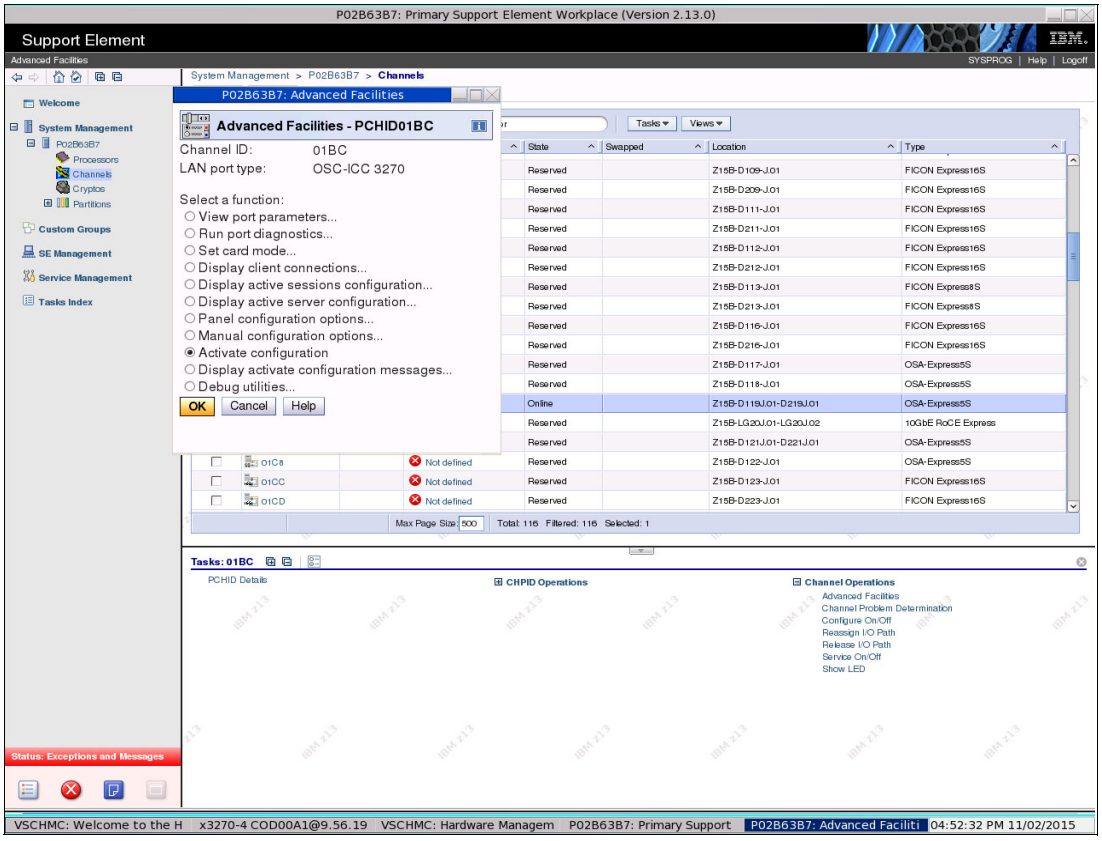

Figure 7-17 Activation configuration option

2. The Activate Configuration Warning panel is displayed, as shown in Figure 7-18. We click **Yes**.

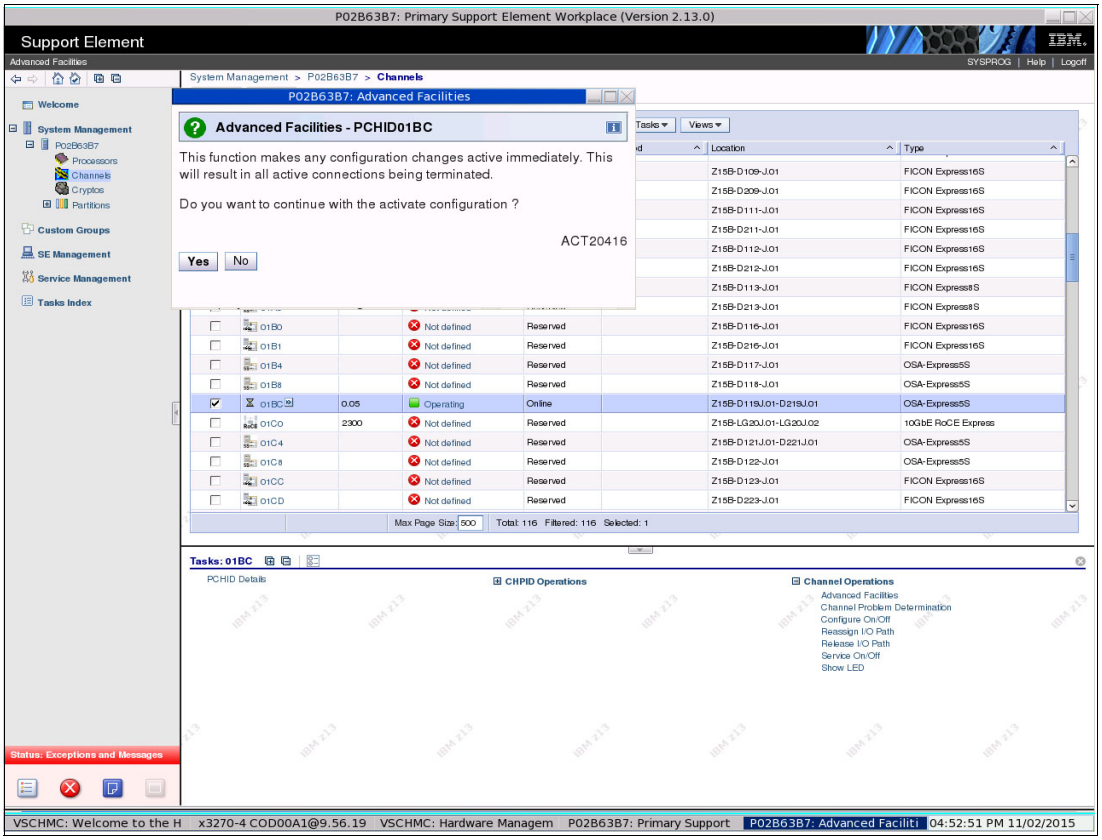

Figure 7-18 Activation Warning panel

3. The Activate Configuration command completed panel is displayed, as shown in Figure 7-19. Then, we click **OK**.

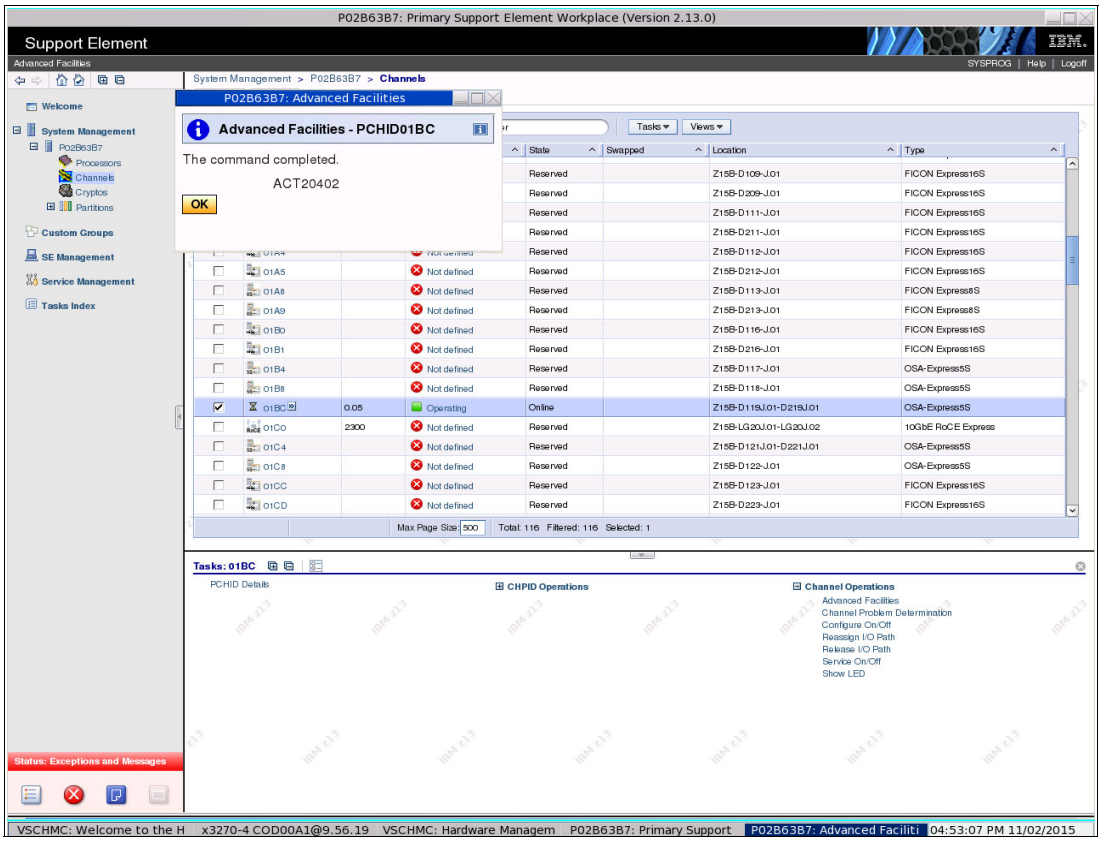

Figure 7-19 Activation complete

7.6 Configuring Personal Communications for NIP consoles

The following methods can be used to define the TN3270 sessions:

- Use the IBM Personal Communication tool
- Use the HMC 3270 Emulation panel

These methods are described next.

The IBM Personal Communications software can be downloaded from this website:

`http://www.ibm.com/software/network/pcomm/`

Note: This software is licensed software and the website download provides a one-month trial version only. If a full version is needed, contact your IBM sales representative.

7.6.1 Configuring a Personal Communications TN3270 session

We complete the following steps to configure a Personal Communications TN3270 session:

1. Starting at the desktop, we click **Start** → **Programs** → **IBM Personal Communications** → **Start or Configure Sessions**, as shown in Figure 7-20.

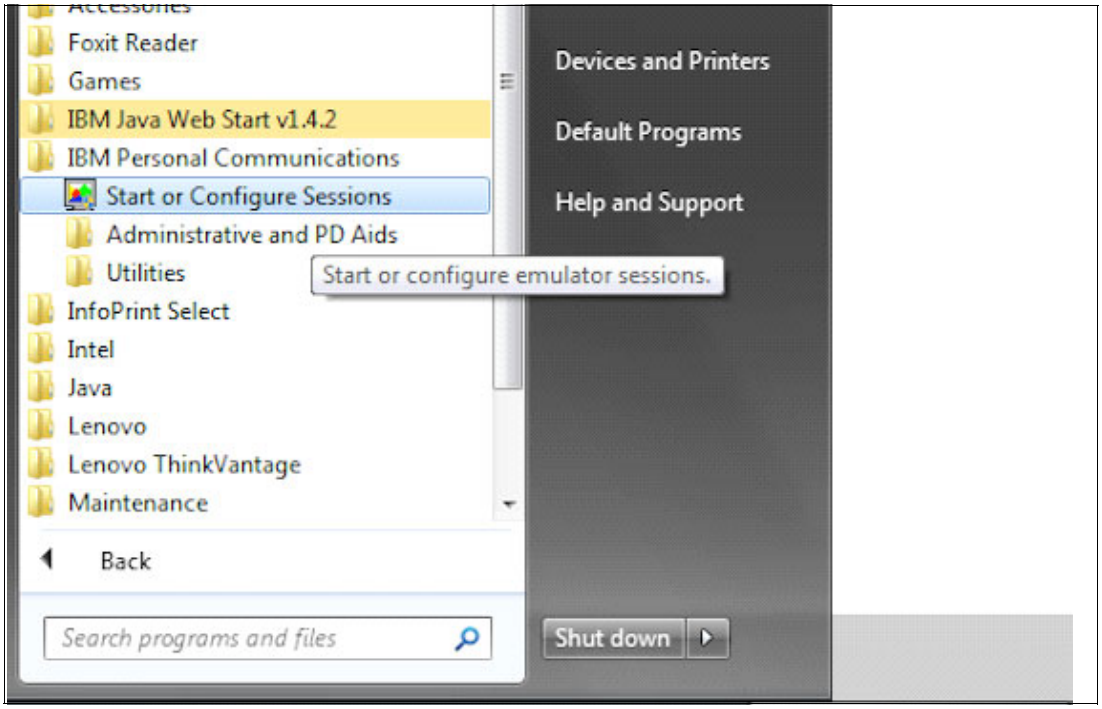

Figure 7-20 Start or configure sessions

2. The IBM Personal Communications Sessions Manager panel is displayed, as shown in Figure 7-21. We click **New Session**.

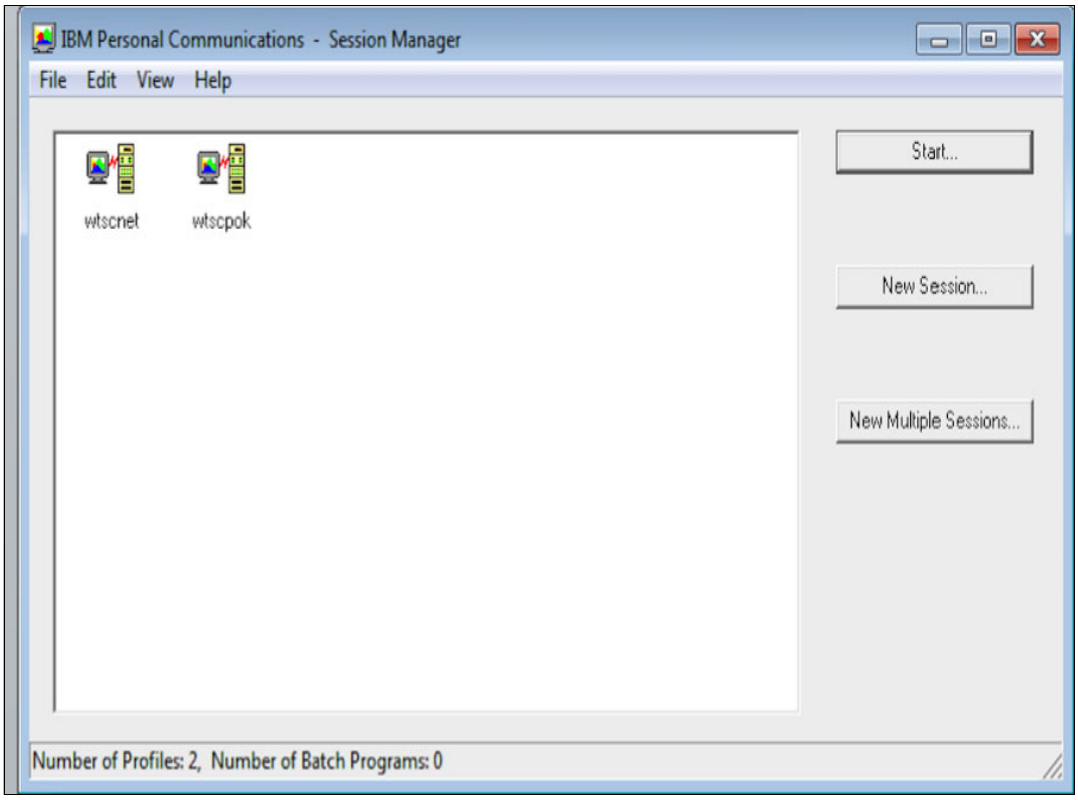

Figure 7-21 New Session window

The Customize Communication window is displayed, as shown in Figure 7-22.

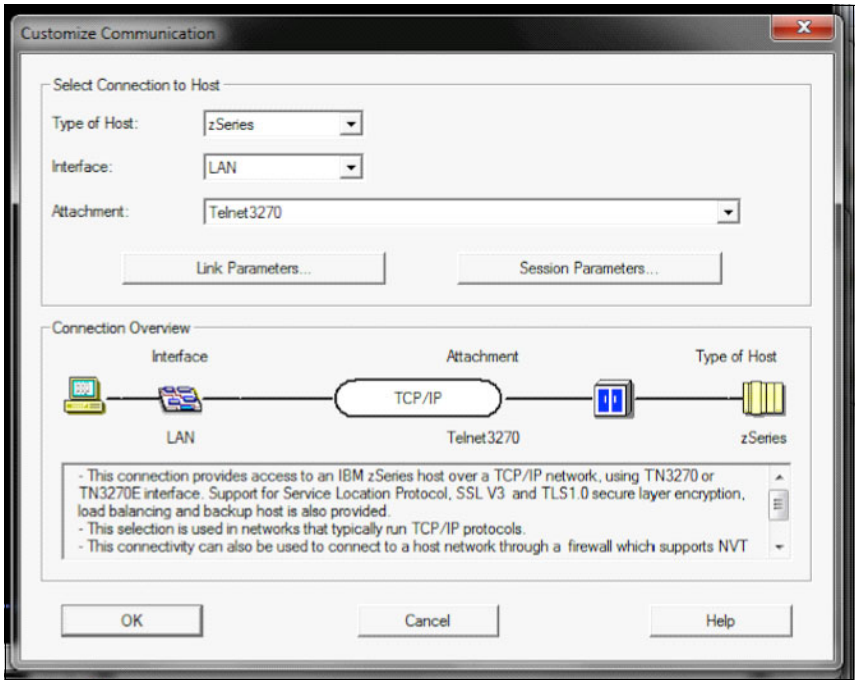

Figure 7-22 Customize Communications window

3. We enter the following Host Settings and then, click **Link Parameters**:
   - Type of Host: zSeries (IBM S/390® in earlier Personal Communications versions)
   - Interface: LAN
   - Attachment: Telnet3270
4. We select **OK** and the panel that is used to configure the link parameters appears, as shown in Figure 7-23.

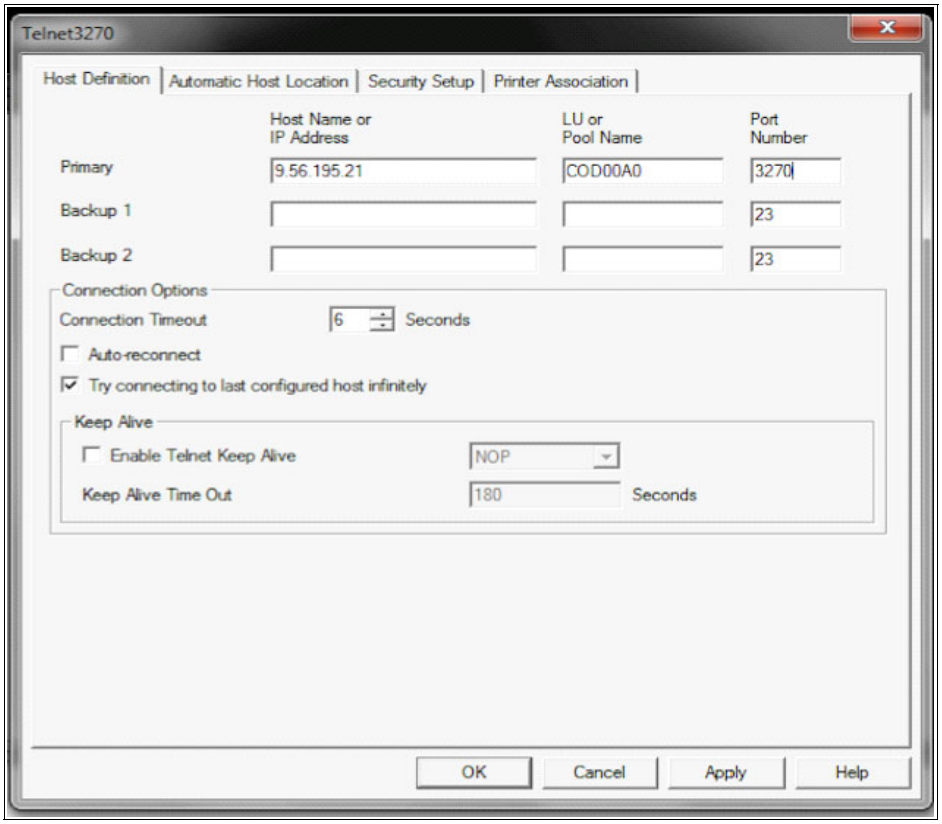

Figure 7-23 Configuring the link parameters

5. The following items should be defined and match the OSA-ICC advanced facility panel server session definition as follows. The parameters should match the configurations in Sessions 6.6.3 and 6.6.4 OSA-ICC server and session configurations and click **OK**:
   - Host Name or IP address
   - LU Name
   - Port Number
   - Auto-reconnect

6. The Customize Communication panel is displayed, as shown in Figure 7-24. We click **Session Parameters**.

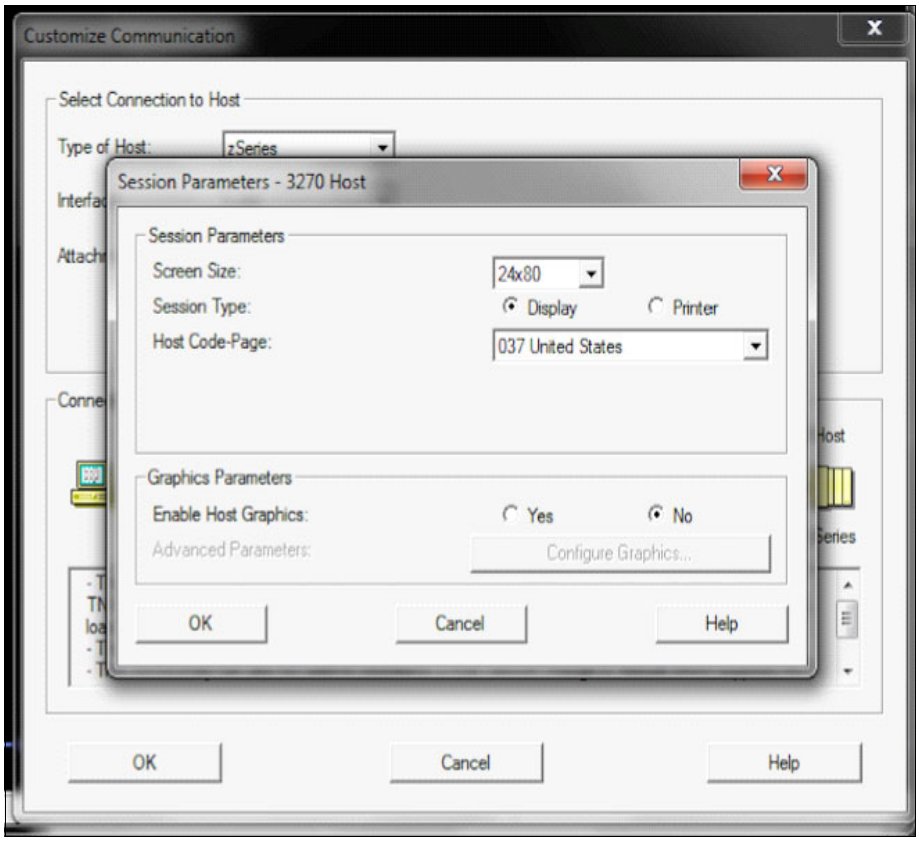

Figure 7-24 Session Parameters

7. The Session Parameters panel is displayed with the following options defined. We complete the session parameters with the default settings and then, click **OK**:
   - Session type
   - Screen size
   - Host code page
   - Host graphics

8. The Customize Communication panel is displayed. We click **OK** and the OSA-ICC session is displayed, as shown in Figure 7-25.

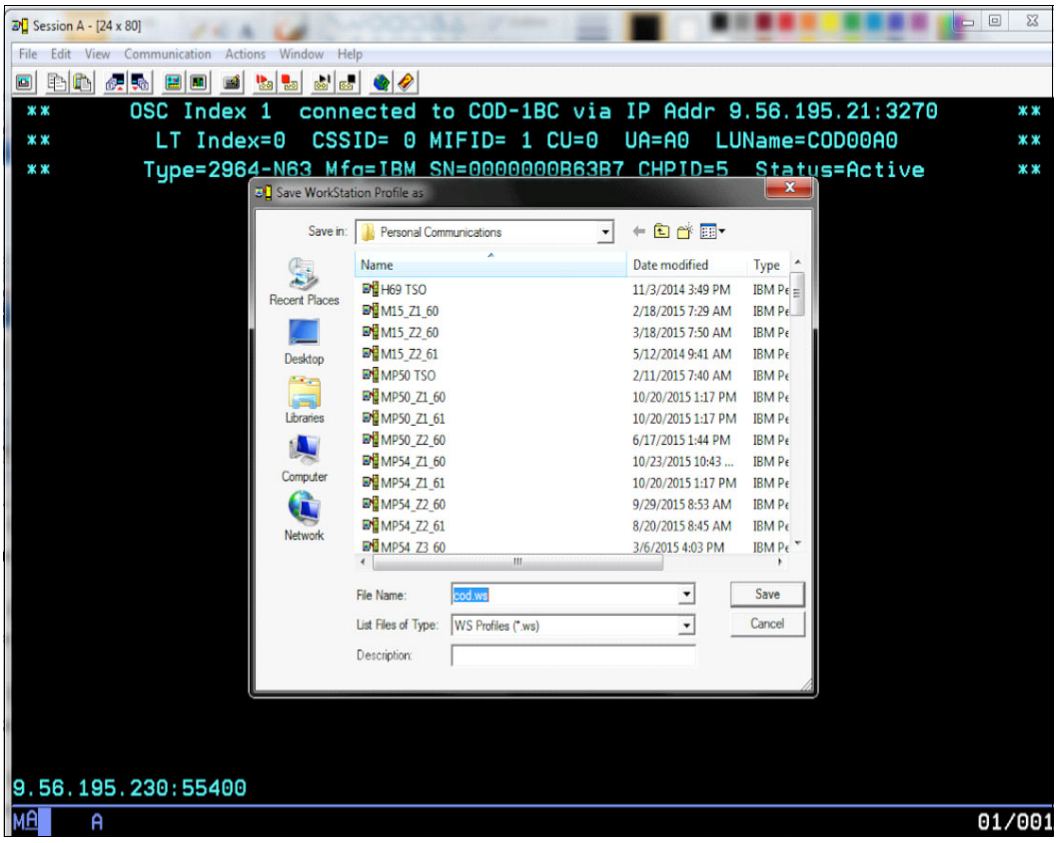

Figure 7-25 OSA-ICC sessions and Save Profile Name

9. The Personal Communications session window is displayed. The Personal Communications emulator attempts to connect to the host (OSA-ICC). We enter a profile name and select **Save**. A profile that is named `COD.ws` is generated. This profile can be used later to establish a PCOMM session with the z13 server.
10. Repeat this process to define other PCOMM sessions.

7.6.2 Defining a TN3270E session from HMC Emulation panel

We complete the following steps to define a TN3270E session from the HMC Emulation panel:

1. We log in to the HMC by using SYSPROG profile.
2. We select **HMC management** → **Configure 3270 Emulation**. The Emulation Configuration panel opens, as shown in Figure 7-26.

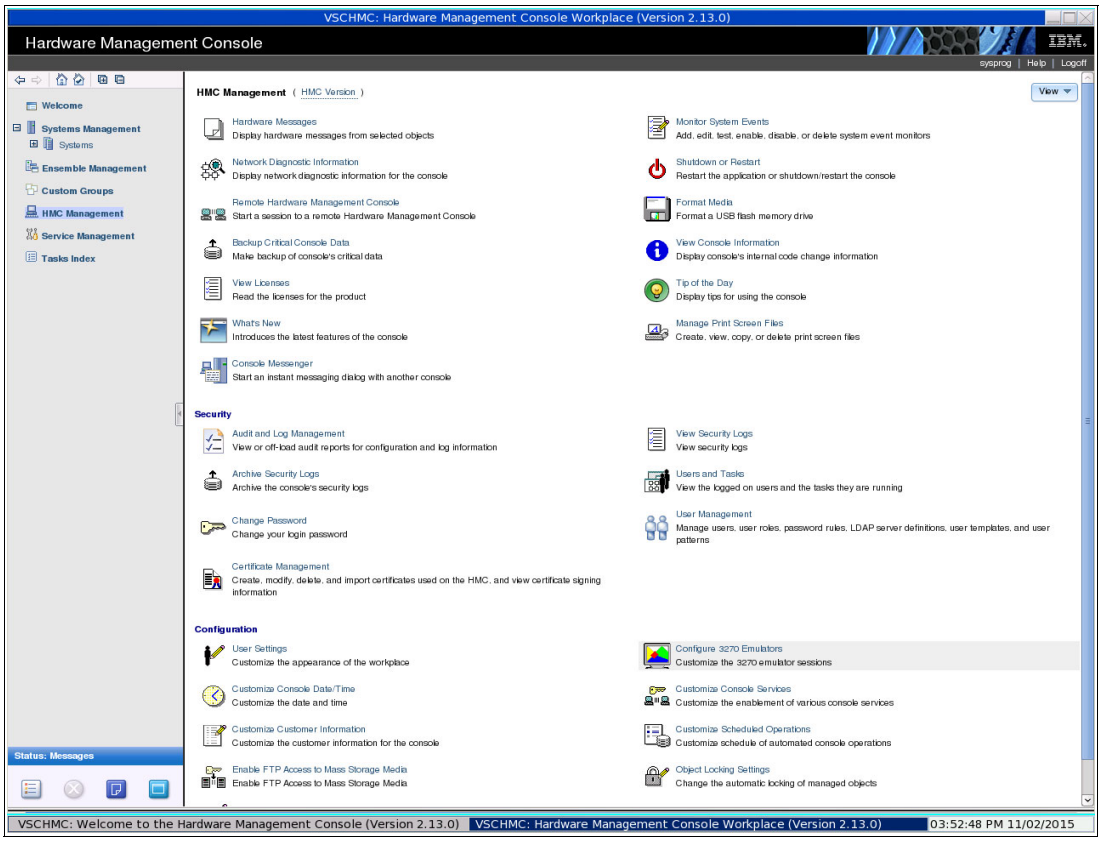

Figure 7-26 HMC configuration for 3270 Emulation

3. When the Emulation Configuration panel opens, we select **NEW**, as shown in Figure 7-27.

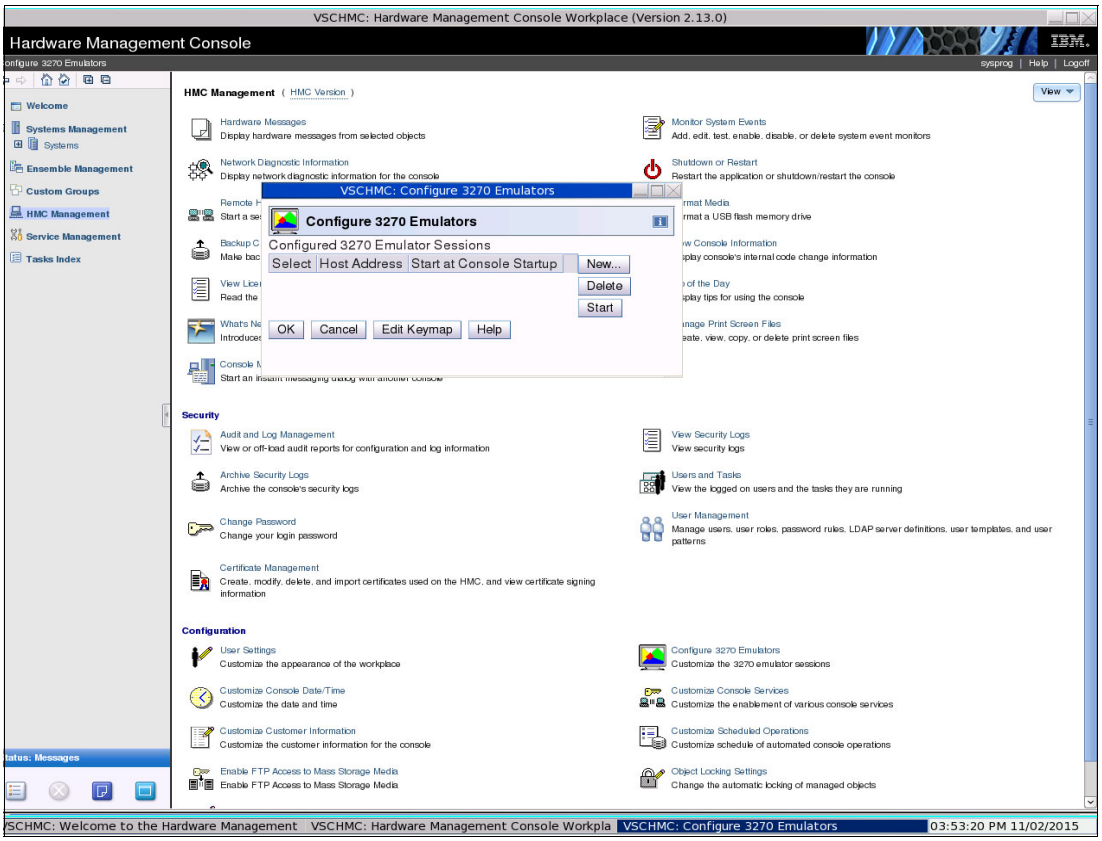

Figure 7-27 New Session panel

4. The New Session panel opens and we enter the parameters by using the format: `LU Name@IP address:port ID`. Then, we select **OK** to open the TN3270 session, as shown in Figure 7-28.

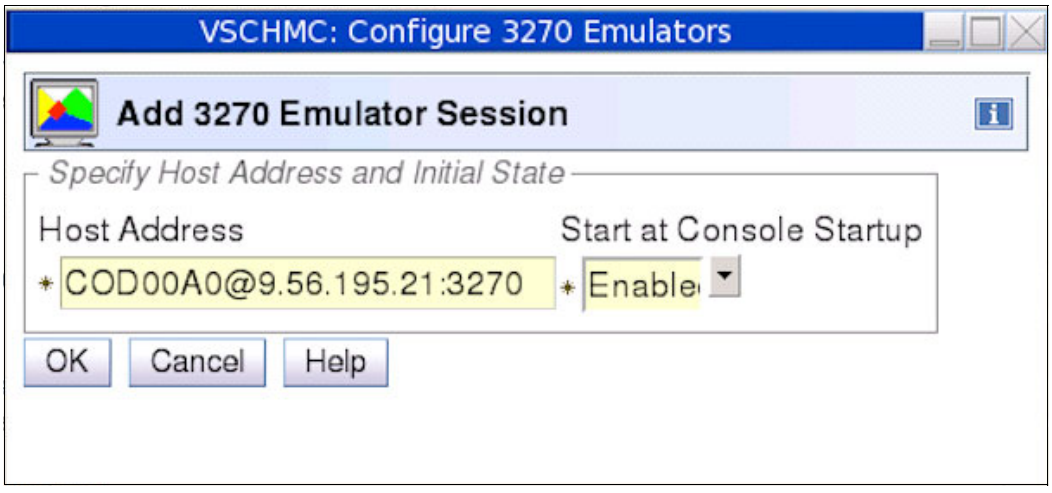

Figure 7-28 3270 Emulation Configuration

We now move on to Phase 5.

8

Phase 5: Customized Offering Driver restore

This chapter describes how the Customized Offering Driver (COD) DVDs are restored to direct access storage device (DASD) volumes by using DFSMSdss Stand-Alone Services.

This chapter includes the following topics:

- 8.1, “Goal” on page 138
- 8.2, “Requirements” on page 138
- 8.3, “Related documents” on page 138
- 8.4, “Scenario” on page 139
- 8.5, “Workflow” on page 139

8.1 Goal

The Phase 5 goal is to restore COD DVDs on three DASD volumes by using DFSMSdss Stand-Alone Services. Each COD DVD is shipped in a DFSMSdss physical memory dump format and has a copy of the DFSMSdss stand-alone program.

Phase 5 is required to achieve milestone 2 Stand Alone Restore of COD and IPL. Where this phase occurs in the overall process is shown in Figure 8-1.

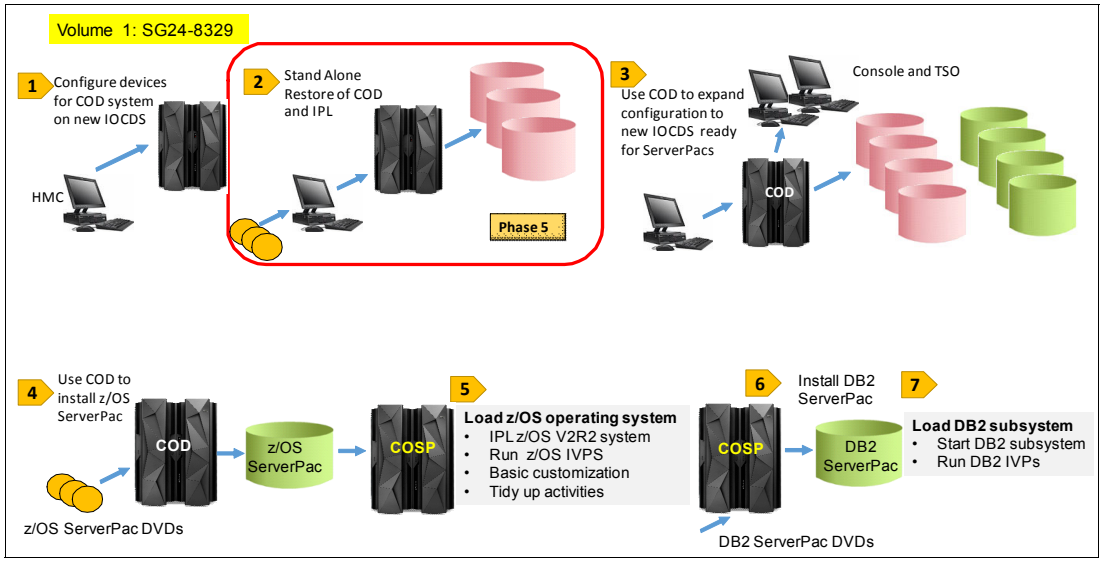

Figure 8-1 Phase 5 Milestone 2

8.2 Requirements

The following documents and resources often are used during Phase 5 tasks:

- Customized Offerings Driver Installation Guide for Program Number 5751-COD
- Your I/O configuration design that meets the COD requirements
- z13 server that is installed by IBM Customer Engineer (CE)
- At least three DASD model 3390-3 volumes on your storage subsystem
- User IDs and passwords for the use of the Hardware Management Console (HMC) and Support Element (SE) with SYSPROG user profiles
- HMC with DVD driver
- COD DVDs

8.3 Related documents

The following IBM publications provide relevant information during Phase 5:

- *IBM z13 Technical Guide,* SG24-8251
- *IBM z13s Technical Guide,* SG24-8294
- *IBM z13 Configuration Setup,* SG24-8260
- *z/OS DFSMSdss Storage Administration,* SC23-6868

8.4 Scenario

The tasks that are described in this chapter assume that the z13 server was PORed with IOCDS A0, which is your minimum I/O hardware configuration to meet COD requirements and with COD logical partition (LPAR) activated.

Three DASD model 3390-9 were used in our laboratory environment, as shown in Figure 8-2.

