

Emerald



Administrator's Guide **Version 4.5**

Emerald Management Suite
IEA Software, Inc.



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Preface

The Emerald Administrator’s Guide is designed to provide detailed technical information for those installing, configuring, and administering the Emerald Management Suite. This technical manual complements the Emerald User’s guide. It is recommended that you read the material presented within the Emerald User’s guide prior to attempting to administer the Emerald Management Suite in order to gain a thorough understanding of the configuration options available to you.

The Emerald Management Suite is designed to utilize either a SQL Server or Sybase relational database package for data storage. The database package must be installed and configured outside of the Emerald Management Suite environment. The Emerald documentation offers no specific information regarding the installation, configuration, operation, or maintenance of the back-end database application. It is highly recommended that the database application documentation be available during Emerald Management Suite installation and setup. A good working knowledge of your database server will aid in understanding some portions of the Administrator’s Guide.

Getting Started

The Emerald Administrator’s Guide will walk you through the process of installing the Emerald Management Suite and using the Emerald Administrative options for system configuration. Each chapter includes fundamental information as well as providing step-by-step guide on using the application. The step-by-step instructions include screen shots of the application that display the information needed to complete the presented tasks. The information shown in the screen shots is generic; your screen may look slightly different at points due to the amount of information that may be currently stored within your user database.

The Frequently Asked Questions (FAQs) and Troubleshooting chapters anticipate questions, concerns or problems that you may encounter during the installation and use of the Emerald Management Suite. Additionally, the Quick Tips scattered throughout the manual are designed to resolve common procedural errors or questions that may arise while using the application.

Document Conventions

The Emerald Administrator’s Guide has standardized document conventions to help you locate, interpret and identify information. They are provided to show consistent visual clues and a standard key combination format to assist you while you learn and use Emerald.

Format	Representation
Bold	Menu option to be selected, icon or button to be clicked. Also used to identify key terms.
<i>Italic</i>	Directory or filename. Also used to emphasize a word, term or concept.
“quoted text”	This is text that you need to type. Do not include the quotation marks in your entry, but rather just the text within the quotation marks.

System Requirements

The Emerald Management Suite operates within a web environment that is based upon its own integrated web server. Emerald is accessed via a standard web browser, minimally supporting Microsoft Internet Explorer 5.0+ and Netscape Navigator 4.7+. Emerald requires database server access, requiring either SQL Server 7.0+ or Sybase 11.9+ to be installed and configured before the Emerald installation takes place. The Emerald installation is designed for computers with full network access, typically those that are hooked into a local area network (LAN), or via a PPP (networked) connection.

The Emerald Management Suite has the following minimum system requirements that should be verified by your System Administrator before installation. Please note that the independent database server/client and web browser installations need only be accessible to the Emerald server, not reside on the same machine.

?? WINDOWS systems

- Pentium-based PC
- Windows NT/Windows 2000 operating system
- 128 MB of free hard disk space for the software
- 64MB of memory, more recommended
- SQL Server 7.0, SQL Server 2000, or Sybase 11.9.2 database server and client
- ODBC connectivity to MSSQL or Sybase
- Standard web browser (clients only, specific support of MS Internet Explorer 5.0+ and Netscape Navigator 4.7+)
- A PDF Viewer or plug-in (clients only, see www.adobe.com for more information)

?? LINUX systems

- Pentium-based PC
- Linux RedHat 6.2,7.0 (7.1+ req 6.2 compat-libc packages), SuSE 6.4 or Caldera OpenLinux2.3
- 60 MB of free hard disk space for the software
- 128 MB of memory, more recommended
- SQL Server 7.0, SQL Server 2000, or Sybase 11.9.2 database server
- TCP/IP connectivity to MSSQL or Sybase
- Standard web browser (clients only, specific support of Netscape Navigator 4.7+)
- A PDF Viewer or plug-in (clients only, see www.adobe.com for more information)

?? SOLARIS systems

- SPARC workstation
- Solaris operating system
- 60 MB of free hard disk space for the software
- 128 MB of memory, more recommended
- SQL Server 7.0, SQL Server 2000, or Sybase 11.9.2 database server
- TCP/IP connectivity to MSSQL or Sybase
- Standard web browser (clients only, specific support of Netscape Navigator 4.7+)
- A PDF Viewer or plug-in (clients only, see www.adobe.com for more information)

?? COBALT systems

- COBALT RAQ3 or RAQ4
- Cobalt Linux operating system
- 60 MB of free hard disk space for the software
- 128 MB of memory, more recommended
- SQL Server 7.0, SQL Server 2000, or Sybase 11.9.2 database server
- TCP/IP connectivity to MSSQL or Sybase
- Standard web browser (clients only, specific support of Netscape Navigator 4.7+)
- A PDF Viewer or plug-in (clients only, see www.adobe.com for more information)

Installation Overview

There are four steps that must be complete *before* installation of the Emerald Management Suite should take place. The scope of these activities is beyond this document and you should consult your System Administrator and your user documentation regarding the separate installation and configuration of the following:

- ?? Database server (SQL Server 7.0+ or Sybase 11.9+)
- ?? Database client
- ?? ODBC connectivity (usually included as part of the database client installation)
- ?? Standard web browser

Note:

The System Administrator *must* complete the initial database pre-installation and configuration steps before the Emerald Server will be able to be installed and configured correctly.

Important:

The **readme.txt** file in the Emerald subdirectory notes all recent changes, known problems, platform-specific issues, and bug fixes that were made to the Emerald Management Suite that may not be included within the released documentation. For the latest release and information on Emerald, access <http://www.iea-software.com> within your web browser. ****READING THIS FILE IS ESPECIALLY IMPORTANT WHEN PERFORMING AN EMERALD UPGRADE INSTALLATION AND SHOULD BE CAREFULLY REVIEWED BEFORE PROCEEDING.**

Important:

If you have purchased Crystal Reports and it is installed on the same machine as Emerald when Emerald is uninstalled the Crystal Reports Installation will become corrupt and you will need to re-install Crystal.

Installation of the Emerald Management Suite itself involves performing the following three steps:

- ?? Installation of the Emerald Server
- ?? Creation of the Emerald database
- ?? Configuration of the Emerald Server through the Emerald Admin options.

These installation instructions describe the installation of the Emerald server from a CD-ROM, or by first downloading it from the Internet and then installing. As part of the normal installation process, your System or Network Administrator will create and populate the default data and configuration information for the Emerald database. These tasks are outlined within this document. *Please note that the Emerald database must be created and configured before the Emerald software can be used.*

In the case that you experience problems during the installation process, please refer to the troubleshooting/FAQ section within this document, the Emerald Administrator's Guide, or contact the IEA Software Customer Support Department for further information.

Downloading Emerald from the IEA Software FTP Site

The Emerald Management Suite can be installed from the distributed CD, or by downloading the product from the IEA Software FTP site. IEA Software diligently maintains this site, providing all available product information and documentation, release notes, and product upgrades for access and/or download by their customers at any time. The IEA Software main web site (www.iea-software.com) also provides important product information and customer support options for those who encounter problems or questions through the installation or use of Emerald. This site should be checked periodically to obtain information regarding available product upgrades and upcoming new releases.

This section briefly describes the process of downloading the Emerald Management Suite product from the IEA Software FTP site.

1. From within a web browser, navigate to the **ftp.iea-software.com** FTP site. This is an anonymous FTP site that allows guest logins. Enter **anonymous** as your login name and use your **e-mail address** as your password.
2. The current supported version of Emerald is located in the *Emerald* directory of the FTP site. Within this directory, choose the Emerald subdirectory indicating the host OS platform (Windows, Linux, or Solaris). The Emerald Version 4.0 distribution file name is Emerald40.xxx, with only the extension differing between the different platform distributions. As product upgrades occur, the product file name will be renamed accordingly (such as Emerald50.exe for Emerald 5.0 for Windows). Download the file into a temporary subdirectory on your hard drive (such as *c:\temp* on Windows systems).

Quick Tip:

To download Emerald with a browser such as Netscape, access the Emerald FTP site at **ftp://ftp.iea-software.com/emeraldv4**. Click on the platform you wish to download (ie, Cobalt, Linux, Solaris or WinNT). Click on the Emerald file name using your right mouse button, then select **Open this Link**. You will be prompted for a location to save the file. Select the desired subdirectory and click OK to download the compressed file into a temporary subdirectory on your hard drive.

3. When the download is complete, the downloaded file can be executed on the chosen platform to start the Emerald installation/setup program.

Quick Tip:

The **readme.txt** file in the Emerald subdirectory notes all recent changes, known problems, platform-specific issues, and bug fixes that were made to the Emerald Management Suite that may not be included within the released documentation. For the latest release and information on Emerald, access <http://www.iea-software.com> within your web browser. ****READING THIS FILE IS ESPECIALLY IMPORTANT WHEN PERFORMING AN EMERALD UPGRADE INSTALLATION AND SHOULD BE CAREFULLY REVIEWED BEFORE PROCEEDING.**

Installation of the Emerald Server

The Emerald Management Suite is capable of running on multiple operating system platforms. The following sections detail the installation instructions for each supported platform.

Windows Installations

The following installation instructions will work for both Windows NT and Windows 2000. Before installing the program, make sure that the logged in user has sufficient access rights to the drive on which you will install Emerald, including having Windows Registry read/write access.

