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Migrating SAP R/3 Systems to SAP NetWeaver 7.4

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Migrating SAP R/3 Systems to SAP NetWeaver 7.4

by

Rakesh Muppidi

A Starred Paper

Submitted to the Graduate Faculty of

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Starred Paper Committee:

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Balasubrahmanian Kasi

Abstract

PPG, Pittsburgh Plate Glass Company founded in 1883 at Creighton, Pennsylvania. In 1990 it founded Transitions Optical as a joint venture with Essilor. On April 1, 2014, PPG finalized the sale of Transitions Optical to its joint venture partner, Essilor International of France, however, PPG's technical center in Monroeville will continue to provide research and development services for transitions.

This Capstone project focused on migrating SAP R/3 systems to NetWeaver 7.4 for better performance and efficiency. It focused on the 24*7*365 customer support through various interfaces like mobile, PDA and web to avoid delays and errors in the manual process and emphasizes on integrating SAP applications with the non-SAP customer applications which gives better support and quick resolution to customer grievances. It allowed the integration and alignment of people, information, and business processes across business and technology boundaries. It reduced the time while converting and deploying the data between SAP and non-sap systems by using SAP's own interface component PI (Process Integration). Successfully accessed SAP systems outside the intranet by using web browser or mobile apps in the devices.

Acknowledgements

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Chapter 1: Introduction

Introduction

Founded in 1883 by Captain John Baptiste Ford and John Pitcairn, Jr., as the Pittsburgh Plate Glass Company at Creighton, Pennsylvania; the company changed its name to PPG Industries, Inc., on 19 December 1968 to show its diverse offerings. Ditzler Color Company, established in 1902 in Detroit as an automotive color concern, was purchased by Pittsburgh Plate Glass Company (now PPG) in 1928. In 1990 it founded Transitions Optical as a joint venture with Essilor. On April 1, 2014, PPG finalized the sale of Transitions Optical to its joint venture partner, Essilor International of France, however, PPG's technical center in Monroeville will continue to provide research and development services for transitions.

PPG Industries is an American global supplier of paints, coatings, optical products, specialty materials, chemicals, glass, and fiberglass. With headquarters in Pittsburgh, Pennsylvania, PPG operates in more than 70 countries around the globe. Sales in 2013 were \$15.1 billion.

This Capstone project focused on migrating SAP R/3 systems to NetWeaver 7.4 for better performance and efficiency. Focused on the 24*7*365 customer support through various interfaces like mobile, PDA and web to avoid delays and errors in the manual process and emphasizes on integrating SAP applications with the non-SAP customer applications which gives better support and quick resolution to customer grievances. It allowed the integration and alignment of people, information, and business processes across business and technology boundaries. Migrating R/3 systems to NetWeaver provided organization to

make quick and profitable decisions to improve the growth. In addition, this document also includes the problem statement, objective and nature and significance of the problem.

Problem Statement

PPG was using SAP R/3 systems. The major limitations of R/3 systems were customers couldn't able to access the systems through web browser and integration between SAP and non-SAP systems were possible by using third party tools only. These above mentioned reasons had major impact on the business.

Objective of the Project

Migrating SAP system version (4.6) to SAP NetWeaver 7.4 which has more capability in handling customer requests and simplifying the working areas.

Major objectives of the project are to have

1. Reduce the time while converting and deploying the data between SAP and non-sap systems by using SAP's own interface component PI (Process Integration).
2. Able to access SAP systems outside the intranet by using web browser or mobile apps in the devices.
3. SAP R/3 supports only German and English languages whereas NetWeaver has Unicode functionality it supports around 90,000 characters (560 languages). This functionality made SAP edge in the ERP field. It improved the business of the PPG and customers throughout the globe can easily understand the day-to-day business transactions.

Nature and Significance of the Problem

Because of these issues, PPG was losing their customers adversely, which affected the business. Customers were moving to other companies due to poor response/service received from PPG. Due to R/3 systems PPG was unable to connect to the customers applications. Converting the non-SAP systems applications data and deploying in to SAP systems was time taking process in PPG. The possibility of getting errors was high while converting and deploying the data from SAP to non-SAP and vice versa and this lead to delay in the business process. As R/3 systems does not have the web functionality, employees of the PPG Company couldn't able to access the SAP systems through web browser and they were not able to support the customers round the clock. All these reasons had severe impact in the terms of revenue and business on PPG. R/3 systems can support German and English, but the company had customers in 70 countries which needed more supporting languages. By migrating to NetWeaver, which has Unicode functionality, it supported 90,000 characters (560 languages) which given major advantage in the service and day-to-day transactions. Proposed Technical landscape for PPG shown in Figure 1.

Proposed Technical Landscape for PPG.

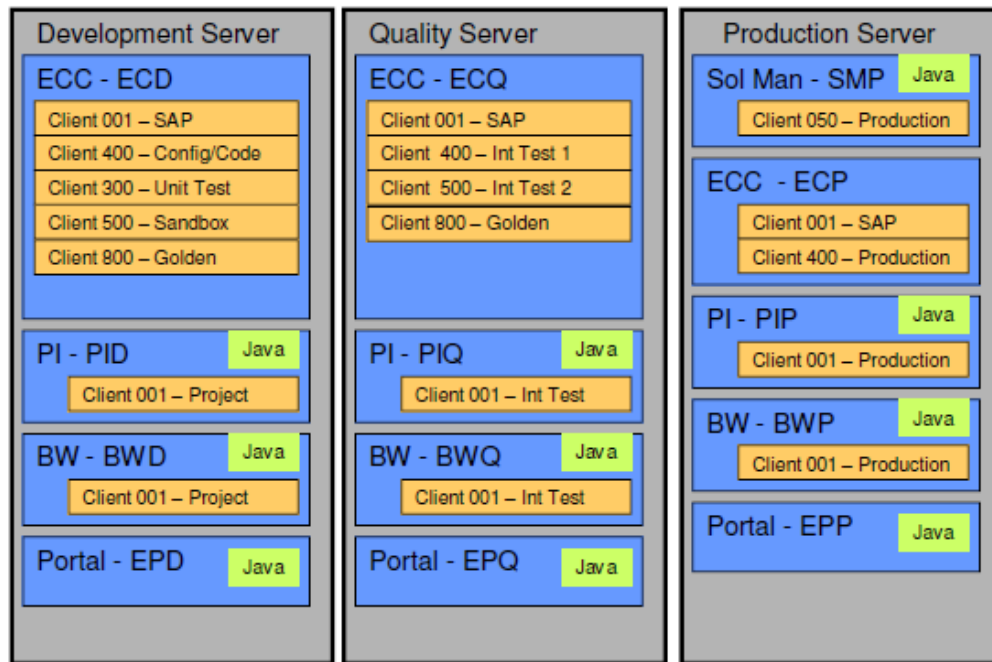


Figure 1: Proposed Technical Landscape for PPG

Three system landscape which was Development, Quality and Production servers shown in Figure 1. After successful migration to NetWeaver version 7.4, development server would have ECD, PID, BWD and EPD systems, quality server would have ECQ, PIQ, BWQ and EPQ systems and production servers would have SMP, ECP, PIP, BWP and EPP systems.

Project Questions

- 1) What is the need for migrating SAP R/3 systems to SAP Net weaver and what are its benefits?
- 2) After migrating the complete landscape, does the PPG Company data secure and reliable?
- 3) Can the project meet go live date?

- 4) Can we really reduce the time of converting code by using SAP PI interface and is it bug free product?

Limitations of the Project

The major limitations of the project were customers couldn't able to access the systems through web browser and integration between SAP and non-SAP systems were possible by using third party tools only and these were solved after migrating systems to SAP NetWeaver.

Definition of Terms

Unicode–Multilanguage Support.

Host–Either a client or a server. A host has its own address on the network, and is its own machine.

ECC System–Enterprise Central Component System.

Summary

The chapter briefly covered the Problem Statement, Objective of the project, Nature and Significance of the project. In later part of the report, it will cover the background and literature review, which explains how the migrations completed successfully to NetWeaver version.

Chapter 2: Background and Review of Literature

Introduction

This chapter briefly describes about on how the problem is originating and narrows down the root causes with the background details and relevant literature. It also draws light on the methodology used and implemented towards the project with the proposed approach.

Background Related to the Problem

PPG Industries is an American global supplier of paints, coatings, optical products, specialty materials, chemicals, glass, and fiberglass. With headquarters in Pittsburgh, Pennsylvania, PPG operates in more than 70 countries around the globe. Company was using SAP R/3 systems and the major limitations of R/3 systems were customers unable to access the systems through web browser and integration between SAP and non-SAP systems were possible by using third party tools only. Converting the non-SAP systems applications data and deploying in to SAP systems was time taking process in PPG and possibility of getting errors were high and this lead to delay in the business process. Due to R/3 landscape PPG was unable to connect to customers' applications and eventually it was losing customers because of poor service. These above mentioned reasons had severe impact in the terms of revenue and business on PPG.

Literature Related to the Problem

A team from PPG raised a request to SAP in order to solve the unique problems which was caused because of R/3 systems. SAP had come up with the solution and provided

several books. They were SAP Administration-Practical Guide, Migrating data from R/3 systems to NetWeaver Version, The SAP OS/DB Migration Project Guide, Upgrading SAP and Efficient SAP NetWeaver BW Implementation and Upgrade Guide (Knox, 2015; Neil, 2013; Vanstechelman, 2005).

Major problem with the R/3 systems was integration between SAP and Non SAP systems by using third party tool was much time taking process when compare with NetWeaver PI component (Schreckenbach, 2015a). NetWeaver version systems would take less time for integration and it would support all languages whereas R/3 systems were supporting only German and English language. And the Company has customers around the globe and they were not able to access through web. We migrated all the legacy systems to NetWeaver version systems to solve all the limitations of the R/3 systems.

SAP is software provided by SAP AG, Germany. It stands for Systems Applications and Products (SAP) for (in) data processing. It is preferred software by most of enterprises, industries. SAP is OS and DB independent. SAP runs on almost all the OS's (Linux, Windows, Z/OS, and AIX). It also supports almost all the Databases (DB2, Oracle, Sybase, MaxDB, and Hana). SAP has rich set of modules (FI, CO, SD, PP, MM, HR, PP, PS, QM, and PM Etc.). SAP supports small, midsized to large enterprises. PPG was using SAP R/3 system landscape. R/3 architecture is explained below (Schreckenbach, 2015a).

SAP R/3 Architecture:

SAP uses the industry specific 3-Layer Architecture and named it as R/3 Architecture (Schreckenbach, 2015a).

It consists of three layers

1. Presentation Server/ Layer/ Tier
2. Application Server
3. Database Layer

1. **Presentation Server:** It is a client for all the SAP Solutions. It is also referred as SAPGUI. There are three 3 types of SAP GUI
 - i) SAP GUI for windows (On Windows OS)
 - ii) SAP GUI for JAVA (On all OS where JAVA is supported)
 - iii) SAPGUI for HTML (for web based)

SAP provides various versions of GUI (4.6c, 620, 640, 700, 710 and 720). To install SAP GUI use presentation server DVD and go to the respective OS win32 and run setupall.exe and follow the onscreen instructions (Vanstechelman, 2005). Figure 2 is the SAP GUI entry screen to add SAP system in the interface.

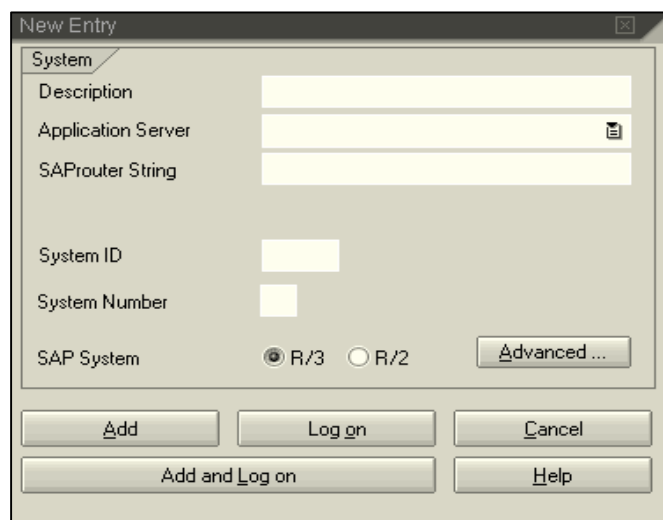


Figure 2: SAP GUI Entry Screen

2. Application Server: It is used to handle the user request and process them to the database. It has dispatcher to process and monitor the user request, work process to process and interpret the requests, Buffer areas to store the frequently accessed data. It absorbs the load both from Client and the server.

It is a physical server, which is used to handle and process the user request. In SAP naming convention we define them as an Instance and it is possible to install more than one instance on a single server provided they should be differentiated by the instance number. Instance number is a 2-digit number that varies between [00 to 97] 98 and 99 are reserved for routing purposes. Instances is of various types (Vanstechelman, 2005).

i) Database Instance.

ii) Central Instance.

iii) Dialogue Instance.

i) Database Instance: This is the Instance where database is installed.

ii) Central Instance: This is the Instance where Application Server/ Tier/ Layer are installed. There will be only one instance in the entire system.

iii) Dialogue Instance: These are the instances, which are used to handle the load on the central instances. We can install as many instances as possible assuming that each instance can serve up to 200 - 500 users depending upon the type of the users.