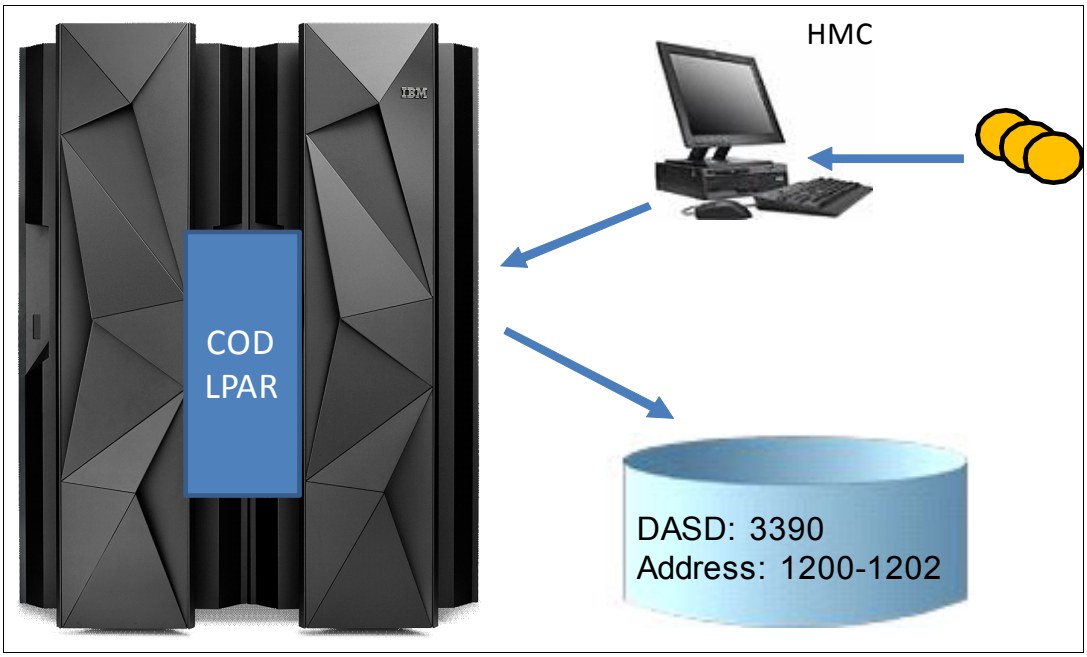

Figure 8-2 Initial scenario for Phase 5

8.5 Workflow

The Phase 5 workflow that is shown in Figure 8-3 is based on our scenario.

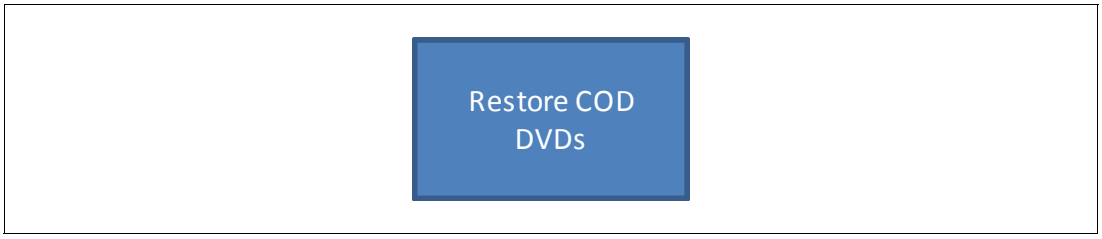

Figure 8-3 Workflow to restore COD DVDs

After we restore COD DVDs on the DASD volumes, we can perform an Initial Program Load (IPL) of the COD z/OS driving system.

8.5.1 Restoring COD DVDs

We complete the following steps to restore disk images on the COD DVDs to the DASD volumes:

> **Note:** Because of changes in the DFSMSdss program, count key data (CKD) volumes do not need to be initialized.

1. We log on to SE by using the SYSPROG profile.
2. We select **System Management** → **P02B63B7** (our z13 server name) → **Partitions** → **COD** (our COD LPAR name). In the Tasks tab at the bottom of the window, we select **Recovery** and then, click **Load from Removable Media or Server**, as shown in Figure 8-4.

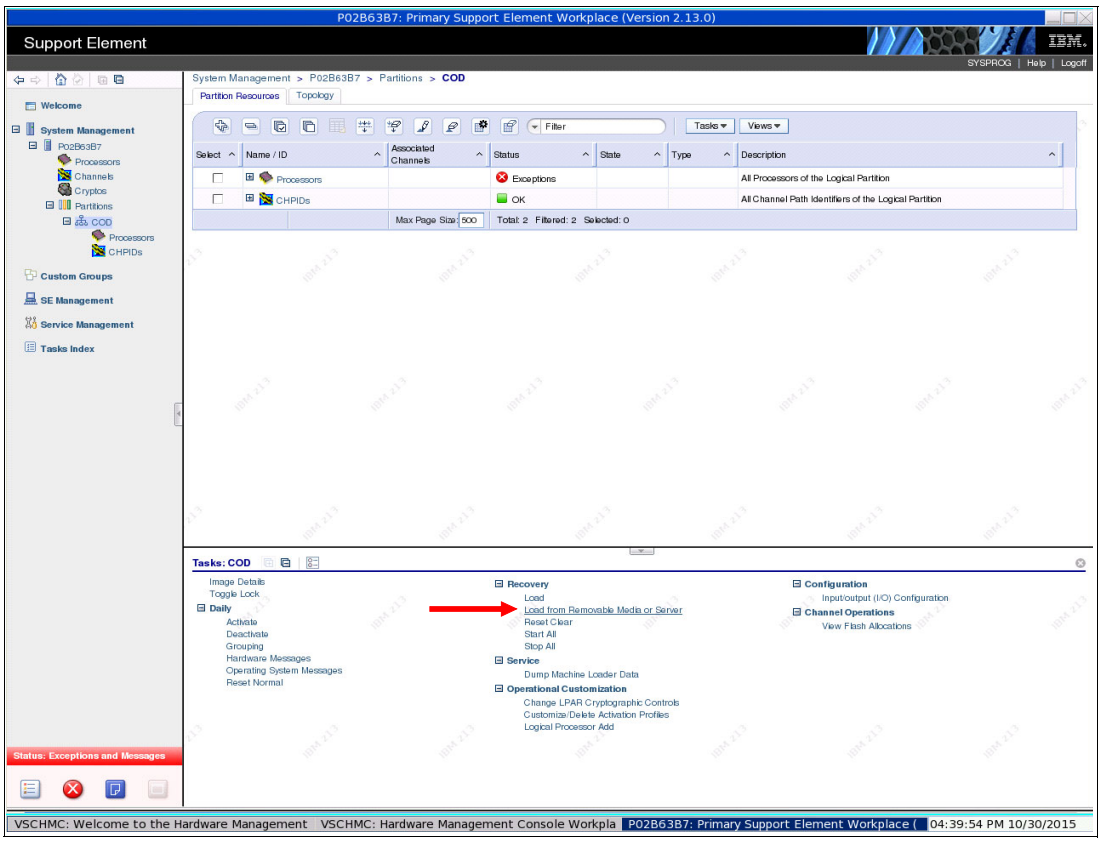

Figure 8-4 Load system from removable media or server

3. A pop-up window opens, as shown in Figure 8-5. We insert into the HMC DVD drive the DVD that is labeled for the first SYSRES volume (the name of which ends with SY1), according to your COD documentation.

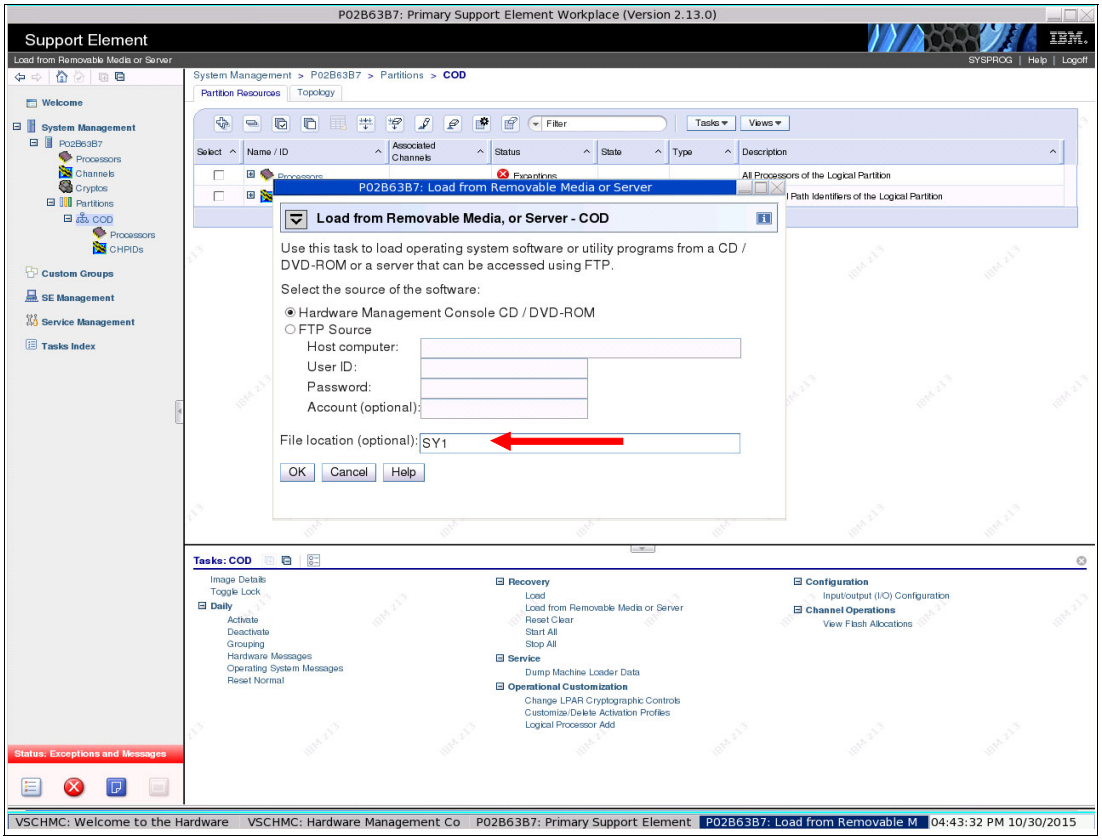

Figure 8-5 Load from Removable Media or Server pop-up window

4. We select **Hardware Management Console CD/DVD** as the source of the software and enter the file location path name `SY1`. Click **OK**.

5. After the DVD loads, we can choose whether to use an OSA console, which requires OSA-ICC customization or HMC console. Then, we click **OK**. On our example, we selected the **DFSMSDSS_OPERCNSL.INS** program to use the HMC console, as shown in Figure 8-6.

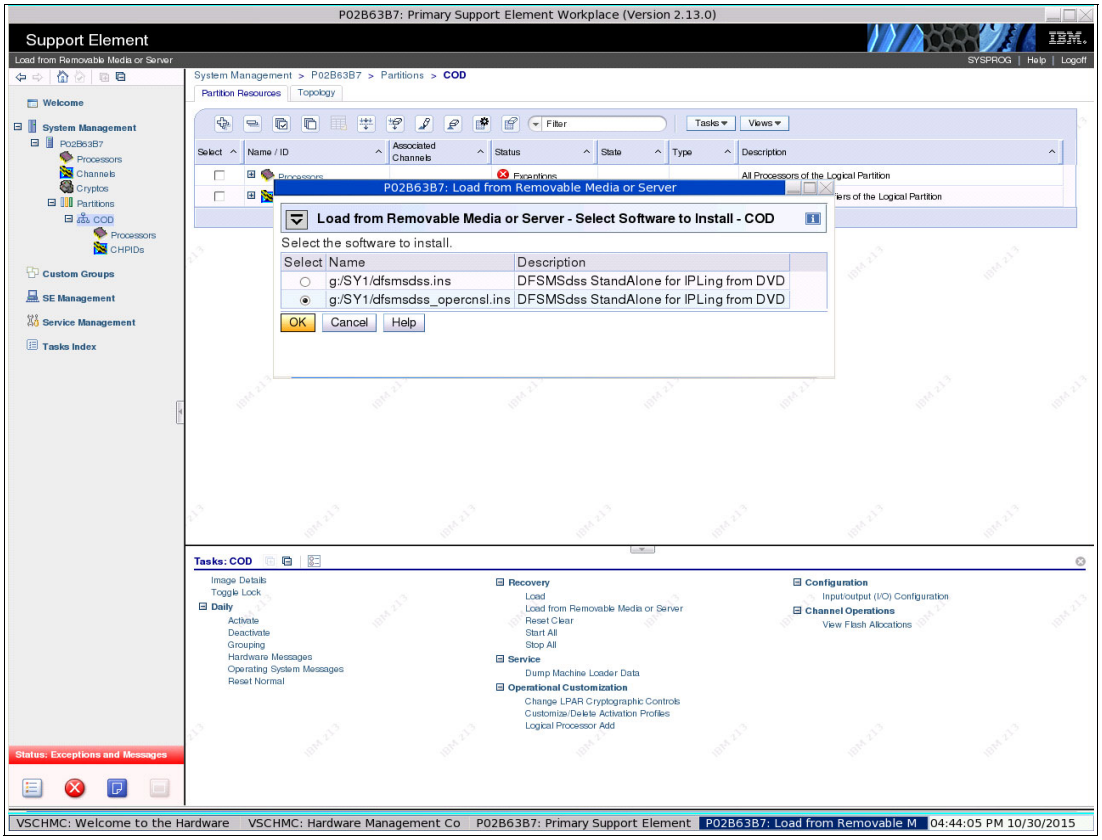

Figure 8-6 Console options

6. A confirmation window opens that indicates that this task is disruptive, as shown in Figure 8-7. We click **Yes** to continue.

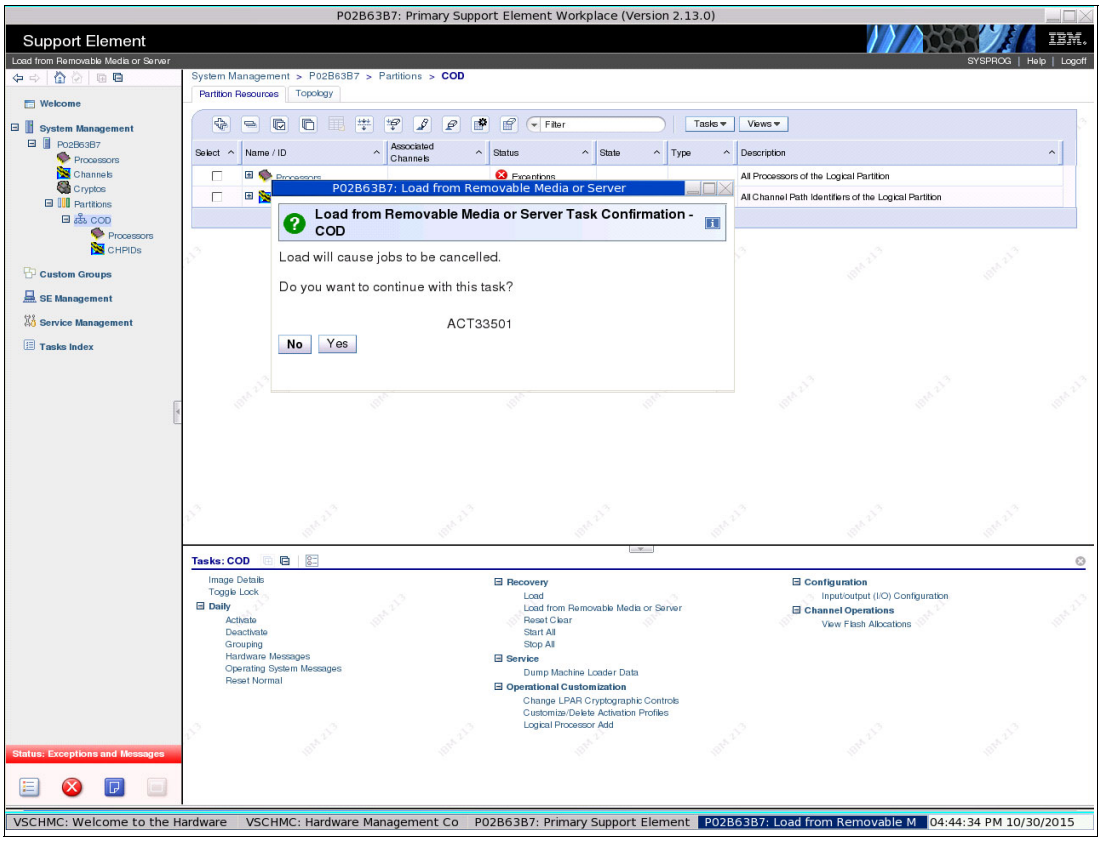

Figure 8-7 Confirmation window

7. We enter out password to proceed with this disruptive task. We click **Yes**, as shown in Figure 8-8. We must ensure that the correct LPAR is used.

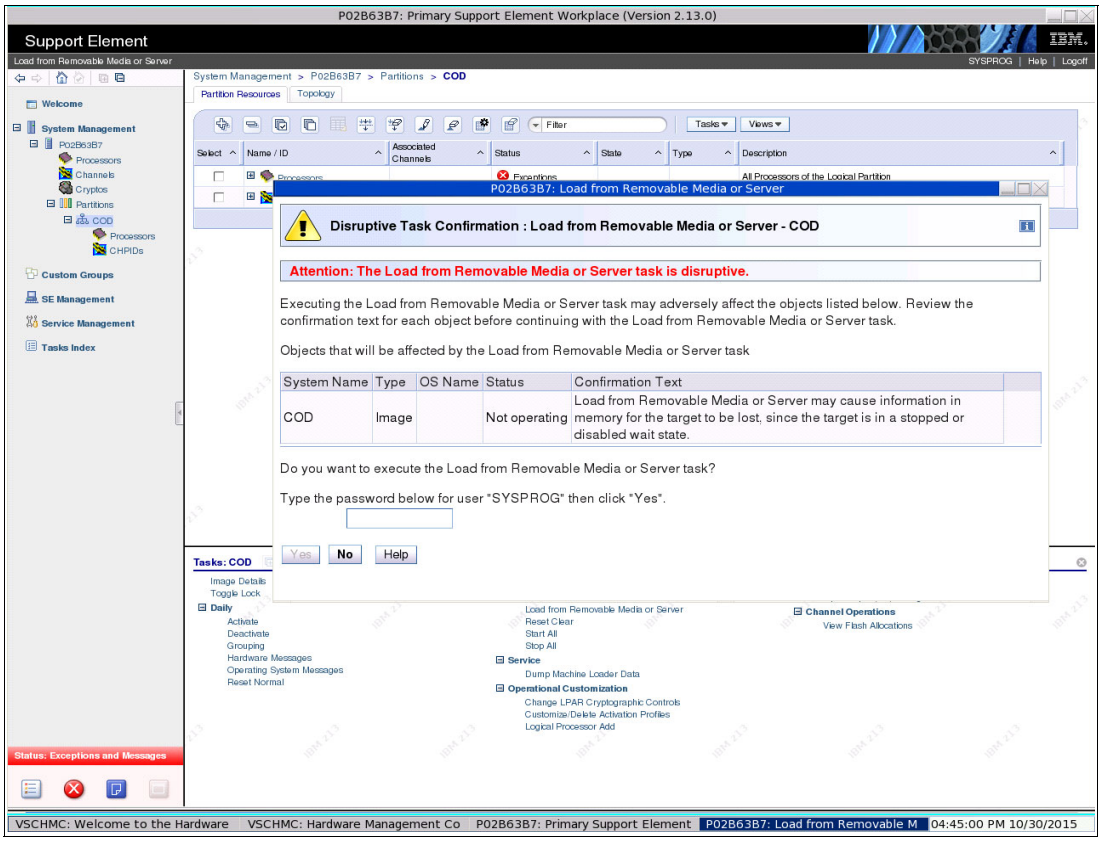

Figure 8-8 Password confirmation

8. When DFSMSdss Stand-Alone Services is loaded on the COD LPAR, the window that is shown in Figure 8-9 opens. We click **OK** to continue.

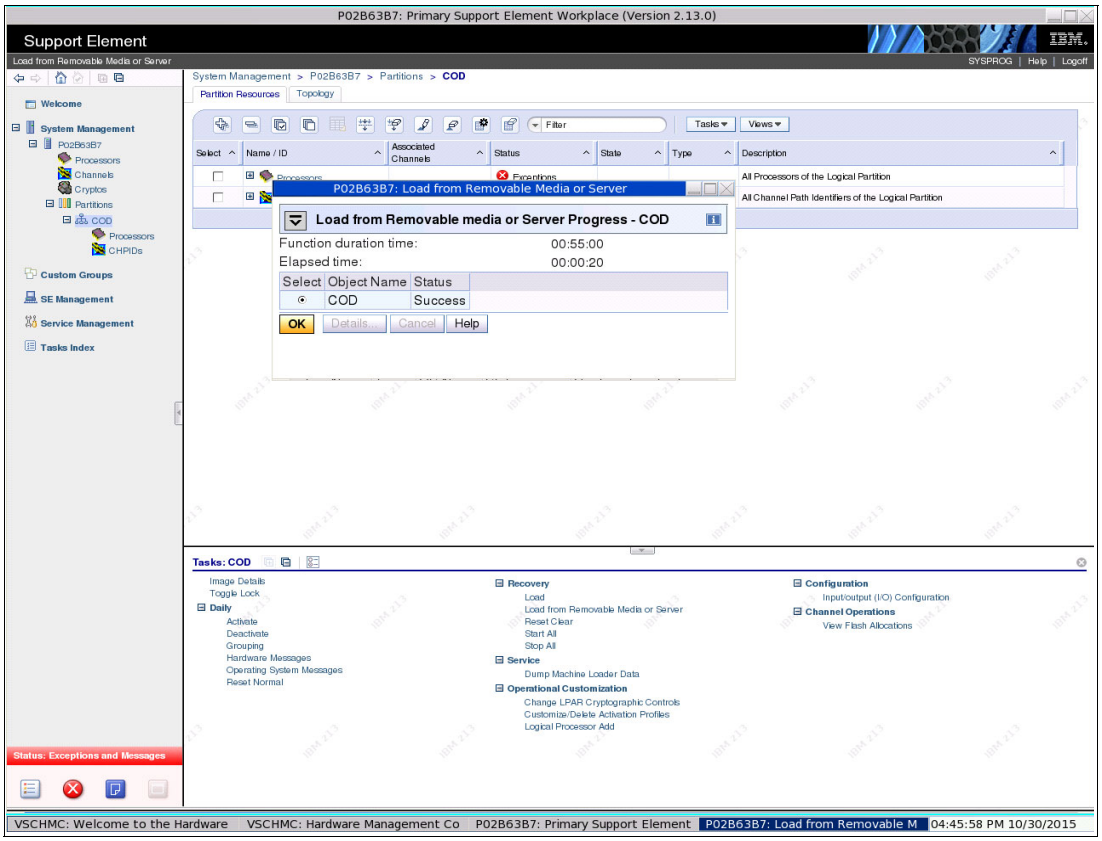

Figure 8-9 DFSMSdss Stand-Alone Services loaded

9. In the Tasks tab at the bottom of the window, we select **Daily** → **Operating System Messages**, as shown in Figure 8-10.

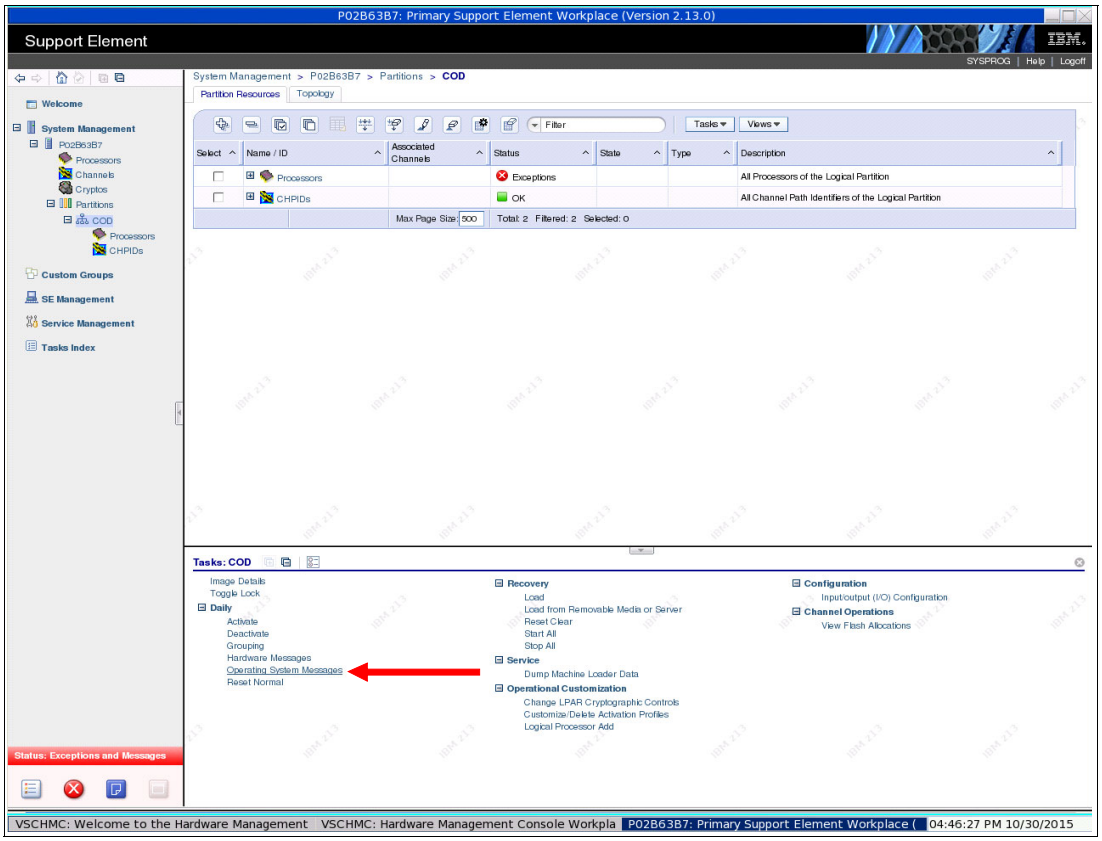

Figure 8-10 Selecting Operating System Messages option

The Operating System Messages window opens, which includes information about the loaded DFSMSdss Stand-Alone Services program, as shown in Figure 8-11.

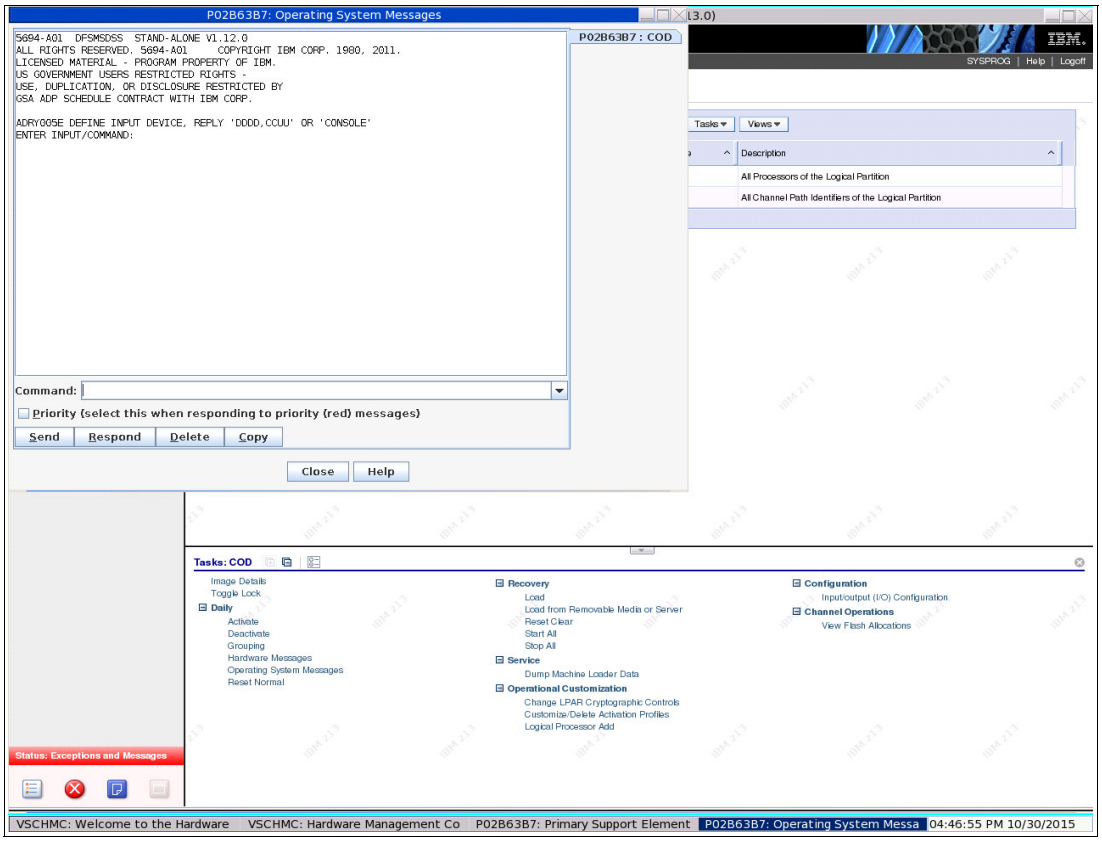

Figure 8-11 Operating System Messages window

10. We use the command field to reply to the ADRY005E message with CONSOLE and then, press Enter.
11. We use the command field to reply to the ADRY006E message with CONSOLE and then press Enter.
12. For the next input or command message, we use the command field to enter the following command:

```
RESTORE FROMDEV(DVD) TOADDR(1200) PATH('/SY1') FULL NOVERIFY
```

Note: Use this command with care because it does not verify volume labels.

The `TOADDR` value is the first address of the DASD volume from the I/O hardware configuration. Messages ADRY4306I and ADRY0500I appear on the HMC console during the restore process. When the restore process completes, the ADRY0001I message is shown.

13. We repeat this process for the DVD that is labeled SY2. For the file location, use SY2 and we enter the following command:

```
RESTORE FROMDEV(DVD) TOADDR(1201) PATH('/SY2') FULL NOVERIFY
```

14. We repeat these steps for the DVD that is labeled CAT. For the file location, use CAT and enter the following command:

```
RESTORE FROMDEV(DVD) TOADDR(1202) PATH('/CAT') FULL NOVERIFY
```

We now move on to Phase 6.

9

Phase 6: Initial program load of the COD system

This chapter describes how to initial program load (IPL) the Customized Offering Driver (COD) system to a point where z/OS system programmer can log on to Time Sharing Options/Extended (TSO/E) by using a local non-SNA 3270 console.

This chapter includes the following topics:

- 9.1, “Goals” on page 150
- 9.2, “Requirements” on page 150
- 9.3, “Related documents” on page 151
- 9.4, “Scenario” on page 151
- 9.5, “Workflow” on page 151

9.1 Goals

The Phase 6 goal is to IPL the COD z/OS driving system to a point where the z/OS system programmer can log on to TSO/E by using a local non-SNA 3270 console.

Phase 6 is required to achieve Milestone 2: Stand-alone Restore of COD and IPL. Where this milestone is positioned in the overall process is shown in Figure 9-1.

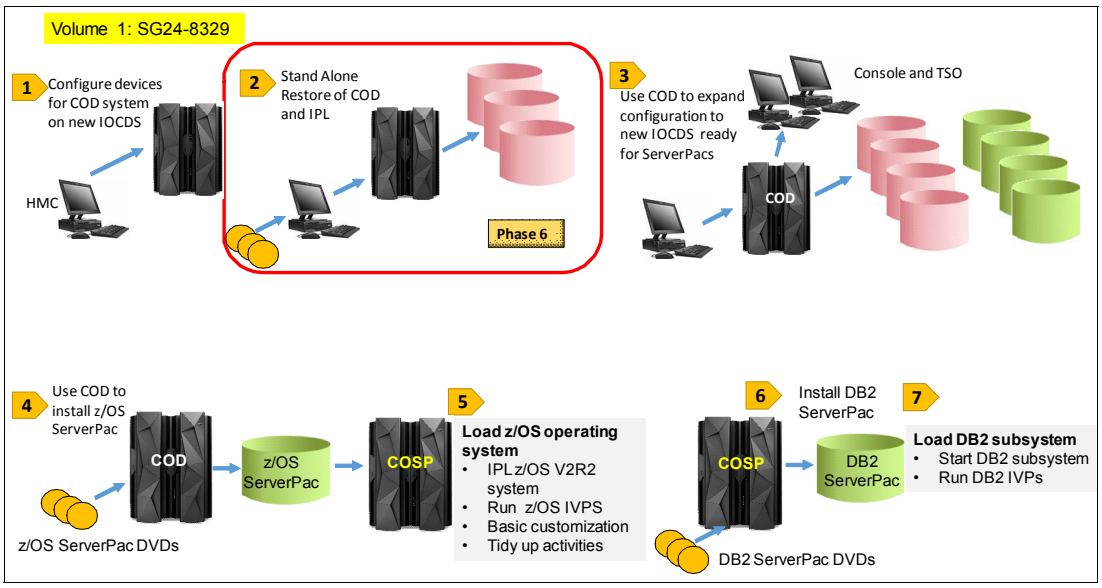

Figure 9-1 Phase 6 Milestone 2

9.2 Requirements

You often use the documents and resources that are described in this section while completing Phase 6 tasks.

9.2.1 Documentation

For more information, see the following documentation:

- Customized Offerings Driver Installation Guide for Program Number 5751-COD
- Your I/O configuration design that meets the COD requirements

9.2.2 Resources

Ensure that the following resources are available:

- z13 server that is installed by IBM Customer Engineer (CE) and is power-on reset (POR)
- COD logical partition (LPAR) activated
- Three direct data storages device (DASD) volumes on your storage subsystem with COD data restored

- User IDs and Passwords for the use of the Hardware Management Console (HMC) and SE with SYSPROG user profiles
- Two local non-SNA 3270 terminals

9.3 Related documents

The following IBM publications provide relevant information during Phase 6:

- *IBM z13 Technical Guide,* SG24-8251
- *IBM z13s Technical Guide,* SG24-8294
- *IBM z13 Configuration Setup,* SG24-8260
- *Introduction to the New Mainframe: z/OS Basics,* SG24-6366
- *Hardware Management Console Operations Guide 2.13.0*
- *z/OS MVS System Messages Vol. 6*, SA22-7636
- *z/OS MVS System Messages Vol. 7*, SA22-7637
- *z/OS MVS System Messages Vol. 8*, SA22-7638
- *z/OS MVS System Messages Vol. 9*, SA22-7639
- *z/OS MVS System Messages Vol. 10*, SA22-7640
- *z/OS MVS System Codes*, SA22-7626
- *z/OS MVS System Commands*, SA22-7627
- *z/OS JES2 Commands*, SA22-7526

9.4 Scenario

It is assumed that a new z13 server is installed and powered-on reset with IOCDS A0, which is your minimum I/O hardware configuration to meet COD requirements. In addition, it is assumed that you have COD data that is restored on three DASD volumes on your storage subsystem and two local non-SNA 3270 terminals that are defined according to your I/O configuration. COD LPAR also must be activated.

9.5 Workflow

The Phase 6 tasks that are shown in Figure 9-2 are based on our scenario.

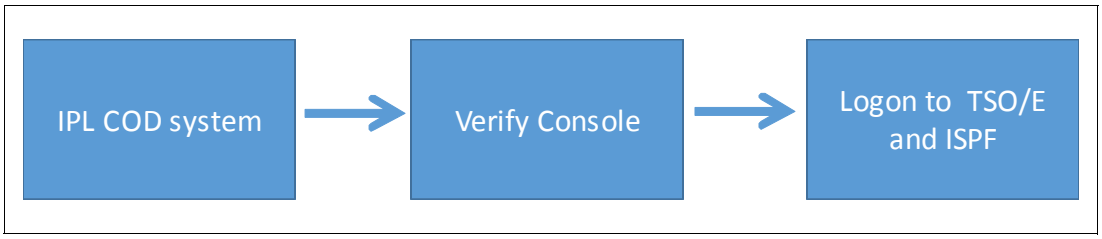

Figure 9-2 Workflow to IPL COD z/OS driving system.

After you initial program load (IPL) your COD z/OS driving system, you can expand your driving system configuration and use it for z/OS ServerPac installation.

9.5.1 IPL COD z/OS driving system

We complete the following steps to load your COD z/OS driving system:

1. We log on to the HMC by using the SYSPROG profile.
2. We select **Systems Management** → **Systems** → **P02B63B7** (our z13 server name), and then, **COD** (our COD LPAR name) from the images list that is in the center of window.
3. In the Tasks tab at the bottom of the window, we select **Recovery** → **Load**, as shown in Figure 9-3.

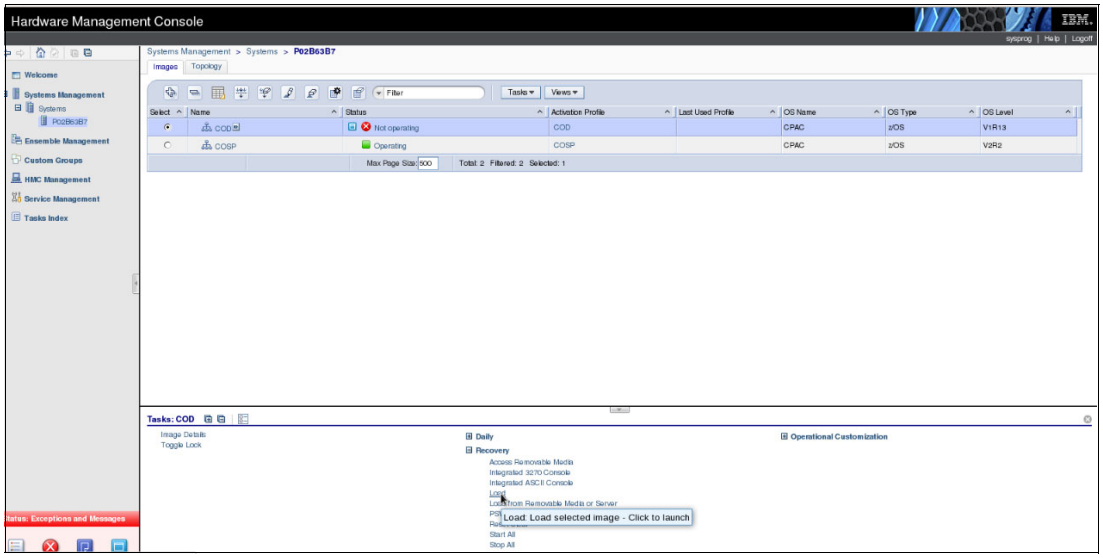

Figure 9-3 Load COD z/OS driving system

4. The Load window opens, as shown in Figure 9-4. We select **Load Type** normal and complete the Load Address field with the first SYSRES volume address (in our case, device address 1200). Then, we click **OK**.