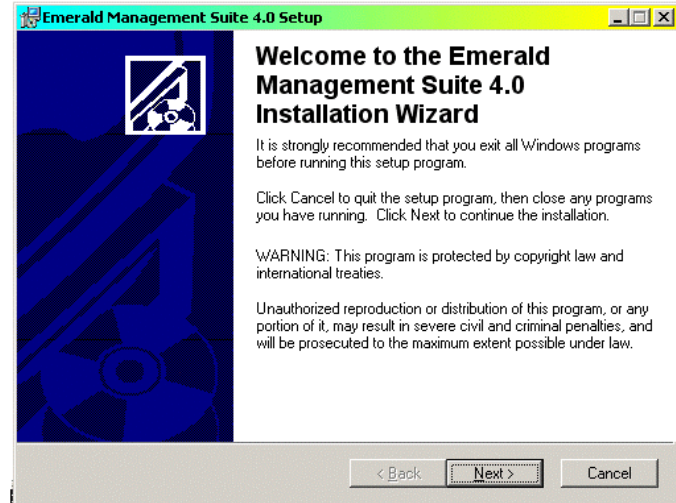
On each installation wizard screen there will be a number of options offered on the bottom of the screen. These button options are described below:

- ?? **Next** button will advance you to the next installation step
- ?? **Back** button will take you back to the last installation step
- ?? **Cancel** button will cancel the installation process
- ?? **Reset** button will clear any settings on the current page and refresh the display

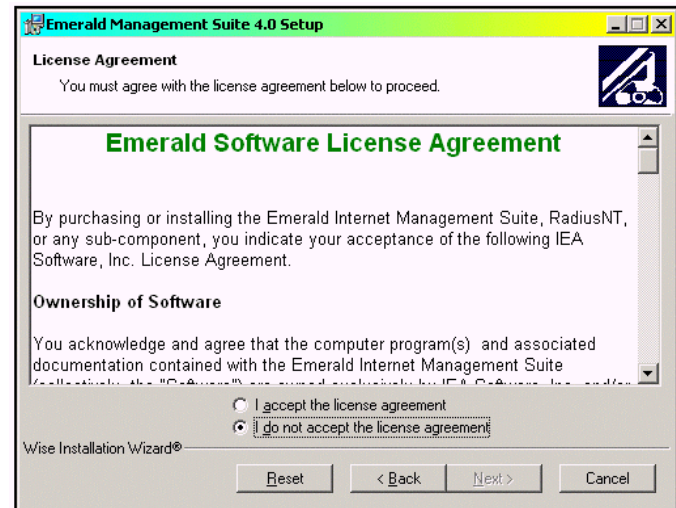
The physical installation of Emerald will not occur until the installation wizard receives the final user confirmation. Until that point, the installation configuration choices may be changed and/or cancelled without affecting your system or the machine you are installing on.

Use the following steps to install the Emerald Management Suite in a Windows environment:

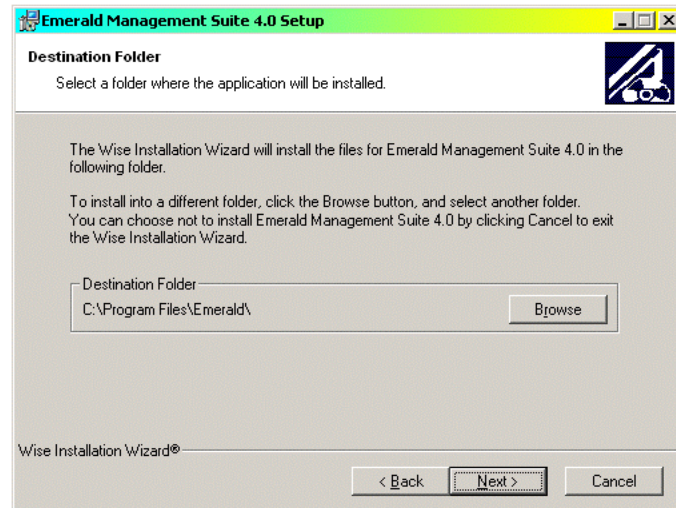
1. Run the Emerald4.exe file from CD or from the temporary download directory in which it was saved. The Emerald Management Suite Installation Wizard welcome screen will be presented. Press the **Next** button to continue the installation procedure.



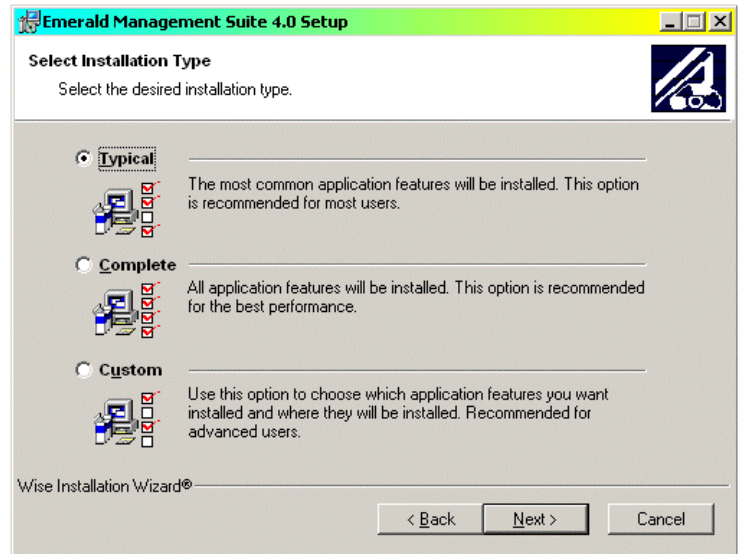
2. When the **Emerald Software License Agreement** screen appears, read the agreement by using the vertical scrollbars to the right on the screen. To accept the Emerald Software License Agreement, click the 'I accept' radio button and choose the **Next** button. If you do not accept the Emerald Software License Agreement, you will not be allowed to continue the Emerald Management Suite installation and you will need to cancel the installation by choosing the **Cancel** button.



3. Choose the Emerald Management Suite destination directory by either accepting the default directory location provided, or selecting an alternative by using the **Browse** button. When entered, choose the **Next** Button.

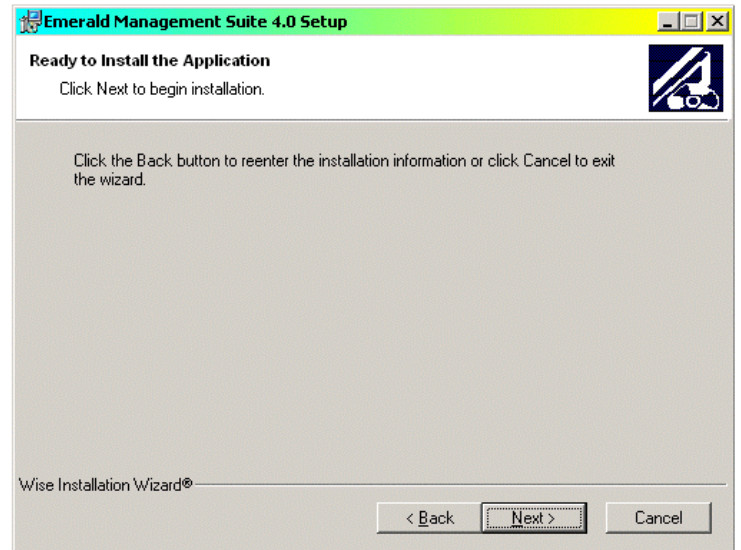


4. Choose the Installation Type. Choose **Typical** to install the most common application features. Choose **Complete** to install all application features and documentation. Choose **Custom** to have complete control over the Emerald features and components that get installed on your system. The Custom option is only recommended for advanced users. It is sufficient for most users to choose a Typical installation. Once you have made your selection, choose the **Next** button to proceed.



5. Confirm your previous installation choices and proceed with the physical installation by pressing the **Next** button. To change one of your previous choices, choose the **Back** button. To cancel the installation process, choose the **Cancel** button.

If the installation is confirmed with the Next button, the application will begin the file installation and will prompt the user when the process is complete.



6. When confirmation of a successful install is presented, press the **Finish** button to exit the Emerald Management Suite installation wizard.

Once the system files have been installed, you are ready for the initial configuration of the Emerald Management Suite system. Refer to the **Initializing and Verifying the Emerald Web Service** section of the document to complete the required installation/configuration tasks.



Note:

Typically, in the case of possible installation problems on the Windows platform, the installation process will end with an error display of “Install Ended Prematurely”. In this case, the installation can be re-run in debug mode to obtain more details regarding the problem. To run the install in debug mode, run the installation script from the command line by entering: *emerald4.exe -I emerald4.msi -l* emerald4.log*. This will create an installation log file called *emerald4.log*. Please contact the customer support department at support@iea-software.com for more information regarding possible logging of the non-windows installation process.

If you previously had EmeraldV4 installed and have removed it, the services may still exist (with a disabled state). They will be removed when you reboot your system. You must reboot your system before installing Emerald under these circumstances, or the install will fail.

Linux Installations

The following installation instructions will work for Linux installations, supporting both Red Hat and SuSE. Before installing the program, make sure that the logged in user has sufficient access rights to the file system on which you will install Emerald.

