

ARBUTUS WINDOWS SERVER

INSTALLATION GUIDE

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Arbutus Software Inc.
270 - 6450 Roberts Street
Burnaby, British Columbia
Canada V5G 4E1

Phone: +1-604-437-7873

Fax: +1-604-437-7872

E-mail: Info@ArbutusSoftware.com

Web: www.ArbutusSoftware.com

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About this Guide

This guide is provided to licensed users of the Arbutus Windows Server and will assist you with installing and configuring the Arbutus Windows Server. For more information about our products and services, visit our web site at:

www.ArbutusSoftware.com

Need Help?

Resources

For assistance in using Analyzer or ConnectPlus, refer to these additional resources:

- Analyzer Installation Guide
- Analyzer Help
- ConnectPlus Installation Guide

Contacting Us

If you have suggestions for improvements or if you can not find a solution to a problem, you can contact technical support for assistance. Please include:

- Your Analyzer serial number.
- A description of what you were doing when the problem occurred.
- The error message, if any, displayed by Analyzer.

Support Center

Global Help Desk

- Phone: +1-604-437-7873 or +1-877-333-6336 ext. 333
- Fax: +1-604-437-7872
- E-mail: support@ArbutusSoftware.com

Or write to us at:

Arbutus Software Inc.
270 - 6450 Roberts Street
Burnaby, BC
Canada V5G 4E1

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CHAPTER 1 INTRODUCTION

System Description

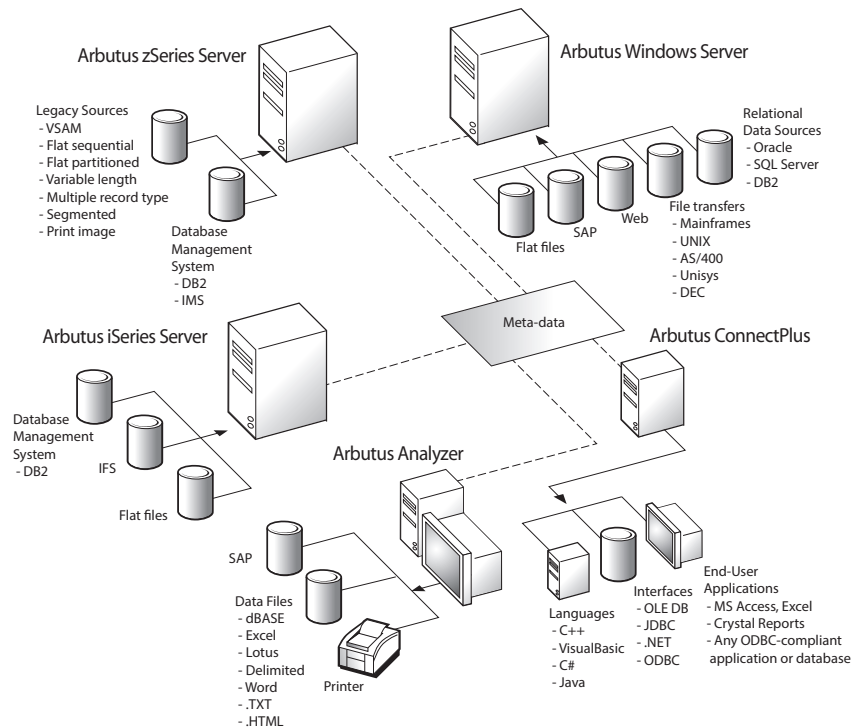
The Arbutus Solution - Overview

The Arbutus Solution consists of:

1. One or more of the Arbutus Servers:
 - A zSeries mainframe computer running the Arbutus zSeries Server
 - An iSeries midrange computer running the Arbutus iSeries Server
 - A Windows server running the Arbutus Windows Server
2. One or more of the PC-based Arbutus Clients:
 - Arbutus Analyzer
 - Arbutus ConnectPlus
3. A TCP/IP network connection linking the clients and servers together
4. Optional background offline batch processing for the Arbutus zSeries Server.