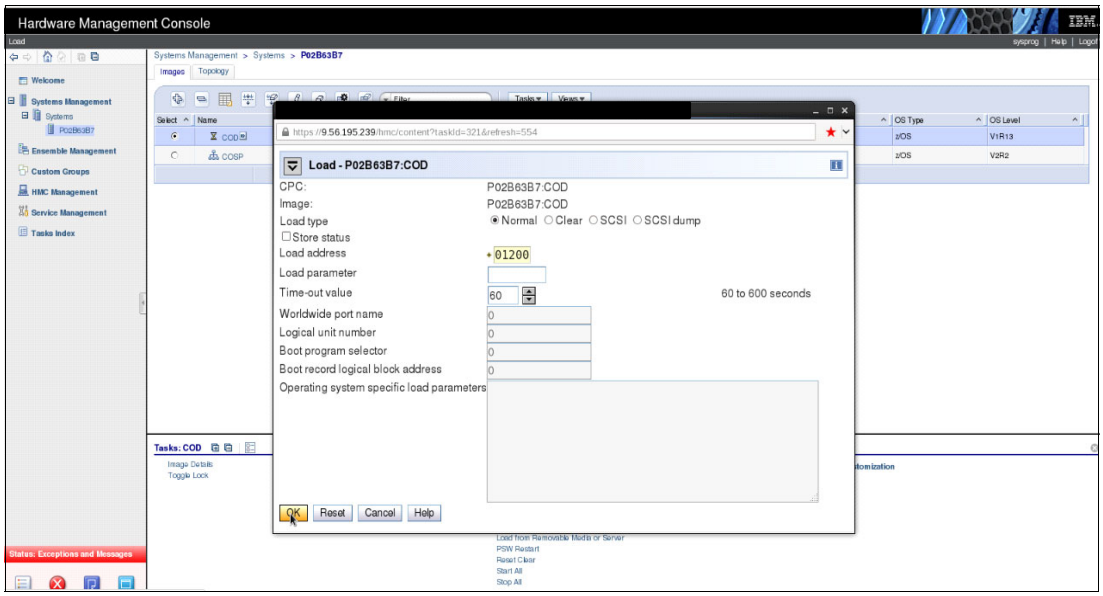

Figure 9-4 Load information

5. A confirmation window opens, as shown in Figure 9-5. We select **Yes** to continue.

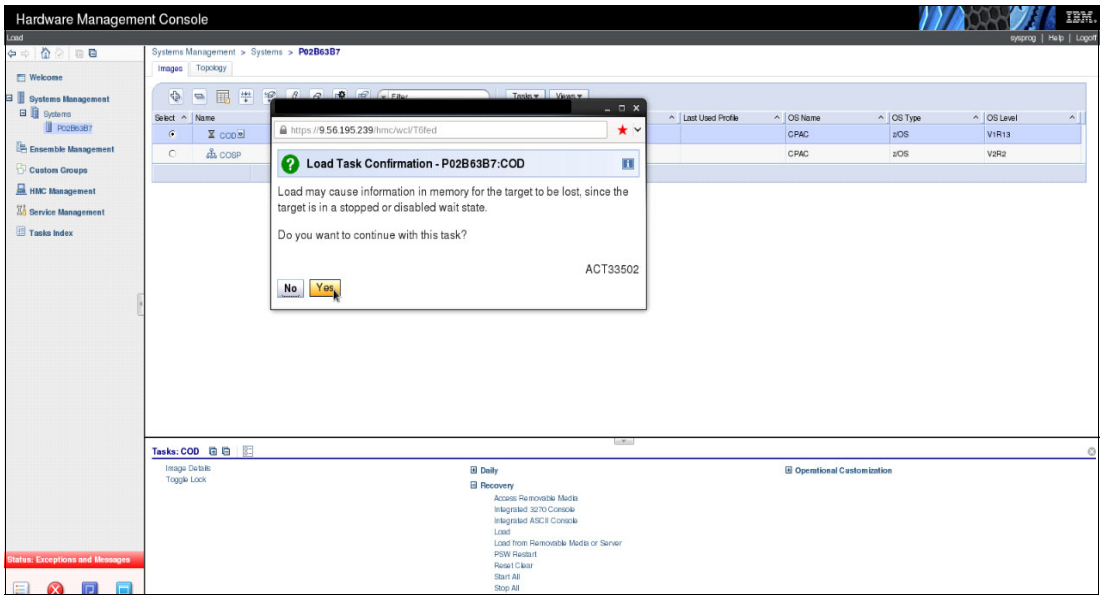

Figure 9-5 Load confirmation window

6. A disruptive task confirmation window opens, as shown in Figure 9-6. We enter the password and click **Yes** to proceed.

> **Note:** Verify that the correct LPAR is used before proceeding.

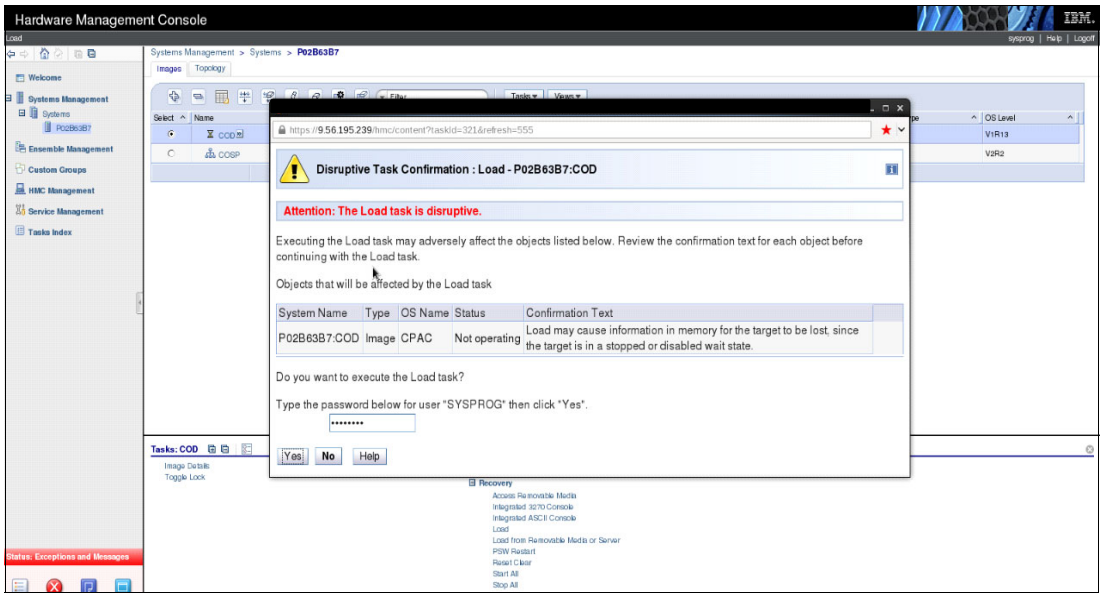

Figure 9-6 Disruptive task confirmation window

The hardware portion of the IPL starts until a message is displayed that indicates it is completed, as shown in Figure 9-7.

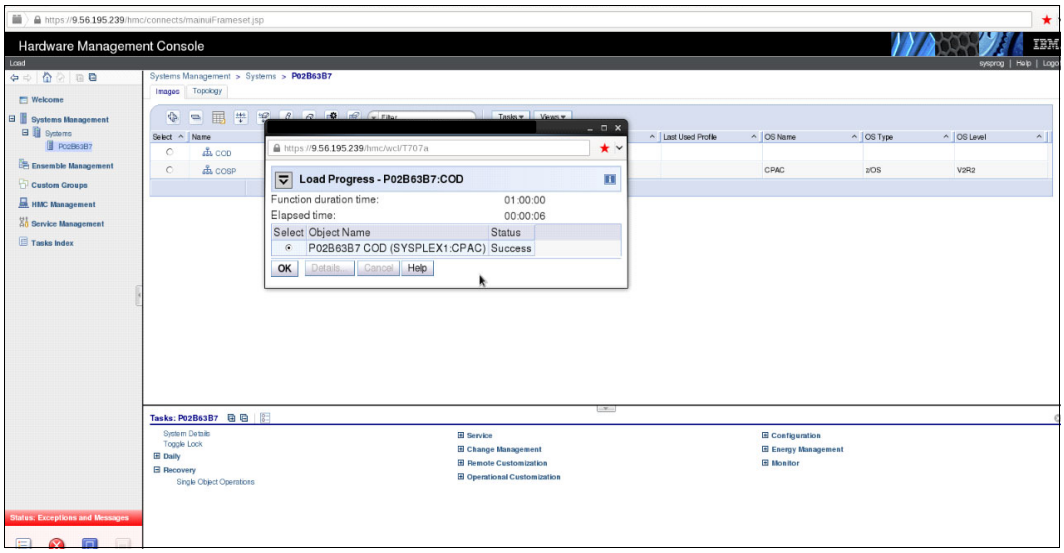

Figure 9-7 Hardware portion of IPL

7. We click **OK** to close the pop-up window and you can see the Nucleus Initialization Program (NIP) messages on the NIP console, which is our case is the local non-SNA 3270 console address 00A1, as shown in Figure 9-8.

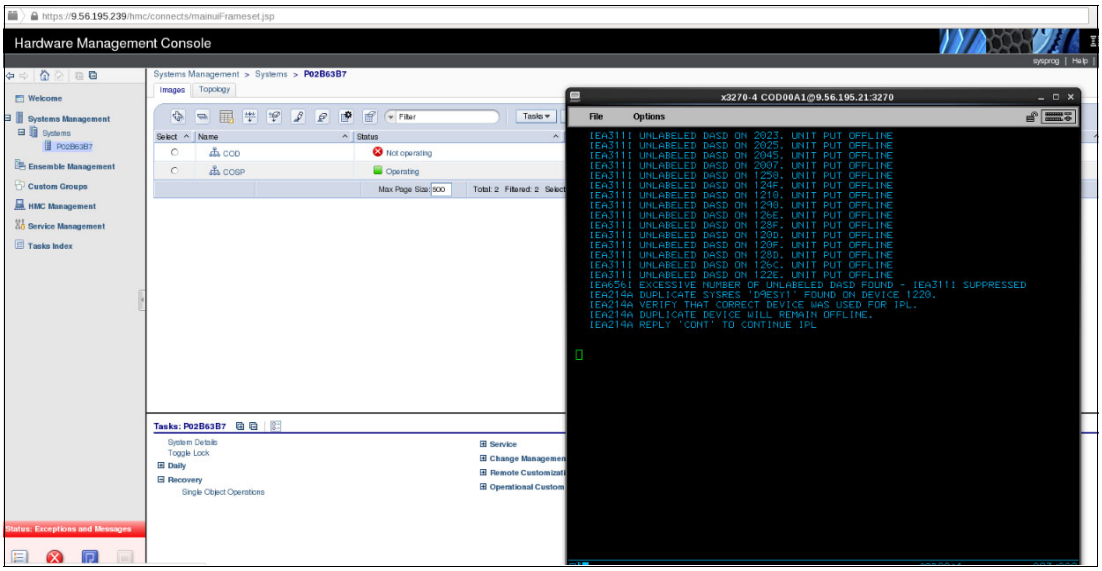

Figure 9-8 NIP console messages

As shown in Example 9-1, the messages that are shown from the system (“System:”) are followed by the command that is entered by the user (“User”).

Example 9-1 NIP console messages

```
System: IEA101A SPECIFY SYSTEM PARAMETERS FOR z/OS 01.13.00 HBB7780
User: R 00,CLPA,SYSP=00

System: IEE600I REPLY TO 00 IS;CLPA,SYSP=00
   IEA376I VIODSN PARAMETER IS 'IGNORE'. NO VIO JOURNALING
IEA598I TIME ZONE = W.00.00.00
IEA549I SYSTEM CONSOLE FUNCTIONS AVAILABLE

System: ICH509I SYSRACF DD STATEMENT NOT SPECIFIED IN MSTRJCL OR
ALLOCATION FAILURE FOR IBM RACF DATA SET.
*01 ICH502A SPECIFY NAME FOR PRIMARY RACF DATA SET
SEQUENCE 001 OR 'NONE'
User: R 01,SYS1.RACF

System: IEE600I REPLY TO 01 IS;SYS1.RACF
*02 ICH502A SPECIFY NAME FOR BACKUP
SEQUENCE 001 OR 'NONE'
RACF DATA SET
User: R 02,NONE

System: IEE600I REPLY TO 02 IS;NONE
System: ICH520I z/OS SECURITY SERVER (RACF HRF7780) IS ACTIVE.

System: *03 $HASP426 SPECIFY OPTIONS - JES2 z/OS1.13
User: R 03,COLD,NOREQ

System: IEE600I REPLY TO 03 IS;COLD,NOREQ
System: *$HASP479 UNABLE TO OBTAIN CKPT DATA SET LOCK-MEMBER=CPAC
04 $HASP454 SHOULD JES2 BYPASS THE MULTI-MEMBER INTEGRITY
LOCK? ('Y' OR 'N')
User: R 04,Y

System: IEE600I REPLY TO 04 IS;Y
           *$HASP436 CONFIRM COLD START ON
            * CKPT1 - VOLSER=Dxxxxx DSN=SYS1.HASPCKPT
            * CKPT2 - NOT IN USE
            * SPOOL - PREFIX=Dxxxx DSN=SYS1.HASPACE
            *05 $HASP441 REPLY 'Y' TO CONTINUE INITIALIZATION OR
             'N' TO TERMINATE IN RESPONSE TO MESSAGE HASP436
User: R 05,Y

System: $HASP493 JES2 COLD START IS IN PROGRESS
             $HASP423 Dxxxxx IS BEING MINI-FORMATTED
             $HASP266 JES2 CKPT1 DATA SET IS BEING FORMATTED
             $HASP267 JES2 CKPT1 DATA SET HAS BEEN SUCCESSFULLY FORMATTED
             $HASP492 JES2 COLD START HAS COMPLETED - z11 MODE

             IEF403I INIT - STARTED - TIME=19.59.50
             $HASP309 INIT 1  INACTIVE ******** C=A
BPXI004I OMVS INITIALIZATION COMPLETE
User: S VTAM
```

```
System: $HASP100 VTAM ON STCINRDR
            $HASP373 VTAM STARTED

            IST093I TSOAPPL ACTIVE
            IST020I VTAM INITIALIZATION COMPLETE FOR CSV1R13
            IST1349I COMPONENT ID IS 5695-11701-1D0
            IST1348I VTAM STARTED AS SUBAREA NODE
User: S TSO

System: IEF403I TSO - STARTED - TIME=tt.tt.tt
            IKT007I TCAS ACCEPTING LOGONS
            IKT005I TCAS IS INITIALIZED
```

8. Terminal 00A0 must be brought online because it is the local non-SNA 3270 console for our TSO/E session. We enter the following command:

   ```
   V 00A0,ONLINE
   ```

9. We must activate a console major node on IBM VTAM® that defines the console to be used during TSO/E session, which depends on your I/O configuration. For more information, see the COD documentation. In our scenario, we enter the following command:

   ```
   V NET,ACT,ID=D0A00BF
   ```

10. We log on to TSO/E by using the second local non-SNA 3270 console (as shown in Figure 9-9) and respond by entering the following command:

    ```
    LOGON DRVUSER
    ```

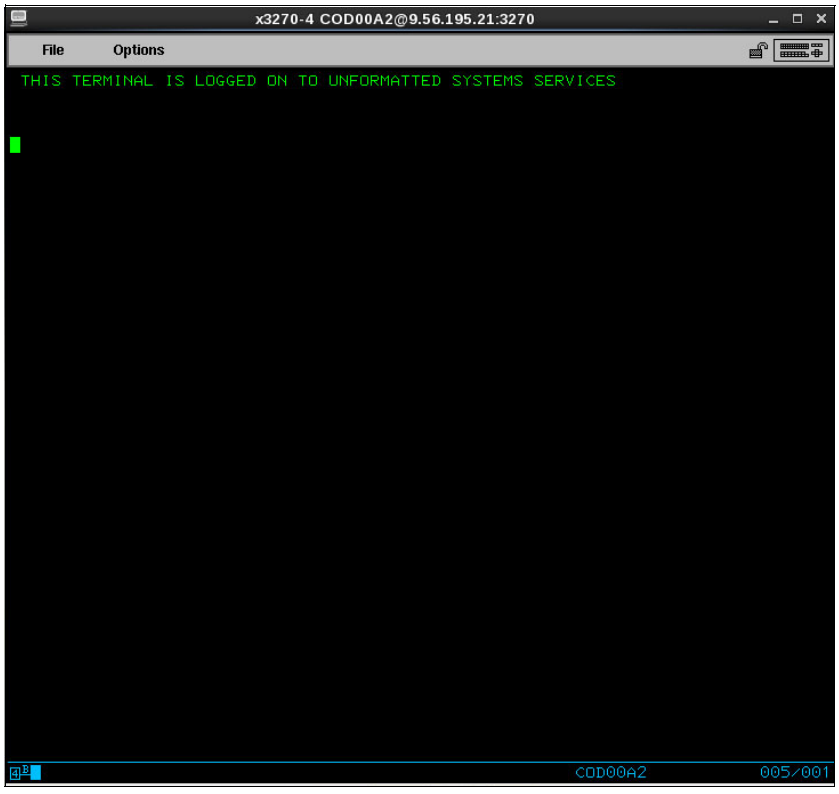

Figure 9-9 TSO/E session

11. A panel is displayed in which all of the necessary information is completed except for the password. We enter the password DRVUSER in the PASSWORD field. The following information is shown:

```
ICH70001I DRVUSER LAST ACCESS AT HH:MM:SS ON
IKJ56455I DRVUSER LOGON IN PROGRESS AT HH:MM:SS
IKJ56951I NO BROADCAST MESSAGES
```

The CUSTOMPAC MASTER APPLICATION MENU window is displayed, as shown in Figure 9-10.

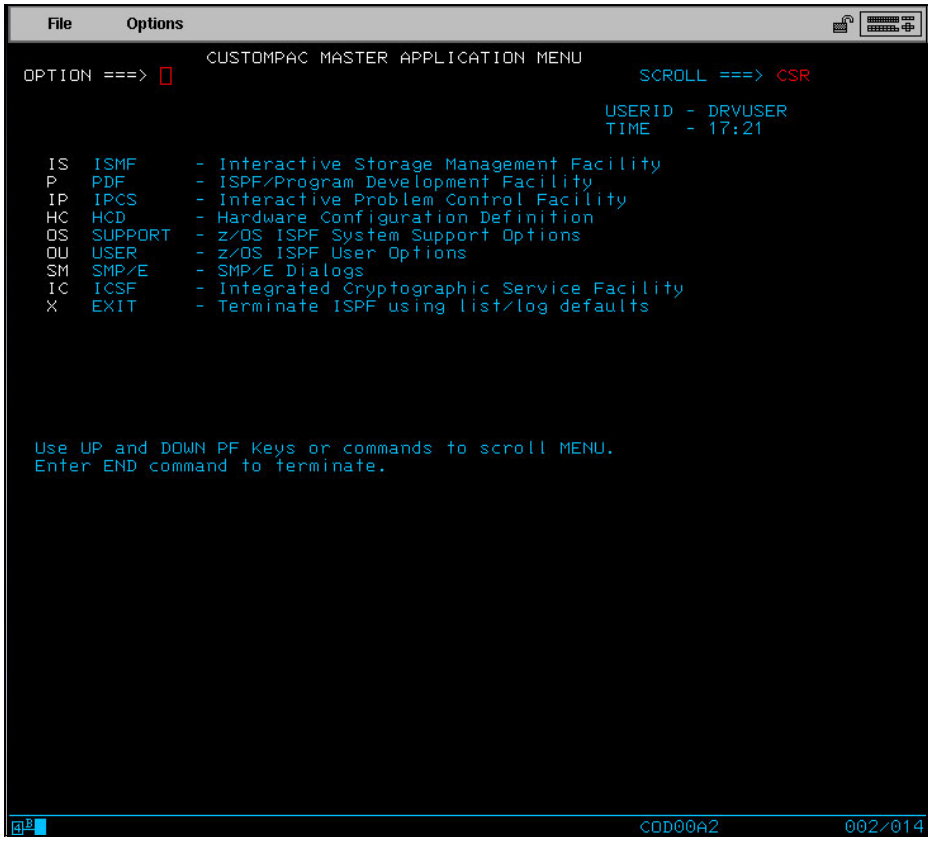

Figure 9-10 CustomPac primary option menu

Now we are logged on to TSO/E and can continue to customize the COD z/OS driving system to install ServerPac.

Shutdown

If the COD z/OS driving system must be shut down in an orderly manner, we must proceed with a controlled process.

We complete the following steps:

1. We exit ISPF from the CUSTOMPAC MASTER APPLICATION MENU by using the **X** command (exit) from the Primary Option menu. The Log and List Defaults data set panel is displayed.
2. After we leave ISPF, we log off TSO/E by entering LOGOFF at the system READY prompt.
3. TSO/E displays several messages. We select **Enter**. The system displays the following message:

```
THIS TERMINAL IS LOGGED ON TO UNFORMATTED SYSTEMS SERVICES.
```

We are now logged off and the console is disconnected.

4. We stop TSO/E by entering `P TSO` on the console.

   The system displays the following information:

   ```
   IKT006I TCAS ENDED
   IEF404I TSO - ENDED - TIME=hh.mm.ss
   $HASP395 TSO ENDED
   ```

5. We stop VTAM by entering `Z NET,QUICK`.

   The system displays the following information:

   ```
   IST097I HALT ACCEPTED
   IST133I VTAM TERMINATION IN PROGRESS
   $HASP395 VTAM ENDED
   IST102I VTAM IS NOW INACTIVE
   ```

6. When VTAM ends, LLA and VLF can be stopped by entering the following commands:

   ```
   STOP LLA
   STOP VLF
   ```

   The system displays the following information:

   ```
   COF033I VLF HAS TERMINATED BECAUSE OF AN OPERATOR STOP REQUEST
   IEF404I VLF - ENDED - TIME=hh.mm.ss
   IEF352I ADDRESS SPACE UNAVAILABLE
   IEF404I LLA - ENDED - TIME=hh.mm.ss
   IEF352I ADDRESS SPACE UNAVAILABLE
   CSV210I LIBRARY LOOKASIDE ENDED
   ```

7. When LLA and VLF end, JES2 can be stopped by entering `$PJES2,TERM`.

   The system displays the following information:

   ```
   $HASP314 INIT 1
   $HASP314 INIT 2
   $HASP314 INIT 3
   DRAINED ******** C=A
   DRAINED ******** C=AB
   DRAINED ******** C=ABC
   $HASP085 JES2 TERMINATION COMPLETE
   IEF404I JES2 - ENDED - TIME=hh.mm.ss
   ```

8. We stop z/OS by entering `Z EOD`.

   The system displays the following information:

   ```
   IEE334I HALT EOD SUCCESSFUL
   ```

We now move on to Phase 7.

10

Phase 7: Expanding the configuration

We now have a usable z/OS system, although the system is simple and restrictive.

More resources must be added to the driver system so that it can be used as an installation platform for the ServerPac.

This chapter includes the following topics:

- 10.1, “Goals” on page 160
- 10.2, “Tasks overview” on page 160
- 10.3, “Ready to fully use driver system” on page 168

10.1 Goals

Phase 7 features the following goals:

- Make more disk volumes available on DS8000 DASD subsystem
- Create and load new IOCDS for z13 CPU
- Make more local 3270 devices available on z13 and z/OS
- Make TCP/IP connectivity available via TN3270 and TCP/IP
- Add extra SPOOL and Paging space

Phase 7 is required to achieve Milestone 3: Use COD to Expand Configuration to New IOCDS ready for ServerPacs. Where this phase is positioned in the overall process is shown in Figure 10-1.

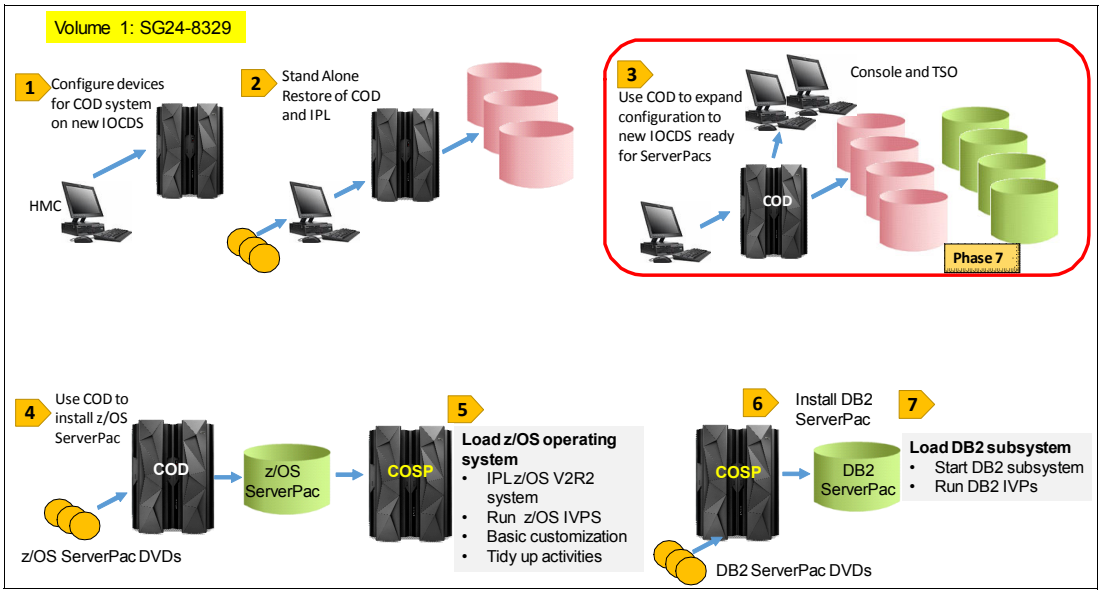

Figure 10-1 Phase 7 Milestone 3

10.2 Tasks overview

We must add some Count Key Data (CKD) volumes on a second Logical Control Unit (LCU) of the DS8800. This addition provides volumes for transferring the data from the ServerPac DVDs to z/OS. We also add various volumes of other 3390 capacity models in preparation of the final disk layout.

As we need better connectivity to allow more Time Sharing Option (TSO) users and for the ServerPac upload, we define more 3270 devices on the OSA-Express Integrated Console Controller (OSC) channel and also define an Open Systems Adapter (OSA) channel in queued direct I/O (QDIO) mode for TCP/IP.

In addition, the driver system requires more disk space for SPOOL and Paging to have sufficient capacity for the ServerPac process.

We complete these tasks through the following methods:

- Using the DS8000 GUI to define new LCU and volumes
- Creating IOCDs by using the ICPIOCP program from z/OS

- Defining more 3270 sessions in the TN3270 server by using the OSC channel advanced facilities
- Connecting another network cable
- Setting up TCP/IP, VTAM, and IOS parameters
- Applying changed parameters and starting communications procedures
- Running disk initialization, SPOOL allocation, and page data set definition jobs
- Starting the extra spool disk and adding the extra page data set

10.2.1 Defining DS8800 volumes

As with the first volume definition step, we use the DS8000 GUI; however, the command-line interface (CLI) also can be used. All of the required steps for this process are not described here. For more information, see 6.7, “Creating CKD LCUs with volumes” on page 98.

In addition to the 128 model 9 volumes and 32 model 27 volumes that were originally defined, we define a second LCU (numbered 01) with 16 model 54 volumes, and 32 each of model 3 and model 1 volumes. This new LCU also contains 64 aliases.

It is suggested to have a selection of volume sizes to physically separate data sets that do not belong on the same volume without wasting space and to allow large data sets to not have to span volumes.

The capacity of the volume models is listed in Table 10-1.

Table 10-1 3390 Model capacity

3390 Model	Cylinders
1	1113
3	3339
9	10017
27	30051/32760 *1
54	60102/65520 *1

Note: Some users prefer to specify 32760 cylinders for model 27 and 65520 for model 54. Other users prefer multiples of 1113 cylinders, which are equivalent to a DS8000 CKD extent.

10.2.2 New IOCDS

We increase the number of 3270 devices in the 00A0 range and add Parallel Access Volumes (PAV) on the disk LCU. We then add a second disk LCU (01) with 192 base and 64 PAVs that are connected to the same channels as LCU 00. This configuration corresponds with the configuration that we used for the DS8800.

An extra channel with a control unit and devices is defined to map a driver system QDIO OSA device range to a real OSA in the z13 channel subsystem. Although our z13 has many fiber OSAs, we use another copper (1000BaseT) adapter to be compatible with the network in the lab area.

Because we now have an operating system, the IOCDS can be built on z/OS and written from there, which eliminates the need to build it again by using the stand-alone IOCP.

The job that is used to create the IOCDS is included in Example 10-1.

Example 10-1 Job that is used to create IOCDS

```
//DRVUSERC JOB (0101),B,MSGCLASS=X,CLASS=A,NOTIFY=&SYSUID              00010000
//********     *                                                       00020000
//IOCDS    EXEC PGM=ICPIOCP,REGION=00M,                               00030001
//             PARM='WRTCDS=A1,LINECOUNT=55' ,CHECKCPC=NO'            00040001
//SYSPRINT DD  SYSOUT=*                                               00050000
*                                                                     00060000
  ID    MSG1='COD IOCP'                                               00070000
*                                                                     00080000
*       LPAR DEFINITION                                               00090000
*                                                                     00100000
        RESOURCE PARTITION=((CSS(0),(COD,1),(COSP,2)))                00110001
*                                                                     00120000
*       CHANNEL PATH DEFINITION                                       00130000
*                                                                     00140000
*       FICON PATH SECTION FOR DS8000 DISKS                           00150000
         CHPID PATH=(CSS(0),01),PCHID=1E0,                           X00160000
               TYPE=FC,SHARED                                         00170000
         CHPID PATH=(CSS(0),02),PCHID=1E1,                           X00180000
               TYPE=FC,SHARED                                         00190000
         CHPID PATH=(CSS(0),03),PCHID=260,                           X00200000
               TYPE=FC,SHARED                                         00210000
         CHPID PATH=(CSS(0),04),PCHID=261,                           X00220000
               TYPE=FC,SHARED                                         00230000
*       OSA ICC PATH SECTION FOR CONSOLES                             00240000
         CHPID PATH=(CSS(0),05),PCHID=1BC,                           X00250000
               TYPE=OSC,SHARED                                        00260000
*       OSA QDIO PATH SECTION FOR TCP/IP                              00270000
         CHPID PATH=(CSS(0),06),PCHID=240,                           X00280000
               TYPE=OSD,SHARED                                        00290000
*                                                                     00300000
*       CONTROL UNIT DEFINITION                                       00310000
*                                                                     00320000
*       OSA ICC CNTLUNIT SECTION                                      00330000
         CNTLUNIT CUNUMBR=0500,PATH=((CSS(0),05)),                   X00340000
               UNIT=OSC                                               00350001
*       OSA QDIO CNTLUNIT SECTION                                     00351001
         CNTLUNIT CUNUMBR=0600,PATH=((CSS(0),06)),                   X00360000
               UNIT=OSA                                               00370001
*        DS8000 CNTLUNIT SECTION                                      00380000
         CNTLUNIT CUNUMBR=1200,PATH=((CSS(0),01,02,03,04)),CUADD=0,  X00390000
               UNIT=2107,UNITADD=((00,256))                           00400000
         CNTLUNIT CUNUMBR=2000,PATH=((CSS(0),01,02,03,04)),CUADD=1,  X00410000
               UNIT=2107,UNITADD=((00,256))                           00420000
*                                                                     00430000
```

```
*       I/O DEVICE DEFINITION                                          00440000
*                                                                      00450000
*         3270-X TERMINALS                                             00460000
         IODEVICE ADDRESS=(00A0,32),CUNUMBR=(0500),MODEL=X,UNIT=3270   00470000
*         TCP/IP OSA QDIO                                              00480000
         IODEVICE ADDRESS=(0040,16),CUNUMBR=(0600),UNIT=OSA           00490000
         IODEVICE ADDRESS=(06FE,001),CUNUMBR=(0600),UNIT=OSAD         00500000
*         DASD IODEVICES                                               00501001
         IODEVICE ADDRESS=(1200,192),CUNUMBR=(1200),UNIT=3390B        00510000
         IODEVICE ADDRESS=(12C0,064),CUNUMBR=(1200),UNIT=3390A        00520000
         IODEVICE ADDRESS=(2000,192),CUNUMBR=(2000),UNIT=3390B        00530000
         IODEVICE ADDRESS=(20C0,064),CUNUMBR=(2000),UNIT=3390A        00540000
//
```

The input of the job that is shown in Example 10-1 on page 162 can be referred to as the IOCS or IOCP input deck.

Ensure that the IOCDS selected (A1 in the sample job) is available for use and not write-protected. When the job requests, reply to allow it to write the new IOCDS.

Now the system must be shut down and a power on-reset (POR) done by using the selected IOCDS. This process is similar to the process that is described in 4.5.2, “POR by using IOCDS D0” on page 35. However, we are performing a POR from IOCDS A1 in this instance.

10.2.3 Adding 3270 sessions

Because the OSC channel is now aware of many more 3270 devices, sessions for more terminals can be added. We added only one until now for TSO on the driver system.

After obtaining an available IPV4 address in the lab LAN, we edit the sample TCP/IP profile in TCPIP.SEZAINST(PROFILE). We uncomment and modify the INTERFACE statement for OSAQDIO24, uncomment the start statement for it, and define routing options for it.

In addition, a Transport Resource LIST Element (TRLE) member is created in SYS1.VTAMLST called TRL0040. The PORTNAME in this member must match the PORTNAME in the profile. The devices that are specified here must have Missing Interrupt Handler (MIH) time outs disabled in IECIOS00 member of SYS1.PARMLIB.

To automate activation, the new TRL0040 member is added to the SYS1.VTAMLST configuration member (ATCCON00), as is the local console member (D0A00BF). The automatic IPL time commands in SYS1.PARMLIB member COMMND00 are also changed to include a start for VTAM, TCP/IP, and TN3270.

TRLE

The new TRL0040 member of SYS1.VTAMLST is shown in Figure 10-2.

```
TRL0040 VBUILD  TYPE=TRL
TRL004A TRLE  LNCTL=MPC,                                              X
               READ=(0040),                                           X
               WRITE=(0041),                                          X
               DATAPATH=(0042),                                       X
               PORTNAME=OSAQDIO2,                                     X
               MPCLEVEL=QDIO
```

Figure 10-2 VTAM TRLE

MIH

The entry that was added to the IECIOS00 member of SYS1.PARMLIB is shown in Figure 10-3.

```
MIH DEVICE=(0040-0042),TIME=00:00
```

Figure 10-3 IOS parameters

ATCCON00

The modifications that were made to the ATCCON00 member of SYS1.VTAMLST are shown in Figure 10-4.

```
TSOAPPL,TCPAPPL,TRL0040,D0A00BF
/* LIB: SYS1.VTAMLST(ATCCON00)    */
```

Figure 10-4 VTAM configuration

TCP/IP PROFILE

An excerpt from the modified PROFILE member of TCPIP.SEZAINST is shown in Figure 10-5.

```
.....................SNIP.......................
INTERFACE OSAQDIO24                 ; IPv4 OSA-Express QDIO ethernet
     DEFINE IPAQENET
     PORTNAME OSAQDIO2
     INBPERF DYNAMIC
     VMAC
;    SOURCEVIPAINT VLINK1
     IPADDR 9.56.195.20/24
..................SNIP.........................

ROUTE 9.56.195.0  255.255.255.0 =         OSAQDIO24    MTU 2000
ROUTE DEFAULT                 9.56.195.1   OSAQDIO24   MTU DEFAULTSIZE
..................SNIP.........................
START OSAQDIO24
```

Figure 10-5 TCP/IP profile

Activating changes

The TRLE is activated dynamically by varying the OSA devices online (by using the **V 0040-0042,ONLINE** command) and then issuing the **V NET,ACT,ID=TRL0040** command.

Input/output Supervisor (IOS) parameters are updated by issuing the following command:

```
SETIOS MIH,DEV=(0040,0041,0042),TIME=00:00
```

TCP/IP and TN3270 are started by using the **S TCPIP** and **S TN3270** commands in sequence.

10.2.4 Ready to communicate

Our configuration is shown in Figure 10-6.

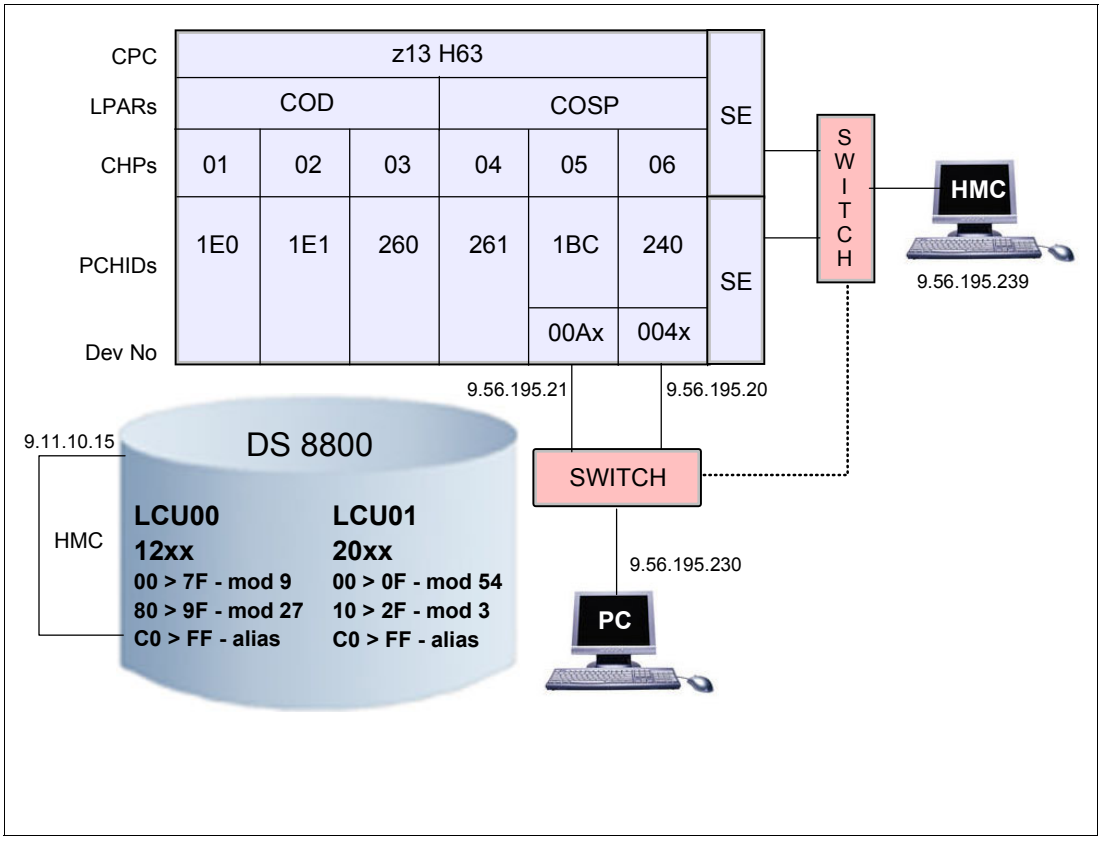

Figure 10-6 Expanded configuration

10.2.5 Adding system volumes

As shipped, the driver system features limited spool and paging space. We initialize two more volumes (D9ESY3 and D9EPAG) to alleviate this problem.

Two disk units are initialized in offline status by first issuing the **V 1203-1204 OFFLINE** command and then submitting the JCL, as shown in Figure 10-7.

```
//DRVUSERI JOB (0000),INIT,CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
//INITDISK EXEC PGM=ICKDSF,PARM=NOREPLYU,REGION=100M
//SYSPRINT DD SYSOUT=*
   INIT UNIT(1203) NOVALIDATE VERIFY(*NONE*) OWNER(DRIVER) VOLID(D9ESY3) -
   VTOC(3,0,90) INDEX(0,1,44)
   INIT UNIT(1204) NOVALIDATE VERIFY(*NONE*) OWNER(DRIVER) VOLID(D9EPAG) -
   VTOC(3,0,90) INDEX(0,1,44)
//
```

Figure 10-7 Initialize volumes D9ESYS3 and D9EPAG

After the drives are back online (by issuing the **V 1203-1204,ONLINE** command), the disks are ready to be used.