1. Extract the *emerald4_linux.tar.gz* file (from the CD or download) into a temp directory.
2. Start the installer by typing “./install.pl”.
3. The first screen will list a set of components you can install. To install a component, select the number of that component. Selecting the number again will deselect that component.
4. Select C to continue when the desired components are selected.
5. The files installed will scroll on the screen, with a final summary of installation status.

```
Welcome to IEA Software, Inc. UNIX Installer v4.0

Select optional components to install from the list
by selecting the number of the option below.
Press 'C' to continue with the Installation or 'Q' to abort.

4.  [Install]      Emerald Server (4.0.18)
5.  [Install]      RadiusX (4.0.1)
6.  [Install]      Emerald task scheduler (4.0.18)
7.  [Do not Install] Emerald LDAP sync server (4.0.18)
8.  [Do not Install] Emerald Syslog server (4.0.18)
:
```

Once the system files have been installed, you are ready for the initial configuration of the Emerald Management Suite system.

```
Installation completed successfully.
System libraries have been installed in /usr/lib and /usr/local/iea
Database configuration file has been installed to /usr/local/iea/odbc.ini
```

Refer to the **Initializing and Verifying the Emerald Web Service** section of the document to complete the required installation/configuration tasks.

Solaris Installations

The following installation instructions will work for Solaris installations, supporting SPARC Solaris only. Before installing the program, make sure that the logged in user has sufficient access rights to the file system on which you will install Emerald.

1. Extract the *emerald4_solaris.tar.gz* file (from the CD or download) into a temp directory.
2. Start the installer by typing “./install.pl”.
3. The first screen will list a set of components you can install. To install a component, select the number of that component. Selecting the number again will deselect that component.

```
Welcome to IEA Software, Inc. UNIX Installer v4.0

Select optional components to install from the list
by selecting the number of the option below.
Press 'C' to continue with the Installation or 'Q' to abort.

4.  [Install]      Emerald Server (4.0.18)
5.  [Install]      RadiusX (4.0.1)
6.  [Install]      Emerald task scheduler (4.0.18)
7.  [Do not Install] Emerald LDAP sync server (4.0.18)
8.  [Do not Install] Emerald Syslog server (4.0.18)
:
```

4. Select C to continue when the desired components are selected.

- The files installed will scroll on the screen, with a final summary of installation status.

Once the system files have been installed, you are ready for the initial configuration of the Emerald Management Suite system.

```
Installation completed successfully.
System libraries have been installed in /usr/lib and /usr/local/iea
Database configuration file has been installed to /usr/local/iea/odbc.ini
```

Refer to the **Initializing and Verifying the Emerald Web Service** section of the document to complete the required installation/configuration tasks.

Cobalt Installations

The following installation instructions will work for Cobalt installations, supporting Cobalt 3 and Cobalt 4 only. Before installing the program, make sure that the logged in user has sufficient access rights to the file system on which you will install Emerald.

- Extract the emerald4_cobalt.tar.gz file (from the CD or download) into a temp directory.
- Start the installer by typing “./install.pl”.
- The first screen will list a set of components you can install. To install a component, select the number of that component. Selecting the number again will deselect that component.
- Select C to continue when the desired components are selected.
- The files installed will scroll on the screen, with a final summary of installation status.

```
Welcome to IEA Software, Inc. UNIX Installer v4.0

Select optional components to install from the list
by selecting the number of the option below.
Press 'C' to continue with the Installation or 'Q' to abort.

4.  [Install]      Emerald Server (4.0.18)
5.  [Install]      RadiusX (4.0.1)
6.  [Install]      Emerald task scheduler (4.0.18)
7.  [Do not Install] Emerald LDAP sync server (4.0.18)
8.  [Do not Install] Emerald Syslog server (4.0.18)

:
```

Once the system files have been installed, you are ready for the initial configuration of the Emerald Management Suite system.

```
Installation completed successfully.
System libraries have been installed in /usr/lib and /usr/local/iea
Database configuration file has been installed to /usr/local/iea/odbc.ini
```

Refer to the **Initializing and Verifying the Emerald Web Service** section of the document to complete the required installation/configuration tasks.

Initializing and Verifying the Emerald Web Service

During the Emerald Management Suite installation, the Emerald Web Server (Emerweb) was automatically installed and configured on your system. The Emerald Web Server is always required to be running in order to access the Emerald Management Suite. The Emerweb Service is pre-configured to start automatically upon system startup and will be available once the system has been restarted. *Please note that Emerald must be fully installed and the Emerald database must be created and configured before Emerald software can be used.*

By default the Emerald Web Server, once installed and initialized, will continue to run without interruption. If there is a disruption and the Web Server must be restarted, contact your System Administrator to complete the following steps to verify and restart the Emerweb service.

On Windows systems:

- To start the Emerald Web Server, select **Web Server Debug Mode** from the Start Menu/Program Files/Emerald/Server menu.

On Linux and Solaris systems:

1. To start the Web Configuration Server, change to the /usr/local/emerald directory: “cd /usr/local/emerald”.
2. Execute the command “./emerwebsrv -debug”.

Initial Database Configuration

Once the Emerald Server installation is complete and the Emerald Web Server has been initialized, the Emerald System Administrator must configure the system. Configuration of the system includes the creation and population of the Emerald database and performing the user configuration of the Emerald billing and system options. The database configuration activities are detailed within this section and are performed by the Emerald Administrator. The Emerald Administrator must perform these steps, as well as verify the independently installed database server and client configurations, before the Emerald Management Suite can be used.

Regardless of operating system platform, each installation requires the initial creation and configuration of the Emerald database performed with the Emerald Web Configuration Server. The steps required to complete the initial configuration of the system are described below.

1. Start the Emerald Web Configuration Server.

On Windows systems:

- a. To login to the Web Configuration Server, select **Web Config** from the Start Menu/ Program Files/Emerald menu.

On Linux and Solaris systems:

- a. Open a web browser and go to the URL: <http://127.0.0.1/settings>.

2. If this is the first time that the Configuration Server has been started, you will initially be prompted to enter a **Password** and confirm the password value by entering it again. The Web Configuration password entered will only be valid for the Emerald Web Configuration Server (not for the Emerald application itself). There is no default username or password when the Web Configuration Server is initially started.

After you have created the Web Configuration Server password, you will be prompted again for a Web Configuration Server username and password to login. The username is insignificant, and the password is the password you initially set up for the Configuration server above.

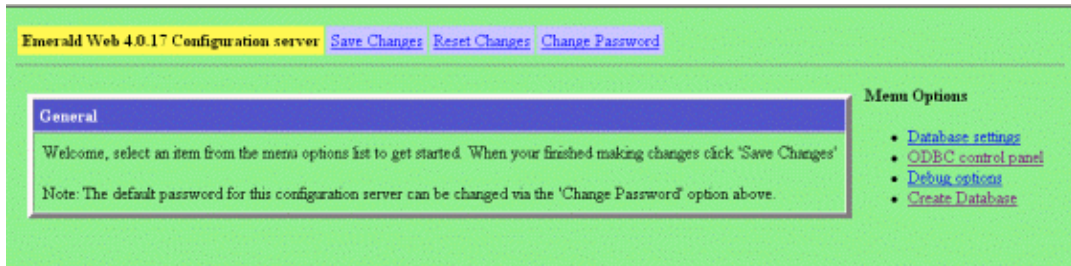
Note:

The password configured for the Web Configuration Server is shared among all the Emerald Management Suite Configuration Server Administrators (Emerald Web Configuration Server, RadiusNT Administrator, EmerAuth Administrator, etc.), meaning that all Administrators running on the same machine will use the same password once it has been established. Because it is locally configured, the password is machine-specific. If the password is forgotten, it can be located by following the instructions below. If the WCPasswd entry is cleared as described below, you will be prompted to provide a new password upon the next Web Configuration Server start-up.

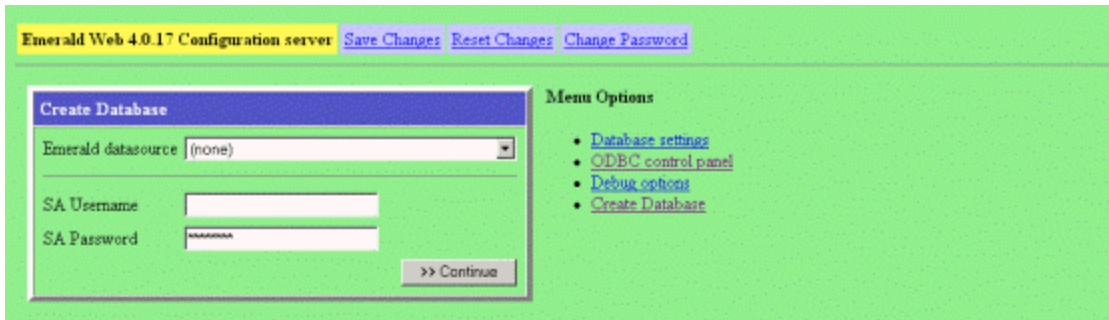
On Windows machines: Use the Registry Editor to look up the value under the Registry value for WCPasswd under HKEY_LOCAL_MACHINE\Software\IEA\Common. You can clear the value within the Registry Editor, but the web server must be stopped and restarted in order for the changes to take affect.

On non-windows platforms the value can be found within the /usr/local/iea/common.ini file. The existing password is cleared by removing the “WCPasswd = “ line.

