



Gplus Adapter 7.2

NICE-IEX WFM

Installation and Configuration Guide

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Preface

Welcome to the *Gplus* Adapter – NICE-IEX WFM - Installation and Configuration Guide. This document describes the *Gplus* Adapter for NICE-IEX WFM and lists the steps required to install and configure the components of this Adapter. The product name references *IEX* but this Adapter will refer to the associated workforce application as *NICE-IEX* to reflect the change in ownership. The *IEX TotalView* application is now named *NICE Workforce Management*.

This document is valid only for the 7.2 release(s) of this product.

Note: For versions of this document created for other releases of this product, visit the Genesys Technical Support website.

For information about related resources and about the conventions that are used in this document, see the supplementary material starting with section [Related Documentation Resources](#).

About *Gplus* Adapter for NICE-IEX WFM

The *Gplus* Adapter for NICE-IEX WFM is a software solution that provides integration between a NICE Workforce Management / IEX TotalView system and Genesys routing solutions. Genesys event data is filtered and aggregated to provide interval activity data and a real-time data feed for the NICE-IEX workforce applications.

The *Gplus* Adapter for NICE-IEX WFM has backward compatibility with legacy IEX WFMs.

Intended Audience

This document is primarily intended for system administrators or other individuals who will be installing the *Gplus* Adapter and have a basic understanding of the following:

- Computer-telephony integration (CTI) concepts, processes, terminology, and applications.

- TCP/IP networking fundamentals including routing and client/server application communications via TCP sockets.
- NICE-IEX Workforce Management conventions and reports.
- The network configurations used in the installation computing environment.
- The following Genesys applications and solutions:
 - Framework 7.6 - 8.x
 - Configuration Manager
 - Universal Routing 7.0 - 8.x

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Related Documentation Resources

The following resources provide additional information that is relevant to this software. Consult these additional resources as necessary:

- The *Gplus WFM Adapter 7.2 - Hardware and Software Requirements*, which will help in ensuring that the Adapter is installed with sufficient resources.
- The *Framework 8.5 Configuration Manager Help*, which will help when using Configuration Manager.

- The *Genesys 8.5 Security Deployment Guide*, which will help when configuring secure connections to the TServer(s), SIP Server(s), Interaction Server(s) and Configuration Server(s).
- The product documentation, Release Notes, and Product Advisories for this product, which are available on the Genesys Customer Care website after logging in at <https://genesyspartner.force.com/customercare/GenesysCommunityLogin>.

Document Conventions

This document uses certain stylistic and typographical conventions—introduced here—that serve as shorthand for particular kinds of information.

Document Version Number

A version number appears at the bottom of the inside front cover of this document. Version numbers change as new information is added to this document. Here is a sample version number:

72gp_icg_iex-wfm_MM-YYYY_v7.2.x

You will need this number when you are talking with Genesys Technical Support about this product.

Type Styles

The Type Styles table describes and illustrates the type conventions that are used in this document.

Type Styles

Type Style	Used For	Examples
Italic	<ul style="list-style-type: none"> • Document titles • Emphasis • Definitions of (or first references to) unfamiliar terms • Mathematical variables <p>Also used to indicate placeholder text within code</p>	<p>Please consult the <i>Genesys Migration Guide</i> for more information.</p> <p>Do <i>not</i> use this value for this option.</p> <p>A <i>customary and usual</i> practice is one that is widely accepted and used within a particular industry or profession.</p>

	samples or commands, in the special case where angle brackets are a required part of the syntax (see the note about angle brackets below).	The formula, $x + 1 = 7$ where x stands for . . .
Monospace font (Looks like teletype or typewriter text)	<p>All programming identifiers and GUI elements. This convention includes:</p> <ul style="list-style-type: none"> • The <i>names</i> of directories, files, folders, configuration objects, paths, scripts, dialog boxes, options, fields, text and list boxes, operational modes, all buttons (including radio buttons), check boxes, commands, tabs, CTI events, and error messages. • The values of options. • Logical arguments and command syntax. • Code samples. <p>Also used for any text that users must manually enter during a configuration or installation procedure, or on a command line.</p>	<p>Select the Show variables on screen check box.</p> <p>In the Operand text box, enter your formula.</p> <p>Click OK to exit the Properties dialog box.</p> <p>T-Server distributes the error messages in EventError events.</p> <p>If you select true for the inbound-bsns-calls option, all established inbound calls on a local agent are considered business calls.</p> <p>Enter exit on the command line.</p>
Angle brackets (< >)	<p>A placeholder for a value that the user must specify. This might be a DN or a port number specific to your enterprise.</p> <p>Note: In some cases, angle brackets are required characters in code syntax (for example, in XML schemas). In these cases, italic text is used for placeholder values.</p>	smcp_server -host <confighost>



Chapter 1: Product Description

Historical Reports

The NICE-IEX Historical reports are contained in one file with the start and end of each report indicated by delimiting lines in that file:

Version 3.x/4.x (text file)

- *Contact Queue Report* - Customer interaction interval report
- *Agent Contact Queue Report* - Agent/customer interval report
- *Agent System Performance Report* - Agent activity interval report
- *Agent Sign-On/Sign-Off Report* - Agent daily sign-on report

Version 7.x (xml file)

- *Queue Data Report* - Customer interaction interval report
- *Agent Queue Data Report* - Agent/customer interval report
- *Agent System Data Report* - Agent activity interval report
- *Agent Activity Data Report* - Agent daily sign-on report

A file containing the first three reports is generated on either a 15- or 30-minute interval depending upon the client preference. The daily *Agent Sign-On/Sign-Off/Agent Activity Data* report is added to the file with the other three reports at midnight.

See option [nice iex.version](#) for additional information about setting the NICE-IEX report version.

Real Time Adherence (RTA)

RTA tracks agent state to ensure that the agents are in compliance with their set schedules. NICE-IEX does not stipulate a standard set of RTA states so the states tabulated below have been selected as the “standard” used by the *Gplus* Adapter for NICE-IEX WFM.

Agent States SignOut NotReady Available DndOn	Voice States CallInbound DirectCallInbound CallOutbound CallInternal CallOnHold CallConsult Conference AfterCallWork	Email States EmailInbound EmailReply EmailOutbound AfterEmailWork
iWD/OpenMedia States InteractionInbound InteractionInternal AfterInteractionWork	Outbound States OutboundPreview OutboundCampaignCall	Chat States ChatInbound ChatInternal AfterChatWork
IM States IMInbound IMInternal AfterIMWork	Extended Phone States OffHook Dialing Ringing (See Option)	

Note: While NICE-IEX supports a synchronous and asynchronous connection protocol for the RTA connection, this version of the adapter only supports the asynchronous option.

RTA State Priority

When multiple RTA states are present for an agent, the following priorities are applied to determine the most relevant state to appear in the RTA feed. The larger the number, the higher the priority.

For example:

Agent is logged in and ready on voice, email, and chat.

- Available (voice) – priority 60
- Available (email) – priority 60
- Available (chat) – priority 60

Agent is reading a routed email.

- EmailInbound – priority 150

Agent gets a routed inbound call.

- CallInbound – priority 400

The agent now has five (5) simultaneously active RTA states, but the agent is reported as CallInbound in the RTA feed as it has the highest priority.

RTA State	Priority
AfterCallWork	100
AfterChatWork	80
AfterEmailWork	90
AfterIMWork	80
AfterInteractionWork	80
Available	60
CallConsult	350 when during an inbound or outbound call 200 when during composing collaboration email reply 150 when during reading collaboration email
CallInbound	400
CallInternal	350
CallOnHold	300 - routed call 250 - non-routed call
CallOutbound	400 - outboundRoutedCall 350 - outboundNonRoutedCall
ChatInbound	130
ChatInternal	120
Conference	350 (takes precedence over CallConsult)
Dialing	116
DirectCallInbound	350
DndOn	450
EmailInbound	150
EmailOutbound	140
EmailReply	200
IMInbound	130
IMInternal	120
InteractionInbound	200
InteractionInternal	140
NotReady	50
OffHook	113
OutboundCampaignCall	400
OutboundPreview	110
Ringing	117
SignOut	990
Unknown	2 - loggedIn



Chapter 2: Installation and Setup

Installation and Windows Permissions

File and folder permissions can be a factor when installing the *Gplus* Adapter on Windows Server versions. It is recommended that the same User with *Administrator* privileges install the adapter files, the Java instance, and the Adapter as a Windows Service. The installed service may fail to start if the access permissions are not aligned.

Included Files

The application installation package contains all of the required components with the exception of the Java Runtime Environment (JRE). Installation of the application is a matter of copying the distribution files into a suitable directory. An example is shown below:

Folders

- | | |
|-------------------------|--|
| • GPlusAdapter/config | – configuration files and license file |
| • GPlusAdapter/lib | – application jar files |
| • GPlusAdapter/ftp | – reports folders |
| • GPlusAdapter/licenses | – third party software licenses |
| • GPlusAdapter/logs | – log files |
| • GPlusAdapter/res | – report templates |
| • GPlusAdapter/recovery | – recovery log files |
| • GPlusAdapter/scripts | – Windows and “unix” scripts |
| • GPlusAdapter/wrappers | – Java Windows Service wrappers |

Files

GPlusAdapter\

- bootstrap.jar – start up jar file

GPlusAdapter\scripts\windows\

- windows_install.bat – installation script
- encryptPassword.bat.example – password encryption script
- serverHostName.bat.example – hostname script
- startup.bat.example – console start up script
- svcinstall.bat.example – service installation script

Note: The scripts\windows folder contains a subroutines folder that holds the scripts called by windows_install.bat. There is nothing to configure in this folder and it should not be tampered with.

GPlusAdapter/scripts/unix_bash/

- encryptPassword.sh.example – password encryption script
- serverHostName.sh.example – hostname script
- shutdown.sh – shut down script
- startup.sh.example – start up script

GPlusAdapter\config

- GPlusWFM.properties – Configuration Server connection
- product.properties – Adapter name and version
- jvm.properties – JVM location, memory and type
- log4j2.xml.example – logging configuration
- license.txt – license file

Logging, FTP and Report Directories

A default set of folders for log files and historical reports are included as part of the installation package. These folders (with the exception of the recovery folder) do not have to be used and the configuration options allow for alternatives.

Logging

- Default - logs folder

- The number, size and location of the adapter log files are set in the log4j2.xml file contained in the config folder.
- The default service install script for Windows creates the AdapterService, service-stdout and service-stderr log files in the logs folder but their location can be changed.

Reports

- Default - ftp/reports folder
- Option - historical.reports/directory
- Reports folders for historical streams are automatically created as subfolders of the reports folder using the stream name as the subfolder name.
- Normal operation sees the report files transferred to a remote server and the local copy removed from the reports folder.
- The number of days that the report files are retained if they are not transferred is set with the historical.reports/reportRetentionDays Option.

FTP Source

- Default - ftp/reports folder
- Option - historical.ftp/localSourceDirectory
- The *Gplus* Adapter attempts to transfer all of the files contained in this folder immediately after the report generation task has ended.

FTP Backup

- Default - ftp/reportsBackup folder
- Option - historical.ftp/localBackupDirectory
- Backup folders for historical streams are automatically created as subfolders of the backup folder using the stream name as the subfolder name.
- The number of days that the FTP backup files are retained is set as an application option in the historical.ftp section.

Recovery

- Default - recovery folder
- Option – recoveryPath property in the GPlusWFM.properties file.
- This folder contains the archived logs of all of the events received by the *Gplus* Adapter instance for the last seven days.
- Neither the folder nor the log files should be tampered with as the *Gplus* Adapter replays the last day's events at startup to recover the state prior to shutting down.

Adding an Adapter Instance to the Configuration Server

The Adapter does not use a wizard application to simplify the installation but rather requires manual steps to add the application to the Configuration Server and complete the configuration. The present version of the Adapter does not support installation with the Genesys Administrator and its meta-data files. It is recommended that the Adapter be installed using the Genesys Configuration Manager.

Importing the Application Template

The templates folder contains the `GPlus_Adapter_IEX_72.apd` file that defines the properties for the adapter's Application Template. This file should be moved to a location accessible by the computer running the Genesys Configuration Manager so that it can be imported into the Configuration Server.

Once the Application Template has been imported, the name should be confirmed prior to saving it. `GPlus_Adapter_IEX_72` is one possibility but alternatives are also acceptable as long as the template name is unique.

Creating the Application in the Configuration Layer

An empty application can be created after the Application Template has been added to the Configuration Layer.

1. Select the Applications folder and right click in the right frame to bring up the menu.
2. Select New ... Application.
3. Select the recently imported Gplus Adapter template.

Once the template is selected, an Application Properties window will appear. Once again, a unique name should be entered for the Adapter instance. At this point, one option would be to continue with the configuration of the new application object, but it is suggested that new application be saved by selecting the OK button. Saving the new Application object requires that something be added to the fields in the Start Info tab. Periods ('.') will suffice until the start information is properly configured.

Java Virtual Machine

The *Gplus* Adapter is a Java application that runs in a Java Virtual Machine (JVM) that isolates the application from the underlying operating system.

Note: The 7.2 version of the Gplus Adapter requires Java 11.

The significant benefit is that the same code runs on more than one operating system. One downside is that there is some configuration required to properly start the application in the JVM. There are two steps to successfully starting the *Gplus* Adapter:

- Invoking the Java application launcher to load and run the Adapter application in the JVM.
- Connecting to the Genesys Configuration Server to obtain the saved application configuration options.

The first of these two steps differ slightly between Windows and "unix" installations. Additionally, a *Gplus* Adapter instance installed on a Windows server can be started as a console application or as a Windows Service.

Note: "unix" is used as a generic description for either the Solaris or Linux operating systems.

Java Version

The Java Runtime Environment (JRE) is not bundled with the Adapter installation files and the actual location of the JRE is a parameter that is specified in the startup scripts. The only version that is supported is the JDK 11 version that contains the JRE.

Windows

Note: The Windows script files are located in the scripts\windows folder of the Adapter installation.

windows_install.bat

The windows_install.bat script file performs the installation tasks listed below as a single menu driven script. The use of this script file is described in [Appendix E](#) below and it is recommended that it be used to install the *Gplus* Adapter as a Windows Service.

This script incorporates many of the steps discussed below and it is also recommended that the following steps be read for background. It should be noted that the *Gplus* Adapter can still be installed as described below using the listed script files.

startup.bat and svcinstall.bat

Both the startup.bat file and the svcinstall.bat Windows script files have common parameters that must be set to identify the JRE that will be used as well as the allocated memory limit for the running *Gplus* Adapter instance.

Setting WFM_JAVA_HOME

The WFM_JAVA_HOME parameter has to set to a base folder in the Java installation as shown in the example below.

```
set WFM_JAVA_HOME=../java/jdk11
```

JVM Memory

The memory setting configures the maximum amount of memory that the JVM will allocate on startup. The default is 4096 MB and it should be sufficient for all but the very largest call centers.

```
set JVM_MEM=4096m
```

startup.bat Script

The Windows batch file startup.bat is immediately executable as soon as the .example suffix has been removed. A console window will open and the program will continue to run as long as that window is open. This is fine for debugging and testing the application but is not a viable mode for running a server application. Once the application has been set up and tested using the startup.bat file, it should be converted into a Windows service or invoked directly with the Genesys Solution Control Server.

The following is an excerpt from the Windows startup.bat script showing part of the command to start the adapter:

```
%WFM_JAVA_HOME%\bin\java.exe -Xms%JVM_MEM%m ...
```

The java.exe file is the executable that starts the JVM. The file path created by the concatenation of the WFM_JAVA_HOME parameter and the rest of the file path, \bin\java.exe, must point to the actual Java executable.

svcinstall.bat and jvm.dll

When the Adapter is installed as a Windows service, it does not use the java.exe file but rather links to the jvm.dll file. There is a server version of that file available and this is the recommended version to use with the *Gplus* Adapter. The excerpt shown below is taken from the svcinstall.bat file and the file path assumes that the server version is being used:

```
...%WFM_JAVA_HOME%\jre\bin\server\jvm.dll ...
```

Again, the combination of the `WFM_JAVA_HOME` parameter and the file path must identify an actual file in the Java installation.

Installing a Windows Service

The following description discusses installing the adapter as a Windows service using the Apache Commons™ *daemon*™ *procrun* Java service wrapper.

The included `svcinstall.bat` file must reference the installed JRE in exactly the same way that the `startup.bat` file was configured with the `WFM_JAVA_HOME` parameter. An additional parameter, `SVCNAME`, must be set to identify the new service in the Services Console as shown below:

```
set SVCNAME=GPlusAdapter_WFM_P
```

The service name must match the Configuration Server application name of the Adapter instance that is configured in the `GPlusWFM.properties` file described [below](#).

One point to note is the location of the `jvm.dll` file as described above. The other is that it is also possible to modify the logging of the service process. The installation script has the following service logs enabled:

- `AdapterService.YEAR-MONTH-DAY.log`
- `service-stdout.YEAR-MONTH-DAY.log`
- `service-stderr.YEAR-MONTH-DAY.log`

The logging can be disabled by removing the parameters or using the [prunmgr](#) application.

This script file must be run once to install the adapter instance as a service after the parameters have been set. As part of the service installation, the `prunsvr.exe` file is copied and given the name of the new service e.g. `GPlusAdapter_WFM_P.exe`.

32-bit or 64-bit Service Installation

As Java 11 is only available as a 64 bit JVM, it must be installed as a 64-bit service. The default installation uses the following line to rename the `prunsvr.exe` executable but there are two versions of that file available depending on the Windows version and JRE type:

```
COPY prunsvr.exe %RENAMED_EXE%
```

Copies of the versions have been placed in the two folders contained in the wrappers folder. The *ia64* version is specific to a 64-bit machine using an Itanium™ processor

with the *amd64* version used for all other 64-bit processors. The appropriate file should be placed in the main folder prior to executing the `svcinstall.bat` script.

- `wrappers/amd64` – default 64-bit JRE version
- `wrappers/ia64` – 64-bit JRE on Itanium™ version

Modifying an Existing Service Installation

After a successful installation, the adapter will automatically start as a service when the server boots up and the service can be stopped or started through the Windows Services Console. For most installations, there is no need to change the JVM parameters from the defaults set in the `svcinstall.bat` script but it is possible to change the startup parameters for the JVM if required using the included `prunmgr.exe` application. This is discussed in detail in [Appendix C](#).

Removing an Existing Service Installation

Uninstalling the service can be carried out with the following command (using the example service given above):

```
prunsrv.exe //DS//GPlusAdapter_WFM_P
```

bash Shell Scripts

Note: The *bash* script files are located in the `scripts\unix_bash` folder of the Adapter installation.

The `startup.sh.example` and `shutdown.sh` files are standard *bash* shell scripts. The startup script has to be renamed to remove the `.example` suffix and then both files have to be made executable with the `chmod` command. An example is given below:

```
chmod 751 ./startup.sh
```

The `startup.sh` script file starts up the Adapter as a background process that will continue to run until the `shutdown.sh` script is executed. The process ID for the running adapter is contained in the `WFM_PID` file and this file should not be tampered with or that particular process will have to be stopped manually.

Setting WFM_JAVA_HOME

The `WFM_JAVA_HOME` parameter has to set to a base folder in the Java installation as shown in the example below.

```
WFM_JAVA_HOME=../java/jdk11
```

JVM Memory

The memory setting configures the maximum amount of memory that the JVM will allocate on startup. The default is 4096 MB and it should be sufficient for all but the very largest call centers.

```
JVM_MEM=4096m
```

Configuration Server Connection

Former versions of the *Gplus* Adapter had configured the connection to the Configuration Server in the startup scripts but the connection parameters should now be defined in the `GPlusWFM.properties` file contained in the `config` directory of the adapter installation. The adapter will still accept the parameters defined in the script files but using the new properties file is recommended.

Note: Avoid defining the same connection parameter in multiple locations. If a parameter is defined both in a startup script and properties file, the value in the properties file will be ignored.

Identifying the Adapter's Application Object

This property references the previously created Application object in the Configuration Server so that the proper configuration information can be acquired and used by the associated adapter instance.

```
appName=applicationName
```

Setting the Application Type

Applications registering with the Configuration Server have to identify their application type as part of establishing the connection. The *Gplus* Adapter has been configured as a `ThirdPartyServer` in the application template discussed above. The `cmeAppType` parameter has been set properly and can be ignored in most cases.

```
cmeAppType=ThirdPartyServer
```

Applications configured as a `ThirdPartyServer` application type can register with the Genesys Configuration Server once without specifying a username or password. Multiple registrations with the same Application Name (`appName`) are not allowed.

The properties file still has the username and password parameters listed although they are not usually required and they are only used if the application type is set to ThirdPartyApplication.

```
cmeUser=  
cmePass=
```

Configuring the Adapter instance as a ThirdPartyApplication would allow for multiple connections to the Configuration Server using the same credentials

Encrypting the Configuration Server Password

If the application type is set to ThirdPartyApplication, it is possible to encrypt the password for the CME user. The encryptPassword script files will encrypt the provided password and store it in the enc file contained in the config folder. The Adapter will check for this file at startup and use the encrypted password as the user's credentials when connecting to the Configuration Server.

The scripts start a small Java application and the JRE to be used to run the application must be identified with the WFM_JAVA_HOME parameter. The script file must be run from the console as it does not prompt for the password but rather expects the password as the only parameter.

Example:

```
encryptPassword.bat cmePassword
```

Setting Configuration Server Connection Parameters

The next set of properties specifies the connection parameters for the Genesys Configuration Server.

Socket Parameters

The parameters below are mostly self-explanatory. The Adapter instance will be attempting to connect to the Configuration Server through a socket defined by a host name and port number.

```
cmeHost=hostName  
cmePort=2020  
cmeBackupHost=  
cmeBackupPort=
```

Note: The hostName is the actual server host name or IP address.

Note: When TLS is enabled, the `cmePort` parameter should specify the secure port on the Configuration Server. The secure port on the Configuration Server is not necessarily the default port. See [Enabling Transport Layer Security \(TLS\)](#)

The backup Configuration Server host and port can also be added if there is a backup. If there is no backup server, the backup parameters should be set to the primary Configuration Server. The connection parameters defined in the following sections will be shared by both the primary and backup Configuration Server connections.

Setting Registration Timeout and Delay

The next three connection properties configure how the *Gplus* Adapter registers for notifications after connecting (or reconnecting) to the Configuration Server. These parameters were added to reduce the load on the Configuration Server in a busy call center when a number of applications may be attempting to reconnect and register requests at the same time.

```
configTimeout=10m
registrationMinDelay=5m
registrationMaxDelay=15m
```

The first parameter (`configTimeout`) sets the amount of time the Adapter will wait before attempting to reregister a request for which it has not received a response. The default is 10 minutes and that should be more than sufficient for most call centers but it can be increased if required.

The other two parameters set the bounds for when the Adapter instance will randomly attempt to register for notifications after reconnecting to the Configuration Server. The delay will be random time longer than `registrationMinDelay` but less than `registrationMaxDelay`. Again, these parameters would only be relevant if a large number of Adapters were connected to the same Configuration Server.

Setting addp Protocol

The next set of parameters configures the `addp` connection protocol. This protocol acts as a *heartbeat* for the connection and each side of the connection can be notified if the connection is inadvertently dropped.

```
addpEnabled=false
addpLocalTimeout=45
addpRemoteTimeout=75
addpTraceMode=Both
```

Both timeouts are in seconds and should be set to different values with the remote timeout greater than the local timeout.

It is recommended that if addp is enabled, the addpTraceMode should be set to Both which is the equivalent of Trace On Both Sides. This setting will ensure that the Adapter is notified if the connection to the Configuration Server is disconnected.

Enabling Transport Layer Security (TLS)

The Configuration Server must be properly set up on the server side. Ensure the server certificates and a secure port have been configured. See [Securing Connections Using TLS \(genesys.com\)](#) for how to set up TLS on the Configuration Server.

The tls parameter enables the Adapter to use Transport Layer Security (TLS) when connecting to the Configuration Server.

tls=<true or false>

Note: When TLS is enabled, the cmePort parameter should specify the secure port on the Configuration Server. The secure port on the Configuration Server is not necessarily the default port. See [Socket Parameters](#).

Recovery Log Folder

The path for the recovery logs can be changed from the default recovery folder by modifying the recoveryPath property to another existing folder.

recoveryPath=./recovery

Solution Control Server Integration

Note: SCS integration also requires a Local Control Agent (LCA) instance installed on the server hosting the *Gplus* Adapter and a properly configured Host object in the Configuration Server.

The *Gplus* Adapter can be started and stopped using the Solution Control Interface for both the Windows and “unix” versions by invoking the Java executable with the command line arguments. Additionally, an adapter instance installed as a Windows Service can also be controlled by invoking a command on the prunsvr.exe service wrapper.

Invoking the Application Directly

The following fields in the Start Info tab of the Adapter's Configuration Properties must be set as described for the Solution Control Server to start and stop the application.

Working Directory

The working directory is set to the root of the adapter installation files:

```
/Applications/GPlus_WFM_Adapter
```

Command Line

The command line starts up the JVM with the java command as in this example:

```
/java/jdk11.0.2/bin/java
```

It is also possible to just invoke the startup.bat file in the case of a Windows installation if that file was configured properly:

```
startup.bat
```

Command Line Arguments

If the command line does not use the startup script, then the command line arguments are given below:

```
-Xms4096m -Xmx4096m -jar bootstrap.jar com.ariasolutions.icconnect.BootStrap
```

The only variable set in the command line arguments is the JVM memory size and both the minimum (-Xms) and the maximum (-Xmx) should be set to the same amount. The other parameters should not be changed from the example above which shows the allocated memory set to 4096 MB.

Start and Stopping a Windows Service

The following instructions are relevant if the Adapter instance has been installed as a Windows Service and the Service is to be started and stopped through the Solution Control Server.

Note: The LCA version should be 8.1.200.07 or higher and the Solution Control Server should be an 8.1.x version to be compatible with the LCA.

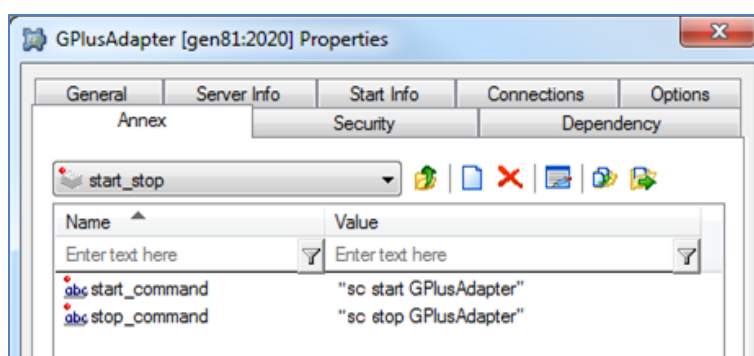
Working Directory

The working directory is still set to the root of the adapter installation files. The directory that contains the renamed prunsrv.exe as described [above](#):

/Applications/GPlus_WFM_Adapter

Command Line

The command line just identifies the renamed prunsrv.exe that was created when the Service was installed. The LCA uses the command line argument to either identify the started Adapter service or to actually start and also identify the service :



GPlusAdapter.exe

Alternative Start Methods

There are two methods for setting up the integration of the Adapter's Java Service Wrapper and the Solution Control Server:

1. Service start/stop commands added to the Adapter's Annex Tab

A new Section, start_stop, has to be added to the Adapter's Annex Tab. Two options, start_command and stop_command, are added with their Values containing the commands that explicitly start and stop the Windows Service installed for the Adapter instance. The example below shows the configuration for a Service instance named GPlusAdapter.

The sc command is the Windows Service Control application and it is used to either start or stop the Adapter service.

Command Line Arguments

The command line arguments field can be left blank.

2. Using the renamed prunsvr.exe to start the Service

This method of starting the Adapter service does have a problem as the Adapter appears to start, stop, and then start again. This is the result of using the renamed prunsvr.exe application to start the service as it runs just long enough to start the Service and stops immediately after. The starting Service then invokes the executable with different parameters to actually start the Adapter instance

Command Line Arguments

The command line arguments field contains the argument to start the Adapter service and takes the following one word command:

start

Logging Configuration

The *Gplus* Adapter has three types of logs and the first two are configurable beyond being enabled or disabled:

1. TServer and Interaction Server events with the adapter state changes associated with those events.
2. A summary of errors also logged in the first log.
3. The recovery log.

Event and Error Logs

Note: If migrating to v7.2.016 or higher, the logging configuration file has changed due to the upgrade from Apache Log4j to Apache Log4j2. Review the section below for the new file name and parameters.

log4j2.xml File Location

The first two log types are configured using the parameters found in the log4j2.xml.example file contained in the configuration directory (./config). This file will not be the active logging configuration until .example is removed from the filename.