Note: For visual depictions of "The Arbutus Solution" see the diagrams on the following pages

The Arbutus Solution



The Arbutus Solution - Components

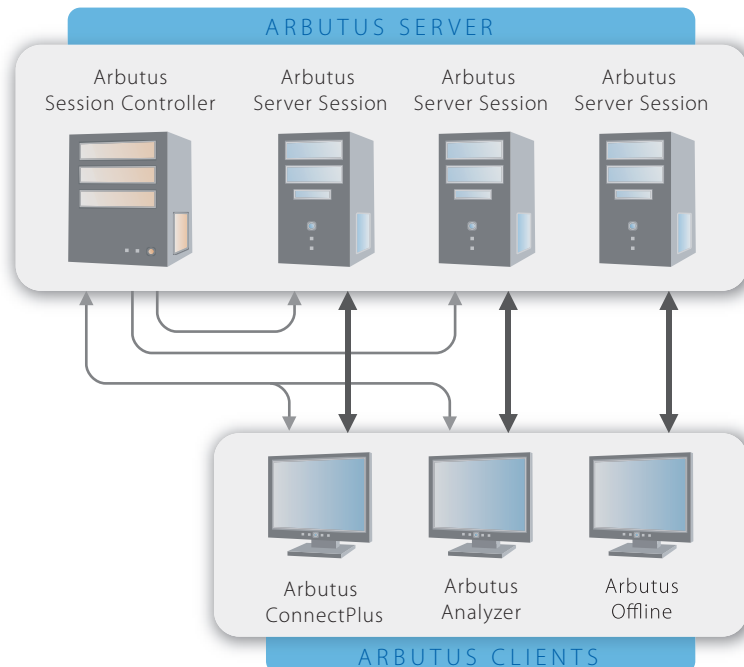
An Arbutus “session controller” is provided to manage TCP/IP communications and Arbutus end-user sessions (“server sessions”) for configurations that connect across multiple platforms, as is the case when running the PC-based Arbutus Clients with any of the Arbutus Servers.

When a PC-based Arbutus Client sends a connection request to the session controller, the session controller authenticates the request and creates an end-user server session. The session controller then establishes a direct communications link between the client and the end-user server session, and hands off the communication link to them.

Once this connection is established, the end-user server session runs independently of the session controller, and the session controller goes back to listening for incoming requests.

For each connection it accepts, the session controller starts a separate end-user server session. Connection requests from different users result in multiple, independent server sessions. A server session ends when the connection is terminated from the PC-based client.

Arbutus Server Session Management



User Interface Options

All of the Arbutus Servers can be configured to provide interactive, real-time processing from any ODBC-compliant PC application or from the Arbutus Analyzer graphical user interface.

In addition, the Arbutus zSeries Server can be configured to run in offline batch processing mode.

ODBC-Compliant PC Application

Use of this feature requires an ODBC-compliant application running on the PC, Arbutus ConnectPlus, TCP/IP services, various specific configuration settings, and at least one of the Arbutus Servers.

Arbutus Analyzer Graphical User Interface

Use of this feature requires a copy of the Arbutus Analyzer client running on the PC, TCP/IP services, various specific configuration settings and at least one of the *Arbutus Servers*.

System Requirements

The Arbutus Windows Server

The installation steps described in “Installing the Arbutus Windows Server” on page 7 are those required to install the Arbutus Windows Server for use in a client/server environment with either of the Arbutus Analyzer or ConnectPlus clients.

Access to the Arbutus Windows Server via Arbutus clients requires the TCP/IP communication protocol.

The Arbutus Windows Server can be installed on a machine running any version of the Windows operating system.

It is important to point out that data analytics is a very resource intensive task, and therefore we recommended that a separate application server should be allocated for the sole use of the Arbutus Windows Server. If installed on network server, the resource consumption may slow down your overall network performance.

As a result, neither the Arbutus Windows Server nor the Arbutus Clients should be installed on your network server.

Recommended Optimal Resources

Running on a Physical Server

To obtain the best performance when running the Arbutus Windows Server software on a physical server, we recommend the following optimal resources:

- An Intel i7 level processor (or equivalent),
- 32 GB of RAM (or 1 GB of RAM per concurrent user, if greater),
- 3 TB or greater hard disk space (to allow for downloaded mainframe data or to store data that will be created as part of an end users analytics).
- Optional: Solid state drives (SSD's) can significantly enhance speed, where performance is at a premium.

Running on a Virtual Server

Virtual server specifications should match physical specifications as much as possible. Under resourcing your virtual server will result in severe performance degradation.

To obtain the best performance when running the Arbutus Windows Server software on a virtual server, we recommend the following optimal resources:

- 4 CPU Cores,
- 32 GB of RAM (or 1 GB of RAM per concurrent user, if greater)
- Sufficient hard disk space (to allow for downloaded mainframe data or to store data that will be created as part of an end users analytics).
- Optional: Solid state drives (SSD's) can significantly enhance speed, where performance is at a premium.

The Server-Based Copy of Analyzer

The server-based copy of the Analyzer software is required for scheduling jobs.

In order to activate the server-based copy of the Analyzer software, the Windows machine must have the 32-bit version of Microsoft .NET Framework 4.0 installed.

