



GC3

Administration Guide

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About this Manual

This manual is for administrator's who are responsible for installing and managing the GC3 system at your site. This manual provides step-by-step installation instructions for installing all GC3 software components and supporting software such as WebLogic. This manual does not cover the installation of any operating system that is required to run GC3 such as Linux or Windows Server. It is assumed that your IT staff will handle the installation and configuration of this software.

The Administration Guide contains the following chapters:

- **GC3 Architecture Overview** – provides a brief overview of the GC3 Database, Application, Web, and Integration servers.
- **Windows Installation Requirements** – includes platform-specific instructions for installing GC3 on the Windows 2000/2003 Server operating systems.
- **Solaris Installation Requirements**– includes platform-specific instructions for installing GC3 on the Solaris 8 and 9 operating systems.
- **AIX Installation Requirements**– includes platform-specific instructions for installing GC3 on the AIX 5.1 operating system.
- **HP-UX Installation Requirements**– includes platform-specific instructions for installing GC3 on the HP-UX 11i operating system.
- **Red Hat Enterprise Linux Installation Requirements**– includes platform-specific instructions for installing GC3 on the Red Hat Advanced Server 3.0 operating system.
- **Installing GC3** – includes general instructions for installing GC3 on the Database, Application, and Web servers and is applicable to all operating systems.
- **Installing Oracle 9iR2 RAC** – describes a sample installation of an Oracle 9iR2 (9.2.0.5) RAC cluster and configuration with GC3.
- **Installing Optional Components** – describes how to install and configure optional GC3 components.
- **Getting Started** – describes how to start/stop the GC3 software on all the servers and upgrade the GC3 database.
- **GC3 Database Migration** describes the procedures for migrating the GC3 database from v3.1 and above to the latest release.
- **Advanced GC3 Configuration** – describes how to configure some advanced settings within GC3.
- **LDAP** – describes LDAP and how to integrate GC3 with your LDAP server.
- **GC3 Database Administration** – describes recommended techniques for administering a GC3 database.
- **Appendix A - Recommended Resources** – lists recommended resources for the products included with GC3.
- **Appendix B** – Errata and Known Issues – lists known problems and recommends workarounds.

1. GC3 Architecture Overview

GC3 is built for interactive environments that leverage the Internet as an information backbone to capture reference data such as updates to carries, carrier rates, shipping schedules, locations, ports, and other logistics sources. The underlying architecture is a unique multi-enterprise data model with n-tier web and application servers, partitioned database server, native XML language, extensible style sheets, advanced data security, and optimal caching.

GC3 is highly distributed and collaborative. It is written in Java and Enterprise Java Beans application logic, XML, HTML, and XSL technologies. The design is based on a thin HTML client/fat application architecture so that applications are easily deployable and accessible by multiple enterprises. It supports comprehensive integration via XML APIs to all of the application logic.

GC3 Server Overview

The following illustration describes the overall architecture of the GC3 servers.

Each server is designed to perform specific functions that are briefly described in the following sections. From a user's perspective, all that you need to use to GC3 is a standard Web browser such as Internet Explorer or Netscape Navigator. You can also choose to install the Control Center on your computer and take advantage of advanced functionality for managing orders and shipments. See chapter 6, Getting Started with GC3 for more information on the Control Center.

Web Server

The Web server controls the GC3 user interface and communicates with the Application server to initiate the appropriate application logic. The GC3 user interface is delivered to the user in HTML format and viewed using a browser such as the Internet Explorer or Netscape Navigator.

The GC3 Web server uses Apache Web server and the Tomcat Java servlet engine to manage the user interface and communications with the Application server.

Application Server

The Application Server controls the application logic and communicates that logic between the Web server and the database. The Application server runs WebLogic Server software from BEA Systems, Inc. to manage system-level details and operates at the center of the GC3 multi-tier architecture. In this architecture, business logic is executed in the WebLogic server, rather than in client applications. The resulting "thin" client, allows the client to manage the presentation layer, the application server to manage the business logic, and the back-end data services manage the data.

Database Server

The Database server is the central repository for all the data entered in GC3. The Database server communicates with the Application server to deliver the appropriate data to the user based on the GC3 application logic. The Database server also communicates with the Integration server to handle the import and export of GC3 data with other systems.

GC3 supports the following databases:

- Oracle 9i Release 2 (AIX 5.3, HP-UX 11iv1, Red Hat Advanced Server 3.0, Solaris 8 / 9, Windows 2000/2003 Server)

Integration Server

The Integration server is responsible for:

- Accepting GC3 XML from an Enterprise Application Integration (EAI) solution.
- Persisting XML transmission to a staging table.
- Accepting requests from the GC3 Application server to build GC3 XML from staged data.
- Sending GC3 XML to an EAI solution.

The EAI solution is used as a secure data pipeline and data transformation engine and is responsible for:

- Sending and receiving EDI flat files from an EDI Van.
- Transforming EDI flat files to GC3 XML.
- Login Security (communication is permitted only from registered IP addresses).
- Encryption Security (using https).
- Guaranteed delivery (only if a partner server is on the remote side).

The Integration server's job is to safely store XML transmissions and transform the XML transmission into internal tables. The GC3 Application server is responsible for initiating jobs that move data to and from staging tables and notifies the Application server when new data has arrived in the staging table. The Application server must notify the Integration server when it has moved new data to the staging table.

The Integration server does not perform data validation. Data validation occurs when data is transferred from the staging table to the Application server tables. The staging table does not enforce referential integrity or constraints.

The Integration server and the Application server communicate to the application server using EJB Session Bean calls. When an integration event occurs, the Integration server notifies the Application server using a session bean call. When the application service needs to communicate with the outside world, it does so directly, using an integration solution that provides a method to build transmissions and forward them to the EAI solution.

2. Windows Installation Requirements

This chapter describes the platform-specific procedures for installing the GC3 software components including the Web server, Application server, and Database server on the Windows 2000/2003 Server operating system.

It is HIGHLY recommended that you make available personnel who are familiar with the installation and configuration of Windows based applications. It is also recommended that you have an administrator familiar with the creation and support of an Oracle Database (or multiple) instances. A Network Administrator may be necessary at times, especially during the configuration of systems that will be accessed through firewalls, VPN, etc.

You must be logged in as Administrator or someone with Administrative privileges to install GC3 successfully.

Minimum Hardware Requirements

The following represent the minimum hardware requirements for the Control Center and GC3 server configurations.

Web User

- Windows 98/NT 4.0/2000/XP: 1 Ghz CPU, 128MB RAM

Test and Development Server

- 2.2 Ghz Xeon P-IV or above CPU, 4GB RAM, 3GB Free Disk Space (Web/Application), 10GB free disk space (Reports/Discoverer), 15GB free disk space (Database).

Production Servers

- Web Server: 2 x 2.4Ghz Xeon P-IV or above CPUs, 2GB RAM, 3GB free disk space
- Application Server: 2 x 2.4Ghz Xeon P-IV or above CPUs, 2GB RAM, 3GB free disk space
- Reports/Discoverer Server: 2 x 2.4Ghz Xeon P-IV or above CPUs, 2GB RAM, 10GB free disk space
- Database Server: 2 x 2.4Ghz Xeon P-IV or above CPUs, 2GB RAM, (enough free disk space to meet your database needs)

Recommended Hardware Requirements

The following are the recommended hardware requirements for the Control Center and GC3 server configurations.

Note: These are example configurations. Please contact G-Log to size hardware for your particular application and environment.

Web User

- Windows 98/NT 4.0/2000/XP: 2.4Ghz P-IV CPU, 256MB RAM, 1024x768 Screen Resolution

Test / Development Server

- 2 x 3.0Ghz Xeon P-IV or above CPUs, 4GB RAM, 3GB free disk space (Web/Application), 10GB free disk space (Reports/Discoverer), 15GB free disk space (Database)

Production Server

- Web Server: 2 x 3.0Ghz Xeon P-IV or above CPUs, 4GB RAM, 3GB free disk space
- Application Server: 2 x 3.0Ghz Xeon P-IV or above CPUs, 4GB RAM, 3GB free disk space
- Reports/Discoverer Server: 2 x 3.0Ghz Xeon P-IV or above CPUs, 4GB RAM, 10GB free disk space
- Database Server: 2 x 3.0Ghz Xeon P-4 or above CPUs, 4GB RAM, (enough free disk space to meet your database needs. Please see database creation section for more disk space recommendations.)
- Database Storage: We recommend RAID 0+1 storage connected via a SCSI or Fiber-channel interface for best performance.

Software Requirements

The following are the software requirements for the GC3 server configurations.

- Windows 2000 Server with Service Pack 4 or
- Windows 2003 Server with Service Pack 1
- Internet Explorer 6.0 SP1 with Java Plugin 1.4.2 or later (for client)
Note: Popup Blockers may prevent your browser from working correctly with GC3. If you experience any problems, try disabling them before contacting Technical Support.
- Adobe Acrobat 6.0 (for client)
- Oracle 9i Release 2 (9.2.0.6) Enterprise Edition
- WebLogic 8.1 with Service Pack 4 with an Advantage (non-clustered) License
- Oracle Application Server 10g (9.0.4) Forms and Reports Services (optional)
- Integration Server - EAI solution (optional)

The following software is distributed with GC3:

- Apache Web Server 2.0.53
- Tomcat Java Servlet Server 5.5.8
- OpenSSL 0.9.7e
- Sun JDK 1.4.2
- Python 2.1.3
- Java Service Wrapper 3.1.2
- zlib 1.1.4

The GC3 software is distributed on CD or via your FTP site (contact G-Log Technical Support for FTP connection information).

Preparing to Install GC3

GC3 requires the following software:

- Windows 2000 Server with Service Pack 4 or
Windows 2003 Server with Service Pack 1 (www.microsoft.com)
- Internet Explorer 6.0 SP1 with Java Plugin 1.4.2 or later (www.microsoft.com)

Note: Popup Blockers may prevent your browser from working correctly with GC3. If you experience any problems, try disabling them before contacting Technical Support.

- Oracle 9iR2 (9.2.0.6) client (www.oracle.com) [optional on web server – required on app server]
- WebLogic 8.1 with Service Pack 4 (www.beasys.com) [app server only]
- Oracle 9iR2 (9.2.0.6) DB Server (www.oracle.com) [db server only]
- Oracle Application Server 10g (9.0.4) Forms and Reports Services (www.oracle.com) [rpt server only]
- GC3 software (www.glog.com)

Before you begin the installation process, ensure that the following is already complete:

- Windows 2000 Server with Service Pack 4 or Windows 2003 Server with Service Pack 1.
- The “Server” service under the “Network” Control Panel (Start Menu -> Settings -> Control Panel) is set to “Maximize Throughput for Network Applications”.
- Virtual memory is set to 1.5 to 2 times the amount of physical memory in the system. Also, within the “Server” control panel (Performance) set the “Performance boost for the foreground application” to NONE.
- All GC3 servers are time-synced using a process like NTP. This is critical to the proper operation and troubleshooting of a GC3 instance.
- Oracle 9iR2 (9.2.0.6) client (Administrator install) has been installed and configured to connect to your database.

Installing WebLogic on the Application Server

WebLogic Server is an application server; a runtime environment that provides infrastructure services such as database access, transaction coordinator, and component framework for distributed applications. WebLogic Server also provides administrative features such as configurable security, management and application deployment tools, and clustering to promote high availability and scalability.

You must purchase WebLogic Server, version 8.1 (with Service Pack 4) from Bea Systems, Inc. Once you have the *appropriate license* you can download the appropriate executables from the Bea website (www.beasys.com).

1. Run server814_win32.exe or platform814_win32.exe to install WebLogic.
2. Accept the license agreement.
3. Enter d:\product\bea as the BEA Home.
4. Choose Typical Installation.
5. Install WebLogic into d:\product\bea\weblogic81
6. Install your WebLogic license by following the directions supplied by BEA.

Installing Oracle on the Database Server

The following steps represent a basic Oracle 9iR2 installation. You should have your Database Administrator (DBA) fine-tune the installation for performance improvements and redundancy.

Note: The default database encoding should be UTF8 for new databases. Existing databases (GC3 migrations) may be WE8ISO8859P1. The Oracle JServer module should also be loaded in the database. Your DB should allow at least 200 connections per GC3 Application Server so that the GC3 db pool will fully initialize.

1. Install Oracle to d:\product\oracle\ora920.
2. Choose the Oracle9i Enterprise Edition 9.2.0.0 installation option.
3. Choose a Typical installation.
4. Choose the appropriate global database name and SID (for example, "gc3" or "gc3v50").
5. Add the following lines to your sqlnet.ora file, which allows Oracle to connect to a database without making a DNS request each time.

```
name.directory_path = (TNSNAMES)
automatic_ipc = on
sqlnet.authentication_services = (NONE)
```

6. Upgrade Oracle to 9.2.0.6.

Installing Oracle Application Server 10g (9.0.4) Forms and Reports Services on the Report Server

The system requirements and installation steps (along with explanations of each) for the Oracle Application Server 10g (9.0.4) Forms and Reports Services (hereafter referred to as Oracle AS 10g FR) installation are documented within either the web-based or Adobe Acrobat PDF files on Disk 1 of the Oracle AS 10g FR installation CD package. Please read the requirements and installation instructions fully before installing the Oracle AS 10g FR Software.

The instructions listed below should be used in conjunction with those supplied by Oracle, as there are certain sections within the AS that are not utilized by GC3 at this time. Please refer to the Oracle documentation, as they are far more complete and contain in-depth explanations of all installation options.

Follow these steps to install Oracle AS 10g FR software.

1. Insert Disk1 of the Oracle AS 10g FR install package.
2. Click iSetup.exe.
3. Ensure your system passes the Installation Requirements Check.
4. Review the Welcome screen and click Next.
5. At the Destination Oracle Home and Oracle Home Name Screen, enter the Oracle Home "Name" (i.e. FR_HOME, AS_HOME, etc.) and the path to the new Oracle Home (i.e. d:\product\oracle\reports10g).
 Note: Do NOT install the Oracle AS 10g FR software to an existing Oracle Home! This would cause any existing Oracle products, including databases, to become inoperable.
6. Click Next.
7. Choose your language (usually English).
8. Specify an Instance Name (unique identifier for the Reports instance – usually a hostname), and ias_admin password. The ias_admin password will be used to manage the Oracle Reports Server.
9. Enter the FQDN of an SMTP mail relay server.
10. Click Install on the Summary screen.
11. Monitor the installation process.
12. Write down the Oracle HTTP Server URL (usually http://<servername>:7777) and Oracle Enterprise Manager Application Server Control URL (usually http://<servername>:1810. The OEM AS url is used to stop and start the Oracle Reports Server.
13. Click Exit when the installation process completes.

Note: The Oracle Reports service may stop whenever a user logs out of the Windows server. Due to this limitation, the Windows console must stay continuously logged in (You may LOCK the console for security reasons).

Installing GC3

Follow the instructions in the Installing GC3 chapter to finish your GC3 installation. You must be logged in as Administrator or someone with Administrative privileges to install GC3 successfully.

3. Solaris Installation Requirements

This chapter describes the platform-specific procedures for installing the GC3 software components including the Web server, Application server, and Database server on the Solaris operating system.

It is HIGHLY recommended that you make available personnel who are familiar with the installation and configuration of UNIX based applications. Also, it is recommended that you have an administrator familiar with the creation and support of an Oracle Database (or multiple) instances. A Network Administrator may be necessary at times, especially during the configuration of systems that will be accessed through firewalls, VPN, etc.

You must run the installer as a non-root user, though root access will be required to run a script during the installation. The user that runs the installer must have full rights to the installation directory.

Minimum Hardware Requirements

The following are the minimum hardware requirements for the Control Center and GC3 server configurations.

Web User

- Windows 98/NT 4.0/2000/XP: 1.0Ghz CPU, 128MB RAM
-

Test / Development Server

- 900Mhz CPU, 4GB RAM, 3GB Free Disk Space (Web/Application), 10GB free disk space (Report), 15GB free disk space (Database)

Production Servers

- Web Server: 2 x 900Mhz UltraSPARC III CPUs, 2GB RAM, 3GB free disk space
- Application Server: 2 x 900Mhz UltraSPARC III CPUs, 2GB RAM, 3GB free disk space
- Report Server: 2 x 900Mhz UltraSPARC III CPUs, 2GB RAM, 10GB free disk space
- Database Server: 2 x 900Mhz UltraSPARC III CPUs, 2GB RAM, (enough free disk space to meet your database needs)

Recommended Hardware Requirements

The following are the recommended hardware requirements for the Control Center and GC3 server configurations.

Note: These are example configurations. Please contact G-Log to size hardware for your particular application and environment.

Web User

- Windows 98/NT 4.0/2000/XP: 2.4Ghz P-IV CPU, 256MB RAM, 1024x768 Screen Resolution

Test / Development Server

- 2 x 1.35Ghz UltraSPARC IV CPUs, 4GB RAM, 3GB free disk space (Application), 10GB free disk space (Report), 15GB free disk space (Database)

Production Server

- Web Server: 2 x 1.35Ghz UltraSPARC IV CPUs, 4GB RAM, 3GB free disk space
- Application Server: 2 x 1.35Ghz UltraSPARC IV CPUs, 4GB RAM, 3GB free disk space
- Report Server: 2 x 1.35Ghz UltraSPARC IV CPUs, 4GB RAM, 10GB free disk space
- Database Server: 2 x 1.35Ghz UltraSPARC IV CPUs, 4GB RAM, (enough free disk space to meet your database needs)
- Database Storage: We recommend RAID 0+1 storage connected via a SCSI or Fiber-channel interface for best performance.

Software Requirements

- Solaris 8 or 9 with the latest Recommended Patches
- Solaris patches for the JDK 1.4.2
- Internet Explorer 6.0 SP1 with Java Plugin 1.4.2 or later (for client)
Note: Popup Blockers may prevent your browser from working correctly with GC3. If you experience any problems, try disabling them before contacting Technical Support.
- Adobe Acrobat 6.0 (for client)
- Oracle 9i Release 2 (9.2.0.6) Enterprise Edition
- WebLogic 8.1 with Service Pack 4 with an Advantage (non-clustered) License
- Oracle Application Server 10g (9.0.4) Forms and Reports Services (optional)
- Integration Server - EAI solution (optional)

The following software is distributed with GC3:

- Apache Web Server 2.0.53
- Tomcat Java Servlet Server 5.5.8
- OpenSSL 0.9.7e
- Sun JDK 1.4.2
- Python 2.1.3
- Java Service Wrapper 3.1.2
- zlib 1.1.4

The GC3 software is distributed on CD or via your FTP site (contact G-Log Technical Support for FTP connection information).

Preparing to Install GC3

GC3 requires the following software:

- Solaris 8 or 9 with latest Sun Recommended Patch Bundle (www.sun.com)
- SUNWzlib or GNU zlib package (www.sun.com or www.sunfreeware.com)
- Oracle 9iR2 (9.2.0.5) Client (www.oracle.com) [optional for web server – required for app server]
Note: Oracle Client 9.2.0.5 is the version required for use on the GC3 Web and App servers, due to a bug in 9.2.0.6.
- WebLogic 8.1 with Service Pack 4 (www.beasys.com) [app server only]

- Oracle 9iR2 (9.2.0.6) DB Server (www.oracle.com) [db server only]
- Oracle Application Server 10g (9.0.4) Forms and Reports Services (www.oracle.com) [rpt server only]
- GC3 Application software (www.glog.com)

Before you begin the installation process, ensure that the following is complete:

- Solaris 8 or 9 has been installed on your server.
- The size of the swap space on your server is equal to or greater than the amount of memory it contains.
- All GC3 servers are time-synced using a process like NTP. This is critical to the proper operation and troubleshooting of a GC3 instance.
- Oracle 9iR2 (9.2.0.6) Client (Administrator install) has been installed and configured to connect to your database.

Pre-Install Setup

Ensure that Solaris 8 or 9 and all of the latest patches are installed. The latest Solaris recommended patch bundle could be downloaded from Sun at:

<http://sunsolve.sun.com>

After the latest Sun Recommended patches are installed, you need to install the latest patches to support the Sun JDK 1.4.2. The latest patch bundles are available at:

<http://sunsolve.sun.com/pub-cgi/show.pl?target=patches/J2SE>

Note: It is CRITICAL that the latest patch bundle is installed on your server. Without these patches the Java JVM may not run or may be very unstable.

Once the Solaris (8 or 9) operating system is installed, you need to modify kernel parameters to ensure that Solaris works properly with WebLogic.

1. Edit the `/etc/system` file and add the following lines at the end of the file:

```
set rlim_fd_max=8192
set rlim_fd_cur=8192
set tcp:tcp_conn_hash_size=32768
set shmsys:shminfo_shmmax 4294967295
set autoup 900
set tune_t_fsflushr 1
```

14. The following kernel parameters may improve your server's performance. Your system administrator should evaluate each of the settings below and add the appropriate settings to your `/etc/system` file:

```
set maxpgio=25468
set slowscan=500
set ncsiz=5000
set ufs_ninode=10000
```

2. Update additional kernel parameters as needed for the Database Server. This is covered in the Oracle installation documentation.
3. Restart the server.
4. Install the latest SUNWzlib or GNU zlib packages.

Creating the GLOG User

You must add a group and user on the Application server called glog.

1. Start the Admin tool.
2. Add a group called glog.
3. Add a user called glog and set a password for the glog user.
4. Assign the glog user to the glog group.

Installing WebLogic on the Application Server

WebLogic Server is an application server; a runtime environment that provides infrastructure services such as database access, transaction coordinator, and component framework for distributed applications. WebLogic Server also provides administrative features such as configurable security, management and application deployment tools, and clustering to promote high availability and scalability.

You must purchase WebLogic Server, version 8.1 (with Service Pack 4) from Beas Systems, Inc. Once you have the appropriate license you can download the appropriate executables from the Beas website (www.bea.com).

We recommend that you run this installer from the server console.

1. Launch `server814_solaris.bin` or `platform814_solaris.bin` to install WebLogic.
2. Accept the license agreement.
3. Enter `/opt/bea` as the BEA Home.
4. Choose "Typical Installation"
5. Install WebLogic into `/opt/bea/weblogic81`
6. Install your License file using the directions provided by BEA.

Installing Oracle on the Database Server

The following steps represent a basic Oracle 9iR2 installation. You should have your Database Administrator (DBA) fine-tune the installation for performance improvements and redundancy.

Note: The default database encoding should be UTF8 for new databases. Existing databases (GC3 migrations) may be WE8ISO8859P1. The Oracle JServer module should also be loaded in the database. Your DB should allow at least 200 connections per GC3 Application server so that the GC3 db pool will fully initialize.

1. Install Oracle to `/u01/app/oracle/product920`.
2. Choose the Oracle9i Enterprise Edition 9.2.0.0 installation option.
3. Choose a Typical installation.
4. Choose the appropriate global database name and SID (for example, "gc3" or "gc3v50").
5. Add the following lines to your `sqlnet.ora` file, which allows Oracle to connect to a database without making a DNS request each time.

```
name.directory_path = (TNSNAMES)
automatic_ipc = on
sqlnet.authentication_services = (NONE)
```

6. Upgrade Oracle to 9.2.0.6.

Installing Oracle Application Server 10g (9.0.4) Forms and Reports Services on the Report Server

The system requirements and installation steps (along with explanations of each) for the Oracle Application Server 10g (9.0.4) Forms and Reports Services (hereafter referred to as Oracle AS 10g FR) installation are documented within either the web-based or Adobe Acrobat PDF files on Disk 1 of the Oracle AS 10g FR installation CD package. Please read the requirements and installation instructions fully before installing the Oracle AS 10g FR Software.

The instructions listed below should be used in conjunction with those supplied by Oracle, as there are certain sections within the AS that are not utilized by GC3 at this time. Please refer to the Oracle documentation, as they are far more complete and contain in-depth explanations of all installation options.

Follow these steps to install Oracle AS 10g FR software.

1. Create an oracle user and assign it to the DBA group. The installer should be run as this user.
2. Insert Disk1 of the Oracle AS 10g FR install package.
3. Run runInstaller.
4. Ensure your system passes the Installation Requirements Check.
5. Review the Welcome screen and click Next.
6. At the Destination Oracle Home and Oracle Home Name Screen, please enter in the Oracle Home "Name" (i.e. FR_HOME, AS_HOME, etc.) and the path to the new Oracle Home (i.e. /u01/app/oracle/product/reports10g).

Note: Do NOT install the Oracle AS 10g FR software to an existing Oracle Home! This may cause any existing Oracle products (including databases) to become inoperable.

7. Click Next after entering Oracle Home name and path.
8. Enter the oracle user's group (usually dba).
9. Choose your language (usually English).
10. Specify an Instance Name (unique identifier for the Reports instance – usually a hostname), and ias_admin password. The ias_admin password will be used to manage the Oracle Reports server.
11. Enter the FQDN of an SMTP mail relay server.
12. Click Install on the Summary screen.
13. Monitor the installation process.
14. Write down the Oracle HTTP Server URL (usually http://<servername>:7777) and Oracle Enterprise Manager Application Server Control URL (usually http://<servername>:1810. The OEM AS url is used to stop and start the Oracle Reports Server).
15. Click Exit after the installation process completes.

Installing GC3

Follow the instructions in the "Installing GC3" Chapter to finish your GC3 installation.

You must run the installer as a non-root user, though root access will be required to run a script during the installation. The user that runs the installer must have full rights to the installation directory.

4. AIX Installation Requirements

This chapter describes the platform-specific procedures for installing the GC3 software components including the Web server, Application server, and Database server on the AIX operating system.

It is HIGHLY recommended that you make available personnel who are familiar with the installation and configuration of UNIX based applications. Also, it is recommended that you have an administrator familiar with the creation and support of an Oracle Database (or multiple) instances. A Network Administrator may be necessary at times, especially during the configuration of systems that will be accessed through firewalls, VPN, etc.

You must run the installer as a non-root user, though root access will be required to run a script during the installation. The user that runs the installer must have full rights to the installation directory.

Minimum Hardware Requirements

The following are the minimum hardware requirements for the Control Center and GC3 server configurations.

Web User

- Windows 98/NT 4.0/2000/XP: 1.0Ghz P-III CPU, 128MB RAM

Test/Development Server

- 1.2Ghz POWER4 CPU, 4GB RAM, 3GB Free Disk Space (Web/Application), 10GB free disk space (Report), 15GB free disk space (Database)

Production Servers

- Web Server: 2 x 1.2Ghz POWER4 CPUs, 2GB RAM, 3GB free disk space
- Application Server: 2 x 1.2Ghz POWER4 CPUs, 2GB RAM, 3GB free disk space; Video Adapter
- Report Server: 2 x 1.2Ghz POWER4 CPUs, 2GB RAM, 10GB free disk space
- Database Server: 2 x 1.2Ghz POWER4 CPUs, 2GB RAM, (enough free disk space to meet your database needs)

Recommended Hardware Requirements

The following are the recommended hardware requirements for the Control Center and GC3 server configurations.

Note: These are example configurations. Please contact G-Log to size hardware for your particular application and environment.

Web User

- Windows 98/NT 4.0/2000/XP: 2.4Ghz P-IV CPU, 256MB RAM, 1024x768 Screen Resolution

Test / Development Server

- 2 x 1.5Ghz POWER5 CPUs, 4GB RAM, 3GB free disk space (Application), 10GB free disk space (Report), 15GB free disk space (Database)

Production Server

- Web Server: 2 x 1.5Ghz POWER5 CPUs, 4GB RAM, 3GB free disk space
- Application Server: 2 x 1.5Ghz POWER5 CPUs, 4GB RAM, 3GB free disk space
- Report Server: 2 x 1.5Ghz POWER5 CPUs, 4GB RAM, 6GB free disk space
- Database Server: 2 x 1.5Ghz POWER5 CPUs, 4GB RAM, (enough free disk space to meet your database needs)
- Database Storage: We recommend RAID 0+1 storage connected via a SCSI or Fiber-channel interface for best performance.

Software Requirements

- AIX 5.3 with the latest Recommended Patches
- AIX patches for the JDK 1.4.2
- Internet Explorer 6.0 SP1 with Java Plugin 1.4.2 or later (for client)
Note: Popup Blockers may prevent your browser from working correctly with GC3. If you experience any problems, try disabling them before contacting Technical Support.
- Adobe Acrobat 6.0 (for client)
- Oracle 9i Release 2 (9.2.0.6) Enterprise Edition
- WebLogic 8.1 with Service Pack 4 with an Advantage (non-clustered) License
- Oracle Application Server 10g (9.0.4) Forms and Reports Services
- Integration Server - EAI solution (optional)

The following software is distributed with GC3:

- Apache Web Server 2.0.53
- Tomcat Java Servlet Server 5.5.8
- OpenSSL 0.9.7e
- IBM JDK 1.4.2
- Python 2.1.3
- Java Service Wrapper 3.1.2
- zlib 1.1.4

The GC3 software is distributed on CD or via your FTP site (contact G-Log Technical Support for FTP connection information).

Preparing to Install GC3

GC3 requires the following software:

- AIX 5.3 with latest IBM Recommended Patch Bundle (www.ibm.com)
- Oracle 9iR2 (9.2.0.6) Client (www.oracle.com) [optional for web server – required for app server]
- WebLogic 8.1 with Service Pack 4 (www.beasys.com) [app server only]
- Oracle 9iR2 (9.2.0.6) DB Server (www.oracle.com) [db server only]
- Oracle Application Server 10g (9.0.4) Forms and Reports Services (www.oracle.com) [rpt server only]
- GC3 Application software (www.glog.com)

Before you begin the installation process, ensure that the following is complete:

- AIX 5.3 has been installed on your server.
- The size of the swap space on your server is equal to or greater than the amount of memory it contains.
- All GC3 servers are time-synced using a process like NTP. This is critical to the proper operation and troubleshooting of a GC3 instance.
- Oracle 9iR2 (9.2.0.6) Client (Administrator install) has been installed and configured to connect to your database.

Pre-Install Setup

Ensure that AIX 5.3 and all of the latest patches are installed. The latest AIX recommended patch bundle could be downloaded from IBM at:

<https://techsupport.services.ibm.com/server/fixes/>

After the latest IBM Recommended patches are installed, you need to install the latest patches to support the IBM JDK 1.4.2. The latest patch bundles are available at:

<https://techsupport.services.ibm.com/server/fixes/>

Note: It is CRITICAL that the latest patch bundle is installed on your server. Without these patches the Java JVM may not run or may be very unstable.

Once the AIX operating system is installed, you need to modify kernel parameters to ensure that AIX works properly with WebLogic.

1. Edit the /etc/security/limits file and change the following parameters:

```
fsize = -1
core = -1
cpu = -1
data = -1
rss = -1
stack = -1
nofiles = -1
```

2. Update additional kernel parameters as needed for the Database Server. This is covered in the Oracle installation documentation.
3. Restart the server.

Creating the GLOG user

You must add a group and user on the Application server called glog.

1. Start SMIT.
2. Add a group called glog.
3. Add a user called glog and set a password for the glog user.
4. Assign the glog user to the glog group.

Installing WebLogic on the Application Server

WebLogic Server is an application server; a runtime environment that provides infrastructure services such as database access, transaction coordinator, and component framework for distributed applications. WebLogic Server also provides administrative features such as configurable security,

management and application deployment tools, and clustering to promote high availability and scalability.

You must purchase WebLogic Server, version 8.1 (with Service Pack 4) from Beas Systems, Inc. Once you have the appropriate license you can download the appropriate executables from the Beas website (www.bea.com).

We recommend that you run this installer from the server console.

1. Install the IBM Java JDK 1.4.2 or later.
2. Launch "java -jar pj_server814_generic.jar" or "java -jar pj_platform814_generic.jar" to install WebLogic.
3. Accept the license agreement.
4. Enter /opt/bea as the BEA Home.
5. Choose "Typical Installation"
6. Install WebLogic into /opt/bea/weblogic81
7. Install your License file using the directions provided by BEA.

Installing Oracle on the Database Server

The following steps represent a basic Oracle 9iR2 installation. You should have your Database Administrator (DBA) fine-tune the installation for performance improvements and redundancy.