ROLLING Appender (including compression)

The following is an excerpt from the log4j2.xml file showing some of the parameters that can be set for the ROLLING appender:

```
<RollingFile name="ROLLING" fileIndex="min" append="true"
fileName="logs/GPlusAdapterWFM.log" filePattern="logs/GPlusAdapterWFM.log.%i.gz">
```

```

<PatternLayout>
  <Pattern>%d{DATE} %-4r [%t] %-5p %c %x - %m%n</Pattern>
</PatternLayout>
<Policies>
  <SizeBasedTriggeringPolicy size="50 MB"/>
</Policies>
<DefaultRolloverStrategy compressionLevel="9">
  <Delete basePath="logs">
    <IfFileName glob="GPlusAdapterWFM.log.*.gz" />
    <IfAccumulatedFileCount exceeds="10" />
  </Delete>
</DefaultRolloverStrategy>
</RollingFile>

```

The file (GPlusAdapterWFM.log) will be created and updated in the logs directory that was created when the application was installed. (The destination folder could have been set to any folder accessible from the installation.)

The ROLLING log files are set to roll over when the file size of the current file (GPlusAdapterWFM.log) reaches the size (50MB). The older files are indicated by an integer appended to the file name: the most recent, GPlusAdapterWFM.log.1 and the previous file, GPlusAdapterWFM.log.2.

Once 10 rollovers are compressed in gzip format, e.g., GPlusAdapterWFM.log.1.gz, GPlusAdapterWFM.log.2.gz, etc., then they begin being deleted automatically.

Parameter	Valid values	Description
fileIndex	min or max	min sets the filename.log.1 is the more recent than filename.log.2 max reverses this methodology
fileName	Destination folder/fileName accessible from the installation	The file to be created and updated in the indicated directory.
filePattern	See Apache Log4j2 RollingFileAppender	Specifies the filename pattern to be used for the rollover files.
size	Any MB	Specifies the file size reached before rolling over, e.g., 50 MB.
compressionLevel	0 - 9	0 is no compression 9 is maximum

ROLLING_ERROR Appender

The ROLLING_ERROR appender is essentially the ROLLING appender with the logging threshold level set to error. The errors will still be logged to the ROLLING logs but the error log file allows for a quick check to see if the adapter is running error free rather than having to search through the event logs.

Logging Levels

Logging levels for the log4j2 library are limited to six levels with fatal being the least verbose and trace being the most. The default level set in the log4j2.xml.example file is debug. In production or when detailed log entries are no longer required, the logging threshold could be increased but this can be set easily in the Configuration Layer with the application/logThreshold option. See [logThreshold](#).

Adding or removing appenders

The example file includes a definition for a STDOUT appender that has been left commented out. This appender allows logging to the console and it is not practical for a production instance. The following excerpt from the example file shows that the STDOUT appender is not included in the logging but the ROLLING and ROLLING_ERROR appenders are included:

```
<root>
  <level value="debug"/>
  <!-- <appender-ref ref="STDOUT"/> -->
  <appender-ref ref="ROLLING"/>
  <appender-ref ref="ROLLING_ERROR"/>
  <appender-ref ref="GZIP"/>
</root>
```

The xml comment tags (<!-- -->) can be used to exclude any of the logging appenders.

Windows Service Logs

The parameters for installing the adapter as a Windows Service include specifying that stdout and stderr for the adapter are redirected to two log files: service-stdout*.log and service-stderr*.log. Usually both log files will be empty but in the event of a fault with the JVM, that fault should be logged in the err.log file.

If the STDOUT appender is enabled, the adapter logs will be directed to the service-stdout*.log file. This is not recommended as the file is not "managed" and it will continue to grow until the available disk space is consumed.

Recovery Log

The recovery log will be contained separately in the recovery folder. Other than changing the location to which the logs are written (see [Recovery](#)), this log has no configuration options and is managed automatically by the *Gplus* Adapter. The log files contain enough information to restart the adapter after a mishap without losing the data recorded prior to the mishap. It should not be tampered with.

If data contained in the recovery log prevents the adapter from starting up, the log files can be removed from the recovery folder to allow the application to start.

Initial Start Up Test

The application has not been configured in the Configuration Manager but it should now start up and create a log file before failing. This test requires running the startup script and then confirming that a brief log file has been created listing the exceptions generated from starting without configuration. The log file(s) should be created in the directory specified in the log4j2 configuration.

In the case of the *bash* shell scripts, shutdown.sh has to be run to ensure that the stalled run state has cleared. Both shell script files should have been modified to be executable during the initial setup of the application.

License File

A temporary license file (license.txt) is included in the config folder of the *Gplus* Adapter installation. This license will allow the adapter to run on any server for a limited amount of days. The expiry date is listed in the license file. When a production license has been purchased, the temporary license file must be replaced with the new file.

While the temporary license allows the Adapter instance to run on any host server, the purchased permanent licenses are created with permanent fields that cannot be altered. Changing any of these fields requires creating a new license e.g., moving the Adapter to a new server would require a new license. The following fields are required and restrict the Adapter to being installed on one host server and acquiring its configuration from an existing Application object in the Configuration Server:

- Host name
- Adapter application name in Configuration Server
- Vendor (*NICE-IEX*)
- Number of seats

Determining the Host Name

Depending upon the host operating system and network configuration, the required host name may be either a simple hostname or a qualified hostname:

- Simple adapterhost
- Qualified adapterhost.qualified.domain

The JRE libraries are used to check the licensed hostname in the Adapter and those libraries are also used with the provided serverHostName script file. Executing the script file will display the required hostname in the console window. There are Windows and

bash versions of these script files. The scripts start a small Java application and the JRE to be used to run the application must be identified with the WFM_JAVA_HOME parameter. The .example extension has to be removed from the script name and the *bash* version has to be made executable.



Chapter 3: Application Options

Each of the *Gplus* Adapter application options is discussed in this chapter. To change the application options, open the Adapter Application in the Configuration Manager and select the Options tab.

alarmCodes Section

This Option Section deals with the alarm codes sent to the Genesys Message Server. The alarm codes sent must match up with the Log Event IDs defined in the Alarm Conditions contained in the Configuration Server.

diskWriteFailure

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	diskWriteSuccess

This option identifies the integer Alarm Code sent to the Message Server when the *Gplus* Adapter encounters a problem writing the event logs, the recovery logs, or the historical reports to the disk drive.

diskWriteSuccess

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	diskWriteFailure

This option identifies the integer Alarm Code sent to the Message Server when the problem that generated a diskWriteFailure Alarm Code has been cleared.

ftpFailure

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	ftpSuccess

This option identifies the integer Alarm Code sent to the Message Server when the *Gplus* Adapter encounters a problem sending the generated report files to the remote WFM server.

ftpSuccess

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	ftpFailure

This option identifies the integer Alarm Code sent to the Message Server when the problem that generated a ftpFailure Alarm Code has been cleared.

recoveryLogFailure

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	serverConnected:<serverName>

This option identifies the integer Alarm Code sent to the Message Server when the recovery log files to write, usually due to a full drive.

reportFailure

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	reportSuccess

This option identifies the integer Alarm Code sent to the Message Server when the *Gplus* Adapter encounters a problem generating the report files.

reportSuccess

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	reportFailure

This option identifies the integer Alarm Code sent to the Message Server when the problem that generated a reportFailure Alarm Code has been cleared.

rtaConnected

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	rtaDisconnected

This option identifies the integer Alarm Code sent to the Message Server when the connection problem that generated a `rtaDisconnected` Alarm Code has been cleared.

rtaDisconnected

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	<code>rtaConnected</code>

This option identifies the integer Alarm Code sent to the Message Server when the *Gplus* Adapter's RTA connection to the NICE-IEX server was terminated by either side.

rtaConnected:<streamName>

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	<code>rtaDisconnected:<streamName></code>

This option identifies the integer Alarm Code sent to the Message Server when the connection problem that generated a `rtaDisconnected:<streamName>` Alarm Code has been cleared.

rtaDisconnected:<streamName>

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	<code>rtaConnected:<streamName></code>

This option identifies the integer Alarm Code sent to the Message Server when the *Gplus* Adapter's RTA connection associated with the Stream identified by `<streamName>` was terminated by either side.

serverConnected

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs
Dependencies:	<code>serverDisconnected</code>

This option identifies the integer Alarm Code sent to the Message Server when the connection problem that generated a `serverDisconnected` Alarm Code has been cleared.

serverDisconnected

Type:	Optional
Default Value:	Not set
Valid Values:	Alarm Condition/Detect Event/Log Event IDs

Dependencies: serverConnected

This option identifies the integer Alarm Code sent to the Message Server when one the Genesys Server (TServer, SIPServer or Interaction Server) connections has been disconnected.

serverConnected:<serverName>

Type: Optional
 Default Value: Not set
 Valid Values: Alarm Condition/Detect Event/Log Event IDs
 Dependencies: serverDisconnected:<serverName>

This option identifies the integer Alarm Code sent to the Message Server when the connection problem that generated a serverDisconnected Alarm Code has been cleared.

serverDisconnected:<serverName>

Type: Optional
 Default Value: Not set
 Valid Values: Alarm Condition/Detect Event/Log Event IDs
 Dependencies: serverConnected:<serverName>

This option identifies the integer Alarm Code sent to the Message Server when the Genesys Server (TServer, SIPServer or Interaction Server) connection identified by <serverName> has been disconnected.

application Section

This Option Section deals with the general options for the Adapter instance.

acwStrategy

Type: Optional
 Default Value: lastRouted
 Valid Values: lastRouted, pendingOnly
 Dependencies: None

This option defines how the Adapter handles ACW sessions that were not started within a routed interaction. These ACW sessions can either be associated with the last routed interaction that the agent handled (lastRouted) or be treated as NotReady or Unavailable time (pendingOnly).

agentIdMode

Type: Mandatory
 Default Value: personUserName
 Valid Values: agentLogin - Switch Login ID field
 personEmployeeId - Employee ID field

personUserName - User Name field
 Dependencies: None

This option identifies which of the Genesys Person fields will be reported as the agent identifier in *Gplus* Adapter reports. In multi-site implementations, it is recommended this option be set to personUserName or personEmployeeId to avoid duplicated agentLogin IDs across PBXs. In email, chat, and other Open Media implementations, only personUserName or personEmployeeId option values can be used as no PBX switch is involved.

annexSection

Note: Contact Professional Services prior to configuring this option.

Type: Optional
 Default Value: GPlus_WFM
 Valid Values: Any text string acceptable as an Annex Section name.
 Dependencies: None

This option identifies the name of the Annex Section that will contain the *Gplus* specific options added to a Place Group, VQ or Skill object in the Configuration Server. More than one Annex Section containing a site name can be configured for a particular Place Group.

callType

Type: Mandatory
 Default Value: queueNumber
 Valid Values: skill list of Skill Names.
 queueNumber list of Virtual Queue Numbers.
 queueAlias list of Virtual Queue Aliases.
 custom list contained in callTypes.custom
 Dependencies: genesys.queueGroups, callTypes.custom

This option specifies the Configuration Object type (or in the case of Virtual Queues, the field within the type) that will be used as the contact ID for each voice call. The *Gplus* Adapter uses the appropriate Configuration Objects to create a list of contact IDs. There are two consequences of this setting:

1. The created list of contact IDs must correspond to the contact/queues expected by the NICE-IEX server in the *Contact Queue* report.
2. It must be possible to parse the contact ID from the attributes of an EventQueued received from one of the monitored DNs.

The use of the [event.properties/callType.determiner](#) allows the event parsing to be customized. This should minimize the need for any changes to the Genesys environment. In addition, if one of the queue values has been selected, all Virtual Queues to be included in the list of reported contact types must be included in the genesys.queueGroup Section of the *Gplus* Adapter application.

When the contact types used by the WFM application do not map to either Skills or Virtual Queues, a custom option value must be used and a `callTypes.custom` Section containing a list of the reported contact types must be added to the application options.

countUnattachedACW

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	None

This option is applicable to environments where an agent can choose the ACW (AfterCallWork) state at any time. When set to true, an agent choosing the ACW state in a login session with no previous routed calls to associate with that state (e.g. Login, ACW and Logout) will have the time counted as ACW Time against a default callType in the *Gplus* Adapter reports. If set to false, any ACW time in a login session with no previous handled routed calls will be reported as NotReady/Aux time.

eventLoggingMode

Type:	Optional
Default Value:	minimum
Valid Values:	minimum, full
Dependencies:	None

When added and set to the default value of minimum, only the necessary event attributes required for reporting by the *Gplus* Adapter for WFM are logged. This prevents sensitive PII data from appearing in recovery logs. A value of full provides all event attributes in recovery logs.

inheritOptionsFromApp

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	Any <i>GPlus</i> adapter application name.
Dependencies:	None

This option would typically be set when configuring a backup *Gplus* Adapter application. The backup application will inherit relevant options from the adapter instance identified by the specified application name. Any options set for the backup adapter instance will override those set for the primary instance.

lcalInstalled

Type:	Optional
Default Value:	true
Valid Values:	true, false
Dependencies:	None

This Option determines whether the Adapter will attempt to connect to an LCA instance at startup. It was added to eliminate the Adapter connection attempts and subsequent failures when Genesys Local Control Agent (LCA) that has not been installed.

logoutOnEmptyMediaTypes

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	None

When set to true, the adapter will treat a logged in agent who logs out of all media types as logged out instead of in a logged in state. This occurs in certain desktop configurations but can be left at default values for most customers.

logThreshold

Type:	Mandatory
Default Value:	debug
Valid Values:	fatal Least verbose level
	error
	warn
	info
	debug
	trace Most verbose level
Dependencies:	None

The logging level of the application at startup is set to the level defined in the config/log4j2.xml file. This option defines the logging level that the application will use after the configuration information is read from the Configuration Server.

[Appendix D](#) discusses different log file examples based on the configured logThreshold.

pendingLogout

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	None

This Option determines whether the Adapter will process EventAgentLogout events as soon as they are received (the default behavior) or wait until any existing calls are complete first (when set to true). When the logout is processed immediately, all reporting for ongoing calls is terminated at that point.

recoveryTimeout

Type:	Optional
Default Value:	0 (no timeout set)

Valid Values:	any timespan either denoted with units (1d, 5h, 5m, 3600s, etc.) or without units, in which case the entry is interpreted as milliseconds.
Dependencies:	None

If the recovery log playback has not been completed by this timeout, processing ends and start up continues without completing the recovery log processing.

shortAbandonEnabled

Note: Contact Professional Services prior to enabling this option.

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	None.

This option enables the removal of abandoned interactions from the Abandons count in the *Contact Queue* report if the interactions were abandoned prior to a configured time threshold. It should be noted that the interactions are just removed from that one statistic and will continue to be included in the AbandonedInThreshold statistic and the abandoned counts used to calculate the service levels.

As only abandoned interactions for inbound voice, chat or im interactions are reported, this option applies to those media. It is possible to set a defaultShortAbandonThreshold in the [voice](#), [chat](#) and [im](#) Option sections and that Option applies to all interactions of the media type. Further configuration can be carried out by adding the [shortAbandonThreshold](#) Option to the Annex data of a Virtual Queue.

siteBased

Note: Contact Professional Services prior to enabling this option.

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	Site name added to Place Group Annex tab.

This option allows the information presented in the historical reports to be grouped by *Sites* in a multi-site environment. *Sites* used by the *Gplus* Adapter are defined by adding *Site* names to the Annex section options of the Place Group configurations. The Site name will then prefix the Queue name in the CQ column in the *Contact Queue* and *Agent Contact Queue* reports.

This Option only applies to the stream defined in the historical.reports Section. In the case of multiple streams, each additional historical stream has its own siteBased Option.

tenantDbid

Type:	Optional
-------	----------

Default Value:	101 (Resources)
Valid Values:	A dbid of a configured Tenant
Dependencies:	Configuration Server tenant type

This option must be set if the *Gplus* Adapter is connected to a Genesys Multi-Tenant Configuration Server and the Adapter will be monitoring a different Tenant than the default Resources Tenant that usually corresponds to a dbid of 101.

timeZone

Type:	Optional
Default Value:	Time zone of the application's host server.
Valid Values:	Listed in Appendix A .
Dependencies:	None.

This option is used to report data for a time zone other than the time zone where the *Gplus* Adapter instance is installed. It is not required if the server time zone is correct for the locale.

Note: See Appendix A - Time Zone ID List.

useLocalTime

Note: Contact Professional Services prior to configuring this option.

Type:	Optional
Default Value:	auto
Valid Values:	auto, true, false
Dependencies:	None

The useLocalTime option allows the *Gplus* Adapter to set the event time for received events using the local server time. This provides coordination between two or more servers where the event times create synchronization problems. One example would be with the Interaction Server that retains event time in seconds while voice TServers maintain event time to a resolution of milliseconds. Synchronization between the two server types is necessary for monitoring events in *Outbound Push Preview* campaigns.

If the option is left as auto, the adapter will automatically use local time if it is connected to both an Interaction Server and a voice TServer. This can be disabled by setting the option to false.

attachedDataFilter Section

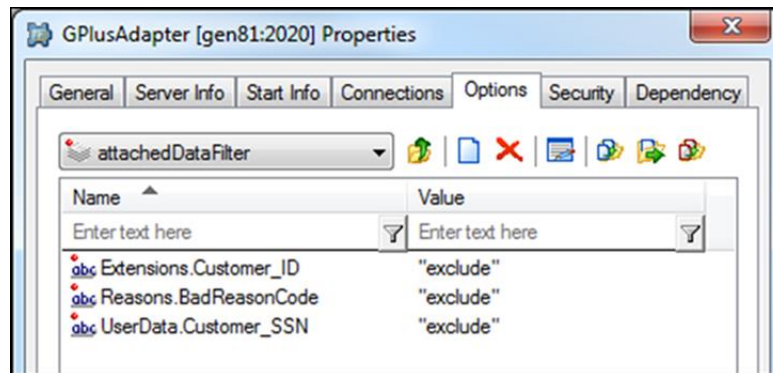
This Option Section is used to remove sensitive or private information from the received events prior to those events being processed or logged. Key/value pairs can be removed from the following Key/Value List attributes:

- UserData
- Reasons

- Extensions

The only allowed Option value is exclude and the Option name is the event attribute to excluded. Nested attributes will be removed if their *root* is identified in Option name.

It should be noted that the attribute will not be available to the Adapter if removed. For example, if a UserData.VQ_Name attribute was being used to identify a target for a customer's queued call and all of the UserData had been removed, the target determiner would fail.



billing Section

This Option Section contains the configuration options for submitting usage reports to *Genesys Billing Database Server (BDS)*. Most of the configuration options below deal with where the Adapter will store the generated files. Placing the files on the local host or uploading them to an *Amazon Web Services (AWS) Simple Storage Service (S3)* bucket are both supported.

backupDirectory

Type:	Optional
Default Value:	bdsBackup
Valid Values:	Any valid folder on the <i>Gplus</i> Adapter server
Dependencies:	enabled, destination, retentionTime

This Option specifies the folder where the *BDS* report files will be retained when those files have been successfully sent to the *AWS S3* storage bucket. The contents of the folder are managed by the Adapter. Files are deleted when they have reached the threshold specified in the [retentionTime](#) option.

destination

Type:	Mandatory
Default Value:	local
Valid Values:	local, S3
Dependencies:	enabled

This Option specifies whether *BDS* reports are retained on the local server or transferred to an *AWS S3* bucket. If *S3* is specified as the destination, the server or the application must be configured properly with credentials to access the bucket. The [AWS credentials](#) webpage lists the details for several different authentication methods.

directory

Type:	Optional
Default Value:	bds
Valid Values:	Any valid folder on the <i>Gplus</i> Adapter server
Dependencies:	enabled, destination, retentionTime

This Option specifies the local folder where the *BDS* reports will be kept for the *BDS* application to access them. The contents of the folder are managed by the Adapter. The files are deleted when they have reached the threshold specified in the [retentionTime](#) option.

enabled

Type:	Mandatory
Default Value:	false
Valid Values:	true, false
Dependencies:	None

This option enables the Adapter to generate the daily *BDS* usage reports used by *Genesys* for their subscription billing model. The reports are generated at midnight UTC and contain the activity for the previous 24 hours.

fileNamePrefix

Type:	Optional
Default Value:	BDS_Report.
Valid Values:	any file name prefix followed by a period
Dependencies:	None

This option allows the user to change the prefix for the billing report file name. For example, *GplusWFM_TenantID.* .

region

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	An <i>AWS</i> S3 region identifier .
Dependencies:	destination

This Option allows users to specify the region where their *AWS S3* storage bucket resides.

retentionTime

Type:	Optional
Default Value:	7d
Valid Values:	A positive integer with a 'd' suffix.
Dependencies:	directory, backupDirectory

This Option specifies the duration in days that reports are kept inside the local *BDS* report directory or the backup directory that retains copies of the files transferred to the *S3* storage bucket.

s3Bucket

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	A globally unique <i>S3</i> bucket name
Dependencies:	destination, region

This Option specifies the *AWS S3* storage bucket in the configured [region](#) that will serve as the destination for the generated *BDS* reports. [Appendix F](#) discusses *AWS* credentials used for accessing the storage bucket.

s3Subdirectory

Type:	Optional
Default Value:	<i>Not set</i> - root of bucket
Valid Values:	Path to an existing folder in the <i>S3</i> bucket
Dependencies:	destination, s3Bucket

This Option specifies the path to the folder in the *AWS S3* storage bucket that will contain the forwarded *BDS* reports.

testing

Type:	Testing only
Default Value:	false
Valid Values:	true, false
Dependencies:	None

This Option enables the generation of test reports on the interval specified in the *testingInterval* option.

testInterval

Type:	Testing only
Default Value:	5m
Valid Values:	A positive integer with an 'm' suffix
Dependencies:	None

This Option specifies the interval duration in minutes for the generated test reports.

callback Section

This Option section provides the configuration options for support of the Genesys *Callback 8.5* functionality. The typical configuration should only entail enabling the Option section as the defaults will be correct for the majority of installations. When this Option Section is enabled, the original inbound call and the subsequent successful callback will be counted as a single call.

abandonDelay

Note: Setting this Option requires an in-depth level knowledge of the Callback implementation details and should be undertaken with the collaboration of qualified personnel.

Type:	Optional
Default Value:	0
Valid Values:	See Threshold Format
Dependencies:	callback/enabled, callback/callbackType

Tracking unsuccessful callbacks in "agent first" mode of the *Premise* version of *Genesys Callback* requires the Adapter to delay processing those callbacks when determining when the retry limit has been reached. That delay is configurable with this Option. It should be greater than the combination of the configured delay between callback retries and the time threshold that an agent has to refuse a callback retry.

agentAddedDeterminer

Type:	Optional
Default Value:	UserData._CB_N_AGENT_ADDED_TO_I_XN
Valid Values:	See Event Attribute Determiners
Dependencies:	callback/enabled

This Option identifies the event attribute that identifies whether an agent has been added to the callback. This option is optional and is only used when using an environment that requires it. Any returned non-zero value, including null will be treated as true. If not set, this will also default to true.

callbackType

Type:	Optional
Default Value:	cloud
Valid Values:	cloud or premise
Dependencies:	callback/enabled

Genesys Callback comes in two versions: *Cloud* and *Premise* which have been implemented differently. This Option allows the *Callback* version to be set for the implementation being used in the Genesys environment.

cancelledDisposition

Type:	Optional
Default Value:	COMPLETED.FAILED
Valid Values:	See Event Attribute Determiners
Dependencies:	callback/enabled, callback/connectedDeterminer

This Option identifies the value used to indicate an abandoned contact in the disposition. If the value returned from the dispositionDeterminer equals this value, the interaction is considered to be abandoned.

connectedDeterminer

Type:	Optional
Default Value:	eventAttribute: UserData._CB_T_CUSTOMER_CONNECTED
Valid Values:	See Event Attribute Determiners
Dependencies:	callback/enabled, callback/connectedValue

This Option identifies the EventDiverted attribute that contains the callback connected status or connection timestamp.

dispositionDeterminer

Type:	Optional
Default Value:	eventAttribute: UserData._CB_DISPOSITION
Valid Values:	See Event Attribute Determiners
Dependencies:	callback/enabled, callback/scheduledDisposition

This Option identifies the event attribute that contains the disposition type for the associated call. Presently, the Adapter only checks this attribute when the original inbound call is *Abandoned* after the caller has elected to be called back rather than waiting for an available agent.

enabled

Type:	Mandatory
Default Value:	false
Valid Values:	true or false
Dependencies:	None

This Option enables the Adapter to track *Genesys Callback* interactions where the callbacks are directly associated with the original inbound call and the queue delay is calculated as the period between the inbound call and the successful *callback*.

idDeterminer

Type:	Optional
Default Value:	eventAttribute: UserData._CB_SERVICE_ID
Valid Values:	See Event Attribute Determiners
Dependencies:	callback/enabled

This Option identifies the event attribute that contains the unique identifier that links the original inbound customer call with the outbound *callback(s)*.

maxDuration

Type:	Optional
Default Value:	1d
Valid Values:	See Threshold Format
Dependencies:	callback/enabled
Examples:	1d2h35m30s, 12h25m etc.

This Option specifies a time threshold after which an inbound call is counted as Abandoned if there has not been a successful callback.

scheduledDisposition

Type:	Optional
Default Value:	SCHEDULED
Valid Values:	Any text string
Dependencies:	callback/enabled, callback/dispositionDeterminer

This Option specifies value of the event attribute identified by the dispositionDeterminer Option that identifies the disposition type as a scheduled callback. This attribute will be set on the *Abandoned* event generated on the initial inbound call when the caller elects to be called back.

callTypes.custom Section

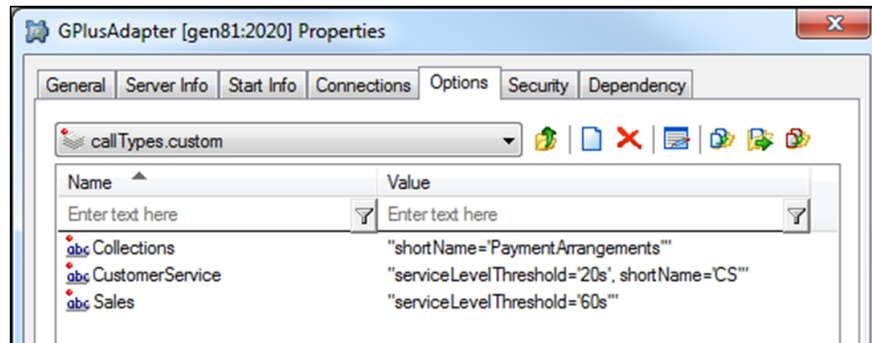
This optional Section is only used if the application/callType Option has been set to custom. The section contains a list of WFM voice contact type/queue names that will be reported by the *Gplus* Adapter. This list is required when there is no one-to-one mapping of expected WFM contact types/queues to specific Configuration Objects (Skills or Virtual Queues).

The Option Name must match the exact value generated by the *Gplus* Adapter when applying the callType.determiner to the queued events. The Option Value can be left blank or a configuration text string specified. Since this is essentially a custom list of contact types rather than Genesys Configuration Objects, the serviceLevelThreshold (see [Threshold Format](#)) and/or a shortname can be set in a manner similar to that of the [Virtual Queues](#).

If no serviceLevelThreshold is specified, the *Gplus* Adapter will use the defaultServiceThreshold Option from the voice Section of the Adapter Options. If no shortname is specified, the *Gplus* Adapter will report the Option Name.

Type:	Optional
Default Value:	<i>Section is not used</i>
Valid Values:	serviceLevelThreshold and shortName

Dependencies: application/callType,
 event.properties/callType.determiner



chat Section

chatACWReason

Type: Optional
 Default Value: ACW
 Valid Values: Any unique text value.
 Dependencies: Agent's chat client must be able to set the Reason field when going NotReady.

This option allows users to specify a NotReady ReasonCode that will be reported as the equivalent of ACW for the chat statistics and will be reported as the AfterChatWork RTA state.

The text string must be contained in the attribute of a chat NotReadyForMedia event specified by the [reason.notReady.determiner](#).

defaultAbandonedThreshold

Type: Optional
 Default Value: 0s
 Valid Values: See [Threshold Format](#)
 Dependencies: None

This option specifies the default abandoned threshold for the Abandoned In Threshold column in the *Contact Queue* report. A chat is considered abandoned if the customer leaves the chat session prior to the agent joining the session.

This option is set when a single abandoned threshold is used for all chat targets. Individual abandoned thresholds can be set for each chat target/queue by adding Annex Data to the chat Virtual Queues as shown in a later [section](#) or adding the threshold to an Interaction Queue as described in the [interactionTargets](#) Section. These individual thresholds will override the default specified with this option.

defaultServiceThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	None

This option specifies the default service threshold for the service level calculations that form part of the interval reports. A chat is considered *served* at the time that the agent first joins the chat session with a customer.