3. Database server/ layer/ tier: It is the area where the complete data resides. It has its own queue, process, buffers, and request handling mechanism. Most of the databases are on Oracle. SAP is pushing MAXDB (without any license key), Microsoft SQL Server & IBM DB2

with discounted prices. Figure 3 is the pictorial view of SAP R/3 architecture explains the presentation layer, application layer and the database layer (Schreckenbach, 2015b).

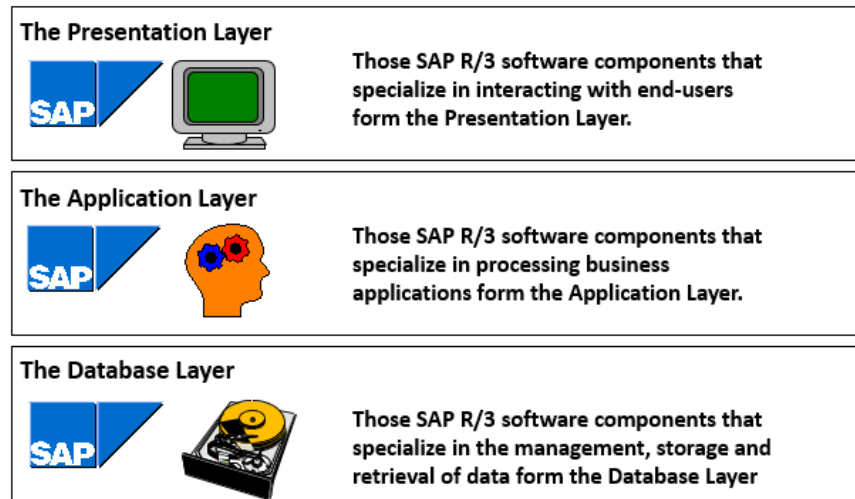


Figure 3: SAP R/3 Architecture

Supporting Platforms:

SAP can be installed on Microsoft windows 2000, win 2008 and win 2012. It can be installed on 32bit or 64bit operating systems. 64 bit means a single process can serve the user with 4GB RAM/ Memory whereas in 32 bit it is 1.9GB Memory. 264, 232 / 8 bytes.

HP UNIX and ORACLE

AIX and ORACLE

IBM Specific operating system with version 5.3 technical (TL) level 7 (TL7)

AIX and DB/2

Proprietary of IBM gives more mileage. Both provided by IBM

ISERIES/ AS400 with DB/2

This is also IBM specific which provides more consistency, reliability, mileage than any other operating system and database.

Sun OS (SOLARIS with ORACLE)

LINUX (SUSE, RHL (RED HAT LINUX) and ORACLE LINUX)

Note: Linux with MaxDB is supported by SAP and provides more leverage (Finance)

Microsoft windows and SQL Server This is the best combination for interactive usage.

PPG had decided to migrate all their legacy systems to SAP NetWeaver systems. Here SAP NetWeaver architecture explained below.

SAP NetWeaver:

SAP Net Weaver provides core functions for the infrastructure of your business solutions in four integration levels. Listed below are the core functions of SAP NetWeaver (Schreckenbach, 2015b).

People Integration (EP).

Information Integration (BI).

Process Integration (XI).

SAP Web Application Server (J2EE + ABAP) Runtime environment.

Application Platform.

Mobile Infrastructure.

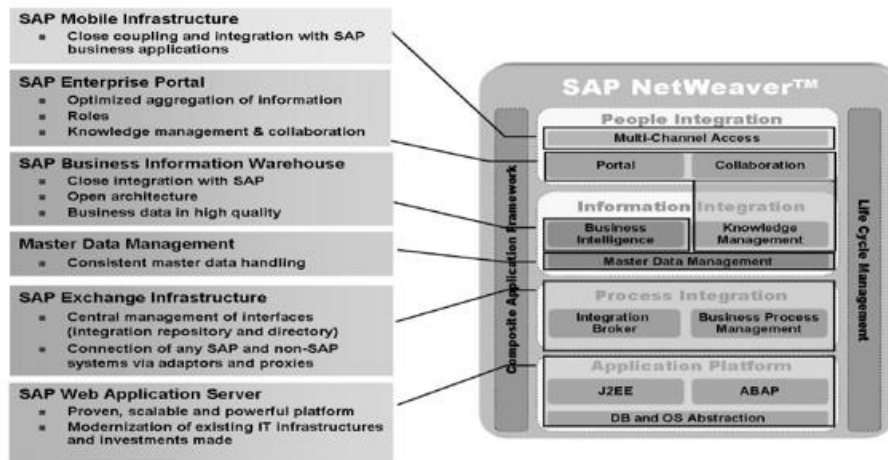


Figure 4: SAP NetWeaver Architecture

Figure 4 is the pictorial explanation of SAP NetWeaver architecture and explains how EP, PI, BI (BW), XI/PI and MI interconnected with each other. With inbuilt components of NetWeaver, integration and accessibility issues can be solved. PPG had faced integration problem with R/3 systems after migrating to NetWeaver version integration problem has been solved. With the third party tool integration was taking much more time when you compare with the SAP PI component. After migration, SAP systems are accessible through web and outside of the intranet (Nolan & Khaitan, 2010).

Literature Related to the Methodology

Migrating SAP R/3 systems to NetWeaver systems was achieved by below mentioned five phases (Mergaerts & Vanstechelman, 2015). They were:

1. Project Preparation
2. Business Blue Print phase
3. Realization Phase

4. Final Preparation

5. Go live / Support

1. **Project Preparation:** During this phase the business requirements were gathered and documented. The core team was defined from SAP, Implementing partner, Customer, Business owners, etc., also referred as Steering Committee (With some management skills). These committees assembled from time to time and review the progress of the project. Author gathered all the important data and requirements to begin the project (Mergaerts & Vanstechelman, 2015).

2. **Business Blueprint:** In this phase, the project was documented and the blue print got signed off from the customer. In this phase required scenarios were selected. Scenario was nothing but a group of transactions that were related to a specific module like ECC, PI, BW, and Solman. Author reviewed the documents before it actually executed (Mergaerts & Vanstechelman, 2015).

3. **Realization:** In this phase where the actual migration took place (Vanstechelman, 2005).

Below mentioned steps were very important in migrating R/3 systems to NetWeaver systems.

i) SAP Basis team took export of the source system by using export/import method.

Author had taken the notes of prerequisites and preparation steps before actually export begin.

- ii) Team downloaded the software from SAP service market place. Checked the dependencies of Target system.
- iii) Planning, preparation and execution of the migration.
- iv) Post migration steps. Author reviewed each and every phase of the realization step and documented it.

4. **Testing & Final Preparation:** Testing took place in the testing client, integration client and test cases built during the configuration only.

- i) Unit testing: This was used to test the customizing in its test client within the same system. Tcode: SCCI was used to copy the requests between clients before change requests released.
- ii) Integration testing: It performed in a separate system QAS

It was used to prepare the quality and as well as production system. The integration testing signoff from the users, MTP (Mote to Production) and readiness of production system communicating with SAP to conduct GO-Live sessions, End user training, End user acceptance, SAP Early watch report, internal and external security (Vanstechelman, 2005).

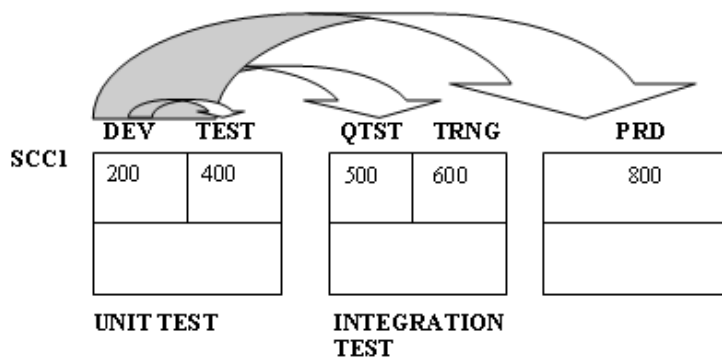


Figure 5: Testing Strategy

Figure 5 explains the testing strategy in a pictorial format. Unit testing was performed in DEV and TEST clients and Integration testing was performed in QTST and TRNG before it actually moved to production client.

4. **GO-LIVE:** Where SAP NetWeaver systems worked as production systems. All the teams made sure system was stable and performed up to the expectations and also checked the customer needs were met.

Summary

The concentration of this chapter has been focused towards making the readers understand more about the background of the problem, in depth details of the literature related to the problem. Also, all the background literature review towards the methodology of the project has been explained in a detailed manner.

Chapter 3: Methodology

Introduction

In this chapter, various steps were involved to make progress towards the accomplished objective. Migration of SAP R/3 systems to SAP NetWeaver 7.4 version includes very important phases like Project Preparation, Business Blue Print phase, Realization Phase, Final Preparation and Go live / Support (Kalluri, 2014). This chapter would explain all the phases clearly and also covered the data collection and analysis with the proposed timelines.

Design of the Study

Migrated legacy systems to NetWeaver 7.4 version by moving all the core data to a separate folder and applied it to the newly installed systems.

Project Preparation, Business Blue Print phase, Realization Phase, Final Preparation and Go live / Support phases were very important for migrating legacy systems to NetWeaver 7.4 version. In Project preparation phase the business requirements were gathered and documented. In business blue print phase the project was documented and the blue print got signed off from the customer. Actual migration took place in the realization phase by taking the export of legacy systems and importing it to the NetWeaver 7.4 version systems.

Migration of legacy systems to NetWeaver version followed below steps.

STEPS for SYSTEM COPY

Core data had been taken from legacy systems by using below methods.

1. Source System
2. Use Installation Master DVD
 - Use Additional Tasks
 - System Copy
 - Source System
 - Select database instance export
 - Specify typical and specify Profile directory e:\usr\sap\sid\sys\profile.
 - Specify the password if <sid>adm
 - Specify the export location for Import.

Review the inputs and continue the import. Figure 6 screen was displayed after running the sapinst executable.

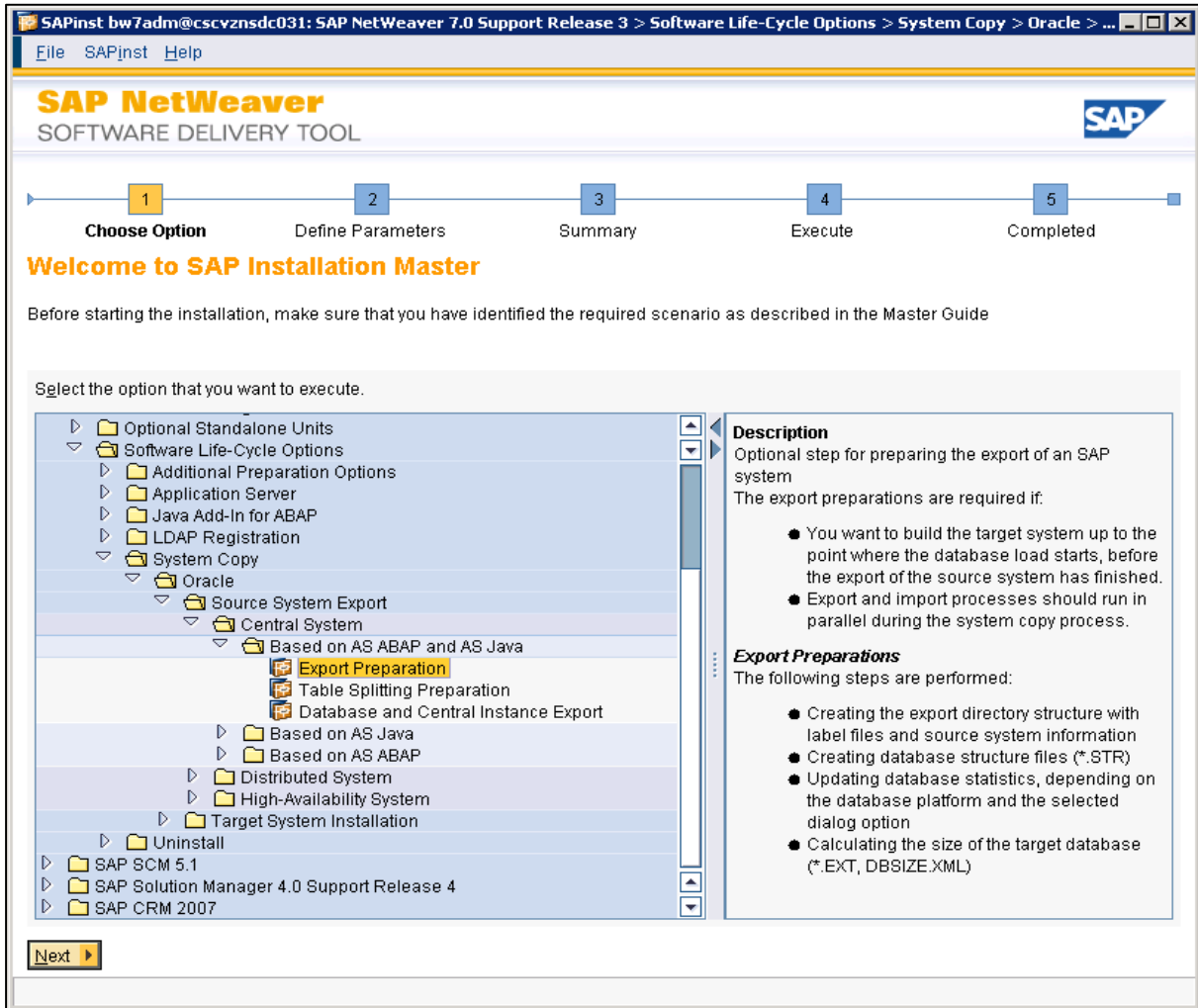


Figure 6: SAP Export Screen 1

After running sapinst executable Figure 6 was prompted. In order to start the export preparation of SAP R/3 systems we chose the below option.