Note: The default database encoding should be UTF8 for new databases. Existing databases (GC3 migrations) may be WE8ISO8859P1. The Oracle JServer module should also be loaded in the database. Your DB should allow at least 200 connections per GC3 Application server so that the GC3 db pool will fully initialize.

1. Install Oracle to /u01/app/oracle/product920.
2. Choose the Oracle9i Enterprise Edition 9.2.0.0 installation option.
3. Choose a Typical installation.
4. Choose the appropriate global database name and SID (for example, "gc3" or "gc3v50").
5. Add the following lines to your sqlnet.ora file, which allows Oracle to connect to a database without making a DNS request each time.

```
name.directory_path = (TNSNAMES)
automatic_ipc = on
sqlnet.authentication_services = (NONE)
```

6. Upgrade Oracle to 9.2.0.6.

Installing Oracle Application Server 10g (9.0.4) Forms and Reports Services on the Report Server

The system requirements and installation steps (along with explanations of each) for the Oracle Application Server 10g (9.0.4) Forms and Reports Services (hereafter referred to as Oracle AS 10g FR) installation are documented within either the web-based or Adobe Acrobat PDF files on Disk 1 of the Oracle AS 10g FR installation CD package. Please read the requirements and installation instructions fully before installing the Oracle AS 10g FR Software.

The instructions listed below should be used in conjunction with those supplied by Oracle, as there are certain sections within the AS that are not utilized by GC3 at this time. Please refer to the Oracle documentation, as they are far more complete and contain in-depth explanations of all installation options.

Follow these steps to install Oracle AS 10g FR software.

1. Create an oracle user and assign it to the DBA group. The installer should be run as this user.
2. Insert Disk1 of the Oracle AS 10g FR install package.
3. Run runInstaller.
4. Ensure your system passes the Installation Requirements Check.
5. Review the Welcome screen and click Next.
6. At the Destination Oracle Home and Oracle Home Name Screen, please enter in the Oracle Home "Name" (i.e. FR_HOME, AS_HOME, etc.) and the path to the new Oracle Home (i.e. /u01/app/oracle/product/reports10g).

Note: Do NOT install the Oracle AS 10g FR software to an existing Oracle Home! This may cause any existing Oracle products (including databases) to become inoperable.
7. Click Next after entering Oracle Home name and path.
8. Enter the oracle user's group (usually dba).
9. Choose your language (usually English).
10. Specify an Instance Name (unique identifier for the Reports instance – usually a hostname), and ias_admin password. The ias_admin password will be used to manage the Oracle Reports server.
11. Enter the FQDN of an SMTP mail relay server.
12. Click Install on the Summary screen.
13. Monitor the installation process.
14. Write down the Oracle HTTP Server URL (usually http://<servername>:7777) and Oracle Enterprise Manager Application Server Control URL (usually http://<servername>:1810. The OEM AS url is used to stop and start the Oracle Reports Server.
15. Click Exit after the installation process completes.

Installing GC3

Follow the instructions in the Installing GC3 chapter to finish your GC3 installation. You must run the installer as a non-root user, though root access will be required to run a script during the installation. The user that runs the installer must have full rights to the installation directory.

5. HP-UX Installation Requirements

This chapter describes the platform-specific procedures for installing the GC3 software components including the Web server, Application server, and Database server on the HP-UX operating system.

It is HIGHLY recommended that you make available personnel who are familiar with the installation and configuration of UNIX based applications. Also, it is recommended that you have an administrator familiar with the creation and support of an Oracle Database (or multiple) instances. A Network Administrator may be necessary at times, especially during the configuration of systems that will be accessed through firewalls, VPN, etc.

You must run the installer as a non-root user, though root access will be required to run a script during the installation. The user that runs the installer must have full rights to the installation directory.

Minimum Hardware Requirements

The following are the minimum hardware requirements for the Control Center and GC3 server configurations.

Web User

- Windows 98/NT 4.0/2000/XP: 1.0Ghz CPU, 128MB RAM

Test / Development Server

- 800Mhz PA-RISC CPU, 4GB RAM, 3GB Free Disk Space (Web/Application), 10GB free disk space (Report), 15GB free disk space (Database)

Production Servers

- Web Server: 2 x 800Mhz PA-RISC CPUs, 2GB RAM, 3GB free disk space
- Application Server: 2 x 800Mhz PA-RISC CPUs, 2GB RAM, 3GB free disk space
- Report Server: 2 x 800Mhz PA-RISC CPUs, 2GB RAM, 10GB free disk space
- Database Server: 2 x PA-RISC 800Mhz CPUs, 2GB RAM, (enough free disk space to meet your database needs)

Recommended Hardware Requirements

The following are the recommended hardware requirements for the Control Center and GC3 server configurations.

Note: These are example configurations. Please contact G-Log to size hardware for your particular application and environment.

Web User

- Windows 98/NT 4.0/2000/XP: 2.4Ghz P-IV CPU, 256MB RAM, 1024x768 Screen Resolution

Test / Development Server

- 2 x 1Ghz PA-RISC CPUs, 4GB RAM, 3GB free disk space (Application), 10GB free disk space (Report), 15GB free disk space (Database)

Production Server

- Web Server: 2 x 1Ghz PA-RISC Dual-Core CPUs, 4GB RAM, 3GB free disk space
- Application Server: 2 x 1Ghz PA-RISC Dual-Core CPUs, 4GB RAM, 3GB free disk space
- Report Server: 2 x 1Ghz PA-RISC Dual-Core CPUs, 4GB RAM, 10GB free disk space
- Database Server: 2 x 1Ghz PA-RISC Dual-Core CPUs, 4GB RAM, (enough free disk space to meet your database needs)
- Database Storage: We recommend RAID 0+1 storage connected via a SCSI or Fiber-channel interface for best performance.

Software Requirements

- HP-UX 11iv1 with the latest Recommended Patches
- HP-UX patches for the JDK 1.4.2
- HP-UX JDK 1.4.2_08
- Internet Explorer 6.0 SP1 with Java Plugin 1.4.2 or later (for client)

Note: Popup Blockers may prevent your browser from working correctly with GC3. If you experience any problems, try disabling them before contacting Technical Support.

Note: GC3 v5.0 is certified with the 32 bit version only for HP-UX 11i v1.

- Adobe Acrobat 6.0 (for client)
- Oracle 9i Release 2 (9.2.0.6) Enterprise Edition
- WebLogic 8.1 with Service Pack 4 with an Advantage (non-clustered) License
- Oracle Application Server 10g (9.0.4) Forms and Reports Services (optional)
- Integration Server - EAI solution (optional)

The following software is distributed with GC3:

- Apache Web Server 2.0.53
- Tomcat Java Servlet Server 5.5.8
- OpenSSL 0.9.7e
- HP JDK 1.4.2
- Python 2.1.3
- Java Service Wrapper 3.1.2
- zlib 1.1.4

The GC3 software is distributed on CD or via your FTP site (contact G-Log Technical Support for FTP connection information).

Preparing to Install GC3

GC3 requires the following software:

- HP-UX 11iv1 with latest HP Recommended Patch Bundle (www.hp.com)
- Oracle 9iR2 (9.2.0.6) Client (www.oracle.com) [optional for web server – required for app server]
- WebLogic 8.1 with Service Pack 4 (www.beasys.com) [app server only]
- Oracle 9iR2 (9.2.0.6) DB Server (www.oracle.com) [db server only]

- Oracle Application Server 10g (9.0.4) Forms and Reports Services (www.oracle.com) [rpt server only]
- GC3 Application software (www.glog.com)

Before you begin the installation process, ensure that the following is complete:

- HP-UX 11iv1 has been installed on your server.
- The size of the swap space on your server is equal to or greater than the amount of memory it contains.
- All GC3 servers are time-synced using a process like NTP. This is critical to the proper operation and troubleshooting of a GC3 instance.
- Oracle 9iR2 (9.2.0.6) Client (Administrator install) has been installed and configured to connect to your database.
- The HP-UX JDK 1.4.2_08 has been installed. This is required so that specific libraries get installed on your system. This package is available from HP's web site: <http://www.hp.com/products1/unix/java/>

Pre-Install Setup

Ensure that HP-UX 11iv1 and all of the latest patches are installed. The latest HP-UX recommended patch bundle could be downloaded from HP at:

http://www.software.hp.com/SUPPORT_PLUS/

After the latest HP Recommended patches are installed, you need to install the latest patches to support the HP JDK 1.4.2. The latest patch bundles are available at <http://www.hp.com/products1/unix/java/patches/index.html>.

Note: It is CRITICAL that the latest patch bundle is installed on your server. Without these patches, the Java JVM may not run or may be very unstable.

Once the HP-UX operating system is installed, you need to modify kernel parameters to ensure that HP-UX works properly with GC3.

1. Use SAM to update the following kernel parameters. These are minimum settings and may be higher:

```
maxusers=400
max_threads_proc=<maxusers>*3
maxfiles=8192
maxfiles_lim=8192
ncallout=2*(((nproc*7)/4)+16)*2)
nkthread=2*<max_thread_proc>
nfile=(2*<nproc>)+1000
nproc=(<maxusers>*5)+64
```

2. Update additional kernel parameters as needed for the Database Server. This is covered in the Oracle installation documentation.
3. Restart the server.

Creating the GLOG user

You must add a group and user on the Application server called glog.

1. Start SAM.
2. Add a group called glog.

3. Add a user called glog and set a password for the glog user.
4. Assign the glog user to the glog group.

Installing WebLogic On the Application Server

WebLogic Server is an application server; a runtime environment that provides infrastructure services such as database access, transaction coordinator, and component framework for distributed applications. WebLogic Server also provides administrative features such as configurable security, management and application deployment tools, and clustering to promote high availability and scalability.

You must purchase WebLogic Server, version 8.1 (with Service Pack 4) from Bea Systems, Inc. Once you have the appropriate license you can download the appropriate executables from the Bea website (www.bea.com).

We recommend that you run this installer from the server console.

1. Launch `server814_hpux.bin` or `platform814_hpux.bin` to install WebLogic.
2. Accept the license agreement.
3. Enter `/opt/bea` as the BEA Home.
4. Choose "Typical Installation"
5. Install WebLogic into `/opt/bea/weblogic81`
6. Install your License file using the directions provided by BEA.

Installing Oracle on the Database Server

The following steps represent a basic Oracle 9iR2 installation. You should have your Database Administrator (DBA) fine-tune the installation for performance improvements and redundancy.

Note: The default database encoding should be UTF8 for new databases. Existing databases (GC3 migrations) may be WE8ISO8859P1. The Oracle JServer module should also be loaded in the database. Your DB should allow at least 200 connections per GC3 Application server so that the GC3 db pool will fully initialize.

1. Install Oracle to `/u01/app/oracle/product920`.
2. Choose the Oracle9i Enterprise Edition 9.2.0.0 installation option.
3. Choose a Typical installation.
4. Choose the appropriate global database name and SID (for example, "gc3" or "gc3v50").
5. Add the following lines to your `sqlnet.ora` file, which allows Oracle to connect to a database without making a DNS request each time.

```
name.directory_path = (TNSNAMES)
automatic_ipc = on
sqlnet.authentication_services = (NONE)
```

6. Upgrade Oracle to 9.2.0.6.

Installing Oracle Application Server 10g (9.0.4) Forms and Reports Services on the Report Server

The system requirements and installation steps (along with explanations of each) for the Oracle Application Server 10g (9.0.4) Forms and Reports Services (hereafter referred to as Oracle AS 10g FR) installation are documented within either the web-based or Adobe Acrobat PDF files on Disk 1 of the Oracle AS 10g FR installation CD package. Please read the requirements and installation instructions fully before installing the Oracle AS 10g FR Software.

The instructions listed below should be used in conjunction with those supplied by Oracle, as there are certain sections within the AS that are not utilized by GC3 at this time. Please refer to the Oracle documentation, as they are far more complete and contain in-depth explanations of all installation options.

Follow these steps to install Oracle AS 10g FR software.

7. Create an oracle user and assign it to the DBA group. The installer should be run as this user.
8. Insert Disk1 of the Oracle AS 10g FR install package.
9. Run runInstaller.
10. Ensure your system passes the Installation Requirements Check.
11. Review the Welcome screen and click Next.
12. At the Destination Oracle Home and Oracle Home Name Screen, please enter in the Oracle Home "Name" (i.e. FR_HOME, AS_HOME, etc.) and the path to the new Oracle Home (i.e. /u01/app/oracle/product/reports10g).

Note: Do NOT install the Oracle AS 10g FR software to an existing Oracle Home! This may cause any existing Oracle products (including databases) to become inoperable.
13. Click Next after entering Oracle Home name and path.
14. Enter the oracle user's group (usually dba).
15. Choose your language (usually English).
16. Specify an Instance Name (unique identifier for the Reports instance – usually a hostname), and ias_admin password. The ias_admin password will be used to manage the Oracle Reports server.
17. Enter the FQDN of an SMTP mail relay server.
18. Click Install on the Summary screen.
19. Monitor the installation process.
20. Write down the Oracle HTTP Server URL (usually http://<servername>:7777) and Oracle Enterprise Manager Application Server Control URL (usually http://<servername>:1810. The OEM AS url is used to stop and start the Oracle Reports Server.
21. Click Exit after the installation process completes.

Installing GC3

Follow the instructions in the Installing GC3 chapter to finish your GC3 installation. You must run the installer as a non-root user, though root access will be required to run a script during the installation. The user that runs the installer must have full rights to the installation directory.

6. Red Hat Enterprise Linux Installation Requirements

This chapter describes the platform-specific procedures for installing the GC3 software components including the Web server, Application server, and Database server on the Red Hat Advanced Server operating system.

It is HIGHLY recommended that you make available personnel who are familiar with the installation and configuration of UNIX based applications. Also, it is recommended that you have an administrator familiar with the creation and support of an Oracle Database (or multiple) instances. A Network Administrator may be necessary at times, especially during the configuration of systems that will be accessed through firewalls, VPN, etc.

You must run the installer as a non-root user, though root access will be required to run a script during the installation. The user that runs the installer must have full rights to the installation directory.

Minimum Hardware Requirements

The following are the minimum hardware requirements for the Control Center and GC3 server configurations.

Web User

- Windows 98/NT 4.0/2000/XP: 1.0Ghz CPU, 128MB RAM

Test / Development Server

- 2.4Ghz Xeon P-IV CPU, 4GB RAM, 3GB Free Disk Space (Web/Application), 10GB free disk space (Report), 15GB free disk space (Database)

Production Servers

- Web Server: 2 x 2.4Ghz Xeon P-IV CPUs, 2GB RAM, 3GB free disk space
- Application Server: 2 x 2.4Ghz Xeon P-IV CPUs, 2GB RAM, 3GB free disk space
- Report Server: 2 x 2.4Ghz Xeon P-IV CPUs, 2GB RAM, 10GB free disk space
- Database Server: 2 x 2.4Ghz Xeon P-IV CPUs, 2GB RAM, (enough free disk space to meet your database needs)

Recommended Hardware Requirements

The following are the recommended hardware requirements for the Control Center and GC3 server configurations.

Note: These are example configurations. Please contact G-Log to size hardware for your particular application and environment.

Web User

- Windows 98/NT 4.0/2000/XP: 2.4Ghz P-IV CPU, 256MB RAM, 1024x768 Screen Resolution

Test / Development Server

- 2 x 3.0Ghz Xeon P-IV CPUs, 4GB RAM, 3GB free disk space (Application), 10GB free disk space (Report), 15GB free disk space (Database)

Production Server

- Web Server: 2 x 3.0Ghz Xeon P-IV CPUs, 4GB RAM, 3GB free disk space
- Application Server: 2 x 3.0Ghz Xeon P-IV CPUs, 4GB RAM, 3GB free disk space
- Report Server: 2 x 3.0Ghz Xeon P-IV CPUs, 4GB RAM, 6GB free disk space
- Database Server: 2 x 3.0Ghz Xeon P-IV CPUs, 4GB RAM, (enough free disk space to meet your database needs)
- Database Storage: We recommend RAID 0+1 storage connected via a SCSI or Fiber-channel interface for best performance.

Software Requirements

- Red Hat Advanced Server 3.0 Update 4 with the latest Recommended Patches
- Red Hat patches for the JDK 1.4.2
- Internet Explorer 6.0 SP1 with Java Plugin 1.4.2 or later (for client)
Note: Popup Blockers may prevent your browser from working correctly with GC3. If you experience any problems, try disabling them before contacting Technical Support.
- Adobe Acrobat 6.0 (for client)
- Oracle 9i Release 2 (9.2.0.6) Enterprise Edition
- WebLogic 8.1 with Service Pack 4 with an Advantage (non-clustered) License
- Oracle Application Server 10g (9.0.4) Forms and Reports Services (optional)
- Integration Server - EAI solution (optional)

The following software is distributed with GC3:

- Apache Web Server 2.0.53
- Tomcat Java Servlet Server 5.5.8
- OpenSSL 0.9.7e
- JDK 1.4.2
- Python 2.1.3
- Java Service Wrapper 3.1.2
- zlib 1.1.4

The GC3 software is distributed on CD or via your FTP site (contact G-Log Technical Support for FTP connection information).

Preparing to Install GC3

GC3 requires the following software:

- Red Hat Advanced Server 3.0 Update 4 with latest Red Hat Recommended Patch Bundle (www.redhat.com)
- Oracle 9iR2 (9.2.0.6) Client (www.oracle.com) [optional for web server – required for app server]
- WebLogic 8.1 with Service Pack 4 (www.beasys.com) [app server only]
- Oracle 9iR2 (9.2.0.6) DB Server (www.oracle.com) [db server only]
- Oracle Application Server 10g (9.0.4) Forms and Reports Services (www.oracle.com) [rpt server only]
- GC3 Application software (www.glog.com)

Before you begin the installation process, ensure that the following is complete:

- Red Hat Advanced Server 3.0 Update 4 has been installed on your server.
- The size of the swap space on your server is equal to or greater than the amount of memory it contains.
- All GC3 servers are time-synced using a process like NTP. This is critical to the proper operation and troubleshooting of a GC3 instance.
- Oracle 9iR2 (9.2.0.6) Client (Administrator install) has been installed and configured to connect to your database.

Pre-Install Setup

Ensure that Red Hat Advanced Server 3.0 Update 4 and all of the latest patches are installed. The latest Red Hat recommended patch bundle could be downloaded from Red Hat at:

<http://rhn.redhat.com>

After the latest Red Hat Recommended patches are installed, you need to install the latest patches to support the Sun JDK 1.4.2. The latest patch bundles are available at:

<http://rhn.redhat.com>

Note: It is CRITICAL that the latest patch bundle is installed on your server. Without these patches the Java JVM may not run or may be very unstable.

Once the Red Hat Advanced Server 3.0 operating system is installed, you need to modify kernel parameters to ensure that Red Hat Advanced Server works properly with WebLogic.

1. Update kernel parameters as needed for the Database Server. This is covered in the Oracle installation documentation.
2. Restart the server.

The following parameters may improve your server's performance. Your system administrator should evaluate each of the settings below and add implement them as necessary:

3. Improve filesystem performance by mounting them with the "noatime" parameter in /etc/fstab.

Creating the GLOG user

You must add a group and user on the Application server called glog.

1. Start the User Manager tool.
2. Add a group called glog.
3. Add a user called glog and set a password for the glog user.
4. Assign the glog user to the glog group.

Installing WebLogic on the Application Server

WebLogic Server is an application server; a runtime environment that provides infrastructure services such as database access, transaction coordinator, and component framework for distributed applications. WebLogic Server also provides administrative features such as configurable security, management and application deployment tools, and clustering to promote high availability and scalability.

You must purchase WebLogic Server, version 8.1 (with Service Pack 4) from Be a Systems, Inc. Once you have the appropriate license you can download the appropriate executables from the Be a website (www.bea.com).

We recommend that you run this installer from the server console.

1. Launch server814_linux.bin or platform814_linux.bin to install WebLogic.
2. Accept the license agreement.
3. Enter /opt/bea as the BEA Home.
4. Choose "Typical Installation"
5. Install WebLogic into /opt/bea/weblogic81
6. Install your License file using the directions provided by BEA.

Installing Oracle on the Database Server

The following steps represent a basic Oracle 9iR2 installation. You should have your Database Administrator (DBA) fine-tune the installation for performance improvements and redundancy.

Note: The default database encoding should be UTF8 for new databases. Existing databases (GC3 migrations) may be WE8ISO8859P1. The Oracle JServer module should also be loaded in the database. Your DB should allow at least 200 connections per GC3 Application server so that the GC3 db pool will fully initialize.

1. Install Oracle to /u01/app/oracle/product920.
2. Choose the Oracle9i Enterprise Edition 9.2.0.0 installation option.
3. Choose a Typical installation.
4. Choose the appropriate global database name and SID (for example, "gc3" or "gc3v50").
5. Add the following lines to your sqlnet.ora file, which allows Oracle to connect to a database without making a DNS request each time.

```
name.directory_path = (TNSNAMES)
automatic_ipc = on
sqlnet.authentication_services = (NONE)
```

6. Upgrade Oracle to 9.2.0.6.

Installing Oracle Application Server 10g (9.0.4) Forms and Reports Services on the Report Server

The system requirements and installation steps (along with explanations of each) for the Oracle Application Server 10g (9.0.4) Forms and Reports Services (hereafter referred to as Oracle AS 10g FR) installation are documented within either the web-based or Adobe Acrobat PDF files on Disk 1 of the Oracle AS 10g FR installation CD package. Please read the requirements and installation instructions fully before installing the Oracle AS 10g FR Software.

The instructions listed below should be used in conjunction with those supplied by Oracle, as there are certain sections within the AS that are not utilized by GC3 at this time. Please refer to the Oracle documentation, as they are far more complete and contain in-depth explanations of all installation options.

Follow these steps to install Oracle AS 10g FR software.

1. Create an oracle user and assign it to the DBA group. The installer should be run as this user.
2. Insert Disk1 of the Oracle AS 10g FR install package.
3. Run runInstaller.

4. Ensure your system passes the Installation Requirements Check.
5. Review the Welcome screen and click Next.
6. At the Destination Oracle Home and Oracle Home Name Screen, please enter in the Oracle Home "Name" (i.e. FR_HOME, AS_HOME, etc.) and the path to the new Oracle Home (i.e. /u01/app/oracle/product/reports10g).

Note: Do NOT install the Oracle AS 10g FR software to an existing Oracle Home! This may cause any existing Oracle products (including databases) to become inoperable.
7. Click Next after entering Oracle Home name and path.
8. Enter the oracle user's group (usually dba).
9. Choose your language (usually English).
10. Specify an Instance Name (unique identifier for the Reports instance – usually a hostname), and ias_admin password. The ias_admin password will be used to manage the Oracle Reports server.
11. Enter the FQDN of an SMTP mail relay server.
12. Click Install on the Summary screen.
13. Monitor the installation process.
14. Write down the Oracle HTTP Server URL (usually <http://<servername>:7777>) and Oracle Enterprise Manager Application Server Control URL (usually <http://<servername>:1810>). The OEM AS url is used to stop and start the Oracle Reports Server.
15. Click Exit after the installation process completes.
16. Apply Oracle Patch 3319824 to resolve issues with the WebCache processes failing on Red Hat AS/ES 3.0. This patch can be obtained from <http://metalink.oracle.com>.

Installing GC3

Follow the instructions in the Installing GC3 chapter to finish your GC3 installation. You must run the installer as a non-root user, though root access will be required to run a script during the installation. The user that runs the installer must have full rights to the installation directory.

7. Installing GC3

This chapter describes the step-by-step procedures for installing the GC3 software components including the Web server, Application server, and Database server on all operating systems.

It is HIGHLY recommended that you make available personnel who are familiar with the installation and configuration of Windows or UNIX based applications (depending on operating system you are installing on.) Also, we recommend that, in the case of the Oracle Database, that you have on hand an administrator familiar with the creation and support of an Oracle Database (or multiple) instances. A Network Administrator may be necessary at times – especially during the configuration of systems that will be accessed through firewalls, VPN, etc.

Recommended Installation Steps

GC3 can be installed in various configurations to provide scalability for production instances, or to provide for consolidation of system resources for test/development instances.

Production instances of GC3 would normally run each application layer (Web/Application/Database/Reports) on separate physical servers. For instance, we would see the following configuration:

- Server One: Oracle database instance
- Server Two: GC3 Application server (WebLogic)
- Server Three: GC3 Web server (Apache/Tomcat)
- Server Four: Oracle Application server (Reports/Discoverer – Optional)

The instructions that follow assume that you are installing a production instance of GC3 where the various applications reside on separate physical servers. If you want to install a test or development instance of GC3, please see the Installing GC3 on a Single Server section.

Test instances can be consolidated on to one, two, three or more servers – depending on the hardware availability within your organization. Commonly, we will see the following configuration for Test instances:

- Server One: Oracle database instance AND Oracle Application Server (Reports/Discoverer).
- Server Two: GC3 Application Server (WebLogic) AND GC3 Web Server (Apache/Tomcat).

If the Test server has enough resources (Memory/CPU), it is possible to run everything on a single system. This should ONLY be done for test instances and is NOT recommended for any Production level use. Please contact G-Log Technical Support if you have any questions.

Before installing your GC3 instance, you may decide to mount certain high-growth directories on separate partitions, to keep them from filling up your primary partition. In order to do this, just create the GC3 installation directory and mounted partitions before installation. Some recommended directories are:

- <gc3_install_dir>/logs/ (Web and App Servers): This is the directory that all logs are created under (including user-created logs) and it can grow very quickly.
- <gc3_install_dir>/temp/upload/ (Web Server): This is the directory that uploaded files get placed in prior to processing. The growth will vary based on your product usage.
- <gc3_install_dir>/rptapache/htdocs/ (Report Server): This is the directory that scheduled reports will get placed into. The growth will vary based on your product usage.

Note: If you are upgrading an existing GC3 installation to GC3 v5.0, please take a moment to read about the following changes:

The startup scripts and procedure has changed. Please read the *Starting and Stopping the GC3 Servers* section of Chapter 11 for more details.

The console output for java processes no longer goes to the nohup.out files. Instead it goes to the console.log files under <gc3_install_dir>/logs/tomcat and <gc3_install_dir>/logs/weblogic directories. These log files automatically rotate and are no longer overwritten at startup.

The default password for the *system* user has changed to *CHANGEME*. This is required for logging into the WebLogic console. If your password is different, you can either update it or update the Tomcat and Weblogic configuration files as described in the *Changing Passwords* section of Chapter 13.

Installing GC3 on a Single Server

You can install GC3 on a single server for testing and development purposes.

- Run the install program and select “Web and Application” servers to install both on the same server.
- Install all required software for the Application and Web Servers as described previously.

or

- Run the install program and select Web, Application, and Report Servers to install all three (Oracle Reports must be installed on this same physical server) on the same server and follow all the prompts.
- Install the Oracle Database as described in this chapter.

Note: Paths shown in this section will be in Unix format (Ex. /opt/gc3) but should be in Windows format for Win32 installs (Ex. D:/gc3 or D:\gc3). All directions are generic across all operating systems and any differences will be noted.

Installing GC3 on the Application Server

Follow these steps to install the GC3 software on the Application server. The GC3 Install Program requires a graphical interface on Win32

On Unix, we recommend that you run this installer from the server console, or from an X-Windows session. Please contact your UNIX Administrator for more information about launching GUI based UNIX applications. Also, you must set the “DISPLAY” environment variable if again, if you haven’t already done so. Alternatively, you Unix users can install in console mode, as described below.

1. Run the installer to start the installation (gc3v50_win32.exe for Win32 and gc3v50GA_<platform>.bin for Unix).

Note: GC3 also supports CONSOLE MODE installation on Unix platforms only. This allows you to install GC3 when a GUI console is not available or practical. Run the following commands to launch the installer in this mode:

```
"stty erase ^H"  
"./gc3v50GA_<platform>.bin -i console"
```

2. Read this page and ensure that you are logged in with the correct privileges and click “Next”.
3. Read the installation notice and click “Next”.
4. Read and accept license agreement.

5. Enter your Customer ID. If you do not have one, please contact G-Log Technical Support.
6. Choose the installation directory (usually /opt/gc3 or /opt/gc350 to denote version type). If you are installing more than one GC3 instance on a server, each instance should be installed into a different directory.
7. Choose Simple or Custom installation. A Simple installation will accept defaults for some settings, while the custom installation gives you complete control. Example settings are: init script / service names, memory settings, ports, etc. During a Simple install, fewer questions will be asked, since these defaults are assumed.
8. Choose App Server to install the Application Server only and click Next.
9. Enter the Web Server External Fully Qualified Domain Name (for example, charlie.brown.com). This would work if charlie is the server name and brown.com is the domain name. If your site were accessed through a load-balancer or NAT device, this would be the external URL (outside your network). If not, then this would be the FQDN of your web server from within your network.
10. Enter the Web Server External Port (usually 80). If your site were accessed through a load-balancer or NAT device, this is the external port. If not, then this is the port on your web server.
11. Enter the Fully Qualified Domain Name of your Web Server. This may or may not be the same as the Web Server External URL. Please contact your Network Administrator if you have any concerns about this.
12. Enter the Web Server Port (usually 80).
13. Enter the Fully Qualified Domain Name of your Application Server, which is the name of your server and the domain name (for example, lucy.brown.com).
14. Enter the App. Server Port (usually 7001).
15. Enter the Database Server Fully Qualified Domain Name that is the name of your Database Server and the domain name (for example, snoopy.brown.com).
16. Enter the Database Server Port. This is usually 1521.
17. Enter the Database Connect String. This is the db connect string as setup in your tnsnames.ora file under the Oracle client installation. Contact your Oracle Administrator for this information.
18. Enter the Database SID name.
19. Enter Oracle Home Path where you installed the Oracle client (/u01/app/oracle/product/920, for instance) and click "Next".
20. Enter the URL Prefix, if your web server is running behind a reverse-proxy or SSO solution. Otherwise, you can accept the default.
21. Enter the App. Server IP Address. WebLogic will be bound to this IP address specifically. If you are installing more than one GC3 instance on a server, each instance should be bound to a different IP address Please contact your Network or UNIX Administrators for more information on creating virtual IP addresses within a server.
22. Enter the App Server SNMP Port (usually 7161).
23. Enter the WebLogic Bea Home directory, which is the BEA home directory you specified when installing WebLogic. (ex./opt/bea)
24. Enter the WebLogic Server Path, which is the directory that you installed WebLogic into and is underneath the BEA home directory. (for example, /opt/bea/weblogic81)
25. Enter the WebLogic memory in megabytes, which is the amount of system memory that WebLogic uses. This default is 1025MB, but may be higher or depending on your configuration.

Note: If this value is lower than 1025MB, WebLogic may not start. Also – please take into consideration whether the server will be used for Test/Development or Production, and what system resources are available.

26. Enter the GC3 App Server Service/Init Script name (usually glogapp50). If installing more than one GC3 instance on a server, this should be unique for each one. This script is created under /etc/init.d.
27. Enter SMTP Server Fully Qualified Domain Name. This server name is necessary to send email notifications from within GC3. Please contact your Network Administrator for this information.
28. Enter the Default Reply-To Email Address that all email notifications will appear to come from. This should map to a real mailbox and will allow you to check for bounced messages or delivery failures.
29. [Unix Only] Click Next and enter the user name that GC3 and WebLogic will run under (usually glog or glog50).
30. [Unix Only] Enter the group name that GC3 and WebLogic will run under (usually glog or glog50).
31. Choose whether or not to migrate custom settings from a previous GC3 installation (v3.7 or later). If you answer yes, you'll need to choose the directory where your old glog.properties file is located.
32. Click Next and choose the optional components with which GC3 will integrate. Depending on what you choose, the installer will prompt for the appropriate configuration information.
33. [Console Install Only] Enter all components that you wish to integrate with using a comma-separated list.
34. If you are integrating with Oracle Reports server, enter the following:
 - Fully Qualified Domain Name of the Oracle Reports server.
 - Port that Apache using on the Oracle Report server (usually 81)
 - Directory that GC3 was (or will be) installed into on the Report Server (usually /opt/gc3).
 - TNSNAMES entry of the Oracle Reports Server.
 - If you do not already have an Oracle Reports server configured, you can configure this afterwards by editing the appropriate configuration files. Simply enter in generic information now and contact G-Log Support for assistance with adding a Reports server later.
35. If you are integrating your Reports Server with ROD, enter the following:
36. Fully Qualified Domain Name of the ROD Server.
37. Port that Oracle is using on the ROD server (usually 1521).
38. Connect String for the ROD database.
39. SID of the ROD database.
40. If you are integrating with FAXMaker or RightFax, enter the following:
41. Phone number that faxes will seem to originate from.
42. Email address that the fax server polls.
43. If you are integrating with SMC RateWare server, enter the following:
 - SMC RateWare Fully Qualified Domain Name
 - SMC RateWare Server Port (usually 23700)
44. If you are integrating with PCMiller server, enter the following:
 - Fully Qualified Domain Name of the PCMiller server
 - PCMiller server port (usually 8145)
45. If you are integrating with Rand McNally IntelliRoute Server, enter the following:
 - Fully Qualified Domain Name of the Rand McNally IntelliRoute Server
 - Rand McNally IntelliRoute Server port (usually 1998).
 - IntelliRoute user name setup during the IntelliRoute server installation (usually glog).
 - IntelliRoute password setup during the IntelliRoute server installation.

