

Arbutus HUB

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 Hub Server and will assist you with installing and configuring the Arbutus Hub 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.

800 – 525 West 8th Avenue

Vancouver, BC, Canada, V5Z 1C6

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CHAPTER 1 INTRODUCTION

System Description

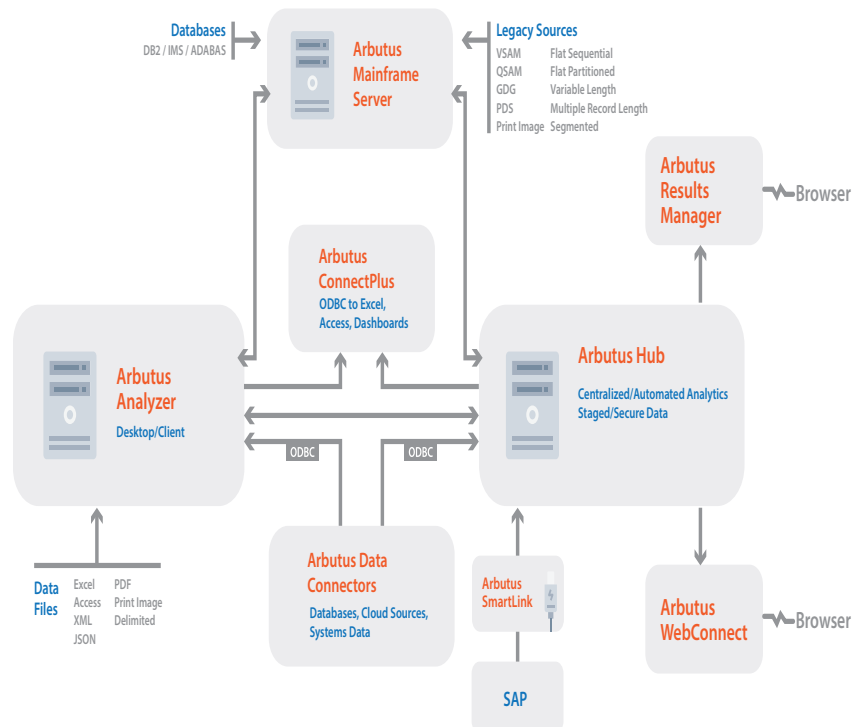
The Arbutus Solution - Overview

The Arbutus Solution consists of:

1. One or more of the Arbutus Servers:
 - A zSeries mainframe computer running the Arbutus zSeries Server
 - A Windows server running the Arbutus Hub Server
2. One or more of the PC-based Arbutus Clients:
 - Arbutus Analyzer
 - Arbutus ConnectPlus
 - Arbutus WebConnect
 - Arbutus Results Manager
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

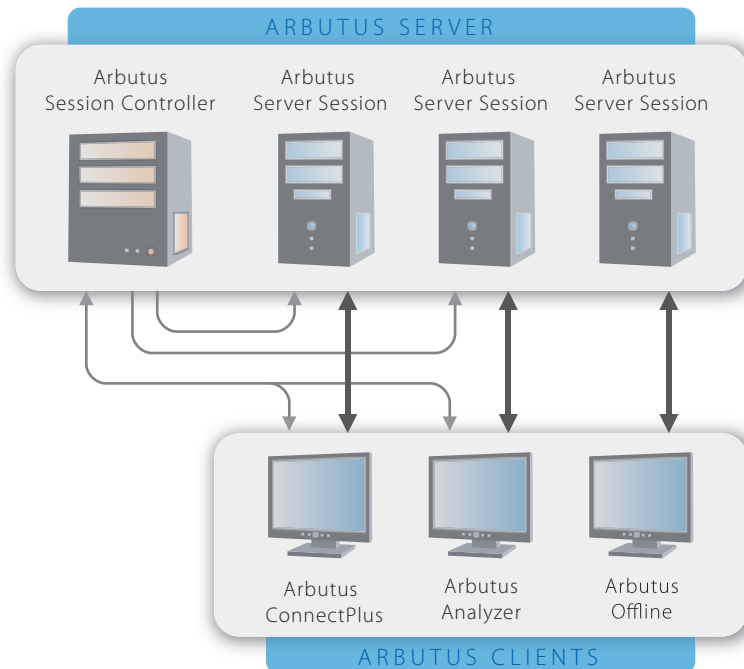
An Arbutus “session controller” is provided to manage TCP/IP communications and Arbutus end-user sessions (“server sessions”) for configurations that connect across multiple platforms, as is the case when running the PC-based Arbutus Clients with any of the Arbutus Servers.