System copy → Oracle → Source System export → Central System → Based on AS ABAP and AS Java → Export preparation.

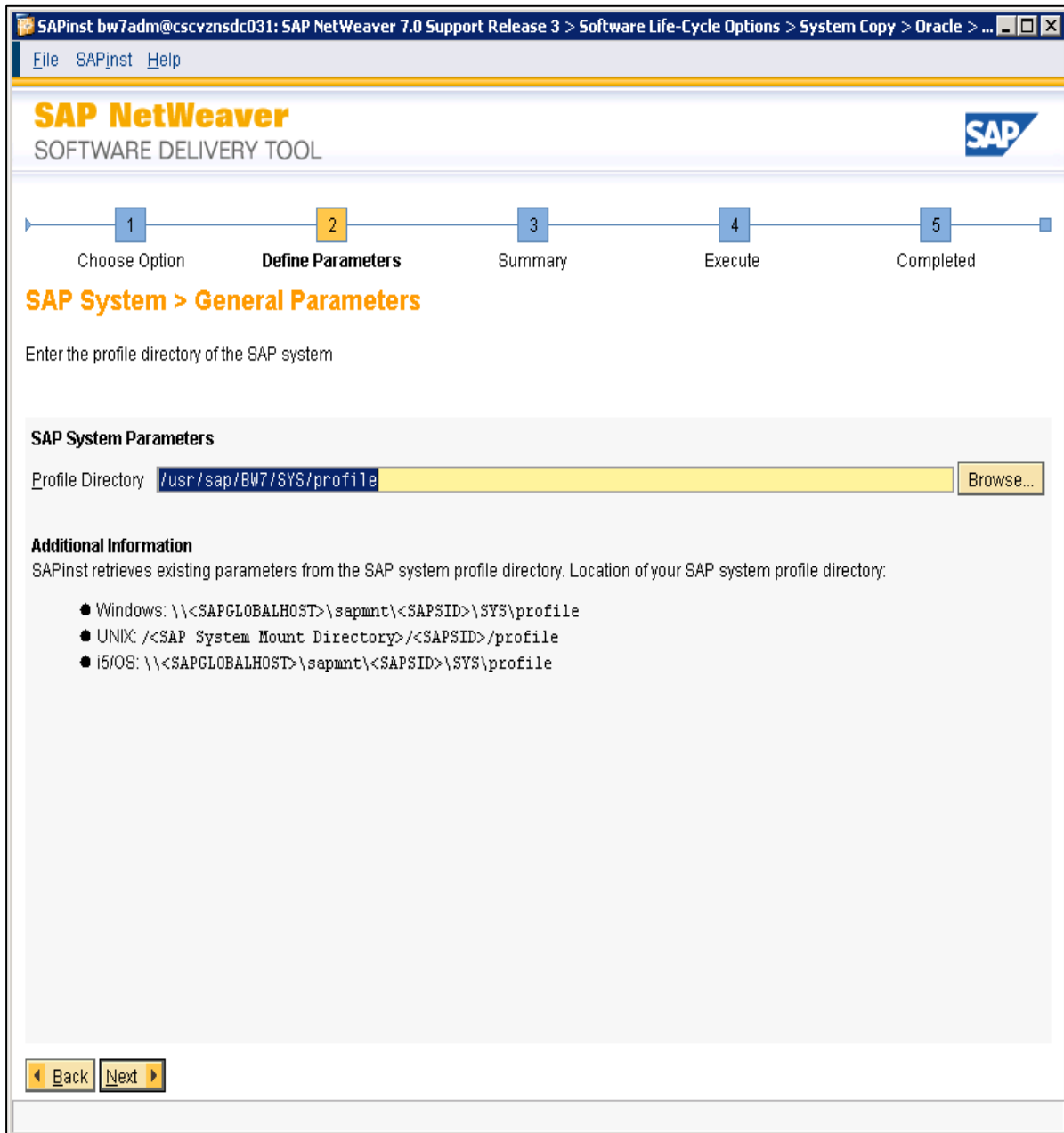


Figure 7: SAP Export Screen 2

In Figure 7, profile directory path of the legacy systems was given.

The screenshot shows the SAP NetWeaver Software Delivery Tool interface. At the top, the title bar reads "SAPinst bw7adm@cscvznsdc031: SAP NetWeaver 7.0 Support Release 3 > Software Life-Cycle Options > System Copy > Oracle > ...". Below the title bar is a menu with "File", "SAPinst", and "Help". The main header displays "SAP NetWeaver" and "SOFTWARE DELIVERY TOOL" with the SAP logo on the right. A progress bar at the top indicates five steps: 1. Choose Option, 2. Define Parameters (highlighted in yellow), 3. Summary, 4. Execute, and 5. Completed. The main content area is titled "SAP System > DNS Domain Name" and contains the instruction: "Enter the DNS domain name for the SAP system to calculate the fully qualified domain name (FQDN)". Under the heading "SAP System Domain Name", there is a checkbox labeled "Set FQDN for SAP System" which is checked. Below it is a text input field for "DNS Domain Name for SAP System*" containing the value "consult.csc.com.". An "Additional Information" section follows, explaining that the DNS Domain Name is used to calculate the FQDN and is configured in the profile parameter SAPLOCALHOSTFULL, with a reference to SAP Note 654982. At the bottom left, there are "Back" and "Next" navigation buttons.

Figure 8: SAP Export Screen 3

In Figure 8 author marked for Fully Qualified Domain Name (FQDN) and given the DNS name.

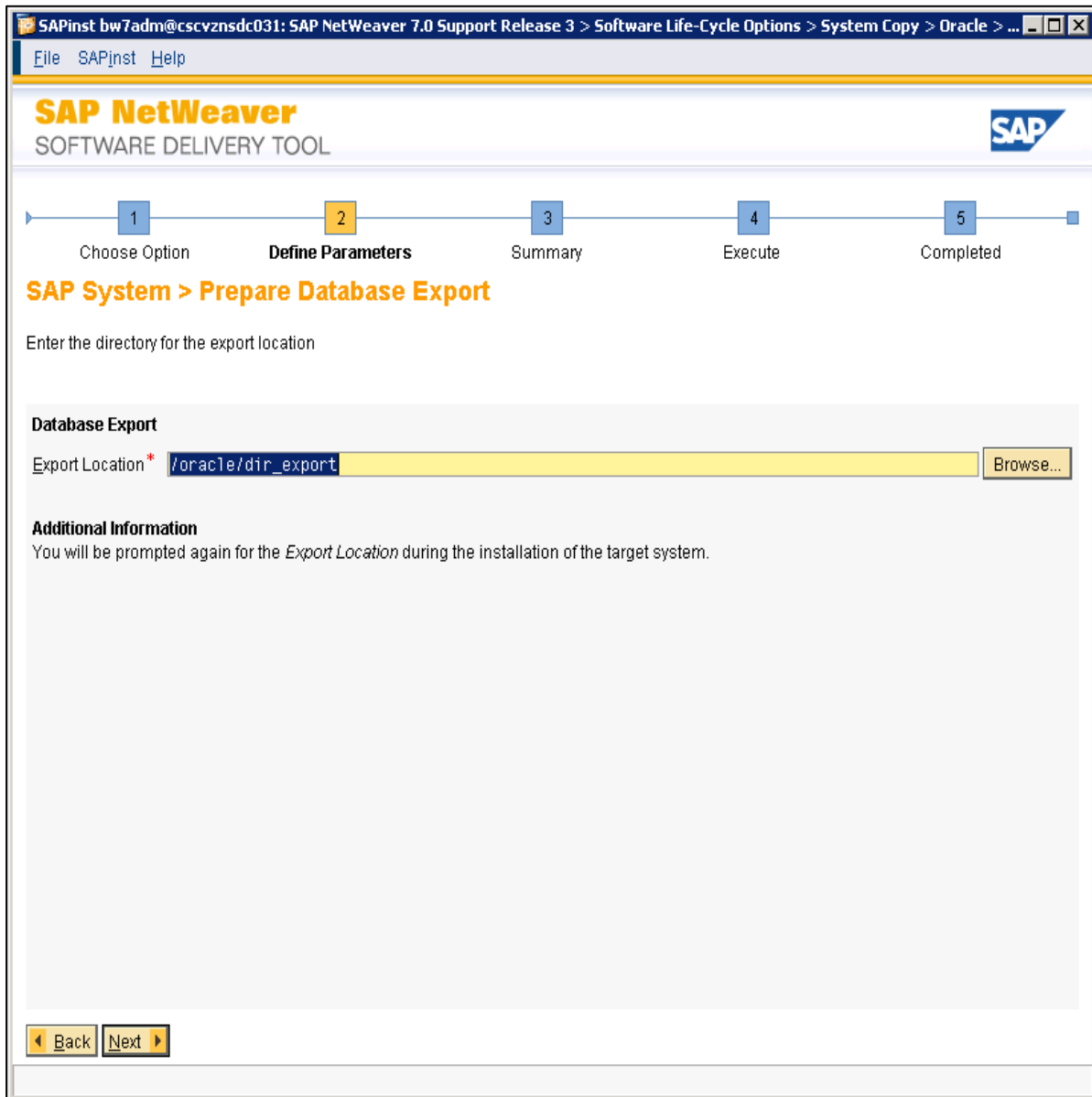


Figure 9: SAP Export Screen 4

Export location path had been provided in figure 9. This export had imported after migrating legacy systems to NetWeaver version.

The screenshot shows the SAP NetWeaver Software Delivery Tool interface. At the top, the title bar reads "SAPinst bw7adm@cscvznsdc031: SAP NetWeaver 7.0 Support Release 3 > Software Life-Cycle Options > System Copy > Oracle > ...". Below the title bar is a menu with "File", "SAPinst", and "Help". The main header displays "SAP NetWeaver SOFTWARE DELIVERY TOOL" with the SAP logo on the right. A progress bar at the top indicates five steps: 1. Choose Option, 2. Define Parameters (highlighted in yellow), 3. Summary, 4. Execute, and 5. Completed. The main content area is titled "SAP System > Export for Target System" and contains the instruction "Specify the system parameters of the database that you want to install". Under the "Source System" section, there are four input fields: "Database ID (DBSID)" with value "BW7", "Source DB" with value "Oracle", "Database Host" with value "cscvznsdc031", and "Source OS" with value "SunOS". Under the "Target System" section, there is one dropdown menu for "Target Database Type" with "Oracle" selected. At the bottom left, there are "Back" and "Next" navigation buttons.

Figure 10: SAP Export Screen 5

In Figure 10 author provided the Source system details, Database ID (DBSID), Source DB, Database Host, Source OS and Target database type.

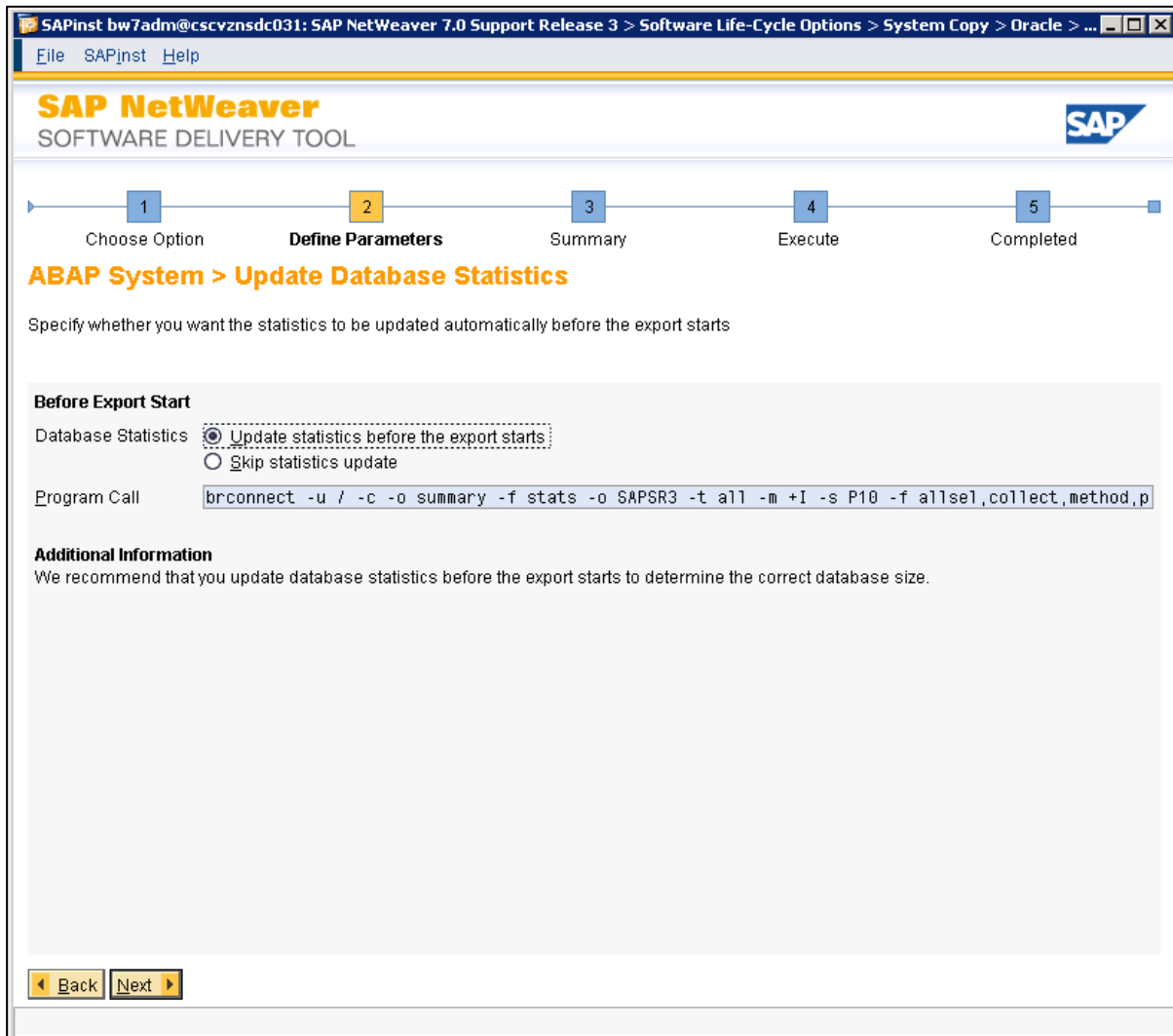


Figure 11: SAP Export Screen 6

In Figure 11 author chose the option to update statistics before the export start and sap recommended to update database statistics before the export started to determine the correct database size.