This option should be set when a single service threshold is used as a default for all chat targets. Individual service thresholds can be set for each chat target/queue by adding Annex Data to the chat Virtual Queues as shown in a later [section](#) or adding the threshold to an Interaction Queue as described in the [interactionTargets](#) Section. These individual thresholds will override the default specified by this option.

defaultShortAbandonThreshold

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Threshold Format
Dependencies:	application/shortAbandonEnabled

This option specifies the default time threshold that an abandoned chat must exceed in order to be included in the *Abandoned* column of the *Contact Queue* report. This option does not affect the service level calculations.

defaultTarget

Type:	Optional
Default Value:	UnknownTarget
Valid Values:	Any text
Dependencies:	application/countUnattachedACW

This option allows users to define a separate chat target/queue other than the default value used by the *Gplus* Adapter to report on an agent's time outside of actual chat activity (including unattached ACW) when that time cannot be associated with an actual chat target/queue.

It should be noted that the default for this Option is the same as that for voice and email (UnknownTarget). If the adapter is monitoring multiple media and the defaults are retained, the calls or interactions that cannot be allocated to a proper target will be combined under UnknownTarget in the *Contact Queue* report.

enabled

Type:	Mandatory
Default Value:	false
Valid Values:	true, false

Dependencies: A connection to a Genesys Interaction Server.

Set to true to capture and report on chat activity (historical and RTA) in the contact center.

interaction.reason.determiner

Note: Contact Professional Services before using this option.

Type: Optional
 Default Value: *Not set*
 Valid Values: See [Event Attribute Determiners](#)
 Dependencies: chat/enabled, rta/enabled

This option specifies the attribute of a chat Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by one of the following events:

- EventPartyAdded
- EventPropertiesChanged while the agent is a party to a routed chat.

Certain implementations may require that the combination of an InRoutedChat RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [interactionCodeMappings](#) Section.

maxInteractionTime

Type: Optional
 Default Value: *Not Set*
 Valid Values: See [Threshold Format](#)
 Dependencies: None

While unlikely, it is possible for some interactions to become *stuck* in certain states if the terminating events are not received due to a mishap with an Interaction Server connection. Normally, the *stuck* interaction records in the Adapter would be terminated as soon as the connection was lost but this response relies on the [addp protocol](#) being configured properly for the connection(s) to the Interaction Server(s).

This option sets a timeout that defines the maximum amount of time that a chat can remain in a *handled* or *wrap* state before the Adapter automatically terminates its associated record in the data tables. If the Option is not set, the *stuck* records are not terminated until the agent logs out or any agent logs in to the Place associated with the interaction.

If used, this timeout must be set to a value significantly higher than the expected longest chat duration to ensure that an ongoing interaction is not terminated prematurely in the Adapter tables. It should be noted that the timeout also applies to wrap up sessions so the expected duration of the wrap time must be taken into account.

outOfFocus.determiner

Note: The customer is responsible for setting the out-of-focus custom event attribute(s), e.g., using a desktop plugin.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	chat/outOfFocus.values

This option specifies the attribute(s) of a chat Interaction Server Event that are checked to determine if the chat is out-of-focus. Out-of-focus chats do not contribute to historical handle time metrics or RTA states. If an agent enters an ACW state with chats that are all out-of-focus, work time counts towards the last released chat. If no chat was released beforehand, this is reported as unattached ACW.

outOfFocus.values

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	Comma-separated string
Dependencies:	chat/outOfFocus.determiner

This option specifies a comma separated list of values that indicate the chat is out-of-focus. These values are checked using the outOfFocus.determiner.

reason.notReady.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	eventAttribute: ReasonDescription
Valid Values:	See Event Attribute Determiners
Dependencies:	chat/enabled, rta/enabled

This option specifies the attribute of a chat Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by one of the following events:

- EventNotReadyForMedia
- EventMediaStateReasonChanged while the agent is NotReady to receive a routed chat.

Certain implementations may require that the combination of an Unavailable RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [reasonCodeMappings](#) Section.

reason.ready.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	chat/enabled, rta/enabled

This option specifies the attribute of a chat Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by an EventReadyForMedia event.

Certain implementations may require that the combination of an Available RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [readyCodeMappings](#) Section.

customReporting Section

This section is optional and must be added manually as it is not included in the Application Template. When the section is included, the customReporting options provide support for reporting on Cloud iWD interactions.

Note: For these custom events to propagate to the adapter, the enableCustomWfmEvents flag must be enabled in Genesys Cloud iWD. Contact Professional Services prior to configuring this option.

customAttributeDeterminer

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	customAttributeValues

This option specifies the attribute of an EventCustomReporting event and future interaction events, indicating if these events are part of a Cloud iWD interaction. If this option is not set, this section is disabled and any EventCustomReporting events received will be ignored.

customAttributeValues

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	Comma separated strings
Dependencies:	customAttributeDeterminer

This option specifies a comma separated list of values that indicate that this is part of a Cloud iWD interaction. These values are checked using the above determiner. If this option is not set, this section is disabled and any EventCustomReporting events received will be ignored.

customIdDeterminer

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	None

This option specifies the ID of a Cloud iWD interaction as this may differ from the InteractionId(s) in use. If this option is not set, this section is disabled and any EventCustomReporting events received will be ignored.

customReportingReclassifyId

Type:	Optional
Default Value:	9001
Valid Values:	Any positive integer
Dependencies:	customAttributeDeterminer, customAttributeValues, customIdDeterminer

This option specifies the value found in the CustomEventId attribute of the EventCustomReporting event, indicating to end the existing callflow of the Cloud iWD interaction and remove it from the callFlowManager.

customReportingStartId

Type:	Optional
Default Value:	9000
Valid Values:	Any positive integer
Dependencies:	customAttributeDeterminer, customAttributeValues, customIdDeterminer

This option specifies the value found in the CustomEventId attribute of the EventCustomReporting event, indicating the start of the Cloud iWD interaction.

customReportingStopId

Type:	Optional
Default Value:	9002
Valid Values:	Any positive integer
Dependencies:	customAttributeDeterminer, customAttributeValues, customIdDeterminer

This option specifies the value found in the CustomEventId attribute of the EventCustomReporting event, indicating the end of the Cloud iWD interaction.

email Section

defaultServiceThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	None

This option specifies the default service threshold for the service level calculations that form part of the interval reports. An email is considered *serviced* at the time that the agent sends the reply to a customer.

This option should be set when a single service threshold is used as a default for all email targets. Individual service thresholds can be set for each email target/queue by adding Annex Data to the email Virtual Queues as shown in a later [section](#) or adding the threshold to an Interaction Queue as described in the [interactionTargets](#) Section. These individual thresholds will override the default specified by this option.

defaultTarget

Type:	Optional
Default Value:	UnknownTarget
Valid Values:	Any text
Dependencies:	application/countUnattachedACW

This option allows users to define a separate email target/queue other than the default value used by the *Gplus* Adapter to report on an agent's time outside of actual email activity (including unattached ACW) when that time cannot be associated with an actual email target/queue.

It should be noted that the default for this Option is the same as that for voice and chat (UnknownTarget). If the adapter is monitoring multiple media and the defaults are retained, the calls or interactions that cannot be allocated to a proper target will be combined under UnknownTarget in the *Contact Queue* report.

emailACWReason

Type:	Optional
Default Value:	ACW
Valid Values:	Any unique text value.
Dependencies:	Agent's email client must be able to set the Reason field when going NotReady.

This option allows users to specify a NotReady ReasonCode that will be reported as the equivalent of AfterCallWork for the email statistics in the reports and will be reported as the AfterEmailWork RTA state.

The text string must be contained in the attribute of an email NotReadyForMedia event specified by the [reason.notReady.determiner](#).

enabled

Type:	Mandatory
Default Value:	false
Valid Values:	true, false
Dependencies:	A connection to a Genesys Interaction Server.

Set to true to capture and report on email activity (historical and RTA) in the contact center.

interaction.reason.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	email/enabled, rta/enabled

This option specifies the attribute of an email Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by one of the following events:

- EventPartyAdded
- EventPropertiesChanged while the agent is a party to a routed email.

Certain implementations may require that the combination of a ReadingCustomerEmail or ReplyingToCustomerEmail RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [interactionCodeMappings](#) Section.

maxInteractionTime

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	See Threshold Format
Dependencies:	None

While unlikely, it is possible for some interactions to become *stuck* in certain states if the terminating events are not received due to a mishap with an Interaction Server connection. Normally, the *stuck* interaction records in the Adapter would be terminated as soon as the connection was lost but this response relies on the [addp protocol](#) being configured properly for the connection(s) to the Interaction Server(s).

This option sets a timeout that defines the maximum amount of time that an email can remain in a *handled* or *wrap* state before the Adapter automatically terminates its associated record in the data tables. If the Option is not set, the *stuck* records are not terminated until the agent logs out or any agent logs in to the Place associated with the interaction.

If used, this timeout must be set to a value significantly higher than the expected longest email duration to ensure that an ongoing interaction is not terminated prematurely in the Adapter tables. It should be noted that the timeout also applies to wrap sessions so the expected duration of any wrap time must be taken into account.

reason.notReady.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	eventAttribute: ReasonDescription
Valid Values:	See Event Attribute Determiners
Dependencies:	email/enabled, rta/enabled

This option specifies the attribute of an email Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by one of the following events:

- EventNotReadyForMedia
- EventMediaStateReasonChanged while the agent is NotReady to receive a routed email.

Certain implementations may require that the combination of an Unavailable RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [reasonCodeMappings](#) Section

reason.ready.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	email/enabled, rta/enabled

This option specifies the attribute of an email Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by an EventReadyForMedia event.

Certain implementations may require that the combination of an Available RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [readyCodeMappings](#) Section.

event.properties Section

callType.determiner

Type:	Optional
-------	----------

Default Value:	eventAttribute: ThisQueue
Valid Values:	See Event Attribute Determiners
Dependencies:	voice/enabled, application/callType

This option specifies what part (attribute) of an EventQueued will be used to determine the contact queue/call target for a routed inbound call.

Examples:

```
eventAttribute: ThisQueue
eventAttribute: UserData.VQ_Name
```

campaignTarget.determiner

Note: Contact Professional Services prior to configuring this option.

Type:	Optional
Default Value:	eventAttribute: UserData.GSW_CAMPAIGN_NAME
Valid Values:	See Event Attribute Determiners
Dependencies:	outbound/enabled

This option specifies what part (attribute) of an event on an agent's outbound campaign call will be used to determine the contact queue/call target for that call. There will rarely be a reason to use anything other than the default.

See [Outbound Campaign Calls](#) for more information.

chat.target.determiner

Type:	Optional
Default Value:	eventAttribute: interactionProperties.interactionQueue
Valid Values:	See Event Attribute Determiners
Dependencies:	chat/enabled

This Option identifies the attribute in the queued event to be used as the chat target or queue. It replaces the discontinued interactionTarget.determiner that was formerly used for email and chat interactions.

email.target.determiner

Type:	Optional
Default Value:	eventAttribute: interactionProperties.interactionQueue
Valid Values:	See Event Attribute Determiners
Dependencies:	email/enabled

This Option identifies the attribute in the queued event to be used as the email target or queue. It replaces the discontinued interactionTarget.determiner that was formerly used for email and chat interactions.

ignoreAbandonOnRinging

Type:	Optional
-------	----------

Default Value:	false
Valid Values:	true, false
Dependencies:	None

This option specifies whether the adapter will continue to track an inbound voice call that is Abandoned while ringing at an agent's Place. Normal behavior would see the call records terminated at that point but in certain *Route On No Answer* (RONA) situations, the Abandoned event is generated when the call is pulled back and requeued. This option allows for those calls to be reported correctly.

Note: Calls that are actually abandoned by the customer releasing the call while ringing will be counted incorrectly because the call is not terminated if this option is enabled. This option should only be enabled after considering the effect on the report data.

ignoreRONA_EventAttribute

Note: Contact Professional Services prior to configuring this option.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	UserData.
Dependencies:	Nortel Switch

This option specifies the attached data field that the *Gplus* Adapter will look for to avoid double counting calls in a Route on No Answer (RONA) scenario. This option is required when a RONA call is answered at the agent's desktop and immediately transferred back to the queue to reroute the call.

im.target.determiner

Type:	Optional
Default Value:	eventAttribute: interactionProperties.interactionQueue
Valid Values:	See Event Attribute Determiners
Dependencies:	im/enabled

This Option identifies the attribute in the queued event to be used as the im target or queue.

ixn.logout.determiner

Type:	Optional
Default Value:	eventAttribute: Extensions.ReasonCode
Valid Values:	See Event Attribute Determiners
Dependencies:	None

This Option identifies the attribute in the Interaction Server logout event to be included as the Reason field in the RTA state message.

reason.logout.determiner

Type:	Optional
Default Value:	eventAttribute: Extensions.ReasonCode
Valid Values:	See Event Attribute Determiners
Dependencies:	voice/enabled, rta/enabled

This option specifies one of the attributes of a voice EventAgentLogout that identifies the reason code associated with an agent logging out. This Reason Code will be reported as the Sign-Off reason in the Agent Sign-On/Sign Off report and included as the reason code that forms part of the RTA state transition associated with the logout event.

reason.notReady.determiner

Note: Contact Professional Services before changing this option.

Type:	Optional
Default Value:	eventAttribute: Reasons.ReasonCode
Valid Values:	See Event Attribute Determiners
Dependencies:	voice/enabled, rta/enabled, reasonCodeMappings

This option specifies attribute(s) of an EventAgentNotReady that identify the reason associated with an agent entering an Unavailable RTA state. Certain implementations may require that the combination of EventAgentNotReady and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [reasonCodeMappings](#) Section.

ronaValue

Type:	Optional
Default Value:	None
Valid Values:	any string
Dependencies:	ignoreRONA_EventAttribute

Setting this value determines the valid values for the attribute defined in the [ignoreRONA_EventAttribute](#) option in order to determine if a call is a RONA scenario. If the ronaValue matches the ignoreRONA_EventAttribute value, then the call is counted as answered.

serviceDate.determiner

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	None

This option specifies attribute of in a queued event that contains a “to be serviced by” timestamp for the queued interaction. If the attribute is not present, then the defaultServiceThreshold for the media or the configured serviceLevelThreshold for the queue will be used.

The attribute value is a date/time combination that indicates the time that interaction must be serviced by to meet the Service Level expectations. The attribute string must be in the following format and the time is assumed to GMT rather than the local time:

- Format - "YYYY-MM-DDThh:mm:ssZ"
- Example - "2013-12-31T09:30:00Z"

usePlacedInQueueTime

Type:	Optional
Default Value:	true
Valid Values:	true or false
Dependencies:	None

This option specifies whether the queue times used for interaction server interactions comes from the UserData.PlacedInQueueAt attribute (true), or the event time on the queue event (false) for determining queue delay. The offered is always counted when it occurs, regardless of this setting.

filter:<filterName> Section

There can be more than one instance of this Section type and each is differentiated and made unique by the <filterName> portion of the Section name. The purpose of this Section is to define a subset of the monitored objects that have already been defined in the [genesys.agentGroups](#), [genesys.placeGroups](#) and [genesys.queueGroups](#) Sections. Filters combined with the Stream configurations ([historical](#) and/or [rta](#)) allow the *Gplus* Adapter to support multiple *NICE-IEX WFM* servers if required.

The filter is equivalent to the group sections listed above with Agent Groups, Place Groups and VQ DN Groups included or excluded as required. The addition of the loginQueue option provides an alternative method for including or excluding groups of Agents. The site option allows a set of Place Groups to be defined in much the same way. Sites and Place Groups are discussed [below](#). The syntax for the group options is as follows:

- agentGroup.<AgentGroupName> : include or exclude
- campaign.<Campaign Name> : include or exclude
- loginQueue.<ACDQueue DN> : include or exclude
- media.<mediaType> : include or exclude
- placeGroup.<PlaceGroupName> : include or exclude
- site.<SiteName> : include or exclude
- targetGroup.<DNGroupName> : include or exclude

Note: The groups that are included or excluded must correspond to groups already included in the three genesys.*Groups Sections. This will require attention as to how the AgentGroups, PlaceGroups and DNGroups (VQs) are defined.

The campaign.<Campaign Name> filter is similar to the targetGroup.<DNGroupName> filter in terms of its effect. An excluded outbound campaign is not reported in the *Contact Queue* or *Agent Contact Queue* reports but the agents handling those calls will still have their call activity reported in the *Agent System Performance* report. However, the campaign.<Campaign Name> filter is quite different from the other filters with the exception of the media.<mediaType> filter in that it references a single campaign rather than a defined group of Agents, Places or VQs.

The media.<mediaType> filter allows for interactions with a specific media type to be included or excluded.

genesys.agentGroups Section

This Section is a list of the Agent Groups that will be included in or excluded from the group of agents being monitored by the *Gplus* Adapter. Valid Option names are either an asterisk (*) or the name of an Agent Group defined in the Configuration Server. The Option value is the action to be taken with respect to the named Agent Group: include or exclude.

*	
Type:	Optional
Default Value:	include
Valid Values:	include
Dependencies:	None

OR

<Agent Group Name>	
Type:	Optional
Default Value:	<i>None</i>
Valid Values:	include, exclude
Dependencies:	Configuration Server Agent Groups.

The Option Name determines the agents that the *Gplus* Adapter will report upon. An agent that is a member of an excluded or not included Agent Group will have no activity statistics reported in the Agent Contact Queue, Agent System Performance or Agent Sign-on/Sign-off reports. Additionally, an excluded agent's call activity will not be

included in the Contact Queue report; a queued call would still be counted as “Offered” but it would not be counted as “Handled”.

An excluded agent’s activity will not be reported in the RTA data stream.

The asterisk (*) as the Option Name can be considered to be an Agent Group containing all of the Persons configured as an Agent with an enabled state in the Configuration Server. Including all of the agents is the default configuration and there is little reason to change that unless there is a specific configuration requirement.

The only alternative is to have an Option Name that corresponds to one of the defined Agent Groups in the Configuration Server. Any of those Agent Groups can be excluded or included.

genesys.placeGroups Section

This Section is a list of the Place Groups that will be included in or excluded from the group of Places being monitored by the *Gplus* Adapter. Valid Option names are either an asterisk (*) or the name of a Place Group defined in the Configuration Server. The Option value is the action to be taken against the named Place Group: include or exclude.

*	
Type:	Optional
Default Value:	include
Valid Values:	include, exclude
Dependencies:	None

OR

<Place Group Name>	
Type:	Optional
Default Value:	<i>None</i>
Valid Values:	include, exclude
Dependencies:	Configuration Server Place Groups.

The Option Name determines the Place Group that the *Gplus* Adapter will monitor or not monitor. This will mean that all of the DNs associated with the Places in those groups will be registered with the connected voice TServer(s) and all of the Places will be registered with the connected Interaction Server(s).

Specifying an asterisk (*) as the Option Name can be considered to be a Place Group containing all of the Places configured in the Configuration Server. The only alternative is to have an Option Name that corresponds to one of the defined Place Groups in the Configuration Server.

Place Groups have two roles in the configuration of the *Gplus* Adapter: identifying the Places that are to be monitored by the application and associating groups of Places with Site names. Sites and Place Groups are discussed in another [section](#).

Note: When IVR Ports or other non-Agent Places are defined within the Configuration Server it is common to exclude these places with the use of a Place Group so that IVR (non-Agent) activity is not reported.

genesys.queueGroups Section

This Section is a list of the DN Groups that will be included in or excluded from the group of Virtual Queue DNs (VQs) being monitored by the *Gplus* Adapter. Valid Option names are either an asterisk (*) or the name of a DN Group defined in the Configuration Server. The Option value is the action to be taken against the named DN Group: include or exclude.

* (Option Name)

Type:	Optional
Default Value:	include
Valid Values:	include
Dependencies:	None

OR

<VQ DN Group Name>

Type:	Optional
Default Value:	<i>None</i>
Valid Values:	include, exclude
Dependencies:	VQ DN Groups in the Configuration Server.

The Option Name determines the VQs that the *Gplus* Adapter will monitor. Specifying an asterisk (*) as the Option Name can be considered to be a DN Group containing all of the VQ DNs configured in the Configuration Server. The only alternative is to have an Option Name that corresponds to one of the defined DN Groups in the Configuration Server.

This option is used to specify monitored VQs that are defined for an actual Switch object in the Configuration Server. VQs defined on a Multimedia_Switch can be included but multimedia Interaction Queues defined in a Business Process routing strategy cannot.

historical.ftp Section

This section lists the configuration options for transferring historical report files from the server hosting the *Gplus* Adapter to a folder on the server hosting the WFM Application that uses those files. These options allow the transfer protocol to be configured as plain FTP or to use SSH (Secure Shell) to transfer the files.

With the addition of multiple [Streams](#), this Section should be set up to transfer the report files associated with the Stream defined in the [historical.reports](#) Section.

backupRetentionDays

Type:	Mandatory
Default Value:	30
Valid Values:	Any positive integer
Dependencies:	localBackupDirectory

This option determines the number of days that historical report files created by the *Gplus* Adapter will be retained in the directory specified in the localBackupDirectory Option. The report files are removed permanently from the back up folder as they expire.

connectionMode

Type:	Optional
Default Value:	active
Valid Values:	active, passive
Dependencies:	Ignored if secureTransfer is enabled.

This option specifies the ftp connection mode used by the ftp client to connect to the remote ftp server. Some network firewalls will not allow active ftp connections and the connection mode can be changed to passive to allow the report files to transfer through the firewall.

enabled

Type:	Mandatory
Default Value:	true
Valid Values:	true, false
Dependencies:	None

This option can disable the ftp client that forwards the report files to the WFM server. This option is often set to false for backup *Gplus* Adapter applications that do not need to send report files on a continuous basis but only in the event of a mishap.

enableHostVerification

Type:	Optional
Default Value:	true
Valid Values:	true, false

Dependencies: knownHostEntry

This option enables SFTP host validation against a known_hosts file or the [knownHostEntry](#) Option.

For more information, see [Chapter 5: Setting Up Secure File Transfer](#) and [Appendix B: Secure File Transfer Problems](#).

keyPath

Type: Optional
 Default Value: *Not set*
 Valid Values: Path to SSH private key file
 Dependencies: secureTransfer

This option defines the full path (including the file name) for the private key file used to establish the SSH connection with the remote server when the secureTransfer Option is enabled. The key file should usually be placed in the Adapter's config folder.

keyPassphrase

Type: Optional
 Default Value: *Not set*
 Valid Values: Valid text string.
 Dependencies: secureTransfer

This pass phrase provides additional security for the SSH connection as establishing the connection requires the providing the pass phrase as well as possessing the private key file. The pass phrase must be specified when the SSH keys are created.

knownHostEntry

Type: Optional
 Default Value: *Not set*
 Valid Values: Any string
 Dependencies: enableHostVerification

This option holds a value that represents an entry in a known_hosts file. When the enableHostVerification option is enabled, the SFTP transfer manager will verify host connections against the entry. This option can be used in situations where the known_hosts file is inaccessible or cannot be updated. For more information, see [Chapter 5: Setting Up Secure File Transfer](#) and [Appendix B: Secure File Transfer Problems](#).

localBackupDirectory

Type: Mandatory
 Default Value: ftp/reportsBackup
 Valid Values: Any existing folder on the *Gplus* Adapter server.
 Dependencies: None

This option identifies the directory on the *Gplus* Adapter server where copies of the historical report files will be saved after those files have been successfully transferred. If the option value is left blank, the report files will be deleted locally after being transferred to the remote WFM server.

localSourceDirectory

Type:	Mandatory
Default Value:	ftp/reports
Valid Values:	Any existing folder path.
Dependencies:	historical.reports/directory

This option identifies the directory where files will be temporarily stored at each reporting interval prior to being transferred to the WFM Server and subsequently moved to the backup directory or deleted if the backup directory is not configured.

The default location is the default report location specified in the `historical.reports` Option section and setting the two options to the same folder is how the association between the ftp client and the historical Stream is established.

password

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	Any alphanumeric password
Dependencies:	User identified by <code>userName</code>

This option should be used to replace the [userPassword](#) Option if there is a requirement that the password text not be displayed as plain text in either *Genesys Administrator* or the *Configuration Manager*. Both applications automatically hide the Option value if the Option name is “password”.

This Option will take precedence when both password Options have been set.

remoteDestinationDirectory

Type:	Mandatory
Default Value:	./
Valid Values:	Any folder path on the remote server relative to the ftp user’s default directory
Dependencies:	None

This option identifies the relative directory on the remote WFM Server where the *Gplus* Adapter report files will be transferred. This directory is relative to the configured default directory for the ftp user identified in the `userName` Option.

Note: The ftp user must have sufficient access privileges to write the transferred files to the folder identified by the relative path.

remoteHost

Type:	Mandatory
Default Value:	<i>Not set</i>
Valid Values:	Host Name or IP Address of the WFM Server
Dependencies:	None

This option specifies the host name or IP address of the server to which the report files will be transferred.

remotePort

Type:	Mandatory
Default Value:	21
Valid Values:	FTP (21) or SSH (22) Port on the remote WFM Server
Dependencies:	secureTransfer Option

This option allows users to define the port on the remote WFM Server to something other than the default FTP port of 21. For instance, the default SSH port is 22 and the option should be set to that when secureTransfer is enabled.

retry

Type:	Optional
Default Value:	0
Valid Values:	Any non-negative integer
Dependencies:	None

This option allows users to define the number of retries used for those environments with ftp server issues that require retries sooner than the next interval. This option is not normally required to be set, as the first failure is most often quite relevant and should not be ignored.

secureTransfer

Type:	Mandatory
Default Value:	false
Valid Values:	true, false
Dependencies:	keyPath, keyPassphrase, remotePort

This option specifies that the file transfer will be made over an SSH (Secure Shell) connection to the remote server rather than the default FTP protocol. A private key file must be created and stored on the server hosting the *Gplus* Adapter and the public key must be registered on the server hosting the WFM reporting application. Configuring an SSH connection is discussed [below](#) and [Appendix B](#) contains troubleshooting tips when problems occur.

sessionTimeout

Type:	Mandatory
-------	-----------

Default Value:	120s
Valid Values:	A time that can include minutes (m) or seconds (s)
Dependencies:	None

This option has been added to set the maximum duration of the file transfer session associated with the transfer of the report files to the remote server for both regular FTP and SSH transfers. It ensures that the session will be closed in the event of a mishap on the remote server side during the transfer.

userName

Type:	Mandatory
Default Value:	<i>Not set</i>
Valid Values:	Any alphanumeric username registered on the remote server.
Dependencies:	None

This option specifies the username used to log in to the destination FTP server.

userPassword

Type:	Deprecated
Default Value:	<i>Not set</i>
Valid Values:	Any alphanumeric password
Dependencies:	User identified by userName, password

This option specifies the password for the user identified by the userName Option and is required to establish the connection to the ftp server but both *Genesys Administrator* and *Configuration Manager* display the password as plain text. The password Option should be used instead.

historical.reports Section

countlrregularIncoming

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	None

This option specifies whether non-routed calls received by an agent will be reported in the *Agent System Performance* report as internal calls and their handle time allocated toward internal call time. The default adapter behavior is to report only incoming calls with the Genesys CallType of CallInternal as internal calls. If this option is set to true, all non-routed incoming calls received by the agent are counted as internal no matter what their Genesys CallType (CallInbound, CallConsult, etc.).

dailyReportEnabled

Type:	Optional
Default Value:	true
Valid Values:	true, false
Dependencies:	None

This option specifies whether the daily *Agent Sign-on/Sign-off* report will be generated by the *Gplus* Adapter. Daily reports are not required for all WFM integrations since some are replaced by RTA applications or require that optional WFM modules be purchased. This report will be the first report in the multiple report file that is generated at midnight.

directory

Type:	Mandatory
Default Value:	ftp/reports
Valid Values:	Any valid folder on the <i>Gplus</i> Adapter server
Dependencies:	None

This option specifies the directory where the report files will be saved as they are generated. Typically, this will be the directory monitored by the Adapter's file transfer client and the files will be immediately transferred to the remote server.

enabled

Type:	Mandatory
Default Value:	true
Valid Values:	true, false
Dependencies:	None

This option allows users to disable all historical reports for this particular Stream when only RTA data is required from the *Gplus* Adapter.

filter

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	A filterName (filter:<filterName> Section)
Dependencies:	A filter Section must be defined.