In addition, to activate the server-based copy of the Analyzer software, the installer must be connected to the internet and have administrator rights on the Windows machine to ensure that all required activation settings can be properly set in the server machines registry.

For more information see Step 3 - Activating the Server-based Analyzer Copy in “Installing the Arbutus Windows Server” on page 7.

Requirements for SmartLink for SAP ERP

Smart Link for SAP ERP requires that the SAP Client is installed and configured on the machine that Smart Link for SAP ERP is to be installed upon. For more information on the SAP Client, please see the SAP Client installation instructions for your SAP system.

CHAPTER 2 INSTALLING THE ARBUTUS WINDOWS SERVER

Installation Overview

Installing the Arbutus Windows Server is quick and easy. Here you will learn how to install the Arbutus Windows Server from the Arbutus website.

Installation Basics

It is important to point out that data analytics is a very resource intensive task, and therefore we recommended that a separate application server should be allocated for the sole use of the Arbutus Windows Server. If installed on network server, the resource consumption may slow down your overall network performance.

As a result, neither the Arbutus Windows Server nor the Arbutus Clients should be installed on your network server.

Server Logon Methods

The Arbutus Windows Server supports INTERACTIVE, NETWORK and BATCH log-on methods. The INTERACTIVE log-on method is the default. Use of this type of log-on method requires that all connecting users be granted the right to 'Log on locally' within the Windows Security Policy on the physical Windows server.

This is not usually a problem, since by default all users are granted this standard type of log-on method - except on domain controllers. On domain controllers, the right to 'Log on locally' is only granted to administrators by default. To enable regular Windows accounts to log in with this log-on method on a domain controller, the right to 'Log on locally' must be granted to the relevant groups or accounts in the Domain Controller Security Policy, found in the physical Windows server's Administrative Tools.

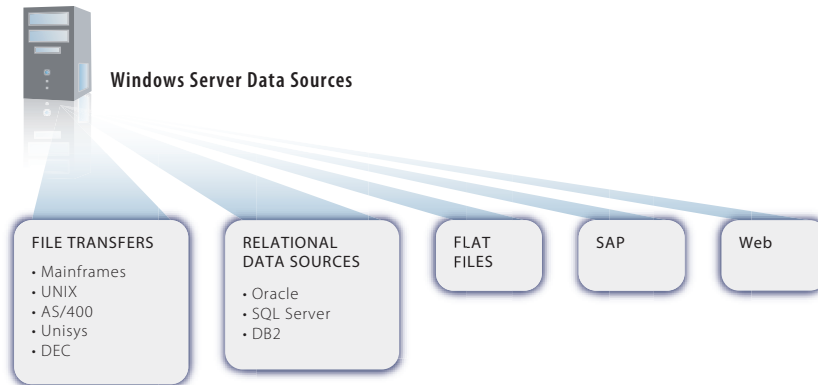
Alternatively, the physical Windows server can be configured to use the Network log-on method, by including the line "Logon=Network" in the STUB section of the ArbutusS.INI server file. For more information see "Step 4 - Editing the ArbutusS.INI file" on page 9.

Data Source Basics

If you plan on accessing relational databases using the Arbutus Windows Server, please review "Connecting to Relational Data Sources" on page 15 before proceeding with the installation of the Arbutus Windows Server.

If you plan on accessing SAP data sources using the Arbutus Windows Server, please review "Installing Arbutus SmartLink for SAP ERP" on page 17 before proceeding with the installation of the Arbutus Windows Server.

The following diagram details the data sources available to the Arbutus Windows Server:



Installation Procedures

The Arbutus Windows Server components can be copied directly from the Arbutus Web site to the desired server and then installed.

To optimize performance and to mitigate the possible negative impact from excessive network activity, install the Arbutus Windows Server on a dedicated Windows Server machine closest to the data.

Step 1 - Downloading Executable from Arbutus Web Site

Go to the following Arbutus Web Site Download page:

<http://www.arbutussoftware.com/support/downloads/>

Download the Arbutus Windows Server install file from the Arbutus Web site and place the installation file into a temporary directory on the physical Windows Server box:

e.g. C:\Temp\

Step 2 - Installing or Updating the Arbutus Windows Server

Performing a New Installation:

To perform a new installation of an Arbutus Windows Server, double-click on the downloaded installation file to run the install and follow the installation prompts.

Ensure all necessary edits have been made to the supplied ArbutusS.INI (as described below). For more information see "Step 4 - Editing the ArbutusS.INI file" on page 9. Save the edited ArbutusS.INI file into the same install folder as the Arbutus Windows Server.