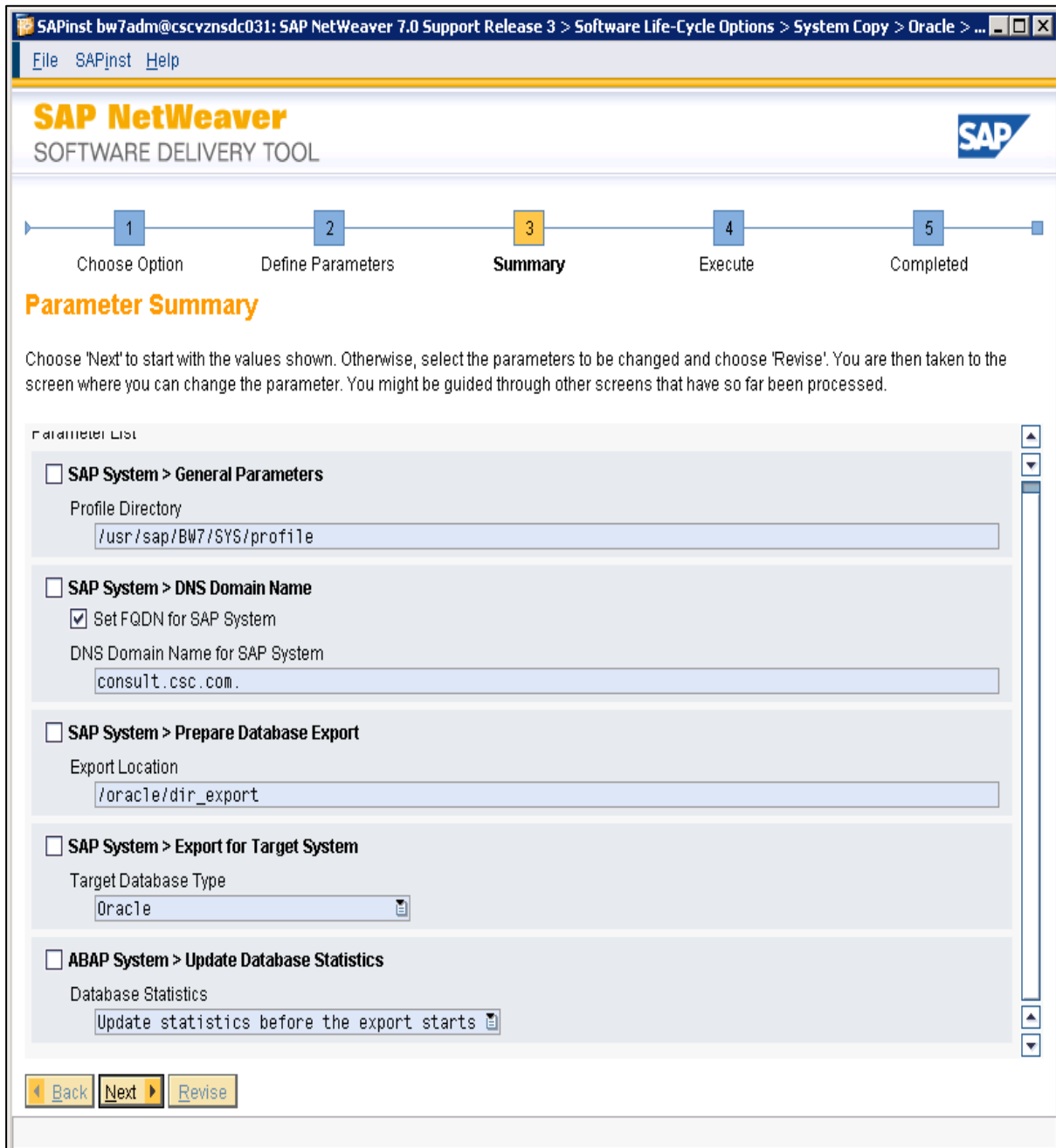


Figure 12: SAP Export Screen 7

Parameter summary shown in Figure 12 and author checked all the parameters once again and clicked 'Next' to proceed with the export.



Figure 13: SAP Export Preparation Successfully Finished Screen

SAP export preparation successfully finished screen shown in Figure 13.

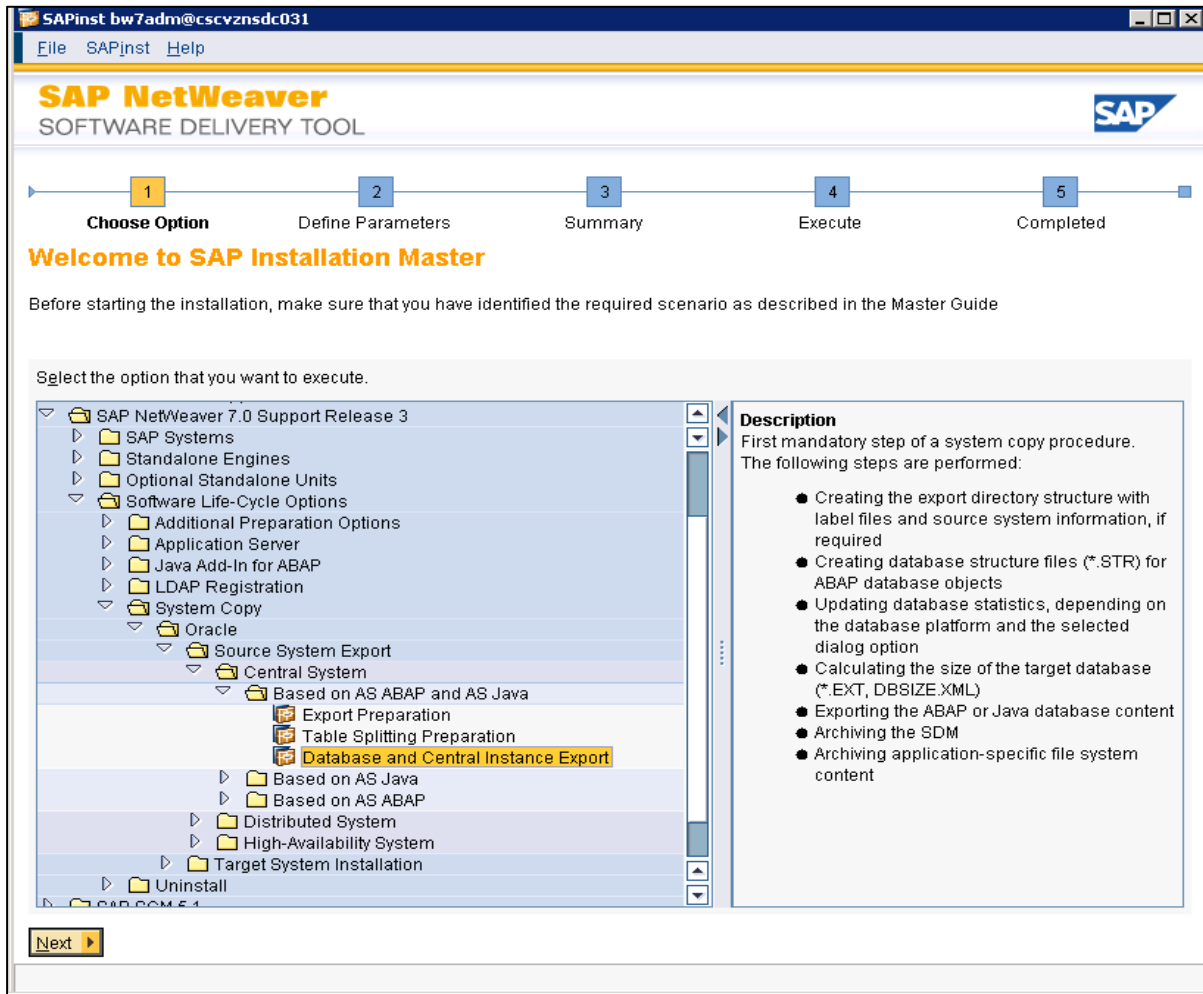


Figure 14: SAP Export Screen 9

After running sapinst executable again Figure 14 was prompted. In order to start the actual export of SAP R/3 systems data and objects we chose the below option.

System copy → Oracle → Source System export → Central System → Based on AS ABAP and AS Java → Database and Central Instance Export.

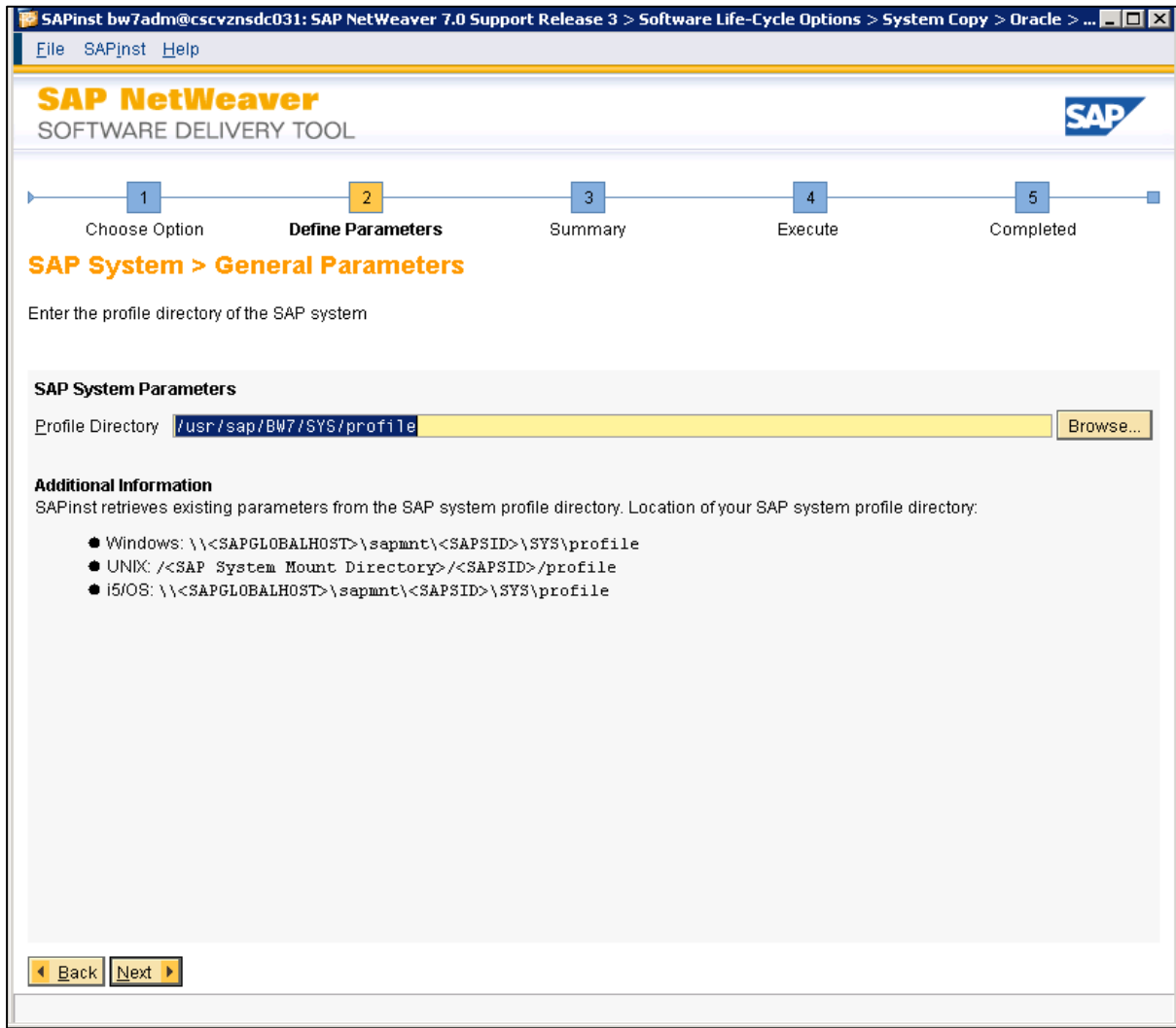


Figure 15: SAP Export Screen 10

In Figure 15 profile directory of the legacy systems path had been given in the screen.