This option allows users to associate the options defined in this Section with a defined filter section by setting the value to filterName. If multiple streams are not defined or the reports are going to include all of the Agents, Places and VQs defined in the genesys.*Groups Sections, then this option can be left blank.

includeOutboundInternalInNOC

Type:	Optional
Default Value:	false

Valid Values: true, false
 Dependencies: None

This option specifies which non-routed calls made by an agent will be reported on agent reports as outbound calls. The default behavior is report only the Genesys CallType of CallOutbound (external to the switch) as outbound calls. If this option is set to true, all non-routed calls (e.g. CallInternal) dialed by the agent are considered outbound calls.

intervalReportEnabled

Type: Mandatory
 Default Value: true
 Valid Values: true, false
 Dependencies: None

This option specifies whether the following three reports will be included in the report file generated by the *Gplus* Adapter on the interval specified by the intervalReport.interval Option:

- Contact Queue Report
- Agent Contact Queue Report
- Agent System Performance Report

intervalReport.interval

Type: Mandatory
 Default Value: 15
 Valid Values: 15, 30
 Dependencies: None

This option specifies the period in minutes between interval reports. This option should be set to whatever the duration the WFM solution has been configured for. The reports are generated at set times in the hour depending upon the interval so a 15-minute interval would see reports created at 0:00, 0:15, 0:30 and 0:45 in each hour.

nice_iex.version

Type: Optional
 Default Value: 3.x
 Valid Value: 3.x, 4.x, 7.x
 Dependencies: Version of NICE-IEX WFM application

This option specifies which version of the NICE-IEX WFM application is receiving the report files. This specifies differences in Agent and Queue field length and report format, text file vs XML (eXtensible Markup Language).

	3.x	4.x	7.x
NICE-IEX compatible version	3.x or earlier	4.x and 5.x	6.x and later

Agent field	40 characters	256 characters	256 characters
Queue field	40 characters	100 characters	100 characters
Report format	Text	Text	XML

prefix

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	Any text string
Dependencies:	None

This option specifies a prefix for the historical report filename.

Note: Some NICE WFM solutions require a specific prefix for the historical report filename.

reportRetentionDays

Type:	Mandatory
Default Value:	30
Valid Values:	Any positive integer
Dependencies:	historical.ftp/localBackupDirectory

This option specifies the number of days that copies of the historical reports will be retained in the localBackupDirectory after the originals have been transferred to the remote server. If the localBackupDirectory has not been set, the local copies of the report files will not be backed up after being successfully transferred.

timeZone

Type:	Optional
Default Value:	None
Valid Values:	Listed in Appendix A
Dependencies:	None

This option can be used to set the time zone for this historical stream. If not set, the value in [application/timeZone](#) will be used instead.

Note: The Adapter must be restarted for changes to take effect; restarting the individual stream is not sufficient. This is a known issue.

historical:<streamName> Section

This Section is optional and is used when the *Gplus* Adapter instance is providing more than one Stream. This Section is used to configure the historical component of the data feed to the NICE-IEX WFM Server. The Options contained in this section combine the

Options from both the [historical.reports](#) and [historical.ftp](#) Sections with a few additions. The Options are listed below, and the additions are discussed.

Report Options

- [countIrregularIncoming](#)
- [dailyReportEnabled](#)
- [enabled](#)
- [filter](#)
- [includeOutboundInternalInNOC](#)
- [intervalReportEnabled](#)
- [intervalReport.interval](#)
- [nice_iex.version](#)
- [prefix](#)
- [reportRetentionDays](#)
- [siteBased](#)

The application/siteBased Option only applies to the stream defined in the historical.reports Section. This stream Option allows the site-based reports to be configured on a stream-by-stream basis.

- [timeZone](#)

There is no directory option for the Stream configuration as the adapter automatically creates subdirectories in the directory configured by the [historical.reports/directory](#) Option. The created stream directory uses this Section's streamName as its name.

FTP Options

- [ftp.backupRetentionDays](#)
- [ftp.connectionMode](#)
- [ftp.enabled](#)

This Option is the surrogate for the historical.ftp/enabled Option that enables (value = true) or disables (value = false) the transfer of the historical reports to the remote NICE-IEX server.

- [ftp.keyPath](#)
- [ftp.keyPassphrase](#)
- [ftp.remoteDestinationDirectory](#)
- [ftp.remoteHost](#)
- [ftp.remotePort](#)
- [ftp.secureTransfer](#)
- [ftp.sessionTimeout](#)

- [ftp.userName](#)
- [ftp.userPassword](#)
- [password](#)

im Section

This Section is used to configure the *Gplus* Adapter instance if internal *Interaction Workspace Instant Messaging* interactions are being used by the Agents and those interactions are to be reported.

defaultAbandonedThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	None

This option specifies the default abandoned threshold for the Abandoned In Threshold column in the *Contact Queue* report. This option is set when a single abandoned threshold is used for all im targets. Individual abandoned thresholds can be set for each im target/queue by adding Annex Data to the im Virtual Queues as shown in a later [section](#) or adding the threshold to an Interaction Queue as described in the [interactionTargets](#) Section. These individual thresholds will override the default specified with this option.

defaultServiceThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	None

This option specifies the default service threshold for the service level calculations that form part of the interval reports. An im interaction is considered *serviced* at the time that the second agent first joins the im session with the first agent.

This option should be set when a single service threshold is used as a default for all im targets. Individual service thresholds can be set for each im target/queue by adding Annex Data to the im Virtual Queues as shown in a later [section](#) or adding the threshold to an Interaction Queue as described in the [interactionTargets](#) Section. These individual thresholds will override the default specified by this option.

defaultShortAbandonThreshold

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Threshold Format
Dependencies:	application/shortAbandonEnabled

This option specifies the default time threshold that an abandoned im must exceed in order to be included in the *Abandoned* column of the *Contact Queue* report. This option does not affect the service level calculations.

enabled

Type:	Mandatory
Default Value:	false
Valid Values:	true, false
Dependencies:	A connection to a Genesys Interaction Server.

Set to true to capture and report on *Instant Messaging* (im) activity (historical and RTA) in the contact center.

interaction.reason.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	chat/enabled, rta/enabled

This option specifies the attribute of an *Instant Messaging* (im) Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by one of the following events:

- EventPartyAdded
- EventPropertiesChanged while the agent is a party to a routed im interaction.

Certain implementations may require that the combination of a RoutedIM RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [interactionCodeMappings](#) Section.

maxInteractionTime

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	See Threshold Format
Dependencies:	None

While unlikely, it is possible for some interactions to become *stuck* in certain states if the terminating events are not received due to a mishap with an Interaction Server connection. Normally, the *stuck* interaction records in the Adapter would be terminated as soon as the connection was lost but this response relies on the [addp protocol](#) being configured properly for the connection(s) to the Interaction Server(s).

This option sets a timeout that defines the maximum amount of time that an *Instant Messaging* (im) interaction can remain in a *handled* or *wrap* state before the Adapter

automatically terminates its associated record in the data tables. If the Option is not set, the *stuck* records are not terminated until the agent logs out or any agent logs in to the Place associated with the interaction.

If used, this timeout must be set to a value significantly higher than the expected longest im duration to ensure that an ongoing interaction is not terminated prematurely in the Adapter tables. It should be noted that the timeout also applies to wrap up sessions so the expected duration of the wrap time must be taken into account.

individualDNs Section

This section is optional and must be added manually as it is not included in the Application Template. The intent of this Option section to allow for monitoring a small number of DN's that cannot presently be identified with the existing Options. The DN number is the Option key and the value field can be left blank.

interactionCodeMappings Section

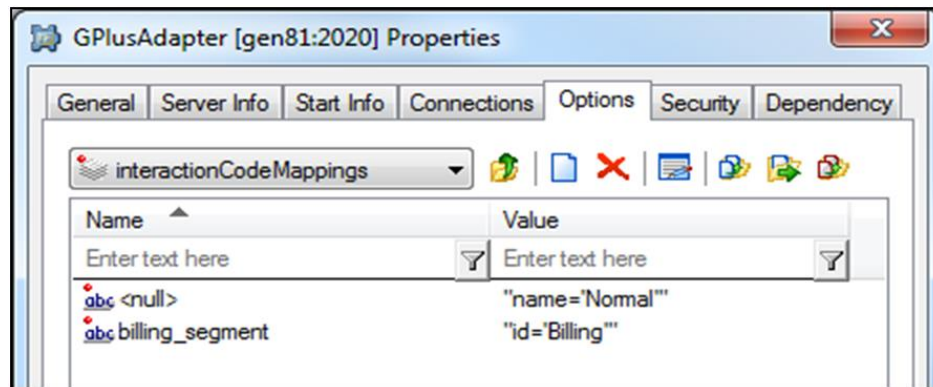
This section is optional and must be added manually as it is not included in the Application Template. When the section is included, the reasons parsed by the `interaction.reason.determiner(s)` will be compared against the Option key names in this section. If there is a match, the parameters listed in the Option value will be used. There are two possible parameters:

1. `id` new RTA state.
2. `name` new reason code.

The `id` field can be the new RTA State Name as defined in the [RTA State table](#). The `name` field is the new Reason that will be included with the RTA state message sent to the *Workforce Manager* server.

The `<null>` Option key signifies an event with no reason attached and it is used to configure a default behavior for the *Interaction* events.

Note: Contact Professional Services before configuring this section.

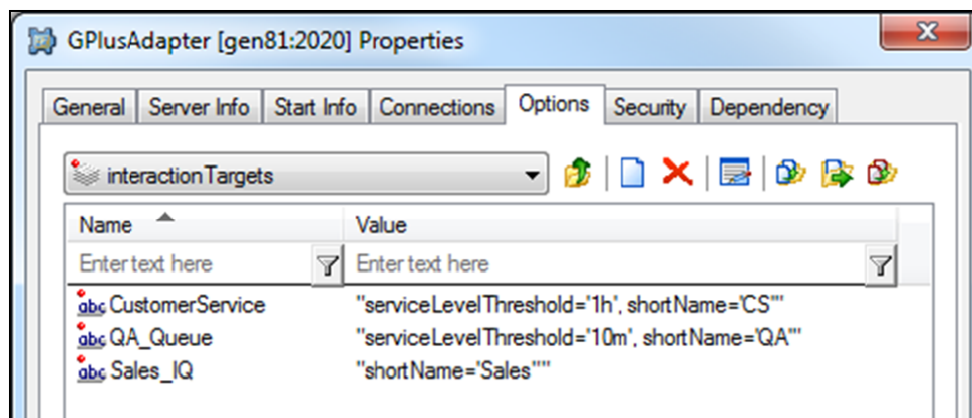


interactionTargets Section

This Section is optional, but it is required when Interaction Queues are used within Business Process Routing Strategies as the reporting objects. If only Virtual Queues defined on a Switch are used as reporting objects, this Section is not required. The situation is slightly different for email or other media where the interactions must also be tracked after they leave the agent's desktop. In that situation, outbound queues or *Quality Assurance* queues must also be monitored. This is explained in more detail in the following section.

Each Option name represents the specific name of an actual Interaction Queue defined in the Configuration Server. For each Interaction Queue, the Option value can be used to specify the serviceLevelThreshold, abandonedThreshold, shortAbandonThreshold (See [Threshold Format](#)) and the shortName for the Interaction Queue that will be used in the reports sent to the WFM application. It should be noted that the shortName field does not actually have to be shorter than the Interaction Queue name.

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	See example below
Dependencies:	email/enabled, chat/enabled, im/enabled, media:<name>/enabled



ixnProcessObjects Section

This Section is optional, but it may be required in certain configurations.

In typical configurations, interaction server interactions arrive on an interaction queue and are then associated to a virtual queue (VQ) providing the VQ reporting. The optional ixnProcessObjects section should be used when interaction queue reporting is desired instead, thereby using the reporting “queue” object on the interval report.

The section contains a list of Interaction Queues and their purpose according to the Gplus Adapter to determine how to report on digital interaction activity at various stages of handling. These Interaction Queues are monitored by the Adapter for queueing and terminating events.

All Interaction Queues involved with the following actions must be added and categorized in this section:

- completion of an interaction
- transferring an interaction
- holding an interaction for quality assurance handling

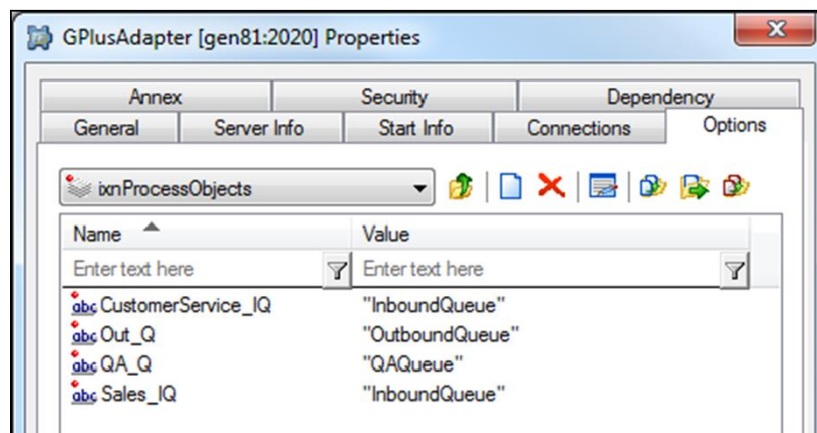
The option Name represents the specific name of an Interaction Queue configured in the Genesys environment. The option Value categorizes this queue with one of the interaction handling roles defined by the Gplus Adapter.

Valid Value	Description
InboundQueue	Use for reporting of queue events for interaction queues
OutboundQueue	Use for reporting of interactions completed or cancelled
QAQueue	Use for reporting queue events of the outbound queue of the original interaction queue and inbound queue of the QA queue
ObservationQueue	Use for monitoring the queue for abandons (no queue reporting will occur)

Type:

Mandatory for QAQueues

Default Value:	<i>Not Set</i>
Valid Values:	InboundQueue, OutboundQueue, QAQueue, ObservationQueue
Dependencies:	email/enabled, chat/enabled, im/enabled, media:<name>/enabled



media:<name> Section

The present version of the *Gplus* Adapter has defined configuration Options for each of the following media:

- voice
- email
- outboundpreview
- chat
- im

This section allows configuration for a generic media supported by the Interaction Server that may be unique to one call center. The <name> portion of the section name must correspond to the Media Type attribute contained in the Interaction Server events.

Besides a straightforward configuration of how the adapter will deal with the new media, this section also has options that define associations with the other configured media types. It should be noted that this section should be used to configure the media that wraps or initiates the associated media interactions.

Note: ThisMedia is used as an identifier in the following discussion for the media that is configured within this section. OtherMedia describes any media that may be associated with ThisMedia in multiple media interactions.

acwReason

Type:	Optional
Default Value:	ACW
Valid Values:	Any text string
Dependencies:	NotReady Reason is attached by agent desktop

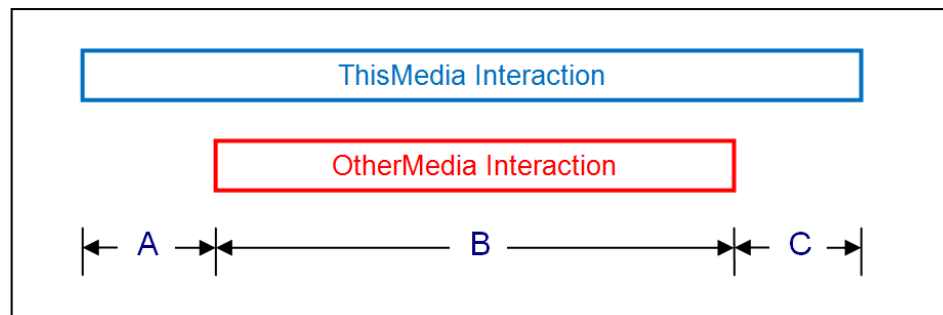
This option identifies the Reason string attached to a NotReady event that will signify the start of a Wrap (AfterInteractionWork) state rather than an Unavailable state.

associationType

Note: Contact Professional Services prior to configuring this option as it will require a detailed understanding of the association between the two related media.

Type:	Optional
Default Value:	none
Valid Values:	handle, work, target, or none
Dependencies:	OtherMedia

The diagram below demonstrates two associated media interactions and the time intervals defined by the association. This diagram will be used to clarify the alternative values that deal with the non-overlapping time (A and C) for the two media.



- none
there is no association with the OtherMedia type
all of the interaction time for ThisMedia is reported as handle time
all of the interaction time for OtherMedia is reported as handle time if that interaction was routed
- handle
non-overlapping time (A and C) will be reported as handle time for ThisMedia
- work

non-overlapping time (A and C) will be reported as wrap up
(AfterInteractionWork) time for ThisMedia

- target
the target determined for ThisMedia interaction will be used for the
OtherMedia interaction
none of the non-overlapping time (A and C) will be reported

defaultAbandonedThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	historical.reports/serviceLevelFormula

This option specifies the default abandoned threshold for the Abandoned in Threshold statistic that form part of the interval reports. It is also quite possible that there is no mechanism to actually abandon a ThisMedia interaction and this option can be ignored.

This option should be set when a single abandoned threshold is used as a default for all ThisMedia targets. Individual abandoned thresholds can be set for each ThisMedia target/queue by adding Annex Data to the ThisMedia Virtual Queues as shown in a later [section](#) or adding the threshold to an Interaction Queue as described in the [interactionTargets](#) Section. These individual thresholds will override the default specified by this option.

defaultServiceThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	markServicedOn

This option specifies the default service threshold for the service level calculations that form part of the interval reports. A ThisMedia is considered *serviced* at either the start or the end of the agent's involvement with the interaction depending on the markServicedOn Option.

This option should be set when a single service threshold is used as a default for all ThisMedia targets. Individual service thresholds can be set for each ThisMedia target/queue by adding Annex Data to the ThisMedia Virtual Queues as shown in a later [section](#) or adding the threshold to an Interaction Queue as described in the [interactionTargets](#) Section. These individual thresholds will override the default specified by this option.

defaultShortAbandonThreshold

Type:	Optional
Default Value:	0
Valid Values:	see Threshold Format

Dependencies: application/shortAbandonEnabled

This option specifies the default short abandon threshold for the service level calculations that form part of the interval reports. If application/shortAbandonEnabled is set to false, this option has no effect.

This option should be set when a single short abandon threshold is used as a default for all ThisMedia targets. Individual short abandon thresholds can be set for each ThisMedia target/queue by adding Annex Data to the ThisMedia Virtual Queues as shown in a later section. These individual thresholds will override the default specified by this option.

defaultTarget

Type: Optional
 Default Value: UnknownTarget
 Valid Values: Any text string
 Dependencies: application/countUnattachedACW

This option allows users to define a separate target/queue for this media other than the default value used by the Gplus Adapter to report on unattached wrap up (AfterInteractionWork) time. This option is only applicable when the application/countUnattachedACW Option is set to true.

Unattached wrap up time is defined as the time that the agent spends in an AfterInteractionWork state when the agent has not yet received a routed interaction of the ThisMedia type since logging in.

deleteOnTransfer

Note: Contact Professional Services prior to configuring this option as it will require a detailed understanding of the association between the two related media.

Type: Optional
 Default Value: false
 Valid Values: true, false
 Dependencies: OtherMedia, associationType

This option deals with a transfer scenario where the OtherMedia interaction is transferred to another agent but there is no "End of Interaction" event received for ThisMedia. If this option is set to true, the ThisMedia interaction will be terminated when the transfer is completed.

enabled

Type: Mandatory
 Default Value: false
 Valid Values: true, false
 Dependencies: None

This option must be set to true to capture and report on historical ThisMedia activity in the contact center. It is possible to disable the tracking of media activity if required.

interaction.reason.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	enabled, rta/enabled

This option specifies the attribute of a ThisMedia Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by one of the following events:

- EventPartyAdded
- EventPropertiesChanged while the agent is a party to a routed interaction of the ThisMedia type.

Certain implementations may require that the combination of a RoutedOpenMediaWork RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [interactionCodeMappings](#) Section.

markServicedOn

Type:	Mandatory
Default Value:	answered
Valid Values:	answered, released
Dependencies:	None

This option indicates when an interaction of the ThisMedia type is considered to be serviced for the Service Level Threshold calculations. Either when the agent first *answers* the interaction or when the agent has completed handling the interaction.

maxInteractionTime

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	See Threshold Format
Dependencies:	None

While unlikely, it is possible for some interactions to become *stuck* in certain states if the terminating events are not received due to a mishap with an Interaction Server connection. Normally, the *stuck* interaction records in the Adapter would be terminated as soon as the connection was lost but this response relies on the [addp protocol](#) being configured properly for the connection(s) to the Interaction Server(s).

This option sets a timeout that defines the maximum amount of time that an interaction of the ThisMedia type can remain in a *handled* or *wrap* state before the Adapter automatically terminates its associated record in the data tables. If the Option is not set,

the *stuck* records are not terminated until the agent logs out or any agent logs in to the Place associated with the interaction.

If used, this timeout must be set to a value significantly higher than the expected longest duration for the interactions of the ThisMedia type to ensure that an ongoing interaction is not terminated prematurely in the Adapter tables. It should be noted that the timeout applies to wrap sessions so the expected duration of the wrap time must be taken into account.

otherIdDeterminer

Note: Contact Professional Services prior to configuring this option as it will require a detailed understanding of the association between the two related media.

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	OtherMedia, associationType, thisIdDeterminer

This option identifies the determiner used to uniquely identify the OtherMedia interaction and provide the association back to the ThisMedia interaction that forms the other half of connected interactions.

otherMediaTypes

Note: Contact Professional Services prior to configuring this option as it will require a detailed understanding of the association between the two related media.

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	Comma delimited list of media names.
Dependencies:	OtherMedia, associationType

This option lists the names of the OtherMedia that could be associated with ThisMedia.

reason.notReady.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	eventAttribute: ReasonDescription
Valid Values:	See Event Attribute Determiners
Dependencies:	enabled, rta/enabled

This option specifies the attribute of a ThisMedia Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by one of the following events:

- EventNotReadyForMedia
- EventMediaStateReasonChanged while the agent is NotReady to receive a routed interaction of a ThisMedia type.

Certain implementations may require that the combination of an Unavailable RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [reasonCodeMappings](#) Section

reason.ready.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	enabled, rta/enabled

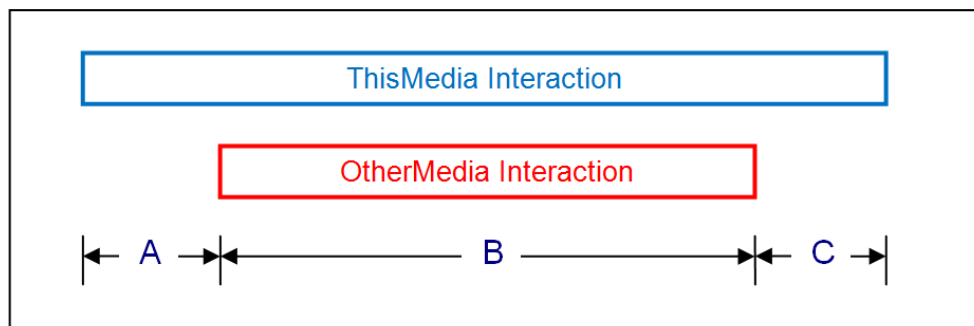
This option specifies the attribute of a ThisMedia Interaction Server Event that will be included as the *Reason* field of an RTA state message generated by an EventReadyForMedia event.

Certain implementations may require that the combination of an Available RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [readyCodeMappings](#) Section.

reportingType

Note: Contact Professional Services prior to configuring this option as it will require a detailed understanding of the association between the two related media.

Type:	Optional
Default Value:	thisInteraction
Valid Values:	thisInteraction, otherInteraction
Dependencies:	OtherMedia, associationType



This option determines whether the ThisMedia or the OtherMedia activity is reported upon for the overlapping interval (B) in the offered and handled metrics.

rta.routedInteractionState

Type:	Optional
Default Value:	InteractionInbound
Valid Values:	Any valid text string no more than 20 characters
Dependencies:	rta.nonRoutedInteractionState, rta.acwInteractionState

This option identifies the agent state value that will be passed to the NICE-IEX RTA server when the agent is handling a ThisMedia interaction that was routed through a monitored queue to that agent.

rta.nonRoutedInteractionState

Type:	Optional
Default Value:	InteractionInternal
Valid Values:	Any valid text string no more than 20 characters
Dependencies:	rta.routedInteractionState, rta.acwInteractionState

This option identifies the agent state value that will be passed to the NICE-IEX RTA server when the agent is handling a ThisMedia interaction that was not routed through a monitored queue to that agent.

rta.acwInteractionState

Type:	Optional
Default Value:	AfterInteractionWork
Valid Values:	Any valid text string no more than 20 characters
Dependencies:	rta.routedInteractionState, rta.nonRoutedInteractionState

This option identifies the agent state value that will be passed to the NICE-IEX RTA server when the agent is wrapping up a concluded ThisMedia interaction that was routed through a monitored queue to that agent.

targetProperty

Type:	Mandatory
Default Value:	eventAttribute: interactionProperties.interactionQueue
Valid Values:	Any valid Interaction target determiner.
Dependencies:	None

This option identifies the event attribute that the adapter will use to identify the target/queue for the ThisMedia in the same way as the event.properties/interactionTarget.determiner is defined for email.

thisIdDeterminer

Note: Contact Professional Services prior to configuring this option as it will require a detailed understanding of the medias' association.

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	OtherMedia, associationType, otherIdDeterminer

This option identifies the determiner used to uniquely identify the ThisMedia interaction and provide the association back to the OtherMedia interaction that forms the other half of connected interactions.

outbound Section

defaultTarget

Type:	Optional
Default Value:	UnknownTarget
Valid Values:	Any text
Dependencies:	application/countUnattachedACW

This option allows users to define a separate outbound target/queue or campaign name other than the default value used by the *Gplus* Adapter for all media. This value is used to report on an agent's time outside of actual outbound activity (including unattached ACW) when that time cannot be associated with an actual outbound target/queue or campaign name.

dialingDN

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Value:	Name of an actual Trunk Group
Dependencies:	<i>Predictive</i> or <i>Progressive</i> Campaign Type

This option specifies the name of the Trunk Group that is used in either *Predictive* or *Progressive* campaigns to dial the outbound calls.

dialingRouteGroup

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Value:	Name of an actual Routing Point DN Group
Dependencies:	<i>Predictive</i> or <i>Progressive</i> Campaign Type

This option specifies the name of the DN Group that contains the Routing Points (RPs) used in either *Predictive* or *Progressive* campaigns to dial the outbound calls.

enabled

Type:	Mandatory
Default Value:	false
Valid Values:	true, false
Dependencies:	event.properties/campaignTarget.determiner.

This option allows users to enable reporting of outbound campaign calls in the *Contact Queue* and *Agent Contact Queue* reports. See [Outbound Campaign Calls](#) for more information.

ignoreCampaignConsults

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	enabled

This Option configures how the Adapter will allocate a routed consult call originating from an outbound Campaign call. Setting this Option to true will prevent the campaignTarget.determiner from being applied to the queued consult call and the determiner specified by the event.properties/callType.determiner will be used instead.

interaction.reason.determiner

Type:	Optional
Default Value:	none
Valid Values:	See Event Attribute Determiners
Dependencies:	outbound/enabled

This option specifies the attribute of a TServer/SIPServer voice Event that will be included as the Reason field of an RTA state message generated by one of the following events:

- EventEstablished
- EventHeld
- EventPartyAdded
- EventPartyChanged
- EventPartyDeleted
- EventRetrieved

Certain implementations may require that the combination of a voice call RTA state and its reason code map to a different RTA state and reason text string. This mapping can be configured in the interactionCodeMappings Section.

maxInteractionTime

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	See Threshold Format

Dependencies: None

While unlikely, it is possible for some calls to become *stuck* in certain states if the terminating events are not received due to a mishap with a TServer connection. Normally, the *stuck* interaction records in the Adapter would be terminated as soon as the connection was lost but this response does rely on the [addp protocol](#) being configured properly for the connection(s) to the TServer(s).

This option sets a timeout that defines the maximum amount of time that an outbound campaign call can remain in a *handled* or *wrap* state before the Adapter automatically terminates its associated record in the data tables. If the Option is not set, the records are not terminated until the agent logs out or any agent logs in to the Place associated with the call.