Once all of the installation steps have been completed, start the Arbutus Windows Server service. For more information see “Step 5 - Starting or Stopping the Service” on page 14.

Updating an Existing Installation:

To update an existing Arbutus Windows Server to a newer version, you must do the following:

1. Stop the Arbutus Windows Server service.
2. Ensure that there are no active process connections to the Arbutus Windows Server by starting the Task Manager and reviewing the Processes tab. Ensure any active Arbutus Windows Server processes are terminated (either by the end-user or by clicking the End Process button for each highlighted process in the Task Manager).
3. Double-click on the downloaded install file to run the install and follow the installation prompts.
4. Restart the Arbutus Windows Server service.

Note: “Step 5 - Starting or Stopping the Service” on page 14 “Step 5 - Starting or Stopping the Service” on page 14

Step 3 - Activating the Server-Based Analyzer Copy

You will be prompted to activate the server-based copy of Analyzer that is automatically installed as part of the Arbutus Windows Server installation. This copy of Analyzer is only used by the Arbutus Windows Server for running scheduled jobs and must be activated if you intend to use the Arbutus Windows Server scheduling features.

You will also be prompted to enter the following information:

- User: please enter “Arbutus Server”
- Company: please enter your company name
- Activation Code: please enter activation code supplied in accompanying e-mail.

Click [OK] to complete the activation.

If the Analyzer activation is successful, Analyzer will launch. Please close Analyzer. If the activation fails, follow the prompts to complete the activation.

Step 4 - Editing the ArbutusS.INI file

You will be e-mailed a custom ArbutusS.INI file containing unique codes for your installation. You must copy this custom INI file to your program files directory where the Arbutus Windows Server is installed.

The parameters in ArbutusS.INI file control a variety of performance, licensing and end-user preferences that allow you to customize the server software to suit your environment.

If you are installing Arbutus Smart Link for SAP ERP, please review the necessary ArbutusS.INI file edits that are also required before completing this step. For more information, see “Installing Arbutus SmartLink for SAP ERP” on page 17.

A typical example of an ArbutusS.INI file is shown below:

```
[Arbutus Stub Info]
Port=7000
Timeout=60
Log=1
Encrypt
;Logname=C:\temp\ArbutusPort7000.log
;Logon=Network
;Schedule=C:\Program Files (x86)\Arbutus
;Schedjobs=C:\temp\Port7000Jobs.txt

[Arbutus Server Info]
Designation=Company Name
SerialNo=1000
Users=10
Expiry=130401
Expcode=651096706430
Compress=1
Srvcode=521908114409
```

The ArbutusS.INI file is read each time the server is started. Changes made while the server is running are not recognized until the next time the server is started.

Note: The semi-colon “;” leading any optional parameter line in the INI file indicates that the parameter has been commented out. To use the optional parameter, remove the leading “;”.

The following is a detailed description of each of the required ArbutusS INI file parameters. For the Arbutus Windows Server, these values are supplied in the shipped ArbutusS.INI file. These values should not be modified except as indicated.

Note: The case for each of the ArbutusS.INI file parameter values must be as shown. An ArbutusS.INI file parameter will not be recognized if the case is changed.

Parameters [Arbutus Stub Info]

Port Number

Specify the TCP/IP port number on which the session controller should listen for connection requests. The default syntax is:

```
Port=7000
```

Any available port number in the range 1024 through 32767 may be specified. The value entered here must match the port number entered for the Analyzer server profile.

Maximum Inactivity Wait Time

Specify the amount of time, in minutes, that you want the session to wait for activity from a PC-based Arbutus Client. The default syntax is:

```
Timeout=60
```

The default value for this setting terminates the sessions after 60 minutes of inactivity. The minimum value for this setting is 5 minutes. Anything less than that may cause the session to end during the course of normal processing.

This setting applies only to the maximum length of time that the server waits for input from the client, and has no effect on times associated with long-running processes.

To achieve no timeout, set the value to 999.

Note: This value may be reduced by the client in the server profile, as required. For more information on server profiles see the Analyzer Installation Guide or the Analyzer Help.

Message Logging

Specify the level of message logging to be used by the session controller. The default syntax is:

```
Log=1
```

A value of 1 specifies logging all connection attempts; a value of 2 specifies full message logging. Full message logging includes a great deal of information, and should be used only for troubleshooting purposes. A value of 0 indicates no message logging.

Encryption

Specifies that all data transferred between servers or from server to local must be encrypted.

The default syntax is:

```
Encrypt=YES
```

The presence of the keyword Encrypt ensures that all data transferred between servers or from server to local must be encrypted.

Note: If encryption is mandated in the server INI then the server profile used to access the server must also have encryption enabled or the end user will not be allowed to connect to the server and will be warned to enable encryption in their server profile.