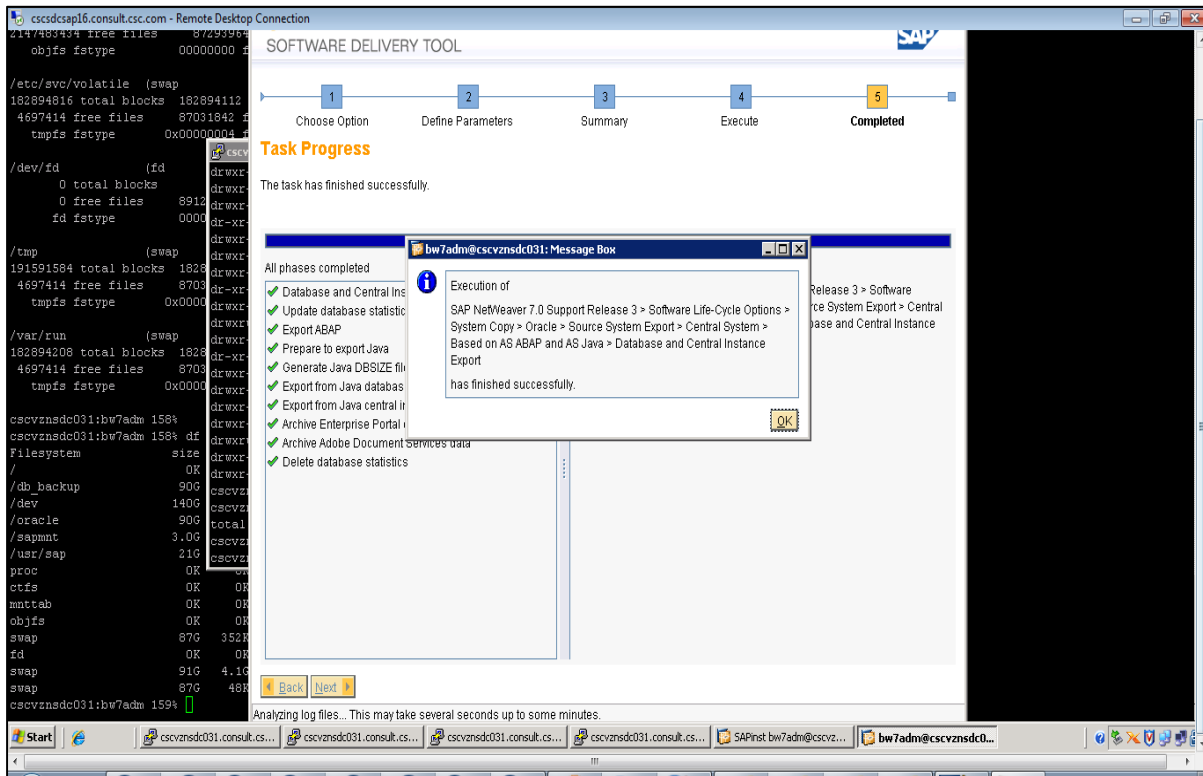


Figure 16: SAP Export Successfully Finished Screen

Export of the data and objects of PPG legacy systems had been taken successfully.

Successful screen had shown in Figure 16.

Data Collection and Analysis

A detailed report was made of what content legacy systems had across an organization and what content should be migrated.

Earlier Third-party tools used to integrate between SAP and NON SAP systems and usually it would take more time for converting the core data and deploying to the systems.

The time taken by the third party tool for integrate between SAP and NON SAP systems was calculated by *Objective evaluation*. We had calculated time for all the seven tasks before and after migration.

- i) Conducted objective evaluation to calculate the time taken to integrate SAP and Non SAP systems by the third party tool and SAP PI component. Noted time for all the 7 tasks before and after migration and calculated the average time for both the components.
- ii) Tested the configuration, Unicode feature and web accessibility tested by the testers and administrators.
- iii) System usability tested by the testers and administrators by the subjective assessment of asking several questions.

After migrated to SAP NetWeaver 7.4 version it would not need of any third party tools for integration. SAP NetWeaver 7.4 version had PI (Process Integrator) to integrate between SAP and Non SAP systems. Validation went good after migration. Validating the source and target environments had been correctly migrated and that all metadata and versions had been preserved.

Calculated time in both the cases before and after migration. And usability of the systems tested before and after migration.

The obtained information like structural design and nomenclature of the organization's systems should also be audited. This includes documenting and auditing the following key areas:

Permissions, Users, Features, Customizations, Core data and Integration with other systems.

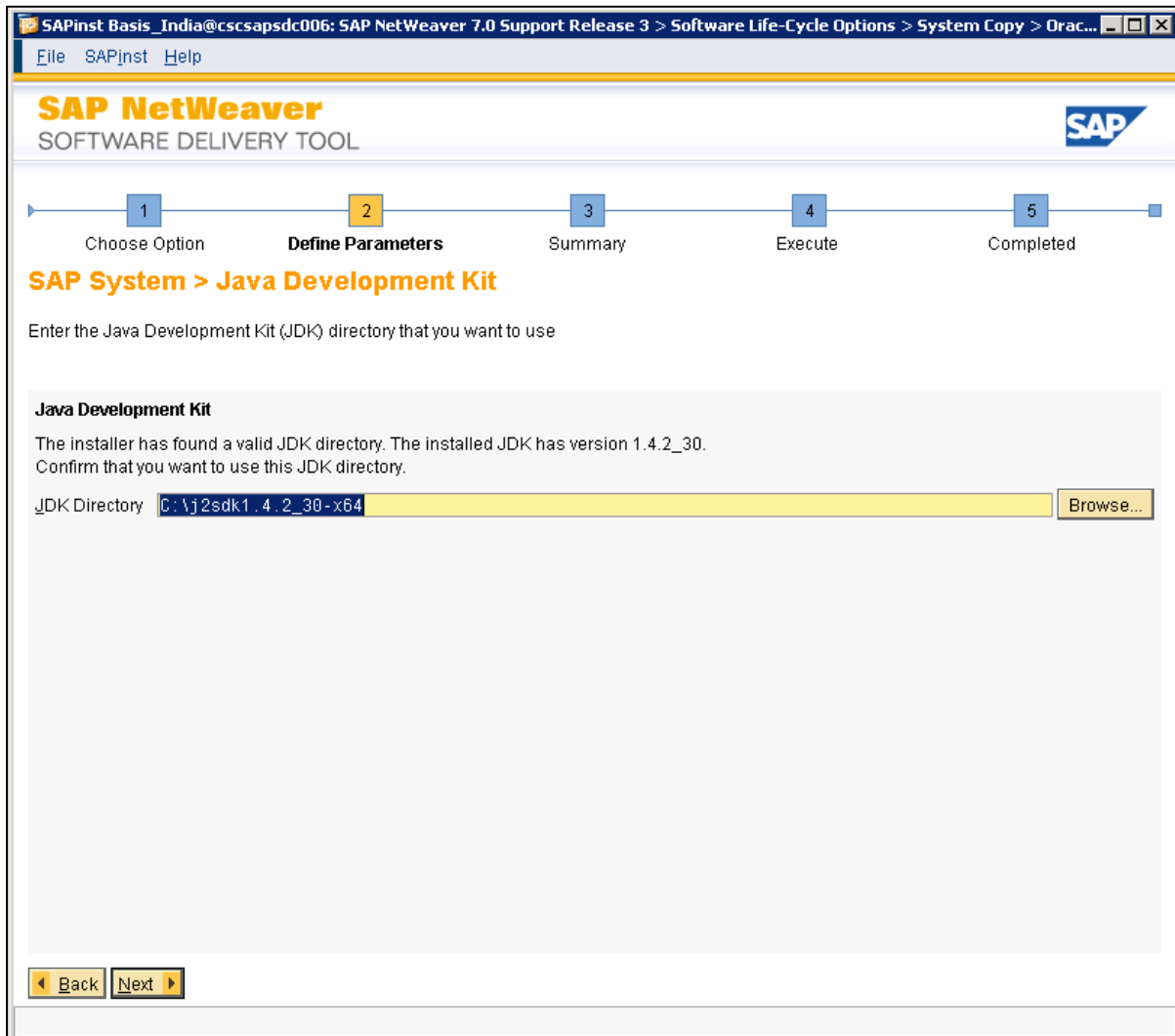


Figure 17: SAP Import Screen 1

The export data had imported to newly installed NetWeaver systems to enhance the integration capability and accessibility. JDK directory path had shown in Figure 17.

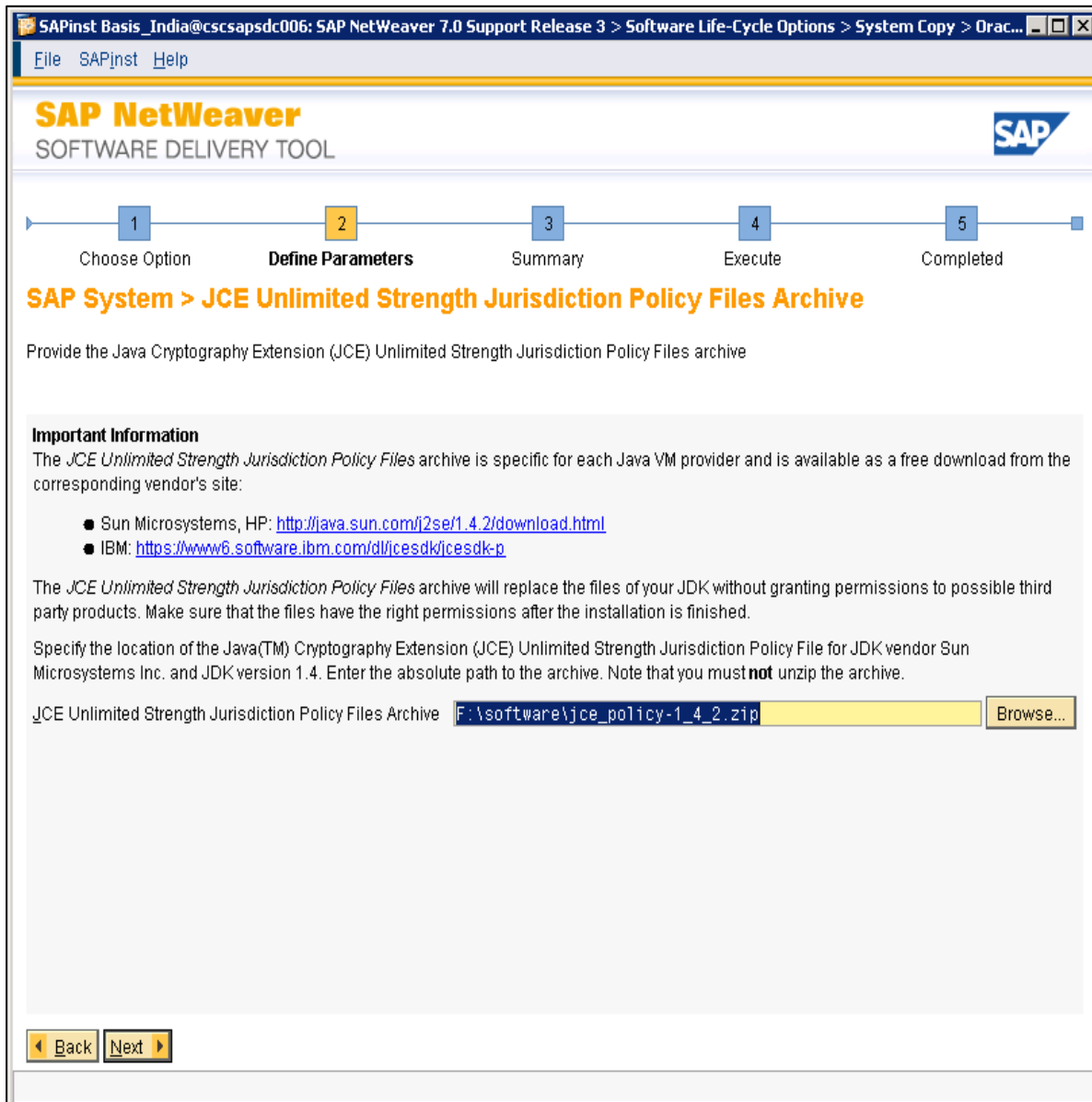


Figure 18: SAP Import Screen 2

In Figure 18 it shown the JCE Unlimited Strength Jurisdiction Policy Files archive path. Which were very important in the import. JCE policy files were downloaded and placed in the shown path.