If used, this timeout must be set to a value significantly higher than the expected longest campaign call duration to ensure that an ongoing call is not terminated prematurely in the Adapter tables. It should be noted that the timeout applies to ACW sessions so the expected duration of the wrap time must be taken into account.

pushPreviewMediaType

Type: Optional
 Default Value: outboundpreview
 Valid Values: Any text string
 Dependencies: Push Preview outbound record media type

This option allows the expected media type name for *Push Preview* outbound records to be changed from the default, outboundpreview. A mismatch will result in the dialed outbound calls not being properly associated with an Outbound campaign.

recordProcessedOnRelease

Type: Optional
 Default Value: true
 Valid Values: true, false
 Dependencies: Predictive or Progressive Campaign Type OCS
 OCServer/record_processed Option

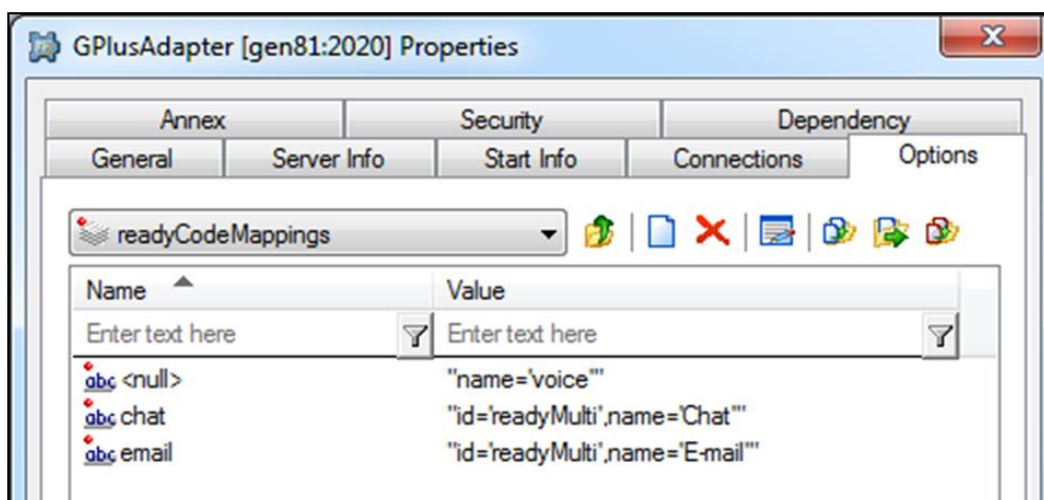
This option sets when the *Gplus* Adapter considers the Outbound Contact Server (OCS) outbound call record to be finished. If this option is set to true, then the record is marked as processed when the outbound call is released. If the option is set to false, the record is considered processed when a specific EventUserEvent is received after the call has been released.

readyCodeMappings Section

Note: Contact Professional Services before configuring this section.

This section is optional and must be added manually as it is not included in the Application Template. When the section is included, the reasons parsed by the `reason.ready.determiner(s)` will be compared against the Option key names in this section. If there is a match, the parameters listed in the Option value will be used. There are two possible parameters:

1. id new RTA state.
2. name new reason code.



The id field can be the new RTA State Name as defined in the [RTA State table](#). The name field is the new Reason that will be included with the RTA state message sent to the *Workforce Manager* server.

The <null> Option key signifies an event with no reason attached and it is used to configure a default behavior for the *Ready* events.

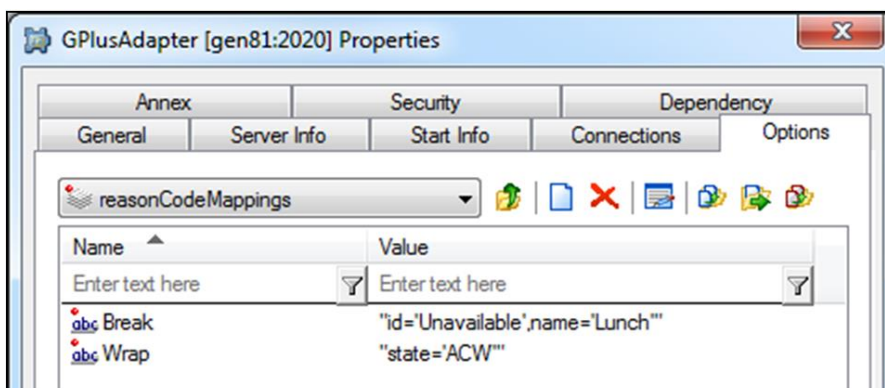
reasonCodeMappings Section

Note: Contact Professional Services before configuring this section.

This section is optional and must be added manually as it is not included in the Application Template. When the section is included, the NotReady reasons parsed by the `reason.notReady.determiner` will be compared against the Option key names in this section. If there is a match, the parameters listed in the Option value will be used. There are three possible parameters:

1. id new RTA state.
2. name new NotReady reason code.

3. state NotReady or ACW



The id field, if defined, must be the new RTA State Name as listed in the [RTA State table](#). The name field is the new Reason that will be included with the RTA state message sent to the WFM server. The state field allows the event to be interpreted as either Unavailable or ACW in the historical reports.

The <null> Option key signifies an event with no reason attached and it is used to configure a default behavior for the NotReady events.

rta Section

enabled

Type:	Mandatory
Default Value:	true
Valid Values:	true, false
Dependencies:	None

The option allows users to disable the RTA data stream for *Gplus* Adapter installations where RTA data is not required.

extendedPhoneStates

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	None

This Option adds OffHook, Dialing and Ringing phone states to the reported RTA states if set to true.

filter

Type:	Optional
Default Value:	Not set

Valid Values:	A filterName (filter:<filterName> Section)
Dependencies:	A filter Section must be defined.

This option allows users to associate the options defined in this Section with a defined filter section by setting the value to filterName. If multiple streams are not defined, then this option can be left blank and the RTA stream will be associated with the Agents, VQs and Places defined by the genesys.*Groups sections.

nice_iex.heartbeat

Type:	Optional
Default Value:	30 (s)
Valid Values:	0 and any positive integer
Dependencies:	None

The RTA heartbeat interval can be configured with this Option. Heartbeat requests are sent at a regular interval to ensure that the RTA connection remains intact. The Adapter expects a response from the RTA client within the heartbeat interval after which it closes the connection. While in most cases, a delay of 30 seconds before closing the connection is more than sufficient, there may be instances where the longer interval may be necessary.

nice_iex.listenPort

Type	Mandatory
Default Value:	6999
Valid Values:	Any open port on <i>Gplus</i> Adapter host
Dependencies:	None

This option sets the port that the *Gplus* Adapter listens on while waiting for a connection request from the NICE-IEX RTA application

nice_iex.password

Type:	Deprecated
Default Value:	IEX
Valid Values:	Any alphanumeric password.
Dependencies:	nice_iex.userName

The listen port can be configured to require a password from the connecting NICE-IEX RTA application. This option specifies the password for a valid socket request.

nice_iex.userName

Type:	Optional
Default Value:	Not set
Valid Values:	Any alphanumeric user name.
Dependencies:	nice_iex.password, password

The listen port can be configured to require a user name from the connecting NICE-IEX RTA application. This option specifies the user name for a valid socket request.

nice_iex.version

Type:	Optional
Default Value:	3.x
Valid Values:	3.x, 4.x
Dependencies:	None

This option indicates whether the adapter uses the 3.x or 4.x RTA protocol. The 3.x protocol is limited to 40 and 20 characters respectively, and the 4.x protocol has a field width of 100 and 256 respectively for agent ID and RTA state fields.

password

Type	Optional
Default Value:	Blank (empty text string)
Valid Values:	Any alphanumeric user name.
Dependencies:	nice_iex.userName

The listen port can be configured to require a password from the connecting NICE-IEX RTA application. This option specifies the password for a valid socket request. This option should be used instead of nice_iex.password as *Configuration Manager* and *Administrator* automatically obfuscate the value while the nice_iex.password is stored as plain text.

prioritizeStates

Type:	Optional
Default Value:	true
Valid Values:	true, false
Dependencies:	None

This Option specifies whether the RTA states with the same priority are collapsed into a single state or if each will be reported separately. RTA states with the same priority would be things like Ready on voice, but not chat collapses to Ready, and when going Ready on chat is still Ready and would not be reported when this option is set to true, as the state has not changed, but would be reported if set to false.

reportDndAsNotReady

Type:	Optional
Default Value:	true
Valid Values:	true, false
Dependencies:	None

The default behavior is for the Adapter to report Do Not Disturb time as the NotReady RTA state. This option allows the Adapter to report that time as the DndOn RTA state if set to false.

rta:<streamName> Section

This Section is optional and is used when the *Gplus* Adapter instance is providing more than one data Stream. This Section is used to configure the Real Time Adherence (RTA) component of the data feed to the NICE Workforce Manager Server. The Options are listed below but are not discussed here as they directly correspond to those listed in the [rta](#) section.

Options

- [enabled](#)
- [extendedPhoneStates](#)
- [filter](#)
- [nice_iex.heartbeat](#)
- [nice_iex.listenPort](#)
- [nice_iex.password](#)
- [nice_iex.userName](#)
- [nice_iex.version](#)
- [password](#)
- [prioritizeStates](#)
- [reportDndAsNotReady](#)

vht Section

This Section is optional and is used to configure how the *Gplus* Adapter instance tracks *VirtualHold* callbacks. The Adapter presently only supports *Virtual Hold – Concierge* mode and tracking other *VirtualHold* modes could result in unexpected behavior. The other requirement is that the call must be redirected from the IVR to a monitored VQ after the caller has selected the *Virtual Hold* callback option. This VQ is used to initialize the information maintained by the Adapter to track the callback and the queued event starts the timer for the queue delay calculation.

The default behavior is to treat the initial inbound customer call and the delayed callback as two calls. The options listed configure the association between the two calls and treat

the callback delay as “queue time” for a single call that is included in the *Queue Delay* statistic of the *Contact Queue* report.

Note: Contact Professional Services before configuring this section.

attribute.determiner

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	voice/enabled

This Option identifies the call attribute that provides the link between the initial customer call and the eventual *Virtual Hold* callback. Setting this option enables the functionality where the Adapter tracks the linked calls as a single call with the extended queue time.

The specified linking attribute must be contained in the TServer/SIPServer EventDiverted generated when a caller chooses a *Virtual Hold* callback rather than waiting for the next available agent. As mentioned above, the call must be queued in and diverted from a monitored VQ.

The Adapter first parses the call target from the attributes of the EventQueued using the event.properties/callType.determiner. It then parses the linking attribute from the EventDiverted generated as the call leaves the monitored VQ. The parsed attribute value must be the unique call ID that will also be attached to the outbound callback.

The presence of the linking attribute is then checked in the EventDialing generated from the monitored Trunk Group or Routing Point at the start of the callback. It will also be checked in the EventEstablished generated when the Agent picks up the outbound callback. The same attribute.determiner is used for the initial customer call and the subsequent callback(s) so the linking attribute must have the same key and value for both calls.

callbackAccepted.determiner

Type:	Optional
Default Value:	Not set
Valid Values:	See Event Attribute Determiners
Dependencies:	voice/enabled

This Option identifies the call attribute that indicates whether this callback was accepted by the customer. Leave this option blank unless needed, which will depend on the implementation. This option cannot be used without setting the callbackAcceptedValue option.

callbackAcceptedValue

Type:	Optional
-------	----------

Default Value:	Not set
Valid Values:	any valid string
Dependencies:	voice/enabled

This Option identifies the value that indicates that a callback was accepted by the customer. This option is used in conjunction with `callbackAccepted.determiner`. Any value that does not match this value (null does not match anything) is considered to be not accepted.

defaultRetries

Type:	Optional
Default Value:	1
Valid Values:	1 to 1000
Dependencies:	None

The option specifies the maximum number of callback attempts that will be made to contact the customer. It should be exactly the same value as the *Virtual Hold* setting that specifies the number of callbacks that will be attempted. Once this limit has been reached without an answer from the customer, the initial customer call is reported as *Abandoned*.

It should be noted that the retry count maintained by the Adapter for the callbacks will only be incremented if the linking attribute described above is contained in the `EventDialing` generated from the monitored Trunk Group or Routing Point.

This option can also be set for an individual VQ using the `vhtRetries` Option as described in the [Adding Annex Data for Virtual Queues and Skills](#) section of Chapter 4.

defaultTimeout

Type:	Optional
Default Value:	24h
Valid Values:	See Threshold Format
Dependencies:	None

This option specifies the amount of time (starting from the initial queued event) that the Adapter will wait before reporting the initial call as *Abandoned* if none of the callbacks are successful.

This option can also be set for an individual VQ using the `vhtExpiry` Option as described in the [Adding Annex Data for Virtual Queues and Skills](#) section of Chapter 4.

timeToFlushAt

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	00:00 to 23:59 (24-hour clock - GMT)
Dependencies:	None

The *Virtual Hold* application can be configured to clear or flush all of the pending callbacks daily. This Option should be set to the time of day when that "flush" occurs. Inbound calls associated with the flushed pending callbacks will be reported as *Abandoned*.

This option can also be set for an individual VQ using the `vhtFlushTime` Option as described in the [Adding Annex Data for Virtual Queues and Skills](#) section of Chapter 4.

voice Section

defaultAbandonedThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	None

This option specifies the default abandoned threshold for the Abandoned In Threshold column in the Contact Queue report. This option is set when a single abandoned threshold is used for all voice targets. Individual abandoned thresholds can be set for each voice target/queue by [adding Annex Data](#) to the voice Virtual Queues included in the `genesys.queueGroups` Section.

defaultServiceThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	None

This option specifies the default service threshold for the service level calculations that form part of the interval reports. An inbound voice call is considered *served* at the time that the agent answers the call.

This option should be set when a single service threshold is used as a default for all inbound voice call targets. Individual service thresholds can be set for each inbound voice call target/queue by adding Annex Data to the voice Virtual Queues as shown in a later [section](#). These individual thresholds will override the default specified by this option.

defaultShortAbandonThreshold

Type:	Optional
Default Value:	0s
Valid Values:	See Threshold Format
Dependencies:	None

This option specifies the default *short abandons* threshold for the *Abandoned* column in the *Contact Queue* report. This option sets a single short abandoned threshold that is used for all voice targets. Individual abandoned thresholds can be set for each voice

target/queue by [adding Annex Data](#) to the voice Virtual Queues included in the `genesys.queueGroups` Section.

defaultTarget

Type:	Optional
Default Value:	UnknownTarget
Valid Values:	Any text string
Dependencies:	application/countUnattachedACW

This option allows users to define a separate contact type/queue other than the default value used by the *Gplus* Adapter to report on unattached After Call Work time. This option is applicable if the `application/countUnattachedACW` Option in the application Section is set to true.

Unattached AfterCallWork time is defined as the time that the agent spends in a NotReady state initiated by an `EventAgentNotReady` containing a `WorkMode` attribute of 3 during the portion of a login session when the agent has not yet answered a routed call.

enabled

Type:	Mandatory
Default Value:	false
Valid Values:	true, false
Dependencies:	None

This option is set to true to capture and report on inbound voice call activity in the contact center. It is possible to disable the tracking of voice activity if the *Gplus* Adapter was installed to only track the agents' other media interactions.

interaction.reason.determiner

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	voice/enabled, rta/enabled

This option specifies the attribute of a TServer/SIPServer voice Event that will be included as the *Reason* field of an RTA state message generated by one of the following events:

- EventEstablished
- EventHeld
- EventPartyAdded
- EventPartyChanged
- EventPartyDeleted
- EventRetrieved

Certain implementations may require that the combination of a voice call RTA state and its reason code map to a different RTA state and reason text string. This mapping can be configured in the [interactionCodeMappings](#) Section.

isAfterCallWork.class

Type:	Optional
Default Value:	DefaultAfterCallWorkProperty
Valid Values:	Check with Technical support.
Dependencies:	None

The option overrides the default behavior for determining whether an agent has entered an ACW state. One, `PresumptiveAfterCallWorkProperty`, can be used to report all NotReady time as After Call Work.

maxInteractionTime

Type:	Optional
Default Value:	<i>Not Set</i>
Valid Values:	See Threshold Format
Dependencies:	None

While unlikely, it is possible for some calls to become *stuck* in certain states if the terminating events are not received due to a mishap with a TServer connection. Normally, the *stuck* interaction records in the Adapter would be terminated as soon as the connection was lost but this response relies on the [addp protocol](#) being configured properly for the connection(s) to the TServer(s).

This option sets a timeout that defines the maximum amount of time that an inbound routed call can remain in a *handled* or *wrap* state before the Adapter automatically terminates its associated record in the data tables. If the Option is not set, the records are not terminated until the agent logs out or any agent logs in to the Place associated with the call.

If used, this timeout must be set to a value significantly higher than the expected longest routed inbound call duration to ensure that an ongoing call is not terminated prematurely in the Adapter tables. It should be noted that the timeout also applies to ACW sessions so the expected duration of the wrap time must be taken into account.

parallelQueuesEnabled

Note: Contact Professional Services prior to changing this option.

Type:	Optional
Default Value:	false
Valid Values:	true, false
Dependencies:	Routing strategy

This option is set to true to report a call against a different queue than the first monitored queue in one particular circumstance. Genesys routing can place a call in additional

queues to broaden the target agent group if the call has been waiting in the original queue for a set period. This option, if set to true, allows the target for the customer call to be associated with the queue that the call was diverted from rather than defaulting to the original queue.

reason.notReady.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	eventAttribute: Reasons.ReasonCode
Valid Values:	See Event Attribute Determiners
Dependencies:	voice/enabled, rta/enabled

This option specifies the attribute of a voice TServer/SIPServer event that will be included as the *Reason* field of an RTA state message generated by an EventAgentNotReady event.

Certain implementations may require that the combination of an Unavailable RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [reasonCodeMappings](#) Section.

reason.ready.determiner

Note: Contact Professional Services before using this option.

Type:	Optional
Default Value:	<i>Not set</i>
Valid Values:	See Event Attribute Determiners
Dependencies:	enabled, rta/enabled

This option specifies the attribute of a voice TServer/SIPServer event that will be included as the *Reason* field of an RTA state message generated by an EventAgentReady event.

Certain implementations may require that the combination of an Available RTA state and the reason code map to a different RTA state and reason text string. This mapping can be configured in the [readyCodeMappings](#) Section.



Chapter 4: Additional Configuration

Adding T-Servers and Interaction Servers

The application establishes connections with the TServers, SIP Servers, Interaction Servers and Message Servers listed under the Connections tab of the Properties window. Adding a server is accomplished in exactly the same way that any other Genesys application would add connections to servers in the Genesys environment.

Select the Add button and then the Browse button at the end of the Server line on the Connection Info Properties window. The adapter supports connections to multiple TServers/SIP Servers/Interaction Servers and using the addp connection protocol for those connections. Only the Primary servers should be added to the Connections tab, as the Backup servers will be identified from the Primary's configuration and included automatically.

Transport Layer Security (TLS) can also be added to a server connection by checking the Secure checkbox. This assumes that the *Security Deployment Guide* has been followed to properly install certificates etc.

Threshold Time Format

The service level calculations are based upon calls/interactions that meet or do not meet configured service or abandoned time thresholds. These thresholds can be set as a default per media or added to the following configuration objects: Skills, Virtual Queues and interactionTargets. The default for setting the threshold time is to specify it in milliseconds. However, a more user-friendly version is also available where the threshold time is specified in terms of days, hours, minutes, and seconds. A typical call center would have a service (answered) threshold for inbound calls that would be in the range of 20 to 30 seconds whereas a threshold for emails may be measured in hours or days. The following format allows a range of time values to be specified without having to calculate the millisecond equivalent:

`{0-31}d{0-24}h{0-60}m{0-60}s`

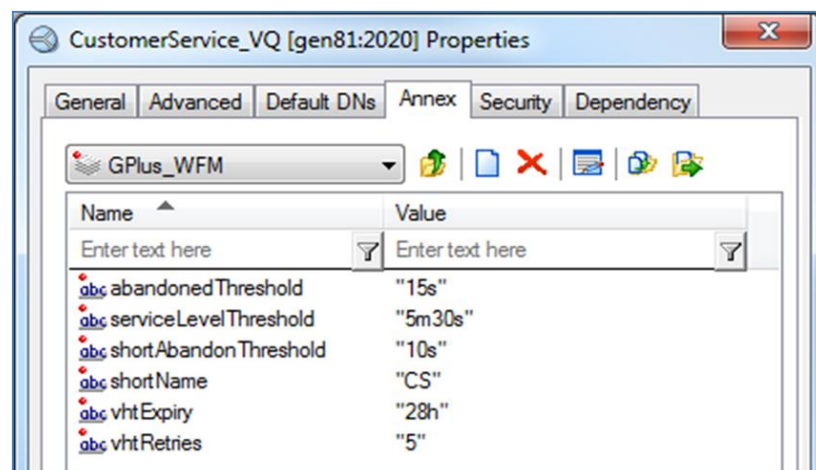
Examples:

15000	15000 milliseconds
60s	60000 milliseconds
45m	2700000 milliseconds
1d12h30m	131400000 milliseconds

Adding Annex Data for Virtual Queues and Skills

This section discusses adding individual configuration to a Skill or Virtual Queue with the end result being additional configuration of the associated call/interaction target. The following parameters can be added to these Configuration Objects to modify the reported results:

- `abandonedThreshold` Skill or VQ
- `serviceLevelThreshold` Skill or VQ
- `shortAbandonThreshold` Skill or VQ
- `shortName` Skill or VQ
- `vhtExpiry` VQ only
- `vhtFlushTime` VQ only
- `vhtRetries` VQ only



`abandonedThreshold`, `serviceLevelThreshold`, `shortAbandonThreshold`

The *Contact Queue* report deals with statistics for each Contact Group and the two thresholds can differ between Groups as the business expectations for each type of

customer call will vary. Associating the thresholds with a specific Skill or Virtual Queue allows the reports to take into account the different response expectations.

Configuring abandoned thresholds for an email Virtual Queue while allowed would have little effect as emails are not abandoned.

The abandoned threshold can also be set for each Skill or Virtual Queue, but it only affects the service level calculation and not the abandoned count in the *Contact Queue* reports.

Conversely, the `shortAbandonThreshold` option does remove interactions from the *Abandons* count if those interactions are abandoned prior to the threshold time but the option does not affect the service level calculations.

The figure above shows an example with the opened Annex tab for a Virtual Queue object in the Configuration Manager. Adding the threshold settings to a Skill object is essentially the same process. The question of which of the two object types will be configured with the thresholds is answered by the [application/callType](#) Option.

The following steps should be followed to add a `serviceLevelThreshold`, `abandonedThreshold` or `shortAbandonThreshold` to a Virtual Queue:

1. Select the Virtual Queue in the Configuration Manager and open the Properties frame.
2. Select the Annex tab.
3. Add a GPlus_WFM Section or if the [application/annexSection](#) Option has been set, add a Section with the name configured there.
4. In the new Section, add an Option with the Name set to `serviceLevelThreshold`, `abandonedThreshold` or `shortAbandonThreshold` with value equal to the new threshold as described [above](#).

shortName

If the Skill or Virtual Queue (Number or Alias fields) name exceeds the report field size or the *Workforce Manager* application requires something different than the actual name, the `shortName` option can be added to the Annex tab of the Virtual Queue as follows:

1. Create a GPlus_WFM section in the Annex tab if it does not exist already.
2. Add a new option to this section named `shortName` with the Value set to the new text string.
3. This value will now be used in place of the original Virtual Queue/Skill name in all reports.
4. The short name must be unique with respect to other short names.

vhtExpiry, vhtFlushTime, vhtRetries

These three *Virtual Hold* options can only be added to the Annex tab of a Virtual Queue that queues an initial customer inbound call. They provide a VQ level of configuration

versus the three *vht* options, [defaultRetries](#), [timeToFlushAt](#) and [defaultTimeout](#), that set application level defaults for the *Virtual Hold* configuration.

1. Create a GPlus_WFM section in the Annex tab if it does not exist already.
2. Add a new option to this section named `vhtExpiry` with the Value set to the amount of time that the Adapter will wait for a successful callback using the Threshold Time Format described [above](#).
3. Add a new option to this section named `vhtFlushTime` with the Value set to the time during the day that the Adapter will flush the calls that have not resulted in a successful callback and count those calls as *Abandoned*. This time setting will be in the GMT in the range from 00:00 to 23:59.
4. Add a new option to this section named `vhtRetries` with the Value set to an integer value equal to the number of callback attempts that could be made before the call is reported as Abandoned.

Adding A PlaceGroup to a Site

All of the reports can include Site information if required. The *Gplus* Adapter creates an association between Place Groups and Sites by adding a `siteName` option to a Place Group's Annex Data. Only the Place Groups included in the `genesys.placeGroups` Section of the Options will be included and, therefore, only those Place Groups should be modified.

To add a Site name for use in reporting:

1. Add a GPlus_WFM Section or if the [application/annexSection](#) Option has been set, add a Section with the name configured there.
2. Add a new option to this section named `siteName` with the new Site name as the value.
3. This name will be used as the Site identifier in the reports

Event Attribute Determiners

There are a number of *determiner* Options in the Adapter configuration. These Options are used to identify an event attribute that can be used for any number of purposes; some of which are listed below:

- Contact queue or target
- Not Ready reason
- Outbound Campaign name

- Link attribute for Virtual Hold™ and Genesys callbacks

All of the determiners share common functionality and work in exactly the same way.

Event Attributes

The Adapter works with the low-level events received from the Genesys Servers and the configurable determiners are the main tools used to access information from those events. An event is essentially a collection of key/value pairs (attributes) that describe the event and the determiners retrieve information from one of those key/value pairs.

An example event that will be used to demonstrate how the `reason.notReady.determiner` can be configured is shown below. One thing to note is that the value part of the key/value pair can also be a collection of key/value pairs; the attributes can be nested in other attributes. Both the *Extensions* and *Reasons* attributes are key/value collections. However, the *GPlusWFM* prefix does not indicate a collection as it just identifies the extra attributes added to the event by the Adapter.

```
EventAgentNotReady
AgentID: 12345
AgentWorkMode: AuxWork
EventSequenceNumber: 123456789
Extensions.ReasonCode: 5
Extensions.AgentSessionID: ABCDEFGHIJ1234567890KLMNPQR
GPlusWFM.LocalTime: 1234567890000
GPlusWFM.RemoteTime: 1234567890000
GPlusWFM.SourceId: 101
GPlusWFM.SourceName: TServer_A
GPlusWFM.Time: 1234567890000
Reasons.Break: 5
ThisDN: 60000
ThisQueue: 3000
TimeinSecs: 1234567890
TimeinuSecs: 000000
```

Determiner Types

The event attributes can be accessed by one of the three determiner types:

eventAttribute

This determiner type specifies the actual attribute key name when identifying the attribute and returns that attribute's value.

eventAttribute: Extensions.ReasonCode -> 5

eventAttributeKey

This determiner type specifies the attribute name for the collection attribute that contains the actual attribute of interest. The key name for the first attribute in the collection is returned.

eventAttributeKey: Reasons -> Break

eventAttributeValue

This determiner type specifies the attribute name for the collection attribute that contains the actual attribute of interest. The value for the first attribute in the collection is returned.

eventAttributeValue: Reasons -> 5

The eventAttributeKey and eventAttributeValue determiners address a problem that usually arises with NotReady reasons where the attribute key name is descriptive (e.g. Break, Meeting, Lunch etc.) and as a result, there are multiple possible key names that cannot be addressed with a single eventAttribute determiner.

Multiple Determiners

Determiners can also be combined to parse more than one attribute in an event. The Adapter iterates through the list of determiners until a value is returned. The alternatives are formatted as a comma separated list:

eventAttribute: NonExistent, eventAttributeKey: Reasons -> Break



Chapter 5: Setting Up Secure File Transfer

The file transfer protocol that forwards the historical reports to the remote WFM server can be configured to use SSH (Secure Shell) as the underlying network channel. Three options are included in the [historical.ftp](#) section of the application configuration to set up the *Gplus* Adapter as an SSH client. The configuration of the client side of the SSH channel is reasonably simple as most of the complexity is reserved for the configuration of the server side.

The *Gplus* adapter can be configured to utilize ftp over SSH to deliver reports securely. This can be done with either a username/password combination, or with public/private key encryption. The adapter will also perform host verification against the SSH server using the `known_hosts` file or the `knownHostEntry` option.

A description of some of the possible errors due to a misconfigured client or server has been included as [Appendix B: Secure File Transfer Problems](#).

Generating the Private-Public Key Pair

The authentication of the SSH login to the remote server can be carried out using a public-private key pair. The private key is stored on the *Gplus* Adapter server and the public key is stored on the remote NICE-IEX server. When the keys are generated, it is also possible to specify a key passphrase to further limit access to the private key.

The embedded SSH client supports SSH2 RSA keys. The SSH2 protocol does not specify a standard key format and there are key formats that are not compatible with the SSH client used in the Adapter. Keys generated by the PuTTY `gen` key generation tool are not compatible. Keys generated by the OpenSSH `ssh-keygen` tool are compatible. Tools using the following ciphers should be compatible:

- `aes{128,192,256}-{cbc,ctr}`
- `aes{128,256}-gcm@openssh.com`
- `blowfish-{cbc,ctr}`
- `chacha20-poly1305@openssh.com`
- `3des-{cbc,ctr}`
- `twofish{128,192,256}-{cbc,ctr}`
- `twofish-cbc`

- serpent{128,192,256}-{cbc,ctr}
- idea-{cbc,ctr}
- cast128-{cbc,ctr}
- arcfour
- arcfour{128,256}

As mentioned, the private key is stored with the *Gplus* Adapter where the embedded SSH client can access it. This key is usually stored in the config folder of the Adapter installation.