- IntelliRoute location setup during the IntelliRoute server installation.
46. If you are integrating with Rand McNally MileMaker Server, enter the following:
 - Enter the Fully Qualified Domain Name of the MileMaker server
 - Enter the MileMaker server port (usually 1031).
 47. Please review the summary before continuing and click Next when ready to proceed. The file copy process may take some time– please be patient. Once the files are copied, the installation program prompts you to begin configuring GC3. This step takes a few minutes (typically one to five minutes).
 48. [Unix Only] The installer will prompt you to log in as root and run the root.sh script. This must be completed for a successful installation.
 49. [Win32 Only] When finished, you must restart your entire server before attempting to start GC3.
 50. Apply the latest GC3 service release before starting up your server. Contact G-Log Technical Support for information and assistance.

Startup Scripts (Unix Only)

The startup scripts are copied to /etc/rc.local on AIX, /sbin/init.d on HP-UX, and /etc/init.d on Linux and Solaris. The default names are shown below, but may differ, depending on what names you specified in the installer.

- glogapp50 (GC3 App Server)

Property Files

The following property files exist on the GC3 Application server and determine how it functions.

- glog.properties (/opt/gc3/glog/config)
- config.xml.template (/opt/gc3/weblogic/config/gc3domain)
- weblogic.sh / weblogic.bat (/opt/gc3/weblogic/config/gc3domain)
- weblogic.conf (/opt/gc3/weblogic/config/gc3domain)

Log Files

The following log files exist on the GC3 Application server.

- glog.app.log (/opt/gc3/logs) – automatically rotates
- weblogic.log (/opt/gc3/logs/weblogic) – automatically rotates
- wl-domain.log (/opt/gc3/logs/weblogic) – automatically rotates
- console.log (/opt/gc3/logs/weblogic) – automatically rotates

Installing GC3 on the Web Server

Follow these steps to install the GC3 software on the Web server. The GC3 Install Program requires a graphical interface on Win32

On Unix, we recommend that you run this installer from the server console, or from an X-Windows session. Please contact your UNIX Administrator for more information about launching GUI based UNIX applications. Also, you must set the "DISPLAY" environment variable if again, if you haven't already done so. Alternatively, you Unix users can install in console mode, as described below.

1. Create a directory to store the additional jar files and classes needed by GC3. We recommend /tmp/addjars for the purpose of these instructions.

2. Copy weblogic.jar and xmlx.jar from /opt/bea/weblogic81/server/lib on the GC3 Application server to /tmp/addjars on your Web server.
3. Run the installer to start the installation (gc3v50_win32.exe for Win32 and gc3v50GA_<platform>.bin for Unix).

Note: GC3 also supports CONSOLE MODE installation on Unix platforms only. This allows you to install GC3 when a GUI console is neither available nor practical. Run the following commands to launch the installer in this mode:

```
"stty erase ^H"  
"./gc3v50GA_<platform>.bin -i console"
```

4. Read this page and ensure that you are logged in with the correct privileges and click "Next".
5. Read the installation notice and click "Next".
6. Read and accept license agreement.
7. Enter your Customer ID. If you do not have one, please contact G-Log Technical Support.
8. Choose the installation directory (usually /opt/gc3 or /opt/gc350 to denote version type). If you are installing more than one GC3 instance on a server, each instance should be installed into a different directory.
9. Choose Simple or Custom installation. A Simple installation will accept defaults for some settings, while the custom installation gives you complete control. Example settings are: init script / service names, memory settings, ports, etc. During a Simple install, fewer questions will be asked, since these defaults are assumed.
10. Choose "Web Server" to install the Web Server only and click "Next".
11. Enter the Web Server External Fully Qualified Domain Name (for example, charlie.brown.com). This would work if charlie is the server name and brown.com is the domain name. If your site were accessed through a load-balancer or NAT device, this would be the external URL (outside your network). If not, then this would be the URL to your web server from within your network.
12. Enter the Web Server External Port (usually 80). If your site were accessed through a load-balancer or NAT device, this is the external port. If not, then this is the port on your web server.
13. Enter the Fully Qualified Domain Name of your Web Server. This may or may not be the same as the Web Server External URL. Please contact your Network Administrator if you have any concerns about this.
14. Enter the Web Server Port (usually 80).
15. Enter the Fully Qualified Domain Name of your Application Server, which is the name of your server and the domain name (for example, lucy.brown.com).
16. Enter the App. Server Port (usually 7001).
17. Enter the Database Server Fully Qualified Domain Name that is the name of your Database Server and the domain name (for example, snoopy.brown.com).
18. Enter the Database Server Port. This is usually 1521.
19. Enter the Database Connect String. This is the db connect string as setup in your tnsnames.ora file under the Oracle client installation. Contact your Oracle Administrator for this information.
20. Enter the Database SID name.
21. Enter Oracle Home Path where you installed the Oracle client (/u01/app/oracle/product/920, for instance) and click "Next".
22. Enter the URL Prefix, if your web server is running behind a reverse-proxy or SSO solution. Otherwise, you can accept the default.

23. Enter the Web Server IP Address. Apache will be bound to this IP address. If you are installing more than one GC3 instance on a server, each instance should be bound to a different IP address. (ex. 192.168.2.1)
24. Enter the Web Server SSL Port (usually 443).
25. Enter the GC3 Web Server Service/Init Script name (usually glogweb50). If installing more than one GC3 instance on a server, this should be unique for each one. This script will be created under /etc/init.d.
26. Enter the Tomcat Data Port (usually 8009).
27. Enter the Tomcat Shutdown Port (usually 8007).
Note: This port must be unique for every GC3 instance on a physical server, since it binds to 127.0.0.1.
28. Enter the Tomcat Memory in Megabytes. This is the amount of system memory that Tomcat will use. This is 1025Mb by default, but may be higher or lower, depending on your configuration.
Note: If this value is lower than 1025MB, Tomcat may not start. Also, please be sure to note whether this server will be used for Test/Development or Production, and what system resources it has available.
29. Enter the path to your "addjars" directory (usually /tmp/addjars) and click Next. This is the directory where you placed the extra jar files that GC3 requires. During the installation, they are copied from this directory to the appropriate installation directories.
30. [Unix Only] Click Next and enter the user name that GC3 and WebLogic will run under (usually glog or glog50).
31. [Unix Only] Enter the group name that GC3 and WebLogic will run under (usually glog or glog50).
32. Choose whether or not to migrate custom settings from a previous GC3 installation (v3.7 or later). If you answer yes, you'll need to choose the directory where your old glog.properties file is located.
33. Click Next and choose the optional components with which GC3 will integrate. Depending on what you choose, the installer will prompt for the appropriate configuration information.
34. If you are integrating with Oracle Reports server, enter the following:
 - Fully Qualified Domain Name of the Oracle Reports server.
 - Port that Apache using on the Oracle Report server (usually 81)
 - Directory that GC3 was (or will be) installed into on the Report Server (usually /opt/gc3).
 - TNSNAMES entry of the Oracle Reports Server.
 - If you do not already have an Oracle Reports server configured, you can configure this afterwards by editing the appropriate configuration files. Simply enter in generic information now and contact G-Log Support for assistance with adding a Reports server later.
35. If you are integrating your Reports Server with ROD, enter the following:
 - Fully Qualified Domain Name of the ROD Server.
 - Port that Oracle is using on the ROD server (usually 1521).
 - Connect String for the ROD database.
 - SID of the ROD database.
36. Review the summary and click next when ready to proceed. The file copy process may take a while and may appear to hang – please be patient. Once the files are copied, the Install Program prompts you to begin configuring GC3. Click next when you are ready to proceed. This step takes a few minutes (typically one to five minutes).

37. [Unix Only] The installer will prompt you to log in as root and run the root.sh script. This must be completed for a successful installation.
38. [Win32 Only] When finished, you must restart your entire server before attempting to start GC3.
39. Apply the latest GC3 service release before starting your server. Contact G-Log Technical Support if you need assistance.

Startup Scripts (Unix Only)

The startup scripts are copied to /etc/rc.local on AIX, /sbin/init.d on HP-UX, and /etc/init.d on Linux and Solaris. The default names are shown below, but may differ, depending on what names you specified in the installer.

- glogweb50 (GC3 Web Server)

Property Files

The following property files on the GC3 Web server determine how it functions.

- glog.properties (/opt/gc3/glog/config)
- httpd.conf (/opt/gc3/apache/conf)
- mod_jk.conf (/opt/gc3/apache/conf)
- tomcat.sh / tomcat.bat (/gc3/tomcat/bin)
- tomcat.conf (/gc3/tomcat/bin)
- server.xml (/gc3/tomcat/conf)

Log Files

The following log files exist on the GC3 Web server.

- glog.web.log (/opt/gc3/logs) – automatically rotates
- access.log (/opt/gc3/logs/apache) – may grow quickly
- error.log (/opt/gc3/logs/apache)
- mod_jk.log (/opt/gc3/logs/apache)
- ssl.log (/opt/gc3/logs/apache)
- console.log (/opt/gc3/logs/tomcat) – automatically rotates

Installing GC3 on the Reports Server

Follow these steps to install the GC3 software on the Reports server. The GC3 Install Program requires a graphical interface on Windows.

On Unix, we recommend that you run this installer from the server console, or from an X-Windows session. Please contact your UNIX Administrator for more information about launching GUI based UNIX applications. Also, you must set the DISPLAY environment variable if again, if you haven't already done so. Alternatively, you Unix users can install in console mode, as described below.

1. Run the installer to start the installation (gc3v50_win32.exe for Win32 and gc3v50GA_<platform>.bin for Unix).

Note: GC3 also supports CONSOLE MODE installation on Unix platforms only. This allows you to install GC3 when a GUI console is not available or practical. Run the following commands to launch the installer in this mode:

```
"stty erase ^H"  
"./gc3v50GA_<platform>.bin -i console"
```

2. Read this page and ensure that you are logged in with the correct privileges and click Next.
3. Read the installation notice and click Next.
4. Read and accept license agreement.
5. Enter your Customer ID. If you do not have one, please contact G-Log Technical Support.
6. Choose the installation directory (usually /opt/gc3 or /opt/gc350 to denote version type). If you are installing more than one GC3 instance on a server, each instance should be installed into a different directory.
7. Choose Simple or Custom installation. A Simple installation will accept defaults for some settings, while the custom installation gives you complete control. Example settings are: init script / service names, memory settings, ports, etc. During a Simple install, fewer questions will be asked, since these defaults are assumed.
8. Choose Rpt Server to install the Reports Server only and click Next.
9. Enter the Web Server External Fully Qualified Domain Name (for example, charlie.brown.com). This would work if charlie is the server name and brown.com is the domain name. If your site were accessed through a load-balancer or NAT device, this would be the external URL (outside your network). If not, then this would be the URL to your web server from within your network.
10. Enter the Web Server External Port (usually 80). If your site were accessed through a load-balancer or NAT device, this is the external port. If not, then this is the port on your web server.
11. Enter the Fully Qualified Domain Name of your Web Server. This may or may not be the same as the Web Server External URL. Please contact your Network Administrator if you have any concerns about this.
12. Enter the Web Server Port (usually 80).
13. Enter the Fully Qualified Domain Name of your Application Server, which is the name of your server and the domain name (for example, lucy.brown.com).
14. Enter the App. Server Port (usually 7001).
15. Enter the Database Server Fully Qualified Domain Name that is the name of your Database Server and the domain name (for example, snoopy.brown.com).
16. Enter the Database Server Port. This is usually 1521.
17. Enter the Database Connect String. This is the db connect string as setup in your tnsnames.ora file under the Oracle client installation. Contact your Oracle Administrator for this information.
18. Enter the Database SID name.
19. Enter Oracle Home Path where you installed the Oracle client (/u01/app/oracle/product/920, for instance) and click "Next".
20. Enter the URL Prefix, if your web server is running behind a reverse-proxy or SSO solution. Otherwise, you can accept the default.
21. Enter the GC3 Web Server IP Address (for example, 192.168.2.1).
22. Enter the GC3 Application Server IP Address (for example, 192.168.2.2).
23. Enter the GC3 Report Server FQDN. (ex. linus.brown.com)
24. Enter the Report Server IP Address. Apache and Tomcat on the Report Server will be bound to this IP address. If you are installing more than one GC3 instance on a server, each one should be bound to a different IP address (for example, 192.168.2.3).
25. Enter the Report Server Apache Port (usually 81).
26. Enter the GC3 Report Server Web Server Service/Init Script name (usually glogrptweb50). If installing more than one GC3 instance on a server, this should be unique for each one.
27. Enter the Oracle Reports Connect String.

28. Enter the ORACLE_HOME path of Oracle Reports (usually /u01/app/oracle/product/reports10g).
29. **[Unix Only]** Click Next and enter the user name that GC3 and WebLogic will run under (usually glog or glog50).
30. **[Unix Only]** Enter the group name that GC3 and WebLogic will run under (usually glog or glog50).
31. If you are integrating your Reports Server with ROD, enter the following:
 - Fully Qualified Domain Name of the ROD Server.
 - Port that Oracle is using on the ROD server (usually 1521).
 - Connect String for the ROD database.
 - SID of the ROD database.
32. Review the summary before continuing and click Next when ready to proceed. The file copy process may take a while and may appear to hang – please be patient. Once the files are copied, the Install Program prompts you to begin configuring GC3. Click next when you are ready to proceed. This step takes a few minutes (typically one to five minutes).
33. **[Unix Only]** The installer will prompt you to log in as root and run the root.sh script. This must be completed for a successful installation.
34. **[Win32 Only]** When finished, you must restart your entire server before attempting to start GC3.
35. Apply the latest GC3 service release before starting up your server. Contact G-Log Technical Support if you need assistance.
36. Copy all of the files from <gc3_install_dir>/glog/reports/10g to <oracle_reports_home>/reports/templates. Overwrite all existing files.
 Note: You will need to do this step after applying each GC3 patch, in order to ensure the files under <oracle_reports_home>/reports/templates are up to date.
37. It is now necessary to make configuration changes in support of the GC3 / Oracle Reports installation.
38. Edit the TNSNAMES.ORA file on the Reports Server. Add a TNS entry that points to the same Oracle database instance as the GC3 installation.
39. Go to the Oracle Reports HOME directory. Change to the reports/conf/ directory and edit the rep_<REPORTS_SERVERNAME>.conf file. This is an XML file. Make the following changes:
 - Uncomment the “Compatible” property
 <compatible version=“6i”/>
 - Change the “engine id” property as follows:
 <engine id=“rwEng” class=“oracle.reports.engine.EngineImpl” initEngine=“10” maxEngine=“20” minEngine=“10” engLife=“50” maxIdle=“30” callbackTimeOut=“60000”>
 - Modify the “SourceDir” property
 <property name=“sourceDir” value=“<gc3_install_dir>/glog/reports”/>
40. Edit or create the cgicmd.dat file on the Reports Server (under reports10g/reports/conf). The file should look like the following. Keep in mind that the format of this file is important and spaces and blank lines should be just as they are below. Replace <db_connect_string> with the connect string for your GC3 database, as configured in your TNSNAMES.ORA file.

```
all=: %*
hide_pass_key: userid=glogdba/glogdba@<db_connect_string> %*
```

Note: Everything from hide_pass_key to %* should be on one line.

41. When the configuration is complete, log into the Oracle Enterprise Manager (usually `http://<servername>:1810`). The username is "ias_admin" and the password was defined during installation. Click on "Reports Server: rep_<servername>". Then click on "Restart" to restart your Oracle Reports server.
42. If the Oracle Enterprise Manager is not running, you can start it by logging into your server as the oracle user, changing into the `<ORACLE_FR_HOME>/bin` directory, and running:


```
emctl start iasconsole
```
43. In order to test your Oracle Reports installation, use a web browser to hit the following URLs:
 - `http://<servername>:7777/reports/rwservlet/help`
This will display the help page
 - `http://<servername>:7777/repdemo/runrepIAS.html`
Run the test.rdf report. Enter the Connect String of your GC3 DB and click "Run Report"

When prompted, enter the User name "glogdba", password "glogdba" and the Connect String of your GC3 DB in the Database field. Click "Submit".

If the test report runs successfully, your configuration is correct.
44. If you encounter problems with GC3 communicating with Oracle Reports, first double check your `tnsnames.ora` file and ensure that the entries for your Oracle Reports instance and Oracle DB instance are correct. You can utilize the "sqlplus" and "tnsping" utilities within Oracle AS 10g FR to test these connections.

Startup Scripts (Unix Only)

The startup scripts are copied to `/etc/rc.local` on AIX, `/sbin/init.d` on HP-UX, and `/etc/init.d` on Linux and Solaris. The default names are shown below, but may differ, depending on what names you specified in the installer.

- `glogrptweb50` (GC3 Reports Web Server)

Property Files

The following property files are on the GC3 Reports server and determine how it functions.

- `glog.properties` (`/opt/gc3/glog/config`)
- `httpd.conf` (`/opt/gc3/rptapache/conf`)
- `cgicmd.dat` (`/u01/app/oracle/product/reports/conf`)
- `rep_<REPORTS_HOST>.conf` (`/u01/app/oracle/product/reports10g/reports/conf`)

Log Files

The following log files are on the GC3 Reports server.

- `access.log` (`/opt/gc3/logs/rptapache`) – may grow quickly
- `error.log` (`/opt/gc3/logs/rptapache`)
- `rwservlet.log` (`/u01/app/oracle/product/reports10g/reports/logs/rep-<REPORTS_HOST>`)

Installing GC3 on the Database Server

You should have your Database Administrator install the Oracle database and fine-tune it for performance. Once Oracle is installed, follow these steps to complete the process.

These steps outline the procedures to set up an Oracle database for GC3. It is assumed that Oracle software has already been installed, patched to 9.2.0.6, and an Oracle database has been created. Please note that the GC3 database scripts are located under `/opt/gc3/glog/oracle/script8` on the GC3 Application server.

Requirements

Oracle Version: 9.2.0.6 Enterprise Edition
Oracle Options: Jserver, Partitioning (optional)
Oracle Instance Character Set: UTF8

Initial Parameters

The following initial parameters should be set:

```
O7_DICTIONARY_ACCESSIBILITY = true  
MAX_ENABLED_ROLES = 90  
Open_cursors = 200 (or greater)
```

Please refer to the init.ora file in <gc3_install_path>/glog/oracle/script8 for recommendations on other parameters.

Create Tablespaces

The following tablespaces are required to be created first. As the database grows, more datafiles should be added to accommodate the application. For performance purposes, all tablespaces should be on different physical disks (if available) or on RAID 0+1 storage.

Required Tablespaces for GC3 database

For a partitioned database, required tablespaces and initial file sizes are listed below:

Tablespace	Initial File Size
ARCHIVE	500 MB
DATA	1500 MB
INDX	3000 MB
REPORT	300 MB
REPORTINDX	300 MB
BPL_DAY1	50 MB
BPL_DAY2	50 MB
BPL_DAY3	50 MB
BPL_DAY4	50 MB
BPL_DAY5	50 MB
BPL_DAY6	50 MB
BPL_DAY7	50 MB
PART_1	100 MB

Tablespace	Initial File Size
PART_2	100 MB
PART_3	100 MB
PART_4	100 MB
LOB1	300 MB
LOB2	300 MB
LOB3	300 MB
LOB4	300 MB
LOB5	100 MB
LOB6	100 MB
LOB7	100 MB
TEMP	1 GB

For a non-partitioned database, required tablespaces and initial file sizes are listed below:

Tablespace	Initial File Size
ARCHIVE	500 MB
DATA	1500 MB
INDX	3000 MB
REPORT	300 MB
REPORTINDX	300 MB
LOB1	300 MB
LOB2	300 MB
LOB3	300 MB
LOB4	300 MB
LOB5	100 MB
LOB6	100 MB
LOB7	100 MB
TEMP	1 GB

These tablespaces should be created first. A database administrator can write a script to create the tablespaces or use the G-Log provided procedure described below. G-Log recommends all GC3 tablespaces are locally managed with automatic segment spacement.

The sizes specified above are minimal for the successful installation of GC3 database. LOB tablespaces are used to hold LOB objects, which are usually very space consuming. G-Log recommends double the size of these tablespaces at the creation time if the database is being used immediately with integrations. G-Log also recommends giving 20% - 50% more space to the other tablespaces.

Using G-Log Procedure to Create Tablespaces

G-Log provides a SQL script, `create_gc3_tablespaces.sql`, to create all tablespaces of GC3 database. When you run this script, you are prompted for options, which are explained below. All of tablespaces are locally managed with uniform size set as 5MB for lob tablespaces and 1MB for the others. Only one datafile is created for each tablespace. The datafiles of all tablespaces are created in the same directory that you specify. If you want to create dictionary-managed tablespaces, and/or create tablespaces in different file systems/directories, you should run the script with Execute Now option set to N. This way the process will generate create tablespaces statements in a log file. You can modify the statements and run them later manually.

This script creates LOB tablespaces with 16 KB block size. This is the recommended block size for optimal performance. In order to create a tablespace with 16 KB block size, you should have following `init.ora` parameter set if your database standard block size is not 16 KB. Change the cache size as needed for your database.

```
db_16k_cache_size = 104857600 # 100MB for 16k block buffers
```

1. To run the script, log in to the database as user SYS or any other user with CREATE TABLESPACE privilege and run script:

```
create_gc3_tablespaces.sql.
```

Create Tablespace Options

- ROD database (Y/N)

The primary GC3 database is OLTP type and also referred to OLTP. A secondary database referred as ROD (replicated operational database) is also an option. GC3 requires different tablespaces in this ROD database; therefore, if you are setting up an ROD database, enter Y. Otherwise enter N.

- Partition Option (Y/N)

In the GC3 OLTP database, most integration tables are partitioned for the purpose of easy maintenance. There are some other tables that are also partitioned. To accommodate the partitioned tables, there are dedicated tablespaces for these partitions. But if your database is not partition-enabled and you are not planning to add the partitioning option of Oracle, you can have the partitioned GC3 tables created without partitioning. In this case, you will not need the partition tablespaces and you should enter N for this option. The default is Y. Your ROD database is not partitioned. So this question is irrelevant if you are creating ROD database tablespaces. Hit ENTER in that case.

- Parameter Default Option (Y/N)

This process sets the following parameters with default values. If you do not want to use these values, you should enter N. The default is Y.

file size: 1GB

maximum file size(if auto extend is on): 2GB

- Parameter Value Option

If you choose N for parameter default option, you can enter values you want for the above parameters. Otherwise just press Enter.

- Autoextend Option

Enter N if you don't want your datafiles to be autoextended. Default is Y.

- Datafile directory

Enter full path of data files directory. The trailing slash (/) for Unix/Linux or back-slash (\) should be included.

- Executing-Now Option

Enter Y if you want to let the process to create tablespaces for you. Otherwise the process will generate create statements in the log file. Default is N.

Creating Database Roles and Database Users

There are various SQL scripts that MUST be run before an attempt is made to start GC3. You can find them, on the APPLICATION server, under the <GC3_install>gc3/glog/oracle/script8 directory.

1. In SQL*Plus as the **SYSTEM** user, run:

```
@create_glog_roles.sql  
@create_glog_users.sql
```

The database users created have a password that matches their userid.

Import GC3 Database Structure and Public Data

1. Change to the <GC3_install>/gc3/glog/oracle/export directory on the GC3 Application server.
2. Unzip gc3v50_partition.zip/gc3v50_nonpartition.zip file.
3. Modify dump file path in imp_gc3v50_partition.par/ imp_gc3v50_nonpartition.par to make sure it is the location of the dump file (gc3v50_partition.dmp or gc3v50_nonpartition.dmp).
4. Set environment variable ORACLE_SID to your database SID. If the ORACLE_SID is not set within the system environment you set this within your current command prompt by typing "export ORACLE_SID=<your ORACLE_SID>". You can check that this variable is active by typing "echo \$ORACLE_SID". You should see your ORACLE_SID displayed.
5. Set environment variable NLS_LANG to: <LANGUAGE>_<TERRITORY>.UTF8. Here <LANGUAGE> is used for Oracle messages, day names and month names. <TERRITORY> specifies conventions for default calendar, monetary, numerical format. For example, if in USA, you can set the parameter to AMERICAN_AMERICA.UTF8. For more information on NLS_LANG see the Oracle National Language Support Guide.
6. At command line type: (replace <SYSTEM_PWD> with the password of user SYSTEM and replace <CON_STR> with the database connection string setup in your tnsnames.ora file.)

For partition option, at the command line type:

```
imp parfile=imp_gc3v50_partition.par  
userid=system/<SYSTEM_PWD>@<CON_STR>
```

For non-partition option, at the command line type:

```
imp parfile=imp_gc3v50_non_partition.par  
userid=system/<SYSTEM_PWD>@<CON_STR>
```

7. Check the imp_gc3v50.log file. There should not be any errors in the importing table portion. It is safe to ignore the error message *IMP-00041: Warning: object created with compilation warnings*. If there are other IMP- or ORA- errors, please contact G-Log Technical Support.

Running G-Log scripts

1. Change to the gc3/glog/oracle/script8 directory on the GC3 Application server. In SQL*Plus, as user **GLOGOWNER** run:

```
@create_vpd_package.sql
@glogowner_grants.sql
@create_public_synonyms.sql
@create_logon_triggers (enter connection string when prompted)
```

2. In SQL*Plus, as user ARCHIVE run:

```
@archive_grants
```

3. In SQL*Plus, as user **REPORTOWNER** run:

```
@reportowner_grants.sql
@create_public_synonyms.sql
@recompile_invalid_objects.sql
```

After running the "recompile_invalid_objects.sql" script, you should see the following on the screen:

```
Invalid objects after Recompile...
0
```

If the number of invalid objects is not zero, run the recompile_invalid_objects.sql script again. If you still have invalid objects after the second run, copy the script output from the command prompt window, paste into a text file, and forward it on to G-Log Technical Support.

4. In SQL*Plus, as user **GLOGOWNER** run:

```
@aq_setup.sql
@recompile_invalid_objects.sql
```

After running the recompile_invalid_objects.sql script, you should see the following on the screen:

```
Invalid objects after Recompile...
0
```

If the number of invalid objects is not zero, run the recompile_invalid_objects.sql script again. If you still have invalid objects after the second run, copy the script output from the command prompt window, paste into a text file, and forward it on to G-Log Technical Support.

Verify Database Structure

5. In SQL*Plus, as user **GLOGOWNER** run:

```
Select count(*) from all_objects where status='INVALID' and owner in
('GLOGOWNER', 'REPORTOWNER', 'GLOGDEV', 'GLOGLOAD');
```

The result should be:

```
COUNT(*)
0
```

6. Run:

```
Select namespace from dba_context where schema = 'GLOGOWNER';
```

The result should be:

```
NAMESPACE
GL_USER_CTX
```

7. Run:

```
select object_owner, count(*) from dba_policies
where object_owner in ('GLOGOWNER','REPORTOWNER')
group by object_owner;
```

The result should be:

OBJECT_OWNER	COUNT(*)
GLOGOWNER	16544
REPORTOWNER	224

8. Run:

```
@object_count.sql
```

For partitioned database the results should be:

OWNER	OBJECT_TYPE	TOTAL
ARCHIVE	LOB	4
	SEQUENCE	234
	TABLE	234
GLOGDEV	TRIGGER	1
GLOGLOAD	TRIGGER	1
GLOGOWNER	FUNCTION	1
	INDEX	2257
	INDEX PARTITION	39
	JAVA CLASS	7
	JAVA SOURCE	6
	LOB	25
	LOB SUBPARTITION	39
	PACKAGE	65
	PACKAGE BODY	63
	PROCEDURE	1
	QUEUE	3
	SEQUENCE	98

OWNER	OBJECT_TYPE	TOTAL
	TABLE	1074
	TABLE PARTITION	140
	TRIGGER	2440
	TYPE	4
	VIEW	23
REPORTOWNER	INDEX	14
	PACKAGE	9
	PACKAGE BODY	9
	SEQUENCE	1
	TABLE	14
	TRIGGER	16
	VIEW	33

For non-partitioned database the results should be:

OWNER	OBJECT_TYPE	TOTAL
ARCHIVE	LOB	4
	SEQUENCE	234
	TABLE	234
GLOGDEV	TRIGGER	1
GLOGLOAD	TRIGGER	1
GLOGOWNER	FUNCTION	1
	INDEX	2257
	JAVA CLASS	7
	JAVA SOURCE	6
	LOB	25
	PACKAGE	65
	PACKAGE BODY	63

OWNER	OBJECT_TYPE	TOTAL
	PROCEDURE	1
	QUEUE	3
	SEQUENCE	98
	TABLE	1074
	TRIGGER	2440
	TYPE	4
	VIEW	23
REPORTOWNER	INDEX	14
	PACKAGE	9
	PACKAGE BODY	9
	SEQUENCE	1
	TABLE	14
	TRIGGER	16
	VIEW	33

If your results differ from those shown above, gather the log files generated from the import process, and SQL scripts, and forward them on to G-Log Technical Support.

Reset Sequences

1. In SQL*Plus as the GLOGOWNER user, run:

```
Set serverout on size 1000000
Execute domainman.reset_sequence;
```

Analyze Tables

1. In SQL*Plus as the SYSTEM user , run:

```
@gather_table_stats.sql
```

Setup Security Roles

1. Change to the <GC3_install>/gc3/glog/oracle directory on the GC3 Application server.
2. In SQL*Plus as the **GLOGOWNER** user, run:

```
@insert_security_roles.sql
```

Installing the Replicated Operational Database

This section describes how to install and configure the replicated online database (ROD) for reporting and archiving (optional).

An ROD is a replicated version of your OLTP database (except for CLOB and LONG columns), on a completely separate database. It is created using Oracle's materialized view technology. The ROD is intended for users who need to run reports or long-running queries. Separating the reporting from the online transaction processing ensures that reports do not adversely affect performance of the OLTP database.

Once you create the new database for storing the ROD, ensure that the database initialization parameters are similar to the OLTP database (such as the character set), and that the dictionary_accessibility is set to true. The ROD does not use partitioning, since LONG and CLOB columns are not copied over.

Creating Materialized View Logs on the OLTP

Log files are needed to capture update, inserts, and deletes on the OLTP database, so that the ROD database can be refreshed incrementally. Run the following to install the logs onto the OLTP database.

1. If you had our previous ODS system, run the following first as GLOGOWNER on the OLTP database. This will remove previous logs. Repeat this step as REPORTOWNER. Also, it is recommended to make a backup of the original ODS database, since the next steps will completely wipe out the environment. Follow the rest of the steps as described, to recreate your replicated environment.

```
@drop_user_mview_logs
```

2. On the OLTP database as GLOGOWNER run the following. It created the logs for both GLOGOWNER and REPORTOWNER.

```
@create_mview_logs
```

Note: You can let this run on the OLTP, and continue to the next steps on the ROD. Just make sure all the logs are created prior to running the create_rod.sql script.