To turn off mandatory encryption, the keyword Encrypt must be removed from the ArbutusS INI file.

Log Name

Logname specifies the fully pathed name of the server activity log, if the Log parameter is non-zero (see the Message Logging parameter above). By default, server messaging is written to a text file called ArbutusServer.Log in the folder where the server executable is installed. To manually control where server messaging is written, you can specify (for example):

```
Logname=c:\temp\ArbutusPort7000.log
```

Note: Any valid path and log file name can be specified. We recommend using the filename ArbutusServer.Log for consistency. This entry must be made in both the Arbutus Stub and Arbutus Server Info sections of the INI file so that all messaging is written to the same log file.

Log-on Method

If the physical Windows server is configured to use the Network log-on method, Logon is used to specify the Network method. Specify:

```
Logon=Network
```

Schedule

Schedule specifies the directory where the server copy of Analyzer for scheduling purposes is installed. By default, specify:

```
Schedule=C:\Program Files (x86)\Arbutus
```

Schedule Jobs

Schedjobs specifies the directory path and the optional text file (with a .TXT extension) where the scheduling backup file is to be written. For example specify:

```
Schedjobs=C:\temp\Port7000Jobs.txt
```

If only the path is specified then the text file name is assumed to be JOBLOG.txt by default.

Parameters [Arbutus Server Info]

Designation

Specifies title to appear at the top of reports generated when running with the ISPF or offline interfaces. This entry can be changed to any value or left blank. The syntax is:

```
Designation=
```

Note: Users can temporarily change the value using the server command SET DESIGNATION.

Serial Number

Indicates the copy number of your Arbutus Analyzer software. The syntax is:

```
SerialNo=
```


Expiry Code

Indicates the expiry date of your server software. The syntax is:

```
Expcode=
```

Expiry

Shows a printable version of your software expiry date. The syntax is:

```
Expiry=
```

CPU ID Code

Indicates the enabling code for the system. The syntax is:

```
Srvcode=
```

This value must be entered exactly as provided in your licensing information e-mail that accompanies this installation guide. If you are licensing more than one CPU, this parameter should be omitted and replaced with:

```
Srvcode1=
```

```
Srvcode2=
```

to a maximum of 20 unique CPU license codes.

Authorized Seat Count

Specifies the “Authorized Seat Count”. The syntax is:

```
Users=
```

Data Caching

By default, relational data sources on the Arbutus Windows Server are cached to speed scrolling the data in the view. The cached file is temporary and is named:

```
prefix\CACHEn.tmp
```

where prefix is the Output Prefix specified in the server profile and n is a unique sequence number.

Normally the cached file is deleted when the relational data source is closed. An ABEND of the server could result in the temporary file hanging around, but the next time it is opened all previous cached contents are discarded.

To permanently turn caching off, enter the syntax:

```
DBCACHE=0
```

Note: Users can temporarily turn caching off on the command line using the command SET DBCACHE 0. This will only work if a Windows server based table is open.

Compression

Specifies the amount of data compression to apply to data files written to the Arbutus Windows Server from an Analyzer command. The syntax is:

```
Compression=
```

Compression values range from 0 to 9 with 0 indicating no compression and 9 indicating maximum file compression.

Note: Users can temporarily change compression using the command SET COMPRESSION=n

Step 5 - Starting or Stopping the Service

To start or stop the Arbutus Windows Server as a service (or to confirm it has been started), select Control Panel in your Start Menu, choose Administrative Tools and double-click on Services.

Ensure that the Startup Type for the Arbutus Server service is set to "Automatic", then highlight the Arbutus Server service and:

- Click START (if not already started) to start the service
- Click STOP (if not already stopped) to stop the service

If you encounter any problems, please contact Arbutus Technical Support.

Allowing External Access via the Windows Firewall

To ensure that the Analyzer and ConnectPlus clients can communicate with the Arbutus Windows Server, you must either open a port in the Windows firewall or enable the application (NTSERVERSTUB.exe) in the Windows firewall on the server that the Arbutus Windows Server has been installed on.

Note: If enabling via an open port number, the port number is the port number you specified in "Step 4 - Editing the ArbutusS.INI file" on page 9.

If you are enabling via an open port number, this will be the same port number that you specify later within Analyzer or within the Profiles.txt file when you create a server profile to connect to the Arbutus Windows Server.

Note: If you will be accessing your Arbutus Windows Server from external locations you may need to allow appropriate access through your external firewall as well.

Testing PC-based Connections

The Arbutus Windows Server is now running and ready to accept connection requests from the PC-based Analyzer client or any ODBC-compliant applications utilizing the ConnectPlus client.