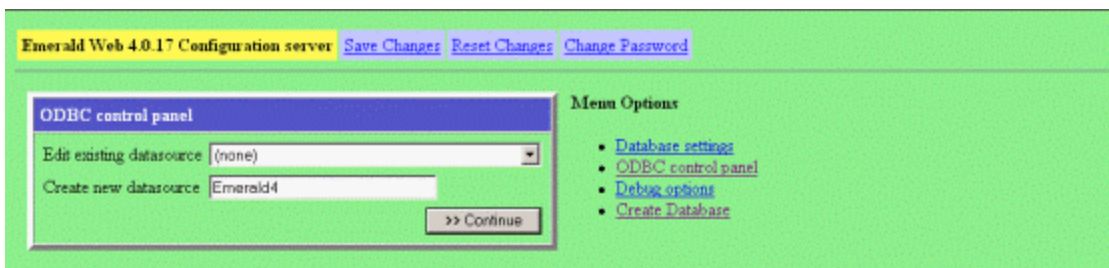
Once the Emerald Web Configuration Server has been launched, choose the **Create Database** Menu option to the right of the welcome screen. **Note:** Upgrade installations must also create a *new* Version 4.0 Emerald database (your existing data will be copied into and converted into the new database during upgrade).



3. Within the Create Database screen, you are prompted to configure the Emerald data source information to establish ODBC connectivity to your database server. To create the Emerald database, choose the 'New' option from the **Emerald datasource** pick list and then press the **Continue** button.



4. On the ODBC control panel screen, enter "Emerald4" in the **Create new datasource** field. Alternatively, you may select an existing datasource to edit from the **Edit existing datasource** pick list. Press the **Continue** button when finished.

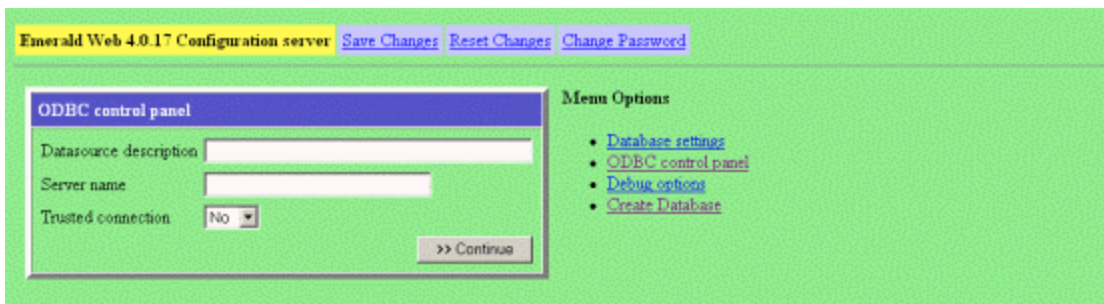


- Choose the appropriate type from the **Database type** pick list. This indicates the type of database server installed on your site that will run against the Emerald server. Typically your choice will be a Microsoft SQL or Sybase selection. Press **Continue** when done.



- The next step is to describe the new Emerald data source and provide server information. Enter the following information on the fields provided:

Field	Description
Datasource description	Enter a description for the datasource. Generally, this will be the datasource name 'Emerald4'.
Server name	Enter the name of the server in which your database server resides. Note: For UNIX versions the server name is the IP Address of your database server followed by ',' and it's TCP port number. Example: 10.0.0.35,1433
Trusted connection	Choose Yes or No from the pick list indicating whether your database server will be accepting a Trusted connection, or using the SA username/password information for Emerald access.

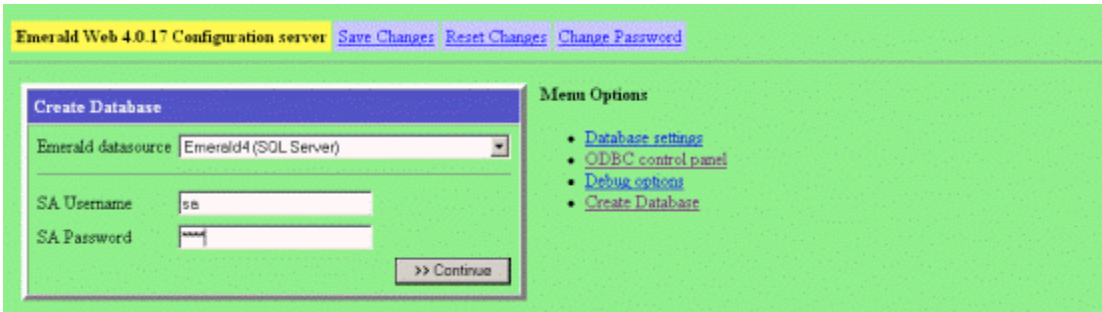


Once the information has been entered, press the **Continue** button.

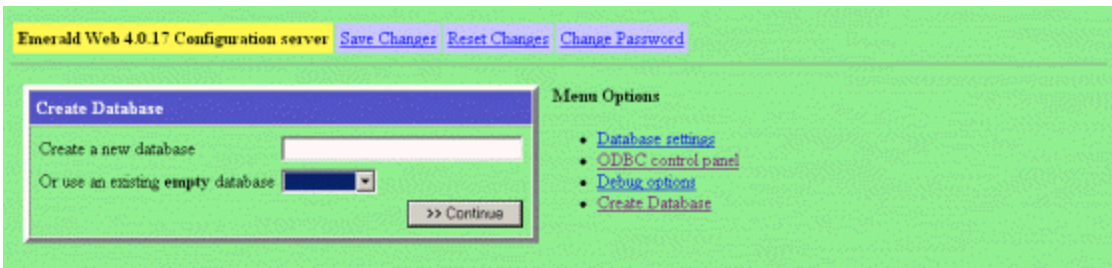
- If the datasource is not configured to use a trusted connection, the datasource will require the system administrative (SA) username and password to set up access to the database server. Enter the following field values and press the **Continue** button to complete the creation and configuration of the Emerald datasource.

Field	Description
Emerald data source	Choose the Emerald datasource name, typically 'Emerald4', from the data source pick list.
SA Username	Enter the system administrator username configured on your database server.

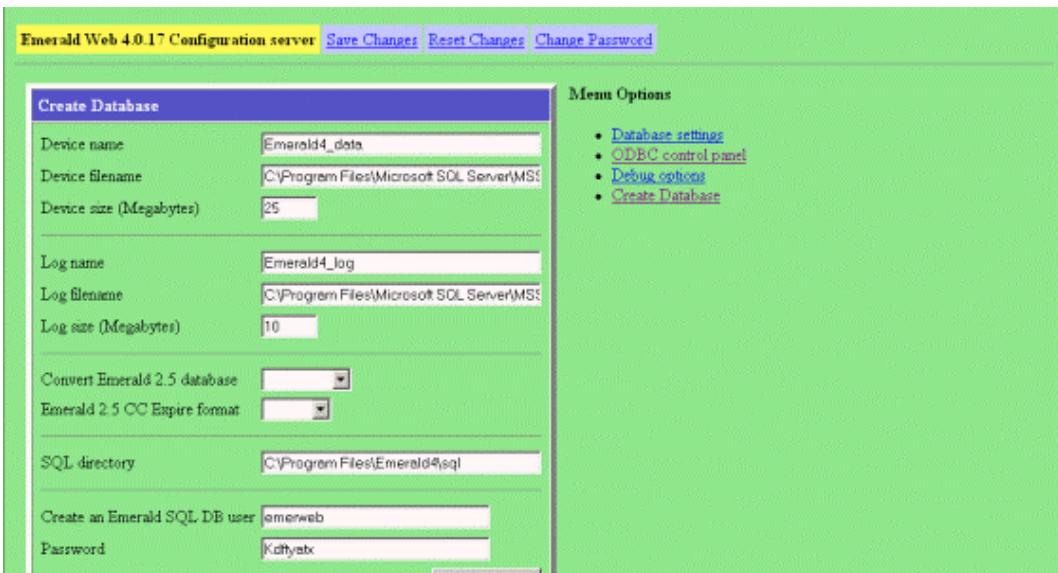
SA Password	Enter the system administrator password configured on your database server.
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- The next step in the database configuration is to actually physically create the Emerald database that will store the account and system information. On the Create Database screen, choose to **Create a new database** by entering 'Emerald4' as the database name in this field and pressing the **Continue** button.



- Continuing on with the Create Database task, this screen is used to identify information for your existing database server, and indicate if a data upgrade from a previous Emerald version installation is required.

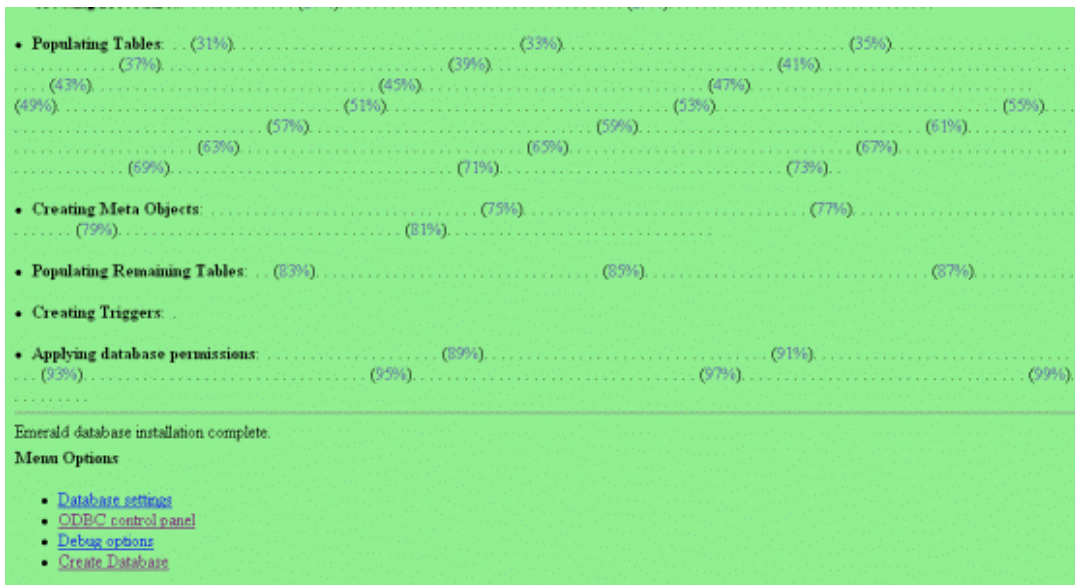


Field Descriptions are provided below.