Create Tablespaces

1. To create the tablespaces for the ROD, run the following. It is the same script for creating tablespaces on the OLTP, but enter Y when asked if this is the ROD database. If archiving is going to be stored on the ROD also, enter Y when prompted.

```
@create_gc3_tablespaces
```

Note: the ROD, without archiving, will be smaller than the OLTP, since the ROD is a replica of the OLTP database without the LONG or CLOB columns (key tablespaces for the ROD is DATA and INDX). If archiving is stored on the ROD database, then this will be stored in the ARCHIVE tablespace.

Configure TNS Names on ROD Database Server

1. On the ROD database server, configure your tnsnames.ora file to have an entry for your OLTP database. You will be prompted for the connection id later when the database link is created.

Create Database Roles and Database Users

1. On the ROD database as user SYSTEM run the following. Be very careful as to run this on the ROD database, since this drops and recreates the users:

```
@create_glog_roles.sql  
@create_glog_users.sql
```

The database users created have their passwords the same as their user id, respectively.

Create Database Links

1. The two databases now need to 'see' each other, so that the ROD can be refreshed from the OLTP, and logging information from the ROD can be written back to the OLTP. Visibility will be accessed through database links. Run the following scripts (you will be immediately be reconnected as GLOGOWNER on the appropriate database (OLTP or ROD) once you have entered the proper parameters, so who you are connected as to start is not a concern.)

```
@create_dblink_rod_to_oltp.sql
```

2. You should see SUCCESS in the feedback after the creation of each link, as it is tested. If you see an error, then do not continue until this step is successful, as the next steps rely on the links.

Note: If you change the passwords for your databases, rerun the database link creation scripts so that the links use the correct passwords. Otherwise, use of the links will produce an Invalid username/password error.

Initialize the ROD database

1. To populate the ROD, run the following step.

```
@create_rod.sql
```

It will connect as GLOGOWNER and create and populate the materialized views. This step will take several hours or days, depending upon the size of your OLTP database and the parallelism number you choose. Once the ROD is initially set up, it will be updated incrementally through the use of the logs.

This will prompt you for:

- the ROD connection string
- The parallelism you want to set for the refresh group. This defaults to null (meaning processing will occur in serial), but you can set it to 1 or higher. This can improve the overall time it takes to refresh the ROD database (read Planning for Parallel Propagation). The higher this setting is, the more data that is processing in parallel. The number you set this to will be limited by the resources of your hardware.

Modify Refresh Time

In the previous step, the materialized views created were grouped into two refresh groups, AA and DEFAULT. The refresh schedule for the two groups has been set as below:

GROUP	INITIAL REFRESH	INTERVAL BETWEEN REFRESHES
AA	SYSDATE + 5	Every 15 minutes
DEFAULT	SYSDATE + 5	Every one day

If you want the initial refresh to start sooner than 5 days or you want to change the refresh interval you can call `pkg_rod.create_refresh_group` procedure. This procedure accepts four parameters:

- Group name. This should be either "AA" or "DEFAULT"
- Initial time the refresh job should begin
- defaults to TRUNC(SYSDATE)+1
- when rod is initially created, it is set to TRUNC(SYSDATE)+5 so that the refresh does not occur during initial setup (i.e. 5 days from 12am of current day)

- Interval of time between refresh jobs
- defaults to 'SYSDATE+1' which means to run the refresh job once a day
- Note even the default is once a day for AA group, you should set it to much shorter interval if you have Advance Analysis runs in this ROD database, like every 15 minutes.
- Note that the initial time to run is a date, but the interval is a string.
- Parallelism (see Parallel Propagation section)
- 0 specifies serial propagation.
- n > 1 specifies parallel propagation with n parallel processes.
- 1 specifies parallel propagation using only one parallel process.

Examples:

```
EXEC PKG_ROD.CREATE_REFRESH_GROUP(P_GROUP_NAME =>'DEFAULT'); --for DEFAULT group,
uses all defaults, which means set initial refresh time to be 12am the next day, refresh every day,
with no parallelism.
```

OR

```
EXEC PKG_ROD.CREATE_REFRESH_GROUP(P_GROUP_NAME =>'AA', P_INITIAL_TIME =>
trunc(sysdate)+2); --for AA group, initially starts refresh 2 days from now at 12am, and refresh once
a day (default)
```

OR

```
EXEC PKG_ROD.CREATE_REFRESH_GROUP(P_GROUP_NAME =>'AA',P_INITIAL_TIME =>
trunc(sysdate)+5, p_interval => 'SYSDATE+15/24/60', P_PARALLELISM => 3); -- for AA group,
starting 5 days from now at 12am, refreshes every 15 minutes, with a parallelism setting of 3.
```

You can verify the settings by querying the view DBA_REFRESH.

**The DBA should check the alert log for any potential errors on a daily basis.

It is recommended to run the refresh during off-peak hours, since reports should not be run while the refresh process is occurring. It does not cause errors, but would cause potential report integrity problems, since some tables might have been refreshed, while others may not have completed.

Parallel Propagation (excerpt from Oracle Documentation)

With serial propagation, Oracle propagates replicated transactions one at a time in the same order that they are committed on the source system. With parallel propagation, Oracle propagates replicated transactions using multiple parallel streams for higher throughput. When necessary, Oracle orders the execution of dependent transactions to preserve data integrity.

Parallel propagation uses the pool of available parallel server processes. This is the same facility Oracle uses for other parallel operations such as parallel query, parallel load, and parallel recovery. Each server process propagates transactions through a single stream. A parallel coordinator process controls these server processes. The coordinator tracks transactions dependencies, allocates work to the server processes, and tracks their progress.

Analyze the ROD database

1. As GLOGOWNER, run:
@analyze_tables.sql

Replicated Operational Database Maintenance

After an upgrade or patch, the ROD will not automatically be aware of new GC3 tables. You only need to run this when you complete all the upgrades on the OLTP; in other words, if you are upgrading through 2 versions on the OLTP in one weekend, complete those upgrades first, and then upgrade the ROD.

Run the following command to create logs for new tables. It will skip tables that already have a log.

1. On the OLTP database in SQL*Plus, as user GLOGOWNER run:

```
@create_mview_logs
```

2. On the ROD database in SQL*Plus, as GLOGOWNER run:

```
@dbupdate_rod.sql
```

This will first identify broken views caused by columns becoming obsolete. It will then build (or rebuild) the materialized views for any new/modified tables. Note: this will not automatically add columns that were added during an upgrade. This is because the materialized view would need to be recreated from scratch again, and you may not even need those new columns. Therefore, views should only need to be completely refreshed when a column has been removed, or modified in a way that Oracle needs a new copy of the data. Once the views are set, it refreshes the views and builds any new indexes.

Rebuilding an Existing Materialized View

If you want the new columns of a particular table to be regenerated, execute the following:

```
EXEC pkg_rod.build_mview('table_name');
```

It will drop and recreate the materialized view, empty. You can wait until the next refresh for it to populate, or you can do the following:

```
EXEC pkg_rod.refresh_one('table_name');
```

If you are recreating several materialized views, you may want to kick off the refresh for all views manually by executing the following:

```
EXEC pkg_rod.refresh_all;
```

Archive Setup

GC3 can store archived orders and shipments on your transactional (OLTP) database, or on the replicated online database (ROD) used for reporting

If you do not have an ROD set up, but plan to (and want archiving stored there), you can create the separate database and follow the initial ROD steps of:

- Create Tablespaces
- Configure TNSNames
- Create Database Roles and Users

Run the following to create the ARCHIVE user and ARCHIVE tablespace on the database that will store archiving (should be your OLTP or the ROD). This step can be skipped if you already have the archive user. As the user SYSTEM, run the following:

```
@create_archive_user.sql
```

If archiving will be stored on the ROD, run the following as GLOGOWNER on your OLTP (if you have not already done so as part of ROD installation):

```
@create_dblink_oltp_to_rod.sql
```

Then, on the ROD, run the following as GLOGOWNER (if you have not already done so as part of ROD installation):

```
@create_dblink_rod_to_oltp.sql
```

Run the following to set up the archive triggers and tables from the OLTP as GLOGOWNER. If the tables already exist from prior versions, this step will ensure they are in sync with the GC3 table structures.

```
@create_archive_objects.sql
```

The upgrades/patches will automatically keep the archive objects in sync as new tables and columns are added.

Moving Archiving from OLTP to ROD

If archiving is already implemented and is stored on the OLTP, you can later move it to the ROD. You will need to

- Export the archive schema
- Run @create_archive_user.sql on the ROD.
- Import archive schema onto the ROD database
- Create database links as described above.
- @create_dblink_oltp_to_rod
- @create_dblink_rod_to_oltp
- Run @create_archive_objects.sql which will recreate the triggers and set up grants.

8. Installing Oracle 9iR2 RAC

This chapter covers the installation of an Oracle 9iR2 (9.2.0.6) RAC cluster and configuration with GC3. This chapter is not a replacement for the Oracle documentation. You should review that documentation first and understand the principles of Oracle RAC before using this chapter as a guide to performing the installation in your environment.

Test Installation Environment

The following environment was used as the basic for the installation steps documented in this chapter.

Node 1 – gc3rac1.glogtech.com

- Dell PowerEdge 2850 Server
- 2 x 3.0 GHz P-IV CPU
- 8GB RAM
- 2x72GB SCSI HDD (Hardware RAID 1)
- QLogic QLA2340 2Gb Fibre Channel HBA
- Broadcom BCM5700 Gigabit NIC – 192.168.0.101
- Broadcom BCM5700 Gigabit NIC – 192.168.1.101
- Red Hat ES 3.0

Node 2 – gc3rac2.glogtech.com

- Dell PowerEdge 2850 Server
- 2x3.0 GHz P-IV CPU
- 8GB RAM
- 2x72GB SCSI HDD (Hardware RAID 1)
- QLogic QLA2340 2Gb Fibre Channel HBA
- Broadcom BCM5700 Gigabit NIC – 192.168.0.102
- Broadcom BCM5700 Gigabit NIC – 192.168.1.102
- Red Hat ES 3.0

Shared Storage System

- Brocade Silkworm 3200 2Gb Fibre Switch
- EMC CX400
- 12x72GB 15K SCSI HDD (RAID 0+1)

Public Network

- Dell PowerConnect 5224 Gigabit Switch
- 192.168.0.x network

Cluster Interconnect Network

- Dell PowerConnect 5224 Gigabit Switch
- 192.168.1.x network

Operating Systems:

- Red Hat Enterprise Linux 3.0
- Kernel 2.4.21-27.0.2.ELsmp with all of the latest patches applied
- 2GB swap
- Required non-standard packages:
 - telnet-server 0.17-26
 - rsh-server-0.17-17
 - make-3.79.1-17
 - compat-libstdc++-7.3-2.96.128
 - openmotif- 2.2.3-4.RHEL3.4
 - tcl-8.3.5-92.2

Oracle DB

- Oracle RAC DB Service Name: RCTST.glogtech.com
- RAC SID: RCTST
- Node 1 SID: RCTST1
- Node 2 SID: RCTST2
- Software:
 - Oracle 9i Release 2 – 9.2.0.4 Installer for Linux
 - Oracle 9i Release 2 – 9.2.0.6 Patch Set
 - Opatch 3553791

Installation Process in Test Environment

Each server was loaded with Red Hat Enterprise Linux ES 3.0. This is a supported platform for both GC3 and Oracle RAC 9.2.0.6.

1. The installation / initial configuration of Oracle RAC was followed step-by-step from Oracle Note # 184821.1 (Step-By-Step Installation of 9.2.0.6 RAC on Linux). Oracle notes and patches are available at <http://metalink.oracle.com>.
2. The configuration of the OCFS file system was followed step-by-step from Oracle Note # 220178.1 (Installing and Setting Up OCFS on Linux – Basic Guide). These file systems were setup on the external EMC storage unit and shared between the RAC servers. The following versions of the OCFS binaries were used and are available at <http://technet.oracle.com>.
 - ocfs- 2.4.21-EL-smp-1.0.13-1
 - ocfs-support-1.0.10-1
 - ocfs-tools-1.0.10-1
3. The Oracle opatch # 3443791 was installed following Oracle Note # 278156.1.
4. Please read the Create a RAC Database section of this document before creating your RAC Database. It lists the non-default settings and tablespaces required by GC3 and can save time and avoid problems when configuring your database for use with GC3.

After following the steps listed above, you will have a working Oracle RAC 9iR2 (9.2.0.6) cluster. It is important to follow the Oracle documentation step-by-step as the configuration is somewhat complex and any unresolved problems will be harder to diagnose later.

Create a RAC Database

Follow the section of Oracle Note # 184821.1 labeled Create a RAC Database using Oracle Database Configuration Assistant. The only additional steps required are listed below.

Note: These steps will result in a fully configured Oracle RAC DB that is ready for use with GC3. However, if this database is intended for use in a production environment, an experienced Oracle DBA should be consulted and the database should be configured and optimized for your environment.

Respond to the DBCA prompts as shown below:

DBCA – Database Options

While in the Database Options page, make the following configuration changes:

1. Select the connection options desired from the Database Connection Options page. Choose Dedicated Server Mode. Click Next. DBCA now displays the Initialization Parameters page. This page comprises a number of Tab fields.
2. Modify the Memory settings if desired and then select the File Locations tab to update information on the Initialization Parameters filename and location.
3. Change the Database Character Set and National Character Set to UTF-8.
4. Change the Block Size to 8KB and the Sort Area Size to 1MB KB. Then click Next.
5. The option Create persistent initialization parameter file is selected by default. If you have a cluster file system, then enter a file system name, otherwise a raw device name for the location of the server parameter file (spfile) must be entered. Then click Next.
6. The button File Location Variables... displays variable information. Click OK.
The button All Initialization Parameters... displays the Initialization Parameters dialog box. This screen presents values for all initialization parameters and indicates whether they are to be included in the spfile to be created through the checkbox, included (Y/N). Instance-specific parameters have an instance value in the instance column. Complete entries in the All Initialization Parameters page and select Close.

Note: There are a few exceptions to what can be altered via this screen. Update the following parameters before continuing:

```
07_DICTIONARY_ACCESSIBILITY = true
DB_16K_CACHE_SIZE = 104857600
MAX_ENABLED_ROLES = 90
```

Ensure all entries in the Initialization Parameters page are complete and select Next.

7. DBCA now displays the Database Storage Window. This page allows you to enter file names for each tablespace in your database. For a base GC3 database, the following tablespaces must be created. These can either be done now or post DB creation.

DATA	1000MB
INDX	2500MB
REPORT	300MB
REPORTINDX	300MB

DATA	1000MB
BPL_DAY1	50MB
BPL_DAY2	50MB
BPL_DAY3	50MB
BPL_DAY4	50MB
BPL_DAY5	50MB
BPL_DAY6	50MB
BPL_DAY7	50MB
PART_1	100MB
PART_2	100MBs
PART_3	100MB
PART_4	100MB
LOB1	300MB
LOB2	300MB
LOB3	300MB
LOB4	300MB
LOB5	300MB
LOB6	300MB
LOB7	300MB
TEMP	1000MB

8. Continue as directed in the Oracle documentation.

Install GC3

Install GC3 as you would normally, following the instructions in the GC3 Administration Manual. If possible, start up GC3 against a single database instance and test the functionality to ensure that everything is configured correctly.

Import GC3 DB Structure and Data

Import the base GC3 structure and data with the same export file and process used in a normal installation. The process is covered in the GC3 Administration Guide.

Configuring GC3 to Use a RAC Database

Test Oracle DB without RAC

Edit the following files on your GC3 Application server(s) and point to each node in the RAC cluster individually. First point to the Database server gc3rac1.glogtech.com and the SID / connect string RCTST1.

```
<gc3_install_dir>/glog/config/glog.properties
  dbserver=<db1_hostname>
  glog.database.sid=<SID>
  glog.database.connectstring=<Oracle connect string>
<gc3_install_dir>/weblogic/config/gc3domain/config.xml.template
URL="jdbc:oracle:thin:@<hostname>:1521:<SID>"
```

Startup the GC3 instance and test for base functionality. All GC3 functions should work correctly. When that is successful, test again with each additional node in the cluster. For example, point to the DB server gc3rac2.glogtech.com and the SID / connect string RCTST2. Each node must test successfully before proceeding.

Configure your GC3 instance to use Oracle JDBC Thin Drivers

In the <gc3_install_dir>/weblogic/config/gc3domain/config.xml.template file on the GC3 Application server(s), modify the JDBCConnectionPool parameters to as follows. Changes are noted in bold red.

```
<JDBCConnectionPool CapacityIncrement="2" ShrinkingEnabled="true"
  DriverName="oracle.jdbc.OracleDriver"
  InitialCapacity="10" MaxCapacity="150" Name="dbaPool"
  Properties="user=glogdba;password=glogdba"
  RefreshMinutes="1" Targets="gc3" TestConnectionsOnReserve="false"
  TestTableName="dual"
  URL="jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=
  (ADDRESS=(PROTOCOL=TCP)(HOST=gc3rac1.glogtech.com)(PORT=1521))
  (ADDRESS=(PROTOCOL=TCP)(HOST=gc3rac2.glogtech.com)(PORT=1521)))
  (FAILOVER=yes)(LOAD_BALANCE=yes)(CONNECT_DATA=(SERVER=DEDICATED)
  (SERVICE_NAME=RCTST.glogtech.com)))"
/>
```

Configure GC3 to use the RAC instance

Edit the glog.properties file on your GC3 Application and Web server(s) and add the nodes of the RAC cluster. The database SID and connect string should be the service name of the RAC database.

```
<gc3_install_dir>/glog/config/glog.properties
  dbserver=gc3rac1.glogtech.com
  dbserver2=gc3rac2.glogtech.com
  glog.database.sid=RCTST
  glog.database.connectstring=RCTST
  glog.database.servicename=RCTST.glogtech.com
  glog.database.port=1521
```

Also, add the following lines to the bottom of your glog.properties file to enable RAC clustering of the security connection and all db connections outside of the WebLogic db connection pool.

```
#-----
# RAC Drivers
#-----
!include glog.rac.properties
```

Finally, place the glog.rac.properties file into the <gc3_install_dir>/glog/config directory on each GC3 App server. This file will "RAC enable" all of the GC3 DB connections.

The Oracle client used by the Oracle Report Server 6i (included in Oracle Application Server 9iR1 v1.0.2.2.2a) does not fully support Oracle RAC functionality. For this reason, it can only be pointed at one RAC node at a time and will not automatically fail over or load-balance. This will be resolved in a later version of GC3 by supporting a newer version of Oracle Reports.

Make the following changes to your GC3 Rpt server(s):

- Setup the tnsnames.ora file for your Oracle Reports Server as described in the Oracle RAC Documentation.
- Edit the following files and point them towards a single database node by using either the connection string RCTST1 or RCTST2. Do not use the connection string RCTST, since Oracle Reports will not handle it correctly.

```
<oracle_reports_home>/reports/conf/cgicmd.dat  
hide_pass_key: userid=glogdba/glogdba@RCTST1
```

At this point, you can startup GC3 and run fully against the RAC instance.

Additional Resources

Oracle Metalink – <http://metalink.oracle.com>

- Step-By-Step Installation of 9.2.0.6 RAC on Linux – 184821.1
- Installing and setting up ocfs on Linux – Basic Guide – 220178.1
- Unix: Script to Verify Installation Requirements for Oracle 9.x version of RDBMS – 189256.1
- RAC on Linux Best Practices – 240575.1
- RAC Frequently Asked Questions – 220970.1
- Oracle Cluster File System (OCFS) on RedHat Advanced Server FAQ – 224586.1
- JDBC Thin connection and load balancing – 509462.995
- OCFS binaries - Oracle Technet – <http://otn.oracle.com>
- Werner Puschwitz – <http://www.puschitz.com/InstallingOracle9i.shtml>

9. Installing Optional Components

This chapter describes the procedures for installing the optional GC3 components and 3rd party software products that integrate with GC3. This includes:

- Installing GFI FAXmaker for Networks/SMTP 8.1
- Installing PCMiller Server
- Installing Rand McNally IntelliRoute Server
- Installing SMC RateWare Server
- Installing Python on a Client PC

Installing FAXmaker for Fax Notifications

FAXmaker is an email-to-fax gateway that allows GC3 to send out fax notifications. GC3 sends an email via SMTP to a specific POP3 mailbox. FAXmaker checks this mailbox at regular intervals and converts the emails within to fax transmissions, if all security requirements are satisfied.

The following steps explain how to configure FAXmaker to work with GC3.

1. Install FAXmaker for Networks/SMTP 8.1 from GFI on a Windows server and configure it to work with your modem(s). Refer to the FAXmaker documentation for details.
2. Test the modem to ensure that it gets a dial tone and can access an outside line.
3. Create a POP3 mailbox within your mail server that can be accessed by the FAXmaker server. The mailbox name should be identical to the email address for outgoing fax notifications that you entered during the GC3 application server install. Test this POP3 account using any email client that supports POP3. Please contact your System Administrators for more information as they will have greater insight into the makeup of your SMTP mail services.
4. Copy the GC3 fax template file (d:\gc3\install\FAXmaker\G-Log.rtf or /opt/gc3/install/FAXmaker/G-Log.rtf) to FAX maker's coverage directory (usually C:\Program Files\FAXmaker\Coverpage\).

Start FAXmaker Configuration MMC Console

Follow these steps to start the FAXmaker configuration console.

1. Start the Fax Server Configuration application.
2. Select "Lines" tab, ensure that your modem is configured to send faxes ONLY! Do not configure the modem to allow faxes to be received!
3. Under the "Coverpages" tab, set G-Log.rtf as the default coverpage and set your paper size to letter.
4. Under the "Dialing" tab, setup any special dialing requirements (such as dialing 7 to get an outside line).
5. Click OK to save this information.
6. Click on "User Configuration" tab.
7. Add a new user. The username and email address should be identical to the email address from which email notifications will come that you entered when you installed the GC3 application server. This allows emails that originate from this email address to be converted and faxed out. If an email is received from an email address that does not have an account, FAXmaker will bounce it.
8. Select the new user and click on the Coverpages tab.
9. Click Add, enter GC3 for the name and select G-Log.rtf as the cover page file. Then click OK. At the bottom of this window, check the Cover-page box.

10. Click on Setup and then Email2Fax Gateway configuration.
 - Check Enable E-mail2Fax Gateway.
 - Enter your SMTP server and port (usually 25).
 - Enter the Sender email address (the email address for outgoing fax notifications that you entered when installing the GC3 application server).
 - Enter your POP3 server (usually the same as the SMTP server) and port (usually 110).
 - Enter the mailbox account, password, and login method. This is the POP3 mailbox that you created a few steps ago.
11. Click OK to save this information.
12. Restart your FAXmaker services so the new configuration takes effect.

Refer to the FAXmaker documentation for any troubleshooting assistance or contact GFI directly.

If desired, FAXmaker can also be configured to convert PDF attachments to text faxes by following these steps:

13. Ensure that the latest version of Adobe Acrobat Reader is installed on the FAXmaker server.
14. After installation, run Acrobat Reader to get rid of any messages displayed the first time the program is run.
15. Open the FAXmaker Configuration program and select Fax server configuration then open Document Conversion.
16. Enter pdf in the Extension field and click Add.
17. Click OK and close out of the FAXmaker Configuration program.
18. Restart your FAXmaker services so the new configuration takes effect.
19. The configuration of GC3 is handled by the following properties in the App server glog.properties file:

```
# FaxMaker Settings - optional
glog.workflow.notify.faxmaker.email=fax@company.com
```

Installing RightFax for Fax Notifications

RightFax is an email-to-fax gateway that allows GC3 to send out fax notifications. The GC3 application sends an email via SMTP to a specific POP3 mailbox. RightFax checks this mailbox at regular intervals and converts the emails within to fax transmissions, if all security requirements are satisfied.

The following steps explain how to configure RightFax to work with GC3.

1. Install RightFax 8.5 from Captaris on a Windows 2000 server and configure it to work with your modem(s). Refer to the RightFax documentation for details.
2. Test the modem to ensure that it gets a dial tone and can access an outside line.
3. Create a POP3 mailbox within your mail server that can be accessed by the FAXmaker server. The mailbox name should be identical to the email address for outgoing fax notifications that you entered during the GC3 application server install. Test this POP3 account using any email client that supports POP3. Please contact your System Administrators for more information as they will have greater insight into the makeup of your SMTP mail services.
4. Install RightFax according to the vendor's installation guide and configure it to poll the POP3 mailbox created above.
5. The configuration of GC3 is handled by the following properties in the App server glog.properties file:

```
# RightFax Settings - optional
glog.fax.defaultHandler.routingMode=to
```

```
glog.fax.defaultHandler.routingPicture=/name={lastName},{firstName}/fax
={rawPhone}/
glog.fax.email=fax@company.com
```

Fax Generation in GC3

Fax generation is controlled via a plug-and-play interface, FaxHandler. Classes that implement this interface support the following two methods:

```
public MailAddress getAddress();
// returns the mail address for fax generation

public void handle(MailEvent event, FaxTopic faxTopic);
// modifies our standard text e-mail to conform to outgoing fax
// specifications.
```

The fax handler is specified via the property `glog.fax.handler=<fax handler class name>`

GC3 supplies a standard fax handler, `glog.server.workflow.notify.DefaultFaxHandler`, to support most fax generation software. This handler embeds routing information into one of the following 3 mail components:

- message body
- subject line
- to alias (i.e. the last name of the to party)

The embedding is accomplished with a picture string describing the modified format of the above component. You can specify original information from the text email to use in the modified component including:

- firstName
- lastName
- company
- phone
- rawPhone (punctuation or space)
- message
- subject

Replacements are represented by one of these identifiers surrounded by parenthesis; for example, `{firstName}`. Newline characters are preserved. To transform an email message body to one supporting faxMaker, the picture string would be:

```
::{firstName},{company},{lastName},,{rawPhone}\n{message}
```

The following properties control the default fax handler:

```
glog.fax.defaultHandler.routingMode=<message|body|to> (default:
message)
glog.fax.defaultHandler.routingPicture=<picture string>
(default:
::{firstName},{company},{lastName},,{rawPhone}\n{message})
```

For RightFax, the properties default to:

```
glog.fax.defaultHandler.routingMode=to
glog.fax.defaultHandler.routingPicture=/name={lastName},
{firstName}/fax={rawPhone}/
glog.fax.email=fax@company.com
```

For FAXMaker, they default to:

```
glog.fax.defaultHandler.routingMode=message
glog.fax.defaultHandler.routingPicture=::{firstName},{company},{lastName},,
{rawPhone}\n{message}
glog.fax.email=fax@company.com
```

Installing PCMiller

The following software is required Software:

- PCMiller Server v14, v15, v16.1, v17, or v18 with the following modules:
- PCMiller TCP/IP Interface
- Optional: PCMiller Canada Postal Codes

Install the PCMiller Server and TCP/IP Interface as described in your PCMiller user's manual. Install the PCMiller Canada Postal Codes, if desired.

The PCMiller Server runs as a console application, which may not be viable for production environments. You may be able to use a tool such as svrany.exe from the Windows Resource Kit (<http://www.microsoft.com>) or FireDaemon (<http://www.firedaemon.com>) to run it as a service. However, the PCMiller TCP/IP Interface runs as a service; you should ensure that this is set to automatically start.

You can setup GC3 to integrate with PCMiller during the initial GC3 installation (as described earlier), or you can modify an existing installation to use PCMiller. To modify an existing GC3 installation, you need to edit the glog.properties file on the GC3 Application server. This file is usually under d:\gc3\glog\config on Windows or /opt/gc3/glog/config on Unix. Uncomment and modify the following lines:

```
#pcmiler.host=pcmiler.company.com
#pcmiler.port=8145
```

If your PCMiller server running on port 8145 on a server named linus.brown.com, your lines would look like:

```
pcmiler.host=linus.brown.com
pcmiler.port=8145
```

Once this change has been made, restart your GC3 instance.

Installing Rand McNally IntelliRoute

The following software is required:

- Rand McNally IntelliRoute with TrueTrack – Win32 Java 02/01/2000

Install the Rand McNally IntelliRoute Server as described in your IntelliRoute user's manual. You will also need to create a user (usually glog), password, and location for the GC3 Application to use. These activities are described in the IntelliRoute user's manual.

The IntelliRoute Server runs as a console application and cannot be run as a service.

Once the server is installed, you need to install the IntelliRoute Java API onto the GC3 Application Server as described in your IntelliRoute user's manual.

You can setup GC3 to integrate with IntelliRoute during the initial GC3 installation (as described earlier), or you can modify an existing installation to use IntelliRoute. To modify an existing GC3 installation, you need to edit the glog.properties file on the GC3 Application server. This file is usually under d:\gc3\glog\config on Windows or /opt/gc3/glog/config on Unix. Uncomment and modify the following lines:

```
#intelliroute.host=intelliroute.company.com
#intelliroute.port=1998
#intelliroute.user=glog
#intelliroute.password=changeme
#intelliroute.location=company
```

If your IntelliRoute server running on port 1998 on a server named linus.brown.com, with a user named glog, with the password changeme, and a location named company1, your lines would look like:

```
intelliroute.host=linus.brown.com
intelliroute.port=1998
intelliroute.user=glog
intelliroute.password=changeme
intelliroute.location=company1
```

Once this change has been made, restart your GC3 instance.

Installing Rand McNally MileMaker

The following software is required.

- Rand McNally MileMaker Server v17 or v18

Install the MileMaker Server as described in your user's manual.

You can setup GC3 to integrate with MileMaker during the initial GC3 installation (as described earlier), or you can modify an existing installation to use MileMaker. To modify an existing GC3 installation, you need to edit the glog.properties file on the GC3 Application server. This file is usually under d:\gc3\glog\config on Windows or /opt/gc3/glog/config on Unix. Uncomment and modify the following lines:

```
#milemaker.host=milemaker.company.com
#milemaker.port=1031
```

If your MileMaker server running on port 1031 on a server named linus.brown.com, your lines would look like:

```
milemaker.host=linus.brown.com
milemaker.port=1031
```

Once this change has been made, restart your GC3 instance.

Installing SMC RateWare

The following software is required:

- SMC RateWare Server 1.2.330

- Appropriate CZAR tariffs

Install the SMC RateWare server and load the CZAR tariffs as described in your RateWare user's manual.

You can setup GC3 to integrate with RateWare during the initial GC3 installation (as described earlier), or you can modify an existing installation to use RateWare. To modify an existing GC3 installation, you need to edit the glog.properties file on the GC3 Application server. This file is usually under d:\gc3\glog\config on Windows or /opt/gc3/glog/config on Unix. Uncomment and modify the following lines:

```
#glog.RatingEngine.Rateware.URL=rateware.company.com
#glog.RatingEngine.Rateware.Port=23700
```

If your RateWare server running on port 23700 on a server named linus.brown.com, your lines would look like:

```
glog.RatingEngine.Rateware.URL=linus.brown.com
glog.RatingEngine.Rateware.Port=23700
```

Once this change has been made, you will need to restart your GC3 instance.

Installing Python on a Client PC

This is a prerequisite to using the ClientUtil.py for exporting/importing from a remote GC3 instance, or for using sql2xml.py or xml2sql.py for exporting/importing from a database for which you have sql*net access.

Installing Python

Follow these steps to install Python.

1. Copy the contents of the <gc3_install_path>/utils/integration/python directory to a path on your local PC. (for example: d:\product\gc3python)
2. Within this directory, you will find and extract the python-for-gc3v50.zip file into a path on your local PC. It will automatically create a python2.1.3 directory that contains all of the python executables and libraries. (Ex. d:\products\python2.1.3)
3. Set your PYTHONPATH environment variables. You can set pythonpath permanently in your environment using Settings->ControlPanel->System->Environment
4. Set PYHOME=d:\products\python2.1.3
5. Set GC3_PYTHON=d:\products\gc3python
6. Set
PYTHONPATH=%PYHOME%\Lib;%PYHOME%\Lib\DCOracle2;%PYHOME%\Lib_xmlplus;%GC3_PYTHON%
7. You are now ready to use the GC3 client-side python scripts.

Python International Character Set Configuration

The site.py file under \$pyhome/lib must be modified to change encoding = ascii to encoding = utf-8

Failure to make the above change will cause international characters to be garbled.

10. Getting Started

This chapter describes the procedures for starting GC3 once the installation is complete.

Starting and Stopping the GC3 Servers

Starting the Servers

Follow these steps to start the GC3 servers.