Storing the public key will be specific to the SSH server that has been used on the NICE-IEX server. The public key will have to be placed in a certain folder and the key will have to be registered with the SSH server. Both of these actions are implementation specific and should be fully described in the SSH server documentation.

Host Verification

Note: When upgrading to this Adapter version, ensure the `known_hosts` file is available or the `knownHostEntry` Option is configured.

The `known_hosts` file is located in `~/.ssh/known_hosts` for linux or `%USERPROFILE%\ssh\known_hosts` for Windows and contains a list of entries of trusted public keys that will be used to verify the identity of a host when we try to connect to it. Each host entry is broken into 3 parts: the hostname, the algorithm, and the key, separated by spaces. Entries of this type can be generated using the `ssh-keyscan` command. For example:

```
ssh-keyscan -H <yourHostName>
```

Might display a line of output similar to this:

```
<yourHostName> ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIISnLYall/CYVBcGYW/rqGPKt6
```

The output of the `ssh-keyscan` can also be piped directly to your `known_hosts` file:

```
ssh-keyscan -H <yourHostName> >> ~/.ssh/known_hosts
```

For situations where the `known_hosts` file is inaccessible or can't be updated, host verification can also be performed by using the `knownHostEntry` option. This option accepts a value that represents a known host entry like the ones described above.

Host verification can optionally be disabled by setting the `enableHostVerification` option to `false`, but this is not recommended as it makes the adapter vulnerable to man-in-the-middle attacks.

Client Configuration

The following options in the `historical.ftp` section must be configured or at least considered:

<code>enabled</code>	true or the files are not transferred
<code>enableHostVerification</code>	true to enable SFTP host validation
<code>keyPath</code>	path and name of the private key file
<code>keyPassphrase</code>	pass phrase that allows access to the private key
<code>knownHostEntry</code>	represents an entry in a <code>known_hosts</code> file
<code>remoteHost</code>	host name of the destination server
<code>remotePort</code>	host port on the destination server
<code>secureTransfer</code>	true to use SSH as a secure connection
<code>userName</code>	user registered on the destination server
<code>userPassword</code>	password for the user identified by <code>userName</code>

Server Configuration

The SSH server should support configuration for the authentication modes that it allows and which mode it will attempt first. The two supported options for the Adapter are public key or password. The public key authentication is more secure and more difficult to implement.

SSH Credentials

To connect to the SSH server, we need a username and account set up on the SFTP server with any applicable subdirectories as configured to be used by the adapter. Configuring the SFTP server is beyond the scope of this document as this is dependent on the particular SFTP server being used.

If using public/private keys is the desired configuration, we will need the private key associated with the user's login. If not using keys, skip this step. The adapter expects this file to be in PEM format. This will be the private key that will be used in authentication to the FTP server. Contact your SFTP server administrator for a key file.



Chapter 6: Outbound Voice Campaigns

The *Gplus* Adapter now supports the Outbound Campaign types that did not fit the original inbound voice call model used to define a customer call. This chapter will discuss the Outbound Campaign types and how the Adapter classifies the calls associated with the campaigns.

There are six types of Genesys outbound campaigns that can be monitored by the *Gplus* Adapter:

1. Predictive
2. Progressive
3. Predictive with ASM
4. Progressive with ASM
5. Preview
6. Push Preview

The first four, Predictive (ASM) and Progressive (ASM), have an outbound call routed to the agent after being dialed by a dialer while the last two, Preview and Push Preview, have the outbound dialed from the agent's DN.

The one common requirement is that there must be a campaign name in the event attributes to be parsed by the `event.properties/campaignTarget.determiner`.

Predictive and Progressive Campaigns

Both the Predictive and Progressive campaign types have call flows that start as a dialing event on a Routing Point, queued on a Virtual Queue, diverted to, and then answered by an available agent with an optional ACW interval after the call is released. The adapter does not differentiate between the two Campaign types.

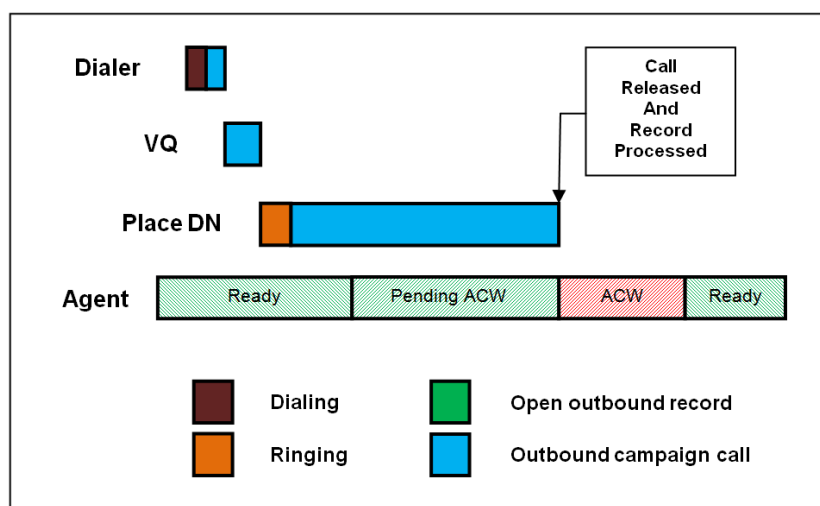
The Adapter attempts to determine the campaign name at two points in the call flow: first by parsing the dialing event associated with the monitored Routing Point and if that

fails, parsing the queued event on the monitored Virtual Queue. It is recommended that the dialing Routing Points be monitored and the Campaign Name is one of the attributes attached to the dialing event. Even if the Campaign Name is parsed in the dialing event, it is still important that the Virtual Queue associated with the targeted Agent Group also be monitored. The time that the call waits in queue for an available agent is still required for the *Contact Queue* report.

The Figures below illustrate the reason for including the [recordProcessedOnReleased](#) Option depending upon the events generated at the conclusion of the call. This Option specifies whether the Outbound Contact Server (OCS) record associated with the call is closed at the conclusion of the call or at a subsequent point marked by a record processed UserEvent.

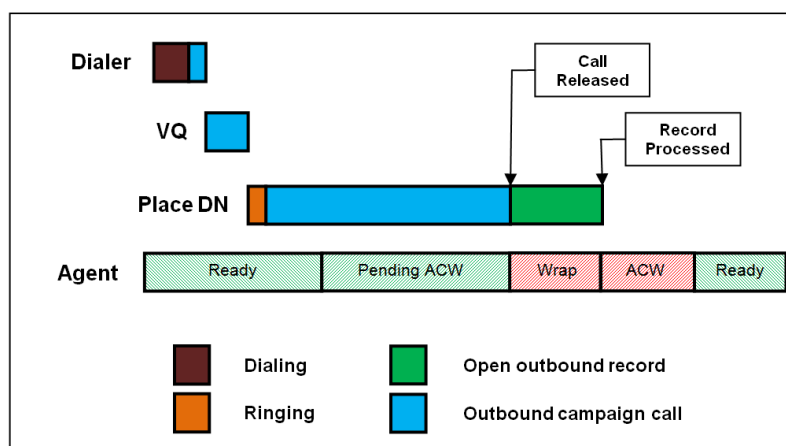
recordProcessedOnReleased = true

The first Figure shows the record being processed at the conclusion of the call. There is no wrap time associated with an open OCS record and any disposition codes must be attached to the call prior to the call being released.



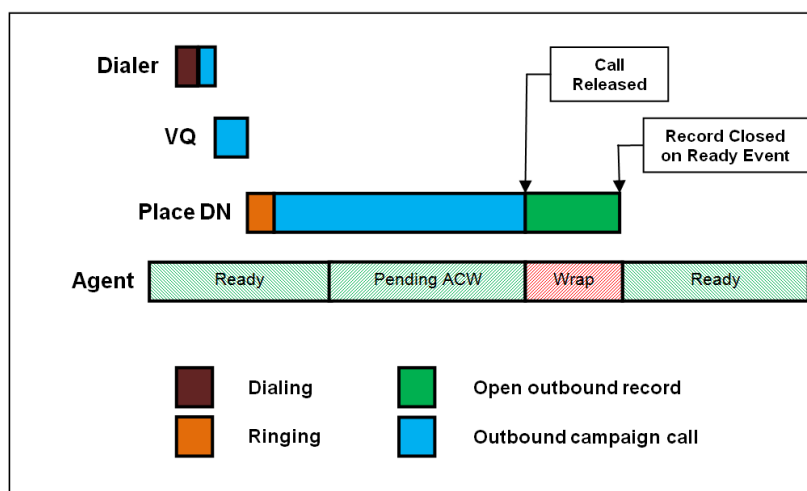
recordProcessedOnReleased = false

The second Figure shows the record being processed after the conclusion of the call. There is wrap time associated with an open OCS record and also ACW time associated with the call that is counted after the record is processed. Both will be counted as AfterCallWork in the reports.



recordProcessedOnReleased = false – Record Closed Prematurely

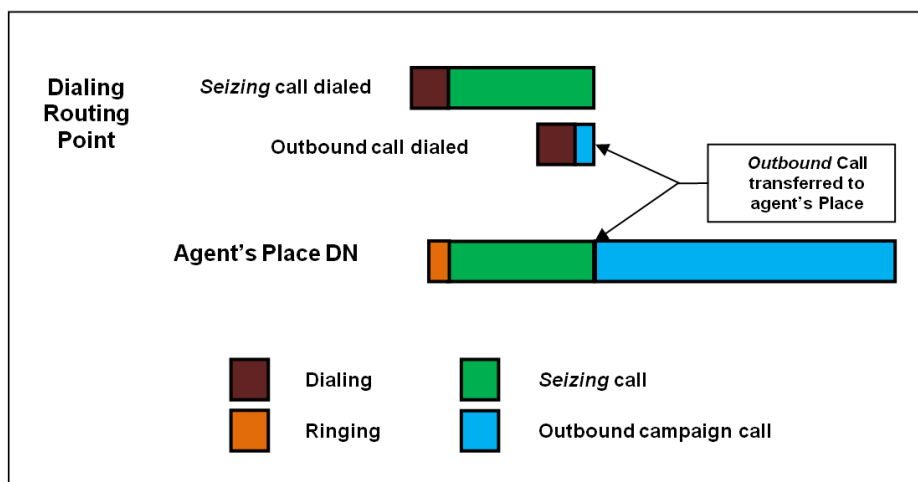
The third Figure shows the record being closed on an error generated by the OCS when the agent goes into a Ready state rather than marking the OCS record as done. Any errors caused by state changes or problems with the OCS will result in the Adapter considering the record closed. There is wrap time associated with an open OCS record up to the agent state change, but any disposition codes attached to the call after the state change are discarded by OCS.



Predictive and Progressive with ASM

Agent Seizing Mode (ASM) adds an extra *seizing* call from the dialer to the start of the Predictive and Progressive call flows. This extra call ensures that an agent is engaged to join the successfully completed outbound call immediately after the campaign call is answered.

The figure below shows the extra activity at the start of the call for the *seizing* modes. After the outbound campaign call is transferred to the agent's Place, the call is tracked in exactly the same manner as a normal Predictive or Progressive call.



The Adapter ignores the contribution of the *seizing* call as long as there are no queued events associated with it. It must be noted that if the *seizing* call is routed to the agent through a monitored VQ, that call and the subsequent outbound campaign call will be counted as inbound customer calls. The simple solution to this situation is to [exclude](#) any VQs that might queue a *seizing* call.

Preview and Push Preview Campaigns

The Preview and Push Preview campaign types are restricted to using the `campaignTarget.determiner` to identify the campaign name. This is the default behavior for the Adapter and the campaign calls will be reported in the *Contact Queue* and *Agent Contact Queue* reports.

Non-Campaign Outbound Calls

If the both the `campaignTarget.determiner` and the `callType.determiner` fail to parse a campaign name or target for an outbound call, the call will not be reported in the *Contact Queue* report. These calls will be regarded as outbound calls but they will be counted in the *Agent System Performance* report as non-customer outbound activity.



Chapter 7: Streams and Filters

“Multiple Adapters”

The initial versions of the Adapter were limited to providing a set of historical reports and one RTA data feed to a single NICE-IEX WFM Server. *Stream* functionality was added to the Adapter with Version 5.1 to allow a single Adapter instance to provide historical reports and RTA data feeds to multiple *Workforce Manager* Servers. *Filters* provide a means to tailor the information provided through each *Stream* by including only the VQs, Places, outbound Campaigns and/or Agents that are to be reported upon through the associated *Stream(s)*. One Adapter instance can essentially be configured as multiple Adapters.

There is nothing in the *Stream* and *Filter* functionality that could not be duplicated with multiple Adapter instances. What *Streams* and *Filters* provide is more effective resource utilization:

- Single connection to Genesys environment (Configuration Server, TServers, SIPServers, and Interaction Servers).
- Single Application configuration object in the Configuration Server.
- Runs in a single Java Virtual Machine (JVM).
- Extra memory required per *Stream* is minimal.

Media and Reports

There are two common *Stream* configurations:

- Consolidating multiple Adapters into a single instance
- Segregating media to their own reports

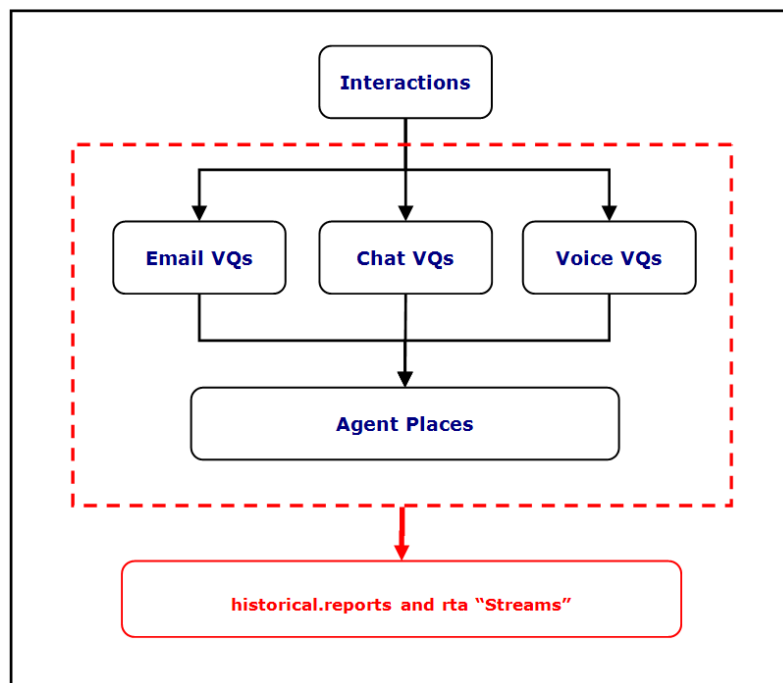
Individual *Filters* are configured as separate Option as described in the [filter:<filtername>](#) Section. A *Filter* defines a set of monitored Agents, Places and Virtual Queues (VQs) that any associated *Stream* will report upon. Only Agents, Places and VQs that are part of the groups configured in the genesys.*Groups Sections are candidates to be

included in a filter. It is not possible to include Agent, Place or VQ groups that are not included in the `genesys.*Groups` Sections.

Streams are associated with *Filters* with a singular reference to the *Filter* name, but multiple *Streams* can be associated with a single *Filter*. The obvious configuration would be a historical and a rta stream "connected" to the same *Filter*. Another configuration might see two historical streams: one *siteBased* and the other not.

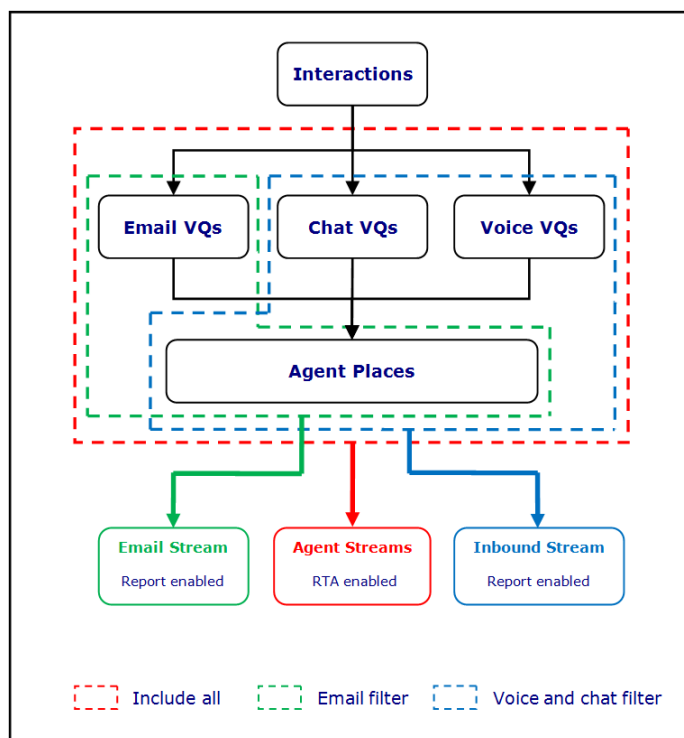
No Filters and Streams

The figure below shows the Adapter configuration without configured *Filters* and *Streams*. There is a mixing of media in the *Contact Queue* report.



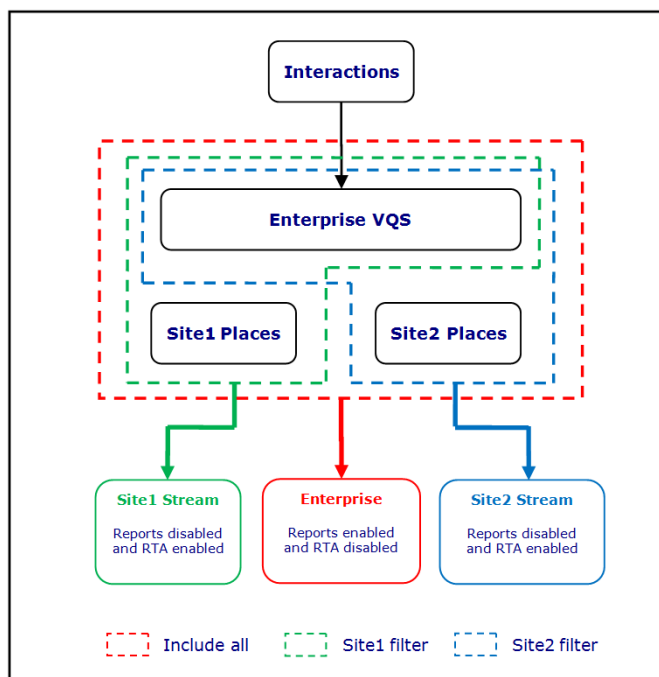
Separated by Media

The figure below shows one example of a solution to the media mix described above. Two *Filters* are configured to separate the email VQs from the chat and voice VQs while still including all of the agents.



Separated by Site

The figure below shows another example where the RTA feeds are separated by Site with the report still including all of the Agent activity.





Chapter 8: Recovery, Restarts, and Reconnects

The Gplus Adapter was designed to run for extended periods with little or no maintenance. However, all of the tracked activity and configuration information is stored in in-memory tables and that data can be lost or left incomplete due to upsets or restarts. The following is a description of the mechanisms used by the Adapter to mitigate the effect of the upsets and restarts.

Recovery

Recovery refers to the processes in place for the Adapter to *recover* after a shutdown and restart. While running, the Gplus Adapter is continuously updating a log file with the events received from the Genesys servers. One of the first steps after a restart is to replay the current day's recovery log and rebuild the internal tables. That data is then used at the end of that day to generate the daily *Agent Productivity* report. While the report will be incomplete, it will include the agent activity prior to the Adapter stopping.

The interval *Forecast* reports will also be generated after the restart but the retained information from the recovery log is not used for those reports. Only the events received after the restart will be processed for these reports. For the most part, the statistics contained in the reports will accurately reflect the activity within an interval or two but there are some cases such as the *Backlog* statistics that might take days or longer to approach the actual number. This occurs because the Adapter is relying on received events to build the statistics. If long lived interactions are not generating events, those interactions are essentially invisible to the Adapter.

Restarts

A restart refers to a shutdown and restart that was not the result of an incident but rather a scheduled downtime for maintenance, an upgrade, or some other planned activity. The Adapter still steps through the recovery log and rebuilds the internal tables but there is an additional step if a graceful shutdown was used to stop the Adapter.

Note: To gracefully shut down the Adapter, right click the adapter in Solution Control Interface or Administrator, select "Graceful Stop" and wait for the adapter to stop.

If the Adapter was stopped using *Graceful Stop* through the Solution Control server, a state dump file is written that contains a list of the queued interactions at the time of the shutdown. The adapter uses this list on restart to restore the backlogged interactions and query the Interaction Server to determine if those interactions are still active. Only those active interactions that are still either queued or retained in a workbin will be recovered. Interactions that are no longer queued are truncated. In some cases, those interactions may still be present but no longer in the queue. There is no method to retrieve the activity that occurred as the interaction transitioned from the queue, so all of that activity is discarded. Recovered interactions will retain their initial queue times and associated target. Interactions in that list that could not be recovered are truncated.

The graceful shutdown list of queued interactions is restricted to Interaction Server interactions only and does not include queued voice calls. This is intended to mitigate the data loss that occurs for long running interactions when there is an adapter restart. There will be a loss of data for any short term active interactions. This would suggest that any planned restarts should be scheduled for periods of little or no activity.

Reconnects

Disconnects and the subsequent reconnects can occur as the result of two different scenarios:

- the disconnected Genesys server had an upset that caused a shutdown and restart, or
- there was a network problem that resulted in the connection being dropped and eventually re-established.

The Adapter cannot differentiate these two based on the received events, so the Adapter response is to treat it as if the Genesys server had undergone an upset and had to be restarted. It turns out that the SIPServers/TServers and the Interaction Server employ different strategies to deal with a restart which, in turn, results in the Adapter treating the disconnects from the two server types differently.

SIPServer/TServer

If a SIPServer or TServer undergoes an upset and must be restarted, all the former voice interactions are removed. The Adapter response is to truncate the records for all voice calls at the start of the disconnect phase whether those calls are queued or being handled by an agent. Again, it must be emphasized that the Adapter response is the same no matter what caused the disconnect and ongoing voice interactions are truncated even if the fault was a loss of the connection for a few seconds due to a network problem.

Interaction Server

The Interaction Server retains the prior active interactions on a restart but returns all of them to the original Interaction Queue. Any active interaction that was being handled by an Agent is no longer being handled.

The Adapter response is to query the Interaction Server on reconnect as to the status of the formerly active interactions. Interactions that are still queued either in an Interaction Queue or workbin are maintained in the Adapter tables and processed accordingly when any future activity occurs. Any other prior interactions are truncated in the Adapter tables and reported as completed.



Appendix A: Time Zone ID List

The list of acceptable values to specify the *Gplus* Adapter timeZone Option mirrors the list of acceptable Time Zone Ids for the Java JVM. For reference the supported option values are listed in the table below. The recommended value is to use one of the Region/Locale formats if possible as they deal with Daylight Savings Time transparently.

ACT	AET	AGT
ART	AST	Africa/Abidjan
Africa/Accra	Africa/Addis_Ababa	Africa/Algiers
Africa/Asmara	Africa/Asmera	Africa/Bamako
Africa/Bangui	Africa/Banjul	Africa/Bissau
Africa/Blantyre	Africa/Brazzaville	Africa/Bujumbura
Africa/Cairo	Africa/Casablanca	Africa/Ceuta
Africa/Conakry	Africa/Dakar	Africa/Dar_es_Salaam
Africa/Djibouti	Africa/Douala	Africa/El_Aaiun
Africa/Freetown	Africa/Gaborone	Africa/Harare
Africa/Johannesburg	Africa/Kampala	Africa/Khartoum
Africa/Kigali	Africa/Kinshasa	Africa/Lagos
Africa/Libreville	Africa/Lome	Africa/Luanda
Africa/Lubumbashi	Africa/Lusaka	Africa/Malabo
Africa/Maputo	Africa/Maseru	Africa/Mbabane
Africa/Mogadishu	Africa/Monrovia	Africa/Nairobi
Africa/Ndjamena	Africa/Niamey	Africa/Nouakchott
Africa/Ouagadougou	Africa/Porto-Novo	Africa/Sao_Tome
Africa/Timbuktu	Africa/Tripoli	Africa/Tunis
Africa/Windhoek	America/Adak	America/Anchorage
America/Anguilla	America/Antigua	America/Araguaina
America/Argentina/Buenos_Aires	America/Argentina/Catamarca	America/Argentina/ComodRivada
America/Argentina/Cordoba	America/Argentina/Jujuy	America/Argentina/La_Rioja
America/Argentina/Mendoza	America/Argentina/Rio_Gallegos	America/Argentina/San_Juan

America/Argentina/Tucuman	America/Argentina/Ushuaia	America/Aruba
America/Asuncion	America/Atikokan	America/Atka
America/Bahia	America/Barbados	America/Belem
America/Belize	America/Blanc-Sablon	America/Boa_Vista
America/Bogota	America/Boise	America/Buenos_Aires
America/Cambridge_Bay	America/Campo_Grande	America/Cancun
America/Caracas	America/Catamarca	America/Cayenne
America/Cayman	America/Chicago	America/Chihuahua
America/Coral_Harbour	America/Cordoba	America/Costa_Rica
America/Cuiaba	America/Curacao	America/Danmarkshavn
America/Dawson	America/Dawson_Creek	America/Denver
America/Detroit	America/Dominica	America/Edmonton
America/Eirunepe	America/El_Salvador	America/Ensenada
America/Fort_Wayne	America/Fortaleza	America/Glace_Bay
America/Godthab	America/Goose_Bay	America/Grand_Turk
America/Grenada	America/Guadeloupe	America/Guatemala
America/Guayaquil	America/Guyana	America/Halifax
America/Havana	America/Hermosillo	America/Indiana/Indianapolis
America/Indiana/Knox	America/Indiana/Marengo	America/Indiana/Petersburg
America/Indiana/Vevay	America/Indiana/Vincennes	America/Indianapolis
America/Inuvik	America/Iqaluit	America/Jamaica
America/Jujuy	America/Juneau	America/Kentucky/Louisville
America/Kentucky/Monticello	America/Knox_IN	America/La_Paz
America/Lima	America/Los_Angeles	America/Louisville
America/Maceio	America/Managua	America/Manaus
America/Martinique	America/Mazatlan	America/Mendoza
America/Menominee	America/Merida	America/Mexico_City
America/Miquelon	America/Moncton	America/Monterrey
America/Montevideo	America/Montreal	America/Montserrat
America/Nassau	America/New_York	America/Nipigon
America/Nome	America/Noronha	America/North_Dakota/Center
America/North_Dakota/New_Sale	America/Panama	America/Pangnirtung
America/Paramaribo	America/Phoenix	America/Port-au-Prince
America/Port_of_Spain	America/Porto_Acre	America/Porto_Velho

America/Puerto_Rico	America/Rainy_River	America/Rankin_Inlet
America/Recife	America/Regina	America/Rio_Branco
America/Rosario	America/Santiago	America/Santo_Domingo
America/Sao_Paulo	America/Scoresbysund	America/Shiprock
America/St_Johns	America/St_Kitts	America/St_Lucia
America/St_Thomas	America/St_Vincent	America/Swift_Current
America/Tegucigalpa	America/Thule	America/Thunder_Bay
America/Tijuana	America/Toronto	America/Tortola
America/Vancouver	America/Virgin	America/Whitehorse
America/Winnipeg	America/Yakutat	America/Yellowknife
Antarctica/Casey	Antarctica/Davis	Antarctica/DumontDURville
Antarctica/Mawson	Antarctica/McMurdo	Antarctica/Palmer
Antarctica/Rothera	Antarctica/South_Pole	Antarctica/Syowa
Antarctica/Vostok	Arctic/Longyearbyen	Asia/Aden
Asia/Almaty	Asia/Amman	Asia/Anadyr
Asia/Aqtai	Asia/Aqtobe	Asia/Ashgabat
Asia/Ashkhabad	Asia/Baghdad	Asia/Bahrain
Asia/Baku	Asia/Bangkok	Asia/Beirut
Asia/Bishkek	Asia/Brunei	Asia/Calcutta
Asia/Choibalsan	Asia/Chongqing	Asia/Chungking
Asia/Colombo	Asia/Dacca	Asia/Damascus
Asia/Dhaka	Asia/Dili	Asia/Dubai
Asia/Dushanbe	Asia/Gaza	Asia/Harbin
Asia/Hong_Kong	Asia/Hovd	Asia/Irkutsk
Asia/Istanbul	Asia/Jakarta	Asia/Jayapura
Asia/Jerusalem	Asia/Kabul	Asia/Kamchatka
Asia/Karachi	Asia/Kashgar	Asia/Katmandu
Asia/Krasnoyarsk	Asia/Kuala_Lumpur	Asia/Kuching
Asia/Kuwait	Asia/Macao	Asia/Macau
Asia/Magadan	Asia/Makassar	Asia/Manila
Asia/Muscat	Asia/Nicosia	Asia/Novosibirsk
Asia/Omsk	Asia/Oral	Asia/Phnom_Penh
Asia/Pontianak	Asia/Pyongyang	Asia/Qatar
Asia/Qyzylorda	Asia/Rangoon	Asia/Riyadh