On D9ESY3, we define a large spool data set SYS1.HASPACE by submitting the job that is shown in Figure 10-8 and adding it by using the **$SSPL** command.

```
//DRVUSERS JOB (0000),SPOOL,CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
//ALLOCSPL EXEC PGM=IEFBR14
//SYSUT1 DD DSN=SYS1.HASPPACE,DISP=(,KEEP),UNIT=3390,VOL=SER=D9ESY3,
//          SPACE=(CYL,(3000),,CONTIG),DSNTYPE=LARGE,BLKSIZE=3992,RECFM=U,
//          LRECL=3992,DSORG=PS
//
```

Figure 10-8 Creating another spool data set

On D9EPAG, we define a page data set PAGE.CPAC.LOCAL3 and use the PAGEADD command to activate it. The job that is shown in Figure 10-9 is used.

```
//DRVUSERP JOB (0000),PAGE,CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
//DEFPGSPC EXEC PGM=IDCAMS,REGION=100M
//SYSPRINT DD SYSOUT=*
//SYSUT1 DD DISP=OLD,UNIT=3390,VOL=SER=D9EPAG
   DEFINE PAGESPACE (FILE(SYSUT1) NAME(PAGE.CPAC.LOCAL3) CYLINDERS(3000) -
         VOLUME(D9EPAG)
//
```

Figure 10-9 Creating pagespace

To make these new data sets available, we run the following commands:

```
PA PAGE=PAGE.CPAC.LOCAL3
$SSPL (D9ESY3)
```

We also update SYS1.PARMLIB member IEASYS00 to permanently add the extra page data set, taking care to maintain the syntax of the commas and parentheses, as shown in Figure 10-10.

```
PAGE=(PAGE.CPAC.COMMON,
      PAGE.CPAC.LOCAL1,
      PAGE.CPAC.LOCAL2,
      PAGE.CPAC.LOCAL3,L),
```

Figure 10-10 Expanded page configuration in IEASYS00

10.3 Ready to fully use driver system

A new Personal Communications session is set up to connect through TN3270. The standard Telnet port (23 Port) number to connect to is used.

We are now ready to use the driver system as the vehicle for installing the ServerPac.

Note: Although TN3270 and console Personal Communications sessions work fine, the OSA ICC sometimes issues a write control character for local non-SNA sessions that causes a printer pop-up window to open.

To avoid this issue, add the following lines to the Personal Communications session profile:

```
(<sessionname>.WS)

[LT]

IgnoreWCCStartPrint=Y
```

We now move on to Phase 8.

11

Phase 8: ServerPac installation preparation

This chapter describes the preparation steps that are used to install the z/OS V2R2 ServerPac with the z/OS Customized Offering Driver (COD) system.

Before your ServerPac is installed, verify that prerequisites for the COD environment are in place. Then, the CustomPac Installation Dialog can be restored from the ServerPac installation media.

Finally, the Installation Dialog is used to create the jobs for receiving and installing the order that is described in Chapter 12, “Phase 9: ServerPac Build of z/OS V2R2” on page 181.

This chapter includes the following topics:

- 11.1, “Goals” on page 170
- 11.2, “Requirements” on page 170
- 11.3, “Related documents” on page 171
- 11.4, “Ordering and receiving the z/OS V2R2 ServerPac” on page 171
- 11.5, “Planning the ServerPac installation layout” on page 172
- 11.6, “Checking the z/OS COD driver system” on page 173
- 11.7, “Preparing the HFS for ServerPac storage” on page 174
- 11.8, “Transferring DVD content to z/OS host” on page 175
- 11.9, “Running LOADRIM JCL to restore the CustomPac installation dialog” on page 177
- 11.10, “Starting the CustomPac installation dialog” on page 178

11.1 Goals

Phase 8 features the following goals:

- Order and receive the z/OS V2R2 ServerPac.
- Plan the ServerPac installation option and layout.
- Prepare the COD installation environment.
- Prepare the installation media and upload into the COD driver.
- Restore the CustomPac Installation Dialog for the next phase.

Phase 8 is required to achieve milestone 4: Use COD to install z/OS ServerPac. Where this phase is positioned in the overall process is shown in Figure 11-1.

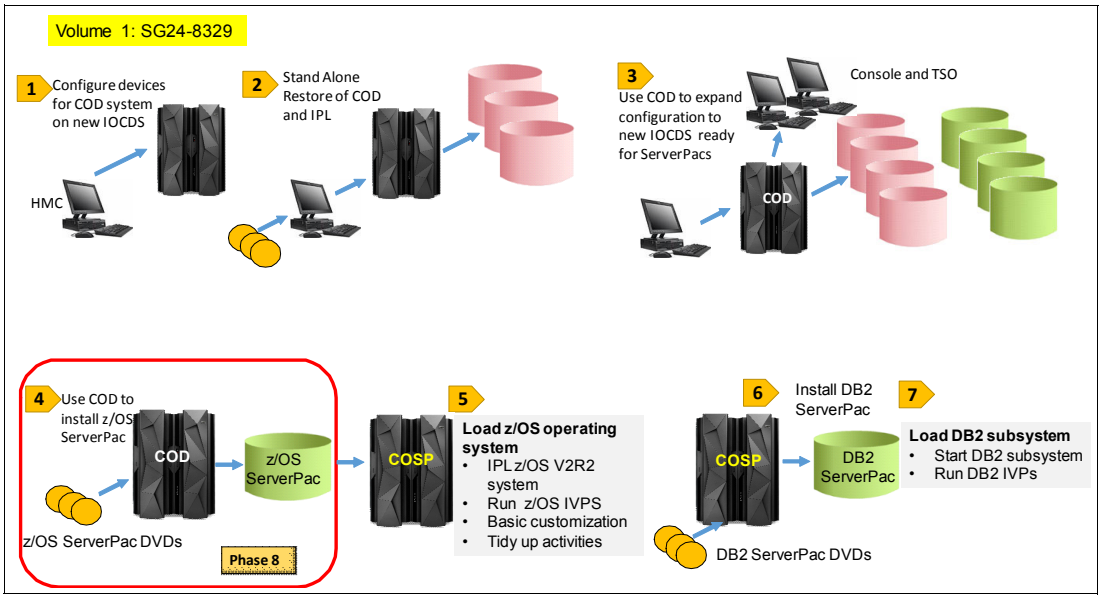

Figure 11-1 Phase 8 Milestone 4

11.2 Requirements

The z/OS ServerPac is one software package that includes the installed z/OS products and operational data sets that make up a test target system that is ready to IPL when it is loaded to DASD volume.

You can load all SMP/E target and distribution library data sets directly from installation media and bypass the SMP/E receive, apply, and accept steps. ServerPac provides two kinds of installation options: Full System Replacement or Software Upgrade to the environment. In this chapter, we choose Full System Replacement to install one new z/OS V2R2 system as the target system by using the CusomPac Installation Dialog panels.

The hardware and software requirements are described next.

11.2.1 Driving system software requirements

The driving system includes the following requirements:

- Operating system is up
- TSO/E session is available

- User ID is authorized
- OMVS address space is active
- SMS is active, at least with one null configuration
- Proper level for service
- zFS configured properly (optional)

11.2.2 Driving system hardware requirements

The driving system includes the following hardware requirements:

- A TSO/E console
- Sufficient logical partition (LPAR) real storage
- A DVD reader for a 4.7 GB (single-sided, single-layered) DVD
- A workstation that is network-attached to your z/OS host system
- Enough workstation hard disk drive space to download the order if you use store-and-forward option
- IBM z Systems servers to support z/OS V1R13 and later release
- Minimum processor storage requirement of 256 MB for initial loading
- Identify I/O device and DASD space requirements

11.3 Related documents

The following IBM publications provide relevant information during this phase:

- ServerPac: Installing Your Order Order Number: OS2xxxx
- *ServerPac: Using the Installation Dialog*, SA23-2278
- *z/OS Introduction and Release Guide*, GA32-0997
- *z/OS V2R2 Planning for Installation*, GA32-0889

For more information, see this website:

`http://www.ibm.com/systems/z/os/zos/installation`

The first document in this list is generated by IBM to match your order and is unique to your order.

11.4 Ordering and receiving the z/OS V2R2 ServerPac

ServerPac orders can be ordered and delivered electronically or physically on tape media or DVDs. Each ServerPac order includes publications, information about the ServerPac data sets that are shipped with your order, and service information.

Contact your IBM service representative to order your z/OS ServerPac.

11.5 Planning the ServerPac installation layout

To complete the installation, you must understand the layout and plan for the target system, including the following components:

- Volume labels and its usage purpose
- Data set names and volume locations
- Master and user catalogs that are used by target system

11.5.1 Volumes

The volume layout that is used is listed in Table 11-1.

Table 11-1 Volume layout for COD and ServerPac systems

Device Address	Volume Label	Access Systems	Usage
1200	D9ESY1	COD, ServerPac	COD Driver SYSRES1
1201	D9ESY2	COD, ServerPac	COD Driver SYSRES2
1202	D9ECAT	COD, ServerPac	COD Driver catalog
1203	D9ESY3	COD, ServerPac	COD Driver JES2 Spool
1204	D9EPAG	COD, ServerPac	COD Driver Paging
1280	M0SR21	COD, ServerPac	ServerPac SYSRES
1281	M0SD21	COD, ServerPac	ServerPac Distribution Library
1282	M0SCT1	COD, ServerPac	ServerPac catalog, Customized data sets
1283	LOGR01	COD, ServerPac	ServerPac Logsteam data sets, SMS-managed
1284	M0SUX1	COD, ServerPac	ServerPac OMVS data sets
2000	M0SIN1	COD, ServerPac	ServerPac installation HFS file system space
2001	M0SIN2	COD, ServerPac	ServerPac CustomPac Dialog, SMP/E CSI
2020	IODF00	ALL Systems	IODF Volume

11.5.2 Catalog

Catalog the following data sets in a user catalog. We suggest that CustomPac.Qualifier be CPAC.MASTER to distinguish the master dialogs from the order dialogs. The high-level qualifier (HLQ) is up to you. A good practice is to use a separate user catalog that is defined in your driving system to catalog the `CPAC.MASTER` into it for later use by the target system. When the target system is initially loaded, you must share and connect that user catalog and continue the postinstallation process:

- CustomPac.Qualifier.SCPPLOADL Load Modules
- CustomPac.Qualifier.SCPPCENU: Clist/Rexx execs
- CustomPac.Qualifier.SCPPEENUL CustomPac messages (VSAM)
- CustomPac.Qualifier.SCPPHENUL CustomPac dialog help (VSAM)
- CustomPac.Qualifier.SCPPMENU: Messages
- CustomPac.Qualifier.SCPPPENU: Panels
- CustomPac.Qualifier.SCPPSENU: Skeletons
- CustomPac.Qualifier.SCPPTENU: Tables
- CustomPac.Qualifier.SCPPVENUL Order inventory (VSAM)

11.6 Checking the z/OS COD driver system

The following checks must be completed:

- SMS subsystem
- zFS subsystem

These checks are described next.

11.6.1 SMS subsystem

Whether you plan to use SMS to manage the data sets in your order, you must start SMS on the driving system in at least a null configuration before you run the installation jobs that are described in this book.

To accommodate the UNIX file system data sets in your order, you also must have SMS active on the target system in at least a null configuration.

11.6.2 zFS subsystem

ServerPac now provides zFS as the default for all file system data sets. ServerPac jobs allocate and unload zFS file systems unless the customer switches it to hierarchical file system (HFS) via the Dialog. Large file systems (size greater than 3.6 GB) are shipped as an HFS.

Starting z/OS V2R2, COD file systems are shipped as zFS in place of HFS. When you IPL COD, zFS address space starts and COD file systems are mounted as zFS. You can allocate and mount file system data sets that are shipped with your order as zFS or HFS. If you intend to allocate data sets as zFS, see Chapter 1.11 Preparing the System for zFS File System of the *Install Your Order* document to determine whether you must take more actions to prepare your driving system.

In our example, we use HFS as the ServerPac file system.

11.7 Preparing the HFS for ServerPac storage

We complete the following steps to initialize the HFS:

1. We initialize the DASD with the specified volume labels that are described in 11.5.1, “Volumes” on page 172, as shown in Figure 11-2.

```
//INITVOL2 JOB (0000),INIT,CLASS=A,MSGCLASS=X,REGION=64M,NOTIFY=&SYSUID
//INITDISK EXEC PGM=ICKDSF,PARM=NOREPLYU
//SYSPRINT DD SYSOUT=*
 INIT -
    UNITADDRESS(2000)  -
    DEVICETYPE(3390)  -
    PURGE  -
    MAP    -
    VERIFY(*NONE*)  -
    NOVALIDATE  -
    VOLID(MOSIN1)  -
    VTOC(0,1,1349)  -
    INDEX(90,0,270)

 INIT -
    UNITADDRESS(2001)  -
    DEVICETYPE(3390)  -
    PURGE  -
    MAP    -
    VERIFY(*NONE*)  -
    NOVALIDATE  -
    VOLID(MOSIN2)  -
    VTOC(0,1,1349)  -
    INDEX(90,0,270)
```

Figure 11-2 Initializing volume by using ICKDSF

We must determine the appropriate VTOC and index according to the size of the DASD. For more information about calculating the correct size, see this website:

https://ibm.biz/BdsBLj

2. We go to OMVS and create one directory as the HFS mount point, as shown in Example 11-1.

Example 11-1 Creating directory for HFS mount point

```
TSO OMVS
cd /
mkdir serverpac
```

Then, a HFS data set can be defined and mounted to the mount point, as shown in Figure 11-3.

```
//HFSALLOC JOB CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID,
//    REGION=0M
//ALLOCHFS EXEC PGM=IEFBR14
//HFSDD DD DSN=OMVS.ZOSV22.CPAC.OS220149.HFS,
//           UNIT=SYSALLDA,VOL=SER=MOSIN1,
//           SPACE=(CYL,(20000,1000,5)),
//           DSNTYPE=HFS,
//           DISP=(NEW,CATLG)
//STEP002 EXEC PGM=IKJEFT1B
//SYSTSPRT DD   SYSOUT=*
//SYSTSIN  DD   *
  PROF MSGID WTPMSG
     MOUNT FILESYSTEM('OMVS.ZOSV22.CPAC.OS220149.HFS') +
     MOUNTPOINT('/serverpac/') +
     TYPE(HFS) MODE(RDWR)  NOSECURITY NOAUTOMOVE
```

Figure 11-3 Defining and mounting HFS

We must also ensure that there is enough space to accommodate the order package. IBM recommends that there is available space in the z/OS file system that is equal to two times the size of the order's package. To convert to 3390 cylinders, multiply the number of MB by 1.4 and then multiply by 2. The size of our order is 8646 MB, one HFS is prepared for approximately 20000 cylinders in one 3390 Model 54 volume.

11.8 Transferring DVD content to z/OS host

The z/OS ServerPac order is provided in SMP/E GIMZIP format. The SMP/E utility GIMUNZIP must be used to process your order. You must perform the tasks that are described in this section to ensure that your host environment is set up to accommodate the package transfer.

Complete the steps that are described in the `README.pdf`, which is in the first DVD to transfer the contents to your z/OS host. Then, complete the following steps:

1. Copy the content from the three DVDs into one temporary directory of your workstation.

   If there are multiple DVDs, copy all the `<#order number>.content` files into the `<#order number>.content` directory on your workstation, as shown in Example 11-2.

   Example 11-2 Copying DVD content in your workstation

   ```
   c:\zOSV2R2\<#order number>.content
   c:\zOSV2R2\<#order number>.order
   ```

   As shown in Example 11-2, `<#order number>` is the order name that you ordered through z/OS ordering process and was printed on the DVD.

2. Upload the z/OS ServerPac contents into z/OS driver system.

   There are multiple options for making the package available to z/OS and the CustomPac Installation Dialog, an FTP client is the most common method that is used to transfer files.

   In this example, we use the workstation as the FTP client and z/OS driver system as the FTP server.

Before transferring files to the z/OS host, ensure that the directories that are shown in Example 11-3 are on your z/OS host system.

Example 11-3 z/OS UNIX System Services directories in your HFS file system

```
/<mountpoint>/<mvs directory>
/<mountpoint>/<mvs directory>/<#order number>.order
/<mountpoint>/<mvs directory>/<#order number>.content
```

Where:

- <mountpoint > is the directory on the z/OS host system to which the HFS is mounted
- <mvs directory> is the directory on the z/OS host system into which the order is to be transferred
- <#order number> is the ServerPac order number

In this example, we create the directories that are shown in Example 11-4 in the HFS file system.

Example 11-4 Creating directories in COD z/OS host system

```
tso omvs
cd /serverpac/
mkdir zosv2r2/
mkdir zosv2r2/OS220149.order
mkdir zosv2r2/OS220149.content
```

3. Upload the ServerPac order and content into the COD driver system by using FTP, as shown in Example 11-5.

Example 11-5 FTP upload ServerPac contents to COD z/OS host system

```
C:\> ftp <mvsaddress>
User (mvsaddress:(none)): <tsouid>
331 Send password please.
Password:
ftp> cd /mountpoint/<mvs directory>/<#order number>.order
ftp> bin
ftp> prompt off
ftp> mput <packagelocation>\<ordernumber>.order\*.*
ftp> cd /mountpoint/<mvs directory>/<#order number>.content
ftp> mput <packagelocation>\<#order number>.content\*.*
ftp> bye
```

Where:

- <mvsaddress> is the name or address of the z/OS host system.
- <tsouid> is the valid user ID that is used when logging on to the z/OS host system.
- <mountpoint> is the directory on the z/OS host system in which the HFS is mounted.
- <mvsdirectory> is the directory on the z/OS host system into which the order is transferred.
- <#order number> is the ServerPac order number.
- <packagelocation> is the directory path on the workstation hard disk drive to where the DVDs files were copied or the name of your DVD drive.

Note: You must validate that the number of files under each order directory is equal to the total number of files that are found under that directory across all the DVDs that comprise your order.

11.9 Running LOADRIM JCL to restore the CustomPac installation dialog

Upload the `LOADRIM.jcl` from your DVD into your COD driver system and customize the LOADRIM job to restore the CustomPac Installation Dialog to your named data sets.

Before the LOADRIM job is used to allocate and load the master dialog data sets, you must customize the job. Replace the JOB statement with a JOB statement that is valid for your installation and supply values for them.

Note: IBM suggests that you do not use an order number as part of CustomPac.Qualifier. Also, do not use a System Specific Alias (SSA) qualifier that you plan to use for any data sets that are included in the order.

Finally, you should not use SYS1 because you should catalog the data sets in a user catalog to assure portability between systems. For example, you can choose a CustomPac.Qualifier, such as CPAC.MASTER or IBM.INSTALL. However, you should avoid names, such as SYS1.CPAC and INSTALL.#order_number.

Each order includes order-related dialog data sets. You need another unique qualifier for each order's data sets, which must be different from the qualifier that you choose for CustomPac.Qualifier.

We changed CustomPac.Qualifier to CPAC.MASTER and volser to M0SIN2, which was initialized in the last step.

As shown in the following SET statement, we specify the path for the directory in which the CustomPac dialog and order information are stored:

```
SET PATH='/serverpac/zosv2r2/'
```

Because we uploaded the ServerPac contents from the workstation to our z/OS COD driver system, there is no need to run GIMGTPKG to retrieve the contents from another FTP server (z/OS driver as FTP client in this scenario). Then, we remove the //UNPLOAD step from LOADRIM job, before submitting it.

This JCL is submitted for running.

11.10 Starting the CustomPac installation dialog

We modify the sample member CPPCSAMP in data set CPAC.MASTER.SCPPCENU, as shown in Figure 11-4.

```
/* ERROR MODE IS SET */
/* DIALOG TERMINATE ON ERROR */
ALTLIB ACTIVATE APPLICATION (CLIST) +
DATASET('CPAC.MASTER.SCPPCENU') UNCOND
SET &ALTLIBRC = &LASTCC;
IF &ALTLIBRC NE 0 THEN +
WRITE &SYSICMD: ALTLIB(ACTIVATE) RC = &ALTLIBRC;
ELSE DO
ISPEXEC LIBDEF ISPMLIB DATASET ID('CPAC.MASTER.SCPPMENU')
ISPEXEC LIBDEF ISPPLIB DATASET ID('CPAC.MASTER.SCPPPENU')
ISPEXEC LIBDEF ISPSLIB DATASET ID('CPAC.MASTER.SCPPSENU')
ISPEXEC LIBDEF ISPTLIB DATASET ID('CPAC.MASTER.SCPPTENU')
ISPEXEC LIBDEF ISPLLIB DATASET ID('CPAC.MASTER.SCPPLOAD')
/*-------------------------------------------------------*/
/* START CPAC DIALOG */
/*-------------------------------------------------------*/
ISPEXEC SELECT CMD(%CPPCISPF CPAC.MASTER)
NEWAPPL(CPP) PASSLIB
/*-------------------------------------------------------*/
/* CLEANUP */
/*-------------------------------------------------------*/
ISPEXEC LIBDEF ISPMLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPSLIB
ISPEXEC LIBDEF ISPTLIB
ISPEXEC LIBDEF ISPLLIB
ALTLIB DEACTIVATE APPLICATION(CLIST)
SET &ALTLIBRC = &LASTCC;
IF &ALTLIBRC NE 0 THEN +
WRITE &SYSICMD: ALTLIB(DEACTIVATE) RC = &ALTLIBRC;
END
EXIT CODE(0)
```

Figure 11-4 Updating CLIST to start the CustomPac Installation Dialog

Change CustomPac.Qualifier to CPAC.MASTER. Then, run the CLIST under TSO/E Option 6, as shown in the following example:

```
exec 'CPAC.MASTER.SCPPCENU(CPPCSAMP)'
```

After you see the information that is shown in the CustomPac Order Management Panel (as shown in Figure 11-5), you can receive and install your order.

```
CustomPac -------------------- IBM Corporation  -------------------- 27.10.18
 OPTION ==>

                    CustomPac Order Management Menu


     R   RECEIVE      - Receive an Order

     I   INSTALL      - Install an Order

         Order Number ==> OS220149 (Leave blank to list uninstalled orders)

     D   DISPLAY      - Select Orders to Display

     Master dialog data set qualifiers: CPAC.MASTER

               This dialog supports secure Internet delivery.

         ********************************************************
         * 5751-CS4, 5751-CS5, 5751-CS6, 5751-CS7 and 5751-CS9  *
         * Copyright IBM Corp.  1988, 2015                      *
         ********************************************************
```

Figure 11-5 CustomPac Order Management Menu

Phase 8 is now completed.

12

Phase 9: ServerPac Build of z/OS V2R2

This chapter describes the process that is used to install the z/OS V2R2 ServerPac order through CustomPac Installation Dialog by using the Customized Offering Driver (COD) system.

In the installation process, we receive and install the order by providing variables, defining volume layout, and modifying the data sets destination and attributes. Then, we create a serial of job stream for later submission.

This chapter includes the following topics:

- 12.1, “Goals” on page 182
- 12.2, “Requirements” on page 183
- 12.3, “Related documents” on page 184
- 12.4, “Planning the ServerPac installation configuration” on page 184
- 12.5, “Receiving the z/OS V2R2 order” on page 185
- 12.6, “Installing the z/OS V2R2 order” on page 186
- 12.7, “Submitting installation jobs” on page 200

12.1 Goals

Phase 9 features the following goals:

- Receive a new ServerPac order
- Create the work configuration
- Tailor the work configuration for the target system
- Generate the installation job stream
- Submit the installation job stream and check return code
- Save the work configuration after the order is installed

Phase 9 is required to achieve milestone 4: Installing the z/OS ServerPac. Where this milestone is positioned in the overall process is shown in Figure 12-1.

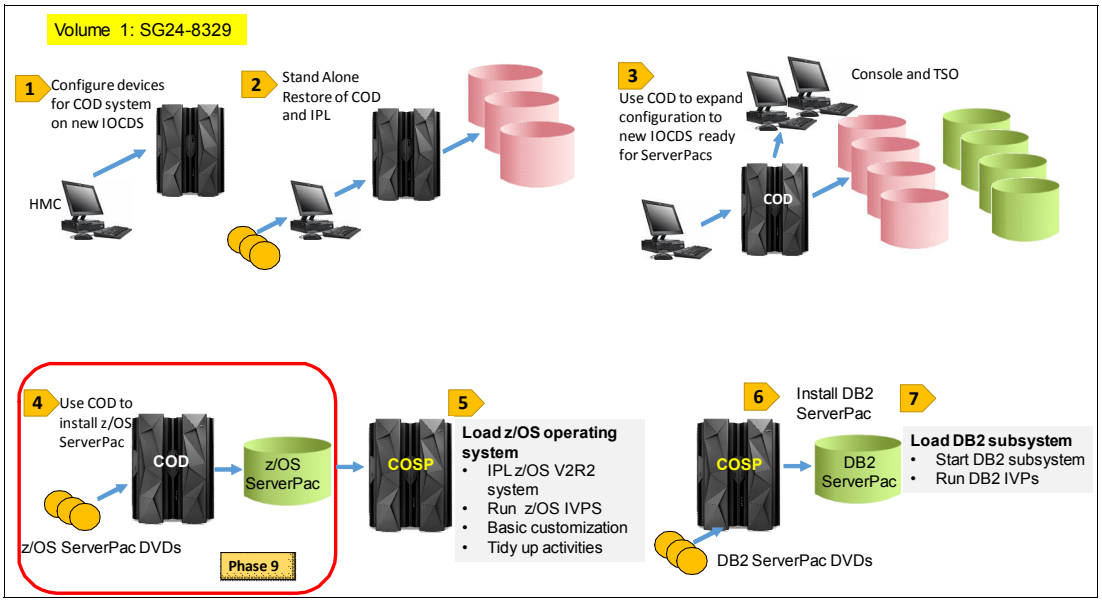

Figure 12-1 Phase 9 Milestone 4

As described in Chapter 11, “Phase 8: ServerPac installation preparation” on page 169, we ran the LOADRIM job to unload the CustomPac Installation Dialog in the driving system. The Dialog is used to tailor the ServerPac configuration to match your own system environment.

Then, the Dialog uses the tailored configuration to generate a customized installation job stream that creates the target system from the ServerPac order. The installation process allocates the data sets on the volumes from driving system and restores the ServerPac contents from the temporary UNIX file systems into those data sets, as shown in Figure 12-2 on page 183.

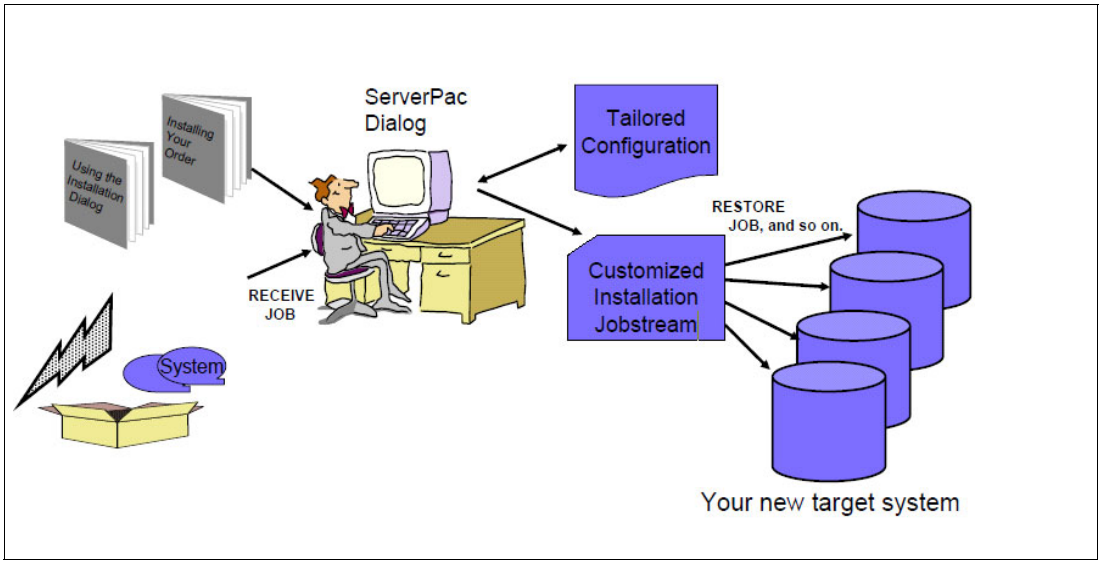

Figure 12-2 ServerPac installation

Note: You can use the CustomPac Installation Dialog as the main master dialog to install different ServerPac orders, such as z/OS, DB2, or IBM CICS® products. We suggest that you separate the master CustomPac Installation dialog data sets and the order-related data sets by using a different HLQ and middle qualifier.

The important terms that are used in this chapter are listed in Table 12-1.

Table 12-1 Important terms

Term	Meaning
Driver/Driving system	The system that you use to install the order; that is, the COD.
Target System	The system that you are creating.
Ready to run	The product requires no extra installation tasks.

12.2 Requirements

We completed the tasks that are described in Chapter 11, “Phase 8: ServerPac installation preparation” on page 169 to upload the ServerPac content and load the master CustomPac Installation Dialog. In this chapter, we continue the installation of the z/OS V2R2 ServerPac order.

12.2.1 COD System Readiness checklist

To continue the installation, our driving system must meet the following prerequisites:

- Customized Offering driving system is initially loaded and active.
- Personal Communication software is installed in the workstation.
- UNIX file system in the driving system is active. Check the status by issuing the **`D OMVS,F`** command.
- RACF profiles are defined for IBMUSER in driving system to access resources.
- SMS configuration is running with null configuration is acceptable. Check the SMS status by issuing the **`D SMS`** command.
- Volumes are reserved for target system and can be accessed from driving system. Check the state by issuing the **`D U,,,xxxx,nn`** command, where *xxxx* is the starting I/O device number for target system volume, and *nn* is the number of volumes that you want to check.
- CustomPac Installation Dialog is restored.

12.3 Related documents

For more information, see the following IBM publications:

- *ServerPac: Installing Your Order Number: OS2xxxx*
- *ServerPac: Using the Installation Dialog*, SA23-2278-02
- *z/OS V2R2 Planning for Installation*, GA32-08890-05
- CustomPac Installation Dialog Reference Manual

ServerPac: Installing Your Order Number: OS2xxxx is produced by IBM to match your order and is unique.

The *ServerPac FAQ* document contains frequently asked questions about ServerPac and is available at this website:

`https://ibm.biz/BdsBLu`

12.4 Planning the ServerPac installation configuration

By using the CustomPac installation dialog, the ServerPac order configuration can be tailored to the environment with the following inputs:

- Global Variables: HFS/zFS information, and so on
- Volumes: Names, device type, and number
- Data sets: Names, placement on volume, and space
- Catalogs: Names and System Specific Aliases (SSAs)
- Aliases: Associate to catalog
- Zones: SMP/E CSI and zone names

To keep the process simple, we adopt a policy of taking the default ServerPac variable settings where we can and make as few modifications as possible.

Next, we describe the variables and settings that you must set.

12.5 Receiving the z/OS V2R2 order

Start the CustomPac Installation Dialog, choose the **R RECEIVE** option to supply the information that is necessary to generate the RECEIVE job that obtains your order.

We select option **F** to use the file system to receive the order and **OS220149** for our severpac order name, as shown in Figure 12-3.

```
CustomPac --------------------- Receive an Order ----------------------------
COMMAND ==>

  Receive the order from   ==> F       F - File system
                                       S - Server
                                       T - Tape

  Order Number             ==> OS220149

  ------------ Order Dialog Data Set Allocation Information -----------------

  Data Set Qualifiers      ==> CPAC.ZOSV2R2                  (Must be unique)

  Volume Serial            ==> MOSIN2   (Blank for SMS-managed data sets)
    - or -
  STORCLAS                 ==>          (Blank for non-SMS-managed data sets)
  Specify a data class for SMS or non-SMS managed data sets (optional).
  DATACLAS                 ==>
  Specify a management class for only SMS managed data sets (optional).
  MGMTCLAS                 ==>
  Dialog CLIST Record Format ==> FB       (FB or VB)

  Target Directory ==> /serverpac/zosv2r2/
```

Figure 12-3 Receiving an order

We also choose CPAC.ZOSV2R2 as our own data set qualifiers for this specific z/OS V2R2 order, which must be unique in the driving system and cataloged in one user catalog for easily connecting and disconnecting between the driving system and target system. The ServerPac order data sets are placed on volume M0SIN2 following our ServerPac Installation Layout that is described in Chapter 11, “Phase 8: ServerPac installation preparation” on page 169.

We provide the UNIX path location (`/serverpac/zosv2r2/`) as the Target Directory, which is where the z/OS ServerPac DVD content was uploaded, as described in Chapter 11, “Phase 8: ServerPac installation preparation” on page 169. You can also choose to receive order from FTP server or tape driver.

Press Enter and one job is generated. Submit the job to receive the order.

12.6 Installing the z/OS V2R2 order

After the order is successfully received, select the **I INSTALL** option from the main panel to proceed with creating the work configuration and generating the installation job stream that is used to create the target system, as shown in Figure 12-4.

```
CustomPac -------------------- IBM Corporation -------------------- 27.10.18
OPTION ==> I

   CustomPac Order Management Menu


 R RECEIVE - Receive an Order

 I INSTALL - Install an Order

 Order Number ==> OS220149 (Leave blank to list uninstalled orders)

 D DISPLAY - Select Orders to Display

 Master dialog data set qualifiers: CPAC.OS220149

  This dialog supports secure Internet delivery.

 ********************************************************
 * 5751-CS4, 5751-CS5, 5751-CS6, 5751-CS7 and 5751-CS9 *
 * Copyright IBM Corp. 1988, 2015   *
 ********************************************************
```

Figure 12-4 Installing an order

12.6.1 Creating the work configuration

The first step to install one order is to create the work configuration and save the variables for next few steps. The order status can be: Shipped, Work, Saved, Started, by selecting the **D Display** option in the main panel of CustomPac Installation Dialog.

We choose the Full System Replacement method and install and merge JES2 into BCP in our configuration, as shown in Figure 12-5 on page 187.

```
CustomPac -------- Installation Options for Order ( OS220149 ) ----------------
OPTION ==> C


 Complete these options to install the order:

 C Create Create the Work Configuration
 * Variables Specify Values for Variables
 * Zones  Specify SMPTLIB and SMP/E Zone Names Information
 * Modify  Modify the System Layout
 * Alias  Specify Catalogs for High-Level Qualifiers
 * SSA  Specify Temporary Aliases (SSAs) for Catalogs
 * Installation Create and Submit Installation Jobs



 You can use Save any time after creating the work configuration:
OPTION ==> F

Select the Install type :


 F - Full System Replacement installs a complete new IPL-able
 stand-alone system including all SMP/E-maintained libraries, SMP/E
 environment, operational data sets, and CustomPac sample data sets.
 The supplied operational data sets must be merged with or replaced
 by production operational data sets before the new system is used
 in production.

 S - Software Upgrade installs only the SMP/E-maintained libraries,
 SMP/E zones, and CustomPac sample data sets. Operational data sets,
 including system control files (like LOGREC and VTAMLST), a security
 system database, and a master catalog must exist. These
 existing operational data sets must be updated as required for new
 products and product changes before the first IPL.

Choose JES elements to be installed:

 JES Elements to Install   ==> JES2 (JES2, JES3, or BOTH)

Specify options for merging SMP/E target and DLIB zones:

 Merge JES2 Zones into BCP Zone  ==> Y (Y or N)
```

Figure 12-5 Installation options for the order

Then, enter `CR create` at the command line to create one work configuration (see Figure 12-6 on page 188). If a duplicate configuration is found, the dialog prompts you to confirm the deletion and recreation of the same name configuration. However, use care when performing this task because after your work configuration is overridden, the previous input is lost.

```
COMMAND ==> cr       SCROLL ==> PAGE

Select Configuration

Primary Commands:(? SET Locate Find Next Previous SORT CReate)
 Line Commands:(Select)

S CONFiguration   Comment
- --------------------------------- ---------------------------------------
* CPAC.ZOSV2R2   Always Selected for Order
- --------------------------------- ---------------------------------------
 ** NO MERGABLE ORDER CONFIGURATIONS
```

Figure 12-6 Creating the work configuration

12.6.2 Specifying variable values

The variables that are used by the dialog obtain information about the driving and target systems, such as name and location of master catalog, RACF databases, naming conventions (for spool volume and work volume), file system directory for installing the target file system, jobcard information, and so on.

You can change the variables as you want or keep the default settings. The following variables are important:

- Installation directory

  The `/Service/` installation directory is the mount point on the driving system where the target system root file system is mounted. This directory is not your ServerPac temporary directory that we provided in the Receive Order option panel. Keep the default or create a directory in the driving system's UNIX file system; then, specify it here.

- SMPWKDIR directory

  The `/tmp` SMPWDIR directory is the temporary directory that is used by GIMUNZIP program to unpax the Pax ServerPac contents during restore job running. It requires a large amount of space; therefore, mount one larger file system to `/tmp` first if the driving system uses TFS file system for this mount point.

  ServerPac includes the recommended primary and secondary values for SMPWKDIR file system allocation. These values include the variables PRIMARY CYLS and SECONDARY CYLS. If you set the value of the variable ALLOCATE SMPWKDIR to YES, ServerPac generates steps to allocate and mount the SMPWKDIR file system in the RESTORE job. If ALLOCATE SMPWKDIR value is set to NO, ServerPac generates a step to verify adequate space in the SMPWKDIR directory. If there is not enough space, the RESTORE job fails.

- SYSNAME: CPAC

  If you change this value from the default (CPAC), you must also change the value of SYSNAME in the IEASYSxx member that is used to initially load the target system. For a full system replacement, changing the SYSNAME value requires that you update the system name list in the SMS Base Configuration (by using ISMF after you load the ServerPac system). Then, you must activate the changed SMS configuration before you can use SMS.

- EXISTING IODF

  SYS1.IODF00 must include the operating system configuration that is used for the ServerPac load.

- VOLSER OLD CAT

  This variable is the catalog volume of the driver.

- ORDER HLQ

  This variable is the order's HLQ, which must be different from your master dialog name HLQ.MLQ.

- OLD MASTERCAT

  This variable is the driver's master catalog. For this z/OS V1.13 COD driver, CATALOG.MVSICFM.VD9ECA is used.

For more information about other variables, see the *ServerPac: Using the Installation Dialog* manual.

12.6.3 Specifying SMP/E zone names

Change the Data Set prefix, volume label per ServerPac Installation Layout, and keep other variables as default, as shown in Figure 12-7.

```
CustomPac -------- Define SMPTLIB and Zone Names ( OS220149 )  Row 1 to 1 of 1
COMMAND ==> SAVE                                               SCROLL ==> PAGE

Primary Commands:(? CANcel SAVE)
   Line Commands:(elemenTs Fmids)

  --------------------------- SMPTLIB Information ---------------------------

  Data set Prefix  ==> SMPE.ZOSV2R2
      SMS Managed  ==> No  (Yes/No)

      Device Type  ==> 3390
        Volume(s)  ==> MOSIN2  ==>         ==>         ==>         ==>



  --------------------------- Zone Names Information ------------------------


               S   Nickname   DLIB Zone   Target Zone  SST
               -   --------   ---------   -----------  ----
                    100       MVSD100     MVST100      MVS
****************************** Bottom of data ********************************
```

Figure 12-7 Defining SMPTLIB and zone names

12.6.4 Modifying system layout

The Modify System Layout (MSL) option is where the most time is spent when the dialog is used. Here, we can assign data sets to volumes, change data set attributes, and so on. The ServerPac dialog option to create a recommended system layout (RSL) helps get to this recommended system layout.

Because you might use different device models or order products other than z/OS in your ServerPac, IBM does not include a pre-configured RSL. Instead, an RSL is created for you by using information that you provide in the dialog. Then, the dialog assigns data sets to physical volumes automatically. The intent is to have a quick and easy way to distribute data sets among physical volumes.