Windows Server

1. Start the Oracle database.
2. Start Oracle Reports – if necessary.
3. On the Reports Server, start the GC3 Rpt Web service (usually named glogrptweb) – if necessary.
4. Start the WebLogic Service (usually named glogapp).
5. Wait for WebLogic to fully initialize before moving to the next step. This can take between two and eight minutes depending on your server. To check WebLogic, you can monitor the d:\gc3\logs\weblogic\console.log file. When WebLogic is fully initialized, you will see the lines:

```
INFO | jvm 1 | 2005/03/29 08:12:11 | <Mar 29, 2005 8:12:11 AM EST>
<Notice> <WebLogicServer> <BEA-000355> <Thread "ListenThread.Default"
listening on port 7001, ip address 192.168.2.2>
INFO | jvm 1 | 2005/03/29 08:12:11 | <Mar 29, 2005 8:12:11 AM EST>
<Notice> <WebLogicServer> <BEA-000329> <Started WebLogic Admin Server
"gc3-box1" for domain "gc3domain" running in Production Mode>
INFO | jvm 1 | 2005/03/29 08:12:11 | <Mar 29, 2005 8:12:11 AM EST>
<Notice> <WebLogicServer> <BEA-000360> <Server started in RUNNING mode>
```

You can also use the following command:

```
java glog.util.admin.WaitForServer 192.168.2.2 7001
```

This command waits until the server at 192.168.2.2 responds on port 7001 before continuing. Since WebLogic doesn't open up port 7001 until it has fully initialized, the program won't continue until WebLogic has completely started.

Note: Use the IP address or FQDN, not localhost, since WebLogic is bound to an IP address and won't respond on localhost (127.0.0.1).

6. Start the Tomcat service (usually named glogtomcat) on the GC3 Web Server. Wait for the web tier to fully initialize before moving to the next step. This can take between 5 – 30 seconds, depending on your server. To check, you can monitor the d:\gc3\logs\tomcat\console.log file. When Tomcat is fully initialized, you will see the line:

```
INFO | jvm 1 | 2005/03/29 08:46:31 | INFO: Server startup in 5512
ms
```

You can also use the following command:

```
java glog.util.admin.WaitForServer 192.168.2.1 8009
```

This command will wait until the server at 192.168.2.1 responds on port 8009 before continuing. Since Tomcat doesn't open up port 8009 until it has fully initialized, the program won't continue until Tomcat has completely started. You may need to setup your environment using the <gc3_install_dir>/install/gc3env.cmd script in order for this command to run.

Note: Use the IP address or FQDN, not localhost, since Tomcat is bound to an IP address and won't respond on localhost (127.0.0.1).

7. Start the Apache service on the GC3 Web server (usually named glogapache).
8. Using a web browser, point to `http://<web server name>`.

Unix

1. Start the Oracle database.
2. Start the Oracle Reports – if necessary.
3. On the Reports Server, start the GC3 Rpt Web daemon (usually `/etc/init.d/glogrptweb start`) – if necessary.
4. Start the GC3 App daemon (usually `/etc/init.d/glogapp start`) on the GC3 Application Server. Wait for WebLogic to fully initialize before moving to the next step. This can take between 2 – 8 minutes, depending on your server. To check WebLogic, you can monitor the `/opt/gc3/logs/weblogic/console.log` file. When WebLogic is fully initialized, you will see the lines:

```
INFO | jvm 1 | 2005/03/29 08:12:11 | <Mar 29, 2005 8:12:11 AM EST>
<Notice> <WebLogicServer> <BEA-000355> <Thread "ListenThread.Default"
listening on port 7001, ip address 192.168.2.2>
INFO | jvm 1 | 2005/03/29 08:12:11 | <Mar 29, 2005 8:12:11 AM EST>
<Notice> <WebLogicServer> <BEA-000329> <Started WebLogic Admin Server
"gc3-box1" for domain "gc3domain" running in Production Mode>
INFO | jvm 1 | 2005/03/29 08:12:11 | <Mar 29, 2005 8:12:11 AM EST>
<Notice> <WebLogicServer> <BEA-000360> <Server started in RUNNING mode>
```

You can also use the following command:

```
java glog.util.admin.WaitForServer 192.168.2.2 7001
```

This command will wait until the server at 192.168.2.2 responds on port 7001, before continuing. Since WebLogic doesn't open up port 7001 until it has fully initialized, the program won't continue until WebLogic has completely started.

Note: Use the IP address or FQDN, not localhost, since WebLogic is bound to an IP address and won't respond on localhost (127.0.0.1).

5. Start the GC3 Web daemon (usually `/etc/init.d/glogweb start`) on the GC3 Web Server. Wait for Tomcat and Apache to fully initialize before moving to the next step. This can take between 5 – 30 seconds, depending on your server. To check Tomcat, you can monitor the `/opt/gc3/logs/tomcat/console.log` file. When WebLogic is fully initialized, you will see the lines:

```
INFO | jvm 1 | 2005/03/29 08:46:31 | INFO: Server startup in 5512
ms
```

You can also use the following command:

```
java glog.util.admin.WaitForServer 192.168.2.1 8009
```

This command waits until the server at 192.168.2.1 responds on port 8009, before continuing. Since Tomcat doesn't open up port 8009 until it has fully initialized, the program won't continue until Tomcat has completely started. You may need to setup your environment using the `<gc3_install_dir>/install/gc3env.sh` script in order for this command to run.

Note: Use the IP address or FQDN, not localhost, since Tomcat is bound to an IP address and won't respond on localhost (127.0.0.1).

6. Apache will automatically startup as soon as Tomcat is available.
7. Using a web browser, point to `http://<web server name>`.

Stopping the Servers

Follow these steps to stop the GC3 servers.

Windows Server

1. Stop the Apache service (usually glogapache) on the GC3 Web Server.
2. Stop the Tomcat service (usually glogtomcat) on the GC3 Web Server.
3. Stop the GC3 App service (usually glogapp) on the GC3 Application server.
4. On the Reports Server, stop the GC3 Rpt Web service (usually named glogrptweb) – if necessary.
5. On the Reports server, stop Oracle Reports – if necessary.
6. Stop the Oracle database, if necessary.
7. If you are going to restart GC3, wait one minute between stopping and restarting the servers. This gives WebLogic the time it needs to fully shut down.

Unix

1. Stop the GC3 Web daemon (usually /etc/init.d/glogweb stop) on the GC3 Web Server.
2. Stop the GC3 App daemon (usually /etc/init.d/glogapp stop) on the GC3 Application server.
3. On the Reports Server, stop the GC3 Rpt Web daemon (usually /etc/init.d/glogrptweb stop) – if necessary.
4. On the Reports server, stop Oracle Reports – if necessary.
5. Stop the Oracle database, if necessary.
6. If you are going to restart GC3, wait one minute between stopping and restarting the servers. This gives WebLogic the time it needs to fully shut down.

Creating Domains

A GC3 domain is a unique name that typically identifies a company. The purpose of a domain is to provide the ability to keep company data separate and secure from other company data in a shared, web-based environment. For example, if you are using GC3 in an environment where many companies may be using the same GC3 installation, the domain allows you to isolate data in GC3 for each company. Therefore, many users from different companies can work in the same GC3 installation (or website) and use data that is private and specific to their company.

Data that is considered sharable is stored in a domain called Public, allowing access to users regardless of their company. The data that is used for the Ask G-Log wizards is considered public since it is not proprietary to any one company.

GUEST and SERPROV Domains

The GUEST and SERVPROV are automatically created when you install GC3. These domains are used as follows:

- **GUEST** – This is a sample domain that you can use to get started using GC3 and experiment with all of the software functionality and data.
- **SERVPROV** – This is a special domain for use with service providers. Special logic is built into GC3 to provide security for service providers that access GC3 for web tendering. This is the domain that must be used for all service providers.
- **PUBLIC** – This domains stores public data that can be accessed by all other domains.

If you are using GC3 in the G-Log hosted environment where many customers are using the same GC3 instance, you need to provide G-Log with the appropriate domain name to maintain data confidentiality and security for your company. G-Log can create the domain for you on the hosted site.

Note: Do NOT delete any of the default domains that are shipped with GC3.

If you have installed GC3 at your own site, use the following procedures to create a domain.

1. Start GC3 and login.
2. Choose Security Services > Domain Manager.
3. Click Add Domain.
4. Type a domain name and click Submit Inquiry to create the new domain. Domain names must abide by the rules for an Oracle database.

A default user called <domain name>.ADMIN is automatically created with Admin Level security. As the administrator of the new domain, you should log in into the new domain and change the password for the default user. Choose the Manage User option in the User Manager once you log into the domain to change the password.

Note: When you change the password of the .ADMIN user, you should log out and log back in before you try to perform any User Management function.

You can also use the other User Management options to add users, set security levels, and so on.

Note: Always change the default passwords after a new domain has been created.

For additional help and product instructions, please use the online help in GC3.

You can also access the help system from any browser. With your GC3 server is up and running, open up the following URL:

`http://<webserver_name>/html/help/webhelp/en/gc3help.htm`

Note: Replace <webserver_name> with the name of your GC3 Web server.

Testing the GC3 Installation

This section describes how to test the basic functionality of your GC3 installation. These tests help validate your GC3 installation.

Note: These tests are written for a stock GC3 installation and may not be valid if you have upgraded or customized your GC3 installation.

Release an Order

1. Choose Logistics Order Management.
2. Choose Order Manager, Simple Order.
3. Enter the following:
 - ID: INSTALL_TEST
 - Source Location: PHL
 - Destination Location: LAX
 - Early Pickup Date: Select any future date
4. Select Ship Unit radio button and click View/Enter Items.
5. Click New Ship Unit and enter the following:

- ID: INSTALL_TEST
 - Weight: 30000 LB
 - Volume: 2000 CUFT
 - Number Ship Unit Specifications: 1
6. Leave ALL other fields at default settings!
 7. Click Save icon.
 8. Click Finished.
 9. Choose the Order Release menu option.
 10. Click Search and verify that your order, created earlier (i.e. INSTALL_TEST), exists.

Workflow Startup

1. Choose System Administration, Process Manager.
2. Choose Logs, System.
3. In the System Log Entry Selection section, enter a time frame that corresponds to the time when transactions are known to have taken place.
4. Click View Results and verify that several records are returned.

Generate a Report

If your GC3 installation is integrated with Oracle Reports, you can generate a test report. Otherwise, skip this section.

1. Choose Reporting, Report Manager.
2. Choose the Tenders Declined by Lane report and click Run Now.
3. Enter date range in the From and To fields. Dates must be in the following format: 01-JAN-2001 (use a 1 mo. date range, i.e., 01-JUN-2001 to 01-JUL-2001).
4. Select View PDF and click Submit.
5. A resulting PDF file is displayed with report output (if any exist).

11. GC3 Database Migration

This chapter describes the procedures for upgrading the GC3 database from previous versions starting with 4.0 to the most current version. If you are migrating from a version prior to 4.0, refer to the GC3 4.5 Administration Manual.

Upgrading from Version 3.7 to 4.0

This section outlines how to upgrade your servers to GC3 version 4.0 and covers the database migration. Any new GC3 installation should be tested in a controlled environment before migrating your production database. This ensures that any potential problems or incompatibilities don't affect your production GC3 instance(s).

Note: If you are migrating from a version earlier than 3.7, you must complete each previous version's migration instructions. You cannot skip any migration steps. Please go through all upgrade steps to 3.7 prior to starting the 3.7 to 4.0 migration.

IMPORTANT! GC3 4.0 relies on Oracle 9i, so this upgrade *must* occur prior to the upgrade of GC3. If the Oracle upgrade needs to be run at a separate time due to time constraints, then we recommend upgrading to Oracle 9i first, and then upgrading to GC3 version 4.0 during back-to-back weekends.

Follow the installation instructions and install the new v4.0 GC3 components into new directories. Once this is complete, you should compare your old glog.properties file with the new glog.properties file and migrate any customized settings. Finally, copy any customer-specific glog.properties files to the new GC3 instance and ensure that the new glog.properties file references these files. Customer specific properties files usually follow the format glog.<company_name>.properties.

The following topics outline the procedures for migrating a GC3 3.7 database to 4.0. The structure of the database to be migrated should be consistent with the GC3 3.7 database specification; otherwise, the migration will fail.

To complete these procedures you need:

- system password
- glogowner password
- reportowner password

In addition, you will be creating tablespaces for lob columns. For this step, you will need to know the directory in which the data files will exist and a default initial size for the lob tablespaces.

Before you begin the migration, shutdown all processes running against the database and shutdown the GC3 application. And always create a full backup of the database before beginning any GC3 migration.

Apply GC3 3.7 Service Releases

You must apply the latest GC3 3.7 Service Release before you continue with the v4.0 migration. You must also install the latest GC3 Service Release to your GC3 v4.0 installation to ensure that any known migration issues have been patched and resolved.

1. Log in as GLOGOWNER and run **dbpatch_37.sql** (which resides in the 3.7 directory, (<gc337_install_dir>/glog/oracle/script8/).

Note: Do not continue with the upgrade until the dbpatch log is completely clean. Contact G-Log Support if you have any questions or concerns.

Important: Ensure that your environment is setup correctly by running:

On UNIX: ". <gc3_install_path>/install/gc3env.sh"

On Win32: "<gc3_install_path>\install\gc3env.cmd"

Updating GLOGOWNER Grants

1. Go to the script8 directory for v4.0 (>gc345_install_dir>/glog/oracle/script8).
2. Log on as SYSTEM.
3. Run 40_mig_grants.sql, which directly grants GLOGOWNER the ability to create and drop public synonyms (versus through a role).

Adding Tablespaces for LOB columns

1. As the SYSTEM user, run create_lob_tablespace.sql. You are prompted for the directory in which to store the data files and the initial size for the tablespaces.

Updating the Structure

1. Run @dbupdate_40.sql to update the database with all the new tables and columns.
2. Enter the glogowner password, reportowner password, and database connection when prompted.
3. After the process has run, verify in the dbupdate_40_<dbsid>_<timestamp>.log file (located in the same directory as source) that there are no errors. If the solution to the error is apparent, then you can fix the problem and then rerun the dbupdate_40 process again, without harm. Contact G-Log if the problem is not resolvable, and send the entire log file (along with any other logs you have from the day) to our Technical Support team. Do not continue until the dbupdate_40 log is clean.

Updating Data Content

1. Update the PUBLIC data by running update_content. This process is run at the host command line, rather than from within SQL*Plus. Two command scripts have been provided; the script you use is dependent on your operating system:
UNIX shell script:
./update_content.sh <gc3_install_path>/glog/config dbaglogowner dbareportowner V40
OR
DOS command script:
update_content <gc3_install_path>\glog\config dbaglogowner dbareportowner V40
2. Review the log file called update_content_v40_<timestamp>.log for errors (located in the same directory as the SQL script). Search for errors beginning with "ORA-" or "<Error>" within the log file.

This procedure migrates the data content into the table structures for the latest enhancements.

3. In SQL*Plus, as user GLOGOWNER run:
@dbmigrate_40.sql.
4. Enter the password and database connect string when prompted.
Note: The script might run for several hours depending on the amount of data to be processed.
5. After the process has run, verify in the dbmigrate_40_<dbsid>_<timestamp>.log file (located in the same directory as the SQL script) that there are no errors.

6. If an error occurs during a migration patch, the database changes roll back. It will however, commit changes once a whole migration patch has been successfully applied, and it will not try to migrate the data associated with that patch again. If an error occurs partway through the process, then you can fix the problem and rerun the process without harm. If you cannot resolve the error yourself, contact G-Log for support.

Reset BNG Sequences

1. In SQL*Plus, as user SYS run:
`exec domainman.reset_sequences.sql`
2. Go to the <gc3_install_path>\glog\oracle\script8 directory on the GC3 Application server. In SQL*Plus, as user SYS run:
@analyze_tables.sql
Running this script will enable you to take advantage of the latest indexes. The script might run for several hours.
3. Go to the <gc3_install_path>\glog\oracle directory on the GC3 Application server. In SQL*Plus, as user GLOGOWNER run:
@insert_security_roles.sql

The remaining topics are not critical to the upgrade but provide helpful information.

Reviewing Obsolete Tables and Columns

When a table or column becomes obsolete during an upgrade, the table/column is renamed with XX<version object became obsolete>_<original name of table/column>.

To generate SQL for dropping obsolete objects, run @gen_obsolete_objects.sql as GLOGOWNER.

Note: it will not include objects that just became obsolete in the current version, as a safety precaution. This script will generate an SQL script called drop_obsolete_objects.sql, which you can review and run at a convenient time.

Verifying Saved Queries

After the upgrade, some of your site's saved queries may no longer be valid due to changes in table structure. Run the following to verify the saved queries:

```
@validate_saved_query.sql
```

If there are invalid saved queries, you can decide what to do with them (remove the records or modify them to correct the syntax). Contact G-Log Support if you need assistance.

Upgrading from Version 4.0 to 4.5

This section outlines how to upgrade your servers to GC3 version 4.5 and covers the database migration. Any new GC3 installation should be tested in a controlled environment before migrating your production database. This ensures that any potential problems or incompatibilities don't affect your production GC3 instance(s).

Note: If you are migrating from a version earlier than 4.0, you must complete each previous version's migration instructions. You cannot skip any migration steps. Please go through all upgrade steps to 4.0 prior to starting the 4.0 to 4.5 migration.

Follow the installation instructions and install the new GC3 4.5 components into new directories. Once this is complete, you should compare your old glog.properties file with the new glog.properties file and migrate any customized settings. Finally, copy any customer-specific glog.properties files to the new GC3 instance and ensure that the new glog.properties file references these files. Customer specific properties files usually follow the format glog.<company_name>.properties.

The following topics outline the procedures for migrating a GC3 4.0 database to 4.5. The structure of the database to be migrated should be consistent with the GC3 4.0 database specification; otherwise, the migration will fail.

Apply GC3 4.0 Service Releases

You must apply the latest GC3 4.0 Service Release before you continue with the v4.5 migration. You must also install the latest GC3 Service Release to your GC3 v4.5 installation to ensure that any known migration issues have been patched and resolved.

1. Log in as GLOGOWNER and run `dbpatch_40.sql` (which resides in the 4.0 directory, `<gc345_install_dir>/glog/oracle/script8/`).

Note: Do not continue with the upgrade until the `dbpatch` log is completely clean. Contact G-Log Support if you have any questions or concerns.

Important: Ensure that your environment is setup correctly by running:

On UNIX: `“. <gc3_install_path>/install/gc3env.sh”`

On Win32: `“<gc3_install_path>\install\gc3env.cmd”`

Implementing 4.5 components within 4.0 (optional)

To reduce migration time, G-Log has provided scripts that add new 4.5 tables and columns (and in some cases populate) to a 4.0 environment. G-Log recommends testing the overall timeframe of the migration without the `preupdate/premigrate` steps. If you determine downtime is too long, then you can use these scripts to reduce downtime.

Since these steps can be performed while 4.0 is running, the overall downtime of the 4.5 migration is reduced. However, this script should be run during off-peak hours, when heavy data loads are not running. You can also choose to run this script while the system is down in the 4.0 environment. If you plan to run these scripts, it is recommended to run these steps in the weekend prior to the 4.5 upgrade.

1. As GLOGOWNER, run:

```
@preupdate_45.sql
```

If the pre-update script cannot obtain access to a table for a new column, you may see a *resource busy* message within the `preupdate_45` log file. You can either rerun pre-update at another time once the table is available (which will only apply the failed procedure(s)), or wait until migration downtime. The step for running `dbupdate_45.sql` will automatically attempt to add the column at that time.

The `ss_status_history` and `order_release` tables have new columns that need to be populated as part of the migration. By running the following, three database triggers will be created to maintain the data within the 4.0 environment. Immediately following the creation of the triggers, the fields will be populated. These triggers will remain in place until your database has been fully upgraded to 4.5.

2. As GLOGOWNER, run:

```
@premigrate_45.sql
```

If your site chooses not to run these scripts in the 4.0, the `dbupdate_45` and `dbmigrate` scripts will automatically add these changes that were not implemented during the `preupdate/premigrate` phase. The rest of the steps are all mandatory, and will be performed as part of the downtime 4.5 migration.

Updating GLOGOWNER Grants

1. Go to the `script8` directory for 4.5 (`>gc345_install_dir>/glog/oracle/script8`).

2. Log on as SYSTEM.
3. Run 45_mig_grants.sql.

Updating the Structure

1. Run **@dbupdate_45.sql** to update the database with all the new tables and columns.
2. Enter the glogowner password, reportowner password, and database connection when prompted.
3. After the process has run, verify in the dbupdate_45_<dbsid>_<timestamp>.log file (located in the same directory as source) that there are no errors. If the solution to the error is apparent, then you can fix the problem and then rerun the dbupdate_45 process again, without harm (you may also want to rerun to see if it automatically resolves your problem). Contact G-Log if the problem is not resolvable, and send the *entire* log file (along with any other logs you have from the day) to our Technical Support team. Do not continue until the dbupdate_45 log is clean.

Updating Data Content

1. Update the PUBLIC data by running update_content. This process is run at the host command line, rather than from within SQL*Plus. Two command scripts have been provided; the script you use is dependent on your operating system:
UNIX shell script:
./update_content.sh <gc3_install_path>/glog/config V45
or
DOS command script:
update_content <gc3_install_path>\glog\config V45
2. Review the log file called update_content_v45_<timestamp>.log for errors (located in the same directory as the SQL script). Search for errors beginning with "ORA-" or "<Error>" within the log file.

This procedure migrates the data content into the table structures for the latest enhancements.

3. In SQL*Plus, as user GLOGOWNER run: @dbmigrate_45.sql.
4. Enter the password and database connect string when prompted.
Note: The script might run for several hours depending on the amount of data to be processed.
5. After the process has run, verify in the dbmigrate_45_<dbsid>_<timestamp>.log file (located in the same directory as the SQL script) that there are no errors.
6. If an error occurs during a migration patch, the database changes roll back. It will however, commit changes once a whole migration patch has been successfully applied, and it will not try to migrate the data associated with that patch again. If an error occurs partway through the process, then you can fix the problem and rerun the process without harm. If you cannot resolve the error yourself, contact G-Log for support.
7. Go to the <gc3_install_path>\glog\oracle\script8 directory on the GC3 Application server. In SQL*Plus, as user SYS run:
@gather_table_stats.sql
Running this script will enable you to take advantage of the latest indexes. The script might run for several hours.
8. Go to the <gc3_install_path>\glog\oracle directory on the GC3 Application server. In SQL*Plus, as user GLOGOWNER run:
@insert_security_roles.sql

The remaining topics are not critical to the upgrade but provide helpful information.

Migrating Audit Trail Information (optional)

Audit trail information has been redesigned in 4.5. GC3 provides an optional migration script that can be run if your site would like to keep its historical audit trail information. This can be run while 4.5 is up-and-running.

You will be prompted for the date range for the auditing information you would like to keep. The smaller the date range, the quicker the process will finish. You can run this process multiple times, if you would like to process sets of small ranges during off-peak hours, rather than processing all records at once.

1. As GLOGOWNER, run @45mig_audit_trail.sql

Reviewing Obsolete Tables and Columns

When a table or column becomes obsolete during an upgrade, the table/column is renamed with XX<version object became obsolete>_<original name of table/column>.

To generate SQL for dropping obsolete objects, run @gen_obsolete_objects.sql as GLOGOWNER.

Note: This will not include objects that just became obsolete in the current version, as a safety precaution. This script will generate a SQL script called drop_obsolete_objects.sql, which you can review and run at a convenient time.

Verifying Saved Queries

After the upgrade, some of your saved queries may no longer be valid due to changes in table structure.

1. Run the following to verify the saved queries:

```
@validate_saved_query.sql
```

If there are invalid saved queries, you can decide what to do with them (remove the records or modify them to correct the syntax).

ROD Maintenance for Upgrades

After the 4.0 to 4.5 upgrade, the ROD will not automatically be aware of new or changed GC3 tables. If structural changes occurred, the automatic refresh process will fail until the following steps have been completed.

Run the following command to create logs for new tables. It will skip tables that already have a log.

1. On the OLTP database in SQL*Plus, as user GLOGOWNER run:

```
@create_mview_logs
```

2. On the ROD database in SQL*Plus, as GLOGOWNER run:

```
@create_logon_triggers.sql
```

3. On the ROD database in SQL*Plus, as GLOGOWNER run:

```
@dbupdate_rod.sql
```

This will first identify broken views caused by columns becoming obsolete. It will then build (or rebuild) the materialized views for any new/modified tables.

Note: this will not automatically add columns that were added during an upgrade. This is because the materialized view would need to be recreated from scratch again, and you may not even need those new columns. Therefore, views should only need to be completely refreshed when a column has been removed, or modified in a way that Oracle needs a new copy of the data. Once the views are set, it refreshes the views and builds any new indexes.

Upgrading from Version 4.5 to 5.0

This section describes how to upgrade your servers to GC3 5.0 and covers the database migration. Any new GC3 installation should be tested in a controlled environment before migrating your production database. This ensures that any potential problems or incompatibilities don't affect your production GC3 instance(s).

Note: If you are migrating from a version earlier than 4.5, you must complete each previous version's migration instructions. You cannot skip any migration steps. Please go through all upgrade steps to 4.5 prior to starting the 4.5 to 5.0 migration.

The following topics outline the procedures for migrating a GC3 4.5 database to 5.0. The structure of the database to be migrated should be consistent with the GC3 4.5 database specification; otherwise, the migration will fail.

Apply GC3 4.5 Service Releases

Important: Ensure that your environment is setup correctly by running:

On UNIX: ". <gc3_install_path>/install/gc3env.sh"
On Win32: "<gc3_install_path>\install\gc3env.cmd"

You must apply GC3 4.5 Service Release dated February 2005 (SR-02.05) or later before you continue with the 5.0 migration. You must also install the latest GC3 Service Release to your GC3 v5.0 installation to ensure that any known migration issues have been patched and resolved.

1. Log in as GLOGOWNER and run dbpatch_45.sql (which resides in the 4.5 directory, (<gc345_install_dir>/glog/oracle/script8/).

Note: Do not continue with the upgrade until the dbpatch log is completely clean. Contact G-Log Support if you have any questions or concerns.

Migrate GC3 4.5 Database to 5.0

GC3 5.0 had an interim release called 5.0 LA. To migrate a 4.5 database to 5.0 GA, you must first migrate 5.0 LA. The following steps will guide you through the process.

Migrate to 5.0 LA: Updating the Structure

1. On the app server change to directory <gc350_install_dir>/glog/oracle/script8LA.
2. SQL*Plus log in as GLOGOWNER
3. Run @dbupdate_50a.sql to update the database with all the new tables and columns to V5.0LA.
4. Enter the glogowner password, reportowner password, archive password, and database connection when prompted.

5. After the process has run, verify in the dbupdate_50a_<dbsid>_<timestamp>.log file (located in the same directory as source) that there are no errors. If the solution to the error is apparent, then you can fix the problem and then rerun the dbupdate_50a.sql process again, without harm (you may also want to rerun to see if it automatically resolves your problem). Contact G-Log if the problem is not resolvable, and send the entire log file (along with any other logs you have from the day) to our Technical Support team. Do not continue until the dbupdate_50a log is clean.

Migrate to 5.0 LA: Updating Data Content

1. Update the PUBLIC data by running update_content. This process is run at the host command line rather than from within SQL*Plus. Two command scripts are provided and the script you use is dependent on your operating system:
UNIX shell script:

```
./update_content.sh <gc3_install_path>/glog/config V50A
```

or

DOS command script:

```
update_content <gc3_install_path>\glog\config V50A
```

2. Review the log file called update_content_v50a_<timestamp>.log for errors (located in the same directory as the SQL script). Look for errors by searching key words like "ORA-", "Caught exception", "SP2-", or "<Error>" within the log file.
3. Load the Procurement PUBLIC data by running update_procure_content. This process is run at the host command line, rather than from within SQL*Plus. Two command scripts have been provided; the script you use is dependent on your operating system:

UNIX shell script:

```
./update_procure_content.sh <gc3_install_path>/glog/config V50A
```

or

DOS command script:

```
update_procure_content <gc3_install_path>\glog\config V50A
```

4. Review the log file called update_procure_content_v50a_<timestamp>.log for errors (located in the same directory as the SQL script). Look for errors by searching key words like "ORA-", "Caught exception", "SP2-", within the log file.

Migrate to 5.0 LA: Data Migration

1. In SQL*Plus as GLOGOWNER, run:
@dbmigrate_50a.sql.
2. Enter the password and database connect string when prompted.
Note: The script might run for several hours depending on the amount of data to process.
3. After the process has run, verify in the dbmigrate_50a_<dbsid>_<timestamp>.log file (located in the same directory as the SQL script) that there are no errors.

If an error occurs during a migration patch, the database changes roll back. It will however, commit changes once a whole migration patch has been successfully applied, and it will not try to migrate the data associated with that patch again. If an error occurs partway through the process, then you can fix the problem and rerun the process without harm. If you cannot resolve the error yourself, contact G-Log for support.

Migrate to 5.0 LA: Apply 5.0 LA Patch

1. In SQL*Plus as user GLOGOWNER, run:
@dbpatch_50a.sql
2. Enter the passwords and connection strings when prompted.
3. Check the log files (dbpatch log and update_content log) to ensure they are error free before proceeding to the next step.

Migrate to 5.0 GA: Updating the Structure

1. On the Application server change to directory
<gc350_install_dir>/glog/oracle/script8.
2. In SQL*Plus as GLOGOWNER, run
@dbupdate_50b.sql to update the database with all the new 5.0 tables and columns.
3. Enter the glogowner password, reportowner password, and database connection when prompted.

After the process has run, verify in the dbupdate_50b_<dbsid>_<timestamp>.log file (located in the same directory as source) that there are no errors. If the solution to the error is apparent, then you can fix the problem and rerun the dbupdate_50b.sql process again, without harm (you may also want to rerun to see if it automatically resolves your problem). Contact Technical Support if the problem is not resolvable, and send the *entire* log file (along with any other logs you have from the day) to the Technical Support team. Do not continue until the dbupdate_50b log is clean.

Migrate to 5.0 GA: Updating Data Content

The GC3 5.0 database includes Procurement structures and data contents even you have not purchased the Procurement component license. The database structure has been loaded in the previous step, while the content is loaded below after normal GC3 content loading

1. Update the GC3 PUBLIC data by running update_content. This process is run at the host command line, rather than from within SQL*Plus. Two command scripts have been provided; the script you use is dependent on your operating system:

UNIX shell script:

```
./update_content.sh <gc3_install_path>/glog/config V50B
```

or

DOS command script:

```
update_content <gc3_install_path>\glog\config V50B
```

2. Review the log file called update_content_v50B_<timestamp>.log for errors (located in the same directory as the SQL script). Look for errors by searching key words like "ORA-", "Caught exception", "SP2-", or "<Error>" within the log file.

3. Load the Procurement PUBLIC data by running update_procure_content. This process is run at the host command line, rather than from within SQL*Plus. Two command scripts have been provided; the script you use is dependent on your operating system:

UNIX shell script:

```
./update_procure_content.sh <gc3_install_path>/glog/config V50B
```

or

DOS command script:

```
update_procure_content <gc3_install_path>\glog\config V50B
```

4. Review the log file called update_procure_content_v50B_<timestamp>.log for errors (located in the same directory as the SQL script). Look for errors by searching key words like "ORA-", "Caught exception", "SP2-", within the log file.

Migrate to 5.0 GA: Data Migration

1. In SQL*Plus as GLOGOWNER, run:
@dbmigrate_50b.sql.
2. Enter the password and database connect string when prompted.
Note: The script might run for several hours depending on the amount of data to process.
3. After the process has run, verify in the dbmigrate_50b_<dbsid>_<timestamp>.log file (located in the same directory as the SQL script) that there are no errors.

If an error occurs during a migration patch, the database changes roll back. It will however, commit changes once a whole migration patch has been successfully applied, and it will not try to migrate the data associated with that patch again. If an error occurs partway through the process, then you can fix the problem and rerun the process without harm. If you cannot resolve the error yourself, contact G-Log for support.