Once the PC components are installed and a valid server profile is configured, you can test the installation by connecting to the server using this profile. For more information on server profiles see either the ConnectPlus or Analyzer Installation Guides and Analyzer's Help.

Analyzer and ConnectPlus do not enable users to update expired Windows account passwords. To avoid this, we recommend creating Windows user accounts with passwords that never expire. After establishing the user accounts,

either the Windows administrator or the end-user must log on to the Windows server as the user. This will complete the setup of the user's profile and add the appropriate user folders under "Documents and Settings" (which are required if the user wants to write out data to the Windows Server using Analyzer).

The Arbutus Windows Server does not have any inherent, proprietary, security or network administration capabilities built into the software. Instead, the Arbutus Windows Server relies on the existing network security that exists within a company's infrastructure. To create user IDs and to setup folders and access rights on the network for use with the Arbutus Windows Server, please ensure you consult with someone in your organization who has the appropriate administrative and security rights to do so.

Installation of the Arbutus Windows Server is now complete!

Connecting to Relational Data Sources

If you intend for end-users to connect to a relational data source using the Arbutus Windows Server, you must first ensure that the compatible version of the vendor's 32-bit ODBC driver for the desired relational data source (i.e., Oracle, DB2, etc.) is installed on the same machine which will host the Arbutus Windows Server.

Whether the 32-bit ODBC driver is installed as part of the vendor client software or on its own, the vendor's 32-bit ODBC driver must be installed as a SYSTEM DSN. Ensure a connection can be established from the Windows ODBC Data Source Administrator prior to installing the Arbutus Windows Server.

This will enable end-users to select the vendor 32-bit ODBC driver as their relational data source on the Arbutus Windows Server using Analyzer's Data Definition Wizard. For more information on defining relational data sources, see the Analyzer Help.

Troubleshooting

An "Unable to Logon User, Name or Password likely incorrect" message indicates that:

- The end-user may have entered a wrong User ID or password.

A "Server not responding, possibly down" message indicates that:

- The host name or IP address is incorrect
- The port number is incorrect, or
- The session controller (NTServerStub.exe) is not running.

Un-installing the Arbutus Windows Server

To un-install the Arbutus Windows Server, you must first stop the service for the Arbutus Windows Server. To do this go to Control Panel, select Administrative Tools, double-click Services, right-click on “Arbutus Server” and select Stop.

Once this service has been stopped you can then go to Control Panel and select Add or Remove Programs to un-install the Arbutus Windows Server.

CHAPTER 3 INSTALLING ARBUTUS SMARTLINK FOR SAP ERP

Installing and configuring Arbutus SmartLink for SAP ERP on the Arbutus Windows Server for use with Arbutus Analyzer clients is quick and easy. Here you will learn how to install and configure SmartLink for SAP ERP on the Arbutus Windows Server and how to configure all Analyzer clients.

Required SAP Authorizations

Users intending to use SmartLink for SAP ERP must have access to the S_RFC authorization group within SAP. Users must also have access to the SDTX function group to be able to use the RFC_READ_TABLE function module (SmartLink for SAP ERP uses this module to retrieve data from SAP ERP).

In general, users must have the following SAP authorizations:

- S_RFC - permission to call a function module
- S_TABU_DIS - permission to view a table
- S_TABU_RFC - permission to view a table over RFC
- S_GUI - authorization for GUI activities

Note: S_GUI allows other programs to perform SAP GUI activities.

Installation Procedures

Install Arbutus Analyzer and Arbutus Windows Server

Before installing the SAP software, you must install the Arbutus Windows Server and the Analyzer client software. See “Installing the Arbutus Windows Server” on page 7 for installing the Arbutus Windows Server and see the Analyzer Installation Guide for installing Analyzer.

Install the SAP Client Software on the Windows Server

Smart Link for SAP ERP currently relies on the standard SAP client to provide connectivity. Since all Arbutus SAP access is made through the Arbutus Windows Server, the SAP client must be installed on the same physical Windows server that the Arbutus Windows Server resides upon. Please refer to SAP’s installation guide for the SAP client installation procedures.

Note: Installing the SAP Client software can be avoided by specifying the optional SAPSOAP=true parameter in the ArbutusS.INI file (see step 6 in the following Configuration section).

Configuration Procedures

Configure the Arbutus Windows Server to enable SAP

The SAP functionality on the Arbutus Windows Server is controlled through settings in the ArbutusS.ini file, that is located in the same folder as the Arbutus Windows Server executable. You will need administrator rights on the server machine to be able to edit this file.