Logical volumes are assigned in the background. As data sets are assigned, the dialog fills each volume up to 85% full the first time that they are used and up to 90% full when they are used later. This configuration makes it less likely that volumes run out of space and more likely that similar data sets can be on the same volumes.

The View and Change facility makes it easier to change data sets and their attributes. We can create customized lists of data sets in the configuration; then, use these lists as targets for CHANGE and MERGE commands. There are many data set attributes that we can use to customize our own data set lists, such as element type, LNKLST eligible, LPA eligible, and required in master catalog.

First, in the Modify System Layout panel, we choose option **A** to allow the CustomPac installation dialog to create an RLS for us. Then, we must enter the volume type and volume label as described in Chapter 11, “Phase 8: ServerPac installation preparation” on page 169 (see Figure 12-8).

```
CustomPac -------- Automatic Data Set Assignment ( OS220149 )  Row 1 to 3 of 3
COMMAND ==>                                                    SCROLL ==> PAGE

Current Volume Configuration                                 Scope ==> ALL

Primary Commands:(? Reset CReate)
   Line Commands:(Select Insert List Move After Before eXclude)

   Phys.   Volume  Sequence  Device  Used +    Volume     Existing  Reserved
S  Volume  Type    Number    Type    Reserved  Threshold  Data      Space
-  ------  ------  --------  ------  --------  ---------  --------  --------
   MVSRES  TARGET    T01     3390-9    173 %       85 %        0 %       0 %
   MVSDLB  DLIB      D01     3390-9    156 %       85 %        0 %       0 %
   MVSCAT  BOTH      B01     3390-9     37 %       85 %        0 %       0 %
*******************************Bottom of Data*********************************
```

Figure 12-8 Default Automatic Data Set Assignment panel

Then, we choose to change the physical volume label, enter S in the S column before each Physical Volume line, as shown in Figure 12-9.

```
CustomPac -------- Automatic Data Set Assignment ( OS220149 )  Row 1 to 3 of 3
COMMAND ==>                                                    SCROLL ==> PAGE

Current Volume Configuration                                  Scope ==> ALL

Primary Commands:(? Reset CReate)
   Line Commands:(Select Insert List Move After Before eXclude)

   Phys.   Volume  Sequence  Device  Used +    Volume     Existing  Reserved
S  Volume  Type    Number    Type    Reserved  Threshold  Data      Space
-  ------  ------  --------  ------  --------  ---------  --------  --------
S  MVSRES  TARGET    T01     3390-9   173 %       85 %       0 %       0 %
S  MVSDLB  DLIB      D01     3390-9   156 %       85 %       0 %       0 %
S  MVSCAT  BOTH      B01     3390-9    37 %       85 %       0 %       0 %
```

Figure 12-9 Changing the Physical Volume label

Then, we enter our planned volume information (label and model), as shown in Figure 12-10.

```
 COMMAND ==>


 Display and Change Volume Attributes


    Volume Serial     ==> MOSR21   (Always required)

    Volume Type        :  TARGET   (Target, DLIB or Both)
    Device Type       ==> 3390-27  (For example, 3390-9)


    Reserved Space    ==> 3000     (Cylinders)

    Initialize Volume ==> Y        (Y or N. Default is Y)

Display and Change Volume Attributes


    Volume Serial     ==> MOSD21   (Always required)

    Volume Type       ==> DLIB     (Target, DLIB or Both - Always required)
    Device Type       ==> 3390-27  (For example, 3390-9)


    Reserved Space    ==> 3000     (Cylinders)

    Initialize Volume ==> Y        (Y or N. Default is Y)

Display and Change Volume Attributes


    Volume Serial     ==> MOSCT1   (Always required)

    Volume Type       ==> BOTH     (Target, DLIB or Both - Always required)
    Device Type       ==> 3390-27  (For example, 3390-9)


    Reserved Space    ==> 3000     (Cylinders)

    Initialize Volume ==> Y        (Y or N. Default is Y)
```

Figure 12-10 Changing Physical Volume label and device type

The physical volume information is changed, as shown in Figure 12-11.

```
CustomPac -------- Automatic Data Set Assignment ( OS220149 )  Row 1 to 3 of 3
COMMAND ==>                                                    SCROLL ==> PAGE

Current Volume Configuration                                  Scope ==> ALL

Primary Commands:(? Reset CReate)
   Line Commands:(Select Insert List Move After Before eXclude)

   Phys.   Volume  Sequence  Device  Used +    Volume     Existing  Reserved
S  Volume  Type    Number    Type    Reserved  Threshold  Data      Space
-  ------  ------  --------  ------  --------  ---------  --------  --------
   MOSR21  TARGET    T01     3390-27   61 %       85 %        0 %       9 %
   MOSD21  DLIB      D01     3390-27   56 %       85 %        0 %       9 %
   MOSCT1  BOTH      B01     3390-27   20 %       85 %        0 %       9 %
*******************************Bottom of Data*********************************
```

Figure 12-11 Customized Automatic Data Set Assignment panel

If you want to add volumes to the data set assignment candidate list, enter the I INSERT line command, as shown in Figure 12-12.

```
 CustomPac -------- Automatic Data Set Assignment ( OS220149 )  Row 1 to 5 of 5
 COMMAND ==>                                                    SCROLL ==> PAGE

 Current Volume Configuration                                  Scope ==> ALL

 Primary Commands:(? Reset CReate)
    Line Commands:(Select Insert List Move After Before eXclude)

    Phys.   Volume  Sequence  Device  Used +    Volume     Existing  Reserved
 S  Volume  Type    Number    Type    Reserved  Threshold  Data      Space
 -  ------  ------  --------  ------  --------  ---------  --------  --------
    MOSR21  TARGET    T01     3390-27   61 %       85 %       0 %       9 %
    MOSD21  DLIB      D01     3390-27   56 %       85 %       0 %       9 %
    MOSCT1  BOTH      B01     3390-27   20 %       85 %       0 %       9 %
    MOSIN1  BOTH      B02     3390-001   8 %       85 %       0 %       8 %
 I  MOSIN2  BOTH      B03     3390-001   8 %       85 %       0 %       8 %

Display and Change Volume Attributes


    Volume Serial     ==> MOSUX1   (Always required)

    Volume Type       ==> BOTH     (Target, DLIB or Both - Always required)
    Device Type       ==> 3390-27  (For example, 3390-9)


    Reserved Space    ==> 3000     (Cylinders)

    Initialize Volume ==> Y        (Y or N. Default is Y)

Current Volume Configuration                                   Scope ==> ALL

 Primary Commands:(? Reset CReate)
    Line Commands:(Select Insert List Move After Before eXclude)

    Phys.   Volume  Sequence  Device  Used +    Volume     Existing  Reserved
 S  Volume  Type    Number    Type    Reserved  Threshold  Data      Space
 -  ------  ------  --------  ------  --------  ---------  --------  --------
    MOSR21  TARGET    T01     3390-27   61 %       85 %       0 %       9 %
    MOSD21  DLIB      D01     3390-27   56 %       85 %       0 %       9 %
    MOSCT1  BOTH      B01     3390-27   20 %       85 %       0 %       9 %
    MOSIN1  BOTH      B02     3390-001   8 %       85 %       0 %       8 %
    MOSIN2  BOTH      B03     3390-001   8 %       85 %       0 %       8 %
    MOSUX1  BOTH      B04     3390-27    9 %       85 %       0 %       9 %
 ******************************Bottom of Data********************************
```

Figure 12-12 Adding Physical Volume into the Data Sets Distribution list

Another scenario is that we want to move all ZFS and HFS data sets into one separate volume (M0SUX1) and move all VSAM data sets from SYSRES to another volume (M0SCT1). We complete the following steps to change the volumes for those specific ZFS/VSAM data sets from the default volumes to other volumes:

1. Select **C** (View and Change data sets by selected attributes).
2. Select **Data Set Type**.
3. Select **ZFS**.
4. In the command line, enter the commands that are shown in Example 12-1 to change their default physical volumes to the volume we want (see Figure 12-13).

Example 12-1 Changing physical volume commands

```
CH PVOL OP MOSUX1
CH PVOL TARGET MOSUX1
CH PVOL DLIB MOSUX1
```

```
 CustomPac --------------- Data Set List ( OS220149 ) --------- Row 1 to 9 of 9
 COMMAND ==> CH PVOL TARGET MOSUX1                              SCROLL ==> PAGE

 Data Set List for: Data Set Type

 Primary Commands:(? SET Locate Find Next Previous SORT CHange OFile OList
                   FindComp)
    Line Commands:(Merge eXpand Conflict Unmerge Select Insert Delete)


Physical
 S Data Set Name                                Selected Value          Volume
 - ---------------------------------------- ---------------------- --------
   FNT.OMVS.HFS                                 ZFS                    MOSRS1
   HKC.HKCCFGFZ                                 ZFS                    MOSCT1
   HKC.HKCDATFZ                                 ZFS                    MOSCT1
   HKC.HKCLOGFZ                                 ZFS                    MOSCT1
   OMVS.ETC                                     ZFS                    MOSCT1
   OMVS.ROOT                                    ZFS                    MOSRS1
   OMVS.SCFZHFS2                                ZFS                    MOSCT1
   OMVS.SIZUUSRD                                ZFS                    MOSRS1
   OMVS.VAR                                     ZFS                    MOSCT1
 ******************************Bottom of Data*********************************
```

Figure 12-13 Changing the OMVS data sets volume destination

Another example is to increase the default secondary space. We complete the following steps:

1. Select **C** (View and Change data sets by selected attributes).
2. Select **Secondary Space**.
3. Select **YES** and generate a list of data sets that were shipped with secondary space allocations.
4. Enter `CH SP 20 10` in the command line to increase the primary space by 20% and the secondary space by 10%.

By using the X line command, you can exclude data sets that you do not want affected by this change.

12.6.5 Specifying catalogs for Target Data Set HLQ

This option assigns these high-level qualifiers to a catalog. Use the panel that is shown in Figure 12-14 to define a catalog data set name for each of the aliases (high-level qualifiers) in this order. In the first phase, we must define only the master catalog and one user catalog name for our target systems' data sets. You can define more user catalogs as needed.

```
CustomPac -------------- ALIAS to CATALOG ( OS220149 ) --------- Row 1 from 34
 COMMAND ==>                                                  SCROLL ==> PAGE

 Define CATALOG Dataset Names

 Primary Commands:(? SET Locate Find Next Previous SORT CANcel SAVE)
    Line Commands:(Delete Insert Repeat)

         S  Alias    STA Target System Catalog Data Set Name           Type
         -  -------- --- ----------------------------------------  ----
            AOP          ???????.CATALOG
            ASM       M  ?MASTER.CATALOG                           MCAT
            BDT1         ???????.CATALOG
            CBC       M  ?MASTER.CATALOG                           MCAT
            CDS          ???????.CATALOG
            CEE       M  ?MASTER.CATALOG                           MCAT
            CFZ          ???????.CATALOG
            CPAC      M  ?MASTER.CATALOG                           MCAT
            CSF       M  ?MASTER.CATALOG                           MCAT
            FFST      M  ?MASTER.CATALOG                           MCAT
```

Figure 12-14 Defining ALIAS to CATALOG

The catalog names initially are shown as "???????" because they are not yet defined. We then specify the catalog names with which an alias is to be associated by entering the question marks or copy and paste the master catalog and user catalog name after each Alias line in the panel that is shown in Figure 12-15 on page 197.

```
CustomPac -------------- ALIAS to CATALOG ( OS220149 ) --------- Row 1 from 34
 COMMAND ==>                                                  SCROLL ==> PAGE

 Define CATALOG Dataset Names

 Primary Commands:(? SET Locate Find Next Previous SORT CANcel SAVE)
    Line Commands:(Delete Insert Repeat)

       S  Alias    STA Target System Catalog Data Set Name           Type
       -  -------- --- ----------------------------------------- ----
          AOP          CATALOG.MOSO.USER
          ASM       M  CATALOG.MOSO.MASTER                         MCAT
          BDT1         CATALOG.MOSO.USER
          CBC       M  CATALOG.MOSO.MASTER                         MCAT
          CDS          CATALOG.MOSO.USER
          CEE       M  CATALOG.MOSO.MASTER                         MCAT
          CFZ          CATALOG.MOSO.USER
          CPAC      M  CATALOG.MOSO.MASTER                         MCAT
          CSF       M  CATALOG.MOSO.MASTER                         MCAT
          EOX       M  CATALOG.MOSO.MASTER                         MCAT
          EOY       M  CATALOG.MOSO.MASTER                         MCAT
          EPH          CATALOG.MOSO.USER
          EUVF         CATALOG.MOSO.USER
          FFST      M  CATALOG.MOSO.MASTER                         MCAT
          FNT          CATALOG.MOSO.USER
          GDDM      M  CATALOG.MOSO.MASTER                         MCAT
          GIM       M  CATALOG.MOSO.MASTER                         MCAT
          GLD          CATALOG.MOSO.USER
          GSK          CATALOG.MOSO.USER
          HAP          CATALOG.MOSO.USER
          HKC          CATALOG.MOSO.USER
          ICQ          CATALOG.MOSO.USER
          IOA          CATALOG.MOSO.USER
          IOE          CATALOG.MOSO.USER
          ISF       M  CATALOG.MOSO.MASTER                         MCAT
          ISP       M  CATALOG.MOSO.MASTER                         MCAT
          IZU          CATALOG.MOSO.USER
          OMVS         CATALOG.MOSO.USER
          PAGE      M  CATALOG.MOSO.MASTER                         MCAT
          REXX      M  CATALOG.MOSO.MASTER                         MCAT
          SMPE         CATALOG.MOSO.USER
          SYS1      M  CATALOG.MOSO.MASTER                         MCAT
          TCPIP     M  CATALOG.MOSO.MASTER                         MCAT
          TCPIVP       CATALOG.MOSO.USER
          PAGE      M  CATALOG.MOSO.MASTER                         MCAT
          REXX      M  CATALOG.MOSO.MASTER                         MCAT
          SMPE         CATALOG.MOSO.USER
          SYS1      M  CATALOG.MOSO.MASTER                         MCAT
          TCPIP     M  CATALOG.MOSO.MASTER                         MCAT
          TCPIVP       CATALOG.MOSO.USER
```

Figure 12-15 Defining ALIAS to Target Master and User Catalog

12.6.6 Specifying temporary aliases for catalogs

As shown in Figure 12-16, the system-specific aliases (SSA) option is where we specify the SSA for the target system master catalog and user catalog. These SSAs create aliases in the driving system's master catalog. SSAs are used by ServerPac so that the driving system data set names do not interfere with the target system data set names.

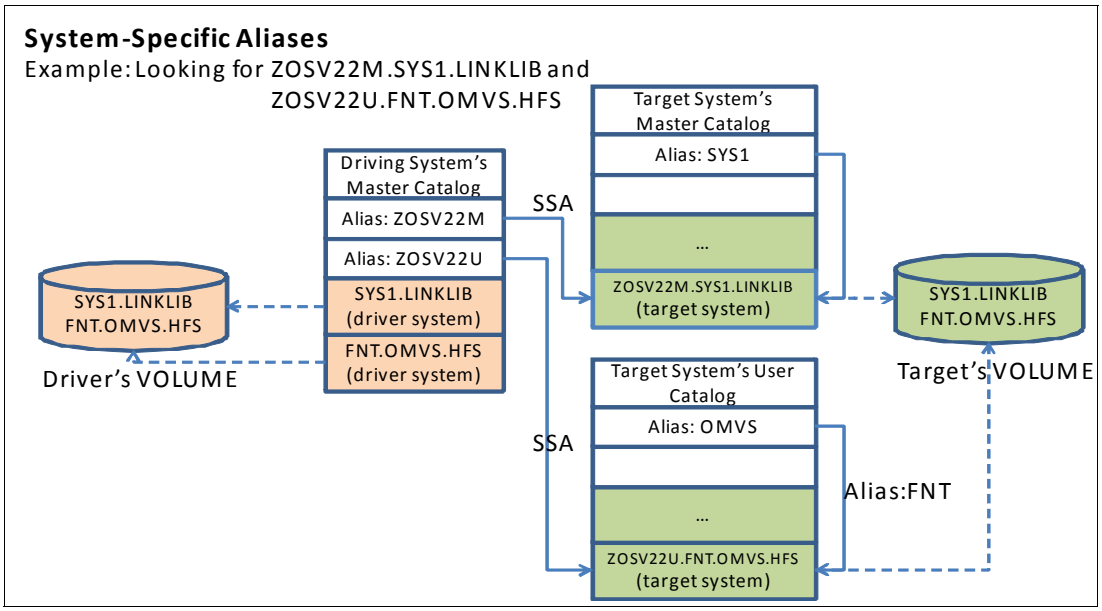

Figure 12-16 System-specific alias option

We create one alias for the target system's master catalog and another one for the target system's user catalog, as shown in Figure 12-17.

```
CustomPac --------------- SSA to CATALOG ( OS220149 ) -------- Row 1 to 2 of 2
COMMAND ==>                                                  SCROLL ==> PAGE

CATALOG Selection List

Primary Commands:(? CANcel SAVE)
   Line Commands:(Select)
                                                          Allocate  Define
                                                                |   |
S Catalog Name                                  SSA Name Type VOLume |   | Unit
- ---------------------------------------------- -------- ---- ------ -   - ----
  CATALOG.MOSO.USER                             ZOSV22U  UCAT MOSCT1 Y   Y 3390
  CATALOG.MOSO.MASTER                           ZOSV22M  MCAT MOSCT1 Y   Y 3390
****************************** Bottom of data ******************************
```

Figure 12-17 Defining SSA to catalog

12.6.7 Saving work configuration

Choose **S** to save the current work configuration, as shown in Figure 12-18.

```
 CustomPac -------- Installation Options for Order ( OS220149 )
----------------
 OPTION ==> s


  Complete these options to install the order:

     C    Create           Create the Work Configuration
     V    Variables        Specify Values for Variables
     Z    Zones            Specify SMPTLIB and SMP/E Zone Names Information
     M    Modify           Modify the System Layout
     A    Alias            Specify Catalogs for High-Level Qualifiers
     SSA  SSA              Specify Temporary Aliases (SSAs) for Catalogs
     I    Installation     Create and Submit Installation Jobs



  You can use Save any time after creating the work configuration:

     S    Save             Save the Current Work Configuration
```

Figure 12-18 Save Work Configuration option

The Save is confirmed, as shown in Figure 12-19.

```
CustomPac -------------- SAVE Configuration ( OS220149 ) ---------------------

Specify SAVE Library

      Enter the High-Level Qualifier and the Volume Serial or Storage
      Class of the Library to which the Order Configuration will be saved

      Data Set HLQ   ==> CPAC.OS220149.D151117.SAVE

      Volume Serial  ==> MOSIN2   (Blank for SMS-managed data sets)
       - or -
      STORCLAS       ==>          (Blank for non-SMS-managed data sets)

      The default qualifier used is 'OrderHLQ'.
      You may enter a Comment to identify the Configuration. This
      is recommended if you use a qualifier other than the default.

                     ==> DEMO SETUP

      MASTER HLQ is  : CPAC.MASTER
                   EsssssssssssssssssssssssssssssssssssssssN
                   e CPP06040061 SAVE Request SUCCESSFUL e
                   DsssssssssssssssssssssssssssssssssssssssM
COMMAND ==>
```

Figure 12-19 Save Work Configuration successful

12.7 Submitting installation jobs

After we tailor our ServerPac configuration to match the environment, the ServerPac installation dialog generates a customized job stream that is based on the information we provide. Enter the Installation option by entering `I`. We then review and submit the installation jobs.

If you find the installation jobs do not fit into your configuration, you can return to the previous options or you can use the VAR primary command to return to the variables options and adjust them before they are submitted. Then, reenter the installation option to issue **`GEN`** to regenerate all of the installation jobs.

The installation job stream is generated by the following phases:

- Phase 1: Installation jobs

  These jobs are run on the driving system and install your order. When complete, your order is restored to DASD.

- Phase 2: Postinstallation from driving system

  These jobs are postinstallation jobs (such as IBM RACF® setup) that must run on the driving system.

- Phase 3: Preinstallation jobs and actions

  These jobs prepare the system for initial loading, such as setting up IODF, parmlib, and stand-alone memory dump.

- Phase 4: Initially load your new target system

  The steps to initially load your new target system and messages that are displayed during system load.

- Phase 5: Postinstallation from target system

  These jobs are postinstallation jobs that must run on the target system. They perform initial setup of many of the products that are contained in your order.

- Phase 6: Installation Verification

  These jobs are product-supplied jobs that verify successful installation and must run on the target system.

- Phase 7: Completing the installation

  These are jobs that perform installation cleanup, such as SSA removal, that are run after a successful installation of your new target system.

In this chapter, we describe phase 1 and 2. The rest of the phases are described in Chapter 13, “Phase 10: First initial program load of z/OS V2R2” on page 205.

12.7.1 Job stream summary

The types of installation job entries (grouped by category) are listed in Table 12-2.

Table 12-2 Job stream categories

Category	Explanation
SRC	Jobcard that can be edited. Use Select line command to generate SRC entry, which can be changed if necessary.
DOC	Documentation for the following set of jobs. Use Select line command to generate and view DOC entries.
JOB	Installation job that can be submitted. Use “S”elect line command to generate only the selected job that can be submitted. Use “B”ackup if you generated the job.

When we submit a job for running, the job number is written to a processing log. You can capture the job output by writing it to data set SCPPOENU. Doing so requires that you set the installation variable synonym OUTPUT LOGGING to YES.

Note: The job name must be the user ID and a character. The default job name is IBMUSER, assuming you log on the driving system as IBMUSER to receive and install the order.

You can add a character after IBMUSER, such as IBMUSERA, to differentiate each job in the JES2 output queue for job output viewing. If you change the job name other than IBMUSERx, you cannot view the job output and get the job return code in the CustomPac Installation dialog panel. You can view the job output through SDSF instead.

In the next sections, we review and submit each job individually.

12.7.2 Starting required VOLUMEs

The OFFLINIT job starts all volumes that you identify in the SUMP primary command in the Modify System Layout option of the CustomPac Installation Dialog. The VTOC and Index size are determined by the 3390 model that you provide in the Modify System Layout panel.

Note: OFFLINIT deletes any data on the volumes.

Before running this job, ensure that the devices were varied offline. Use one of the following commands, where *nnnn* is the device number of the appropriate volume:

- From an z/OS console: **`V nnnn,OFFLINE`**
- From SDSF: **`/V nnnn,OFFLINE`**

When the job completes successfully, vary the devices back online by using one of the following commands:

- From an z/OS console: **`V nnnn,ONLINE`**
- From SDSF: **`/V nnnn,ONLINE`**

Job INITSMS

The INITSMS job starts an SMS-managed volume that is named LOGR01. This volume is defined to the LOGGER storage group in the sample DFSMS configuration in your order. The job is an optional job. The Storage Group (LOGGER) is used in JOB DEFNLOGS to define SMF LOGSTREAMS for target system. This process is done after the Target initial load.

12.7.3 Creating RACF profiles on driving system

The RACFDRV job creates the RACF profiles that are needed on the driving system to run the other driving system installation jobs. RACFDRV also creates profiles for the high-level qualifiers in the order. Run this job on the driving system. The user ID that runs the RACFDRV job must have the RACF SPECIAL attribute. In our Lab, we use IBMUSER on the driver.

When this job completes, examine the job output to verify that your installation's security setup objectives are met.

Note: Review the contents of this job before submitting it. RACFDRV contains sample definitions; running it unchanged on a system might result in an outage or significant rework for you later, depending on your installation's current security definitions.

12.7.4 Defining catalogs

The DEFCAT job allocates and defines the target system master catalog and user catalog and connect them as user catalogs to the driving system master catalog. DEFCAT also imports the user catalogs to the target system master catalog. If there is no master catalog to be allocated, DEFCAT does not define one.

For more information, review the ServerPac DOC: RACFDRV, DEF CAT, SSA, and RESTORE.

12.7.5 Defining SSA

The DEFSSA job defines the SSAs for the catalogs on the driving system and target system that are needed to install your order.

For more information about SSAs and how they are used during installation, see *ServerPac: Using the Installation Dialog*, SA23-2278-02, and 12.6.6, “Specifying temporary aliases for catalogs” on page 198

For more information, see the ServerPac DOC: RACFDRV, DEF CAT, SSA, and RESTORE.

12.7.6 Allocating and cataloging data sets

The ALLOCDS job allocates and catalogs your new target system data sets. Many of these data sets have unique considerations for serialization, availability, security, backup, and recovery. For these considerations, see the planning and implementation documentation for the products that you are installing.

If ALLOCDS fails, you can restart the job by using the RESTART parameter of the job card in the appropriate step. Do not resubmit this job because some data sets might be allocated and you might encounter the JCL error if duplicate data set is found.

For more information, see the ServerPac DOC: RACFDRV, DEF CAT, SSA, and RESTORE.

12.7.7 Restoring data sets

Restoring the ServerPac content files is directed to the Install Directory on the driving system. By default, the Install Directory is `/Service`. This value cannot be blank (the job fails). Ensure that the SMPWKDIR directory `/tmp` is mounted with one temporary HFS or zFS that is larger enough to hold the temporary files during job running.

In our example, the `/tmp` directory is mounted with one HFS approximately 9 GB. If SMPWKDIR is mounted without a block parameter and a file in your order is greater than 2 GB, the RESTORE job fails during GIMUNZIP processing with the message GIM43501S and RETURN CODE '00000077'X.

The RESTORE job might run for some time (minutes to hours), depending on your LPAR’s resources configuration (Logical CP, LPAR Weight, Storage).

For more information, see ServerPacDOC: RACFDRV, DEF CAT, SSA, and RESTORE.

12.7.8 Updating default data sets names

The CPPUPDT job changes the ServerPac default data set names to the names that you specified in the Modify System Layout function of the installation dialog.

Job CPPUPDT also adds members to the CPAC.PARMLIB data set for products in your order, as listed in Table 12-3.

Table 12-3 CPPUPDT added members

PARMLIB Members	Usage
PROG00	For data sets that are in the link list or require APF authorization.
LPALST00	For data sets that are in LPA storage.

If CPPUPDT fails, do not restart the job. Rerunning certain update steps can result in data set names that are incorrect for your installation.

12.7.9 Defining SMP/E environment

The UPDDDD job updates your target system's new CSIs (global, target, and DLIB) with the DDDEFs for the newly allocated SMP/E data sets.

All order installation jobs that are running on the driving system are done and it is ready to prepare the pre-loading jobs and actions for the first initial load of z/OS V2R2.

We now move on to Phase 10

13

Phase 10: First initial program load of z/OS V2R2

This chapter describes the start-up and shutdown tasks for the target system, the first initial program load (IPL) of z/OS V2R2. Before we can IPL the z/OS V2R2, we must complete some preparation tasks by customizing parameters and review our resources readiness. Then, we can IPL the z/OS V2R2 system from the Hardware Management Console (HMC) and start the Time Sharing Option (TSO) for logon. We then must enable some products and customize them for use.

Finally, we must run some installation verification program (IVP) jobs from the target system to verify that our installation is done correctly and key components of z/OS V2R2 are enabled. We also must run some clean-up jobs on target and driving system to remove System Specific Aliases (SSAs) and other information that is not needed.

This chapter includes the following topics:

- 13.1, “Goals” on page 206
- 13.2, “Requirements” on page 207
- 13.3, “Related documents” on page 207
- 13.4, “Preparing the ServerPac IPL tasks from driver system” on page 208
- 13.5, “IPL z/OS V2R2 from HMC” on page 211
- 13.6, “Running postinstallation from target system” on page 223
- 13.7, “Running installation verification programs” on page 231
- 13.8, “Running clean-up jobs to complete installation” on page 232

13.1 Goals

Phase 10 features the following goals:

- Pre-IPL jobs and actions: These jobs prepare the system for IPL, such as setting up IODF, parmlib, and stand-alone dump.
- IPL the new Target System: These steps IPL the new target system and messages displayed during IPL.
- Postinstallation - From Target System: These postinstallation jobs must run on the target system. They perform the initial setup of many of the products that are contained in your order.
- Installation verification: These product-supplied jobs verify successful installation and must run on the target system.
- Completing the installation: These jobs perform installation cleanup, such as SSA removal, that is run after a successful installation of your new target system.

Phase 10 is required to achieve Milestone 5: Load z/OS Operating System. Where this phase is positioned in the overall process is shown in Figure 13-1.

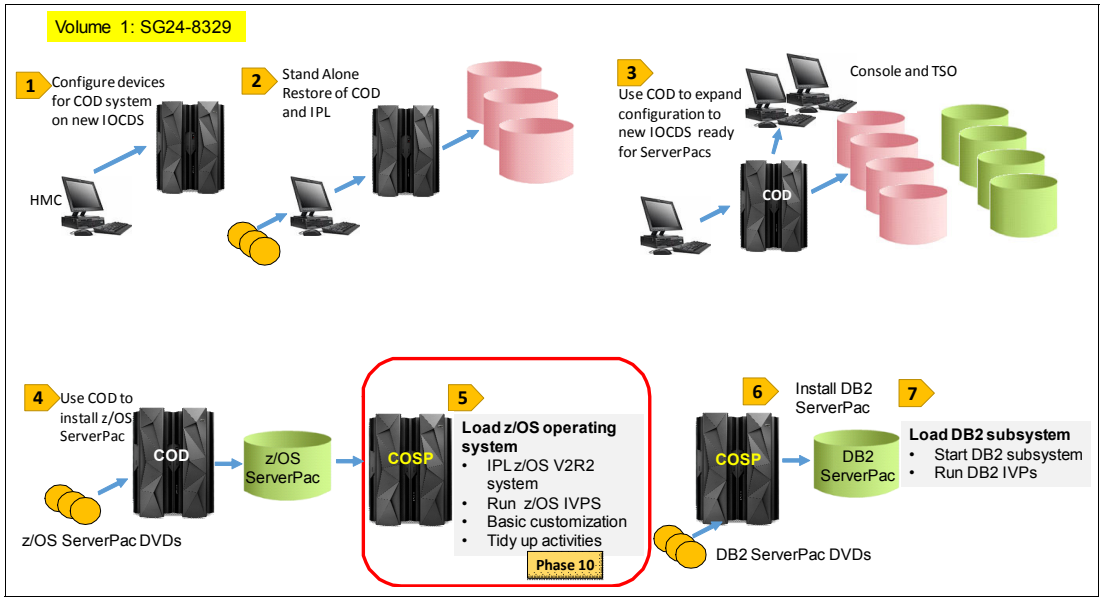

Figure 13-1 Phase 10 Milestone 5

It is important that you understand how the terms in Table 13-1 are used in this chapter.

Table 13-1 Terms and Meaning

Term	Definition
Ready to run	The product requires no other installation tasks
FSR	Full System Replacement
SUI	Software Upgrade Installation

13.2 Requirements

Before we can IPL the z/OS V2R2 system, we must prepare the hardware and software resources for IPL.

13.2.1 Resources

The following hardware is used:

- System z machine
- Logical partition (LPAR) resource
- External devices, including disk, OSA-ICC device, and OSA device
- Workstation to run Personal Communication software

The following software is used:

- Customized Offering Driver (COD) system
- Personal Communication software
- CustomPac Installation Dialog

13.3 Related documents

The following IBM publications provide relevant information during this phase.

- *ServerPac: Installing Your Order Order Number OS2xxxx*
- *ServerPac: Using the Installation Dialog*, SA23-2278
- *z/OS V2R2 Planning for Installation*, GA32-0889
- *CustomPac Installation Dialog Reference Manual*
- *z/OS V2R2 IBM MVS Initialization and Tuning Reference*, SA23-1380

For more information about downloading these publications, see this website:

`http://www.ibm.com/systems/z/os/zos/installation`

The following references are available:

- *z/OS System Commands*, SA38-0666
- *z/OS Initialization and Tuning Reference*, SA22-7592
- *JES2 Initialization and Tuning Guide*, SA32-0991
- *z/OS Communications Server: SNA Operation*, SC27-3673
- *TSO/E Customization*, SA32-0976

Also available is *ServerPac FAQ*. This document contains frequently asked questions about ServerPac and is available at this website:

`https://ibm.biz/Bd4B9B`

13.4 Preparing the ServerPac IPL tasks from driver system

Before we can IPL the ServerPac, we must complete some preparation tasks for one successful load.

13.4.1 Defining I/O configuration

The IODFLOAD job is used to copy the driving system's IODF data set to the target system. Before performing this task, we must update the job with our operating system (OS) configuration in the IODF and the Unit Information Modules (UIMs) must be available during the IPL if the devices are to be used on the target system.

We can define a new operating system configuration to specify the I/O devices that the ServerPac LPAR needs for IPL. Select **HCD** (for Hardware Configuration Definition) to display the operating system configuration list, as shown in Figure 13-2.

```
------------------------------------------------------------------------------
                  Operating System Configuration List             Row 1 of 2
Command ===> _____________________________________________ Scroll ===> PAGE

Select one or more operating system configurations, then press Enter. To
add, use F11.

/ Config. ID  Type     Gen  Description                      D/R site OS ID
_ MOSO        MVS           OS CONFIG FOR MOSO(SERVPAC)
_ OS390       MVS           OS CONFIG FOR COD(DRIVER)
******************************* Bottom of data ********************************
```

Figure 13-2 Defining a new operating system configuration in HCD

13.4.2 Creating data set for Health Checker

The HBB77A0E job is used to create a unique HZSPDATA data set on the target system for Health Checker start-up. HZSPDATA DDNAME must match the name of the data set that is used in start-up procedure HZSPROC for Health Checker.

13.4.3 Initializing LOGREC and creating IPL text

The IPLTEXT job is used to start the LOGREC data set and create IPLTEXT on the volume that contains the SYS1.NUCLEUS data set. This DASD is considered to be our target system's IPL volume (M0SR21).

13.4.4 Creating stand-alone DUMP IPL text

The DMPBLD job is used to create the SADMP program by using the one-step generation method.

Note: Check DMPBLD before you submit it to ensure that the job does not place SADMP (`SYS1.PAGEDUMP.Vnnnnnn`) on the target system's IPL volume. Stand-alone dump requires IPL text to be written to the volume from which it is IPLed, and only one IPL text can be on a volume at any time.

13.4.5 Creating LOAD00 in IPLPARM

The LOAD00 job is used to create member LOAD00 in our target system's SYS1.IPLPARM data set and fills it with the correct target system's master catalog name and the DASD volume serial number where it is stored.

Note: Review the IODF statement to ensure that the wanted OS configuration is specified in columns 22 - 29 (starting by column 22). If more than one OS configuration identifier exists but is not specified in LOAD00, a disabled wait state is loaded during IPL.

In our example, we create two Operating System Configuration Identifiers in SYS1.IODF01: one for the COD system and another for the z/OS V2R2 ServerPac use. We refer to it in the LOADxx of IPLPARM library, as shown in Figure 13-3.

```
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
VIEW        SYS1.IPLPARM(LOAD00) - 01.01                Columns 00001 00072
Command ===> _                                           Scroll ===> CSR
=COLS> ----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
****** ***************************** Top of Data ******************************
000001 IODF     00 SYS1     M0S0
000002 NUCLEUS  1
000003 SYSCAT   M0SCT1113CCATALOG.M0S0.MASTER
000004 SYSPLEX  LOCAL
000005 PARMLIB  SYS1.PARMLIB                              M0SCT1
000006 PARMLIB  CPAC.PARMLIB                              M0SCT1
000007 PARMLIB  SYS1.IBM.PARMLIB                          M0SR21
****** **************************** Bottom of Data ****************************
```

Figure 13-3 LOAD00 in IPLPARM referred to M0S0 OS Configuration

Failure to include the OS configuration name in LOADxx can cause a disable wait state code of 0B1 during HMC Load action, as shown in Figure 13-4.

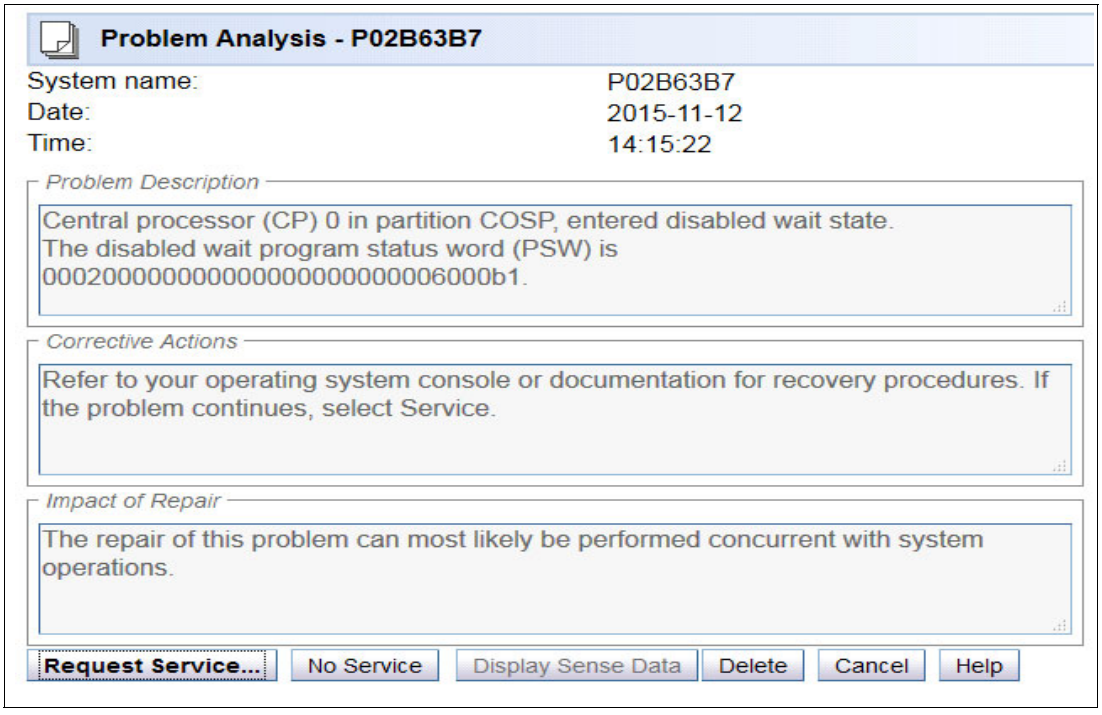

Figure 13-4 Disable wait when LOADxx is not correctly coded

13.4.6 Running Post-apply Link

The CALLLINK job contains the JCL statements for the LINK LMODS command that is generated by the UPDDDD job as described in 12.7.9, “Defining SMP/E environment” on page 204.

13.4.7 Copying customized parmlib members from driver to target

In this section, we describe the jobs that are used to copy the customized parmlib members from the driver to the target.

The COPYCON job is used to copy the specified CONSOLxx member from the driving system to the target. Before running this job, it is suggested that you create a backup copy of the target system’s SYS1.PARMLIB(CONSOL00) member that was shipped with this order. The COPYCON job overlays the shipped CONSOL00 member.