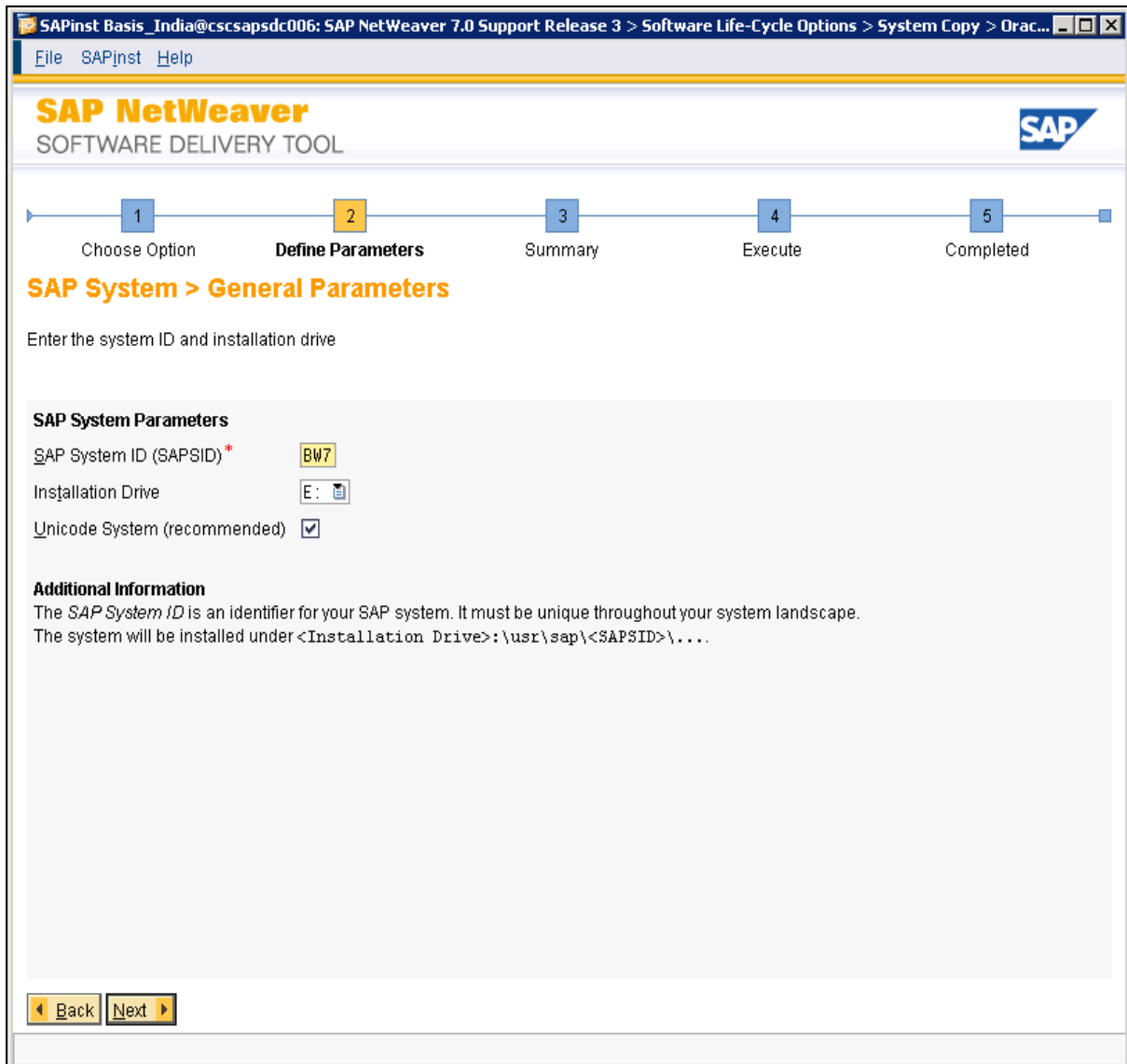


Figure 19: SAP Import Screen 3

SAP system Parameters SAP system ID (SAPSID), Installation drive details had been given in the above screen Figure 19. SAP system ID is an identifier for your SAP system. It must be unique throughout the landscape.

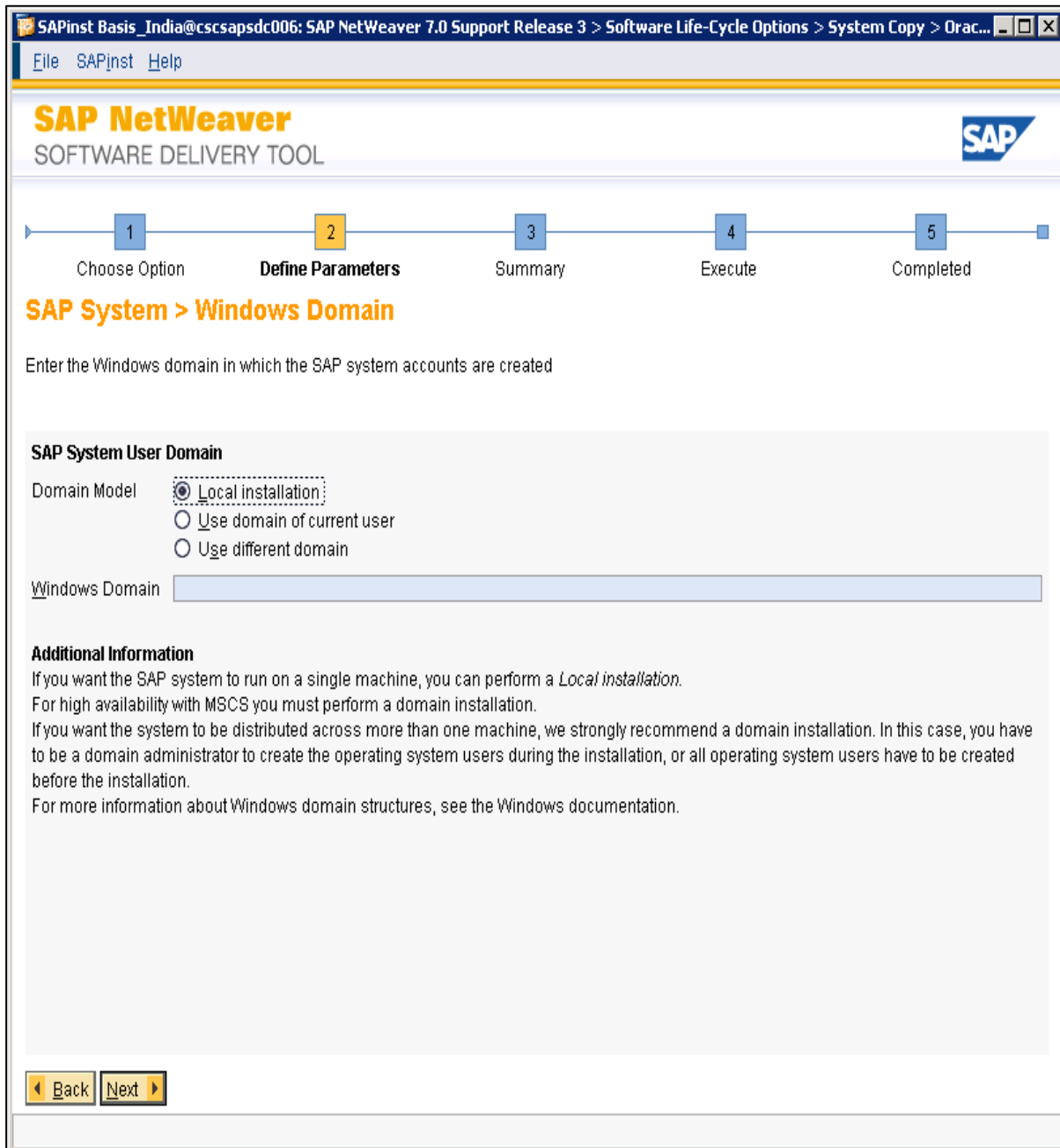


Figure 20: SAP Import Screen 4

SAP system user domain model had shown in the Figure 20 and here in PPG we chose local installation domain model.

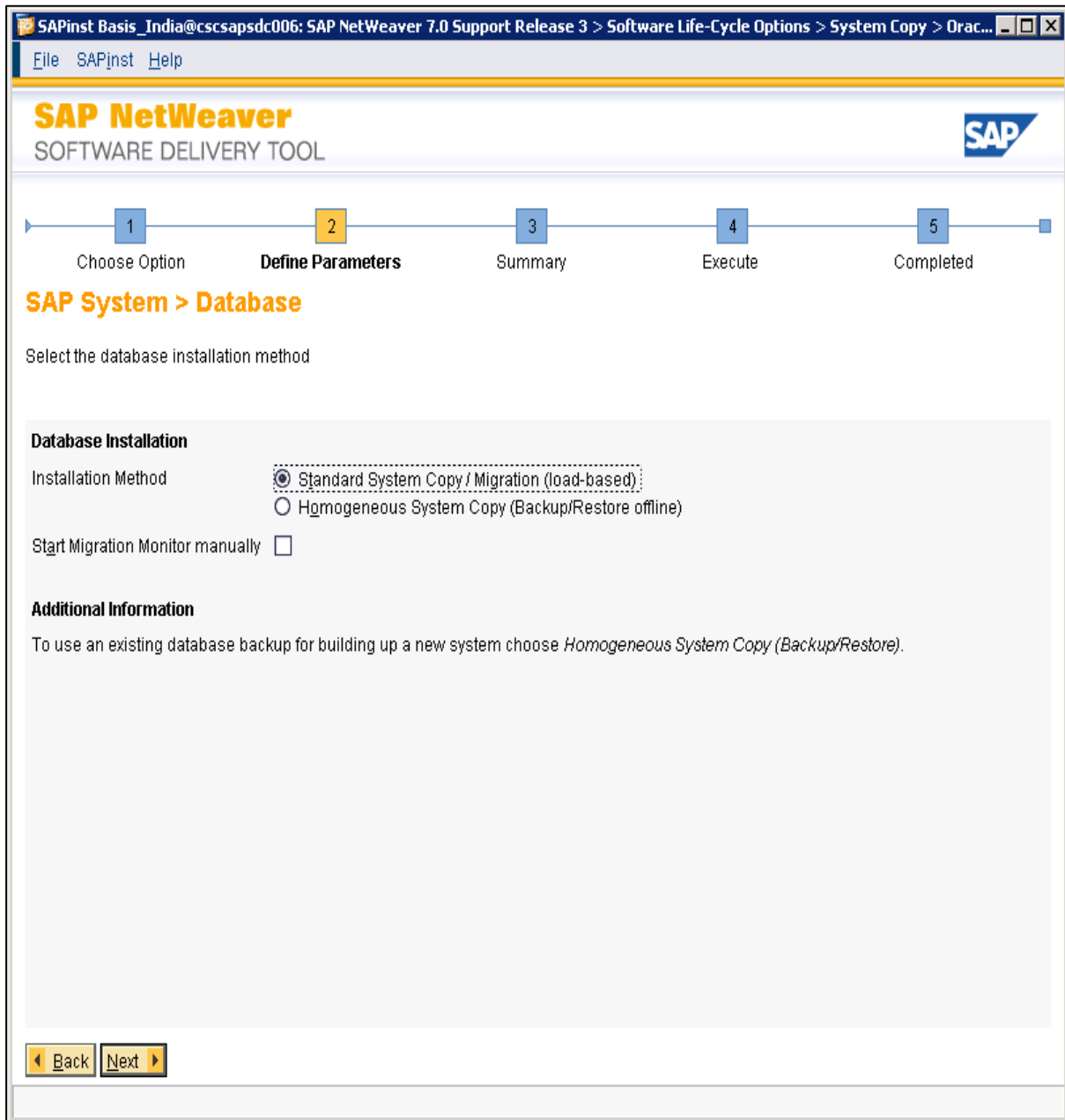


Figure 21: SAP Import Screen 5

In Figure 21 it shown the installation method we followed during the import. Here we followed heterogeneous migration method to import the data in to the newly installed NetWeaver systems.