Run Security Role Script

1. Go to the <gc3_install_path>\glog\oracle directory on the GC3 Application server. In SQL*Plus as GLOGOWNER, run:
@insert_security_roles.sql

Analyze the Database

1. GC3 databases should be fully analyzed after the 5.0 migration. G-Log provides following analyze script. But of course a DBA can use their own analyze process.
@gather_table_stats.sql

The remaining steps are not critical to the upgrade but provide helpful information.

Reviewing Obsolete Tables and Columns

When a table or column becomes obsolete during an upgrade, the table/column is renamed with XX<version object became obsolete>_<original name of table/column>.

1. To generate SQL for dropping obsolete objects, run: @gen_obsolete_objects.sql as GLOGOWNER.
Note: This will not include objects that just became obsolete in the current version, as a safety precaution. This script will generate a SQL script called drop_obsolete_objects.sql, which you can review and run at a convenient time.

Verifying Saved Queries

After the upgrade, some of your saved queries may no longer be valid due to changes in table structure.

1. Run the following to verify the saved queries:

```
@validate_saved_query.sql
```

If there are invalid saved queries, you can decide what to do with them (remove the records or modify them to correct the syntax).

ROD Maintenance for Upgrades

After the 4.5 to 5.0 migration, the ROD will not automatically be aware of new or changed GC3 tables. If structural changes occurred, the automatic refresh process will fail until the following steps have been completed.

Run the following command to create logs for new tables. It will skip tables that already have a log.

1. On the OLTP database in SQL*Plus as GLOGOWNER, run:

```
@create_mview_logs
```

2. On the ROD database in SQL*Plus as GLOGOWNER, run:

```
@dbupdate_rod.sql
```

This will first identify broken views caused by obsolete columns. It will then build (or rebuild) the materialized views for any new/modified tables.

Note: This will not automatically add columns that were added during an upgrade. This is because the materialized view would need to be recreated from scratch again, and you may not even need those new columns. Therefore, views should only need to be completely refreshed when a column has been removed, or modified in a way that Oracle needs a new copy of the data. Once the views are set, it refreshes the views and builds any new indexes.

12. Advanced GC3 Configuration

This chapter describes advanced configuration changes that you can do to your GC3 server. Default paths are used below and may differ from your configuration.

Note: Whenever you edit the GC3 property files, only edit the `glog.properties` file. Any changes that you make override the settings in other `glog.*.properties` files.

Applying Service Releases

G-Log provides GC3 service releases on a regular basis. These service releases include installation instructions and may require updates on any or all of the GC3 servers. GC3 service releases are cumulative, so you get all previous fixes by installing the latest release. The typical service release installation takes between 45 – 90 minutes (depending on backup time and time to run SQL scripts against database) and involves a restart of the GC3 servers. We recommend that, under Production circumstances, that you allocate 2 – 2.5 hours for the entire procedure.

Note: Please check the G-Log ftp site for any release notes that need to be followed in conjunction with this guide.

To determine which service release level your server is at, do the following:

1. Log into your GC3 instance using a web browser.
2. Click  to display the software version and service release version. If your service release version shows GA then you are running the initial GC3 release with no release.

Each service release contains specific installation instructions. The service release installations on Unix only can be run in console mode (no XServer required). To run the service release installer in this mode, run the installer as follows:

```
./gc3v50-P<service_release_number>_<platform>.bin -i console
```

Branding

GC3 service releases typically include updated web files (xsl, html, jpg, gif, js, etc.) to fix specific reported problems and to provide minor enhancements requested by customers.

Since each GC3 service release includes a list of updated files, you should apply the service release to your test site, re-brand the updated files and then test everything. Once it has passed your testing, you should apply the service release, and your new branded files to your production site. This procedure ensures that you have all of the fixes included in the latest service release and that your branding is not broken on your production site.

GC3 now supports branding by domain. You should brand into the following path, which eliminates the problem of overwriting branding when GC3 service releases are installed.

```
<gc3_install_path>/apache/htdocs/xsl/branded subdirectory
```

Contact G-Log's Technical Support group to receive patch notifications or to download the latest GC3 patch.

Changing Logging Options

Depending on your needs, you can change several GC3 logging options. After any of these settings are changed, you should restart the GC3 instance as described in chapter 6, for the changes to take effect.

GC3

To modify the GC3 logging options, you need log into your GC3 instance as the DBA.ADMIN user. Then Navigate through the following menus: Data Management > Power Data > General > Log Files. Click Search to show all available log files. For complete details, please see the GC3 online help.

Apache

To modify your Apache log settings, you need to edit the configuration file, httpd.conf. This file is usually under d:\gc3\apache\conf on Windows or /opt/gc3/apache/conf on Unix. Refer to your Apache documentation or <http://httpd.apache.org> for more information.

Tomcat

To modify your Tomcat log settings, you need to edit the configuration file, server.xml. This file is usually under d:\gc3\tomcat\conf on Windows or /opt/gc3/tomcat/conf on Unix. Refer to your Apache documentation or <http://jakarta.apache.org/tomcat> for more information.

WebLogic

To modify your WebLogic log settings, you need to use the WebLogic console. Open a web browser and go to http://<appserver_name>:7001/console where <appserver_name> is the FQDN of your GC3 Application server. You need to login as system, with the password you setup when installing WebLogic. Refer to your WebLogic documentation or <http://e-docs.bea.com/wls/docs81/index.html>.

Changing Database Pool Size

As your server load varies, you may need to change the number of connections in the database pool. This may increase the performance of your GC3 instance. To determine if you have a database connection bottleneck, follow the instructions provided under the section Monitoring Performance.

After making any database pool changes, you may need to stop and restart GC3, as described in chapter 6. Also, before you change your pool size, consult a qualified Oracle DBA and ensure that your database can handle the new number of connections. If you set your pool connections higher than your database can support, GC3 will not be able to startup and function correctly. The instructions below describe how to make these changes.

1. Log into your GC3 system (http://<gc3_webserver_name>) as the user DBA.ADMIN.
2. In the left frame expand Configuration and Administration>System Administration>Data Source Manager.
3. Select search.
4. Select the desired database pool.
5. You can now edit the initial capacity, maximum capacity, and capacity increment. If resources permit, you should set the initial and maximum capacity to the same value and save some overhead involved with expanding and shrinking the database pool.

Changing Memory Settings

As your server load varies, you may need to change the amount of memory that is allocated to the GC3 instance. You can change the amount of memory allocated to both Tomcat and WebLogic.

Tomcat is the Java servlet server that GC3 uses. Increasing the amount of memory that it can utilize allows more GC3 concurrent users and improves the speed of some integration tasks.

WebLogic is the application server that GC3 runs within. Increasing the amount of memory that it has improves performance of business logic functions.

After making any memory changes, you need to stop and restart GC3, as described in chapter 6. The instructions below describe how to make these changes.

Unix and Win32

To change the amount of memory that Tomcat uses, edit `<gc3_install_dir>/tomcat/bin/tomcat.conf` and modify the following lines:

```
wrapper.java.additional.x=-Xms[TOMCAT_MEMORY]m  
wrapper.java.additional.x=-Xmx[TOMCAT_MEMORY]m
```

[TOMCAT_MEMORY] will be some integer value that represents the amount of memory (in megabytes) to use. NewSize and MaxNewSize should be ¼ of the total JVM memory. For instance, if you changed this to 1.6GB, the line would read:

```
wrapper.java.additional.x=-Xms1600m  
wrapper.java.additional.x=-Xmx1600m
```

You can also change the amount of memory that WebLogic uses by editing `/opt/gc3/weblogic/config/gc3domain/weblogic.conf`:

```
wrapper.java.additional.x=-Xms[WEBLOGIC_MEMORY]m  
wrapper.java.additional.x=-Xmx[WEBLOGIC_MEMORY]m
```

If you change this value to 1.6GB, it would look like:

```
wrapper.java.additional.x=-Xms1600m  
wrapper.java.additional.x=-Xmx1600m
```

Restart your GC3 instance to make these changes take effect.

Changing Notification Settings

The GC3 server sends out a variety of notifications to users. Changing these settings involved modifying the `glog.properties` file on your GC3 Application server as described below.

```
glog.mail.smtp.host=smtp.company.com
```

This setting defines the SMTP server that GC3 uses when sending email and fax notifications.

```
glog.workflow.notify.advisor.email=GlogAdvisor@company.com
```

This setting defines the email address that email and fax notifications will appear to come from. This email address should be valid and this email box should be monitored, so that bounced emails and delivery failures are caught. FAXmaker will also send fax success/failure responses to this email address.

```
glog.workflow.notify.advisor.fax=800-555-1212
```

This setting defines the fax number that fax notifications appear to come from.

```
glog.workflow.notify.FAXmaker.email=fax@company.com
```

This setting defines the e-mail address of the fax server. The fax server should monitor the corresponding mailbox and convert the incoming emails to faxes.

Changing Passwords

This section describes how to change the passwords for your GC3 installation.

GC3

Passwords for GC3 users can be changed using the User Manager. Refer to the GC3 online help for details.

Passwords in the GC3 database are encrypted and are not presented as clear-text. If you lose a password for a user and need to reset it, you can do one of the following.

1. Log in as an Admin user for that domain and reset their password using the User Manager.
2. If the Admin user password is lost, you can:
 - Sqlplus into the database as sys or system and run "select gl_password from gl_user where gl_user_gid = 'GUEST.ADMIN';" Replace GUEST.ADMIN with any user that you know the password for. This will return the encrypted string that represents that password.
 - You can now update the database entry for the user with the lost password with this encrypted string.
 - Restart GC3.
 - You can now log in as the original user, using the GUEST.ADMIN user's password.
3. If you want to reset ALL passwords in the GC3 database to a certain value, do the following.
 - Setup your environment by running `<gc3_install_path>/install/gc3env.sh` on Unix or `<gc3_install_path>/install/gc3env.cmd` on Windows.
 - Run `java glog.database.security.crypto.SwitchPasswordMode Text <new_password>`. This will change all passwords in the database to `<new_password>`. They will also be converted to clear-text.
 - Run `java glog.database.security.crypto.SwitchPasswordMode Encrypt DB`. This will encrypt all of the passwords in the GC3 database.

Note: When running this procedure, the WebLogic system user's password is changed back to the default weblogic. If you had previously changed this, you will need to change it back. See the WebLogic section below for more details.

WebLogic

WebLogic has one super-user that is allowed to stop, start, and manage the WebLogic server. To change the super-user password, follow these steps:

Note: The system user is the admin user for WebLogic. This user has the ability to open the WebLogic console and stop/start the server. This password should be kept secure.

1. Ensure that GC3 is up and running. Log into GC3 as DBA.ADMIN.
2. Choose Security Services > User Manager > List Users.
3. Select the system user.
4. Type the new password under Password then confirm the password under Retype Password.
5. Click Update Password.
6. The password has now been changed and will take effect immediately. However, in order for GC3 to startup correctly, certain property files need to be updated as follows:

7. On the GC3 Application server, edit `<gc3_install_path>/weblogic/config/gc3domain/weblogic.conf` and change the `WL_PW` variable in this file to match the new system password.
 Note: WebLogic uses this parameter to startup and will fail to start if this password isn't correct. Permissions on this file should be very restrictive to keep the password safe.
8. Setup your environment by running:
9. `$. <gc3_install_path>/install/gc3env.sh`
10. Run `"java glog.util.appclass.Base64Encoding <new_password>"`. This will return the encoded value for your new password.
11. On GC3 Web Server(s), edit `<gc3_install_path>/tomcat/bin/tomcat.conf` and search for the string `"-DGC3EncodedPassword=Q0hBTkdFTUU="`. Change this to the new encoded password, for instance `"-DGC3EncodedPassword=bmV3X3Bhc3N3b3Jk"`.
12. Start GC3

GC3 is now setup with the new password and can be restarted. This process needs to be done each time the system password is changed.

Oracle

GC3 uses several users within the GC3 database, including: `archive`, `globalreportuser`, `glogdba`, `glogdev`, `glogload`, `glogowner`, and `reportowner`. If you wish to change the passwords for these users, follow these steps:

1. Using SQL*Plus, log into the GC3 database as `sys` or `system`.
2. Run `"alter user <user_name> identified by <new password>"` for each user that you wish to change.
3. Edit the `<gc3_install_path>/glog/config/glog.properties` file on each GC3 Web and App server and replace the value of `"glog.database.password"` with the new `glogdba` password.
4. Edit the `<gc3_install_path>/glog/config/glog.properties` file on each GC3 Web and App server and replace the value of `"glog.database.load.password"` with the new `glogload` password.
5. On a GC3 Reports server, edit `CGIcmd.dat` (under your Oracle Application Server installation) and update the password for `glogdba...`

Remember the passwords for `glogowner`, `reportowner` and `archive`, as they will be needed when you apply patches to GC3.

Configuring GC3 to use a Different Database

At some point, you may need to point your GC3 instance to another database for testing, development, or fail-over purposes. Follow the directions below to configure GC3 to use this new database. It is assumed that the new GC3 database has already been created and populated with data using the database installation directions earlier in this manual. The database should also be at the same patch level as your GC3 instance to prevent any incompatibility problems.

1. Shutdown your GC3 Web and Application servers as described earlier in this guide.
2. Edit the file `<gc3v35_install_path>/glog/config/glog.properties` and change the following properties. This should be done on each GC3 Web and Application server.

```
dbserver=<db_server_fqdn>
glog.database.sid=<oracle_sid>
glog.database.connectstring=<oracle_connectstring>
```

3. Edit the file `<gc3_install_path>/weblogic/config/gc3domain/config.xml.template` and change the following property under `JDBCConnectionPool`.

```
URL=jdbc:oracle:thin:@<db_server_fqdn>:1521:<oracle_sid>
```

4. Restart your GC3 Web and Application servers as described earlier in this guide.
5. On a GC3 Reports server, edit `cgicmd.dat` (under your Oracle AS 10g FR installation) and update the connect string.
6. You may also need to edit your `tnsnames.ora` files on each GC3 Web, App, and Reports server. Oracle Reports may need to be re-configure to point at the new database.

Creating and Installing SSL Certificates

GC3 is delivered with demonstration SSL certificates for Apache (using `mod_ssl` and `OpenSSL`) and `WebLogic`. To run these servers in a production environment, you should replace these with your own real certificates, verified by a known Certificate Authority, such as Verisign, Thawte, etc. In a high-traffic SSL environment, you should use hardware SSL accelerators as they simplify certificate management, increase SSL performance, and greatly reduce the load on your servers. Hardware solutions are available from F5, Intel, and others.

Apache

1. Open a command prompt and move into `<install_dir>/apache/openssl/bin`, where `<install_dir>` is where you installed the GC3 software.
2. Create a RSA private key for your Apache server (will be Triple-DES encrypted and PEM formatted).

```
openssl genrsa -des3 -out server.key 1024
```

3. Enter your PEM pass phrase. This will be a password that you create. Make a backup copy of the `server.key` and remember your pass phrase (you will need it). You can see the details of the RSA private key with this command:

```
openssl rsa -noout -text -in server.key
```

4. You can also create a decrypted PEM version of the RSA private key with this command:

```
openssl rsa -in server.key -out server.key.unsecure
```

5. Create a Certificate Signing Request (CSR) with the server RSA private key (output will be in PEM formatted):

```
openssl req -new -key server.key -out server.csr -config openssl.cnf
```

6. Please answer all of the questions to the best of your ability, especially the common name (your company's domain name).

7. You can view the details of your CSR via this command:

```
openssl req -noout -text -in server.csr
```

8. You now have to send this Certificate Signing Request (CSR) to a Certifying Authority (CA) for signing. The result is then a real Certificate, which can be used for Apache. You now need to transfer the CSR to a commercial CA like Verisign or Thawte. Usually you will need to post the CSR into a web form, pay for the signing, and await the signed Certificate that you then store into a `server.crt` file.
9. When you receive the file back from the Certifying Authority you will copy this file into `gc3/apache/conf/ssl.crt`. Also copy `server.key` from `gc3/apache/openssl/bin` to `gc3/apache/conf/ssl.key`. The `server.key` file was created earlier.
10. Now you have two files: `server.key` and `server.crt`. These files can be used now. Edit your apache configuration file `\gc3\apache\conf\httpd.conf`. Scroll to almost to the end of the file and you will see two lines:

```
SSLCertificateFile conf/ssl.crt/demo.cert  
SSLCertificateKeyFile conf/ssl.key/demo.key
```

11. Replace demo.cert with the file name server.crt and replace demo.key with the file name server.key. Make sure that you put the file names at the end of the path. Notice server.crt is for SSLCertificateFile and server.key is for SSLCertificateKeyFile.

The Server.csr file is no longer needed.

12. Restart Apache for these new settings to take effect.

Enable mod_deflate

GC3 can use mod_deflate under Apache to compress outbound html content. This reduces bandwidth consumption and increases performance over slow network links. If you wish to enable this feature, do the following:

1. Edit the <gc3_install_path>/apache/conf/httpd.conf file on each GC3 Web server and uncomment the following lines in the mod_deflate section.

```
#      SetOutputFilter DEFLATE
#      SetInputFilter DEFLATE
```

Enabling Automatic Web UI Login

GC3 can remember a user's login ID and password and auto-fill these fields. This feature stores the hashed login ID and password in a cookie within the end-user's web browser. This feature may present a security concern if enabled.

To enable, do the following:

1. Edit the glog.properties file on your Web servers and add the following property:
glog.webserver.login.remember=true
2. Restart GC3 for this to take effect. The "Remember Me" checkbox will now appear on the login screen and browser-based users can selectively enable this feature for their login.

Enabling Reverse-Proxy Support

GC3 supports some reverse-proxy solutions. The reverse-proxy is expected to identify sites based on a URL-prefix (such as /gc3) and then strip that prefix off before forwarding the URL to GC3. Every link that GC3 sends to the browsers will contain the defined URL-prefix.

To enable reverse-proxy support, do the following:

1. Edit the glog.properties file on your Web and Application servers and modify the line to include the desired URL-prefix (ex. /gc3 or /glog):

```
glog.webserver.urlprefix=
```

2. Edit the index.htm file under <gc3_install_path>/apache/htdocs. The line:

```
<META http-equiv="refresh" content="0";
URL=/servlets/glog.webserver.servlet.umt.Login"/>
```

3. Needs to contain the URL-prefix. For example, if your URL-prefix is /gc3, it would look like:

```
<META http-equiv="refresh" content="0";
URL=/gc3/servlets/glog.webserver.servlet.umt.Login"/>
```

4. Ensure that the glog.webserver.URL setting in your glog.properties files points to your reverse-proxy server, rather than the individual web server(s).
5. Restart GC3 to enable these changes. GC3 can now be accessed through the reverse-proxy, but may not be accessible directly. This is a limitation due to adjusting links to work with the reverse-proxy.

Enabling Single Sign On (SSO) Support

GC3 supports SSO, where a central application (the SSO provider) authenticates users and then passes the login information to GC3, therefore bypassing the normal login process. To enable SSO, add the following lines to your `glog.properties` file and then restart GC3:

```
glog.security.sso=true
glog.security.sso.appUIdName=appuid
```

This assumes that your SSO solution passes a variable named `appuid` that contains the username to login to GC3 in either the HTTP header or the url. The GC3 servers will accept either.

Installing Multiple Web Servers

Multiple Web servers can be utilized to increase the performance of GC3. Generally, with more web servers you can maintain more simultaneous user connections into the GC3 server's web interface. You may also see increased performance in integration, since incoming integration files are posted to a servlet on the Web server and are passed back to the Application server. We recommend using a hardware load-balancer to spread the incoming requests among multiple Web servers. Hardware solutions are available from many vendors including Alteon, Cisco, F5, and others.

If you want to install multiple Web servers, follow the normal GC3 Web Server instructions for each one, ensuring that each Web server has a unique FQDN and IP address.

When installing GC3 and utilizing a load-balancer, ensure that you set the Web Server External URL and Port to the virtual address and port on the load-balancer. The other settings (Web Server FQDN, App Server FQDN, etc) should reference the real FQDN's of the server, internal to the load-balancer.

Modifying the Session Timeout

The default session timeout for the GC3 Web Server is 30 minutes. If you leave GC3 idle for 30 minutes, your session will timeout and you will need to log in again. For some GC3 installations, you may want to increase this timeout. Please note that increasing the session timeout will increase the load on your Web server and may decrease the number of simultaneous users that can access the system. We don't recommend setting this above 60 minutes.

To change this setting, edit the `web.xml` files on your GC3 Web Server. These files are located on your web server(s): `<gc3_install_dir>/tomcat/conf/web.xml` and `<gc3_install_dir>/glog/gc3webapp/WEB-INF/web.xml`. Edit the following line in each file:

```
<session-timeout>30</session-timeout>
```

Change the setting from 30 to your desired timeout period, in minutes. Restart the GC3 Instance as described in chapter 6.

Monitoring Performance

This section gives some pointers for monitoring the performance of your GC3 server and the individual components that make it up.

Windows

On Windows, you can monitor system performance using the Task Manager or Performance Monitor. You should monitor general trends, such as CPU usage, memory usage, and memory swapping (out to virtual memory).

The Apache service starts up multiple instances of Apache to handle incoming requests. Each of these will show up as "Apache.exe", and can be monitored for performance statistics using general Windows Server tools.

The Tomcat service starts up one Java JVM and shows up as "java.exe". Unfortunately this can be hard to find if you have multiple JVMs running on the same machine. Usually you can identify Tomcat by the amount of memory it is using, as normal Tomcat instances use large amounts of memory (typically 512MB to 2GB). You can monitor the performance statistics of Tomcat using general Windows Server tools.

The Weblogic service starts up one Java JVM, but shows up as beasvc.exe, because of WebLogic's special service runner. You can monitor the performance statistics of WebLogic using general Windows Server tools. You can also get detailed performance statistics from the WebLogic console. Follow these steps:

1. Log into the WebLogic console (http://<appserver_name>:7001/console) as the user system.
2. In the left frame, expand gc3domain -> Servers.
3. Select the gc3 server.
4. In the main frame, select the Monitoring tab.
5. Then select the Performance tab.
6. This screen shows you the following:
 - Request Throughput – The rate at which requests are processed. The higher the better.
 - Requests Waiting – The number of requests waiting to process. The lower the better.
 - Memory Usage – The amount of memory utilized by WebLogic. Keep in mind that this shows you how much memory WebLogic is using, within the memory allocated to the JVM. The amount of memory reported by your operating system will be higher, since the JVM reserves all of the memory that it has been configured to allocate, regardless of whether WebLogic is using it all or not. This was set during the GC3 installation. To get a true memory reading, you should force a garbage collection.
 - Force Garbage Collection – This will force the JVM to free up all unused memory. This should be run in order to get a true memory reading from the main performance screen. Keep in mind that forcing a garbage collection will slow the server down and shouldn't be forced continually. The JVM usually manages garbage collections automatically as the server runs.
7. To monitor database connections, expand Services > JDBC > Connection Pools.
8. Select dbaPool.
9. Select the Monitoring tab and Monitor all instances of dbaPool.
10. This page shows you the initial, maximum, and high number of db connections. You should monitor whether the high number is at or near the maximum number of connections. If so, you should consider increasing the database connections in the dbaPool.

Unix

On Unix, you can monitor system performance using the ps, top, or sar. You should monitor general trends, such as CPU usage, memory usage, and memory swapping (out to virtual memory). All processes for GC3 should run under the user setup during the installation process. This can be helpful for identifying the processes.

The Apache service starts up multiple instances of Apache to handle incoming requests. Each of these will show up as "httpd", and can be monitored for performance statistics using general Unix tools.

The Tomcat service starts up one Java JVM and shows up as "<path>/ java -server -Xms512m -". Unfortunately this can be hard to find if you have multiple JVMs running on the same machine. Usually you can identify Tomcat by the amount of memory it is using, as normal Tomcat instances use large

amounts of memory (typically 512MB to 2GB). You can monitor the performance statistics of Tomcat using general WebLogic tools.

The WebLogic service starts up one Java JVM and shows up as "<path>/ java -server -XX:MaxPer" (differs slightly from the Tomcat instance). Unfortunately this can be hard to find if you have multiple JVMs running on the same machine. Usually you can identify Tomcat by the amount of memory it is using, as normal WebLogic instances use large amounts of memory (typically 512MB to 2GB). You can monitor the performance statistics of WebLogic using general Unix tools. You can also get detailed performance statistics from the WebLogic console. Follow the steps under the Windows Server section.

Purging Excess Reports

This section explains the steps for purging the REPORT_LOG table. Please follow the steps based on your Operating System.

Purge Process for UNIX

1. Logon to the Unix machine on which the Report server is installed.
2. Run the shell script

```
purgeRepLog.sh
```

The script prompts for the nine parameters that are listed later in this section. Based on the parameters passed, the script deletes the records from the database and deletes the PDF files.

Note: The USERID used to logon to the Unix machine should have delete permissions on the PDF files created by the report server.

Purge Process for Windows

1. Logon to the Windows machine on which the Report server is installed.
2. Run the batch file purgeRepLog.bat with the parameters that are list later in this section (in the order specified).

Based on the parameters passed, the script deletes the records from the database and deletes the PDF files.

Parameters

These parameters should be passed to the procedure in the order listed below:

- **Start Date** – this is the starting date from which the records are to be purged. % can be used to imply all dates. Default value is NULL. The format for the field is DD-MON-YYYY.
- **End Date** – this date is to date till which the records are to be purged. % can be used to imply all dates. Default value is NULL. The format for the field is DD-MON-YYYY.
- **Domain Name** – Domain name for which the records and files are to be purged. % indicates all domains. Default value is NULL
- **GL User** – GL User ID for which the records and files are to be purged. '%' can be used to indicate all users. Default value is NULL
- **Report GID** – the Report GID for which the records and files are to be purged. % indicates all the Report GIDs. Default value is NULL
- **Job Number** – the Job Number for which the records and files are to be purged. % indicates all the job numbers. Default value is NULL
- **DB User Name** – the database user name
- **DB Password** – the database password

- **Connect string** – the database SID or the connect string. Default value is the value of the environment variable \$ORACLE_SID.

Installation

For Windows:

The batch file should be created in the same directory as indicated by the GLOG environment variable - p_report_out_dir.

or

The batch file should be created in the directory that is included in the %PATH% environment variable and should be run from the directory indicated by the p_report_output_dir.

For UNIX

The shell script for UNIX should be created in the same directory as indicated by the GLOG environment variable - p_report_out_dir.

or

The shell script for UNIX should be created in the directory that is included in the \$PATH environment variable and should be run from the directory indicated by the p_report_output_dir.

Updating Data Content

The shell script LOADSCHED (loadsched.sh for UNIX and loadsched.cmd for native Windows shell) is used to load UPS rates.

The input to the load process is an Oracle Export dump file – ups.dmp. Extract the desired dump file from the G-Log FTP site to the directory on your local server where the G-Log Oracle database release scripts are maintained – gc3/glog/oracle/script8 on your GC3 Application Server.

If you need access to the G-Log FTP site to obtain these updates, please contact G-Log's Technical Support. The LOADSCHED script calls Oracle PL/SQL procedures to load the dump file.

The LOADSCHED command takes three parameters. The command format is:

```
Loadsched tnsalias glogowner password
```

- tnsalias - the connect string in the tnsnames.ora used to connect to the database
- Glogowner - the schema owner of the application objects (glogowner)
- Password - the password for glogowner

The LOADSCHED script checks the ERROR_LOG table in the database after loading the rate data to report on any errors encountered. The script will echo any errors to standard output, and also to the file ups.log. A completion message will be sent to standard output and also to ups.log. The completion message indicates either success or a message indicating errors and to contact G-Log Tech Support.

After completion, the ups.dmp file is renamed to ups.sav.

Purge Shipments and Orders from the Database

This section describes how to diagnose purging problems for shipments, order bases, ship units, batch grids, and ship groups. Most likely, the reason for your problem is one of the following:

- Oracle init parameters are not set up.
- Pkg_purge package has become invalid after a GC3 patch.
- Purging job is not scheduled.

The shipment order purge was developed for database archive purposes. The data is purged from the glogowner schema and archived in the archive schema. During purging, there is a dependency between shipments and orders. Shipments should be purged before orders. After purging the shipments, the application also purges the corresponding ship units, batch grids, and ship groups. Corresponding means that only a shipment or order release about to be purged can reference them, no other shipments or order releases may reference them.

You can purge either in SQL*Plus or in GC3. The purge is a two step process:

1. The gids from shipment, order, or ship unit that meet the selection criteria are moved into the table job_queue (release 3.1 and higher) or purge_job_queue (release 3.0).
2. The Oracle background process wakes up at certain time intervals and deletes the objects. The default interval is 30 minutes.

As mentioned earlier, only ship units, batch grids, and ship groups referenced by a shipment or order release about to be purged are purged. Ship units, batch grids, and ship group not referenced by a shipment or order release about to be purged stay in the database. This is to avoid GC3 application errors. For example we do not want the following to happen:

- You have just created a ship unit and you are going to use it to build a shipment.
- At that moment the purge job starts and removes the ship unit.

Setup

The shipment, order, or ship unit purge should have been set up during the Glog database installation. If not, the following steps helps you set up the purge:

1. Add two parameters in init.ora


```
job_queue_interval    integer 60
job_queue_processes   integer 4
```
2. Shutdown your database and then restart it.
3. @pkg_shipment_purge.sql to compile pkg_purge package in SQL*Plus
4. pkg_purge.install to schedule a job.

Diagnose Problems

Before you conclude that your purge did not work, you should diagnose your problem.

1. Log in as DBA in SQL plus.
2. Find out if your Oracle database is ready to run background job:

```
sql>show parameters job
```

NAME	TYPE	VALUE
-----	----	-----
job_queue_interval	integer	60
job_queue_processes	integer	4

3. If either value is 0, you should:
add these two parameters to the init.ora file or directly set the values:

```
sql>alter system set job_queue_interval=60
sql>alter system set job_queue_processes=4
```

4. Find out if the purge job is scheduled:

```
sqlplus>select job from user_jobs
        JOB
        ---
        1
```

5. If the value is not 1, you should schedule the job by executing either one of the following commands:

```
sqlplus> execute pkg_purge.install(a number)
```

This job will be executed as the user who submits it.

or

```
sqlplus> execute pkg_purge.dba_install(a number)
```

This job will be executed as DBA.

The number represents a number of 30 minute periods. For example, 1 represents 30 minutes between job executions and 3 represents 90 minutes between job executions.

The pkg_purge package could become invalid after having patched GC3. In that case, you can just re-schedule the job.

6. Monitor the progress:

```
sqlplus>select count(1) from job_queue
```

The count should decrease quickly, by hundreds of records. A typical speed is 4000-5000 business records per hour.

7. Look in the i_log table for any error messages as well as start and end times of the purge.

Troubleshoot with SQLServlet

After you have submitted your shipment order purge job in the process manager within GC3, you should receive an email. The script moves all gids to the job_queue table. After 30 minutes (or whatever job interval you have chosen), you should notice that the total number of rows in the job_queue table has decreased. If not, the following question and answer section helps you to diagnose the problem. These answers assume that you can use the SqlServlet.

Question: How do I know when my purging will start?

Answer: Submit the following: "select last_date, next_date from dba_jobs where job = 1". The time under the heading of next_date tells you when the next purge should be started.

Question: I submit "select last_date, next_date from dba_jobs where job = 1", but no record is returned for the query.

Answer: This means that the purge job is not scheduled. To schedule the purging job, you can submit "begin pkg_purge.install; end;".

Question: It is passed the time specified in the next_date column in the previous query. However, the total number of rows in the job_queue table is still unchanged. Why?

Answer: One possibility is that the pkg_purge package has become invalid after you have patched GC3. You can reschedule the job by submitting "begin pkg_purge.install; end;".

Question: I rescheduled the job. However, the total number of rows in the job_queue table is still unchanged. Why?

Answer: Most likely, the two Oracle init parameters are not set. You should ask your DBA to check the two parameters.

Question: All of my grids are removed from the job queue table. However, my shipments or orders are still not deleted or only partially deleted. How can I find out what is wrong?

Answer: All of the error messages are logged in the I_log table. You can submit "select * from i_log where written_by = 'PKG_PURGE'" to help you diagnose the problem.

Question: I view the error log. There are some fk violation related error messages. Does this mean that the purging program cannot delete parent records when a child record references them?