Field	Description
Device name	Choose a name for the data device for your Emerald 4.0 database. The default provided is Emerald4_data.
Device filename	Enter the physical filename and directory path of where the database file is to be installed locally on your database server. This directory path must already exist.
Device size	Enter the initial database file size of the database to be installed on your database server. Refer to your database server user documentation to determine the appropriate default value. As a general rule of thumb you will need about 50MB per 1000 MBRs.
Log name	Choose a name for the Emerald4 database log.
Log filename	Enter the physical filename and directory path of where the log file is to be installed on your database server.
Log size	Enter the initial log file size to be installed on your database server. Refer to your database server user documentation to determine the appropriate default value. As a general rule of thumb this should be about 1/5 of the size of your Device size.
Convert Emerald 2.5 database	Select from the existing databases listed within the provided pick list to indicate the Emerald 2.5 database to be converted into the Emerald 4 format. This option will automatically perform the data conversion necessary to upgrade your existing Emerald 2.5 data into a format compatible with the new Emerald 4 application. Note: The database conversion will leave the Emerald 2.5 database intact, performing the conversion by creating a new Emerald 4.0 database (therefore a new database name is required, created as 'Emerald4') and copying the data into the converted format from the old database to the new database.
Emerald 2.5 CC Expire format	Select from the existing CC format options within the provided pick list to indicate the previous Emerald 2.5 format to be converted into a format compatible with the new Emerald 4 application.
Create Emerald SQL DB user and Password	These fields indicate the user and password used for access to the new Emerald V4 database. These fields should be set to allow the Emerald server to connect to the database server specified previously. Note: If Emerald 4.0 is installed over an existing Emerald installation, the password entered here must match the existing database password. The password default in this field is a randomly generated password and will not match the previous password.

After the field values have been entered, press the **Continue** button to initiate database creation and population.

As the database creation and conversion occurs, the following screen will be displayed showing the progress of the database creation. Once the process has completed successfully, the message “Emerald database installation complete” will be displayed at the bottom of the status screen.



Quick Tip:

It is recommended that if an Emerald 2.5 data conversion has occurred, that the data populated within the new Emerald 4.0 database be verified for accuracy before continuing. In the unlikely case that data inconsistencies are discovered, do not try to manipulate the data directly using SQL. Please contact the IEA Software Customer Support team for assistance.

The Emerald Web Configuration Server

The Emerald Web Configuration Server was used during the installation process to install and configure the Emerald 4.0 database for the Emerald Management Suite. Although installation is the primary reason to use the Emerald Web Configuration Server, there are times where it may necessary to modify the Emerald configuration such as changing the database information, ODBC configuration and/or change the administrative operator passwords. The Emerald Web Configuration options are available any time by starting the Web Configuration Server by doing the following:

1. Start the Emerald Web Configuration Server.
 - On Windows systems:
 - a. If the Emerald Web Server is not started, select **Web Server Debug Mode** from the Start Menu/Program Files/Emerald/Server menu.
 - b. To login to the Web Configuration Server, select **Web Config** from the Start Menu/ Program Files/Emerald menu.
 - On Linux and Solaris systems:
 - a. If the Web Configuration Server is not started, change to the /usr/local/emerald directory: “cd /usr/local/emerald” and execute the command “./emerwebsrv -config”.
 - b. Open a web browser and go to the URL: http://127.0.0.1/settings.

- When prompted, enter a **Username** and provide the general Configuration **Password** provided during installation and initial start of the Web Configuration Server (or other Emerald Management Suite Administrator). The creation and access of this password is described above in the **Initial Database Configuration** section above.



Emerald Printing Configuration

On Windows Systems

On Windows systems only, the Batch Printing feature of Emerald requires use of the “Default” system printer. In order to utilize the default system printer, Emerald must be run as a “user” of the system, because the LocalSystem account cannot have a “Default” printer configured. Emerald is configured to run as a user by following the steps below:

- Using the Control Panel, access the **Services** option.
- Locate the **Emerald Web Server** service and double-click to retrieve the service properties.
- Click the **Log On** Tab and select the “This Account” radio button.
- Select the account that Emerald should run under. The recommended user account is your Administrative account. The only requirement is that this user has access to a default printer.

Additionally, the configuration must include a **System DSN** named ‘Emerald4’. Configure the System DSN by following the steps below:

- Using the Control Panel, access the **Administrative Tools/Data Sources (ODBC)** option.
- Click the **System DSN** Tab and click the **Add** button.
- Select the appropriate database server type and press the **Finish** button.
- Name the data source “Emerald4”, provide a description and select the database server name. Press the **Finish** button and optionally use the provided option to test your data source connection.

Note: The System DSN must be set up as a Trusted Connection and the database server must be configured to allow SQL and Windows authentication. Please refer to your database server documentation for this configuration.

On all operating system platforms

Emerald Printing and Preview features rely on the processing of PDF files. Therefore, a PDF Viewer or Plug-in must be installed on all Emerald Client machines. Please go to www.adobe.com for more information regarding the download and installation of the Adobe PDF Viewer.

Secure Socket Layer (SSL) Configuration

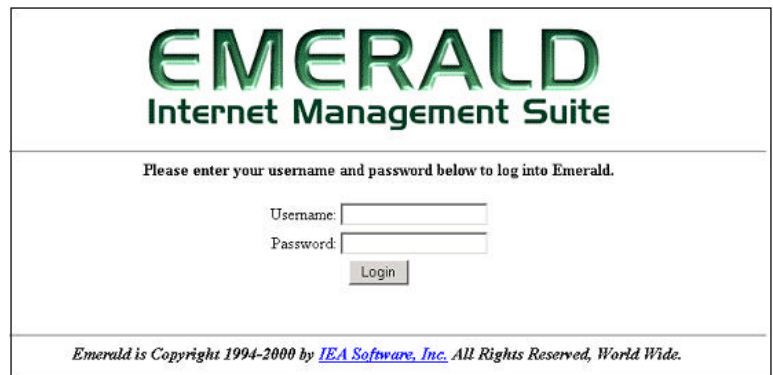
The Emerald Server natively supports SSL (Secure Socket Layer) transactions. To enable SSL support, enter a port for the SSL connection to listen on in the Security section. A sample certificate labeled IEA Software, Inc is included, but you will most likely want to use your own certificate. See the documentation at www.openssl.org for more information on generating your own certificate.

Launching and Logging on to Emerald

To start exploring Emerald's features you need to launch it within a supported web browser. The Emerald Server specifically supports both the Microsoft Internet Explorer and Netscape Navigator web browsers. To launch Emerald, do the following:

1. To login to the Emerald server using your default web browser do the following. On Windows systems, select **Web Login** from the Start Menu/ Program Files/Emerald menu.

On non-Windows systems, start a web browser and go to the URL: <http://localhost> Your System Administrator configured the Emerald site location during the Emerald server installation.



2. Emerald Management Suite login screen, enter your Emerald operator **Username** and **Password** and click on the **Login** button, or just press the **Enter** key. The Emerald System Administrator configures valid username and passwords, as well as assigning individual operator privileges, during system installation and configuration.

Note: The first time you log into the Emerald Suite after installation, use the default Username and Password values '**Admin**' and '**Pass1**', respectively. These values are supplied as the administrative login by default during installation. ***It is strongly recommended that the default Emerald Administrative account password be changed immediately upon initial login to the system.***

Note:

It is critical for the operation of the Emerald Management Suite that both *cookies* and *java script* be enabled within the web browser accessing the Emerald Server. Within Microsoft Internet Explorer this is done within the Browser Tools/Internet Options/*Security/Custom* options. Within Netscape Navigator this is done within the Edit/Preferences *Advanced* options.

Licensing

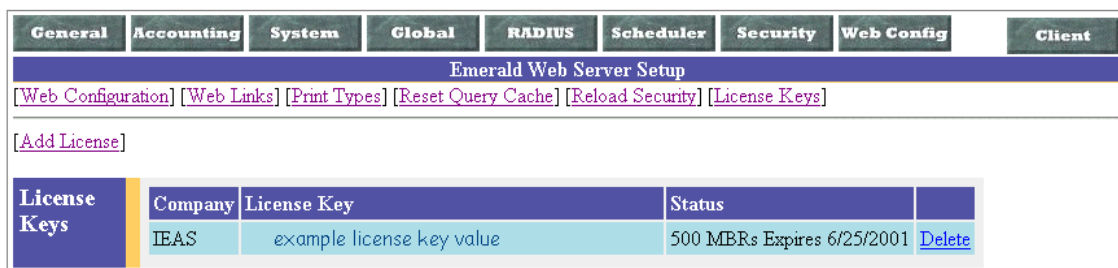
Once you have successfully created your Emerald database, you need to register your initial Emerald software license.