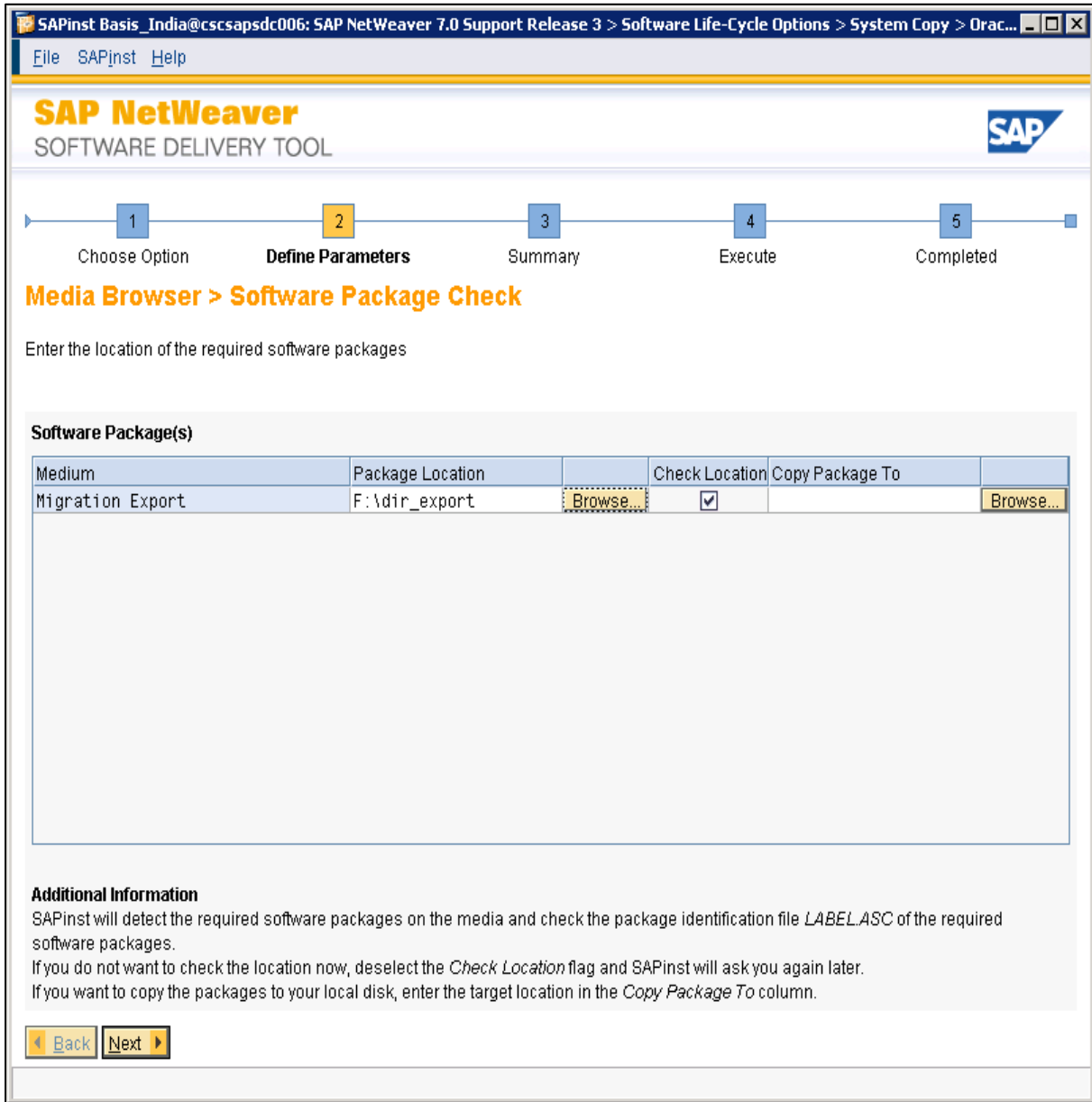


Figure 22: SAP Import Screen 6

Given the export folder location in Figure 22. Sapint had taken the export package and imported to NetWeaver systems.

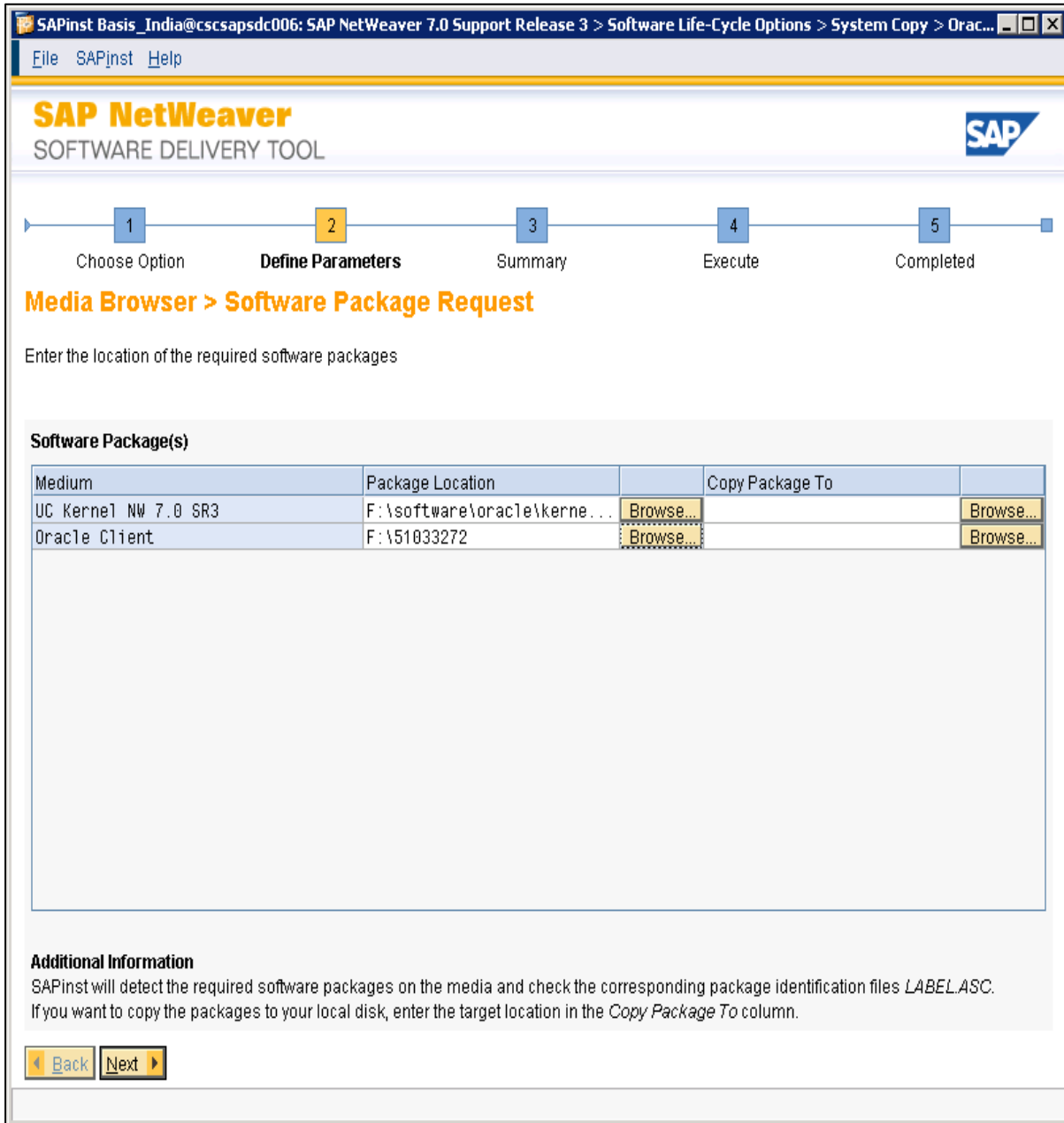


Figure 23: SAP Import Screen 7

UC kernel NW 7.0 SR3 software folder path and oracle client folder had been given in the Figure 23.

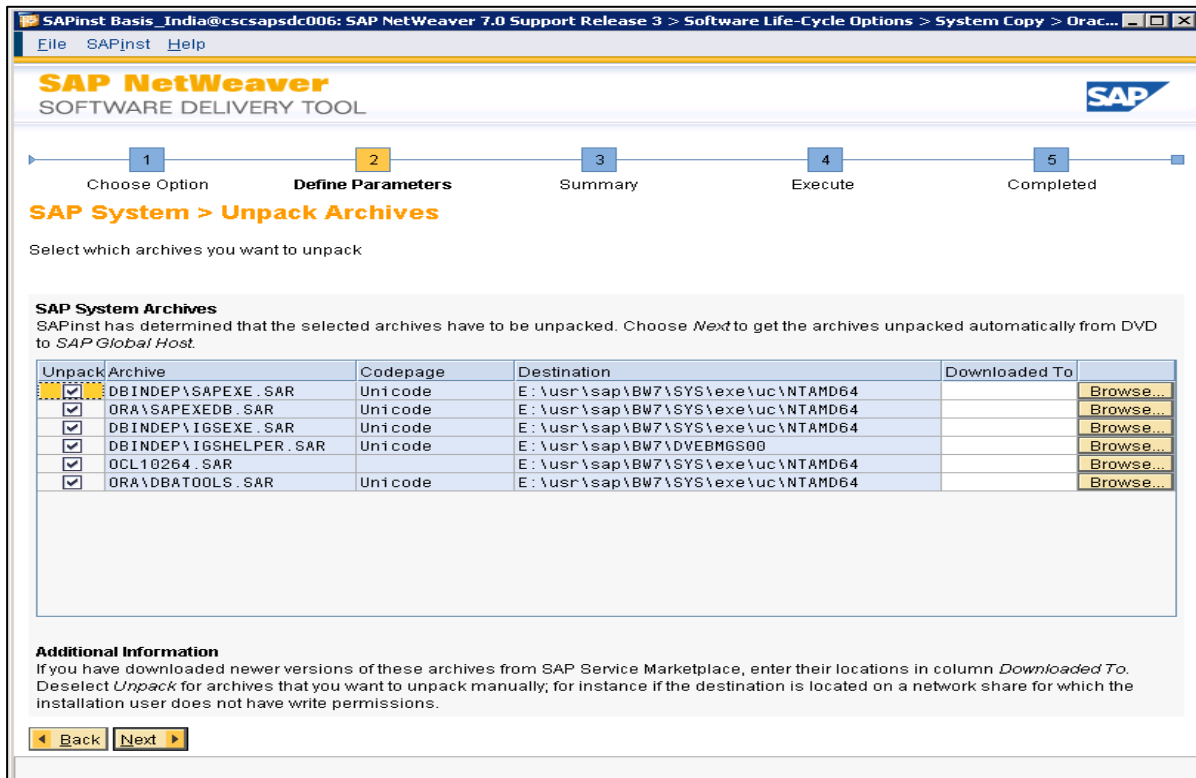


Figure 24: SAP Import Screen 8

In Figure 24 SAP system archives paths had been given. Sapinst unpacked the archive paths to the SAP global host.

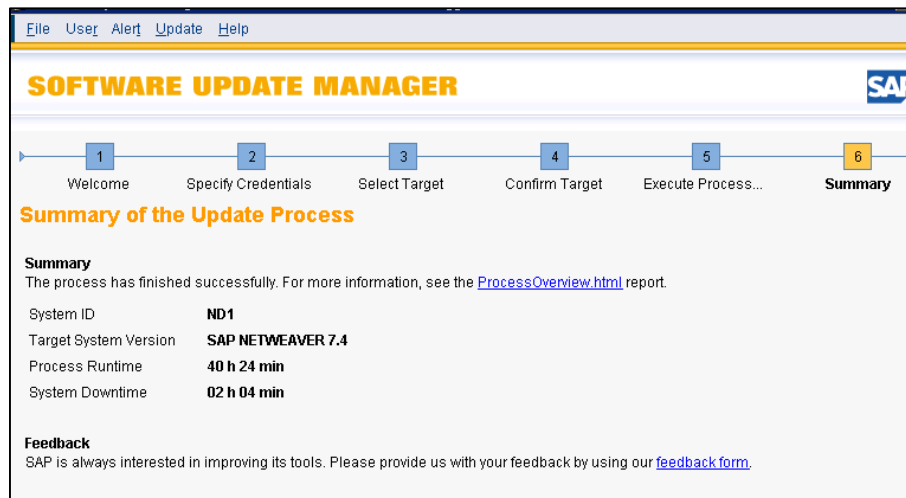


Figure 25: SAP Migration Successfully Finished Screen

After running for several hours SAP migration had finished successfully and it shown in the Figure 25.

Migration of legacy systems to NetWeaver 7.4 version successfully completed.

Timeline

Following were the milestones planned for the project:

Table 1: Timeline

Activity	Timeline	Comments
Project preparation and requirement gathering	June 2015	
Design	July 2015 – August 2015	
Realization	August 2015 – October 2015	
Testing	October 2015	
Go live	November 2015	
Final Defense presentation	February 2016	

Time line of the Capstone project shown in the Table 1.

Summary

This chapter focused on explaining in detail about the process of the project life cycle. It explained in detail the stages involved in the project implementation. The implementation and analysis techniques which best suited the project scope were detailed.

Chapter 4: Data Presentation and Analysis

Introduction

This chapter will focus on the data, interpretation and strategies used to analyze and formulate the recommendations. Also this chapter will outline the process and evaluations performed to optimize the migration process.

Data Analysis

The data analysis was performed using Objective evaluation and Subjective evaluation.

Objective evaluation:

Success by task–Did a tester/administrator complete given task successfully.

Average time on task–how long would integration take place before and after migration.

Subjective evaluation:

System usability scale–After migration, was its experience satisfied by the tester.

Performance issues or challenges found–analysis encountered during the test by administrators and testers.

Objective evaluation:

All the tasks performed successfully during migration and after the migration. SAP migration successfully finished screen shown in Figure 26.