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 installation steps described in “Installing the Arbutus Hub Server” on page 10 are those required to install the Arbutus Hub Server for use in a client/server environment with either of the Arbutus Analyzer or ConnectPlus clients.

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

The Arbutus Hub Server can be installed on a Windows machine running any version of Windows 7 or later..

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 Hub Server. If installed on network server, the resource consumption may slow down your overall network performance.

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

Minimum Recommended Resources (Server)

The minimum recommended resources for running the Arbutus Hub Server software on a physical server are:

- The operating system should be at least Windows 7 (or later) or Windows Server 2016 (or later)

- An Intel i7 level processor (or equivalent),
- 32 GB of RAM (plus 1 GB of RAM per concurrent user, if greater),
- Sufficient hard disk space to meet analytic processing needs

Note: Opting for minimum requirements may significantly impact performance.

Optimal Recommended Resources (Server)

Running on a Physical Server

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

- An Intel i7 level processor (or equivalent),
- 32 GB of RAM (plus 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 Hub Server software on a virtual server, we recommend the following optimal resources:

- 4 CPU Cores,
- 32 GB of RAM (plus 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.

Requirements for 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 Microsoft .NET Framework 4.5.2 or higher installed. To obtain and install the 32-bit Microsoft .NET Framework 4.5.2 or higher, navigate to:

<https://dotnet.microsoft.com/download>

and select Download .NET Framework Runtime.

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 Hub Server” on page 10.

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.

Arbutus Connectors

As part of the Arbutus Hub Server installation, the installer will be provided with the option to select and install desired data connectors from a supplied suite of optional Arbutus data connectors. These data connectors are solely for the use of Arbutus software.

Note: During installation, the installer will be prompted to choose which of the desired Arbutus connectors should be installed.

These are the currently available connectors that users can select from:

- Access
- Active_Directory
- AmazonS3
- Apache_HBase
- Apache_Hive
- Apache_Spark
- Azure_Active_Directory
- Cassandra
- Concur
- Couchbase
- DataBricks
- DynamoDB
- Email
- EpicorERP
- ExcelOnline
- Excel_Services

- Google_BigQuery
- Jira
- Microsoft_Dynamics_365
- Microsoft_Dynamics_365_BC
- Microsoft_Dynamics_GP
- Microsoft_Exchange
- MongoDB
- MySQL
- NetSuite
- Oracle_Financials_Cloud
- Oracle_HCM_Cloud
- Oracle_SCM_Cloud
- Oracle_Sales
- PostgreSQL
- Quickbooks
- Redshift
- Rest
- Salesforce
- SAP_ERP
- SAP_HANA
- ServiceNow
- SharePoint
- Snowflake
- Splunk
- SQL_Server
- Teradata
- Workday
- Xero

Selected data connectors are installed as System DSN's in Window's 32 Bit ODBC Manager. Each of the data connector's names are prefaced with Arbutus (for example: Arbutus SQL Server).

Once the Arbutus data connectors are installed, they must be configured prior to usage:

- For the Arbutus Hub Server, a server administrator must configure each of the installed Arbutus data connectors via Window's 32 Bit ODBC Manager.

The server administrator can easily access the 32 Bit ODBC Manager on the server by establishing a desktop short cut to:

`C:\Windows\SysWOW64\odbcad32.exe`

Installed data connectors will automatically appear in the list of available ODBC/Relational data sources when using Analyzer's Data Definition Wizard, the SQL command or the ODBC Explorer.

CHAPTER 2 INSTALLING THE ARBUTUS HUB SERVER

Installation Overview

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

When installing the Arbutus Hub Server, you can:

- read and follow the quick installation procedures (see “Quick Installation Procedures” on page 11), or
- read and follow the full and detailed installation procedures (see “Full Installation Procedures” on page 12)

The Arbutus Hub Server can be installed on a physical Windows server or on a virtual cloud based Windows server (like Microsoft Azure). The installation instructions that follow apply to both types of servers.