1. Open the ArbutusS.INI file in a text editor.
2. SAPAuth= specifies the enabling code for the SmartLink for SAP ERP system. This code is provided automatically if SAP is enabled.

3. Remove the semicolon (;) from the beginning of the line:

```
;SAP=
```

4. SAP= Identifies the type of SAP access (Arbutus) and also includes the name and location of the SAP system(s) to be accessed, if installed. The name (default is New York) can be anything you choose, and should be entered between pipe characters (|). The location is specified by ASHOST and SYSNR. ASHOST specifies the IP address or name of the system. SYSNR specifies the system number of the system. Additional pairs of values (name, location) may be added, separated by a pipe character (|).

5. Remove the semicolon (;) from the beginning of the line:

```
;SAPcache=
```

6. SAPcache= specifies the location where cached SAP table definitions are stored. This must be a folder on the server to which all users have read and write access. If this entry is omitted then no SAP table definitions will be stored.
7. ;SAPSOAP=true optionally allows you to avoid the need for installing the SAP Client. The default is shown in the file, but is commented out. If you want to avoid installing the SAP Client, remove the leading semicolon (;).

Note: The advantage to using this parameter is avoiding a complex installation of the SAP Client. The disadvantage to using this parameter is that if any communication problems with SAP occur, you will not have the SAP Client to diagnose and fix these problems (i.e. with the SAPSOAP=true parameter set, communication with SAP either works or it doesn't).

8. ;SAPRFC= optionally allows you to specify an alternate RFC to service data requests. The default is shown in the file, but is commented out. If you want to change the RFC accessed, remove the leading semicolon (;) and change the RFC name.

Note: To create an alternate (custom) SAP RFC Read Table for data requests, see "Create An Alternate SAP RFC Read Table (Optional)" on page 19.

9. ;SAPsize= optionally allows you to change the default amount read in each call to SAP. Data is read in blocks to ensure that large queries do not time out. The

default is shown in the file, but is commented out. If you want to change the default amount of data per block, remove the leading semicolon (;) and change the value.

Create An Alternate SAP RFC Read Table (Optional)

By default Analyzer uses the RFC called READ_TABLE to access the SAP tables from your SAP system. This RFC allows for records having a maximum length of 512 characters to be extracted. So for many tables you may need to choose a set of columns that accumulate to less than this length. If you want to bring in records containing all of the columns, you can create an alternate RFC that allows you to read in up to 4096 characters per record.

To do so, have someone in the SAP group perform the following steps:

1. Use transaction SE37 to copy the module RFC_READ_TABLE to a custom name, for example ZRFC_READ_TABLE
2. Use transaction SE11 to copy the structure TAB512 to a custom name, for example ZTAB4096
3. Modify the WA member of ZTAB4096 to component type CHAR with length 4096
4. Save and activate the new structure using Ctrl+F3
5. Open the newly created ZRFC_READ_TABLE and change the type of the TABLES parameter DATA to ZTAB4096 from TAB512

In addition, RFC_READ_TABLE sometimes does not correctly read the uncommon column type Float correctly. If you consider this an issue then steps 6 and 7 below must also be performed:

6. In the Source code tab, locate the following statement (around line 165):

```
ASSIGN WORK TO CASTING TYPE (QUERY_TABLE).
```

7. Replace this statement with the following code:

```
DATA: BEGIN OF WORK, BUFFER(30000), END OF WORK.
FIELD-SYMBOLS: <WA> TYPE ANY, <COMP> TYPE ANY.
" --- begin of modification
" ASSIGN WORK TO <WA> CASTING TYPE (QUERY_TABLE).
DATA: tab_ref TYPE REF TO data.
CREATE DATA tab_ref TYPE (query_table).
ASSIGN tab_ref->* TO <wa>.
" --- end of modification
IF ROWCOUNT > 0.
ROWCOUNT = ROWCOUNT + ROWSKIPS.
ENDIF.
SELECT * FROM (QUERY_TABLE) INTO <WA> WHERE (OPTIONS).
```

In either case, to finish creating an alternate SAP RFC Read Table, complete the following final step:

8. Save and activate the new function module using Ctrl+F3

Create the SAP table lists required by the SAP Wizard

In Analyzer's Data Definition Wizard, the SAP Wizard uses table lists derived from your SAP system. These table lists reside in an SAP sub-folder (SAP\Tables) of the Arbutus Windows Server installation folder.

Note: Normally this process will be run using the Analyzer client installed with the Arbutus Windows Server on the server machine. Alternatively, this may be run from a local Analyzer client, provided that the local machine has access to the server machine's Arbutus Windows Server install directory and can create files there.