Note:

When you login to the system, prior to entering your license key, your system access will be extremely limited and Emerald will consistently present an informational message regarding insufficient licensing of the product.

Emerald license keys are configured within the **License Keys** option under the **Admin/Web Config** main menu option. If you later choose to update your license information (for example add more MBRs) you will select this option as well.



Adding a License

To add a new license key, choose the **Add License** option.

When you purchase Emerald, Evaluate Emerald, or add additional MBRs, you will receive an Email with your License information. You need to enter the *exact* Company Name and License Key that you receive in the E-mail. The best way to copy the information is to cut and paste it from your mail package. This will insure that you do not enter the wrong information into the license manager. Press the Add Key button once the information has been entered.

The screenshot shows a form titled "License Keys" with two input fields: "Company:" and "License Key:". Below the fields is a button labeled "Add Key".

Overview: Emerald Administrative Options

The Emerald Administrative options are used to configure the billing and account selections available throughout the Emerald Management Suite, as well as configure the general settings for the system environment and RadiusNT/X component.

General	Accounting	System	Global	RADIUS	Scheduler	Security	Web Config	Client
General								
[Domains] [Groups] [Company Data] [Regions] [Cancel Reasons] [Referred Bys] [Sales Persons] [Incident Types] [Incident States]								
[Modem Speeds] [Net Softwares] [System Types] [Master Account Data Types] [Sub Account Data Types]								

The following gives a description of the main Administrative options and what types of system settings they are used to configure:

- ?? **General:** Used to configure the available options for MBR and Service account general informational fields including Billing Groups, Regions, Sales Persons, Incident Types and States, user system description information such as modem, net software and system types, and MBR and Service Custom Data field definitions.
- ?? **Accounting:** Used to configure the available options for accounting related settings for MBR and Service accounts including the definition of available Service Types, Billing Cycles, Charge Types, Rates, Discounts, Payment options, Taxes and GL Codes.
- ?? **System:** Used to configure overall system options including defining custom reports, external systems formats, system log and Netflow data filters.
- ?? **Global:** Used to define options that are global to the Emerald Management Suite including your company name and password restrictions, FTP and SMTP settings, invoice formats, RadiusNT/X general configuration options, and system search display limits.
- ?? **RADIUS:** Used to configure the integrated RadiusNT/X environment. This is the means to configure the RadiusNT/X application when it is used in conjunction with the Emerald Management Suite (Note: Local RADIUS Server configuration is still required to be performed through the Radius Server Administrator).
- ?? **Scheduler:** Used to define the Emerald auto-scheduled tasks and view the status of the completion of those tasks. Scheduled tasks range from system actions to billing processes.
- ?? **Security:** Used to configure Emerald system security including the definition of Emerald operators, operator groups and their system privileges, as well as IP group restrictions.
- ?? **Web Config:** Used to set the web environment options including defining the look and feel, web cache settings, print type defaults, and license keys for Emerald Management Suite application access.

?? **Database:** Used to manage basic database functions, including backup, running a query and seeing the current activities.

?? **Client:** Returns you to the Emerald Management Suite Home page and Emerald Client options.

Typically, configuration of the Emerald Management Suite is best approached by sequentially navigating the Administrative menu options from left to right. Some administrative options are dependant upon other administrative options being populated prior, such as Billing Groups that are referenced throughout many of the administrative options for both option grouping and security. The following sections describe all the Administrative options in detail.

General Configuration

The **General** configuration option under the Emerald Administrative menu is where most of the Master Billing Record and Service account informational field selections are defined. The General options work closely with the administrative Accounting options that additionally define MBR and Service account selections. The General configuration options are presented below.

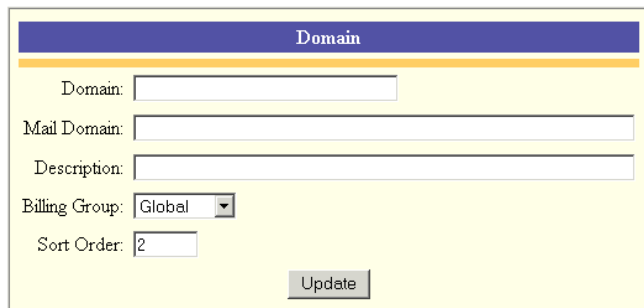


Domains

Emerald Domains represent Internet domains. The Internet domains that your organization is affiliated with should be defined as the minimal Emerald Domain entries, but any number of Internet domains may be defined. All defined Emerald Domains will be available as selection options within the Service account screen, and can be used to determine default email addresses on Service entries.



Choosing the **Domains** General Administrative option will present the display of all existing Emerald Domain entries, as shown above. Retrieve a domain entry for view and/or edit by clicking on the desired entry. To remove a domain, click the Delete link next on the selected entry. To add a new domain, click the **New Domain** link. The Domain entry fields are described below. Press the **Update** button to save the new or modified Domain entry.



A screenshot of a form titled "Domain". The form contains the following fields:

- Domain:
- Mail Domain:
- Description:
- Billing Group:
- Sort Order:

At the bottom right of the form is an "Update" button.

Field	Description
Domain	Choose a name for Emerald to reference the domain.
Mail Domain	Enter the full Internet domain address, such as “iea-software.com”.
Description	Enter a short domain description, or note of comment.
Billing Group	Select an existing Billing Group from the provided pick list to associate this domain with. If a Billing Group is selected, only MBRs from this Billing Group will have the option to assign this domain to their Service accounts.

Note:

In general, throughout the Emerald Administrative options, once an option has been assigned, there is no longer the option to Delete the entry. This guarantees the integrity of the Emerald data by not allowing values in use by other parts of the system to be removed. For example, once a Domain has been assigned to an MBR Service account, that Domain entry can only be removed if the MBR Service account Domain value is re-assigned to a different value.

Billing Groups

A **Billing Group** defines a set of MBRs that have billing characteristics in common. Billing Groups are important to Emerald’s configuration because they allow different billing features and options to be designated to only a specific group of MBRs, or the billing options can remain global and apply to all MBRs. The Billing Group assigned to an MBR is very important because it can affect the choices available for many field selections on MBR and Service account entries. There are many Emerald configuration options that can be associated with a Billing Group that will restrict and/or cause default behavior for members assigned to that group. These dependencies are described within this section.

[New Billing Group] [Edit Billing Group Defaults]								
Billing Groups	Name	Domain	Invoice Report	Invoice Text Report	Statement Report	Statement Text Report	Global	
	ISP	ISP	Default	Default	Default	Default	Yes	Delete

Choosing the **Billing Group** General Administrative option will present the display of all existing Emerald Billing Groups, as shown above. Retrieve a billing group entry for view and/or edit by clicking on the desired entry. To remove a billing group, click the Delete link next on the selected entry. To add a new billing group, click the **New Group** link. The Billing Group entry fields are described below

Billing Group	
Default Domain: <input type="text" value="ISP"/>	Billing Group Company Details
Name: <input type="text"/>	BillName: <input type="text" value="IEA Software"/>
Description: <input type="text"/>	BillAddress 1: <input type="text" value="W, 516 Riverside"/>
Invoice Report: <input type="text"/>	BillAddress 2: <input type="text"/>
Invoice Text Report: <input type="text"/>	BillCity: <input type="text" value="Spokane"/>
Statement Report: <input type="text"/>	BillState: <input type="text" value="WA"/> Zip: <input type="text" value="99201"/>
Statement Text Report: <input type="text"/>	BillCountry: <input type="text"/>
Global Options: <input type="text" value="Yes"/> No Specific Service Type assigned.	Email From: <input type="text" value="billing@iea-software.com"/>
Sort Order: <input type="text" value="2"/>	Email Subject: <input type="text" value="ISP Billing Account"/>
FTP Directory: <input type="text"/>	
<input type="button" value="Update"/>	

Field	Description
Default Domain	Choose a default domain for this Billing Group. When the Billing Group is later assigned to an MBR, the domain specified here will be supplied as the default domain value on the MBR Service account screen (the default may be over-ridden) and can subsequently also be used to determine user default email addresses.
Name	Choose a name for Emerald to reference the billing group.
Description	Enter a short billing group description, or note of comment.
Invoice Report	Select the report format to use for the generation of mailed/printed invoices for MBRs of this billing group. This option allows customization of invoice format per billing group. If no Invoice Report is provided, the general Billing Group Default Invoice Report will be used for this Billing Group.
Invoice Text Report	Select the report format to use for the generation of emailed invoices for MBRs of this billing group. If no Invoice Text Report is provided, the general Billing Group Default Invoice Text Report will be used for this Billing Group..
Statement Report	Select the report format to use for the generation of mailed/printed statements for MBRs of this billing group. This option allows customization of statement format per billing group. If no Statement Report is provided, the general Billing Group Default Statement Report will be used for this Billing Group.
Statement Text Report	Select the report format to use for the generation of emailed statements for MBRs of this billing group. If no Statement Text Report is provided, the general Billing Group Default Statement Text Report will be used for this Billing Group..
Global Options	Choose 'Yes' to allow MBR field selections for this billing group to include Global options, as well as the options specific to the billing group. Choose 'No' to restrict the MBR field selections to only those specifically set up for this billing group.
Sort Order	Enter a numeric value to indicate the display order of this Billing Group entry. The sort order is used to sort the entries from lowest to highest numerical order when the Billing Group entries are presented in selection pick lists throughout Emerald.
FTP Directory	Enter the physical directory path to be assigned to the MBR Service accounts associated with this Billing Group.
Billing Group Company Details	Provide the Company name and address information to use for this Billing Group's billing document generation and distribution. This option provides the ability to track company name and address information associated with external entities that you have established as Emerald Billing Groups. .
Email From	Enter the email address from which billing items are to be sent from (identifies the sender to the email recipient) for members of this Billing Group.
Email Subject	Enter the subject that should be included on all emailed billing correspondence for members of this

Billing Group.