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 Hub Server. If installed on network server, the resource consumption may slow down your overall network performance.

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

Server Logon Methods

The Arbutus Hub 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

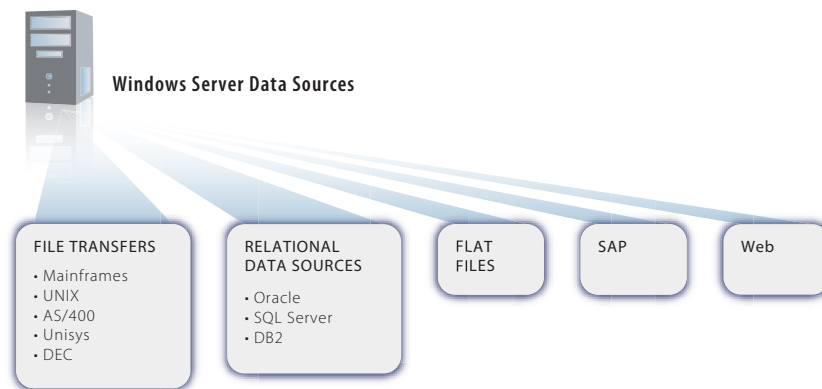
ArbutusS.INI server file. For more information see “Step 4 - Editing the ArbutusS.INI file” on page 14.

Data Source Basics

If you plan on accessing relational databases using the Arbutus Hub Server, please review “Installing the Arbutus Hub Server” on page 10 before proceeding with the installation of the Arbutus Hub Server.

If you plan on accessing SAP data sources using the Arbutus Hub Server, please review “Installing Arbutus SmartLink for SAP ERP” on page 23 before proceeding with the installation of the Arbutus Hub Server.

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



Quick Installation Procedures

For those wishing to perform a quick default installation of the Arbutus Hub Server, and skip the full installation, please follow these easy installation steps:

1. Download the Arbutus Windows software from the Arbutus website onto the server machine.
2. Run the install executable.
3. When prompted, activate the server copy of Analyzer using the supplied activation key.
4. In the Program Files (x86)/Arbutus/Windows Server folder on the server machine, run the ServID.exe program obtain the machine ID for the server machine hosting the Arbutus Windows Server software and email it to:
`support@ArbutusSoftware.com`
5. Stop the Arbutus Server service.
6. Support will e-mail you an ArbutusS.INI file configured for the identified server machine ID.

7. Copy the ArbutusS.INI file into the Program Files (x86)/Arbutus/Windows Server folder on the server machine.
8. Edit the ArbutusS.ini file provided by Arbutus support to:
 - specify the open port number that the Arbutus Hub Server will listen to for connection requests from the Analyzer client software
 - if desired, enable scheduling
 - if purchased, enable SmartLink
9. Start the Arbutus Server service.

For more information on editing the ArbutusS.INI file see “Step 4 - Editing the ArbutusS.INI file” on page 14.

Once the Arbutus Server has been installed and configured, Analyzer users must create a server profile for connecting to/communicating with the Arbutus Hub Server. This will include specifying the necessary IP Address for the server machine, the open port number and entering their server user id and password (typically their Active Directory user id and password).

Full Installation Procedures

The Arbutus Hub 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 Hub 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:

<https://www.arbutussoftware.com/en/download-software>

Download the Arbutus Hub 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 Hub Server

Performing a New Installation:

To perform a new installation of an Arbutus Hub Server, double-click on the downloaded installation file to run the install and follow the installation prompts. We recommend the Complete installation option but you can choose the Custom installation if you want to change installed components (for

instance, choosing which of the supplied suite of Arbutus Connectors that should be installed).

Note: see “Introduction” on page 3 for more details on installing the Arbutus connectors.

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 14. Save the edited ArbutusS.INI file into the same install folder as the Arbutus Hub Server.

Once all of the installation steps have been completed, start the Arbutus Hub Server service. For more information see “Installing the Arbutus Hub Server” on page 10.

Updating an Existing Installation:

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

1. Stop the Arbutus Hub Server service.
2. Ensure that there are no active process connections to the Arbutus Hub Server by starting the Task Manager and reviewing the Processes tab. Ensure any active Arbutus Hub 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 Hub Server service.