Answer: No, the purging program is implemented with cascade delete functionalities. It would delete the referenced children before deleting their parent. However, this may be a security problem. For example, the parent and child data might exist in different domains and the user trying to purge does not have read and write privileges to the domain containing the child data.

Question: I want to purge but some parent and child data exist in different domains. What should I do?

Answer: You have two options: The first is to grant read and write privileges from the child domain to parent domain. You may not like this option because you have to do a lot of granting. The other option is to schedule the purge job with DBA privileges by submitting "begin pkg_purge.dba_install; end;".

Question: How do I change the job interval?

Answer: The default job interval is 30 minutes during glog database installation or patching. However, you are only allowed to change the interval in increments of 30 minutes by calling the stored procedure with a number in the parameter. For example, if you would prefer the job to run every 12 hours, then you submit "begin pkg_purge.dba_install(24); end;". The parameter 24 is calculated from 30 minutes x 24=12 hours.

Question: The database already has a scheduled purging job. What would happen to that job if I submit "begin pkg_purge.dba_install;"?

Answer: You would not do any harm. Your new job would replace the previously scheduled job. If a previously scheduled job was running, Oracle would let it finish.

Question: After I'm done entering all the criteria in UI and I get an email, I really want to physically purge data immediately. How can I do this?

Answer: You can take advantage of the way Oracle schedules a job. When Oracle schedules a job, it executes the job right away. After that, the job is only executed at the time interval specified.

Question: How do I remove ship units, batch grids, and ship groups that are not referenced by any children?

Answer: You submit "begin pkg_purge.scavenge_all; end;".

Purge Transmissions from the Database

This chapter provides basic information on manually purging certain tables relating to transmissions. This is an alternative to truncating the partitioned tables. Learn more about the scheduled jobs that truncate partitioned tables on page 12-16. Truncating data is much faster than purging, but purging allows you to more exactly specify what data to purge.

Transmission_purge deletes data associated with xml blobs used for integrating GC3 with external systems. In general, the xml blobs are temporary, so there is no downside the getting rid of them.

Your DBA or System Administrator should set up a nightly or weekly background job to run purges as described below.

Manually Purge Transmissions

To purge the transmission tables:

1. Log into sql*plus as glogowner. (glogowner/{password}@{tnsname})
2. sql>exec domainman.transmission_purge(<age_in days>, <where clause>, <total minutes>, <keep status clob flag>, <batch size>);

The transmission purge process accepts the following arguments:

Age in days (required): the age of the transmissions that you want to purge.

If you have no idea of how many transmissions you have that are older than 30 days (for example), you can do the following query:

```
sql> select count(*) from i_transmission where sysdate-create_date >
30;
```

Where clause (optional): Value should be 'domainman.no_status_purge' or be left null. Use 'domainman.no_status_purge' if you want to keep transmissions that are associated with shipment events (IE_SHIPMENT_STATUS) or tender collaboration records (TENDER_COLLABORATION), regardless of age. Otherwise, null ignores whether the transmission has shipment events/tender collaboration records or not.

Total Minutes (defaults to 60): The maximum number of minutes you would like the total purge process to take. After processing a set of rows, the procedure will check the total time. If it exceeds the inputted time, the process will wrap up the existing task, and stop. This is helpful if you have a tight time schedule in which you can perform this task.

Keep status clob flag (defaults to TRUE): If the where clause is set to 'domainman.no_status_purge' the process will examine this flag. When the flag is set to FALSE, the CLOB column in I_TRANSACTION table are nulled out only for following rows:

3. Whose insert_date are older than specified age
4. They have associated shipment events, which means these transactions have related records in IE_SHIPMENTSTATUS table.

When the flag is set to FALSE the clob column in I_TRANSACTION table are not nulled out for following rows:

5. Whose insert_date are older than specified age
6. They do not have associated shipment events, which means these transactions do not have related records in IE_SHIPMENTSTATUS table, but they have related records in TENDER_COLLABORATION table.

When the flag is set to TRUE, no clobs are not nulled.

Batch size (default 5000): Limits the number of transmission records that should be processed at a time. The smaller your rollback segment, the lower this number should be set. If you get a rollback segment error, rerun the process with a lower batch size specified.

The transmission purge process delete records from the following tables:

I_TRANSMISSION
I_TRANSACTION
I_LOG
IE_INROUTE_SERVPROV
IE_MARKS
IE_SHIPMENTSTATUS
IE_SHIPMENT_REFNUM
IE_SS_EQUIPMENT
IE_SS_REMARK
IE_SS_STOP
IE_SS_S_EQUIPMENT
IE_S_SHIP_UNIT
IE_S_SHIP_UNIT_LINE
IE_SHIP_GROUP_REFNUM
IT_SHIPMENT_REFNUM
IT_TENDER_RESPONSE
TENDER_COLLABORATION
SERVPROV_TENDER_COMMENT
SERVPROV_TENDER_REFNUM
TENDER_COLLABORATION_STATUS
I_LOG_DETAIL

Examples:

```
exec domainman.transmission_purge(90);
```

deletes all transmission records (for above tables) that are older than 90 days, regardless of whether they are associated with shipment events or tenders. The process would run for 60 minutes (since this is default), and would process 5000 records at a time (default).

```
exec domainman.transmission_purge(60,domainman.no_status_purge,  
120,FALSE,2000);
```

would delete all transmission records older than 60 days that do not have associated shipment events or tenders. For those transmission records that are older than 60 days, but have associated events or tenders, the process will null out the CLOBs, in order to save space. The process will run for 2 hours, and will process 2000 records at a time.

Note: Transmission_purge is an expensive operation. It should be run during off-peak hours.

Manually Purge Problem Records

If you also want to purge the PROBLEM table:

1. Log into SQL*Plus as glogowner. (glogowner/{password}@{tnsname})
2. sql> exec partit.purge_partit_tables(90); to purge all database records in this table older than 90 days.

Partitioned Tables

Because GC3 contains several integration and logging tables that can become quite large very quickly, these tables have been partitioned to allow for quick purges of older data. By partitioning the tables, a particular partition (segment) can be truncated, instead of records being individually deleted, which is inefficient for large amounts of data.

Range Partitioning

Here is an example of partitioning, or segmenting, a table where a certain year and month drive the partition the data should be placed in. This is an example of partitioning by range:

Range	Partition
Jan-Mar 2001	sales_q1
Apr-Jun 2001	sales_q2
Jul-Sep 2001	sales_q3
Oct-Dec 2001	sales_q4

```
CREATE TABLE sales
( invoice_no NUMBER,
  sale_year INT NOT NULL,
  sale_month INT NOT NULL)
PARTITION BY RANGE (sale_year, sale_month)
( PARTITION sales_q1 VALUES LESS THAN (2001, 04)
  TABLESPACE data,
  PARTITION sales_q2 VALUES LESS THAN (2001, 07)
  TABLESPACE data,
  PARTITION sales_q3 VALUES LESS THAN (2001, 10)
  TABLESPACE data,
  PARTITION sales_q4 VALUES LESS THAN (2002, 01)
  TABLESPACE data );
```

GC3 Partitioned Tables

GC3 database has groups of partitioned tables. Most of them are range partitioned. However the ranges are not hard-coded. Instead, a partition_key column has been added to each partitioned table, which is populated with a trigger. The value of the calculated key determines into which partition the data should be placed, based upon the INSERT_DATE. This adds to flexibility in how the tables are segmented.

For integration related partitioned tables, each table has been defined as a quarterly, a monthly, or a weekly table. The frequency to which the table has been associated drives how the partitions are populated, and also the frequency of the purge. Each of these tables has four partitions (except for I_transaction and I_transmission, which have eight to differentiate between inbound and outbound transmissions).

Quarterly	Monthly	Weekly
	EXPLANATION	I_TRANSACTION (outbound)
	GL_LOGIN_HISTORY	I_TRANSMISSION (outbound)
	IE_INROUTE_SERVPROV	
	IE_MARKS	
	IE_SHIPMENTSTATUS	

Quarterly	Monthly	Weekly
	IE_SHIPMENT_REFNUM	
	IE_SHIP_GROUP_REFNUM	
	IE_SS_EQUIPMENT	
	IE_SS_REMARK	
	IE_SS_STOP	
	IE_SS_S_EQUIPMENT	
	IE_S_SHIP_UNIT	
	IE_S_SHIP_UNIT_LINE	
	I_LOG	
	I_LOG_DETAIL	
	I_TRANSACTION_DETAIL	
	PROBLEM	
	I_TRANSACTION (inbound)	
	I_TRANSMISSION (inbound)	

Here is how it works:

If the table is defined as quarterly, then one quarter will go into each partition. In other words,

Quarter	Partition
Jan-Mar	partition 1
Apr-Jun	partition 2
Jul-Sep	partition 3
Oct-Dec	partition 4

If the table is monthly, then the data is segmented as follows:

Quarter	Partition
Jan	partition 1

Quarter	Partition
Feb	partition 2
Mar	partition 3
Apr	partition 4
May	partition 1
June	partition 2
...	

If the table is weekly, then the data is divided as follows:

Quarter	Partition
Jan 1 –7	partition 1
Jan 8-14	partition 2
Jan 15- 21	partition 3
Jan 22-28	partition 4
Jan 29-Feb 4	partition 1
Feb 5–11	partition 2
...	

Every table reuses its partitions, because the intention is that before the end of the cycle, the oldest partition is purged in preparation for the new cycle. In other words, for a monthly table, on April 30th, partition 1 should be purged to remove January's data, which will then be used for May.

Truncate Jobs For Partitioned Tables

In order to make truncating the partitioned tables as seamless as possible, G-Log provides a script that submits an Oracle job to automatically purge the oldest partition, on the last day of the cycle. These jobs should be submitted as a final step in the 3.5 migration, logged in as GLOGOWNER.

1. Enter SET SERVEROUTPUT ON to be able to see feedback.
2. Run `Exec partit.submit_job('WW');`
3. Run `Exec partit.submit_job('MM');`
4. Run `Exec partit.submit_job('Q');`

These jobs are set to run at 1 AM on the last day of the cycle by default.

Schedule Jobs at a Different Time

You can specify a different time if you would like, as an optional second parameter. For example, the following command will have the job run at 2:30am. You can resubmit these jobs whenever you need to change the runtime, since it will auto-delete the previous job, and create it again with the new time.

```
SQL> exec partit.submit_job('WW','02:30');
Job 1164 has been submitted.
It will run next on 13-MAY-2002 02:30
```

Remove Jobs

If you need to remove the job, you can execute the `partit.remove_job` procedure:

```
SQL> EXEC PARTIT.REMOVE_JOB('WW');
PL/SQL procedure successfully completed.
```

Since the job is submitted as a standard Oracle job, you may want to read Oracle documentation about Oracle jobs, and the `DBMS_JOB` package that we utilize in our procedures.

If you need to manually run the purge, you can do so by running `purge_partitioned_tables.sql` logged in as `GLOGOWNER`. You will be prompted for the frequency. You may want to run this script if you are not automating the purge, or if it fails and you would like to run it manually. For example, it can look like this:

```
SQL> @purge_partitioned_tables
```

This routine will truncate the oldest partition for each table that has been identified to be purged at the inputted frequency. The valid values are 'Q' for quarterly, 'MM' for monthly, or 'WW' for weekly, or 'D' for daily. By purging the old data, it can prepare room for the next week, month, or quarter.

```
Please enter a frequency (Q, MM, WW, D): MM
```

```
Purging partition 2...
```

```
Purged partition 2 for table GL_LOGIN_HISTORY
Purged partition 2 for table IE_INROUTE_SERVPROV
Purged partition 2 for table IE_MARKS
Purged partition 2 for table IE_SHIPMENTSTATUS
Purged partition 2 for table IE_SHIPMENT_REFNUM
Purged partition 2 for table IE_SHIP_GROUP_REFNUM
Purged partition 2 for table IE_SS_EQUIPMENT
Purged partition 2 for table IE_SS_REMARK
Purged partition 2 for table IE_SS_STOP
Purged partition 2 for table IE_SS_S_EQUIPMENT
Purged partition 2 for table IE_S_SHIP_UNIT
Purged partition 2 for table IE_S_SHIP_UNIT_LINE
Purged partition 2 for table I_LOG_DETAIL
Purged partition 2 for table I_LOG
Purged partition 2 for table I_LOG_DETAIL
Purged partition 2 for table I_TRANSACTION_DETAIL
Purged partition 2 for table PROBLEM
```

```
Purged inbound i_transaction records
Purged inbound i_transmission records
```

```
PL/SQL procedure successfully completed.
```

Default Units of Measure

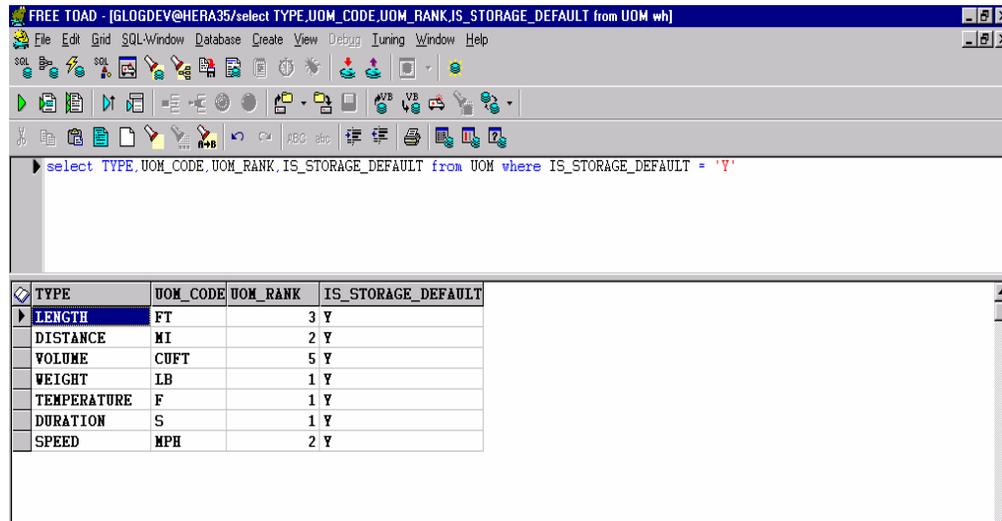
By default, GC3 uses U.S. units of measure when saving data to the database. To change what units of measure GC3 uses, follow these steps.

1. Run the following SQL statement to find out what the current storage default is for each UOM:

```
select TYPE,UOM_CODE,UOM_RANK,IS_STORAGE_DEFAULT from UOM where
IS_STORAGE_DEFAULT = 'Y'
```

The current typical layout of the UOM table for a GC3 instance is as follows:

This layout shows that for this particular GC3 installation, the default storage UOM for length is FT, for



distance Miles...etc...

Note: If you use a default currency other than USD you will need to remove that currency record from UOM table after each month's service release is installed.

- Run the following SQL statement to change the default storage in your system for any UOM. (This example changes the default UOM for LENGTH from current FT to M = meters):

```
UPDATE UOM SET IS_STORAGE_DEFAULT = 'Y' WHERE UOM_CODE = 'M'
```

- You will also need to remove the 'Y' flag on the current length default of FT.

```
UPDATE UOM SET IS_STORAGE_DEFAULT = 'N' WHERE UOM_CODE = 'FT'
```

The above is an example for length but the same SQL can be used to change the defaults for DISTANCE, SPEED, TEMPERATURE, VOLUME, WEIGHT.

Default Currency

By default, GC3 uses US Dollars when saving costs to the database. Also by default, GC3 triangulates all currency conversions through US Dollars. This section explains when and how you can change currency settings.

This example illustrates how GC3 stores a shipment cost record with the currency storage default set to two different currencies:

Total actual cost of shipment is 1000 JPY.

If GC3's currency storage default is USD (current default in all GC3 installations), GC3 stores this cost as follows:

Total_actual-cost	Total-actual-cost_currency_GI D	Total_Actual_cost_base
1000	JPY	7.76

If instead GC3's currency storage default is GBP:

Total_actual-cost	Total-actual-cost_currency_GI D	Total_Actual_cost_base
1000	JPY	5.31

In the first instance, the rate of 7.76 represents the USD value of 1000 JPY converted at the current rate in GC3 (128.77) while in the second instance, the rate of 5.31 represents the GBP value of 1000 JPY converted at the current JPY/GBP rate in the system (188.08).

When to Change Currency Storage Default

There are two scenarios where you would like to change your currency storage default: either you only use one currency other than USD or you use multiple currencies but not USD.

Rates in One Single Currency

In this case, you only need to set your currency storage default to the currency you use. For example, GC3 stores a 100 GBP shipment cost as 100 in both the total cost and the total cost base fields so no currency conversion is needed.

1. Run the following insert statement (example using GBP as new storage default) as the DBA user:

```
INSERT INTO UOM (TYPE, UOM_CODE, UOM_SHORT_DESCRIPTION,  
UOM_LONG_DESCRIPTION, UOM_RANK, IS_STORAGE_DEFAULT, IS_DISPLAY_DEFAULT,  
DOMAIN_NAME) VALUES ('CURRENCY', 'GBP', 'UK POUND', 'UK POUND', 1, 'Y',  
'Y', 'DBA')
```

Rates in Several Currencies

In this case, you need to:

1. Decide what the currency storage default is for your GC3 installation.
2. Set your currency storage default by running the following insert statement (example using GBP as new storage default) as the DBA user:

```
INSERT INTO UOM (TYPE, UOM_CODE, UOM_SHORT_DESCRIPTION,  
UOM_LONG_DESCRIPTION, UOM_RANK, IS_STORAGE_DEFAULT, IS_DISPLAY_DEFAULT,  
DOMAIN_NAME) VALUES ('CURRENCY', 'GBP', 'UK POUND', 'UK POUND', 1, 'Y',  
'Y', 'DBA')
```

GC3 still needs currency rates to convert between the currencies you use. You can download rates from the IMF website. (This populates the DEFAULT rate in the CURRENCY_EXCHANGE_RATE table.) The problem is that all rates from the IMF are against USD. You have two alternatives to using USD centric IMF rates:

- Write an API that uses another source than the IMF to bring in exchange rates stated against your currency storage default.

or

Update the rates you need manually or use a CSV process while again entering your needed rates against your preferred currency. You can do this nightly, monthly or in any other frequency.

- In the property file `glog.properties`, set `glog.currency.base` to your currency storage default (e.g. EUR). This makes GC3 triangulate through the currency of your choice.

This means that GC3 will have all DEFAULT rates stated against your base currency and triangulates using your base currency.

Accounting for Missing Time Zones

The UTC pl/sql package depends on java running in Oracle to do time zone conversions. Some time zones are not accounted for in the `java.util.TimeZone` class. The solution to this problem involves a new (and optional) "missing_time_zone" table, which has the following structure:

Column	Value
TIME_ZONE_GID	NOT NULL VARCHAR2(128)
ALT_TIME_ZONE_GID	NOT NULL VARCHAR2(128)
ADJ_FACTOR	NOT NULL NUMBER

So for example, if you had a location that specified a time zone of "FOO", and you wanted "FOO" to be treated the same as "America/New_York", you would specify a missing_time_zone record of:

```
time_zone_gid = 'FOO'
alt_time_zone_gid = 'America/New_York'
adj_factor = 0
```

The `adj_factor` is added to the `time_zone_offset`. So if the `time_zone_offset` for America/New_York was -5, and you wanted 'FOO' to have an offset of -4, you could set the `adj_factor` to 1.

Some of the missing Australian time zones are accounted for in the java code itself. The defaults established in the code for the Australian time zones can be overridden via the missing_time_zone table.

International Characters in SQL*Plus Windows

This application supports multiple languages. However, you can only display characters for one language at a time. The following needs to be done to properly configure this application to work in another language:

1. Specify NLS_LANG as a system or environment variable on your client. The NLS_LANG parameter has three components: language, territory and charset. Examples of NLS_LANG settings are:

```
NLS_LANG = AMERICAN_AMERICA.WE8ISO8859P1
NLS_LANG = JAPANESE_JAPAN.JA16EUC
```

For more information on NLS_LANG see the Oracle National Language Support Guide.

Important: the character set part of your NLS_LANG setting needs to correspond to your client application character set. For example, in an English Windows environment, the usual character set of GUI applications is the operating system code page 1252, which corresponds to the Oracle character set WE8MSWIN1252. Therefore you would set your NLS_LANG to something like AMERICAN_AMERICA.WE8MSWIN1252. An incorrect NLS_LANG setting in this case would be AMERICAN_AMERICA.WE8ISO8859P15.

2. If characters still do not display properly, then you should switch to a font that contains support for the characters you need. You can find more information on how to do this from Oracle. For example, http://otn.oracle.com/docs/tech/sql_plus/content.html.

Note: To find out which font supports the characters/script you need to use the Character Map utility on Windows Server.

Sorting

Proper sorting in languages other than English can currently not be done via the GC3 web interface and control center. However, language-sensitive sorting of GC3 data is possible when you have direct access to the GC3 database with applications such as Toad and SQL*Plus by setting the desired sort order as an ALTER SESSION parameter. For example, by issuing the command ALTER SESSION SET NLS_SORT = 'SWEDISH'; the sort order for the current session will be changed to Swedish.

Scalability Configuration

The following steps represent an approach for configuring GC3 for scalability.

1. Choose one machine to handle default requests such as Login. This is the DEFAULT machine.
2. Define server clusters: S1=DEFAULT, S2, ..., Sn.
3. Collect a list of appserver URL's: A1, A2, ..., Am.
4. Collect a list of webserver URL's: W1, W2, ..., Wp.
5. For each machine Mi, modify the glog.properties file as follows:
 - Set glog.scalability.on=true
 - Set glog.scalability.thisMachine=DEFAULT for ENG03 (machine which will handle default request as Login).
 - Set glog.scalability.thisMachine=SECONDARY for ENG04 (secondary app server) .
 - Set glog.scalability.defaultServer=DEFAULT.
 - Set glog.scalability.thisMachineURL=URL for M1
 - Set glog.scalability.defaultMachineURL=URL for DEFAULT M1
 - Add the following lines:
 - !remove glog.scalability.topologyMachineURL
 - glog.scalability.topologyMachineURL=A1
 - glog.scalability.topologyMachineURL=A2
 - glog.scalability.topologyMachineURL=Am
 - Add the following lines:
 - !remove glog.scalability.topologyWebserverURL
 - glog.scalability.topologyWebserverURL=W1
 - glog.scalability.topologyWebserverURL=W2
 - glog.scalability.topologyWebserverURL=Wp

Note : If the Weblogic system password is not default (default password usually CHANGEME, you need to include following property in the glog.properties file on both boxes (ENG 03 & ENG04 – eng naming for example only).

```
weblogic.system.password=xxxxxxx
```

where xxxx is weblogic's system password

After these modifications, the "glog.properties" file on machine ENG03 (your DEFAULT app server) would look like this (just a few lines in the file):

```
##### application server URL and
portappserver=eng03.glogtech.comappserver.port=7001# web server URL and
portwebserver=eng03.glogtech.comwebserver.port=80# web URL prefix -
should be blank unless web server is behind a reverse-proxy
serverglog.webserver.urlprefix=# web server URL (may differ from server
name)glog.webserver.URL=http://eng.glogtech.com:80$glog.webserver.urlpr
efix$#-----
---# App Server Settings#-----
-----# scalability
settingsglog.scalability.on=trueglog.log.ID.Scalability.on=trueglog.log
.ID.JMS.on=trueglog.scalability.thisMachine=DEFAULT
glog.scalability.thisMachineURL=t3://eng03:7001glog.scalability.default
Server=DEFAULTglog.scalability.defaultMachineURL=t3://eng03:7001# list
of available app servers to poll for network topology - used only by
web server. one per line.!remove
glog.scalability.topologyMachineURLglog.scalability.topologyMachineURL=
t3://eng03:7001glog.scalability.topologyMachineURL=t3://eng04:7001!remo
ve
glog.scalability.topologyWebserverURLglog.scalability.topologyWebserver
URL=http://eng03:80glog.scalability.topologyWebserverURL=http://eng04:8
0#####
```

After the modifications, the "glog.properties" file on machine ENG04 (your SECONDARY Application Server) would look like this (just few lines in the file) ...

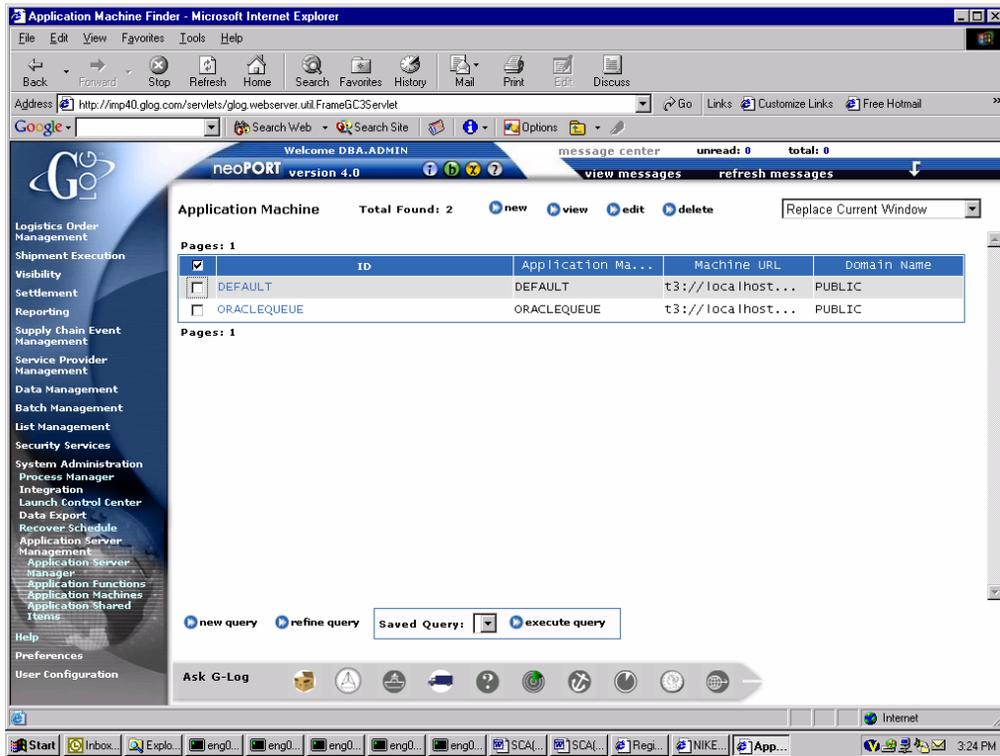
```
##### application server URL and
portappserver=eng04.glogtech.comappserver.port=7001# web server URL and
portwebserver=eng03.glogtech.comwebserver.port=80# web URL prefix -
should be blank unless web server is behind a reverse-proxy
serverglog.webserver.urlprefix=# web server URL (may differ from server
name)glog.webserver.URL=http://eng.glogtech.com:80$glog.webserver.urlpr
efix$#-----
---# App Server Settings#-----
-----# scalability
settingsglog.scalability.on=trueglog.log.ID.Scalability.on=trueglog.log
.ID.JMS.on=trueglog.scalability.thisMachine=SECONDARY
glog.scalability.thisMachineURL=t3://eng04:7001glog.scalability.default
Server=DEFAULTglog.scalability.defaultMachineURL=t3://eng03:7001# list
of available app servers to poll for network topology - used only by
web server. one per line.!remove
glog.scalability.topologyMachineURLglog.scalability.topologyMachineURL=
t3://eng03:7001glog.scalability.topologyMachineURL=t3://eng04:7001!remo
ve
glog.scalability.topologyWebserverURLglog.scalability.topologyWebserver
URL=http://eng03:80glog.scalability.topologyWebserverURL=http://eng04:8
0#####
```

6. Login to your database as "glogdba" or "glogowner" and update some records in APP_MACHINE table. SQL syntax see below.

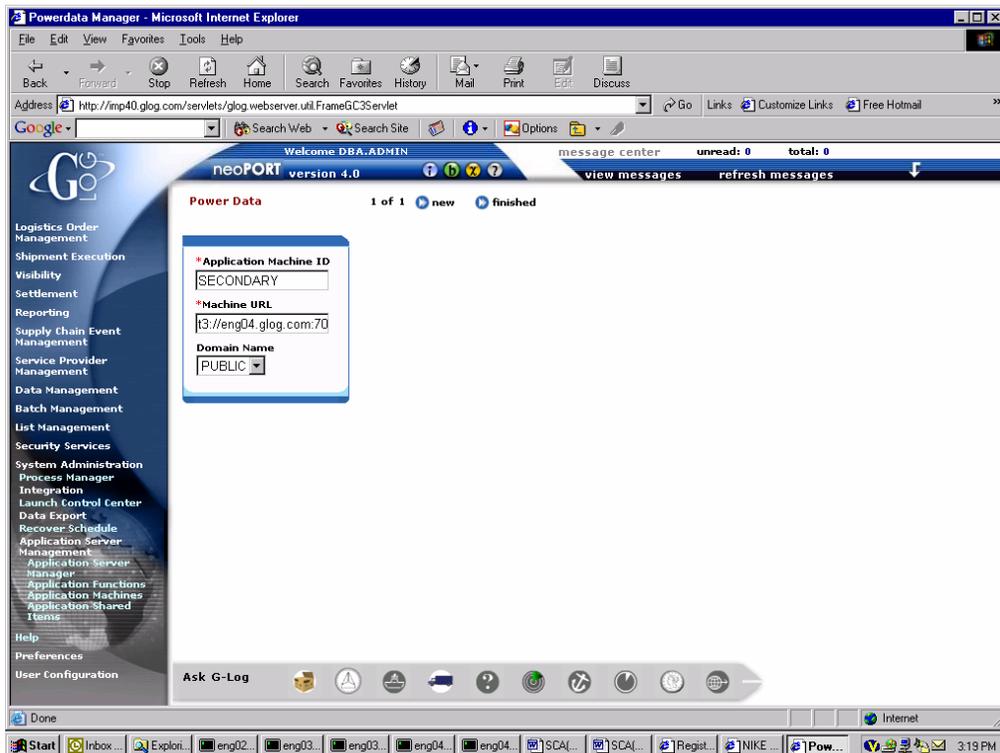
```
SQL> update app_machine set machine_url='t3://eng03.glogtech.com:7001'
where app_machine_gid='DEFAULT';1 row updated.SQL> update app_machine
set machine_url='n/a' where app_machine_gid='ORACLEQUEUE';1 row
updated.
```

7. Start the default server (ENG03) and login as DBA.ADMIN.
8. Add Application Machines for M1, M2, ..., Mn.

SYSTEM ADMIN -> APPLICATION SERVER MANAGEMENT -> APPLICATION MACHINES -> SEARCH.