Press the **Update** button to save the new or modified Billing Group entry.

Configuring General Billing Group Default Values

There are general Billing Group Defaults that may be automatically applied over all Billing Group entries. If one of the Billing Group field values is not explicitly defined for an individual Billing Group, the defined “Default” field value will be accepted and applied for the entry.

Configure the Billing Group Defaults by pressing the **Edit Billing Group Defaults** link on the Billing Group main screen. The field descriptions are provided below.

Billing Group	
Invoice Report:	<input type="text"/>
Invoice Text Report:	<input type="text"/>
Statement Report:	<input type="text"/>
Statement Text Report:	<input type="text"/>
FTP Directory:	<input type="text"/>
Email From:	<input type="text" value="billing@iea-software.com"/>
Email Subject:	<input type="text" value="ISP Billing Account"/>
Default Billing Group Company Details	
Name:	<input type="text" value="IEA Software"/>
Address 1:	<input type="text" value="W. 516 Riverside"/>
Address 2:	<input type="text"/>
City:	<input type="text" value="Spokane"/>
State:	<input type="text" value="WA"/>
Zip:	<input type="text" value="99208"/>
Country:	<input type="text" value="USA"/>
<input type="button" value="Update"/>	

Field	Description
Invoice Report	Select the default report format to use for the generation of mailed/printed MBR invoices. This can be over-ridden on an individual Billing Group level. The provided Emerald default invoice report is invoice.rpt.
Invoice Text Report	Select the default report format to use for the generation of emailed MBR invoices. This can be over-ridden on an individual Billing Group level. The provided Emerald default invoice text report is einvoice.rpt.
Statement Report	Select the default report format to use for the generation of mailed/printed MBR statements. This can be over-ridden on an individual Billing Group level. The provided Emerald default statement report is statement.rpt.
Statement Text Report	Select the default report format to use for the generation of emailed MBR statements. This can be over-ridden on an individual Billing Group level. The provided Emerald default statement report is estatement.rpt.
FTP Directory	Enter the physical directory path to be generally assigned to MBR Service accounts.
Email From	Enter the default email address from which billing items are to be sent from (identifies the sender to the email recipient).
Email Subject	Enter the subject that should be included on all emailed billing correspondence.
Default Billing Group Company Details	Provide the Company name and address information to be used as the general default over all Billing Groups. Company data can be over-ridden on an individual Billing Group level in order to provide specific company identification per Billing Group.

Press the **Update** button to save the Default Billing Group value entries.

Restricting Accounting options to a specific Billing Group

Emerald allows restricting certain Accounting and Global billing options to a specific Billing Group. Once associated to a specific Billing Group, that option will only be available to MBRs of that Billing Group, or those under a Billing Group with Global options.

Once one of the following type of Accounting or Global option entries has been created, it can be individually associated to a particular Billing Group: Service Type, Region, Billing Cycle, Pay Period, Discount. A Billing Group can have any number of billing options associated with it. The Billing Group assignment is performed on the particular option entry screen by selecting a Billing Group from the presented Billing Group pick list, an example using the Region option is shown to the right. If the default 'All Groups' option is selected on the option screen, the option entry will remain available to all MBRs, regardless of Billing Group.

On new and existing Billing Group entries, you may find a message displayed within the group entry indicating, for example: 'No Service Type assigned to this group'. This is a status message indicating that no specific options of this type (for example: Service Type, Billing Cycle, Region) have been restricted to this Billing Group. This is just an informational message and requires no action, as it is not mandatory to restrict any options to a specific Billing Group.

Regions

Emerald Regions are generally geographical areas that indicate the different areas where your organization provides its services. Emerald Regions are informational only and are used primarily for reporting, grouping, or external integration purposes only.

Choosing the **Regions** General Administrative option will present the display of all existing Region entries. Retrieve an existing Region for view and/or edit by clicking on the desired entry. To remove a Region, click the Delete link next on the selected entry. To add a new Emerald Region, click the **New Region** link. The Region entry fields are described below.

[New Region](#)

Regions	Region	Group	Taxable	Users
	MyTown	Global	No	5
	UnKnown	Global	No	1

Region	
Region:	<input type="text"/>
Billing Group:	<input type="text" value="Global"/>
Taxable:	<input type="text" value="Yes"/>
Sort Order:	<input type="text" value="3"/>
<input type="button" value="Update"/>	

Region	Choose a descriptive name for Emerald to reference the Region.
Billing Group	To restrict this option to only be available to MBRs of a particular Billing Group (and Billing Groups with Global Options), select the desired Billing Group from the presented pick list. If the default 'All Groups' option is accepted, the Region will remain available to all MBRs, regardless of Billing Group.
Taxable	Choose 'Yes' to indicate that taxes are generally applicable to this Region. Choose 'No' to indicate that the Region is generally non-taxable. This option will be used as the default for the tax status of MBRs created for this region.
Sort Order	Enter a numeric value to indicate the display order of this Region entry. The sort order is used to sort the entries from lowest to highest numerical order when the Region entries are presented in selection pick-lists throughout Emerald.

Press the **Update** button to save the new or modified Region entry.

Quick Tip:

Regions may be used for many different grouping purposes, rather than just geographical.

Cancel Reasons

[New Cancel Reason](#)

Cancel Reasons	CancelDescription	
	Terminated - Bad account standing	Delete
	Terminated - Late Payments	Delete
	Terminated - Customer Request	Delete
	Temporary - Customer Request	Delete
	Temporary - ISP Request	Delete

Emerald allows MBR accounts to be temporarily or permanently cancelled. During the cancellation process, the Emerald operator can indicate the reason for the account cancellation. The Cancel Reason options are configurable by the Emerald Administrator, allowing them to be tailored towards the particular informational needs of your organization.

Choosing the **Cancel Reasons** General Administrative option will present the display of all existing Cancel Reason entries. Retrieve an existing Cancel Reason for view and/or edit by clicking on the desired entry. To remove a Cancel Reason, click the Delete link next on the selected entry. To add a new Emerald Cancel Reason, click the **New Cancel Reason** link. The Cancel Reason entry fields are described below.

Cancel Reason

CancelDescription:

SortOrder:

Cancel Description	Choose a descriptive cancellation reason. This description will be used within the Emerald ‘Cancel Reasons’ selection pick lists.
Sort Order	Enter a numeric value to indicate the display order of this Cancel Reason entry. The sort order is used to sort the entries from lowest to highest numerical order when the Cancel Reasons are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Cancel Reasons entry.

Referrals (MBR Referred By)

Emerald allows MBR accounts to track the source that may have referred the user to your organization. Referral sources are configurable by the Emerald Administrator, allowing them to be tailored towards the particular informational needs of your organization. Only the pre-configured selections will appear in the Referred By pick list when creating or editing a MBR. Emerald Referrals are informational only and are used only for reporting.

[New Referral](#)

Referrals	Referral	
	Friend	Delete
	Family	Delete
	Advertising	Delete
	Other	Delete

Choosing the **Referrals** General Administrative option will present the display of all existing Referral entries. Retrieve an existing Referral entry for view and/or edit by clicking on the desired entry. To remove a Referral entry, click the Delete link next on the selected entry. To add a new Emerald Referral source, click the **New Referral** link.

The Referral entry fields are described below.

Referral	Enter a description of the Referral source. This
----------	--

Referrals

Referral:

Sort Order:

	description will be used within the Emerald 'Referred By' selection pick lists.
Sort Order	Enter a numeric value to indicate the display order of this Referral entry. The sort order is used to sort the entries from lowest to highest numerical order when the Referrals are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Referral entry.

Sales Persons

Emerald also has the capability to track the sales person that sold and/or setup each new MBR account. The valid Sales Person list is configurable by the Emerald Administrator. Only the pre-configured selections will appear in the Sales Person pick list when creating or editing a MBR. Emerald Sales Persons entries are informational only and are used only for reporting.

Choosing the **Sales Persons** General Administrative option will present the display of all existing Sales Person entries. Retrieve an existing Sales Person entry for view and/or edit by clicking on the desired entry. To remove a Sales Person entry, click the Delete link next on the selected entry. To add a new Emerald Sales Person, click the **New Sales Person** link.

New Sales Person			
Sales Persons	Sales Person	Commission	
	Sales		Delete
	Signup Server		Delete
	Other		Delete

Sales Person	
Sales Person:	<input type="text"/>
Commission:	<input type="text"/>
Sort Order:	<input type="text"/>
<input type="button" value="Update"/>	

The Sales Person entry fields are described below.