Ensure that the second LPAR, which this ServerPac is going to use for IPL, is using the same channel and IO devices as OSA-ICC sessions. Otherwise, you must customize the console device number in target system's SYS1.PARMLIB(CONSOL00), as shown in Figure 13-5.

```
CONSOLE DEVNUM(SYSCONS) ROUTCODE(ALL)
    MONITOR(JOBNAMES-T)
/*                                  */
CONSOLE DEVNUM(0A1) ROUTCODE(ALL)
    NAME(CON1)
    PFKTAB(PFKTAB1)
    AUTH(MASTER)
    UNIT(3270-X)
    MONITOR(JOBNAMES-T)
    CON(N) DEL(RD) RTME(2) MFORM(J,T) AREA(NONE)
```

Figure 13-5 CONSOL00 in parmlib

The VATLST job is used to set default mount attributes for DASD volumes. This job also adds entries to your target system’s SYS1.PARMLIB(VATLST00) member for the DASD volumes that were used to install the order, as shown in Figure 13-6.

```
VATDEF IPLUSE(PRIVATE),SYSUSE(PRIVATE)
MOSCT1,1,0,3390  ,Y
MOSD21,1,2,3390  ,Y
MOSIN2,1,2,3390  ,Y
MOSR21,1,2,3390  ,Y
MOSUX1,1,2,3390  ,Y
```

Figure 13-6 VATLST00 in parmlib

The CPYVTLCL job copies the driving system’s SNA definitions and tables to the target system by using the IEBCOPY utility. The driver system’s VTAMLST data set is copied to the target system’s CPAC.VTAMLST. Before running this job, it is recommended that you create a backup copy of the members in the target system's CPAC.VTAMLST library.

The job SMFPRM job ensures that the SMFPRM00 member of PARMLIB data set contains the required log stream definitions for the value of variable SMF Option that is provided by you in the Installation Order - Variables panel.

This variable can have two values: DATASET and LOGSTREAM. If you choose Logstream, SYS1.MANxx data sets do not appear in Modify System Layout panel and are not allocated by the installation jobs. If you choose DATASET, you must review the destination volume for SYS1.MANxx data sets in Modify System Layout panel and confirm that they are allocated with ALLOCDS job.

13.4.8 Renaming data sets and creating Symlinks for target

The ALTCAT job renames each allocated data set to its final data set name. ALTCAT also defines aliases for these data sets in their respective catalogs. Each alias points to the final data set name and converts the `/etc` and `/var` directories to symbolic links. Ensure that the file systems remain mounted before running this job.

Note: The ALTCAT job is intended for full system replacement installations only. If you are performing a software upgrade, run job RECATDS and optionally, UPDDDUV instead.

13.5 IPL z/OS V2R2 from HMC

Before we can IPL our z/OS V2R2, ensure that the LPAR can access the DASD, OSA-ICC devices, and channels that connect them.

Also, you must ensure that the target system can use all of the operational data sets that are needed to IPL the system, run batch jobs, and use TSO/E and ISPF. These operational data sets include but are not limited to the following data sets:

- A complete set of the necessary system control files (such as PARMLIB and VTAMLST)
- A master catalog that can be updated while building the target system
- Page data sets
- BROADCAST data set
- LOGREC data set
- JES2 Spool and checkpoint data sets
- RACF Security database or SYS1.UADS data set

13.5.1 HMC task

First, we must log on to the HMC by using user ID SYSPROG, and select the second LPAR that loads the z/OS V2R2 system, as shown in Figure 13-7.

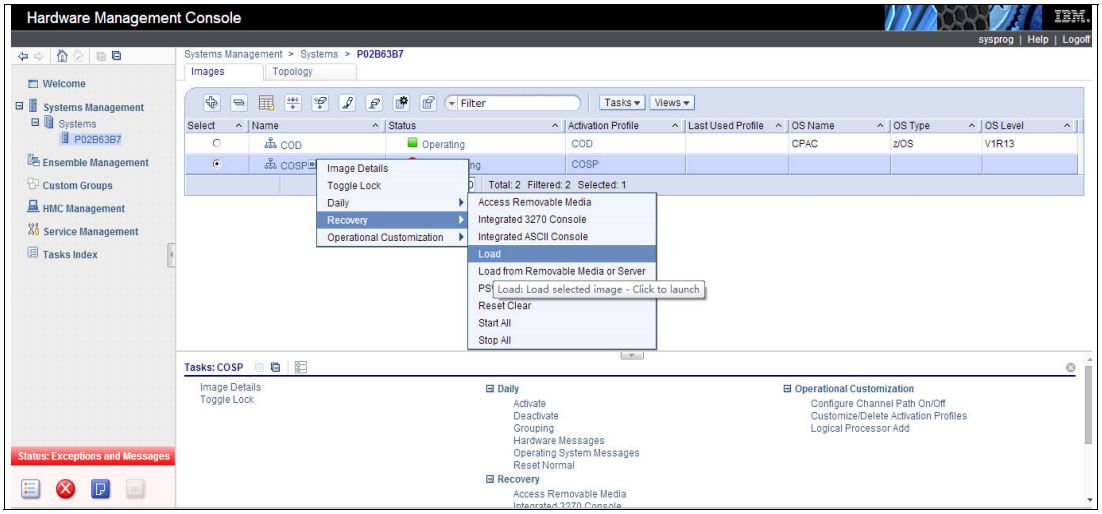

Figure 13-7 Loading z/OS V2R2 from HMC

Next, we enter the Load address (the SYSRES DASD device number) and the Load parameter (the SYS1.IODF01 IODF volume and the LOADxx suffix), as shown in Figure 13-8.

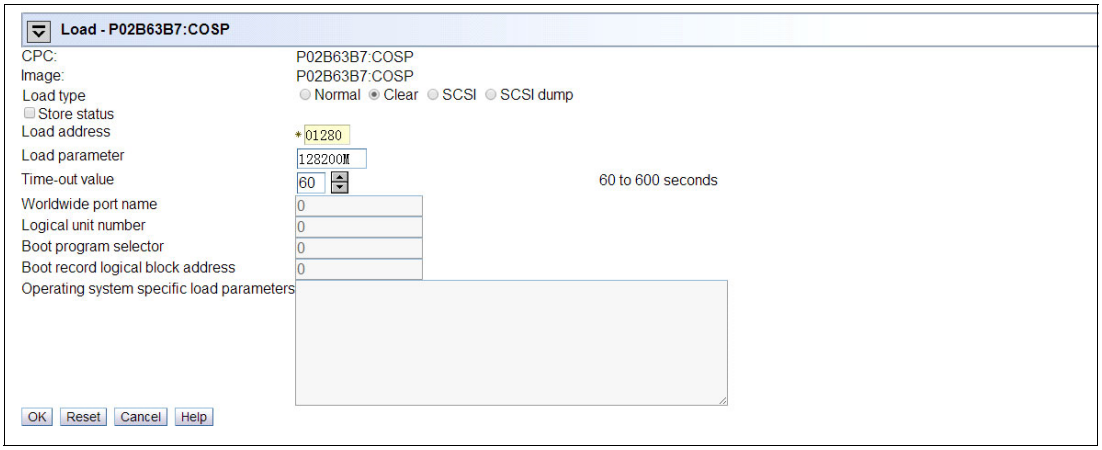

Figure 13-8 Entering the Load address and parameter

When confirming the LPAR Load action by entering the password for SYSPROG, we open the operation system message window that is waiting for the NIP console message to come up, as shown in Figure 13-9.

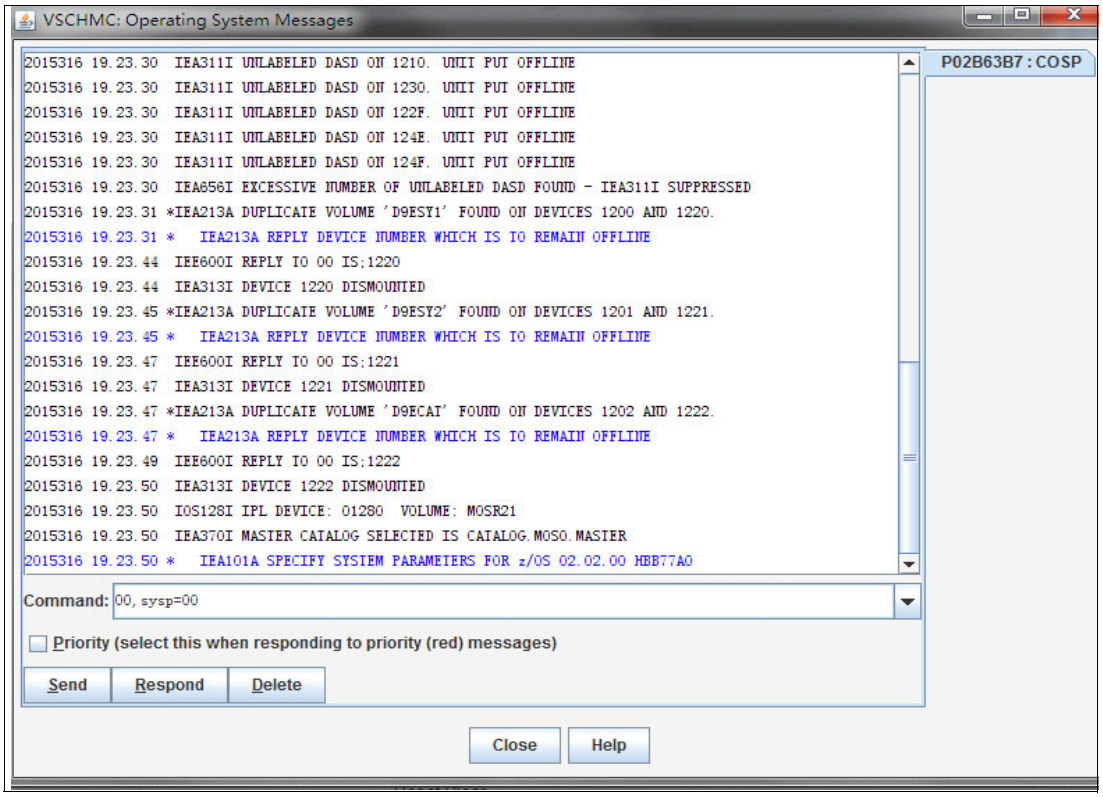

Figure 13-9 OS message in HMC

We use the following reply:

```
R 00,SYSP=00,CLPA
```

The resulting messages vary, depending on your configuration.

13.5.2 Starting address spaces

We activate the master console for command input, as shown in Figure 13-10.

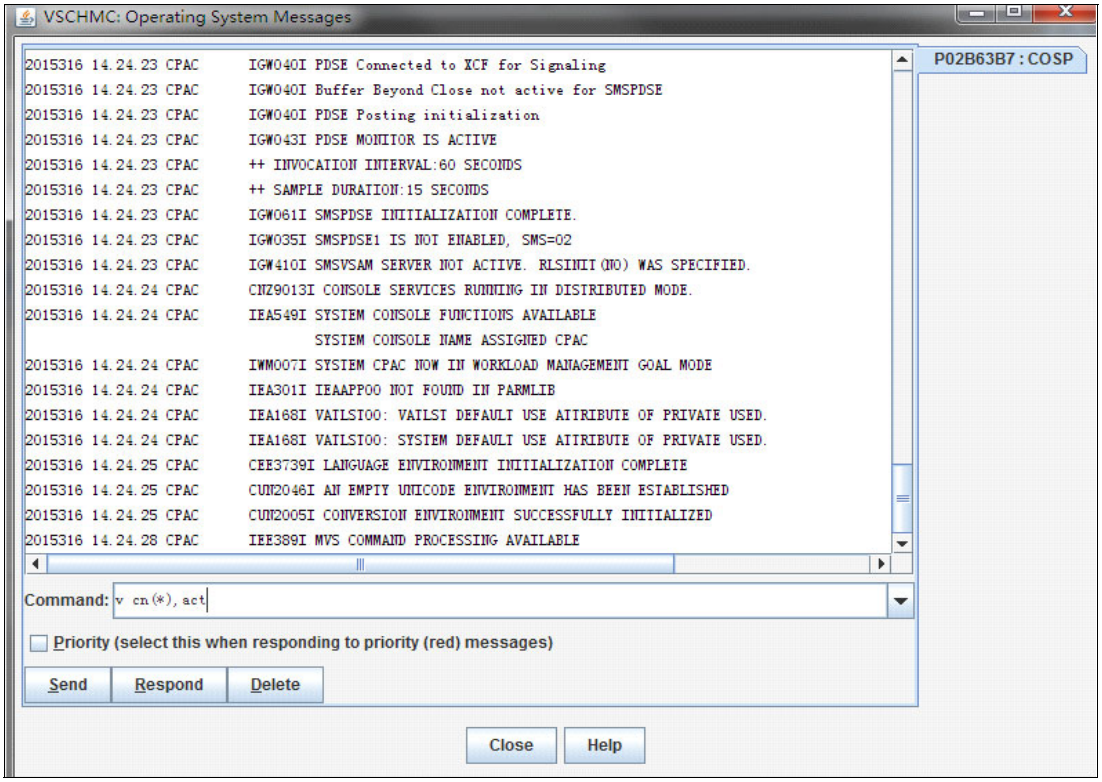

Figure 13-10 Activating console for command input

Starting JES2

We issue D R,R to display any highlighted WTOR messages, as shown in Figure 13-11.

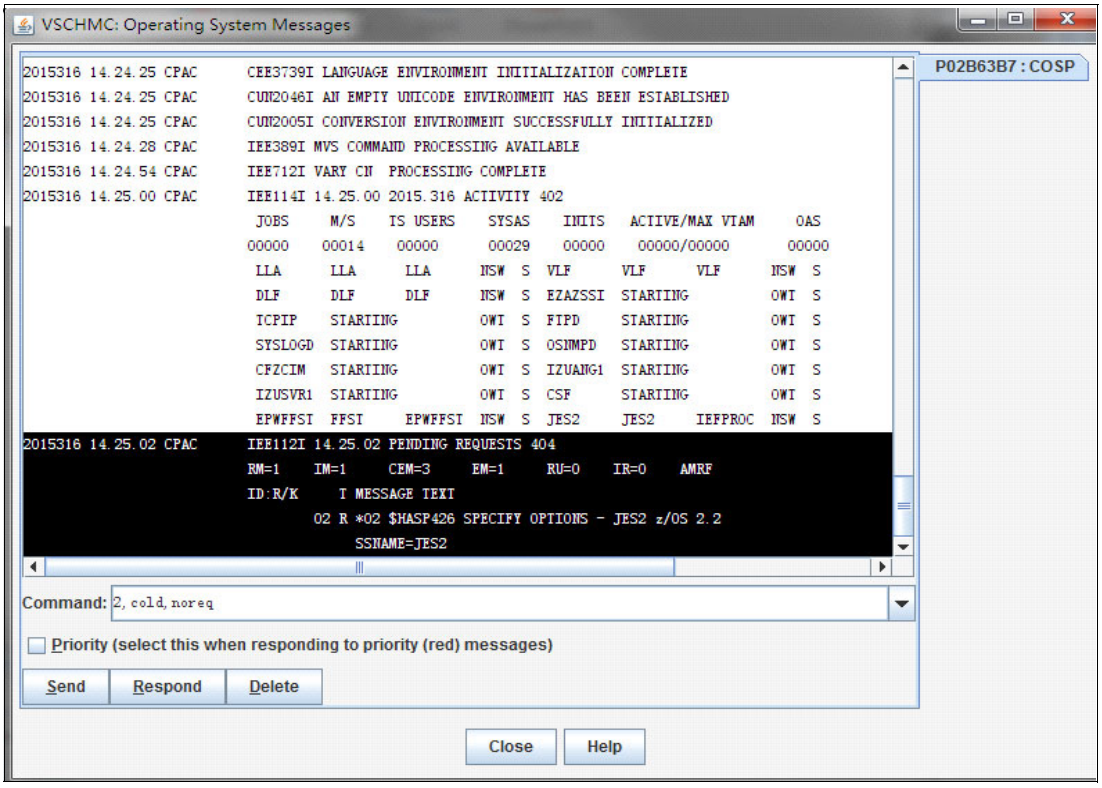

Figure 13-11 Replying WTOR message to JES2

When JES2 starts, we must specify whether a cold or warm start is required. Consider the following points:

- If you used the full system replacement option to generate the installation jobs, a cold start is required for the first IPL, as shown in Example 13-1. If you used the Software Upgrade option, a cold start is not required.
- A warm start can be used for subsequent IPLs.

Example 13-1 Reply to JES2 WTOR to do a cold start

```
*02 $HASP426 SPECIFY OPTIONS - JES2 z/OS 2.2 SSNAME=JES2
R 02,COLD,NOREQ
*03 $HASP441 REPLY 'Y' TO CONTINUE INITIALIZATION OR 'N'
TO TERMINATE IN RESPONSE TO MESSAGE HASP436
R 03,Y
```

If you change the SYSNAME in IEASYSxx, you must confirm for JES2 that no other members are active, as shown in Example 13-2.

Example 13-2 Confirm to JES2 WTOR message

```
*$HASP405 JES2 IS UNABLE TO DETERMINE IF OTHER MEMBERS ARE ACTIVE
*04 $HASP420 REPLY 'Y' IF ALL MEMBERS ARE DOWN (IPL REQUIRED), 'N' IF NOT
 R 04,Y
```

For warm start

In subsequent IPLs of z/OS V2R2, we can start JES2 for a warm start to retain the JES2 SPOOL, as shown in Example 13-3.

Example 13-3 Reply to JES2 WTOR to do a WARM start

```
*nn $HASP426 SPECIFY OPTIONS - JES2 z/OS 2.2 SSNAME=JES2
r nn,WARM,NOREQ
```

Starting VTAM

We issue the **S VTAM** command from the HMC console.

If you have a customized ATCSTRxx member, enter `START VTAM,,,(LIST=xx)`, where `xx` is the two-character suffix of the ATCSTRxx member to be used in addition to the default ATCSTR00 member. Check the CONFIG=nn in the ATCSTRxx member to look for the ATCCONnn member to ensure that every VTAM majnode profile exists.

When VTAM is started, a logo is displayed on active terminals if the shipped USSTAB was used, as shown in Figure 13-12.

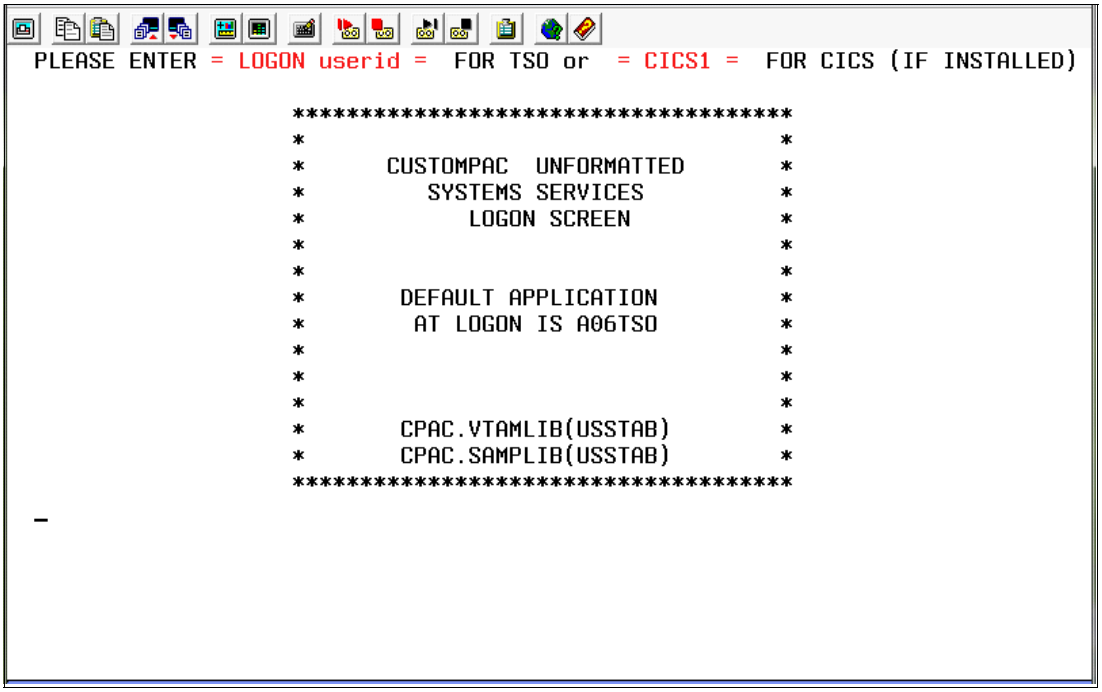

Figure 13-12 VTAM is active

Starting TSO

We issue the **S TSO** command from the HMC console. The message that is shown in Example 13-4 is displayed.

Example 13-4 TSO is active

```
IKT007I TCAS ACCEPTING LOGONS
IKT005I TCAS IS INITIALIZED
```

We are ready to log onto the z/OS V2R2 system.

13.5.3 Logging on to z/OS V2R2

We log on by using user ID `IBMUSER` and password `IBMUSER` into the z/OS V2R2 through the non-SNA terminal.

The Logical Unit (LU) is the OSA-ICC session that is defined for the second LPAR. Check your OSA-ICC server and session configuration from HMC to verify the OSA-ICC server IP address, LU session, and Port number.

We use COSP00A0. The port is 3270 and is defined in our OSA-ICC Server configuration to logon to the ServerPac system, as shown in Figure 13-13.

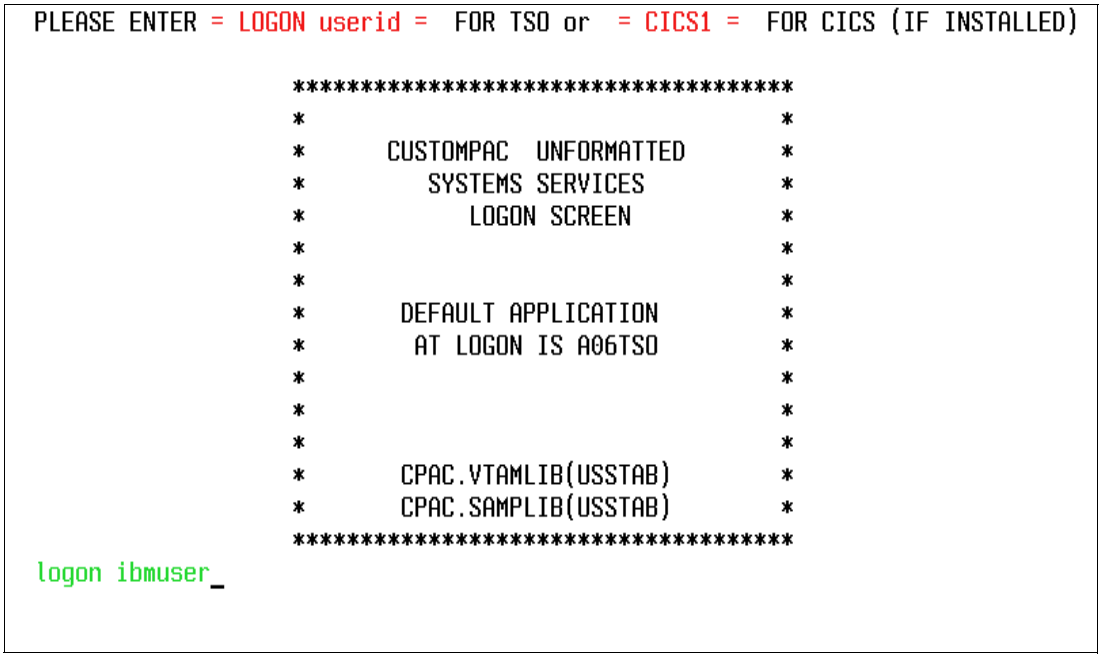

Figure 13-13 Log on with IBMUSER

Enter the password IBMUSER, as shown in Figure 13-14.

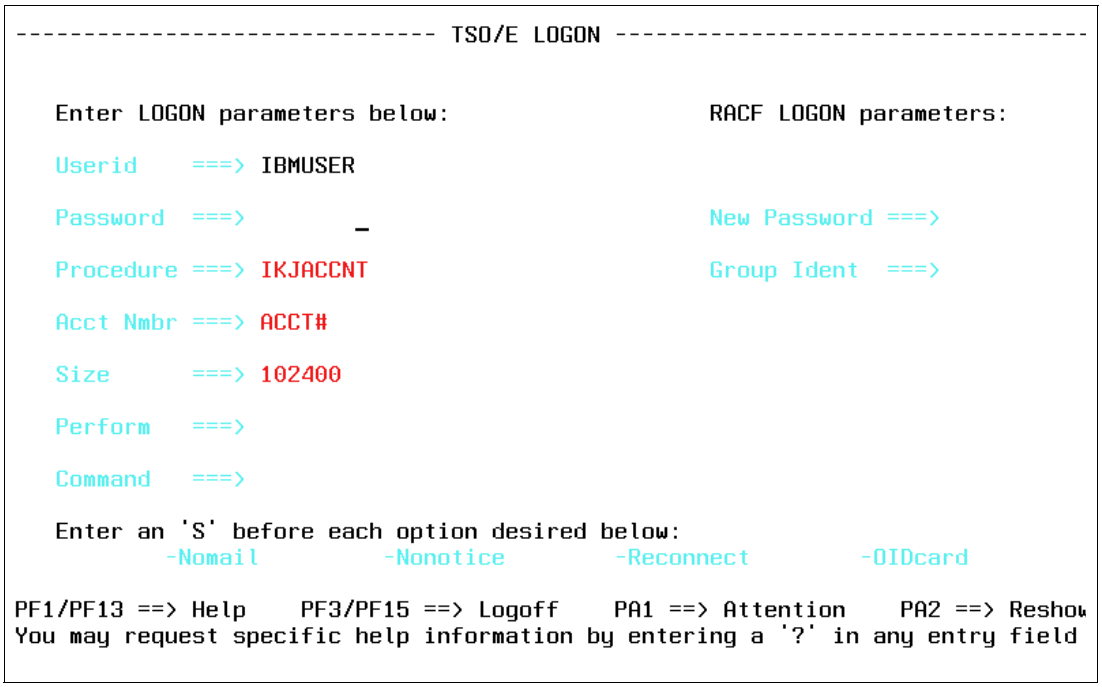

Figure 13-14 Entering password for IBMUSER

Next, we enable some products and customize them for use. Before we perform this task, we can practice the shutdown procedure of z/OS V2R2 system for next IPL, if needed.

13.5.4 Enabling products and subsystems

z/OS consists of base elements that deliver essential operating system functions. When you order z/OS, you receive all of the base elements. In addition to the base elements, you can order optional features that have an affinity to the elements.

Dynamic enablement allows you to dynamically enable and disable a feature.

If you order a feature, it is shipped enabled, meaning it is defined as “enabled” in the IBM-supplied IFAPRD00 member of CPAC.PARMLIB that enables the features that you order.

If you do not order a feature, it is shipped disabled, meaning it is defined as “disabled” in IFAPRD00. Although a feature you did not order is described in the product overview appendix from the *ServerPac: Installing Your Order Order Number OS2xxxx* document, its postinstallation activities and IVPs are not included in this book.

If you want to dynamically enable one product, you can update the IFAPRDxx member and enter a **SET** command (**SET PROD=xx**) or re-IPL the z/OS to take the change in effect. For more information about the use of IFAPRDxx, see *z/OS MVS Initialization and Tuning Reference*, SA23-1380, and *z/OS Planning for Installation*, GA32-0890.

Note: After you install z/OS, you must inform IBM of your intentions if you choose to run an unordered feature that supports dynamic enablement. You also must have a license for each feature that you enable. Then, enable it dynamically through PARMLIB(IFAPRDxx).

Enabling SDSF

If the z/OS V2R2 ServerPac order does not include SDSF, the default status of SDSF in IFAPRD00 is disabled. First, we must change the state from “disabled” to “enabled” in IFAPRD00, as shown in Figure 13-15. We then activate it by issuing the **SET PROD=00** command from Console or SDSF.

```
PRODUCT OWNER('IBM CORP')
    NAME('z/OS')
    ID(5650-ZOS)
    VERSION(*) RELEASE(*) MOD(*)
    FEATURENAME('SDSF')
    STATE(ENABLED)
```

Figure 13-15 Enabling SDSF

Next, we must update the PROGxx to add SDSF libraries into APF and LNKLST, as shown in Figure 13-16.

```
APF ADD
  DSNAME(ISF.SISFLOAD)                 VOLUME(MOSR21)
APF ADD
  DSNAME(ISF.SISFLPA)                 VOLUME(MOSR21)

LNKLST ADD NAME(LNKLST00) DSN(ISF.SISFLOAD)
```

Figure 13-16 CPAC.PARMLIB(PROG00)

We also must update the LPALSTxx to add SDSF libraries into LPA list, as shown in Figure 13-17.

```
SYS1.LPALIB,
ISP.SISPLPA,
ISF.SISFLPA,
EOY.SEOYLPA,
CEE.SCEELPA,
TCPIP.SEZALPA,
SYS1.SDWWDLPA,
SYS1.SBDTLPA
```

Figure 13-17 CPAC.PARMLIB(LPALST00)

Now, we can enter the SDSF panel and view the JES2 queue.

Enabling RACF

As with SDSF, the default status of RACF in IFAPRD00 is disabled if the z/OS V2R2 ServerPac does not include RACF product, as shown in Figure 13-18. We must change the state from “disabled” to “enabled” in IFAPRD00. Then, we activate it by issuing the **SET PROD=00** command.

```
PRODUCT OWNER('IBM CORP')
    NAME('z/OS')
    ID(5650-ZOS)
    VERSION(*) RELEASE(*) MOD(*)
    FEATURENAME('SECURITY SERVER')
    STATE(ENABLED)
```

Figure 13-18 Enabling RACF

If RACF was not included in the base order but enabled later, we must initialize two data sets. The first dat set is the primary RACF database; the second data set is the backup. We submitted the initialization job, Figure 13-19.

```
//DEFRACDB JOB CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID,
//  REGION=0M
//INI01  EXEC PGM=IRRMIN00,PARM=NEW
//STEPLIB DD DSN=SYS1.LINKLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSRACF DD DSN=SYS1.RACF,DISP=(NEW,CATLG),
//       UNIT=3390,VOL=SER=MOSCT1,
//       SPACE=(CYL,(50),,CONTIG),
//       DCB=DSORG=PSU
//INI02  EXEC PGM=IRRMIN00,PARM=NEW
//STEPLIB DD DSN=SYS1.LINKLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSRACF DD DSN=SYS1.RACFSEC,DISP=(NEW,CATLG),
//       UNIT=3390,VOL=SER=MOSCT1,
//       SPACE=(CYL,(50),,CONTIG),
//       DCB=DSORG=PSU
```

Figure 13-19 Define RACF databases

We must re-IPL the system to make it effective. Some components in z/OS depend on RACF product, such as OMVS. If OMVS cannot start, TCPIP and TN3270 also cannot start.

We still log on with IBMUSER after IPLing again, but enter `SYS1` as the password instead of `IBMUSER`. We enter this password because we logged on as IBMUSER previously by using SYS1.UADS for user ID authentication when the RACF product was not yet enabled. Now, the RACF product is enabled, the RACF database is in effect, and the default password for IBMUSER is SYS1 in the new defined RACF database. However, we must change the IBMUSER password during the first logon.

When the system is up, we run the **S IRRDPTAB** command from the console or SDSF to enable dynamic parse function for RACF. Otherwise, you cannot start RACF commands through the TSO interface. An error message is reported, as shown in Example 13-5.

Example 13-5 Error when RACF dynamic parse function is not enabled

```
IRR52100I  Processing terminated.  Dynamic parse is not active. Contact your
system programmer.
READY
```

Defining the new system name to SMS

As shipped in your order, the system name (SYSNAME) for the target system is CPAC. If you changed the SYSNAME value for the target system (for example, through the Define Variables function of the installation dialog), you must ensure that the new system name is defined to SMS.

We use ISMF to update the SMS base configuration to include the new system name, as shown in Figure 13-20.

```
SCDS BASE ALTER                  Page 2 of 2

SCDS Name . : SYS1.DFSMS.SCDS
SCDS Status : VALID

Specify one of the following options . .          (1 Add, 2 Delete, 3 Rename)

  Specify System Name . . . . .          or Sys Group Name . .

  New System/Sys Group Name . .          (For option 3, Rename)

System: CPAC     MOSO



Sysgrp:



Use ENTER to Perform Option; Use UP Command to View previous Panel;
Command ===>
```

Figure 13-20 Defining new SYSNAME into the SMS base configuration

Then, we reactivate the SMS configuration so that it takes effect, as shown in Figure 13-21.

```
CDS APPLICATION SELECTION

To Perform Control Data Set Operations, Specify:
  CDS Name . . 'SYS1.DFSMS.SCDS'
                           (1 to 44 Character Data Set Name or 'Active')

Select one of the following Options:
  5  1. Display       - Display the Base Configuration
     2. Define        - Define the Base Configuration
     3. Alter         - Alter the Base Configuration
     4. Validate      - Validate the SCDS
     5. Activate      - Activate the CDS
     6. Cache Display - Display CF Cache Structure Names for all CF Cache Sets
     7. Cache Update  - Define/Alter/Delete CF Cache Sets
     8. Lock Display  - Display CF Lock Structure Names for all CF Lock Sets
     9. Lock Update   - Define/Alter/Delete CF Lock Sets
If CACHE Display is chosen, Enter CF Cache Set Name . . *
If LOCK Display is chosen, Enter CF Lock Set Name . . . *
                            (1 to 8 character CF cache set name or * for all)
 Command ===>
                          CONFIRM ACTIVATE REQUEST

  To Confirm Activation on the following Control Data Set:

      CDS : SYS1.DFSMS.SCDS


Specify the following:
      Enter "/" to select option   /  Perform Activation
```

Figure 13-21 Activating the SMS base configuration

We reply to the WTOR message from the console and verify that the DFSMS configuration was changed, as shown in Figure 13-22.

```
COMMAND INPUT ===> /D SMS                                    SCROLL ===> PAGE
RESPONSE=CPAC
 IGDOO2I 16:47:03 DISPLAY SMS 438
 SCDS = SYS1.DFSMS.SCDS
 ACDS = SYS1.DFSMS.ACDS
 COMMDS = SYS1.DFSMS.COMMDS
 ACDS LEVEL = z/OS V2.2
 DINTERVAL = 150
 REVERIFY = NO
 ACSDEFAULTS = NO
     SYSTEM     CONFIGURATION LEVEL    INTERVAL SECONDS
     CPAC       2015/11/19 16:46:57           15
     MOSO       ---------- --------          N/A
```

Figure 13-22 Displaying SMS output

13.5.5 Shutting down z/OS V2R2

The sequence of commands to shut down your system is listed in Table 13-2.

Table 13-2 Shutting down address spaces in z/OS V2R2

Command	Description
F OMVS,SHUTDOWN	Stop OMVS
P TN3270	Stop TN3270 If there are users still alive, reply WTOR with FSTOP: ***04 IKT010D 00001 USER(S) ACTIVE, REPLY 'SIC' OR 'FSTOP'** **r 04,FSTOP**
P FTPD1	Stop FTP Server
P RESOLVER	Stop TCPIP Resolver
P TCPIP	Stop TCPIP
P TSO	Stop TSO
P VLF	Stop VLF
P LLA	Stop LLA
F DLF,STOP	Stop DLF. If DLF task is busy, try to use FORCE, ARM command to stop it: **FORCE DLF,ARM**
Z NET,QUICK	Stop VTAM
P FFST™	Stop EPWFFST Reply “YES” to the WTOR message: ***05 EPW0309I ENTER 'YES' TO CONTINUE TERMINATION, 'NO' TO KEEP FFST** **r 05,YES**
$P JES2,TERM	Stop JES2
Z EOD	Stop SMF recording

Note: Some commands might not apply for this IPL because some address spaces are not yet started.

Then, we perform one reset clear action from the HMC against the LPAR for the next IPL.

13.6 Running postinstallation from target system

When the z/OS V2R2 system is up, we can continue our postinstallation tasks from the target system.

13.6.1 Importing the CustomPac Installation Dialog to the target

The target system requires access to the CustomPac Installation Dialogs for further tasks; therefore, we must connect the dialog to the system so that the target system can access it.

We need to IMPORT CONNECT the driver's master catalog to the ServerPac's system to access the CustomPac installation dialog. Because we only must access those data sets other than any CPAC.** data sets, we enable the catalog alias level from 1 to 2 and define two second-level aliases in target system's master catalog, as shown in Example 13-6.

Example 13-6 Changing Catalog Alias Level to 2

```
F CATALOG,ALIASLEVEL(2)
IEC351I CATALOG ADDRESS SPACE MODIFY COMMAND ACTIVE
IEC352I CATALOG ADDRESS SPACE MODIFY COMMAND COMPLETED

F CATALOG,REPORT
IEC351I CATALOG ADDRESS SPACE MODIFY COMMAND ACTIVE
IEC359I CATALOG REPORT OUTPUT 894
*CAS*************************************************************
*  CATALOG COMPONENT LEVEL   = HDZ2220                           *
*  CATALOG ADDRESS SPACE ASN = 002D                              *
*  SERVICE TASK UPPER LIMIT  =  180                              *
*  SERVICE TASK LOWER LIMIT  =   60                              *
*  HIGHEST # SERVICE TASKS   =    4                              *
*  # ATTACHED SERVICE TASKS  =    4                              *
*  MAXIMUM # OPEN CATALOGS   = 1,024                             *
*  ALIAS TABLE AVAILABLE     = YES                               *
*  ALIAS LEVELS SPECIFIED    = 2                                 *
*  SYS% TO SYS1 CONVERSION   = OFF                               *
*  CAS MOTHER TASK           = 005AC680                          *
*  CAS MODIFY TASK           = 005FC9B0                          *
*  CAS ANALYSIS TASK         = 005FC550                          *
*  CAS ALLOCATION TASK       = 005FC780                          *
*  CAS ASYNC TASK            = 005FC320                          *
*  CAS SYSPLEX COMMAND TASK  = 00594E88                          *
*  CAS SYSPLEX QUIESCE TASK  = 005FC0F0                          *
*  VOLCAT HI-LEVEL QUALIFIER = SYS1                              *
*  NOTIFY EXTENT             =   80%                             *
*  DEFAULT VVDS SPACE        = ( 10, 10) TRKS                    *
*  ENABLED FEATURES          = DSNCHECK DELFORCEWNG SYMREC       *
*  ENABLED FEATURES          = UPDTFAIL                          *
*  DISABLED FEATURES         = VVRCHECK AUTOTUNING BCSCHECK      *
*  DISABLED FEATURES         = DELRECOVWNG EXTENDEDALIAS         *
*  DISABLED FEATURES         = ECS AUTOADD DUMPON GDGFIFO        *
*  DISABLED FEATURES         = GDGSCRATCH GDGPURGE               *
*  DISABLED FEATURES         = GDGEXTENDED                       *
*  INTERCEPTS                = (NONE)                            *
*CAS*************************************************************
IEC352I CATALOG ADDRESS SPACE MODIFY COMMAND COMPLETED
```

We then must vary online the volume that contains the driver's master catalog and the volume where CPAC.MASTER.* and CPAC.OS220149.* data sets are stored, submit the job that is shown in Figure 13-23, and access those data sets. The catalog alias is changed from level from 1 to 2 after every IPL if you want to continue accessing those data sets.

```
//IMPORT  JOB CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID,
//  REGION=0M
//IMPORT EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
 IMPORT -
 CONNECT -
  OBJECTS((CATALOG.MVSICFM.VD9ECAT -
  VOLUMES(D9ECAT) -
  DEVT(3390))) -
 CATALOG(CATALOG.M0S0.MASTER)

 DEFINE -
 ALIAS(NAME(CPAC.MASTER) -
 RELATE(CATALOG.MVSICFM.VD9ECAT )) -
 CATALOG(CATALOG.M0S0.MASTER)

 DEFINE -
ALIAS(NAME(CPAC.OS220149) -
 RELATE(CATALOG.MVSICFM.VD9ECAT )) -
 CATALOG(CATALOG.M0S0.MASTER)

/*
```

Figure 13-23 Importing Connect Driver's catalog in ServerPac system

Here, CATALOG.MVSICFM.VD9ECAT is the driver's master catalog; CATALOG.M0S0.MASTER is our target system's master catalog. Two new aliases are created in target system's master catalog and point back to driver's catalog.