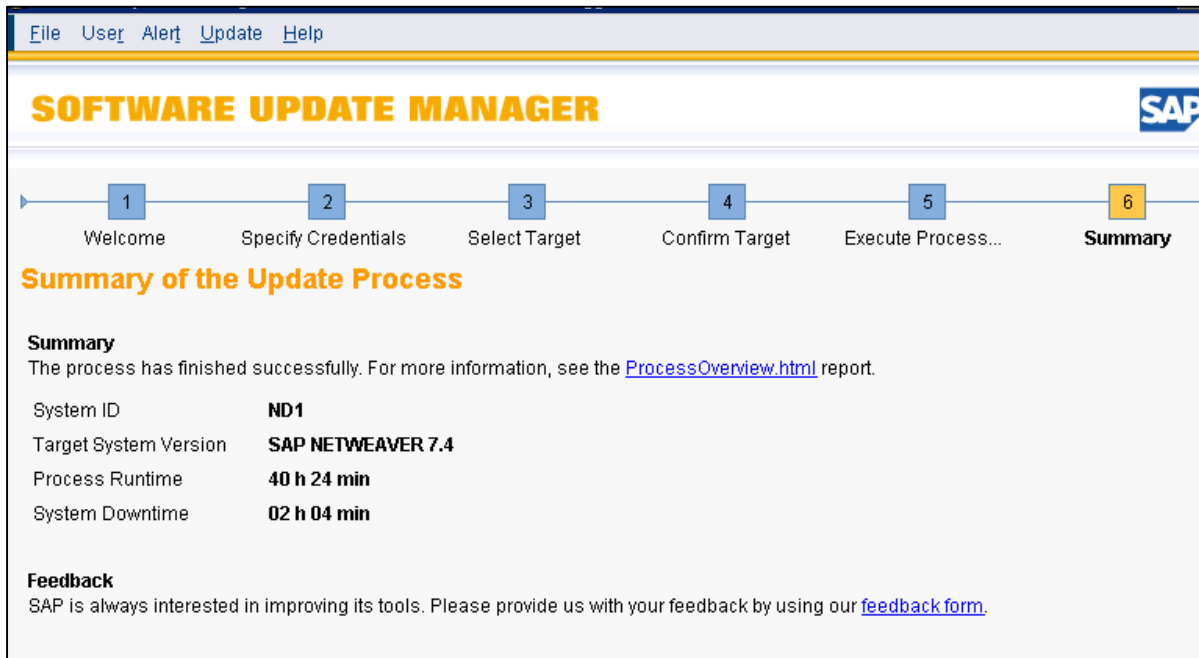


Figure 26: SAP Migration Successfully Finished Screen

Time taken by the third party tools to integrate SAP system to Non SAP system in different tasks is below:

Table 2: Time Measured for Integration by Third Party Tool

Task No	Time taken by the third party tool in min.
1	120
2	150
3	140
4	130
5	125
6	115
7	135

Time measured for integration by third party tool shown in Table 2. Table 2 has two columns and they were task no and time taken by the third party tool in min.

Average time taken by the Third party tool for

$$\text{integration} = (120 + 150 + 140 + 130 + 125 + 115 + 135) / 7$$

$$= (915) / 7$$

$$= 130.7$$

Time taken by the SAP inbuilt component PI to integrate SAP system to Non SAP system in different tasks below:

Table 3: Time Measured for Integration by SAP PI Component

Task No	Time taken by the PI component in min.
1	15
2	10
3	14
4	20
5	12
6	18
7	14

Time measured for integration by SAP PI component shown in Table 3 and it had two columns they were task no and time taken by the PI component in min.

Average time taken by the PI component for integration

$$= (15 + 10 + 14 + 20 + 12 + 18 + 14) / 7$$

$$= (103) / 7$$

$$= 14.71$$

Hence the time taken by the PI component for the integration is nearly 10% of time taken by the third party tool.

Subjective evaluation:

After migrating the systems to NetWeaver 7.4 version the presentation, usability and performance drastically changed.

In response to these requirements a simple table was developed. Below scale gives subjective assessment of the new versioned systems.

	Yes	No
i) Satisfied using SAP systems through web?	1	
ii) Was Unicode functionality really support 90,000 Characters (560 languages)?	1	
iii) Did PI integrator work without any problem?	1	
iv) Was there any data missing after migration?		1

There are no performance issues found after migrating systems to NetWeaver 7.4 version.

The above table explains the performance and efficiency of the new migrated SAP

NetWeaver 7.4 version.

PPG SAP Technical Landscape

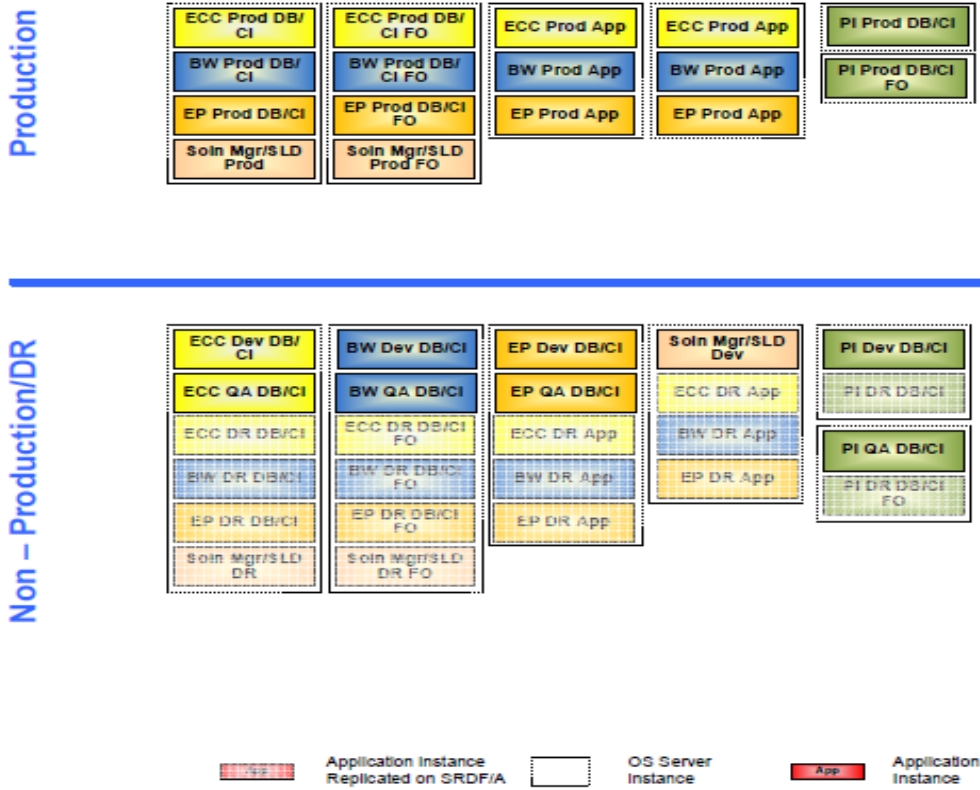


Figure 27: PPG SAP Technical Landscape

Final PPG SAP Technical landscape shown in Figure 27.

PPG Technical Architecture
Draft Data Center Partitioning

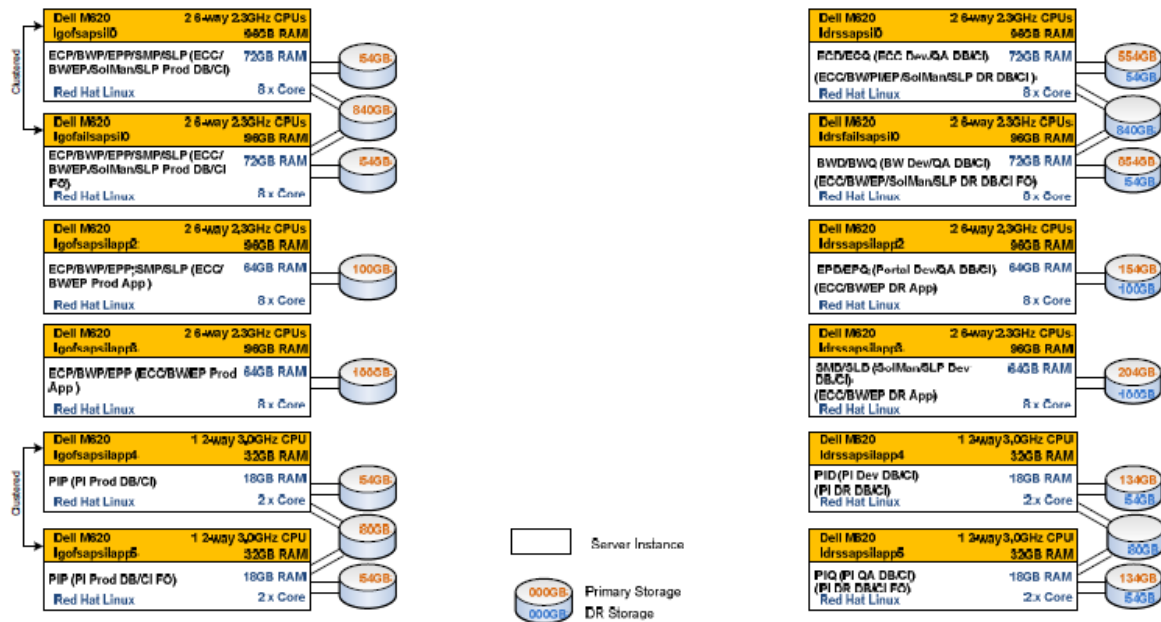


Figure 28: PPG Technical Architecture Data Center Partitioning

PPG Technical architecture data center partitioning shown in the Figure 28.

Summary

Data presentation and analysis explains how migration was done, and also the performance of the newly migrated SAP systems. Different evaluation methods helped to identify the functionality and performance of the NetWeaver 7.4 version systems. Additional information was detailed. The next chapter will cover the result of the project, conclusions based on the results and possible recommendations for the betterment of the organization.

Chapter 5: Results, Conclusion, and Recommendations

Introduction

This chapter focuses on providing the final result of the project. Subsequently, the project questions posed before conducting this study are answered briefly. Possible recommendations are made based on the result and conclusion for further possible improvement opportunities.

Results

In order to migrate PPG company legacy systems to NetWeaver 7.4 version systems followed below five phases.

1. Project Preparation
2. Business Blue Print phase
3. Realization Phase
4. Final Preparation
5. Go live / Support

SAP NetWeaver 7.4 version has PI component and it integrated SAP and Non SAP systems in a very effective way. The time taken for integration is very less and bug free when compared with third party tools. After migration customers and employees were able to access SAP systems outside of intranet. It is supporting 90,000 characters (560 languages) which provides better service around the globe.

- 1) What is the need for migrating SAP R/3 systems to SAP Net weaver and what are its benefits?

PPG was using SAP R/3 systems. The major limitations of R/3 systems were customers could not able to access the systems through web browser and integration between SAP and non-SAP systems were possible by using third party tools only. Because of these issues PPG was losing their customers adversely it effects to the business. Customers were turning to other companies due to poor response/service received from PPG. Migration was performed in order to reduce the time in integration and it had taken nearly 10% of the time taken by the third party tool. Customers and employees were able to access SAP systems through web outside the intranet after migration. SAP R/3 supports only German and English languages whereas Net weaver has Unicode functionality it supports around 90,000 characters (560 languages). SAP Migration Successfully finished screen shown in Figure 29.

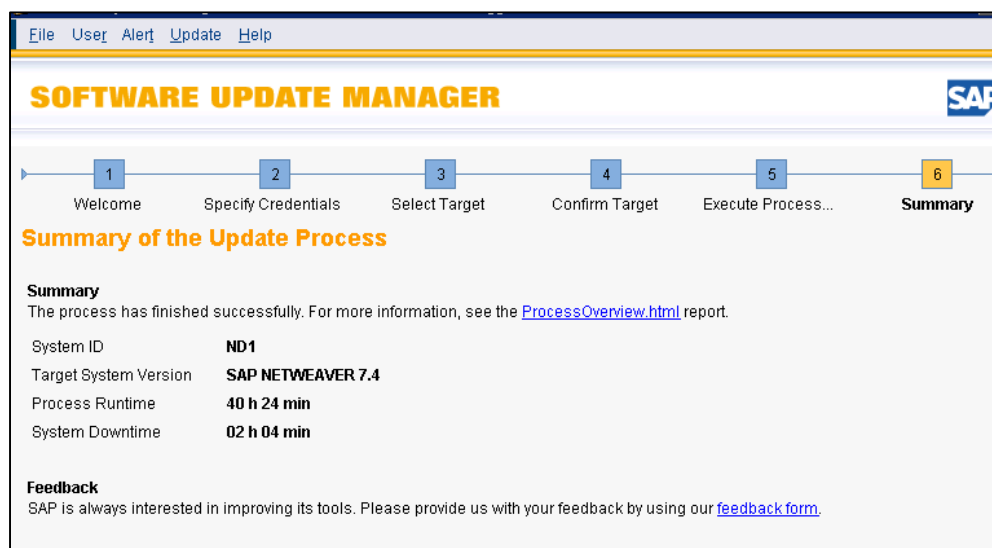


Figure 29: SAP Migration Successfully Finished Screen

- 2) After migrating the complete landscape, is the PPG Company data secure and reliable?

Data was safe and secure and validated by testers and developers after migration of the SAP systems.

- 3) Can the project meet go live date?

Yes. It met the go live date.

- 4) Can we really reduce the time of converting code by using SAP PI interface and is it bug free product?

Yes. SAP PI interface component is a bug free product and it tested by testers and developers. SAP and non-SAP systems are integrated by using PI component after migration. Time taken for integration measured before and after migration. Time taken by PI component is nearly 10% of the time taken by the third party tools. Data was safe and secure throughout the landscape.

Conclusion

Migration of the legacy systems to NetWeaver 7.4 version for better performance and efficiency. Customers couldn't able to access the SAP R/3 systems through web browser and integration between SAP and non-SAP systems were possible by using third party tools only.

Migrated SAP system version (4.6) to SAP NetWeaver 7.4 which has more capability in handling customer requests and simplifying the working areas. Migration was performed in order to reduce the time in integration and it had taken nearly 10% of the time taken by

the third party tool. The administrators measured it successfully after migration. Customers and employees were able to access SAP systems through web outside the intranet after migration. SAP R/3 supports only German and English languages whereas Net weaver has Unicode functionality it supports around 90,000 characters (560 languages).

Recommendations

Reduce the customizations and code changes, to make the future migrations simple without any possible errors or breakdowns.

At regular intervals, the team must reflect on how to become more effective through meetings and interacting with the prospective customers, fine tune and adjust the behavior accordingly.

If possible extend the timeline rather than hiring new resources, which increases the budget.

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