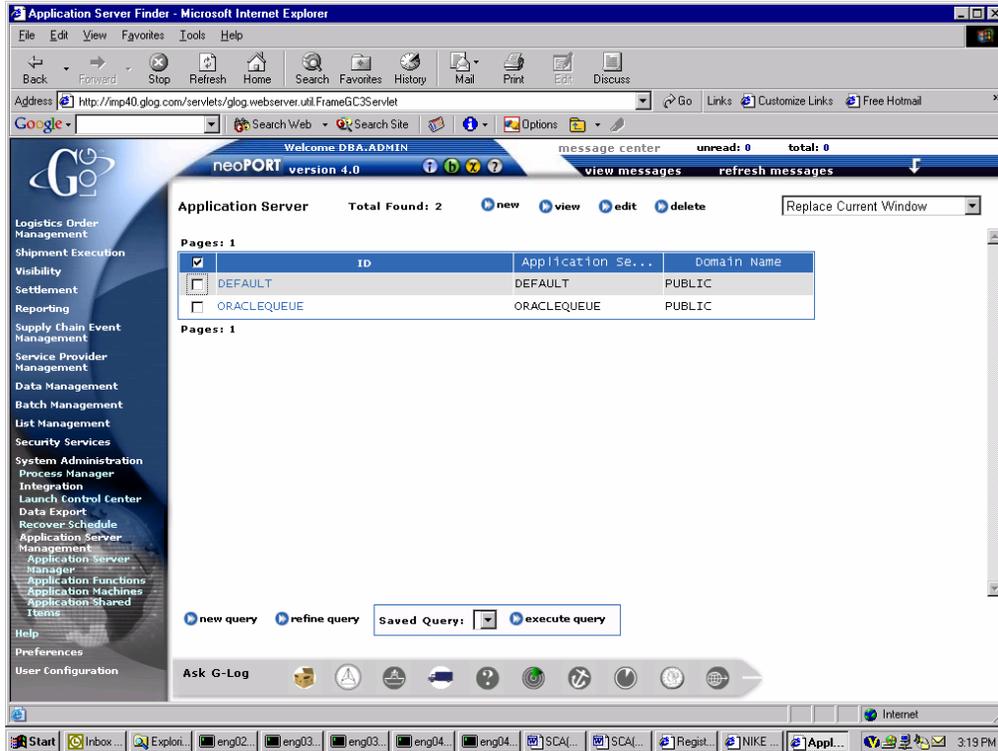
SYSTEM ADMIN -> APPLICATION SERVER MANAGEMENT -> APPLICATION MACHINES -> NEW



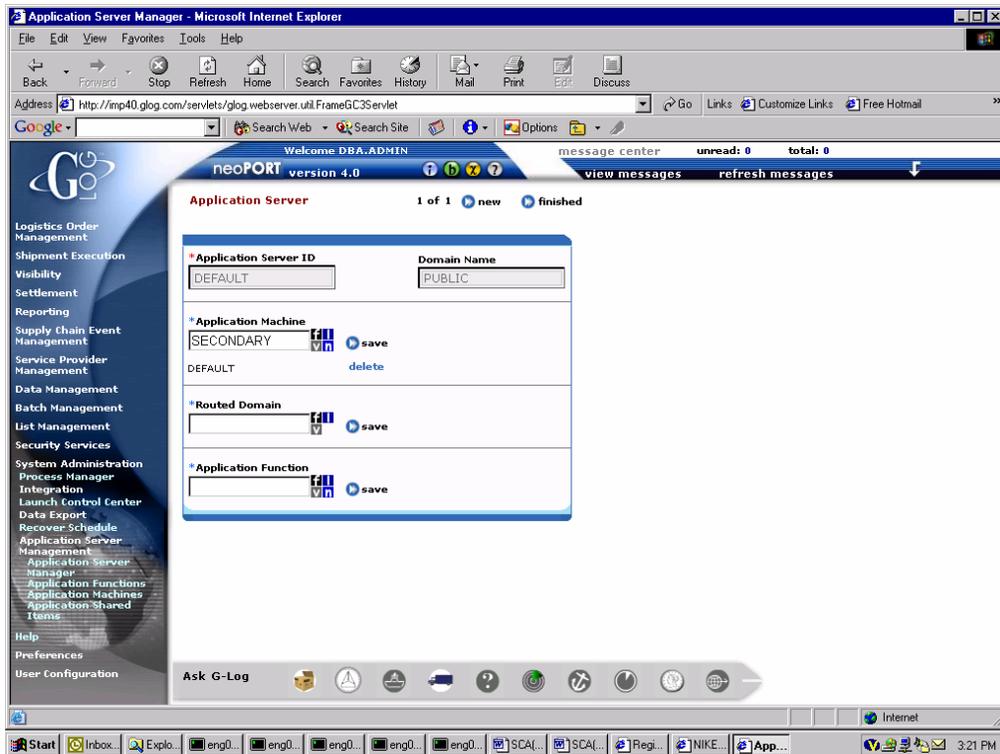
9. Add Application Servers for S1, S2, ..., Sn.

SYSTEM ADMIN -> APPLICATION SERVER MANAGEMENT -> SEARCH

(*) It will show us how many clusters exist. In this case, we have DEFAULT cluster defined (Cluster ID). ORACLEQUEUE is used for Public data.



10. Click DEFAULT and add another machine to the DEFAULT cluster. (*) In our case we named second Application Server as SECONDARY and it is an alias for ENG04.



11. Map machines/domains/functionality to servers.
12. Start the secondary Application Server (ENG04).

13. LDAP

LDAP stands for the Lightweight Directory Access Protocol. It is important to remember that LDAP is in essence a protocol – a common language that various directory products can speak in order to communicate with users and applications -- and other directories. The TCP/IP-based LDAP protocol contains messages allowing an LDAP client (an application or user) to connect to, search, add to, delete from, and modify an LDAP server (the directory).

Overview

LDAP clients connect to an LDAP server as a user in the directory (sometimes called binding to the directory). The LDAP server may choose from a number of authentication protocols (see below) to validate the identity of the connecting user. Once connected, the LDAP user can search or modify the directory (if permission has been granted to perform these operations). In our case, GC3 is the LDAP client. A customer's LDAP directory is the server.

LDAP represents names in a standard format – the Distinguished Name, or DN (see below for more detail on DNs). This format contains name attributes like organization, country, organization unit, etc... Moreover, these attributes are arranged hierarchically. So, there can be multiple organizational units within an organization, and multiple organizations within a country. The directory is searched and organized hierarchically.

Each name is associated with one or more directory objects. These directory objects contain attributes that can be used for authentication, for populating databases, for applications, or any other number of uses.

Because of the focus on clients, the LDAP community also defined standards for the string representation of DNs (RFC 1779), search filters (RFC 1960), and attribute syntaxes (RFC 1778), for a C language-based API (RFC 1823), and for the format of URLs for accessing LDAP services (RFC 1959).

LDAP Schema

A directory schema specifies, among other things, the types of objects that a directory may have and the mandatory and optional attributes that each type of object may have. LDAP (version 3) defines a schema (RFC 2252 and RFC 2256) based on the X.500 standard. The schema includes common objects found in networks, such as countries, localities, organizations, users/persons, groups, and devices. It also defines a way for a client application to access the server's schema so that it can find out the types of objects and attributes that a particular server supports.

The LDAP schema has become one of the basic ways that different LDAP directories can interoperate. Corporations use the schema to store user, profile, organization, contact, and location information. GC3 relies on the username (and for local authentication, password) attributes. Currently, GC3 requires that the username be part of the distinguished name, and requires that the "gluser" attribute be added to each user object.

LDAP in GC3

LDAP is used by GC3 to allow users to log into GC3 using standardized LDAP names, instead of, or in addition to GC3 usernames. GC3 allows authentication to be performed by a remote LDAP server -- a more secure, more centralized approach. Corporate users can securely log onto GC3 with the LDAP login names that they are used to and use everyday.

GC3 allows the LDAP users to be mapped to GC3 users in the LDAP directory itself. This way, GC3 permits a single GC3 user to be mapped to multiple LDAP users. This allows a generic GC3 user such as "GUEST" (GUEST may have primarily read-only access to limited information) to a large group of

users, without giving the password to all of these users. LDAP allows GC3 user, security, and policy information to be centralized in one place – the LDAP directory.

In addition, GC3 contains multiple directory support (see NameSpaces below). This allows multiple LDAP directories to be consulted to find names. For instance, a Logistics company may wish to authenticate Shippers with a local LDAP directory, and Service Providers with an external LDAP directory. In addition, NameSpaces allow the same directory to be looked up using (for instance) different authentication protocols, or different branches of the same directory tree.

GC3 allows you to choose which directory is consulted upon login. Alternatively, a default search order can be configured, so that multiple directories can be looked up in turn to authenticate a login.

Limitations

GC3 does not support group authentication, group membership testing, or distribution lists. It simply supports username authentication upon login. GC3 does not support the use of user profile attributes from LDAP such as language, timezone, e-mail addresses or any other user preferences. All user parameters are controlled within GC3 – the `gluser` attribute provides the linkage between an LDAP user and a GC3 user. The LDAP directory itself must be modified to contain the mapping (this in itself could be considered a limitation).

GC3 does not use the LDAP directory to store contact information, e-mail addresses, location information, or other centrally maintained pieces of information vital to large corporations using our product.

LDAP Server

GC3 does not contain an LDAP server. Many customers already have a corporate LDAP Server, and one of the major goals of this feature is to allow corporations to centralize user and security information -- not having it scattered in many different places. GC3 can be configured to talk to an LDAP Server by defining a NameSpace.

Single Sign-on Support

With LDAP, GC3 supports the ability to have users login to GC3 using LDAP usernames that they are familiar with. Sometimes, third party packages allow user to log into the package once. Thereafter, that person will not have to log in to each individual application that may be accessed subsequently. LDAP, as a technology, is often used in the implementation of Single Signon solutions.

Definitions

NameSpace

A NameSpace is where information about an LDAP directory is stored in GC3. It is a "GC3 term", and not an "LDAP term". It contains information such as the branch of the naming hierarchy to search for users, the URL of the LDAP server, the authentication methods to be employed, and the protocol version to use. A user logging in can choose which NameSpace to use for authentication, or use the default. In the default case, GC3 allows multiple directories to be looked up one by one until successful authentication has taken place.

Distinguished Name

A Distinguished Name (or DN) is the standard format for naming within LDAP directories. Quite simply, a distinguished name is an ordered list of naming attributes. These attributes are often syntactically organized into a single string such as "`cn=John Doe, ou=Marketing, o=Glog, c=US`" (see RFC 1779). This name consists of Common Name, Organizational Unit, Organization, and Country attributes. The

directory uses these attributes to arrange objects in the directory hierarchically. So, there can be multiple organizational units within an organization, and multiple organizations within a country. This way, different branches of the LDAP "tree" can be searched independently. For instance, one might want to search only names within the organization "GLog".

GC3 requires that the user ID field be part of the Distinguished Name (at least externally to an LDAP client). It also requires that each LDAP user object to be authenticated with GC3 be populated with the GLUSER attribute. The GLUSER attribute should not be part of the Distinguished Name.

A fully qualified DN identifies the name of an object within an LDAP directory. A relative DN identifies a branch of the naming tree, but does not necessarily address a schema object.

LDAP Authentication Protocol

An LDAP Authentication Protocol is used between an LDAP client and LDAP server to authenticate a user within the directory. GC3 supports simple authentication (clear text username & password), and some other authentication protocols (such as CRAM-MD5). GC3 also supports using no authentication at all (although this is somewhat pointless). These protocols can be used in both local and external authentication (see below).

LDAP Encryption Protocol (SSL)

GC3 allows encryption between the GC3 application server and the LDAP server. This insures that password information flowing between the LDAP server and GC3 is not intercepted. GC3 uses SSL (Secure Socket Layer) to provide this encryption. SSL is a generic transport layer encryption/authentication solution. The LDAP directory server must support SSL in order to use the feature. Although SSL can in theory be used for authentication as well, SSL is used by GC3 to encrypt the communication between GC3 and the LDAP server.

LDAP Authentication Method

GC3 uses two major methods of authentication. Local authentication involves searching for a name object in the directory and extracting some attributes. These attributes are in turn used to authenticate the name. Most commonly, the password attribute is used to validate entries. It's called local authentication because the validation is performed "locally" (by the client). The client logs into the LDAP directory as a sort of super-user (called the Principal). The principal user is used to look up all other users in the directory.

GC3 can also authenticate users by attempting to directly connect to the directory as the user in question, instead of connecting as a Principal user and then performing a lookup. This allows the LDAP directory to perform the authentication at the LDAP server. It's called External authentication, because the authentication is performed externally to the LDAP client. This method insures that sensitive authentication information (such as certificates or passwords) never leaves the LDAP server. In the LDAP world, this method of authentication is often called "binding" to the server.

LDAP Protocol Version

LDAP is a TCP/IP based protocol, and this protocol has two major revisions still in use. Version 2 contains most of the basic LDAP functionality. RFC 1777 defines what is now called version 2 of the LDAP (or LDAP v2). The LDAP v3 (RFC 2251) protocol is designed to address some of the limitations of LDAP v2 in the areas of internationalization, authentication, referral, and deployment. It also allows new features to be added to the protocol without also requiring changes to the protocol itself.

LDAP Directories

Organizing LDAP Directories For GC3

GC3 requires that the user ID field be part of the Distinguished Name (at least externally to an LDAP client). It also requires that each LDAP user object to be authenticated with GC3 be populated with the GLUSER attribute. The GLUSER attribute should not be part of the Distinguished Name.

Each NameSpace contains a User DN field. This contains a relative DN that identifies the branch of the LDAP tree to search for users. GC3 searches this branch, and this branch only – meaning no “sub-branches are searched. If you wish to search for sub-branches, you must define each sub-branch as a NameSpace, and use the default search order to search for them one-by-one (see NameSpaces above).

Many directories enforce trueness to the schema defined for a particular object. This means that the object's schema must be modified to contain the attribute GLUser in order to have that attribute be successfully added. Sometimes, this schema checking can be turned off in the directory. Another alternative is to use an attribute that already exists in the schema (but is not populated). You can change the NameSpace configuration to define the attribute where the GLUser information is contained, so that GC3 knows where to get the GC3 User mapping.

LDAP and the GC3 Login

If you have any doubt, choose Default. This most likely will be set up by the GC3 Administrator to serve most needs. The GC3 NameSpace allows logging in via the GC3 username and password (see below). The other choices represent LDAP directories that have been configured to work with GC3.

The GC3 administrator has the ability to configure which directories are consulted when the Default option is chosen. In fact, when this option is chosen, the administrator has the ability to configure an ordered list of directories to search. Usually, this results in a successful authentication.

The GC3 NameSpace is a special NameSpace that identifies the GC3 realm itself (the usernames and passwords stored directly within GC3). When you search the GC3 NameSpace, you are performing a search local to the GC3 product.

Configuring LDAP NameSpaces

The `glog.ldap.properties` file is read by the webserver when the first user logs in. It is never read again. You can bounce the Tomcat Instance (if you know how to do this) if you need to reload the properties. The Application Server will automatically adjust. The UIC client reads this file upon startup.

The following is a sample property file containing one NameSpace:

```
ldap.searchOrder=GC3, CorpDir
ldap.namespace.name=CorpDir
ldap.namespace.CorpDir.authProtocol=simple
ldap.namespace.CorpDir.ldapUrl=ldap://localhost:389
ldap.namespace.CorpDir.principal=glogdev
ldap.namespace.CorpDir.credential=CHANGEME
ldap.namespace.CorpDir.userDN=o=Glog, c=US
ldap.namespace.CorpDir.userNameAttribute=uid
ldap.namespace.CorpDir.glUserAttribute=gluser
ldap.namespace.CorpDir.userAuthentication=local
ldap.namespace.CorpDir.credentialAttribute=password
```

The search order parameter is global to all NameSpaces. The namespace.name parameter must precede the other NameSpace parameters. Other NameSpaces can be added below.

NameSpace Attributes

Here is a list of the attributes that comprise a NameSpace.

Attribute	Description	Valid Values
authProtocol	The Authentication Protocol to employ.	Nonesimple (default)CRAM-MD5 (v3 external authentication only)DIGEST-MD5 (v3 external authentication only).
Name	Name Of the LDAP namespace – used in user interface display. Required	String (example: CompanyDir) Only alpha-numeric and underscores are allowed.
LdapUrl	URL of the LDAP server. Required	String (example: ldap://somehost: 389)
Principal	User to log in as on LDAP server. Required if authentication=local	Distinguished Name (example: Uid=foo)
Credential	LDAP principal password. Required if authentication=local.	String
UserDN	Distinguished name of all users to be searched – the branch of the tree to search. Always specify the most “specific” attributes first – for example, supply Organizational Unit (ou) before Organization (o), which should be supplied before Country (c), etc... Required.	Distinguished Name (example: ou=people, o=acme.com,, c=US)
userNameAttribute	Name of the User ID attribute in the LDAP directory. Required.	String (default: uid)
glUserAttribute	Name of the GLUSER attribute in the LDAP directory. Required.	String (example: gluser)

Attribute	Description	Valid Values
userAuthentication	Type of authentication employed for this namespace. Local = authentication based on downloaded attributes.	external = an LDAP bind as the user in question (default)
credentialAttribute	Name of the password attribute in the LDAP directory. Required if authentication=local.	String (example: userpassword)
Ssl	Connect to directory using ssl (true or false).	truefalse (default)
version	The version of the LDAP protocol (2 or 3).	2 (default) 3
ctxFactory	JNDI Service Provider to use.	String (default: com.sun.jndi.ldap.LdapCtxFactory)

The Distinguished Name is an ordered list of attributes, and the attributes must be listed by the most specific attribute first. For instance, OrganizationalUnit is more specific than Organization, but less specific than an individual user within that OrganizationalUnit. Similarly, a domain component attribute of Glog is more specific than dc=com. When you specify a DN, you are really specifying a path from the node you are interested in up to the root of the directory tree.

Common Questions

Why can't I connect using local authentication, even though the password attribute is present?

There are a number of reasons why this could happen. The password attribute may not be visible to GC3, even though it may be visible to other clients. The password could be encrypted – you might want to try changing the authenticationProtocol attribute. It is possible that the directory entry is not readable by the Principal being used.

Why does authentication fail for entries not directly below the UserDN in the directory tree?

This is a limitation of the LDAP client – the benefit is rapid lookups. However, many commercial directories allow entries to be indexed and placed in a single branch. In addition, the NameSpaces feature can be configured to allow multiple branches to be searched.

I am using local authentication and my principal user uses an encrypted password, but my users use simple authentication. How do I get authentication to work?

You cannot have the Principal using a different encryption algorithm than the individual users. If you really need this, you can use external authentication and bypass the special authentication for the Principal altogether.

If you have two user groups that use different authentication mechanisms, you can set up two NameSpaces that point to the same directory, but use different authentication methods. Then, set the default search order parameter (see above) to search the two namespaces.

14. GC3 Database Administration

This chapter serves as a reference guide for database administrators (DBA) who manage an Oracle database(s) that is used for GC3. The content of this chapter represent our recommendations rather than requirements. When making any changes to a GC3 database, the DBA should always consider the size and the activity pattern of the database, the hardware configurations, and business requirements.

Initial Setup of Oracle Database

Initial Parameters

GC3 provides a sample init.ora file with recommended values of some key parameters. These values may need to be adjusted according to available physical memory on the database server. As rule of thumb, the System Global Area (SGA), or the shared memory of a database, should always be allocated in the physical memory for fast data access. If SGA is too large and swapped to disk paging will occur. Paging usually overweighs the advantage of having a large SGA. We recommend the following values for some of initial parameters.

```
DB_BLOCK_SIZE
8192 (or at least 4096)
DB_CACHE_SIZE
209715200 (200 MB)
DB_16K_CACHE-SIZE
104857600 (100 MB)
SHARED_POOL_SIZE
125829120 (120 MB)
LOG_BUFFER
163840 (160 KB)
SORT_AREA_SIZE
1048576 (1 MB)
SORT_AREA_RETAINED_SIZE
1048576 (1 MB)
This parameter is ignored if PGA_AGGREGATE_TARGET is set
OPEN_CURSORS
200
JOB_QUEUE_PROCESS
4(This is mandatory since GC3 database uses scheduled jobs).
LOG_CHECKPOINT_INTERVAL
Do not set this parameter if FAST_START_MTTR_TARGET is set. Otherwise
set it to 0 or infinity.
OPTIMIZER_MODE
CHOOSE
GC3 database uses cost based optimizer. Setting to CHOOSE will let
Oracle use CBO when there are statistics.
OPTIMIZER_INDEX_COST_ADJ
50
Setting this parameter to encourage optimizer to favor NESTED LOOP over
HASH JOIN.
OPTIMIZER_INDEX_CACHING
50
Setting this parameter to encourage optimizer to favor NESTED LOOP over
HASH JOIN.
STATISTICS_LEVEL
ALL
Collect row source execution statistics and timed operating system
statistics.
```

PGA_AGGREGATE_TARGET
209715200 (200 MB)

This is the target of memory usage of work area and other data structure control information for server process. When this parameter is set, automatic memory management is turned on. Oracle suggests for initial setting this parameter can be set to 0.16* total memory that this database can use. If you set this parameter, you should keep watching PGA usage and adjust it accordingly. Don't set it too small. It will affect query performance if too small. If you don't set it, default is unset with a value shown as 0.

WORKAREA_SIZE_POLICY
AUTO If PGA_AGGREGATE_TARGET is set.
MANUAL If PGA_AGGREGATE_TARGET is not set.
You should really just leave this parameter to take default. The default value depends on PGA_AGGREGATE_TARGET setting. It is not good idea to set this parameter to MANUAL when PGA_AGGREGATE_TARGET is set, or vice versa.
query_rewrite_enabled
true
For using function based index.
query_rewrite_integrity
trusted
For using function based index.
PROCESSES
(For initial connections of 100 in Weblogic configuration)
O7_DICTIONARY_ACCESSIBILITY
TRUE
This is required.

Using Locally Managed Tablespaces

G-LOG recommends using locally managed tablespaces for all of GC3 tablespaces, including SYSTEM tablespace. Locally managed tablespaces can improve performance by eliminating some recursive operations during space allocation.

Initial Redo Log Files

It is recommended to have three, four, or five redo log groups. Each group should have at least two members. We recommend that the initial size of the redo log files be 10 – 20 MB. Once the database is in normal operation, especially for a production database, the DBA should monitor the log switch frequency. If log switch occurs too often; for example, less than 10 minutes, the size of redo log files should be increased.

Initial Setting of Undo

Historically Oracle has used rollback segments to manage undo. Space management for these rollback segments has proved to be quite complex. In 9i, Oracle provides UNDO tablespace, another way to manage undoes, UNDO_MANAGEMENT=AUTO. Using this method DBAs do not have to deal with the complexities of managing rollback segment space and can exert control over how long undo is retained before being overwritten. G-LOG recommends using automatic UNDO management.

If you decide using manual UNDO management you should set up your rollback segments following the guideline below. Rollback segments should be designed adequately to reduce contention and prevent "snapshot too old" errors. Most of the transactions of a GC3 database are small and of OLTP type. The number of rollback segments is determined by the number of concurrent transactions in the database. For initial settings, the number of rollback segment should be set to at least four. Each rollback segments also should have equal size of INITIAL and NEXT extents with MINEXTENTS equals

to ten. The INITIAL and NEXT extent size can be set to 2 MB. The DBA should periodically monitor the rollback segment usage and adjust setting or add new segments, if needed.

Initial Setup of GC3 Database

Chapter X provides detailed steps of setting up a GC3 database. There are several schema owners/users and database roles that need to be created in the database. Running `create_glog_roles.sql` and `create_glog_users.sql` will get these roles and users created. These two scripts should be run by user SYS because there are EXECUTION privileges on SYS's objects to be granted to GC3 database users. Most of GC3 database objects are under schema GLOGOWNER. GC3 database object types include, but not limited to:

```
TABLE
TABLE PARTITION
INDEX
INDEX PARTITION
LOB
LOB SUBPARTITION
SEQUENCE
TRIGGER
VIEW
PACKAGE
PACKAGE BODY
PROCEDURE
FUNCTION
JAVA CLASS
JAVA SOURCE
  QUEUE
  TYPE
```

Each GC3 application table has a primary key. There are many foreign keys in GC3 database to guarantee data integrity. Certain database maintenance work such as import may cause foreign keys "NOT VALIDATED". The DBA should make sure the status of the foreign keys are "ENABLED" and "VALIDATED".

Each application table also has a footprint trigger that populates footprint columns of the table. All of the triggers should be "ENABLED".

Analyzing Tables

GC3 database uses cost based optimizer (CBO) for execution plans of SQL statements. To ensure database performance, it is important to maintain accurate statistics in the database. Tables under user GLOGOWNER and REPORTOWNER should be analyzed regularly and after each time of major data change. GLOG recommends:

- Analyze whole schema of GLOGOWNER and REPORTOWNER weekly in normal operation condition.
- Analyze whole schema of GLOGOWNER after loading large amount of data to GLOGOWNER'S tables, usually in the initial setup of the database.
- Analyze individual table if there are data changes (insert, delete, or update) more than 20% of the whole table.

Copy Database Data

When moving from initial implementation to production, or duplicate production to development, there are needs to copy the whole database or part of GC3 data between production and development/test environment. Depending on the purpose and requirement, copying a GC3 database/data can be

achieved using different methods. In this section, three methods are discussed. It is recommended that G-LOG Technical Support be consulted to decide the best way of moving data.

Copy Database Files

An Oracle database can be cloned by copying data files and other configuration files to the destination environment (usually another server). Procedures of this method can be found from Oracle support/document.

Features:

- Simple and straightforward. There is no need to pre-create an Oracle database in the destination machine.
- Fast. The total time needed is governed by physically transferring datafiles from source machine to destination machine.
- Whole database copy. If there are data in the source database that the client does not want to copy to the destination database, then data cleaning process should be carried out in the destination database after the copy.
- Source and destination servers must be the same platform, same operating system and same Oracle version between.
- Requires DBA skills.
- Requires down time in the source database if there is no hot-backup.

Oracle Export/Import Utility

Using the Oracle export/import method, the entire GC3 database structures can be copied from one database to another. To successfully copy a GC3 database, following guidelines are recommended:

1. Create all GC3 used tablespaces first in the target database.
2. Check if all of GLOG required init.ora parameters are properly set in the target database.
3. GC3 database roles and schema users should be created in the target database before the import. This should be done by running GLOG supplied SQL scripts as described below.

Log in to the target database as user SYSTEM.

```
@create_glog_roles.sql .      -- Make sure no errors
```

```
@create_glog_users.sql      -- Make sure no errors
```

4. Perform export on the source database. The easiest way is to do a FULL export. But if for any reason you do not want a FULL export, you can do a schema export. GLOG supplies a schema export parameter file (exp_GC3.par), where it lists all schemas GC3 application needs.
5. Perform import on the source database. You can do a FULL import if the export was a FULL export. Alternatively you can do a schema import. GLOG supplies a schema import parameter file (imp_GC3.par), where it lists all schemas GC3 application needs.
6. After the import finished successfully, there are post-import SQL scripts to be run in the target database. The steps to run these scripts are described in the "Installing GC3 on the Database Server" section of this document (Administration Guide). It is important to follow the instructions to run the scripts. Ensure you log in to the database as right users when running the scripts.

Features:

- Can be used between different platforms and different operating systems.

- Oracle version in the destination environment must be equal or higher than that of source environment.
- Needs to pre-create an Oracle database in the destination environment.
- Whole GC3 database copy. If there are data in the source database that the client does not want to be copied to the destination database, then data cleaning process should be carried out in the destination database after the import.
- May take a long time to finish depending on the size of the database.

Domain Copy

G-Log provides utilities to copy domains between GC3 databases. There are two approaches to copy domains. The first one uses a PL/SQL procedure to generate INSERT statements with domain data to be copied from the source database. The insert statements can be run in the target database. The second approach uses Oracle TABLE mode export/import with WHERE clause to move domain data between source and destination databases. Please refer to the G-Log document titled "Data Management Guide" for details of this method.

Features:

- Can be used between different platforms and different operating systems.
- Oracle version in the target environment must be equal or higher than that in the source environment if using export/import approach.
- Requires pre-creating an Oracle database and installing a GC3 database in the target environment.
- GC3 table structures must be identical between the source and target database.
- Can just move one or more domain data between the databases.

Pinning Large Object in Memory

This section is for a production database and an experienced DBA.

Oracle requires space in the System Global Area (SGA) for stored packages and functions. If SGA space is fragmented, there may not be enough space to load a package or function. Oracle recommends pre-allocating space in the SGA shared pool for frequently used packages, procedures and functions. Pinning objects in the shared pool can improve database performance, if it is done correctly. For large packages, when pinned they do not need to be loaded and parsed from the database again and again. Pinning large package also helps to avoid ORA-04031 error (unable to allocate xxx bytes of shared memory).

It is recommended that, in a GC3 production database, following objects be pinned in the SGA:

```
Package :
  VPD
  PARTIT
  PKG_PURGE
  RRL
  USER_EXIT_HELPER
  RPT_GENERAL
```

Database Space Monitoring

A DBA should periodically monitor GC3 database(s) space usage. There are several tables containing a column with data type of CLOB. These columns can have great amount of data. Some of the CLOB tables can be loaded quite often. One example is I_TRANSMISSION and I_TRANSACTION table. These tables contain transmission/transaction's XMLs. If there are inbound /outbound transmissions in and out of system frequently, the disk space usage of these two tables can grow very quickly.

Scheduled Jobs

GC3 database uses Oracle scheduled job to perform certain activities inside the database. Some of the jobs are set up automatically after the database is installed. The others are optional and can be implemented by a DBA. Refer to Chapter # for details. A GC3 database DBA should monitor these jobs regularly.

15. Appendix A

Recommended Resources

Below are some recommended resources for products included with or required by GC3. For most of these products, many resources are available which may be better than those listed below. These resources are provided for your reference and are not endorsed by G-Log, Inc.

GC3

The online help for GC3 can be accessed once you have installed and started your GC3 instance. The URL is:

`http://<webserver_name>/html/help/webhelp/en/gc3_help.htm`

Where <webserver_name> is the FQDN of your GC3 Web Server.

Apache

The online documentation for Apache can be found at the following URL:

<http://httpd.apache.org/docs>

We also recommend the following books:

- Professional Apache by Peter Wainwright – ISBN: 1861003021
- Apache Server Bible by Mohammed J. Kabir – ISBN: 0764532189

OpenSSL

The online documentation for OpenSSL can be found at the following URL:

<http://www.openssl.org/docs>

Python

The online documentation for Python can be found under the following URL:

<http://www.python.org/doc>

Network Performance

We recommend the following book:

Network Troubleshooting Tools (O'Reilly) by Joseph D. Sloan – ISBN 059600186X

Tomcat

The online documentation for Tomcat can be found under the following URL:

<http://jakarta.apache.org/tomcat/tomcat-5.5-doc>

WebLogic

The online documentation for WebLogic can be found under the following URL:

<http://e-docs.bea.com/wls/docs81>

Java Service Wrapper

The online documentation for JSW can be found under the following URL:

<http://wrapper.tanukisoftware.org/doc/english/introduction.html>

16. Appendix B

Errata and Known Issues

Below are some known issues with the GC3 installation and recommended workarounds.

Installation

There are known problems with Windows X server Terminal Emulators and InstallAnywhere on Solaris. InstallAnywhere is the installation program used by both WebLogic and GC3.

Symptoms: Installer started from Windows via remote X session appears to fail immediately - or in debug mode, displays an error containing the sting "An unexpected exception has been detected in native code outside the VM" and will leave a core dump in your current directory.

Resolution: Install from the Server console (recommended) or log out of your X session, reset your X server and log back in.

Starting GC3

After installing GC3 on Windows Server, make sure that you reboot your server before you start GC3. There are environment settings that will not take effect until the server is rebooted.

Symptoms: Apache won't startup correctly. You get an error stating Cannot load apache/modules/mod_ssl.so into server: (126) The specified module could not be found. This error occurs when openssl.exe is not in the path.

Resolution: Restart your server before starting GC3.

After installing GC3 on Solaris, make sure that you log out of your session before you start GC3. There are environment settings that will not take affect until you log out and log back in.

Symptoms: Apache, Tomcat, or WebLogic will not startup correctly.

Resolution: Log out of your server and then log back in before starting GC3. When GC3 starts, Tomcat opens a connection with WebLogic to cache certain information (OUM fields, dropdown boxes, etc). If WebLogic has not fully started before Tomcat is started, this information is not cached and certain fields will remain blank.

Symptoms: GC3 has been started but some fields and drop-down boxes are not populated as they should be.

Resolution: Restart GC3.

Uninstalling GC3

When uninstalling GC3, some files are not removed. Follow the directions below to completely remove GC3 from your system.

1. Remove the GC3 installation directory and all of its contents. This is usually d:\gc3 on Windows and /opt/gc3 on Unix.
2. If running on Windows, remove the GC3 services. The default names for these services are gc3apache, gc3tomcat, and gc3weblogic. The srvinstw.exe utility from the Windows Resource Kit can help you remove these services.

3. If running on Unix, remove the GC3 init scripts. These scripts are installed under /etc/init.d and their default names are glogweb and glogapp.
4. Modify your PATH and CLASSPATH environmental variables and change them back to their original state.

Browsers

Symptoms: Your browser displays stale or incorrect data while using GC3.

Resolution: Configure your browser to "Check for newer versions of stored pages: Every visit to the page". This will ensure that your browser displays the correct data and not cached pages. Depending on your browser, this option is usually under the "Cache" or "Temporary Internet files" section of the "Options" or "Preferences" window.