Asia/Riyadh87	Asia/Riyadh88	Asia/Riyadh89
Asia/Saigon	Asia/Sakhalin	Asia/Samarkand
Asia/Seoul	Asia/Shanghai	Asia/Singapore
Asia/Taipei	Asia/Tashkent	Asia/Tbilisi
Asia/Tehran	Asia/Tel_Aviv	Asia/Thimbu
Asia/Thimphu	Asia/Tokyo	Asia/Ujung_Pandang
Asia/Ulaanbaatar	Asia/Ulan_Bator	Asia/Urumqi
Asia/Vientiane	Asia/Vladivostok	Asia/Yakutsk
Asia/Yekaterinburg	Asia/Yerevan	Atlantic/Azores
Atlantic/Bermuda	Atlantic/Canary	Atlantic/Cape_Verde
Atlantic/Faeroe	Atlantic/Faroe	Atlantic/Jan_Mayen
Atlantic/Madeira	Atlantic/Reykjavik	Atlantic/South_Georgia
Atlantic/St_Helena	Atlantic/Stanley	Australia/ACT
Australia/Adelaide	Australia/Brisbane	Australia/Broken_Hill
Australia/Canberra	Australia/Currie	Australia/Darwin
Australia/Eucla	Australia/Hobart	Australia/LHI
Australia/Lindeman	Australia/Lord_Howe	Australia/Melbourne
Australia/NSW	Australia/North	Australia/Perth
Australia/Queensland	Australia/South	Australia/Sydney
Australia/Tasmania	Australia/Victoria	Australia/West
Australia/Yancowinna	BET	BST
Brazil/Acre	Brazil/DeNoronha	Brazil/East
Brazil/West	CAT	CET
CNT	CST	CST6CDT
CTT	Canada/Atlantic	Canada/Central
Canada/East-Saskatchewan	Canada/Eastern	Canada/Mountain
Canada/Newfoundland	Canada/Pacific	Canada/Saskatchewan
Canada/Yukon	Chile/Continental	Chile/EasterIsland
Cuba	EAT	ECT
EET	EST	EST5EDT
Egypt	Eire	Etc/GMT
Etc/GMT+0	Etc/GMT+1	Etc/GMT+10
Etc/GMT+11	Etc/GMT+12	Etc/GMT+2
Etc/GMT+3	Etc/GMT+4	Etc/GMT+5

Etc/GMT+6	Etc/GMT+7	Etc/GMT+8
Etc/GMT+9	Etc/GMT-0	Etc/GMT-1
Etc/GMT-10	Etc/GMT-11	Etc/GMT-12
Etc/GMT-13	Etc/GMT-14	Etc/GMT-2
Etc/GMT-3	Etc/GMT-4	Etc/GMT-5
Etc/GMT-6	Etc/GMT-7	Etc/GMT-8
Etc/GMT-9	Etc/GMT0	Etc/Greenwich
Etc/UCT	Etc/UTC	Etc/Universal
Etc/Zulu	Europe/Amsterdam	Europe/Andorra
Europe/Athens	Europe/Belfast	Europe/Belgrade
Europe/Berlin	Europe/Bratislava	Europe/Brussels
Europe/Bucharest	Europe/Budapest	Europe/Chisinau
Europe/Copenhagen	Europe/Dublin	Europe/Gibraltar
Europe/Guernsey	Europe/Helsinki	Europe/Isle_of_Man
Europe/Istanbul	Europe/Jersey	Europe/Kaliningrad
Europe/Kiev	Europe/Lisbon	Europe/Ljubljana
Europe/London	Europe/Luxembourg	Europe/Madrid
Europe/Malta	Europe/Mariehamn	Europe/Minsk
Europe/Monaco	Europe/Moscow	Europe/Nicosia
Europe/Oslo	Europe/Paris	Europe/Podgorica
Europe/Prague	Europe/Riga	Europe/Rome
Europe/Samara	Europe/San_Marino	Europe/Sarajevo
Europe/Simferopol	Europe/Skopje	Europe/Sofia
Europe/Stockholm	Europe/Tallinn	Europe/Tirane
Europe/Tiraspol	Europe/Uzhgorod	Europe/Vaduz
Europe/Vatican	Europe/Vienna	Europe/Vilnius
Europe/Volgograd	Europe/Warsaw	Europe/Zagreb
Europe/Zaporozhye	Europe/Zurich	GB
GB-Eire	GMT	GMT0
Greenwich	HST	Hongkong
IET	IST	Iceland
Indian/Antananarivo	Indian/Chagos	Indian/Christmas
Indian/Cocos	Indian/Comoro	Indian/Kerguelen
Indian/Mahe	Indian/Maldives	Indian/Mauritius

Appendix A: Time Zone ID List

Indian/Mayotte	Indian/Reunion	Iran
Israel	JST	Jamaica
Japan	Kwajalein	Libya
MET	MIT	MST
MST7MDT	Mexico/BajaNorte	Mexico/BajaSur
Mexico/General	Mideast/Riyadh87	Mideast/Riyadh88
Mideast/Riyadh89	NET	NST
NZ	NZ-CHAT	Navajo
PLT	PNT	PRC
PRT	PST	PST8PDT
Pacific/Apia	Pacific/Auckland	Pacific/Chatham
Pacific/Easter	Pacific/Efate	Pacific/Enderbury
Pacific/Fakaofo	Pacific/Fiji	Pacific/Funafuti
Pacific/Galapagos	Pacific/Gambier	Pacific/Guadalcanal
Pacific/Guam	Pacific/Honolulu	Pacific/Johnston
Pacific/Kiritimati	Pacific/Kosrae	Pacific/Kwajalein
Pacific/Majuro	Pacific/Marquesas	Pacific/Midway
Pacific/Nauru	Pacific/Niue	Pacific/Norfolk
Pacific/Noumea	Pacific/Pago_Pago	Pacific/Palau
Pacific/Pitcairn	Pacific/Ponape	Pacific/Port_Moresby
Pacific/Rarotonga	Pacific/Saipan	Pacific/Samoa
Pacific/Tahiti	Pacific/Tarawa	Pacific/Tongatapu
Pacific/Truk	Pacific/Wake	Pacific/Wallis
Pacific/Yap	Poland	Portugal
ROK	SST	Singapore
Turkey	UCT	US/Alaska
US/Aleutian	US/Arizona	US/Central
US/East-Indiana	US/Eastern	US/Hawaii
US/Indiana-Starke	US/Michigan	US/Mountain
US/Pacific	US/Pacific-New	US/Samoa
UTC	Universal	VST
W-SU	WET	Zulu



Appendix B: Secure File Transfer Problems

Below are examples of what the logging should look like, and what logging indicates a problem. Each line of logging is prefaced with something similar to the following:

```
09 Mar 2022 17:47:03,448 85580 [FtpTaskQueue] INFO
    com.ariasolutions.iconnect.historical.transfer.TransferManager [] –
```

Successful connection

Connecting successfully using public/private key should look something like:

```
Transferring files to WFM: [ftp\reports\030922.1745]
<yourDirectory>\ftp\reports\030922.1745 successfully transferred 1 of 1 files sent to WFM FTP server
Backing up file '<yourDirectory>\ftp\reports\Historical-030922.1746 to
    <yourDirectory>\ftp\reportsBackup\030922.1745
FTP task completed
```

Misnamed or missing key file

A misnamed or missing key file will look like:

```
Transferring files to WFM: [ftp\reports\Historical-031022.1118, ftp\reports\rta.txt, ftp\reports\rta.vendor.txt]
Error occurred while uploading reports to WFM FTP server
com.ariasolutions.iconnect.historical.transfer.FtpException: Error occurred while attempting to send files
C:\Users\<yourUser>\.ssh\testKey2 (The system cannot find the file specified)
at com.ariasolutions.iconnect.historical.transfer.SftpTransferAgent.transferFiles(SftpTransferAgent.java:309)
    ~[main/:?]
at com.ariasolutions.iconnect.historical.transfer.TransferManager.transferFiles(TransferManager.java:354)
    [main/:?]
at com.ariasolutions.iconnect.historical.transfer.TransferManager$1.run(TransferManager.java:207) [main/:?]
at com.ariasolutions.utils.concurrent.TaskFuture.run(TaskFuture.java:80) [main/:?]
at com.ariasolutions.utils.concurrent.TaskQueue.run(TaskQueue.java:41) [main/:?]
at java.lang.Thread.run(Thread.java:834) [?:?]
Caused by: java.io.FileNotFoundException: C:\Users\<yourUser>\.ssh\missingTestKey (The system cannot find
    the file specified)
at java.io.FileInputStream.open0(Native Method) ~[?:?]
at java.io.FileInputStream.open(FileInputStream.java:219) ~[?:?]
```

```

at java.io.FileInputStream.<init>(FileInputStream.java:157) ~[?:?]
at java.io.FileReader.<init>(FileReader.java:75) ~[?:?]
at net.schmizz.sshj.userauth.keyprovider.KeyProviderUtil.detectKeyFileFormat(KeyProviderUtil.java:36) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.SSHClient.loadKeys(SSHClient.java:559) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.SSHClient.loadKeys(SSHClient.java:514) ~[sshj-0.32.0.jar:?]
at com.ariasolutions.iconnect.historical.transfer.SftpTransferAgent.transferFiles(SftpTransferAgent.java:268)
~[main/:?]
... 5 more
Of 3 files prepared, 3 files were not sent to the WFM server
0 of 3 files sent to WFM FTP server
FTP task completed

```

Ftp server's host key not in known_hosts file

If the ftp server's host key is not in our known_hosts file (located in ~/.ssh/ or <C:\Users\<yourUser>\.ssh\ by default) and is also not in the knownHostEntry option:

```

Transferring files to WFM: [ftp\reports\Historical-031022.1118]
Error occured while uploading reports to WFM FTP server
com.ariasolutions.iconnect.historical.transfer.FtpException: Error occured while attempting to send files
Could not verify `ssh-ed25519` host key with fingerprint `<yourServerFingerprintHere>` for `w2k12genlab` on
port 22
at com.ariasolutions.iconnect.historical.transfer.SftpTransferAgent.transferFiles(SftpTransferAgent.java:309)
~[main/:?]
at com.ariasolutions.iconnect.historical.transfer.TransferManager.transferFiles(TransferManager.java:354)
[main/:?]
at com.ariasolutions.iconnect.historical.transfer.TransferManager$1.run(TransferManager.java:207) [main/:?]
at com.ariasolutions.utils.concurrent.TaskFuture.run(TaskFuture.java:80) [main/:?]
at com.ariasolutions.utils.concurrent.TaskQueue.run(TaskQueue.java:41) [main/:?]
at java.lang.Thread.run(Thread.java:834) [?:?]
Caused by: net.schmizz.sshj.transport.TransportException: Could not verify `ssh-ed25519` host key with
fingerprint `<yourServerFingerprintHere>` for `<yourHost>` on port 22
at net.schmizz.sshj.transport.KeyExchanger.verifyHost(KeyExchanger.java:220) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.transport.KeyExchanger.handle(KeyExchanger.java:390) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.transport.TransportImpl.handle(TransportImpl.java:474) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.transport.Decoder.decode(Decoder.java:113) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.transport.Decoder.received(Decoder.java:200) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.transport.Reader.run(Reader.java:60) ~[sshj-0.32.0.jar:?]
Of 1 files prepared, 1 files were not sent to the WFM server
0 of 1 files sent to WFM FTP server
FTP task completed

```

Local source directory misconfigured

If the local source directory is misconfigured, all you will see is:

FTP source directory does not exist: C:\Users\rmccarthy.CORP\git\g-wfm5\GPlusWFM\ftp\reports_wrong

Unreachable / misspelled host

If you have an unreachable (or misspelled) host, you will see:

```
Transferring files to WFM: [ftp\reports\031022.1115, ftp\reports\031022.1130]
Error occurred while uploading reports to WFM FTP server
com.ariasolutions.icconnect.historical.transfer.FtpException: Error occurred while attempting to send files
<badHostNameHere>
at com.ariasolutions.icconnect.historical.transfer.SftpTransferAgent.transferFiles(SftpTransferAgent.java:309)
    ~[main/:?]
at com.ariasolutions.icconnect.historical.transfer.TransferManager.transferFiles(TransferManager.java:354)
    [main/:?]
at com.ariasolutions.icconnect.historical.transfer.TransferManager$1.run(TransferManager.java:207) [main/:?]
at com.ariasolutions.utils.concurrent.TaskFuture.run(TaskFuture.java:80) [main/:?]
at com.ariasolutions.utils.concurrent.TaskQueue.run(TaskQueue.java:41) [main/:?]
at java.lang.Thread.run(Thread.java:834) [?:?]
Caused by: java.net.UnknownHostException: <badHostNameHere>
at java.net.AbstractPlainSocketImpl.connect(AbstractPlainSocketImpl.java:220) ~[?:?]
at java.net.SocksSocketImpl.connect(SocksSocketImpl.java:403) ~[?:?]
at java.net.Socket.connect(Socket.java:608) ~[?:?]
at net.schmizz.sshj.SocketClient.connect(SocketClient.java:138) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.SocketClient.connect(SocketClient.java:128) ~[sshj-0.32.0.jar:?]
at com.ariasolutions.icconnect.historical.transfer.SftpTransferAgent.transferFiles(SftpTransferAgent.java:263)
    ~[main/:?]
... 5 more
Of 2 files prepared, 2 files were not sent to the WFM server
0 of 2 files sent to WFM FTP server
FTP task completed
```

Missing remote directory

A missing remote directory (**Note:** directories are not created, they must already exist) will appear to be successful, but the reports will not be in the destination folder as expected. In this case, the destination directory ‘wfmReports_not’ does not exist. Instead of finding the reports in that sub-directory, the parent directory now has a file named ‘wfmReports_not’, which contains the contents of the last report:

```
Transferring files to WFM: [ftp\reports\031022.1130, ftp\reports\031022.1145]
<installDirectory>\ftp\reports\031022.1130 successfully transferred
<installDirectory>\ftp\reports\031022.1145 successfully transferred
2 of 2 files sent to WFM FTP server
Backing up file '<installDirectory>\ftp\reports\031022.1130' to
    <installDirectory>\ftp\reportsBackup\031022.1130
Backing up file '<installDirectory>\ftp\reports\031022.1145' to
    <installDirectory>\ftp\reportsBackup\031022.1145
FTP task completed
```

Username misspelled / incorrect password

In the following example, the username was misspelled in the options, but the same results would be seen for an incorrect password:

```
Transferring files to WFM: [ftp\reports\031022.1215]
Error occurred while uploading reports to WFM FTP server
com.ariasolutions.icconnect.historical.transfer.FtpException: Error occurred while attempting to send files
Exhausted available authentication methods
at com.ariasolutions.icconnect.historical.transfer.SftpTransferAgent.transferFiles(SftpTransferAgent.java:309)
    ~[main/:?]
at com.ariasolutions.icconnect.historical.transfer.TransferManager.transferFiles(TransferManager.java:354)
    [main/:?]
at com.ariasolutions.icconnect.historical.transfer.TransferManager$1.run(TransferManager.java:207) [main/:?]
at com.ariasolutions.utils.concurrent.TaskFuture.run(TaskFuture.java:80) [main/:?]
at com.ariasolutions.utils.concurrent.TaskQueue.run(TaskQueue.java:41) [main/:?]
at java.lang.Thread.run(Thread.java:834) [?:?]
Caused by: net.schmizz.sshj.userauth.UserAuthException: Exhausted available authentication methods
at net.schmizz.sshj.SSHClient.auth(SSHClient.java:227) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.SSHClient.authPublicKey(SSHClient.java:342) ~[sshj-0.32.0.jar:?]
at net.schmizz.sshj.SSHClient.authPublicKey(SSHClient.java:360) ~[sshj-0.32.0.jar:?]
at com.ariasolutions.icconnect.historical.transfer.SftpTransferAgent.transferFiles(SftpTransferAgent.java:269)
    ~[main/:?]
... 5 more
Of 1 files prepared, 1 files were not sent to the WFM server
0 of 1 files sent to WFM FTP server
FTP task completed
```



Appendix C: Managing Windows Service

prunmgr Application

The Apache Commons™ *daemon*™ project also provides a Windows GUI application for managing an installed Service without having to resort to editing Register parameters or reinstalling the Service. This *prunmgr* application will be discussed below with respect to the *Gplus* Adapter installation and there is additional information available on the [Apache website](#). The application is contained in the wrappers folder of the Adapter installation and is started with the following:

```
prunmgr.exe //ES//GPlusAdapterServiceName
```

Any changes to the configuration can be established by stopping and restarting the Service after applying the changes. The options and parameters appropriate to the Adapter Service wrapper are discussed below.

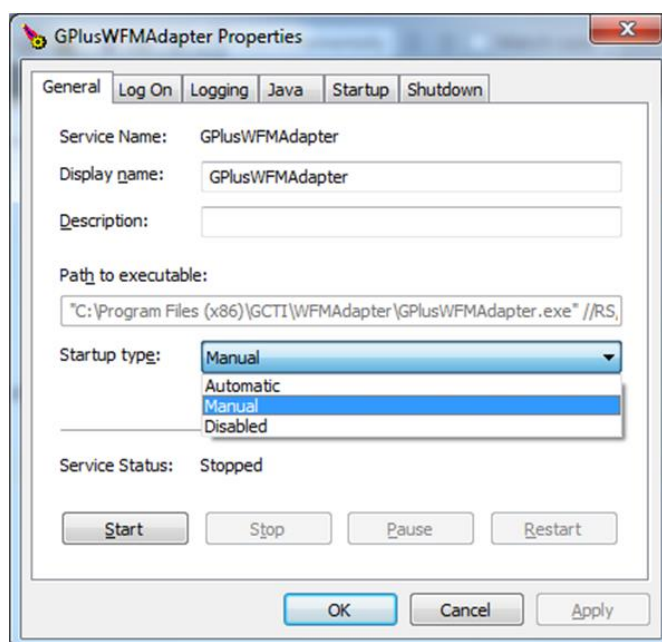
General Tab

Startup type:

This field should be set to *Automatic* so that the Service will restart if the host server is restarted.

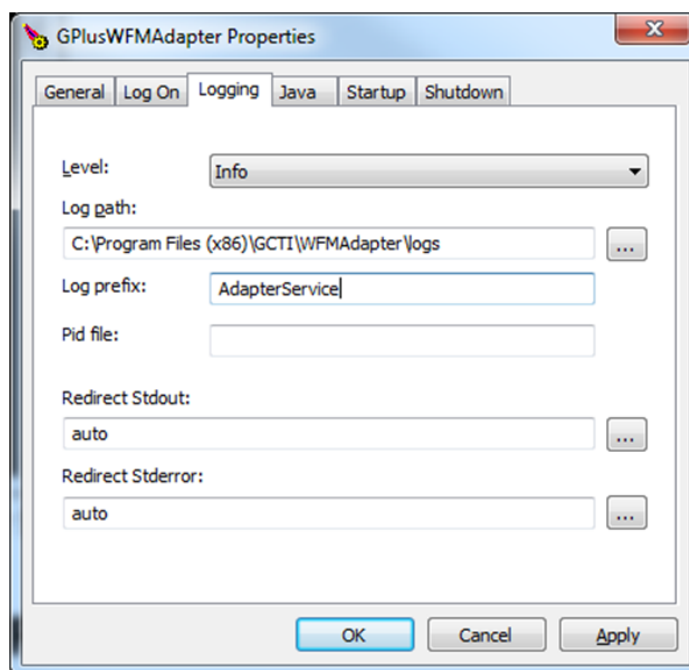
Start, Stop and Restart Buttons

The Service can be started, stopped, and restarted. Pausing the Service would have indeterminate results that would probably warrant a restart.



Logging Tab

It is possible to log the Adapter Service which is helpful when encountering problems with getting the Service properly installed and running.



Log prefix:

Specifying this parameter will enable logging to the *Log path* folder with the prefix as the start of the log name combined with a .YEAR-MONTH-DAY.log suffix.

Log path:

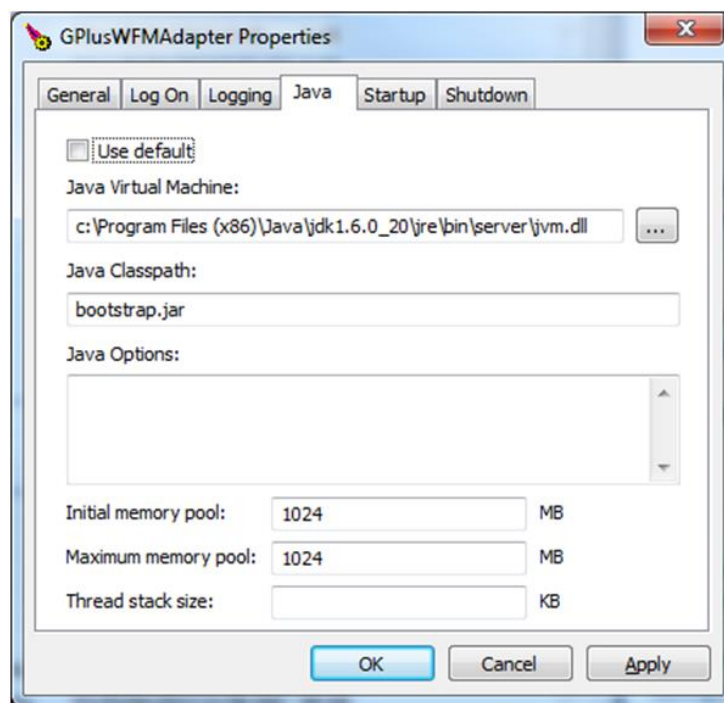
The default is the Adapter's logs folder, but this parameter can be set to another folder if required.

Redirect Stdout: and Redirect Stderr:

Both stdout and stderr can be redirected to files in the *Log path* folder if there is a need to debug JVM problems that are not logged in the regular adapter logs. Both are set to auto in the svcinstall.bat file and that enables the logging with the default file names.

Java Tab

The *Java* tab configures the operating parameters for the Java Virtual Machine associated with the Service. The default configuration is shown below with the exception of the *Java Virtual Machine* parameter that is installation specific.



Java Virtual Machine:

This parameter identifies the path to the `jvm.dll` file that will be linked by the Service wrapper to host the Adapter application. The `.dll` file should be a “server” version as described in [Chapter 2](#).

Java Classpath:

This parameter must not be modified from the default, `bootstrap.jar`.

Initial memory pool:

This parameter specifies the amount of system memory that will be allocated to the JVM at startup. This parameter is set to the same amount as the *Maximum memory pool* so that all of the required memory is requested at startup and if the system cannot provide it at that time, the JVM shuts down. This avoids memory problems arising hours after startup because there is insufficient system memory.

Default = 4096 MB

Maximum memory pool:

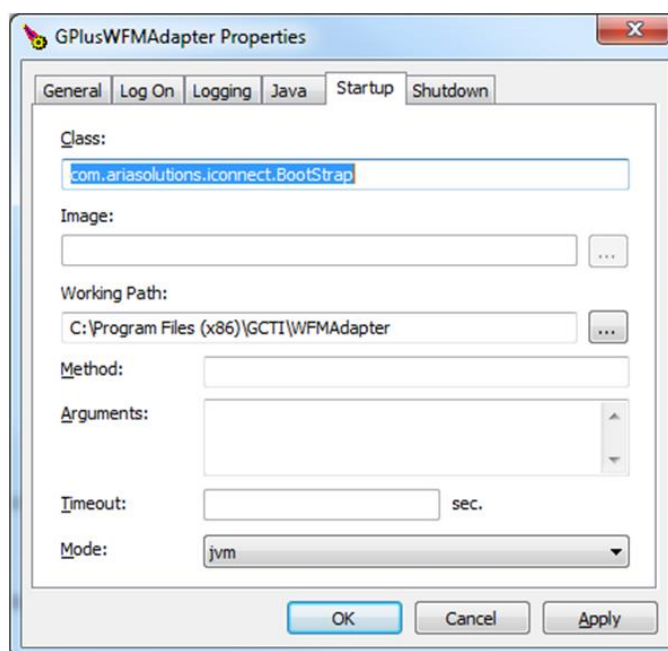
This parameter specifies the maximum amount of system memory that will be requested by the JVM.

Default = 4096 MB

Java Options:

This section allows any number of parameters to be added to the JVM configuration. Presently, the parameters that might be added are related to configuring the memory Garbage Collection (GC) and adding logging of the GC activity.

Startup Tab



Class:

This field specifies the Java class that contains the main method that will be invoked at startup. This cannot be changed.

Default = com.ariasolutions.iconnect.BootStrap

Working Path:

This field specifies the root folder for the Adapter installation. It is dependent upon the *Path to executable* field on the *General Tab* and should not be changed.

Mode:

The proper operation of the Service wrapper is dependent upon this field remaining set to jvm.



Appendix D: Log Files

Log Files

Depending upon the logging configuration discussed [above](#), there may be more than one set of logs contained in the logging folder. This chapter is concerned with the event logs that also include logging of state changes for Agents and media interactions. There will typically be two versions of the event logs contained in the logs folder: ROLLING and GZIP. The actual names of the logs are specified in the log4j2.xml file but unless they have been changed there, the log files will have the prefix of GPlusAdapterWFM.

The default size for each of the ROLLING logs is 50 MB and they will be rolling over quickly in a large call center. These logs give a snapshot of activity at the time that they are checked but may not be suitable for tracking down problems with the adapter if they cover too short an interval. The most recent of the log files will have a name starting with the prefix described above and then the .log extension. Earlier logs will have numbers added to the extension with .log.1 being the next most recent and .log.2 being earlier again.

Each of the zipped logs contain exactly the same information as the ROLLING logs but summarize an hour of activity and the time at the start of that hour is contained in the log file name:

GPlusAdapterWFM.log.2012.01.01-16.00.00.gz

The time field will always be an even hour except for the log created at startup. That file will have a time stamp indicating when the logging started:

GPlusAdapterWFM.log.2012.01.01-15.50.00.gz

This log will contain useful startup information not available in the other logs. If the Adapter has been running for an extended period of time, the startup log will have been removed as older zipped logs are also deleted to prevent filling up the disk storage.

Description of Fields

The log files are intended as an aid in debugging the application when problems do occur. The files have a simple format that is described below using the first line of the log file as it starts up as an example.

01 Jan 2012 12:00:02,000 – 2000 [main] INFO com.ariasolutions.iconnect.Application -
Launching GPlus Adapter

1. 01 Jan 2012 12:00:02,000
2. 2000
3. [main]
4. INFO
5. com.ariasolutions.iconnect.Application
6. Launching GPlus Adapter

The **first** field shows the date and time that the event or update occurred.

The **second** field shows the number of milliseconds that the application has been running.

The **third** field is the thread name that produced the message.

The **fourth** field is the logging level that the message has been assigned.

The **fifth** field is the Java class (and stream) that has generated the message.

The **sixth** field is the description of what has occurred to generate the message.

Logging Threshold and Messages

The [logging threshold](#) has more relevance as the types of messages that are generated by the Adapter have been rationalized. The info mode tracks significant events such as report generation and TServer connections but is restricted to logging agent activity by the changes in RTA states. The debug mode adds more detail to the agent activity as well as logging the progress of interactions (voice calls, emails etc.) from monitored queues to the agent desktops. The trace mode provides the most detail with full logging of the incoming events and includes the PlaceListenerLogger and the QueueListenerLogger discussed below.

Both the info and debug modes result in log files that are significantly smaller than those generated with the trace mode.

info mode example

The following is an example of what is logged when the logThreshold is set to info. It shows the messages generated when an agent receives an inbound customer call.