Later, we can disconnect the catalog. Figure 13-24 shows the JCL that is used to perform the disconnection.

```
//EXPORT  JOB CLASS=A,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID,
//  REGION=0M
//EXPORT EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
 EXPORT -
  CATALOG.MVSICFM.VD9ECAT -
  DISCONNECT
//LIST  EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
 LISTCAT CATALOG(CATALOG.M0S0.MASTER)
```

Figure 13-24 Export Disconnect the Driver's catalog

13.6.2 Defining RACF profiles for target system

The RACFTGT job is used to create RACF profiles that are required to use the system. The job also creates RACF profiles for each high-level qualifier in the order, including SSA qualifiers. RACFTGT creates the RACF profiles for started procedures, OCSF, System Logger, and z/OS UNIX System Services.

The user ID that runs the RACFTGT job must have the RACF SPECIAL attribute. We run this job with IBMUSER.

13.6.3 Allocating log streams for logger

The DEFNLOGS job is used to define System Logger policy information about the target system. We run the DEFNLOGS job on the target system.

13.6.4 Loading and activating Workload Manager policy

The optional IWMINSTI job as provided in the installation dialog (also found in member IWMINSTL of SAMPLIB) allows you to load and activate a sample policy for Workload Manager (WLM).

13.6.5 Customizing TCP/IP

Before we can start the TCPIP address space, we must customize and verify the following configurations:

- TCPIP TRL VTAM Node

  This VTAM node defines the TCPIP MPC port name and associate the port name with the OSAD device number.Make sure the 0040-0042 OSA device numbers can be accessed by the LPAR and their attribute in OS Configuration is INITIAL OFFLINE=NO, as shown in Example 13-25.

```
TRL0040 VBUILD  TYPE=TRL
TRL004A TRLE  LNCTL=MPC,                                              X
               READ=(0040),                                           X
               WRITE=(0041),                                          X
               DATAPATH=(0042),                                       X
               PORTNAME=OSAQDIO2,                                     X
               MPCLEVEL=QDIO
```

Figure 13-25 CPAC.VTAMLST(TRL0040)

- TCPIP TCP LU Session

  This VTAM node defines the LU names for TCP sessions. Increase the definitions for more TCPIP connections if more are needed, as shown in Figure 13-26.

```
TCP      VBUILD TYPE=APPL
TCP00001 APPL AUTH=NVPACE,EAS=1,PARSESS=NO,MODETAB=ISTINCLM,SESSLIM=YES
TCP00002 APPL AUTH=NVPACE,EAS=1,PARSESS=NO,MODETAB=ISTINCLM,SESSLIM=YES
TCP00003 APPL AUTH=NVPACE,EAS=1,PARSESS=NO,MODETAB=ISTINCLM,SESSLIM=YES
TCP00004 APPL AUTH=NVPACE,EAS=1,PARSESS=NO,MODETAB=ISTINCLM,SESSLIM=YES
```

Figure 13-26 CPAC.VTAMLST(TCPAPPL)

- TSO LU Session

  This VTAM node defines the LU names for TSO sessions. Here, you can increase the definitions for more TSO connections, as shown in Figure 13-27.

```
TSOAPPL VBUILD TYPE=APPL               APPLICATION MAJOR NODE
*
*
TSO      APPL  AUTH=(NOACQ,NOBLOCK,PASS,NOTCAM,NVPACE,TSO,NOPO),       X
               EAS=1,ACBNAME=TSO
*
TSO01 APPL     AUTH=(NOACQ,NOBLOCK,PASS,NOTCAM,NVPACE,TSO,NOPO),       X
               EAS=1,ACBNAME=TSO00001
*
```

Figure 13-27 CPAC.VTAMLST(TSOAPPL)

- VTAM PROC Profile

  Check CPAC.VTAMLST(ATCSTR00) for the CONFIG=xx statement, which points to the ATCCONxx VTAMLST member. The ATCCONxx member defines all VTAM majnodes definition names. Ensure that they are all in the VTAMLST data set, as shown in Figure 13-28.

```
A0600,EXLOCAL,TCPAPPL,IVPLU,SMCSAPPL,SMCSCONS,APMSO,TRL0040,D0A00BF
```

Figure 13-28 CPAC.VTAMLST(ATCCON00)

- TCPIP PROC Profile

  In the TCPIP profile, we must define the IP address, gate way, and route. A partial sample configuration is shown in Figure 13-29.

```
;
   INTERFACE OSAQDIO24                ; IPv4 OSA-Express QDIO ethernet
     DEFINE IPAQENET
     PORTNAME OSAQDIO2
     INBPERF DYNAMIC
     VMAC
;    SOURCEVIPAINT VLINK1
     IPADDR 9.56.195.19/24            ; address and subnet mask
;

PORT
      7 UDP MISCSERV            ; Miscellaneous Server - echo
      7 TCP MISCSERV            ; Miscellaneous Server - echo
      9 UDP MISCSERV            ; Miscellaneous Server - discard
      9 TCP MISCSERV            ; Miscellaneous Server - discard
     19 UDP MISCSERV            ; Miscellaneous Server - chargen
     19 TCP MISCSERV            ; Miscellaneous Server - chargen
     20 TCP *  NOAUTOLOG        ; FTP Server
 ;   20 TCP *  NOAUTOLOG SAF FTPDATA ; FTP Server
     21 TCP FTPD1               ; FTP Server
     23 TCP TN3270              ; Telnet 3270 Server
 ;   23 TCP INETD1 BIND 9.67.113.3 ; z/OS UNIX Telnet server
     25 TCP SMTP                ; SMTP Server
     53 TCP NAMED               ; Domain Name Server
     53 UDP NAMED               ; Domain Name Server

 ROUTE 9.56.195.0  255.255.255.0 =       OSAQDIO24      MTU 2000
 ROUTE DEFAULT                 9.56.195.1   OSAQDIO24   MTU DEFAULTSIZE
START OSAQDIO24
```

Figure 13-29 TCPIVP.TCPPARMS(PROFILE)

- TCPIP TCPDATA profile

  Use the default profile in TCPIVP.TCPPARMS(TCPDATA).

The HIP6220J job allocates the required TCP/IP data sets, such as translation tables, HOSTS.LOCAL, and ETC.SERVICES.

The HIP6220K job runs TSO/E command MAKESITE and generates the TCPIP.HOSTS.ADDRINFO and TCPIP.HOSTS.SITEINFO data sets.

Then, we can start the TCPIP by issuing the **S TCPIP** command from the console or SDSF. Before TCPIP is started, we must verify that the OSA devices that are used by MPC TRL VTAM node are all in ONLINE status.

13.6.6 Customizing TN3270

Before we can start the TN3270 address space, we need to customize and verify the following configurations:

- TCPIP PROF Profile

  Ensure that Port 23 is opened for TN3270 in TCPIP starting profile TCPIVP.TCPPARMS(PROFILE).

- TN3270 PROC Profile

  This profile defines the TN3270 required information, such as Port, LU, and USSTAB, as shown in Figure 13-30.

```
BeginVTAM              ; Mapping for basic and TTLS ports.
   Port 23  ; 23,9.10.11.12
   DEFAULTLUS           ; Define LUs to be used for general users.
    TCP00001..TCP00999
   ENDDEFAULTLUS
   LuGroup LugDBCS      ; LUs for DBCS
     DLU001..DLU250     ; Maximum 250 DBCS connections allowed
   EndLuGroup
 ; DEFAULTAPPL TSO      ; Default application for all TN3270(E) clients
 ; LINEMODEAPPL TSO     ; Send all line-mode terminals directly to TSO.
   ALLOWAPPL TSO* DISCONNECTABLE
                        ; Allow all users access to TSO applications.
                        ; TSO uses unique applications for each session
                        ; which all begin with TSO.  Use TSO* to cover
                        ; all TSO sessions.
                        ; If a session is closed, disconnect the user
                        ; rather than log off the user.
   ALLOWAPPL *          ; Allow access to all applications.
   USSTCP    USSTAB     ; Send out the default TN USS table

   LuMap LugDBCS DestIP,9.10.11.12 ; This DestIP uses LugDBCS
 EndVTAM
```

Figure 13-30 TCPIVP.TCPPARMS(TNPROF1)

- TN3270 RACF Profile

  We define the started task for TN3270 in RACF, as shown in Example 13-7.

Example 13-7 Defining started task profile for TN3270

```
ADDGROUP STCGROUP SUPGROUP(SYS1)
RDEFINE STARTED TN3270.* OWNER(IBMUSER) STDATA(USER(IBMUSER) GROUP(STCGROUP))
```

Otherwise, you cannot start the TN3270 address space because the user ID is "++++++++" and has no OMVS segment. You see an error that is similar to the error that is shown in Example 13-8 on page 230.

Example 13-8 Starting TN3270 failed

```
S TN3270
$HASP100 TN3270   ON STCINRDR
IEF695I START TN3270   WITH JOBNAME TN3270   IS ASSIGNED TO USER
++++++++
$HASP373 TN3270   STARTED
IEF403I TN3270 - STARTED - TIME=15.07.04
ICH408I JOB(TN3270  ) STEP(TN3270  ) CL(PROCESS ) 434
  OMVS SEGMENT NOT DEFINED
EZZ4204I TELNET INITIALIZATION FOR TN3270 FAILED.
```

Then, we can start the TN3270 by issuing the **S TN3270** command from the console or SDSF.

13.6.7 Customizing Predictive Failure Analysis

The following jobs are used to customize the Predictive Failure Analysis (PFA):

- Job HBB77A0M

  This job is in the installation dialog and is used to create PFA directories by using the installation script AIRSHREP.sh and customizing the `.ini` files. Starting with z/OS V2R2, running this script is not a mandatory migration task.

  PFA requires IBM 31-bit SDK for z/OS, Java Technology Edition, Version 7.1 (Program Number 5655-W43) operational on your system.

  Note: PFA does not support the IBM 64-bit SDK for z/OS.

- Job HBB77A0O

  This job is used to update COMMND00 to start PFA automatically when the system is up.

13.6.8 Customizing Common Information Model

The HPG77A0B job defines ownership and permission for Common Information Model (CIM) directories and copy "/usr/lpp/wbem/install/profile.add" to "/u/CFZSRV/" directory.

13.6.9 Customizing z/OSMF

Starting in z/OS V2R2, z/OSMF is a base element of z/OS and z/OSMF V2R2 is not orderable as a separate product.

Job HSMA220C sets up the TCP/IP port for z/OSMF and gives owner access to the z/OSMF started task User and Group for the z/OSMF user file system mount point directory.

For more information about how to customize and enable z/OSMF product, see the ServerPac DOC z/OS 2.2 Z/OSMF.

For more information about customizing z/OSMF V2R2, see *IBM z/OS V2R2 ServerPac* SG24-8500.

For more information, see *IBM z/OSMF Management Facility Configuration Guide*, SC27-8419.

13.6.10 Customizing IBM Knowledge Center

IBM Knowledge Center for z/OS (KC4z) is a new element that was added to the z/OS base starting with z/OS V2R2.

The HKZC100C job creates target subdirectories.

The HKXZ100D job copies sample configuration files from the IBM Knowledge Center Installation directory.

13.6.11 Updating COMMNDxx in parmlib for automatic start

Before the z/OS V2R2 system is reloaded, it is better to include some statements in COMMNDxx parmlib member to start those customized subsystems and products automatically during IPL, as shown in Figure 13-31.

```
COM='S VLF,SUB=MSTR'
COM='S DLF,SUB=MSTR'
COM='DD ADD,VOL=MOSR21'
COM='DD NAME=SYS1.&SYSNAME..DMP&SEQ'
COM='DD ALLOC=ACTIVE'
COM='S EZAZSSI,P=NODENAME'
COM='S VTAM'
COM='S TSO'
COM='S RESOLVER'
COM='S TCPIP'
COM='S FTPD'
COM='S TN3270'
COM='S SYSLOGD'
COM='S OSNMPD'
COM='S CFZCIM'
COM='S IZUANG1'
COM='S IZUSVR1,IZUPRM='00''
COM='S CSF'
COM='SETLOGRC LOGSTREAM'
COM='S EPWFFST.FFST,SUB=MSTR'
COM='S PFA'
```

Figure 13-31 CPAC.PARMLIB(COMMND00)

13.7 Running installation verification programs

IBM provides several installation verification programs (IVPs) to test basic functions in your system to ensure that the products in your order were installed properly. These programs are listed in Table 13-3.

Table 13-3 IVPs

Job name	Function
HBB77A0V	Verify that the base control program (BCP) was installed properly
HWQ4160I	Verify that High-Level Assembler installed correctly.

Job name	Function
HIP62200	Test that TCPIP and FTP were correctly set up.
HLE77A0F	Verify IBM Language Environment® was installed properly.
HTV77A0R	Verify that the Runtime Library Extensions element was installed properly.
HDZ2220Q	Verify that the DFSMS OAM function was installed properly.
EDU1H01G	Verify that Device Support Facility (ICKDSF) element was installed properly.
HFST101K	Verify that First Failure Support Technology/IBM MVS™ (FFST) was properly installed.
HPG77A0I	Verify that the CIM component was installed properly.

The other IVPs are provided, depending on your order.

13.8 Running clean-up jobs to complete installation

This section describes the following optional steps that you can take after you verify that your new target system was installed successfully:

- Updating your new master catalog
- Cleaning up your driver system after the installation

The clean-up jobs that can be run are listed in Table 13-4.

Table 13-4 Determination matrix for clean up jobs

Job Name	Is the job for FSR, SUI, or both?	Keep SSAs defined during your installation?	Remove SSAs and use explicit VOLUME information for SMP/E DDDEFs?	Remove SSAs and use catalog information for SMP/E DDDEFs?
UPDDDUV	F	No	Yes	No
UPDDEF	S	No	No	Yes
UPDBCK	F	No	No	Yes
DELDSN	S	No	Yes	Yes
DELCSI	F	No	Yes	Yes
DELSSA	S	No	Yes	Yes

Run these jobs on the target system, except for DELSSA and DELNTS, which must be run on the driving system.

Note: After you remove the SSAs, the following jobs are affected:

- Jobs that run on the driving system no longer can access the target system master catalog.
- Jobs that use SMS-managed target system data sets can no longer run on the driving system.

For non-SMS-managed data sets, the UPDDDUV job updates the following SMP/E DDDEF entries in the target system CSIs:

- Removes SSAs from data set names
- Removes SSAs from SMP/E work data sets
- Removes SSAs from SMP/E ZONEINDEX subentries in the global zone
- Adds UNIT, VOLSER, and WAITFORDSN values
- Removes the installation directory from the UNIX file system paths.

For SMS-managed data sets, job UPDDDUV removes SSAs from data set names.

Caution: Removing the installation directory from the UNIX file system paths requires some caution when applying services, which can affect these file systems. We run this job in our lab.

Run the UPDDEF job only if you did not run UPDDDUV.

UPDDEF updates the following SMP/E DDDEF entries in the target system CSIs:

- Removes SSAs from data set names.
- Removes the installation directory from the UNIX file system paths.

Run the UPDBCK job only if you did not run UPDDDUV.

UPDBCK updates the following SMP/E DDDEF entries in the target system CSIs:

- Removes SSAs from SMP/E work data sets.
- Removes SSAs from SMP/E ZONEINDEX sub entries in the global zone.

The DELDSN job deletes data set name aliases from the target system catalogs.

The DELCSI job deletes the path entries for the target system CSIs. We run this job in our lab.

The DELSSA job deletes SSAs from the driving and target system catalogs

The DELNTS job deletes the order's archive files that were created during the download process. If a new UNIX file system was allocated to receive the download of the order files, it is unmounted and deleted.

Note: It is recommended that you back up your order’s archive files before the clean up job DELNTS is run to avoid having to upload again from the DVD.

Job SETSTAT is an optional job. It sets the orders status to “Installed” in the order inventory.

Note: If you plan to change your configuration, do not run this job. After the order status is set to “Installed”, you cannot update the order configuration.

Your installation is now complete. You have a system that can be IPL in which data sets can be referenced by using the data set name or by the data set aliases, which were defined during the installation.

We now move on to Phase 11.

14

Phase 11: ServerPac DB2 build

This chapter describes the steps that are used to install DB2 V11 through ServerPac software package offering by using z/OS ServerPac system and CustomPac installation dialog. In this installation process, we receive and install the order, provide variables, define SMP/E zones, modify volume layout, and provide catalog information to create a set of job streams to unload and customize DB2 V11 subsystem.

This chapter includes the following topics:

- 14.1, “Goals” on page 236
- 14.2, “Requirements” on page 236
- 14.3, “Scenario” on page 237
- 14.4, “Planning DB2 V11 ServerPac installation layout” on page 239
- 14.5, “Planning the ServerPac installation configuration” on page 240
- 14.6, “Receiving the DB2 V11 ServerPac Order” on page 240
- 14.7, “Installing the DB2 V11 order” on page 243
- 14.8, “Submitting installation jobs” on page 250

14.1 Goals

Phase 11 features the following goals:

- Transfer DB2 V11 Internet order delivery contents to z/OS ServerPac system.
- Plan the DB2 installation layout.
- Receive the DB2 V11 ServerPac order.
- Install the DB2 V11 ServerPac order to unload and customize DB2 subsystem.

Phase 11 is required to achieve Milestone 6: Install DB2 ServerPac. Where this phase occurs in the overall process is shown in Figure 14-1.

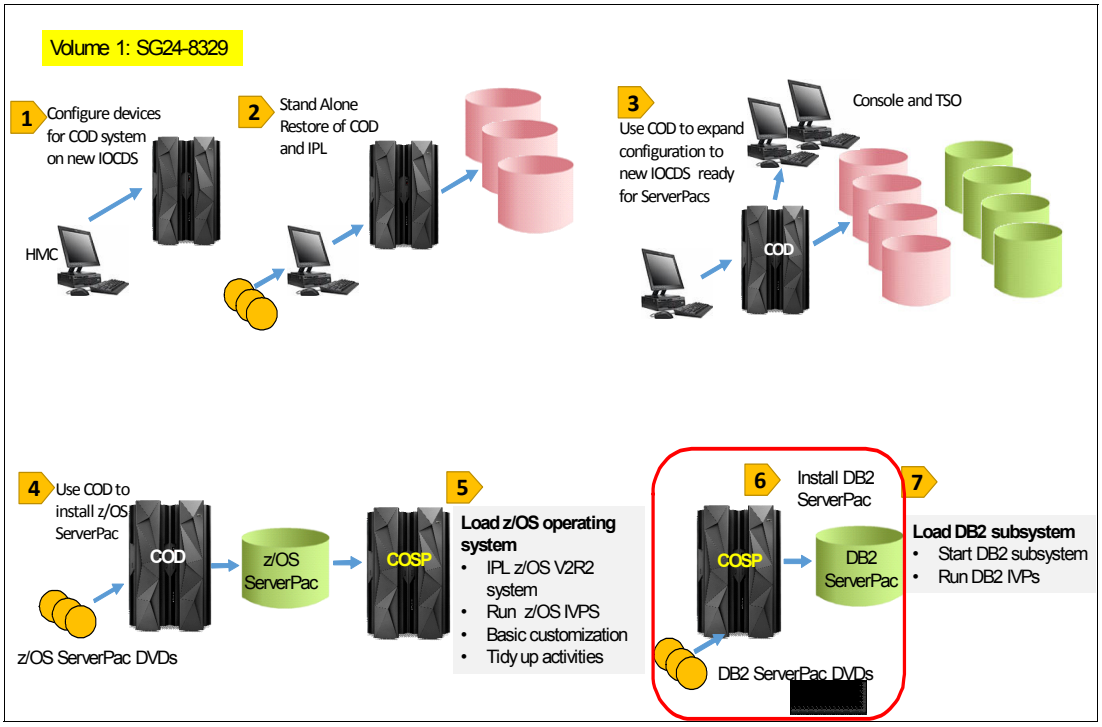

Figure 14-1 Phase 11 Milestone 6

14.2 Requirements

To install DB2 V11 ServerPac order by using z/OS ServerPac system, the CustomPac installation dialog must be loaded and accessible by this system. This requirement was met by completing the tasks that were performed during z/OS ServerPac system installation. The requirements also depend on the options that are used for the ServerPac order.

14.2.1 Related documents

The following IBM publications provide relevant information during Phase 11:

- *ServerPac: Using the Installation Dialog*, SA23-2278
- *ServerPac/DB2: Installing Your Order OSxxxxxx* (documentation that is provided with your ServerPac order)

14.2.2 Resources

Ensure that the following resources are available:

- z13 server installed with a logical partition (LPAR) that is running z/OS ServerPac system.
- UNIX System Services task active and HFS/zFS file system to receive order contents.
- TCP/IP and FTP tasks properly set up and active.
- Workstation with network connectivity to z/OS ServerPac system and ShopzSeries website.
- User ID and password to access z/OS ServerPac system.
- Internet order delivery of ServerPac DB2 V11.
- CustomPac installation dialog installed.
- TN3270 software installed on workstation, such as IBM Personal Communications.

14.2.3 Related document

For more information during this phase, see *z/OS Planning for Installation*, GA32-0889.

14.3 Scenario

The activities that are described in this chapter consider our scenario of a z13 server that is installed with z/OS ServerPac system running on a logical partition (LPAR). This LPAR was set up during z/OS ServerPac installation with UNIX System Services, TCP/IP, and FTP.

We also used this system as driving and target systems in the CustomPac installation dialog for the ServerPac build of DB2 V11. For more information about the ServerPac installation process, see Figure 12-1 on page 182.

The ServerPac ordering process and different media delivery options are described in the following chapters:

- Chapter 2, “Pre-planning” on page 7
- Chapter 3, “Planning” on page 15
- Chapter 11, “Phase 8: ServerPac installation preparation” on page 169

In our example, a workstation with network connectivity to z/OS ServerPac system and ShopzSeries website was used because z/OS ServerPac LPAR had no connectivity to ShopzSeries. This same workstation was used to connect to a TSO/E session of z/OS ServerPac system to perform the installation tasks by using TN3270 software.

14.3.1 Transferring Internet order delivery content to z/OS ServerPac system

Similar to the process that was described in Chapter 11, “Phase 8: ServerPac installation preparation” on page 169, we must transfer DB2 V11 order content to z/OS ServerPac system. The size of our order is 309 MB and the space that is required is approximately twice the size of the order. Therefore, we reused the HFS file system that was used during z/OS ServerPac installation because it featured approximately 10 GB of available space. You can choose to define a new HFS/zFS file system.

Note: Before you mount the hierarchical file system (HFS) that is used for z/OS ServerPac build, ensure that it is not mounted on the Customized Offering Driver (COD) z/OS driving system. If the HFS is still mounted on the COD z/OS driving system, issue the following command from the ISPF Command Shell (option p.6 from CustomPac Master Application menu): UNMOUNT FILESYSTEM('xxx'), where xxx is the HFS data set name. Ensure that you can run the **UNMOUNT** command.

Complete the following steps:

1. Go to the OMVS and create one directory as the HFS mount point to hold ServerPac orders, as shown in Example 14-1. The user ID must include an OMVS segment to log on into UNIX System Services.

Example 14-1 Creating directory for HFS mount point

```
From ISPF Command Shell, execute:
TSO OMVS
cd /
mkdir serverpac
exit
```

Note: Commands on UNIX System Services are case-sensitive.

2. From the ISPF Command Shell, issue the command to mount the HFS, as shown in Example 14-2. Ensure that you can run the **MOUNT** command.

Example 14-2 Mount HFS

```
MOUNT FILESYSTEM('xxx') MOUNTPOINT('/serverpac') TYPE(HFS) MODE(RDWR), where
xxx is the HFS dataset name. Our dataset name is OMVS.ZOSV22.CPAC.OS220149.HFS.
```

3. Download the contents of your Internet order delivery from ShopzSeries into temporary directories of your workstation (see Example 14-3). ServerPac/DB2 contents were delivered by using SMP/E GIMZIP archive format.

Example 14-3 Creating directories on your workstation

```
Create directories C:\<workstationdir>\order and C:\<workstationdir>\content on
your workstation and download the package files into them.

where, <workstationdir> is the path name of the directory on the workstation
into which the order is downloaded.  In our case is 'serverpac'.
```

4. Upload the DB2 V11 order from your workstation to z/OS ServerPac system. Before transferring files to z/OS host, create the directories as shown in Example 14-4.

Example 14-4 Creating directories on z/OS ServerPac system

```
Create directories /<mvsdir>/<order_number>.order and
/<mvsdir>/<order_number>.content on z/OS host system.

where,  <mvsdir> - The path name of the directory on the z/OS host system into
which the order is to be uploaded. In our case, this value is '/serverpac'.
<order_number> - The ServerPac order number is OS220220.
```

In our environment, the directories that are shown in Example 14-5 were created on UNIX System Services.

Example 14-5 DB2 V11 order directories on z/OS ServerPac system

```
cd /serverpac/
mkdir db2v11r1
mkdir db2v11r1/OS220220.content
mkdir db2v11r1/OS220220.order
```

Transfer files from workstation to z/OS ServerPac system via FTP in binary format, as shown in Example 14-6.

Example 14-6 FTP files of DB2 V11 order from workstation to z/OS ServerPac system

```
C:\> ftp <mvsaddress>
User (mvsaddress:(none)): <tsouid>
331 Send password please.
Password:
230 tsouid is logged on. Working directory is "tsouid.".
ftp> bin
ftp> prompt off
ftp> cd /<mvsdir>/<order_number>.order
ftp> mput C:\<workstationdir>\order\*.*
ftp> cd /<mvsdir>/<order_number>.content
ftp> mput C:\<workstationdir>\content\*.*
ftp> quit

where,
<mvsaddress> - The name or address of the z/OS host system.
<tsouid> - The valid user ID to be used when logging on  to the z/OS host
system.
<mvsdir> - The path name of the directory on the z/OS host system into  which
the order is to be uploaded. In our case is '/serverpac'.
<order_number> - The ServerPac order number is OS220220.
<workstationdir> is the path name of the directory on the workstation into
which the order is downloaded, in our case 'serverpac'.
```

14.4 Planning DB2 V11 ServerPac installation layout

During the ServerPac installation process, you must provide the layout of data set placement for your target system. This layout must be defined and the naming convention for volumes labels must be decided before you start your installation. The volumes labels that are used for the ServerPac DB2 build are listed in Table 14-1 on page 240.

Table 14-1 Volume lay out for DB2 V11 installation

Device address	Volume label	Access systems	Usage
1237 (mod 9)	D00SB1	ServerPac	DB2 Software
1285 (mod 27)	D00SB2		DB2 SSID catalog, directory, databases, table spaces, and so on
2000 (mod 54)	M0SIN1		ServerPac Installation HFS
2001 (mod 54)	M0SIN2		ServerPac CustomPac dialogs

14.5 Planning the ServerPac installation configuration

By using the CustomPac installation dialog, the ServerPac order configuration can be tailored with inputs from the following names and values that you want to use for the ServerPac process:

- Global Variables: HFS/zFS information, and so on
- Zones: SMP/E CSI and zone names
- Volumes: Names, device type, and number
- Data Sets: Names, placement on volume, and space
- Aliases: Associated to catalogs
- System Specific Aliases (SSAs)

If you want to keep the configuration simple, modify the default configuration as required.

14.6 Receiving the DB2 V11 ServerPac Order

Start the CustomPac installation dialog from ISPF Command Shell and run the CLIST that is shown in Figure 14-2.

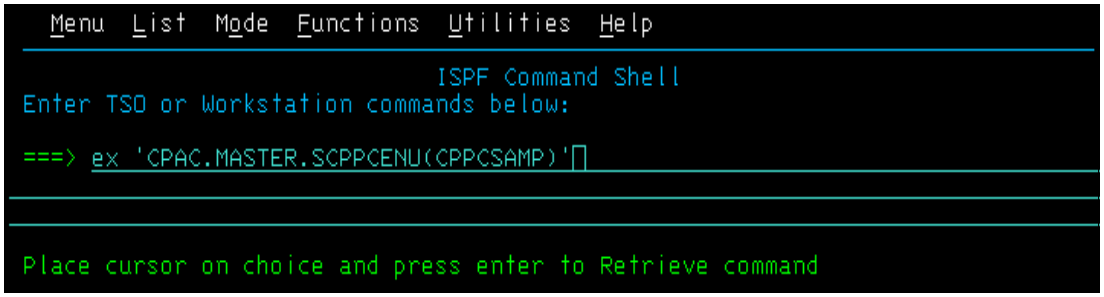

Figure 14-2 Starting the CustomPac installation dialog

When you see the CustomPac installation dialog main menu (as shown in Figure 14-3), you can start receiving your ServerPac order.

Figure 14-3 CustomPac installation dialog main menu

Select the **R RECEIVE** option and enter the information that is necessary to generate the RECEIVE job to obtain your order.

Note: During the receive process for the order, the installation dialog copies some of the SCPPSENU data set members into your ISPPROF data set. Ensure that your ISPPROF data set has at least 30 tracks of available space.

We chose the following options from CustomPac installation dialog panel CPPP610A, according to our media delivery method and press Enter (see Figure 14-4):

```
CPPP610A  --------------------- Receive an Order -----------------------------
COMMAND ==>

  Receive the order from   ==> F       F - File system
                                       S - Server
                                       T - Tape

  Order Number             ==> OS220220

  ------------- Order Dialog Data Set Allocation Information ----------------

  Data Set Qualifiers      ==> CPAC.OS220220               (Must be unique)

  Volume Serial            ==> M0SIN2   (Blank for SMS-managed data sets)
    - or -
  STORCLAS                 ==>          (Blank for non-SMS-managed data sets)
  Specify a data class for SMS or non-SMS managed data sets (optional).
  DATACLAS                 ==>
  Specify a management class for only SMS managed data sets (optional).
  MGMTCLAS                 ==>
  Dialog CLIST Record Format ==> FB       (FB or VB)

              Press Enter to continue or End to cancel
```

Figure 14-4 CustomPac installation dialog panel CPPP610A

- Receive the order from: F - File System
- Order number: OS220220
- Data set Qualifiers: CPAC.OS220220 (for middle level qualifier of data sets for your order to be unique because each ServerPac order has a different number)
- Volume Serial: M0SIN2 (volume to be used to allocate the order installation dialog data sets, which were defined during the z/OS ServerPac installation process)
- Dialog CLIST: FB

In the CustomPac installation dialog panel CPPP610G, the target directory value is provided, as shown in Figure 14-5. This HFS is the file system with DB2 V11 order contents.

```
CPPP610G  ------------ Receive an Order from the File system ----------------
COMMAND ==>

Target Directory ==> /serverpac/db2v11r1

                 Press Enter to continue or End to cancel
```

Figure 14-5 Dialog panel CPPP610G

To complete the receive process, confirm the job card information and review the RECEIVE job before it is submitted.

14.7 Installing the DB2 V11 order

After the order is successfully received, select the **I INSTALL** option from the main panel to proceed with the DB2 V11 installation process. In the Order List panel, select your order number, which should feature a status of “received”. A list of options are displayed, which must be executed in sequence to complete the installation process.

14.7.1 Creating the work configuration

The first step to install DB2 order is to create a work configuration to save the variables and inputs that are used in the next sections. Select **C** from menu option to create the configuration, as shown in Figure 14-6.

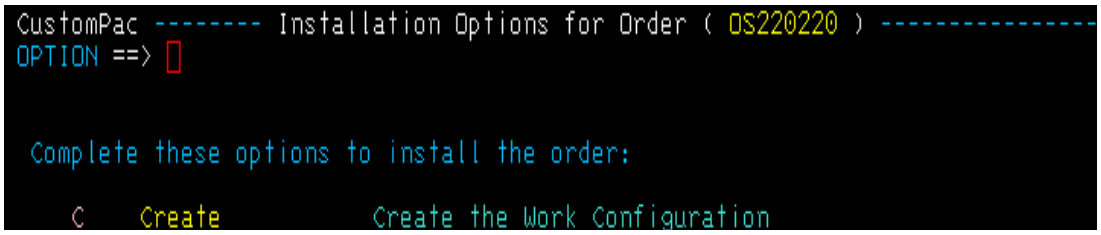

Figure 14-6 Creating the configuration

Because this installation is your first DB2 order installation, there is no option to merge from a previously saved configuration. From the command line, enter `CR` to create your work configuration, as shown in Figure 14-7.

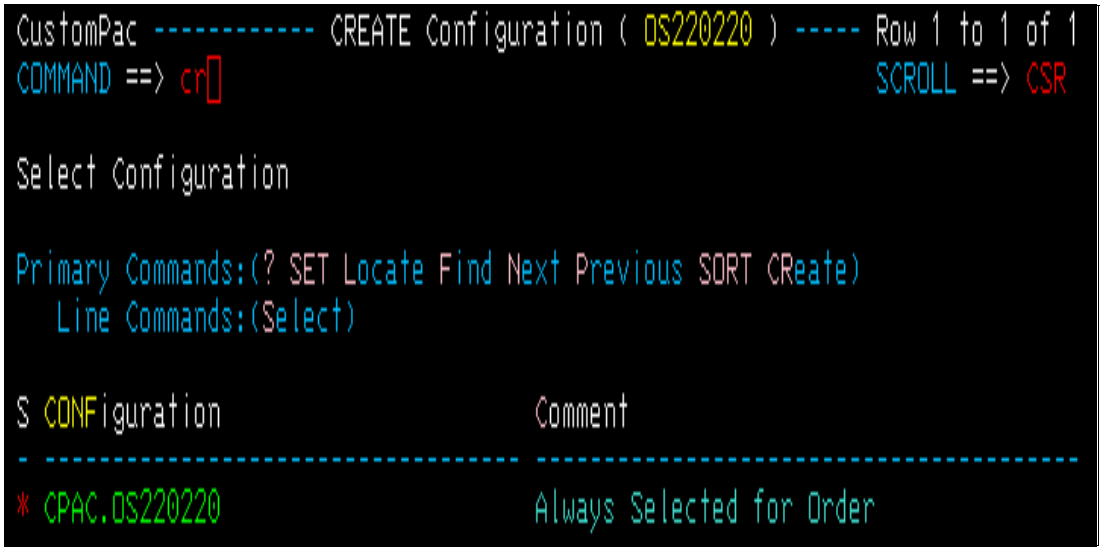

Figure 14-7 Entering CR to create the configuration

Note: If a duplicate configuration is found, you are prompted to confirm the deletion and re-create the same name configuration. Be careful during this process because after your work configuration is overridden, your previous information is lost.

14.7.2 Specifying values for variables

To select this option, select **V** from menu, as shown in Figure 14-8.

```
CustomPac -------- Installation Options for Order ( OS220220 ) ---------------
OPTION ==>

 Complete these options to install the order:

    C    Create           Create the Work Configuration
    V    Variables        Specify Values for Variables
```

Figure 14-8 Variables option

The variables are used by the dialog to obtain information about the driving and target systems, such as, name of master catalog, DB2 subsystem recognition character (SRC), DB2 subsystem ID, DB2 VSAM high-level qualifier (HLQ), and DB2 HLQ. The variables that are shown in this panel depend on your ServerPac order type, such as DB2, as shown in Figure 14-9.

```
CustomPac ----------- Installation Variables ( OS220220 ) - Row 24 to 55 of 62
COMMAND ==>                                                SCROLL ==> CSR

Variable Selection List                                    SHOW( ¬C       )

Primary Commands:(? SET Locate Find Next Previous CANcel SAVE SHow VARname)
   Line Commands:(Browse Delete Edit Insert Repeat Ship)

 S     Synonym            STA  Contents
 - --- -----------------  ---  ----+----0----+----0----+----0----+----0----
   ==> DB2 GEN SUB
       DB2 SRC             D   -
       DB2 SUBSYSTEM ID    D   DB0S
       DB2 SYSADM ID       D   DB2ADM
       DEFINE DB2 ICFCAT   D   YES
       PARMLIB SUFFIX      D   00
       DB2 VSAM HLQ        D   DB0SC
       DB2 HLQ             D   DBS0
       OUTPUT MIDL QUAL    D   V11

   ==> SUBSYS DB2
       DB2 IRLM NAME       D   IRLM
       DB2 IRLMPROC        D   DB0SIRLM
       USR1 VOL SER        D   D00SB2
```

Figure 14-9 Variable Selection List panel

You can change the variables as you want or keep the defaults to conform to your wanted installation. However, consider the following variables (and others) that are shown in Figure 14-9 on page 244:

- DB2 SRC: DB2 subsystem recognition character (SRC). The SRC identifies DB2 commands that were entered from any console for the specified DB2 subsystem.
- DB2 SUBSYSTEM ID: DB2 subsystem ID, as it is specified in the IEFSSNXX parmlib member. The DB2 subsystem ID identifies this DB2 subsystem to the operating system and other subsystems.
- DB2 SYSADM ID: DB2 SYSADM ID, which identifies the user having SYSADM authority to grant access to DB2 resources in the system. This user ID must have RACF ALTER access to install DB2 on an active system.
- DB2 VSAM HLQ: High-level qualifier for data sets that contain DB2 databases, VSAM table spaces, LOG, BSDS, and Archive.
- DB2 HLQ: HLQ of the target and DLIB data sets of this DB2 subsystem.
- DB2 IRLM NAME: Subsystem ID of the IRLM subsystem that is the lock manager for the new DB2 subsystem.
- DB2 IRLMPROC: Name of the procedure that starts the inter-region lock manager for the new DB2 subsystem.
- USR1 VOLSER: VOLSER of the volume that contains the DB2 database and table space data sets.
- OLD MASTERCAT: Fully qualified data set name of the driving systems' master catalog.

For more information about available variables, see your ServerPac DB2: Installing OSxxxx documentation.

14.7.3 Specifying SMP/E Zone Names

Select **Z** to select this option from menu, as shown in Figure 14-10.

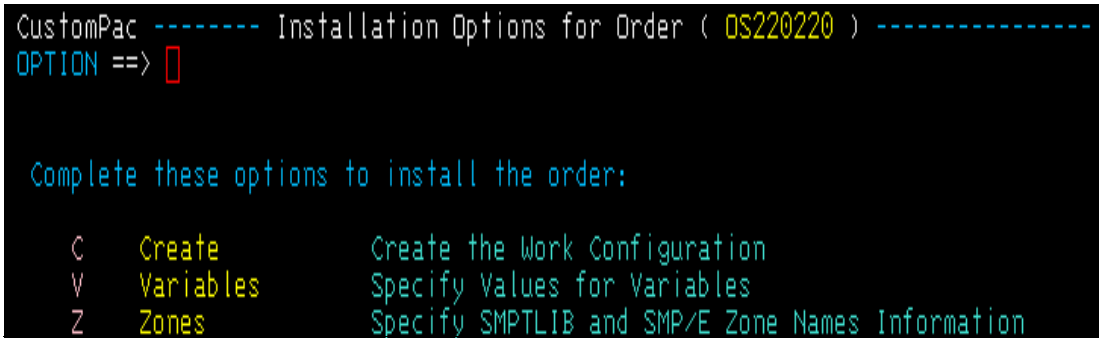

Figure 14-10 Zones option

Change the data set prefix, volume, and zone names as needed. Our installation is shown in Figure 14-11.