The following process creates the files for these table lists from your system:

Open the Analyzer Client

Launch any Analyzer client installed on a workstation that can connect to the Arbutus Windows Server.

Configure the Analyzer Client for Access to the Arbutus Windows Server

Configure a server profile in Analyzer so that the Analyzer client can connect with the Arbutus Windows Server that is mapped to SAP:

1. Follow the instructions in Analyzer's Help for creating a server profile to connect to the Arbutus Windows Server.
2. From the main menu choose Server/Profiles and then click [New]. Provide a name for the server profile, click [OK].
3. Enter the required server information and click [Save].
4. To test the server profile, click the Connect button.

Configure the Analyzer Client for SAP Client Access

To configure SAP client access for the Analyzer client from the Arbutus Windows Server:

1. From the main menu, choose Tools/Options, and then select the SAP tab.
2. Enter your SAP user name and password to access the SAP system.
Note: The password is encrypted when stored.
3. Enter your SAP language code (EN=English, DE=German, etc.)
4. Enter the Client number. The Client should be 800, unless you have other specific needs.
5. Ensure the setting to use technical names for import is turned ON (selected).
6. Save the SAP settings by clicking [OK].

Create an SAP Project Folder

Using Analyzer, create a new Project folder for SAP initialization:

1. In Analyzer, choose File/New and create a local Analyzer SAP Project to use for SAP initialization (click Cancel when prompted to define/import a table).
2. It is best to create the Analyzer SAP Project in your Documents folder; never create it in the Program Files folder.

Import and Run the SAP_INIT.PRO File [Optional]

By default, installation of SmartLink for SAP ERP automatically makes available about 38,000 of the most commonly accessed SAP tables. If you wish to have access to ALL SAP tables then complete the following optional steps:

1. A file called SAP_INIT.PRO is copied as part of the Arbutus Windows Server to "C:\Program Files (x86)\Arbutus\Windows Server\SAP" on the server.
2. You need to copy this file locally (e.g. to your local desktop) using Analyzer by clicking the Server menu and choosing Explore.
3. In Analyzer, right-click on the SAP Project name in the Overview, select Import and then Procedure. Browse and choose the saved SAP.INIT.PRO file and click [Open] to import the procedure.
4. Once the SmartLink software is up and running, in Analyzer right-click on the imported SAP_INIT.PRO and choose Run to run the procedure.
5. When prompted, you must type in the name of your correct server profile (as created earlier to connect to the Arbutus Windows Server) and the correct SAP system name for accessing SAP.
6. When prompted, you must choose the desired language to install.
7. Once this process is completed, someone with administrative rights on the Arbutus Windows Server should copy the resulting text files (.txt) created by this process from your specified output prefix folder on the Arbutus Windows Server into the SAP\Tables folder where the Arbutus Windows Server was installed. There are two files created per language. The names of the files will be in the form ENCommon.txt and ENFull.txt, where EN represents English, FR represents French, etc.
8. That's it. You are done. You are now ready to use the SAP interface!

We strongly recommend not using the SAP initialization project as a regular work project, as the procedures and tables in it were specifically created to initialize the SAP interface, and will be of no ongoing use.

Configure SAP Client Access for Other Analyzer Clients

For each remaining Analyzer client:

1. Start the Analyzer client.

2. Open any Analyzer Project.
3. Configure a server profile to allow the Analyzer client to connect with the Arbutus Windows Server that is mapped to SAP. Follow the instructions in Analyzer's Help for creating a server profile to connect to the Arbutus Windows Server.
4. Configure the SAP client access for the Analyzer client:
 - In Tools/Options, select the SAP tab
 - Enter your SAP user name and password to access the SAP system

Note: Note that the password is encrypted when stored.

 - Enter your SAP language code (EN=English, DE=German, etc.)
 - Enter the Client number. The Client should be 800, unless you have other specific needs
 - Save these settings by clicking [OK]

Configure Standard Queries

SmartLink for SAP ERP supports both private and shared queries.

Private Queries

Private queries are created using the Data Definition Wizard in Analyzer and are stored in the SAP folder under each user's output prefix specified within their server profile. The names of all saved private queries are indicated with a # sign that is automatically added as the first character in the query name.

Shared Queries

Shared queries are stored in the SAP folder under the location where the Arbutus Windows Server was installed.

To create a new shared query:

1. Create a private query that implements the tables, columns and filters required. This will create a file with the same name as the query, preceded by a #, with an XML extension, in the SAP folder under the user's output prefix specified within their server profile.
2. Copy the query to the shared query folder and specify an appropriate name. The # should be removed from the name. You may need administrator rights to copy the file into the shared query location.