01 Jan 2014 12:01:00,000 90000 [main] INFO com.ariasolutions.iconnect.rta.StateHolder
Stream1 - StateHolder.notifyStateChange: msmith: StateInfo(CallInbound, Mon Jan 01 12:01:00
MDT 2014, null, 2500, VoiceSales_VQ,)

Just the single line is generated showing the change in the agent's state. It should be noted that the stream name of Stream1 has been added to the class name that generated the message. If the message was not associated with a configured stream, then a stream name of default would have been logged.

debug mode example

As can be seen, the debug mode adds call tracking.

```
01 Jan 2014 12:00:45,000 75000 [main] DEBUG
    com.ariasolutions.iconnect.eventprocessing.VoiceEventProcessor - Call 00b102420f4e2002
    placed in Queue VoiceSales_VQ
01 Jan 2014 12:00:55,000 85000 [main] DEBUG
    com.ariasolutions.iconnect.eventprocessing.VoiceEventProcessor - Call 00b102420f4e2002
    ringing on Place Place_2500 (Agent msmith)
01 Jan 2014 12:00:59,000 89000 [main] INFO com.ariasolutions.iconnect.rta.StateHolder
    default - StateHolder.notifyStateChange: msmith: StateInfo(CallInbound, Mon Jan 01
    12:00:59 MDT 2014, null, 2500, VoiceSales_VQ, )
01 Jan 2014 12:01:00,000 90000 [main] DEBUG
    com.ariasolutions.iconnect.eventprocessing.VoiceEventProcessor - Call 00b102420f4e2002
    established on Place Place_2500 (Agent msmith) Pegged to Queue VoiceSales_VQ
```

trace mode

The trace mode logging for the above example would be several pages long as the full events are logged from the initial queued event to the EventEstablished on the agent's desktop. The extra logging is discussed below in the next three sections.

Events and Server Identification

Events are logged just as they are received from the connected Genesys Server: Interaction Server, SIPServer or TServer. Configuration Server events are logged but not with the detail described below. The following shows a TServer event generated when an Agent answered an incoming call:

```
24 May 2012 21:59:37,183 - 168858 ... - Received event from 'TServer1'
EventEstablished
ANI: 4032500001
AgentID: 200000
CallState: 0
CallType: Inbound
ConnID: 000000000005c85e
EventSequenceNumber: 112318
GPlusWFM.LocalTime: 1337885977167
GPlusWFM.RemoteTime: 1337885977201
GPlusWFM.SourceId: 133
```

```
GPlusWFM.SourceName: TServer1
GPlusWFM.Time: 1337885977201
OtherDN: 4032500002
OtherDNRole: RoleOrigination
ThisDN: Test_2000
ThisDNRole: RoleDestination
ThisTrunk: 9999
TimeinSecs: 1337885977
TimeinuSecs: 201000
UserData.SampleBinary1: [B@1c668df
UserData.SampleInt1: 1
UserData.inner.inner sample: sample
UserData.inner.inner int: 3
UserData.SampleString1: Sample
```

Some of the enumerated event attributes such as `CallType` are replaced with the value name to make the logged event easier to read. The adapter also adds attributes with the `GPlusWFM` prefix for the Adapter's host time (`GPlusWFM.LocalTime`) and the Genesys Server time (`GPlusWFM.RemoteTime`). The `GPlusWFM.Time` attribute indicates which of the two time sources the Adapter is actually using for the event time as selected by the [application/useLocalTime](#) configuration option.

The `GPlusWFM.SourceId` and `GPlusWFM.SourceName` for the originating Genesys Server are also included.

PlaceListenerLogger

Prior to the event listed above, the Adapter added some state change notifications that were associated with the `EventEstablished`. The first notification is logged by the `PlaceListenerLogger` and indicates the answering Agent's state:

```
24 May 2012 21:59:37,183 - 168858 ... PlaceListenerLogger - PlaceState updated to:
PlaceState for Place: [PlaceName: Place_2500001, site: Site_1]
LoginSession: [LoginID: 200000, AgentUsername: Agent_200000, DoNotDisturb: off]
MediaSession: [MediaType: voice, ReadyState: Ready]
Interaction: [ID: 000000000005c85e, Target: VQ_Test]
```

Although the receiving agent was not identified in the `EventEstablished` attributes, the `PlaceListenerLogger` has identified the Place and its associated Site for the logged in agent. The agent is indicated as in a Ready state for voice calls and is presently handling one call that was queued on a monitored VQ. If the agent was logged in to additional media (email, chat etc.), there would be additional media sessions listed as well as any ongoing interactions associated with those sessions.

Note: The absence of any of the above information (with the exception of Site) would indicate a configuration problem as there was insufficient information to create and maintain the required internal associations.

QueueListenerLogger

The second state change notification associated with the EventEstablished was generated by the QueueListenerLogger which logs the state changes for the incoming call. There is not a lot of detail other than logging the target with which the call had been associated and logging the state of the call in generic terms that apply to routing of any media:

```
24 May 2012 21:59:37,183 - 168858 ... QueueListenerLogger - Interaction 'answered':
    QueuedInteraction [id=000000000005c85e, target=VQ_4847]
```

There are six available states for a queued interaction and they are sufficient to indicate the part of a "call flow" the interaction had reached when the event was generated:

- offered
- abandoned
- expired
- answered
- released
- exitQueue

The QueueListenerLogger had already been logging the interaction state of the call prior to the agent answering it:

```
24 May 2012 21:59:33,613 - 165288 ... QueueListenerLogger - Interaction 'offered':
    QueuedInteraction [id=000000000005c85e, target=VQ_4847]
24 May 2012 21:59:33,613 - 165288 ... - Received event from 'TServer2'
EventQueued
  CallType: Inbound
  ConnID: 000000000005c85e
  EventSequenceNumber: 112574
  GPlusWFM.LocalTime: 1337885973613
  GPlusWFM.RemoteTime: 1337885973638
  GPlusWFM.SourceId: 135
  GPlusWFM.SourceName: TServer2
  GPlusWFM.Time: 1337885973638
  OtherDN: 4032350227
  OtherDNRole: RoleOrigination
  ThisDN: VQ_4847
  ThisDNRole: RoleDestination
  ThisQueue: VQ_4847
```

TimeinSecs: 1337885973

TimeinuSecs: 638000

Note: The QueueListenerLogger only logs calls or interactions that the adapter has identified as a "customer call". If the logger has not identified an interaction as 'offered' prior to the first queued event for the interaction, then none of the activity for that interaction will be associated with a VQ or target.



Appendix E: Windows Installation Script

Files

The Windows installation script retains the configuration parameters in two files:

- `config/jvm.properties`
contains the location of the `jvm.dll` and the memory setting required to install the Adapter as a Windows Service
- `config/GPlusWFM.properties`
contains the Application name and the Configuration Server connection parameters
the Application name is required for the Service installation
the connection parameters are required for the Adapter to run but not for the Service installation

A third file, `config/product.properties`, contains the WFM vendor, NICE, as well as the version number for the specific release that has been installed. This file is not modified by the installation script, but the vendor and release version are displayed.

The Adapter also displays the relevant contents of the license file.

Invoking the Installation Script

It is important that the script execute with Administrator privileges so that the Windows service can be installed and the properties files modified. This can be accomplished by right clicking on the `windows_install.bat` file and selecting *Run as administrator*.

Initial Screen and Status Display

There are three main menus that will be displayed depending on the context of the Adapter installation:

- Initial Tasks – `jvm.dll` not set
- Installation Tasks – adapter service not installed

- Management Tasks – adapter service installed

The first, *Initial Tasks*, will appear until the path to the `jvm.dll` file has been set at which time the second menu will be used.

```

Gplus WFM Adapter - IEX
5.4.001

CME Application name      = GplusWFM_Adapter
Configuration Server Host = 
Configuration Server Port = 2020

JVM path = not set

JVM memory = 1024 MB

localhost name =

License app name = Any
License host name = Testing
Expiry date      = 2014.Apr.15
License type     = Temporary

Initial Tasks - jvm.dll not set

1. Set the Application Name
2. Set the JVM parameters
3. Set the Config Server connection parameters
4. Quit

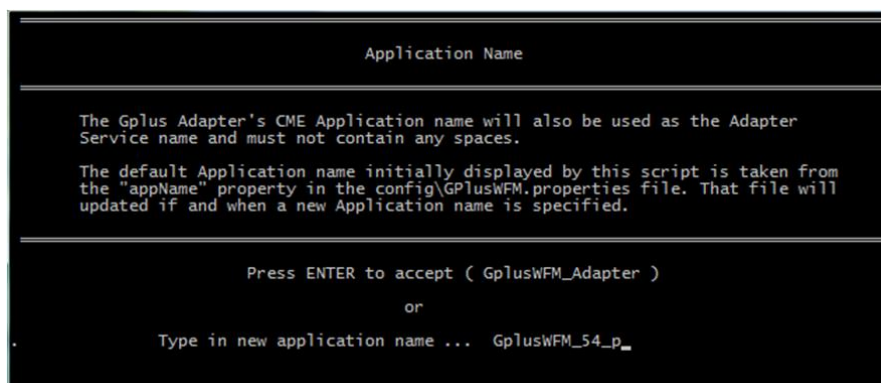
Select a menu item ...

```

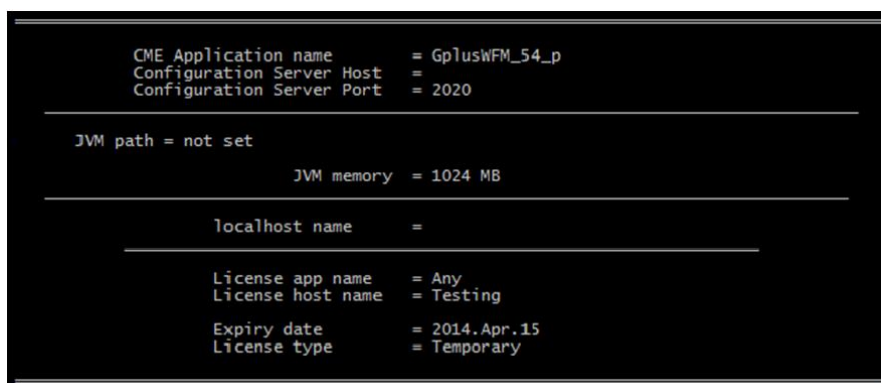
The screenshot above shows the default settings from the properties files as well as the parameters for the temporary license provided with the Adapter release.

Set the Application name

The Application name should be set first. This name must match the name of the *Gplus* Adapter's Application object in the Configuration Server. The name will be used for the name of the installed service and the renamed `prunsrv.exe` (Java service wrapper) that will be copied to the Adapter's main folder.

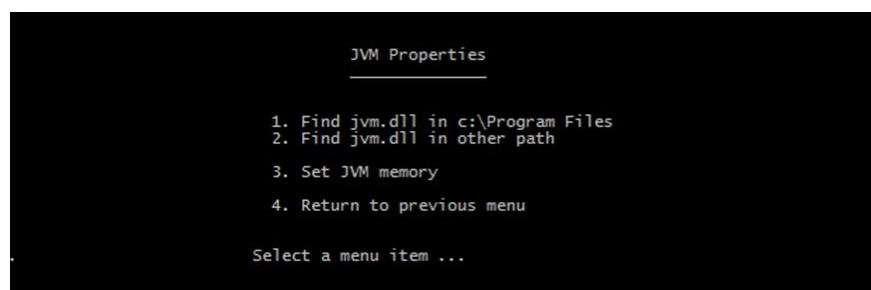


The new name is immediately written to the GplusWFM.properties file and will be displayed in the status section as shown below:



Set the JVM parameters

This menu item brings up a second menu that allows the Java Runtime Environment to be configured. Once this has been completed, the Adapter can be installed as a service.



There are two different menu options for finding the path to the jvm.dll file. The first just looks in the default locations that the Oracle installation application will place a 32 bit or 64-bit version while the second option allows a path to be set with all of the subfolders being searched.

Default JVM Locations

The first menu selection will list all of the jvm.dll files found in the default installation locations. Both 32 bit and 64-bit JVM versions will be listed if present on a 64-bit OS. The Adapter will run in either.

```
jvm.dll in a subfolder of c:\Program Files or c:\Program Files (x86)

The JVM locations listed below are based on the default installation paths
for the expected Oracle JDK installations.

The list is comprised of the server versions of the jvm.dll file found in
the subfolders of the c:\Program Files or C:\Program Files (x86) folders.
The subfolders of both are checked on a 64 bit Windows version as either
a 32 bit or 64 bit JVM can be used.

If the installed jvm.dll is not found in a subfolder of either of these
folders, then use the following option from the previous menu:

2. Find jvm.dll in other path

32 bit JVMs - can be installed on a 64 bit OS
1. c:\Program Files (x86)\Java\jdk1.6.0_20\jre\bin\server\jvm.dll

64 bit JVMs
2. c:\Program Files\Java\jdk1.6.0_20\jre\bin\server\jvm.dll
3. c:\Program Files\Java\jre6\bin\server\jvm.dll

Select JVM path ... 2
```

The change is immediately written to the config\jvm.properties file and the status section reflects the specification of the 64 bit JVM as shown below.

```
CME Application name      = GplusWFM_54_p
Configuration Server Host = 
Configuration Server Port = 2020

JVM path = c:\Program Files\Java\jdk1.6.0_20\jre\bin\server\jvm.dll
JVM memory = 1024 MB
JVM type    = amd64

localhost name = wfm_adapter_host

License app name = Any
License host name = Testing
Expiry date      = 2014.Apr.15
License type     = Temporary
```

There are two things to note in the status section shown above beyond the fact that the path to the jvm.dll file has been identified.

First, a new parameter, JVM type, has been added. This indicates which of the prunsrv.exe service wrappers will be used. In the example above, the 64-bit non-Itanium™ version will be used.

The second addition is that the localhost name parameter has also been set. This is the host name that should be used when requesting a permanent license for the Adapter installation. Once the JVM path was set, a Java application was run to determine the hostname with exactly the same code that is used to confirm the hostname when validating the license.

Set path to find jvm.dll

If the Java instance has not been installed in a subfolder of either c:\Program Files or c:\Program Files (x86), the script will search for the jvm.dll file in other locations.

```
jvm.dll not in a subfolder of c:\Program Files or c:\Program Files (x86)

If the JDK version of Java Runtime Environment (JRE) was not installed
in a subfolder of one of the default Oracle JDK installation paths
( C:\Program Files or C:\Program Files (x86) ), a path can be specified
that will be recursively searched for the following file:

    *\\server\jvm.dll

The resulting list will be comprised of all of the server versions of
the jvm.dll file that were found. This script does not determine if the
identified jvm.dll files are 32 bit or 64 bit versions.

Examples:

    C:\      search all of the folders on the C: drive
    D:\Java  search the \Java folder and all of its
              subfolders on the D: drive

Path to search

Press ENTER to accept ( c:\ )

or

Type the path ... c:\Program Files (x86)
```

The result will be a list of the paths to any found jvm.dll files but there will no indication as to whether the files are 32 bit or 64-bit versions.

```
JVM paths in c:\Program Files (x86)

The search may take a little time ...

1. c:\Program Files (x86)\Java\jdk1.6.0_20\jre\bin\server\jvm.dll

Select JVM path ... 1
```

The script can determine the bitness of the JVM once it has been selected as shown below where the JVM type has been changed to 32_bit.

```
JVM path = c:\Program Files (x86)\Java\jdk1.6.0_20\jre\bin\server\jvm.dll
JVM memory = 1024 MB
JVM type = 32_bit
```

Set JVM memory

The amount of memory that the JVM will allocate as it starts up can be set to something other than the default of 1024 MBs.

```
Adapter JVM memory

The default JVM memory setting of 1024 MB should be sufficient for
most Adapter instances running in a 32 bit Java Virtual Machine (JVM).
The maximum JVM memory on a Windows 32 bit OS is anywhere from 1.3 GB to
1.5 GB depending on the Windows version.

If the Adapter is running on a 32 bit JVM, it is recommended that the
JVM memory setting not exceed 1344 MB. If more memory is required, then
a 64 bit JVM should be used.

If the Adapter is running on a 64 bit JVM, the only restriction on the JVM
memory is what memory is available. It should be noted that a instance
running on a 64 bit JVM will use 30% to 40% more memory than the same
instance running in a 32 bit JVM because of the larger memory pointer size.

Press ENTER to accept ( 1024 )
or
Type in JVM memory in MB ... 768_
```

Installation Tasks

Once the path to the jvm.dll file is set, the *Gplus* Adapter can be installed as a Windows Service. The main menu reflects this change in status with the addition of two more menu options. It is possible to install the service with no issues but starting that service or running the Adapter as a console application will fail if the Configuration Server connection has not been configured.

```
Installation Tasks - adapter service not installed

1. Set the Application Name
2. Set the JVM parameters
3. Set the Config Server connection parameters
4. Install Gplus Adapter Service ( GplusWFM_54_p )
5. Run Gplus Adapter as Java application
6. Quit

Select a menu item ...
```


Set the Config Server connection parameters

Selecting this menu option allows the script to modify the contents of the GPlusWFM.properties file which contains all of the parameters that can set on the connection.

```

Configuration Server Connection
=====
Application Type = ThirdPartyServer
-----
Primary Host =
Primary Port = 2020
Backup Host =
Backup Port =
-----
addp - disabled
Trace Mode =
Local Timeout = not set
Remote Timeout = not set
-----
Transaction Layer Security (TLS) - disabled
-----
Minimum Registration Delay = 5m
Maximum Registration Delay = 15m
Registration timeout = 10m
=====

Configuration Server Properties
-----
1. Set Hosts and Ports
2. Set Application Type
3. Set addp Connection Protocol
4. Enable TLS
5. Set Registration Delays
6. Return to previous menu

Select a menu item ...

```

Hosts and ports

The host and port can be set for the primary Configuration Server and its backup.

```

Configuration Server - Host and Ports
-----
1. Set Primary Host
2. Set Primary Port
3. Set Backup Host
4. Set Backup Port
5. Return to previous menu

Select a menu item ...

```

The host can be specified with the hostname or the IP address. If TLS has been enabled, the configured port should be the Configuration Server's secure port rather than the default.

```

Configuration Server Hosts and Ports

The Gplus Adapter must be configured manually to connect to the Genesys
Configuration Server. The connection parameters are retained in the
following file:

    config\GPlusWFM.properties

The only properties that must be set for the Adapter to run are the
hostname and port properties for the primary Configuration Server. A
connection to a backup Configuration Server can be specified if present.
updated if and when a new Application name is specified.

It should be noted that if Transaction Layer Security (TLS) has been
enabled, the Gplus Adapter should be configured to connect to the secure
port of the Configuration Server.

Primary Configuration Server Host
-----
Press ENTER to accept ( )
or
Type in a new hostname or IP address ... config_host

```

Set Application type

The Adapter's Application type affects the parameters that will be sent to the Configuration Server as part of the Adapter's registration request. A ThirdPartyServer type does not provide a username or password but is only allowed one connection. The alternative, ThirdPartyApplication, requires the username and password but provides better security.

```

Application Type

The Gplus Adapter can register with the Genesys Configuration Server as
one of two application types:

    - ThirdPartyServer
    - ThirdPartyApplication

A "ThirdPartyServer" Application does not require a username and password
to register with the Configuration Server but only one instance can be
registered. A "ThirdPartyApplication" requires that a username and password
be provided when registering.

If "ThirdPartyApplication" is selected, this script provides options to set
the Configuration Server username and password. The password is stored as an
encrypted string in the config\enc file and is not saved as plaintext.

CME Application Type
-----
1. ThirdPartyServer
2. ThirdPartyApplication

Select a value ... 2_

```

ThirdPartyApplication

```

Application Type = ThirdPartyApplication
Username =
Password - not set

-----

Primary Host = config_host
Primary Port = 2020

Backup Host = backup_host
Backup Port = 2025

```

If ThirdPartyApplication is selected as the Application type, the script provides a menu option to set both the username and the password. It should be noted that the password is not saved as plain text.

```

Configuration Server Properties
-----

1. Set Hosts and Ports
2. Set Application Type
3. Set username and password
4. Set addp Connection Protocol
5. Enable TLS
6. Set Registration Delays
7. Return to previous menu

Select a menu item ...

```

When the password is set, that string is encrypted and stored in the config/enc file. If that file is present, the script indicates that the password has been *set* but does not display it.

```

Application Type = ThirdPartyApplication
Username = user_1
Password - set

```

Set addp Connection Protocol

The script provides a menu for configuring the addp connection protocol for the Configuration Server connection.

```

      addp - disabled
      Trace Mode =
      Local Timeout = not set
      Remote Timeout = not set

Transaction Layer Security (TLS) - disabled
      Minimum Registration Delay = 5m
      Maximum Registration Delay = 15m
      Registration timeout = 10m

Configuration Server - addp Parameters

1. Enable addp
2. Set Trace Mode
3. Set Local Timeout
4. Set Remote Timeout
5. Return to previous menu

Select a menu item ...

```

The addp protocol can be enabled or disabled by selecting the first menu option. Both timeouts should be entered as seconds with the Local Timeout being less than the Remote Timeout.

addp Trace mode

The script lists the allowed trace mode settings. It is recommended that the trace mode be set to *Both*.

```

Configuration Server addp Trace Mode

If the Adapter's connection to the Configuration Server has addp enabled,
the recommended Trace Mode setting is "Both" which corresponds to "Trace
on Both Sides".

Config Server addp Trace Mode

1. None
2. Local
3. Remote
4. Both

Select a value ...

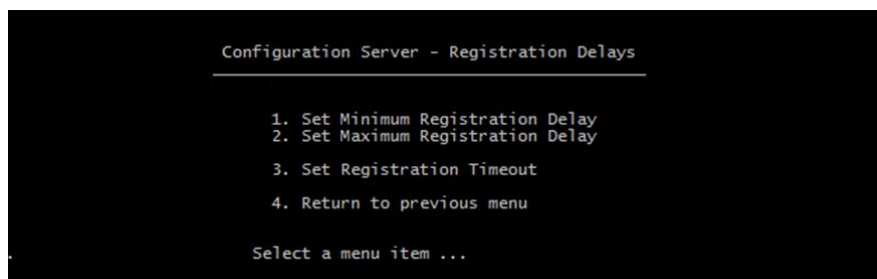
```

Enable/Disable TLS

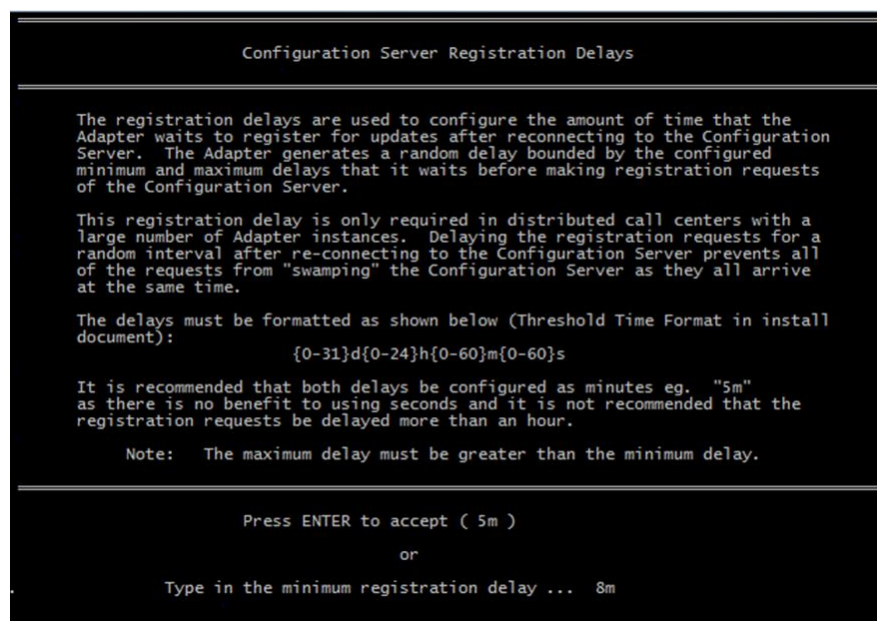
TLS (Transaction Layer Security) can be set on the Configuration Server connection but the majority of the configuration work will be on the server side. See [Enabling Transport Layer Security \(TLS\)](#).

Set Registration delays

This menu section may be necessary in very busy call centers where there are a number of applications connected to the Configuration Server. In that case, the response to requests may be delayed and it may be necessary to delay those requests when the Configuration Server is restarting after a mishap.



The registration delays are the minimum and maximum bounds of the time that the *Gplus* Adapter will wait before making a registration request of the Configuration Server after the connection has been restored. The Adapter will wait a random time between the two limits.



As mentioned, the response from the Configuration Server can be significantly delayed in very busy call centers. The registration timeout option sets the amount of time that the Adapter will wait before generating a new request.

```
Configuration Server Registration Timeout

The registration timeout parameter is the length of time that the adapter will
wait for a reply to a Configuration Server registration request. The default
is 10 minutes which should be sufficient for all but the busiest call centers.

The timeout must be formatted as shown below (Threshold Time Format).

{0-31}d{0-24}h{0-60}m{0-60}s

Press ENTER to accept ( 10m )
or
Type in the registration timeout ... 11m30s_
```

Installing the Adapter as a Service

When the option to install the Adapter as a Service is selected, two actions occur:

1. The appropriate version of the prunsv.exe file is copied to the main Adapter folder from the wrappers folder and renamed to the *CME Application name* e.g. GplusWFM_54_p.exe.
2. The install mode on the renamed prunsv.exe file is used to install the application as a Windows service with the service name set to the *CME Application name*.

The script will check to see if there is a Service installed with the same name as the *CME Application name*. If that is the case, then the script will display the *Management Tasks* menu.

Management Tasks

The final menu allows for certain tasks to be carried out once the *Gplus* Adapter has been installed as a Service.

```

CME Application name      = GplusWFM_54_p
Configuration Server Host = config_host
Configuration Server Port = 2020

JVM path = c:\Program Files (x86)\Java\jdk1.6.0_20\jre\bin\server\jvm.dll

JVM memory = 768 MB
JVM type   = 32_bit

localhost name = wfm_adapter_host

License app name = Any
License host name = Testing

Expiry date = 2014.Apr.15
License type = Temporary

Management Tasks - adapter service installed

1. Manage Service
2. Remove Service
3. Set the Config Server connection parameters
4. Run Gplus Adapter as Java application
5. Quit

Select a menu item ... _

```

Manage Service

Selecting the *Manage Service* option invokes the `prunmgr.exe` application that is detailed in [Appendix C](#). Changes can be made to the JVM parameters without having to uninstall the service.

Remove Service

Selecting this option removes the installed service and deletes the renamed `prunsrv.exe` file. The script menu will return to the *Installation Tasks* menu that is detailed above.

Set the Config Server connection parameters

The *Gplus* Adapter reads the parameters from the `GPlusWFM.properties` file at start up. It is possible to edit the Configuration Server connection parameters, stop the Adapter, restart the Adapter, and have the changes take effect.

Run Gplus Adapter as Java application

This option will start the Adapter as a console application using the same configuration as the Windows Service. It is one way to check that the Adapter configuration is correct if there are problems getting the Service to start.

This is not a viable mode for running the Adapter in a production environment but can be useful for debugging the configuration.



Appendix F: AWS Credentials – S3 Storage Bucket

The following discussion is based on the information provided on the *Amazon Web Services (AWS)* web page, [Working with AWS Credentials](#). This discussion assumes that Genesys has provided the credentials for the *AWS Identity and Access Management (IAM)* User that will be used to access the *Simple Storage Service (S3)* storage bucket.

IAM User versus root User

The root user associated with the *AWS* account should not be used to access the *S3* storage bucket. *AWS* provides *Identity and Access Management (IAM)* User accounts associated with that root user. These accounts can be created with limited permissions that allow transferring files to the bucket and little else.

IAM User Credentials

An *IAM* user created with *Programmatic access* is identified with an *Access Key ID* and a *Secret Access Key* rather than a password. That user does not have access to the *AWS Management Console*.

While there are a few different methods for supplying the *AWS* credentials when accessing the storage bucket, the *Gplus* Adapter code incorporates the *Default Credential Provider Chain* class that steps through the following locations to find credentials used to access the *S3* storage bucket:

1. Environment variables
2. Java system properties
3. The *default credential profiles file* – recommended

This Appendix will discuss the third option of using a credentials file. The other methods are also detailed on the web page mentioned above but will not be discussed here.

Location of Credentials File

The default path and name for the credentials file is as follows with ‘~’ indicating the active user’s home directory:

~/aws/credentials

This can be changed by modifying or adding the `AWS_CREDENTIAL_PROFILES_FILE` environment variable as below:

Linux – export `AWS_CREDENTIAL_PROFILES_FILE=/path/credentials`

Windows – set `AWS_CREDENTIAL_PROFILES_FILE=/path/credentials`

Creating the Credentials File

The credentials file is a text file that can be created with a text editor. As mentioned above, the default name of the file is `credentials`, and the default location is the user's `.aws` folder.

```
[default]
aws_access_key_id={ACCESS_KEY_ID}
aws_secret_access_key={SECRET_ACCESS_KEY}
```

The credentials file can also be created using the [AWS Command Line Interface \(AWS CLI\)](#) as part of the configuration process for that application. The following shows a screenshot when the CLI is invoked with the `aws configure` command.

```

C:\Users\USER.DOMAIN>aws configure
AWS Access Key ID [None]:
AWS Secret Access Key [None]:
Default region name [None]:
Default output format [None]:
  
```

The result is two files in the `~/aws` folder: `config` and `credentials`. The `config` file contains the default region and output format while the `credentials` file is as described above.