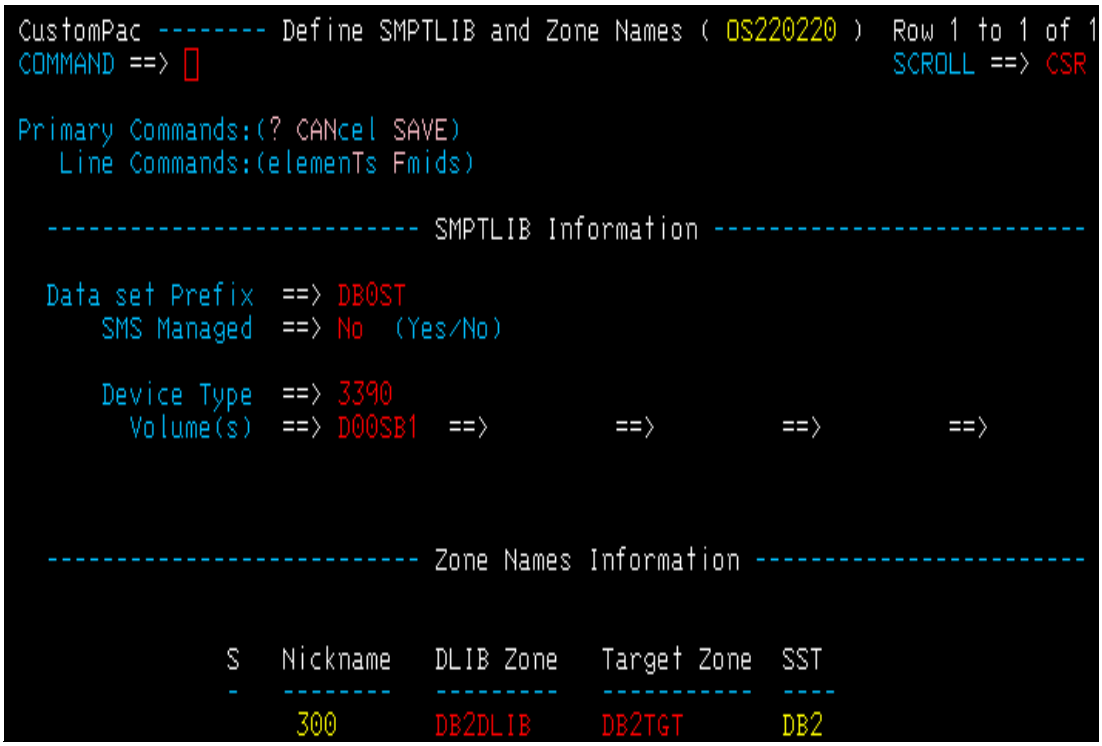

Figure 14-11 Installation example

14.7.4 Modifying the system layout

The Modify System Layout (MSL) option is selected by selecting **M** from menu, as shown in Figure 14-12.

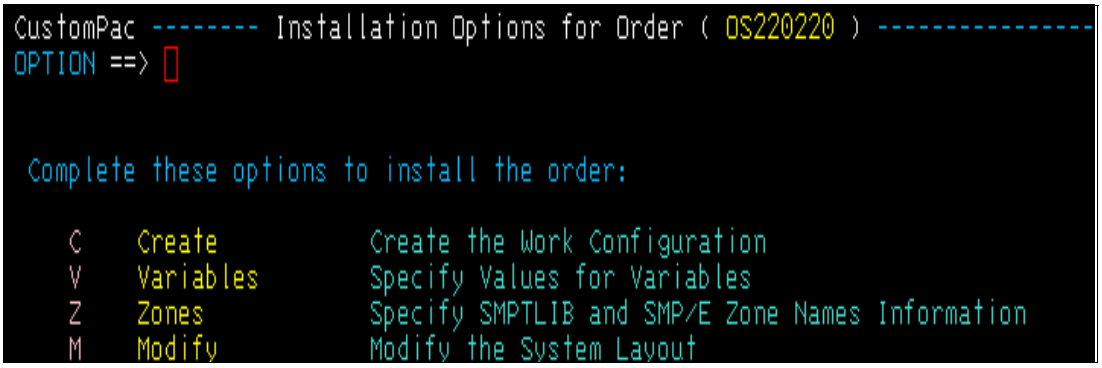

Figure 14-12 Modify option

Here, we can assign data sets to volumes, change data set attributes, and so on. To save some time, CustomPac dialog offers an option to create a recommended system layout (RSL) to automatically assign target and DLIB data sets to physical volumes.

Because you might use different device types or order products other than z/OS in your ServerPac order, IBM does not ship a pre-configured RSL. Instead, an RSL is created for you, by using the information that you provide in the dialog. Then, the dialog assigns data sets to physical volumes automatically. (Logical volumes are assigned in the background.)

We suggest that this option is used first; then, you can make any modifications to adhere to your installation needs. For more information about how to change your system layout, see Chapter 12, “Phase 9: ServerPac Build of z/OS V2R2” on page 181and *ServerPac: Using the Installation Dialog* documentation.

For our DB2 installation, we first selected option A to create an initial recommended system layout. Because physical volumes for each data set type were low, we moved target, DLIB, and SMP/E data sets to a single physical 3390-9 volume, as shown in Figure 14-13.

```
CustomPac ------------ Modify System Layout ( OS220220 ) ---- Row 1 to 1 of 1
COMMAND ==>                                                  SCROLL ==> CSR

SUMMARY Of Physical Volumes

Primary Commands:(? DEVT)
   Line Commands:(Select Dslist)

  PVolume/ Seq Device Device   Warn-  Init   ---------- Cylinders -----------
S STORCLAS No. Number Type     ings   Volume Existng  RSVD Assignd  Used  Free
- -------- --- ------ -------- ------ ------ ------- ----- ------- ----- -----
  D00SB1       1237  3390-9           Y        0      0   1056   1056  8961
```

Figure 14-13 Moving data sets

We also updated the HLQ of target, DLIB, and SMP/E data sets, as shown in Figure 14-14.

```
CustomPac ------------- Modify System Layout ( OS220220 ) -- Row 1 to 30 of 49
COMMAND ==>                                                  SCROLL ==> CSR

Summary Of Data Sets

Primary Commands:(? SET Locate Find Next Previous SORT CHange OFile OList
                  FindComp)
   Line Commands:(Merge eXpand Conflict Unmerge Select)

                                                  --- Data Set --- Primary
S Data Set Name                              X F  Type RECFM LRECL Tracks  WARN
- ------------------------------------------- - -  ---- ----- ----- ------- ----
  CPAC.DB2.DOCLIB                                 PDS   FB      80       8
  CPAC.DB2.PARMLIB                                PDS   FB      80       4
  CPAC.DB2.PDFPD                                  PDS   VB     255      44
  CPAC.DB2.SAMPLIB                                PDS   FB      80       4
  DB0S.ADSNBASE                                   PDS   FB      80      10
  DB0S.ADSNENU                                    PDS   FB      80      16
  DB0S.ADSNHFS                                    PDS   VB     255     363
  DB0S.ADSNIVPD                                   PDS   VB    8188     236
  DB0S.ADSNLOAD                                   PDSE  U        0    3735
  DB0S.ADSNLOD2                                   PDSE  U        0     184
  DB0S.ADSNMACS                                   PDS   FB      80    1690
  DB0S.ADXRLOAD                                   PDS   U        0      41
  DB0S.ADXRSAMP                                   PDS   FB      80       6
  DB0S.SDSNBASE                                   PDS   FB      80      10
  DB0S.SDSNC.H                                    PDS   FB      80      16
  DB0S.SDSNCLST                                   PDS   FB      80     136
  DB0S.SDSNDBRM                                   PDS   FB      80      66
  DB0S.SDSNEXIT                                   PDS   U        0       3
  DB0S.SDSNIVPD                                   PDS   VB    8188     236
  DB0S.SDSNLINK                                   PDS   U        0       6
  DB0S.SDSNLOAD                                   PDSE  U        0    3318
  DB0S.SDSNLOD2                                   PDSE  U        0     363
  DB0S.SDSNMACS                                   PDS   FB      80     189
  DB0S.SDSNPFPE                                   PDS   FB      80      16
  DB0S.SDSNSAMP                                   PDS   FB      80    1276
  DB0S.SDSNSPFM                                   PDS   FB      80       5
  DB0S.SDSNSPFP                                   PDS   FB      80      22
  DB0S.SDSNSPFS                                   PDS   FB      80       5
  DB0S.SDSNSPFT                                   PDS   FB      80       3
  DB0S.SDXRRESL                                   PDS   U        0      29
```

Figure 14-14 Updating data sets

14.7.5 Specifying catalogs for HLQ

Select option **A** to assign high-level qualifiers of your order to a catalog, as shown in Figure 14-15.

```
CustomPac -------- Installation Options for Order ( OS220220 ) ----------------
OPTION ==>

 Complete these options to install the order:

    C    Create           Create the Work Configuration
    V    Variables        Specify Values for Variables
    Z    Zones            Specify SMPTLIB and SMP/E Zone Names Information
    M    Modify           Modify the System Layout
    A    Alias            Specify Catalogs for High-Level Qualifiers
```

Figure 14-15 Assigning high-level qualifiers

Because our target system is also the z/OS ServerPac system, we used previously defined catalogs for this system to make it simple. You can use this panel to define a catalog data set name for each of the alias (that is, high-level qualifier) that are not yet defined for this system to attend your configuration needs, as shown in Figure 14-16.

```
CustomPac -------------- ALIAS to CATALOG ( OS220220 ) ---------- Row 1 from 3
COMMAND ==>                                                 SCROLL ==> CSR

Define CATALOG Dataset Names

Primary Commands:(? SET Locate Find Next Previous SORT CANcel SAVE)
   Line Commands:(Delete Insert Repeat)

        S  Alias    STA Target System Catalog Data Set Name           Type
        -  -------- --- ----------------------------------------- ----
           CPAC      M  CATALOG.M0S0.MASTER                       MCAT
           DB0S      M  CATALOG.M0S0.MASTER                       MCAT
           OMVS         CATALOG.M0S0.USER
```

Figure 14-16 Defining catalog data set names

14.7.6 Specify temporary aliases for catalogs

Select option **SSA** (as shown in Figure 14-17) to specify the System Specific Aliases (SSA) for the target system master catalog and user catalogs.

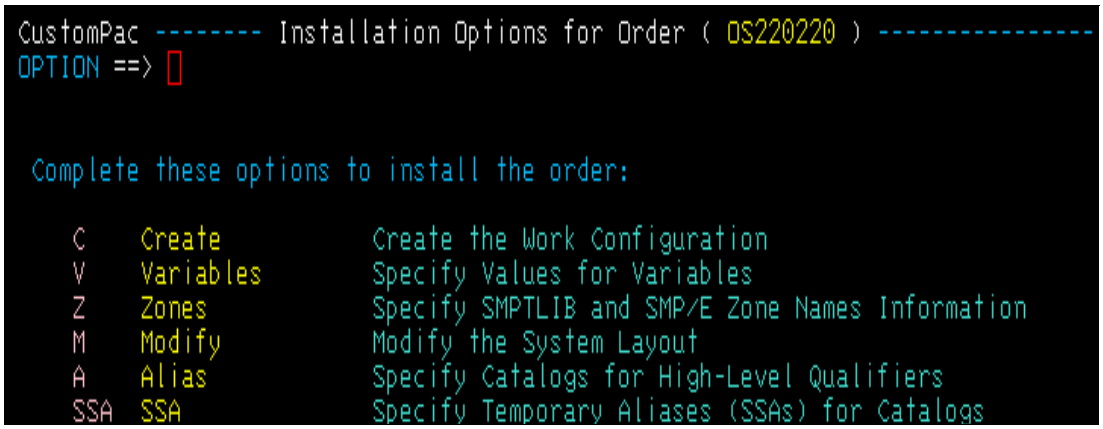

Figure 14-17 Specifying SSAs

SSAs create aliases in the driving system's master catalog to relate data set allocation to target system master and user catalogs without interference. All options on CustomPac installation dialog must be performed to install your order, although z/OS ServerPac system is also the target system, as shown in Figure 14-18.

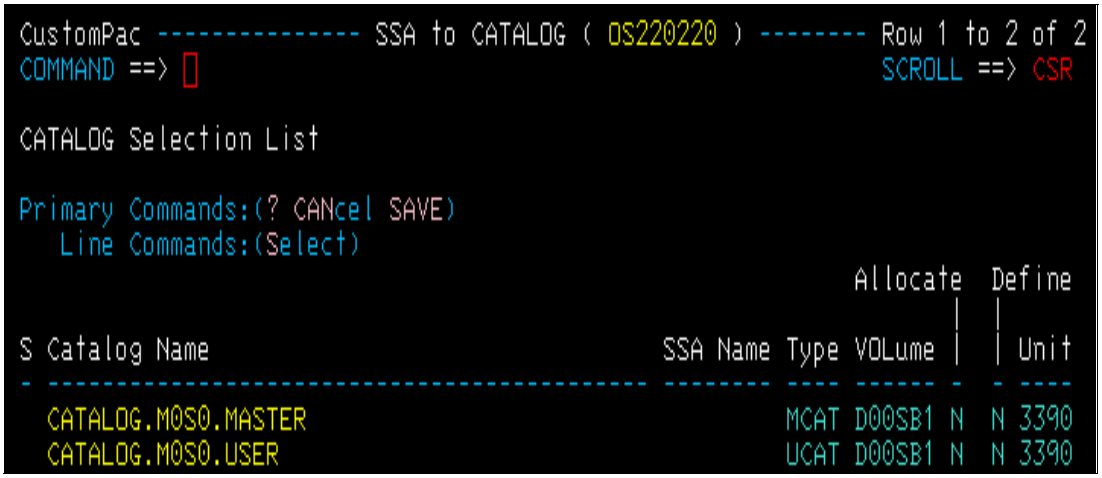

Figure 14-18 SSA to catalog

14.8 Submitting installation jobs

After we customize our ServerPac configuration, the CustomPac installation dialog generates customized jobs that are based on the options that were selected earlier in the installation process. Updates to these installation jobs can be made before their submission. For more information about updates options, see Chapter 12, “Phase 9: ServerPac Build of z/OS V2R2” on page 181.

Select option **I** to run the installation jobs for your ServerPac order, as shown in Figure 14-19.

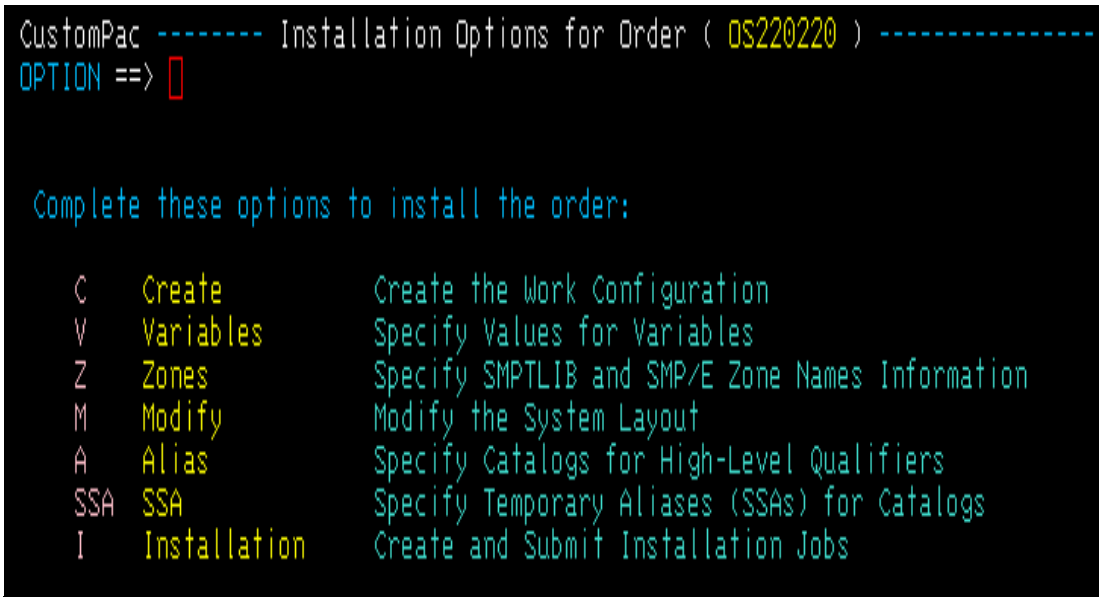

Figure 14-19 Installation option

The installation jobs are grouped into the following phases:

- Phase 1: Installation jobs: During this phase, you allocate and restore DB2 target, DLIB, UNIX System Services, and SMP/E data sets to DASD.
- Phase 2: DB2 Postinstallation tasks: During this phase, you customize and initialize a DB2 subsystem.
- Phase 3: Installation Verification - DB2: Jobs are executed at this stage and verify successful DB2 subsystem installation.
- Phase 4: Completing the Installation: These jobs perform installation cleanup, such as SSA removal, that is run after a successful installation of your DB2 subsystem.

In this chapter, we described Phase 1. The other phases are described in Chapter 15, “Phase 12: Customizing and initializing DB2 V11 subsystem” on page 255.

14.8.1 Installation tasks summary

The three types of installation tasks are listed in Table 14-2.

Table 14-2 Installation tasks

Task	Description
SRC	Jobcard that can be edited. Use Select line command to generate SRC entry, which can be changed if necessary.
DOC	Documentation for the following set of jobs. Use Select line command to generate and view DOC entries.
JOB	Installation job that can be submitted. Use Select line command to generate only the selected job that can be submitted. Use Backup if you generated the job.

Note: Some of these installation jobs are optional or are not required, depending on your configuration.

14.8.2 Running the installation setup

The OFFLINIT job initializes all volumes that you identify in the Modify System Layout option of the CustomPac installation dialog.

In Modify System Layout, if you specified that a volume is to be initialized, OFFLINIT initializes it. If no volumes are initialized, the OFFLINIT job is generated without ICKDSF control statements.

The VTOC and Index size are determined by the 3390 model that you provide in the Modify System Layout panel.

Note: OFFLINIT deletes any data on the volumes.

Before running this job, ensure that the devices were varied offline. Use one of the following commands, where 'nnnn' is the device number of the appropriate DASD:

- From an z/OS console: **`V nnnn,OFFLINE`**
- From SDSF: **`/V nnnn,OFFLINE`**

When the job completes successfully, vary the devices back online with one of the following commands:

- From an z/OS console: **`V nnnn,ONLINE`**
- From SDSF: **`/V nnnn,ONLINE`**

14.8.3 RACF profile comparison and information

The RACFLIST job lists the details of the RACF profiles that are present in RACFDRV job of the current order and helps in identifying missing security requirements on the driving system. This job executes RACF commands **RLIST**, **LISTDSD**, **LISTUSER**, and **LISTGROUP** on resources that belong to classes, data sets, users, and groups.

The RACFDRV job establishes the RACF profiles that are needed on the driving system to run the other driving system installation jobs. RACFDRV also creates profiles for the HLQs in the order. Run this job on the driving system.

The user ID that runs the RACFDRV job must have the RACF SPECIAL attribute; in our case, IBMUSER user ID.

Note: Review the contents of this job before it is submitted. RACFDRV contains sample definitions; therefore, running it unchanged on a system might result in an outage or significant rework for you later, depending on your installation's current security definitions.

14.8.4 Defining catalogs and allocating data sets

If your order includes SMS-managed data sets, you must ensure that the user ID that submits the installation jobs has access to the STGADMIN.IGG.DIRCAT resource in the FACILITY class.

The ALLOCDS job allocates and catalogs your target system data sets. Many of these data sets have unique considerations for serialization, availability, security, backup, and recovery. For more information, see the product documentation. This job also supports allocating data sets under SMS by using the SMS classes (SMS must be active). If data sets are *not* SMS-managed, this job assigns a VOLSER number and UNIT number to data sets.

14.8.5 Restoring your order

Note: Before the RESTORE job is run, ensure that the UNIX File System requirements are met.

The RESTORE job performs the following functions:

- Verifies and decompresses the PAX files that are in the order package directory
- Copies the ServerPac/DB2 data sets to the appropriate DASD device
- Restores the SMP/E data sets
- Defines all the user-defined DDDEFs for user-defined data sets
- Mounts user-defined data sets
- Builds the CSI zones
- Initializes the SMP/E environment
- Restores the UNIX file system into a new service directory
- Builds the BPXPRMDB

The CPPUPDT job adds members to the CPAC.DB2.PARMLIB data set for products in the ServerPac order. Some of these members can be used as-is; others might be merged with your PARMLIB members.

The ALTCAT job renames each allocated data set to its final data set name.

Note: Because no SSA is used for any data sets, it is not required to perform any rename operation. The data set names stay as defined by the ALLOCDS job.

14.8.6 Setting up the SMP/E environment

The UPDDDD job updates your target system's new consolidated software inventories (CSIs) (global, target, and DLIB) with the DDDEFs for the newly allocated SMP/E data sets.

The UPDDDD job also creates a LINK LMODS job if one is needed for the target zone.

The CALLLINK job contains the generated JCL statements from the LINK LMODS command that is executed in the UPDDDD job. Verify that all target UNIX file systems are mounted before the CALLLINK job is executed.

Now, all required order installation jobs are complete and DB2 software is installed.

We are now ready for Phase 12.

15

Phase 12: Customizing and initializing DB2 V11 subsystem

This chapter describes the post-installation tasks on the z/OS ServerPac target system to customize a DB2 V11 subsystem parameters. Then, this DB2 subsystem can be initialized from system console. Finally, some installation verification program (IVP) jobs are run, as needed, from the target system to verify that installation is done correctly. Clean up jobs are then run to remove System Specific Aliases (SSA) and other information.

This chapter includes the following topics:

- 15.1, “Goals” on page 256
- 15.2, “Requirements” on page 256
- 15.3, “Performing post-installation tasks” on page 257
- 15.4, “Installation verification for DB2” on page 261
- 15.5, “Completing the installation” on page 262

15.1 Goals

Phase 12 features the following goals:

- DB2 Post-Installation tasks: At this phase, we customize and initialize a DB2 subsystem.
- Installation verification for DB2: Jobs are run at this stage to verify successful DB2 subsystem installation.
- Completing the installation: These jobs perform installation cleanup, such as SSA removal, that is run after a successful installation of your DB2 subsystem.

Phase 12 is required to achieve Milestone 7: Load the DB2 subsystem. Where this phase occurs in the overall process is shown in Figure 15-1.

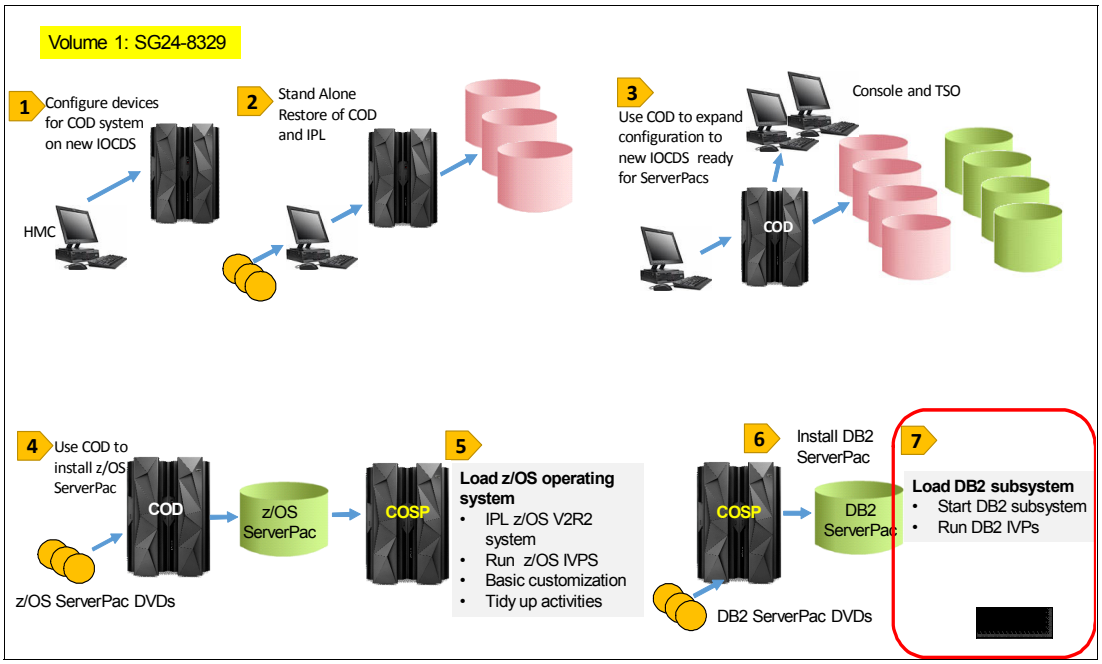

Figure 15-1 Phase 12 Milestone 7

15.2 Requirements

To continue with DB2 V11 ServerPac order installation on z/OS ServerPac system, we must provide an SMS environment for managing DB2 catalog and directory data sets. This SMS environment must include a data class for allocating the data sets in extended format and using extended addressability. RRS task is also required to be active.

15.2.1 Documentation

The following IBM publications provide relevant information during this phase:

- *ServerPac: Using the Installation Dialog*, SA23-2278
- *ServerPac/DB2: Installing Your Order OSxxxxxx* (documentation provided with your ServerPac order)
- *DB2 11 for z/OS Installation and Migration Guide*, GC19-4056

15.2.2 Resources

We ensure that the following resources are available:

- z13 server is installed with a logical partition (LPAR) running z/OS ServerPac system.
- UNIX System Services task is active and hierarchical file system (HFS)/zFS can receive order contents.
- TCP/IP and FTP tasks are properly set up and active.
- Workstation with network connectivity to z/OS ServerPac system and ShopzSeries website is set up.
- User ID and password are available to access z/OS ServerPac system.
- Internet order delivery of ServerPac DB2 V11 is complete.
- CustomPac installation dialog is installed.
- TN3270 software is installed on workstation, such as IBM Personal Communications.
- SMS environment is available to manage DB2 catalog and directory data sets.
- RRS task is active.

15.2.3 Related document

The IBM publication *z/OS Planning for Installation*, GA32-0889, provides relevant information during this phase.

15.3 Performing post-installation tasks

We must perform the post-installation jobs that are described in this section after the SMP/E installation of DB2 V11 is complete. For more information, see Chapter 14, “Phase 11: ServerPac DB2 build” on page 235.

15.3.1 Running the DB2 Installation Dialog

The LOGDB2 job copies the ISPF logon procedure from the current ISPF CMD library to member ISPDB2T and updates ISPDB2T with the DB2 data set names in the library concatenations.

The ISRPRIM job copies a tailored version of the DB2 delivered panel (DSN8ISPM) to DB2 panel library. A new application is added to the ISR@PRIM panel and it is displayed when option P is selected from the Master Application menu.

The DB2PARM job starts the IEBUPDTE utility to add the following members to the PARMLIB data set:

- IEASYSDB
- SCHEDDB
- IEFSSNDB

The DSNTIDXA job copies the DSNTINST CLIST input member DSNTIDXA to member DSNTIDID and updates DSNTIDID with specific DB2 variables that are provided during the ServerPac DB2 installation.

The DSNTINST job copies a CLIST to data set xxxx.OS220220.SCPPCENU(DB2), where xxxx is the DB2 order high-level qualifier (HLQ); in our case, CPAC. This CLIST concatenates DB2 ISPF libraries to the current allocation, makes them available to TSO/E, and calls the DB2 DSNTINST CLIST.

15.3.2 Starting the CLIST

We complete the following steps to start the CLIST:

1. Exit the ServerPac installation dialog.
2. Check the region size (2 MB often is enough).
3. Start ISPF.
4. Select option 6 on the main ISPF panel.
5. Enter the following command:

   ```
   EXEC 'CPAC.OS220220.SCPPCENU(DB2)'
   ```

6. Run the DB2 installation dialog.

   Note: When DB2 is installed through the DB2 installation dialog, we do not add the job card. A job card is supplied automatically. When DB2 is installed outside of the DB2 installation dialog, a job card must be added.

   The DB2 installation CLIST panel is displayed. Some of the values are preset by the DB2 installation dialog. We ensure that the following input parameters are used:

   ```
   1 INSTALL TYPE ===> INSTALL
   4 LIBRARY NAME PREFIX ===> xxxx, where xxxx is the DB2 HLQ
   6 DATA SET NAME PREFIX ===> xxxx, where xxxx is the DB2 HLQ
   8 INPUT MEMBER NAME ===> DSNTIDID
   9 OUTPUT MEMBER NAME ===> DSNTIDxx, where xx is any alphanumeric value except
   XA or VB.
   ```

   This CLIST creates the customization jobs for the new DB2 subsystem. There are many required panels and parameters. We use the defaults to make it simple and change only those parameters that are required to fit the installation.

For more information about the DSNTINST installation CLIST, see *DB2 11 for z/OS Installation and Migration Guide*, GC19-4056.

15.3.3 Running the DB2 Installation Jobs

When the DSNTINST CLIST runs successfully, the DB2 installation jobs are created. These jobs can now be run to install the DB2 subsystem. For more information about submitting the installation jobs, see *DB2 11 for z/OS Installation and Migration Guide*, GC19-4056.

Before submitting the installation jobs, we must run job POSTINST to update these jobs with our variables and copy them to the installation dialog data set.

The POSTINST job updates the DB2 INSTALL/IVP jobs and copies the updated SDSNSAMP members to the installation dialog library, SCPPSENU. After submitting job POSTINST, we must exit the installation dialog. When job POSTINST completes, we can restart the installation dialog and re-tailor our jobs.

Although the DSNTIJSS job is designed for use on systems that do not have an SMS environment, it can be used as a reference for adapting an environment. CLIST DSNTINST does not tailor this job. If we want to create an SMS environment for the DB2 catalog and directory data sets, we customize and run job DSNTIJSS that is supplied in the SDSNSAMP data set.

Note: Per the *DB2 11 for z/OS Installation and Migration Guide*, we must provide an SMS environment for managing DB2 catalog and directory data sets. The SMS environment must include a data class for allocating the data sets in extended format and for the use of extended addressability.

The DSNTIJIN job defines DB2 data sets and databases.

The DSNTIJUZ job defines DB2 initialization parameters. High-level Assembler is required.

The DSNTIJID, DSNTIJIE, and DSNTIJIF jobs are provided to initialize the DB2 catalog and directory data sets. Consider the following points:

- Job DSNTIJID records the active log data set names to the BSDS, formats the active log data sets, and initializes the DB2 directory table spaces and indexes.
- Job DSNTIJIE initializes the DB2 catalog table spaces and indexes (through the SYSGRTNS table space).
- Job DSNTIJIF initializes the remaining DB2 catalog table spaces and indexes.

The DSNTIJMV job copies DB2 procedures to PROCLIB.

The DSNTIJVC job establishes the DB2/TSO environment. If fixed-block format CLIST libraries are used, read the job comments.

15.3.4 Initial start of z/OS

An initial program load (IPL) is required so that changes to logical PARMLIB are effective and to load the DB2 early code from the SDSNLINK load module library.

We complete the following steps:

1. IPL our z/OS residence as usual.
2. Reply to the message `IEA101A SPECIFY SYSTEM PARAMETERS...` as follows:

   ```
   R 00,SYSP=(xx,DB),CLPA
   ```

   where xx is the suffix of the IEASYSxx member we normally use to IPL our z/OS system, and DB indicates the IEASYSDB member, which contains DB2 specific requirements.
3. After we IPL z/OS, message DSN3100I is displayed on the system console, which indicates that DB2 is ready for the **START** command.
4. Start JES, VTAM, and TSO/E as usual.
5. Start DB2 from the system console with the following command:

   ```
   -START DB2
   ```

   Where (-) is the subsystem recognition character defined for DB2 during CustomPac installation dialog. We can choose another SRC.

If DB2 starts successfully, the series of RESTART messages we receive concludes with the following messages:

```
DSNR002I RESTART COMPLETED

DSN9022I DSNYASCP -xxxx START DB2 NORMAL COMPLETION
```

In addition to the normal address on our z/OS system, 2 - 5 new DB2-related address spaces start. These address spaces are `ssnmMSTR` and `ssnmDBM1` (and possibly `ssnmDIST`, `ssnmADMT`, and `irlmproc`) where `ssnm` is the DB2 subsystem name, `ssnmADMT` is the DB2 administrative task scheduler procedure name, and `irlmproc` is the IRLM procedure name.

Note: When we start DB2 for the first time, we might receive message DSNT501I with reason code 00C900A6. The message implies tailoring the DB2 catalog is incomplete. This message can be ignored. Running job DSNTIJTC corrects the cause of this message.

Job DSNTIJTC starts the CATMAINT utility to tailor our DB2 catalog. To run DSNTIJTC, we must have installation SYSADM authority. Also, SMS must be active on the system where this DB2 subsystem is being installed. SMS must be configured to allocate all data sets for the DB2 catalog and directory in extended format and to use extended addressability.

This job runs program DSNUTILB, which must run from an authorized library. If data set `custname.OS220220.SCPPLOAD` is not authorized, we must edit job DSNTIJTC to delete this library from the JOBLIB concatenation.

Job DSNTIJTM creates default storage group, defines temporary work files, and binds DB2 REXX Language Support. The first time that we run DSNTIJTM, we might receive return code 12 for step DSNTIAS.

Jobs DSNTIJRW, DSNTIJRT, and DSNTIJRV are provided to set up DB2 supplied routines.

Consider the following points:

- Job DSNTIJRW defines core WLM environments for DB2 supplied stored procedures and user-defined functions.
- Job DSNTIJRT installs and configures DB2 supplied routines.
- Job DSNTIJRV verifies the DB2 supplied routines.

If the RACF OPERCMDS class is active and a profile was defined for MVS.MCSOPER.*, the user ID that runs the DSNTIJRV job requires READ access.

For more information, see *DB2 11 for z/OS Installation and Migration Guide*.

The DSNTIJIC job creates an image copy of the DB2 catalog and directory. Although it is not required, it is important for backup purposes.

15.3.5 Initial program loading z/OS

An IPL is required only if SYS1.PARMLIB was changed since the previous IPL. Follow the instructions from the first IPL. Restart DB2 to clear initial error messages.

15.4 Installation verification for DB2

We log on to TSO/E with the user ID that features DB2 SYSADM authority. Start DB2 from the tailored ISPF procedure ISPDB2T, as shown in Figure 15-2.

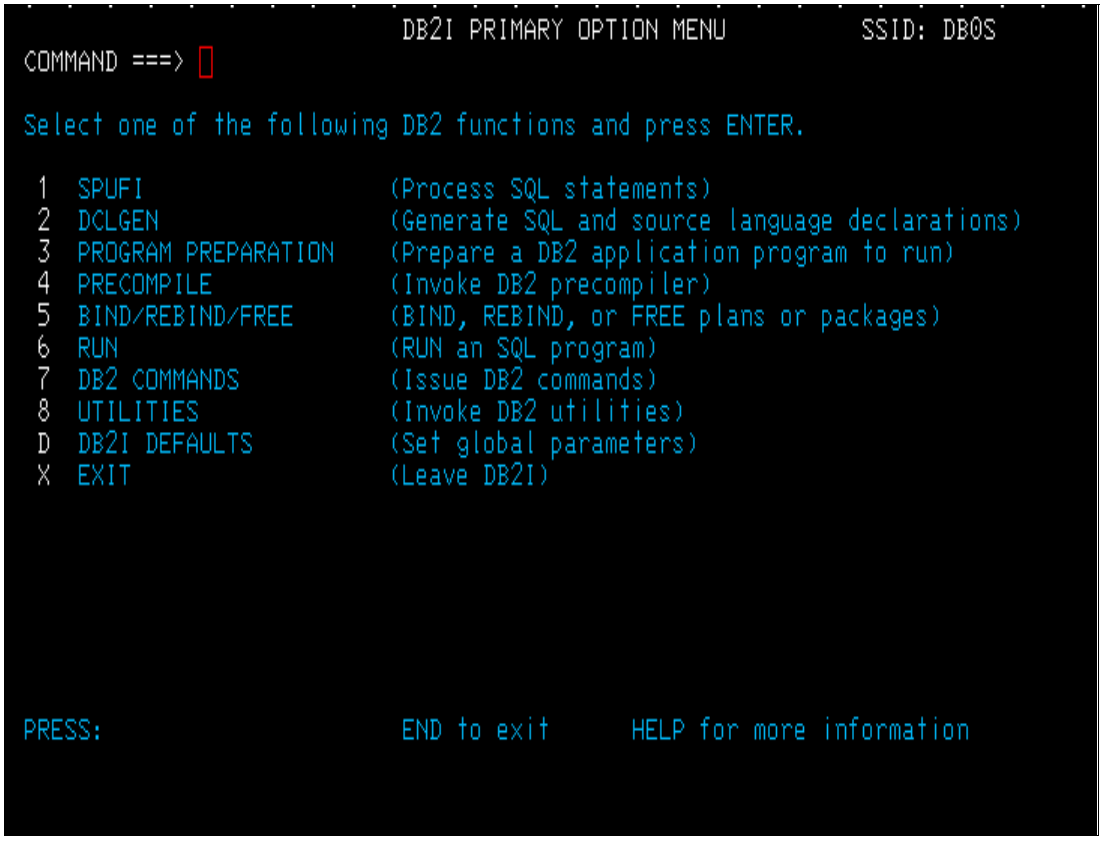

Figure 15-2 Tailored ISPF procedure ISPDB2T

We run a simple SQL query, as shown in Figure 15-3.

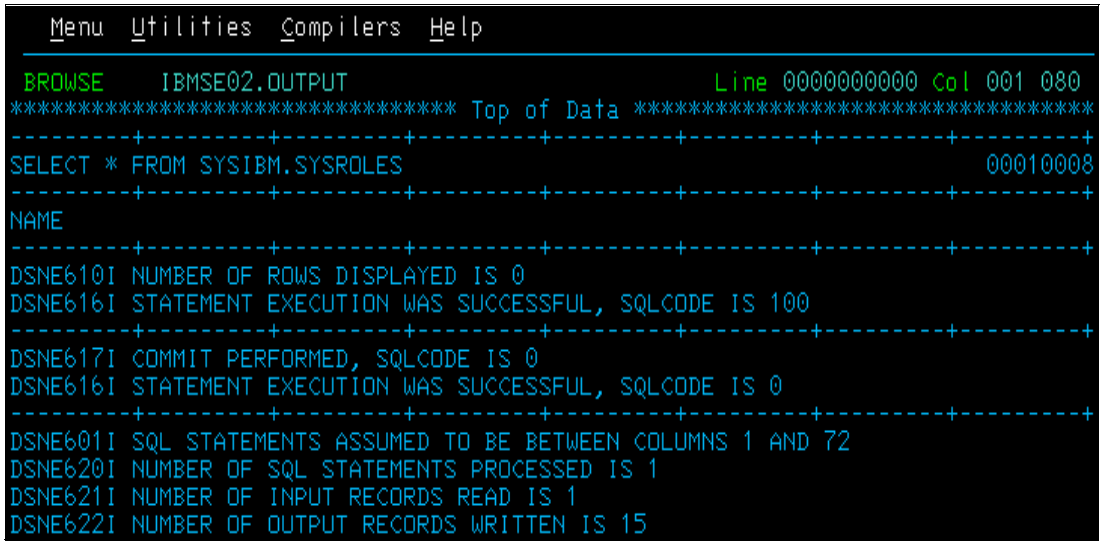

Figure 15-3 Running simple SQL query

We run DSNTEJxx jobs to test our new DB2 subsystem, which depends on our installation because it is possible that some IVP jobs cannot run.

15.5 Completing the installation

We run the cleanup jobs after we verify that ServerPac/DB2 order was installed successfully.

Redbooks

Mainframe from Scratch: Hardware Configuration and z/OS Build

SG24-8329-00
ISBN 0738441619

IBM

(0.5” spine)
0.475”<->0.873”
250 <-> 459 pages

SG24-8329-00

ISBN 0738441619

Printed in U.S.A.