Note: “Installing the Arbutus Hub Server” on page 10 “Installing the Arbutus Hub Server” on page 10

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 Hub Server for running scheduled jobs and must be activated if you intend to use the Arbutus Windows Server scheduling features.

Internet Based Activation

In order to perform an internet based activation of the server-based copy of the Analyzer software, the Windows machine must have the 32-bit Microsoft .NET Framework 4.5.2 or higher installed. To obtain and install the 32-bit Microsoft .NET Framework 4.5.2 or higher, navigate to:

<https://dotnet.microsoft.com/download>

and select Download .NET Framework Runtime.

When installing the Arbutus Hub Server, you will be automatically prompted to perform an internet activation of the server-based copy of the Analyzer.

You will need 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, you will have to complete a manual activation.

Manual Activation

When the server box does not have internet access to allow internet activation of the server-based copy of Analyzer, the alternate approach is to create and use a manual activation key:

1. After installing the Arbutus Hub Server, interactively launch the server-based copy of Analyzer and attempt to activate it with the original activation key.
2. A machine ID will be presented - copy this information.
3. You can either:
 - send this machine ID to technical support who will create a manual activation key for you, or
 - launch the Manual_Activation.exe on a local machine which has internet access and has Analyzer installed upon it. The Manual_Activation.exe can be found in the Analyzer install folder. Enter the user ("Arbutus Server"), the company and the manual activation key
4. Once a manual activation key has been established, you will have to re-install the Arbutus Hub Server and when prompted enter the manual activation key to activate the server-based Analyzer.

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 Hub 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 23.

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

```
[Arbutus Stub Info]
Port=7000
Timeout=60
Log=1
Encrypt=YES
;Logname=C:\temp\ArbutusPort7000.log
;Logon=Network
;NoLocalData=1
;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

Optional - if used, 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
```

Any valid path and log file name can be specified.

Note: This entry must be made in both the Arbutus Stub and Arbutus Server Info sections of the INI file so that Stub and User messaging are not written to the same log file.

For the Stub log we recommend using the filename:

```
ArbutusServerStub.Log
```

For the Session log we recommend using the filename:

```
ArbutusServerSession.Log
```

Log-on Methods

Interactive

By default, the log-on method is deemed interactive if not specified.

Network

To specify the NETWORK logon method, use the Logon parameter with the Network parameter.

```
Logon=Network
```

The NETWORK log-on type has one significant limitation - the log-on session will not be able to access network resources, such as remote printers, mapped drives or UNC paths.

Batch

To specify the BATCH logon method, use the Logon parameter with the Batch parameter.

```
Logon=Batch
```

Restricting Transfer of Files Locally

Specifies that server files may not be transferred locally (i.e. to the users desktop). The syntax to prevent local file transfers is:

```
NoLocalData=1
```

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.

Note: The Server Service must have sufficient privileges to create, update and delete the file name specified in the Schedjobs parameter.

SSOSPN

SSOSPN specifies the Single Sign-On Service Principal Name. For example specify:

SSOPRN=HOST

SSOGroups

SSOGroups specifies which Active Directory Groups are allowed to connect via SSO. For example specify:

SSOGroups=ASI_SALES,ASI_ADMIN

Note: Each Active Directory Group name listed must be separated by a comma (no spaces).

Parameters [Arbutus Server (Session) 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 Hub 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 Hub Server from an Analyzer command. The syntax is:

Compression=

Compression values range from 0 to 2 with 0 indicating no compression, 1 indicating compression, and 2 indicating compression and encryption.

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

Step 5 - Configuring, Starting or Stopping the Service

Configuring the Service

Consistent with all Windows services, a log on user must be specified in order to control the privileges that will be assigned to the Arbutus Hub Server service. This log on user can be established as either a Local System, Local Service or a Custom User ID. If using a Custom User ID, please ensure that the service user has the following privileges in "Local security Policy \ User Rights Assignment":

- Adjust memory quotas for a process
- Allow log on locally
- Replace a process level token

Additionally, if Scheduling is enabled, the service user must have sufficient authority to create, update and delete the file name specified in the Schedjobs parameter in the ArbutusS.INI file.

Starting or Stopping the Service

To start or stop the Arbutus Hub 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 Hub Server service is set to "Automatic", then highlight the Arbutus Hub 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 Hub 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 Hub 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 14.

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 Hub Server.

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

Testing PC-based Connections

The Arbutus Hub 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 Hub Server does not have any inherent, proprietary, security or network administration capabilities built into the software. Instead, the Arbutus Hub 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 Hub 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 Hub 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 Hub 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 Hub 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 Hub Server.

This will enable end-users to select the vendor 32-bit ODBC driver as their relational data source on the Arbutus Hub 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 Hub Server, you must first stop the service for the Arbutus Hub 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 Hub Server.

CHAPTER 3 INSTALLING ARBUTUS SMARTLINK FOR SAP ERP

Installing and configuring Arbutus SmartLink for SAP ERP on the Arbutus Hub 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 Hub 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 tables (in a group)
- 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.

Optionally, for organizations which want to restrict access to specific tables (rather than the entire table group to which it belongs), then the SAP authorization S_TABU_NAM must be granted.

Additionally, Arbutus SmartLink for SAP ERP requires that SAP users must be set up as a SERVICE or DIALOG user for use with RFC. Setting a user up as a SYSTEM user is not supported.

Installation Procedures

Install Arbutus Analyzer and Arbutus Hub Server

Before installing the SAP software, you must install the Arbutus Hub Server and the Analyzer client software. See “Installing the Arbutus Hub Server” on page 10 for installing the Arbutus Hub 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 Hub Server,

the SAP client must be installed on the same physical Windows server that the Arbutus Hub 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-P=true parameter in the ArbutusS.INI file (see step 6 in the following Configuration section).

Configuration Procedures

Configure the Arbutus Hub Server to enable SAP

The SAP functionality on the Arbutus Hub Server is controlled through settings in the ArbutusS.ini file, that is located in the same folder as the Arbutus Hub 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. ;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.
8. ;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 SmartLink uses RFC_READ_TABLE to access the SAP tables from your SAP system. This RFC is built into every SAP system, so there is usually no need to make modifications. One characteristic of RFC_READ_TABLE is that it only allows fields having a maximum length of 512 characters to be extracted. For the vast majority of tables this will be more than sufficient.

In the rare instance where you do need to read single fields longer than 512, you must create an alternate RFC that allows you to do so. To do this your SAP team must make a copy of the RFC READ_TABLE, and adjust the size of the internal buffers to your needs (as per the instructions shown below).

In the example below, we assume that the width of the maximum buffer size is set to 4096, but you must specify the width that you need. The width required is the total width of all the fields being read, for any table that contains an individual long field. For example, if you need to read field X that is 5000 long, X is contained in table Y, and you will also be reading another 800 characters from Y at the same time, then you need to specify a length of 5800. Generally it is better to err on the high side, so adding 1000 (for example) to your width estimate cannot hurt.

To create an alternate SAP RFC Read Table, have someone in your SAP team 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 Hub Server installation folder.

Note: Normally this process will be run using the Analyzer client installed with the Arbutus Hub 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 Hub 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 Hub Server.

Configure the Analyzer Client for Access to the Arbutus Hub Server

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

1. Follow the instructions in Analyzer's Help for creating a server profile to connect to the Arbutus Hub 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 Hub Server:

1. From the main menu, choose Tools/Options, and then select the SAP tab.
2. Enter your SAP language code (EN=English, DE=German, etc).
3. Enter the Client number. By default, the Client is set to 800, unless you have other specific needs

Note: To determine the Client number, open the SAP GUI, click on the System menu and choose Status. On the top left of the System Status dialog you can see the Client number.

4. 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 Hub 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, and select Copy From Another Project and then choose 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 Hub 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 Hub Server should copy the resulting text files (.txt) created by this process from your specified output prefix folder on the Arbutus Hub Server into the SAP\Tables folder where the Arbutus Hub 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 Hub Server that is mapped to SAP. Follow the instructions in Analyzer's Help for creating a server profile to connect to the Arbutus Hub 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. By default, the Client is set to 800, unless you have other specific needs

Note: To determine the Client number, open the SAP GUI, click on the System menu and choose Status. On the top left of the System Status dialog you can see the Client number.

- 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 Hub 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.