Sales Person	Enter a description of the Referral source. This description will be used within the Emerald 'Sales Person' selection pick lists.
Commission	Currently unused. Please see Sales Person Commissioning section below.
Sort Order	Enter a numeric value to indicate the display order of this Sales Person entry. The sort order is used to sort the entries from lowest to highest numerical order when the Sales Persons are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Sales Person entry.

Quick Tip:

The Emerald Sort Order fields can be used to *group*, as well as *sort* option entries. If a set of option entries has the same Sort Order value, they will be grouped together within the selection display. For example, if Sales has different locations, each location can have it's own Sort Order number that can be assigned to the Sales Person entries to insure that Sales Persons are grouped by their location.

Sales Person Commissioning

Emerald has the capability to use the combination of the MBR Sales Person information and the Service Type information associated with MBR Service accounts, to support reporting on Sales Person commissions. Commissions themselves, however, are only determined through the creation and use of custom Sale Person Commission reports and are not automatically generated and managed by the system. For example, the Sales Person Commission field and the Service Type Commission field can be used to indicate and track commission percentages, or develop a commission point system, in which a custom report may be developed to calculate and track resulting commission data based on MBR Service creation dates.

Incident Types

Incident Types allow you to categorize the customer support incidents tracked within Emerald. This is especially useful for summarizing to help evaluate incident data.

Choosing the **Incident Types** General Administrative option will present the display of all existing Incident Types. Retrieve an existing Incident Type entry for view and/or edit by clicking on the desired entry. To remove an Incident Type, click the Delete link next on the selected entry. To add a new Emerald Incident Type, click the **New Incident Type** link.

[New Incident Type](#)

Incident Types	Incident Type	Description	Email	
	Login Error	Login Information error	None	Delete
	Dialup Software	Dialup Software problem	None	Delete
	Modem	Modem Configuration Problem	None	Delete
	Computer Hardware	Computer Hardware	None	Delete
	Password Change	Password Change	None	Delete

Incident Type	
Incident Type:	<input type="text"/>
Description:	<input type="text"/>
Email:	<input type="text"/>
Sort Order:	<input type="text"/>
<input type="button" value="Update"/>	

The Incident Type entry fields are described below.

Incident Type	Enter a short descriptive name for the Incident Type.
Description	Enter a longer comment or description to clarify the Incident Type.
Email	If a particular person should receive notice of activity regarding this type of Incident, enter the full email address of the person to be notified when this type of incident is created. If left blank, notification will be sent to the Administrator, as configured in the Emerald SMTP configuration.
Sort Order	Enter a numeric value to indicate the display order of this Incident Type entry. The sort order is used to sort the entries from lowest to highest numerical order when the Incident Types are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Incident Type entry.

Incident States

The Incident States option allows you to customize the status categories available for the tracking of Emerald Incident entries. This allows the ability to tailor the available states to meet the particular informational needs of your organization. Incident Status types are informational only and are used only for reporting and incident grouping.

Choosing the **Incident States** General Administrative option will present the display of all existing Incident States. Retrieve an existing Incident State entry for view and/or edit by clicking on the desired entry. To remove an Incident State, click the Delete link next on the selected entry. To add a new Emerald Incident State, click the **New Incident State** link. The Incident State entry fields are described below.

[New Incident State](#)

Incident States	Incident State	Description	
	Open	Open	
	Assigned	Assigned	Delete
	Escalated	Escalated	Delete
	Closed	Closed	
	Other	Other	Delete

Incident State	
Incident State:	<input type="text"/>
Description:	<input type="text"/>
Sort Order:	<input type="text" value="10"/>
<input type="button" value="Update"/>	

Incident State	Enter a short descriptive name for the Incident State.
Description	Enter a longer comment or description to clarify the Incident State.
Sort Order	Enter a numeric value to indicate the display order of this Incident State entry. The sort order is used to sort the entries from lowest to highest numerical order when the Incident States are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Incident States entry.

Modem Speeds

The **Modem Speeds** option is used to indicate the modem speed of your users' modems, primarily for informational purposes while acting on customer support incidents. The pre-configured entries will be presented as options within the 'Modem Speed' pick list while creating or editing Service accounts. The Emerald installation provides a default list of entries that may be fully customized for your organization.

Choosing the **Modem Speeds** General Administrative option will present the display of all existing Modem Speed options. Retrieve an existing Modem Speed entry for view and/or edit by clicking on the desired entry. To remove a Modem

[New Modem Speed](#)

Modem Speeds	ModemSpeed	
	28800	Delete
	14400	Delete
	9600	Delete
	2400	Delete
	ISDN	Delete
	Other	Delete

Speed, click the Delete link next on the selected entry. To add a new Emerald Modem Speed entry, click the **New Modem Speed** link.

Net Software

As with the Modem Speeds option above, the **Net Software** option is used to indicate the network software of your users' systems, primarily for informational purposes while acting on customer support incidents. The pre-configured entries will be presented as options within the 'Network Software' pick list while creating or editing Service accounts. The Emerald installation provides a default list of entries that may be fully customized for your organization.

Choosing the **Net Software** General Administrative option will present the display of all existing Network Software options. Retrieve an existing Net Software entry for view and/or edit by clicking on the desired entry. To remove a Network Software option, click the Delete link next on the selected entry. To add a new Emerald Network Software option, click the **New Network Software** link. The Network Software fields are described below.

New Network Software

Network Software	NetSoftware	Map	
	Win95	6	Delete
	WindowsNT RAS	9	Delete
	Winsock	1	Delete
	Netscape	2	Delete
	MacTCP	7	Delete
	Open Transport	8	Delete

NetSoftware	Description of the Network Software option.
Map	Optional field used as a token during the creation of external systems. The field use is user-definable and can identify a mapping between the NetSoftware type and some other item external to the system, such as documentation identifiers.

System Types

The **System Types** option is used to indicate the OS system type of your users' systems, and also is primarily for informational purposes while acting on customer support incidents. The pre-configured entries will be presented as options within the 'System Type' pick list while creating or editing Service accounts. The Emerald installation provides a default list of entries that may be fully customized for your organization. The display indicates the number of users that have been assigned each selection (the **Users** column).

Choosing the **System Types** General Administrative option will present the display of all existing System Type options. Retrieve an existing System Type entry for view and/or edit by clicking on the desired entry. To remove a System Type option, click the Delete link next on the selected entry. To add a new Emerald System Type option, click the **New System Type** link.

New System Type

System Types	System Type	Users	
	Windows 95	11	
	Windows NT	0	Delete
	Mac	0	Delete
	IBM	0	Delete
	Other	0	Delete

MBR Custom Data Fields

The **Master Custom Data Fields** option allows you to define extra fields of information that your organization would like to track for each MBR, or each MBR of a specific Billing Group, within Emerald. The extra MBR account data types defined here will be presented within the **Custom Data** section of the MBR account entry screen, allowing the Emerald operator to optionally enter a value for each of the additional MBR data fields. MBR Custom data fields are informational only and are used for reporting and tracking purposes only.

Choosing the **MBR Custom Data Fields** General Administrative option will present the display of all existing MBR Custom Data Field entries. Retrieve an existing Data Field entry for view and/or edit by clicking on the desired entry. To remove a Data Field, click the Delete link next on the selected entry. To add a new Data Field, click the **New Field** link. The MBR Custom Data Field entry is described below.

Description	Enter a description for the MBR custom data field. This entry will be displayed as the label for the Custom Data field on the MBR account entry screen.
Billing Group	If the MBR custom field is only to be tracked for MBRs of a specific Billing Group, select the appropriate group from the Billing Group selection pick list. If the 'All' Billing Group default is accepted, the MBR custom field will apply to all Emerald MBRs.
Sort Order	Enter a numeric value to indicate the display order of this Incident State entry. The sort order is used to sort the entries from lowest to highest numerical order when the data types are displayed.

Press the **Update** button to save the new or modified MBR Custom Data Field entry.

Service Custom Data Field

The **Service Custom Data Field** option allows you to define extra fields of information that your organization would like to track for each Service account, or each Service of a specific Service Type, within Emerald. The extra Service account data fields defined here will be presented within the **Custom Data** section of the Service account entry screen, allowing the Emerald operator to optionally enter a value for each of the additional Service data fields. Service Custom data fields are informational only and are used for reporting and tracking purposes only.

Choosing the **Service Custom Data Field** General Administrative option will present the display of all existing Service Custom Data Fields. Retrieve an existing Data Field entry for view and/or edit by clicking on the desired entry. To remove a Data Field, click the Delete link next on the selected entry. To add a new Data Field, click the **New Field** link. The Service Custom Data Field entry is described below.

Description	Enter a description for the Service custom data field. This entry will be displayed as the label for the Custom Data field on the Service account entry screen.
Service Type	If the Service account custom field is only to be tracked for those services of a specific Service Type, select the appropriate type from the Service Type selection pick list. If the 'All' Service Type default is accepted, the Service custom field will apply to all Emerald MBR Services.

Sort Order	Enter a numeric value to indicate the display order of this Incident State entry. The sort order is used to sort the entries from lowest to highest numerical order when the data types are displayed.
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Press the **Update** button to save the new or modified Service Custom Data Field entry.

Address Types

The **Address Types** option allows you to define additional contact and/or address information that your organization would like to optionally track for each MBR account. The extra Address Types defined here will be presented within the **Addresses** section of the MBR account entry screen options, allowing the Emerald operator to optionally enter a value for each of the additional Address Types specified.

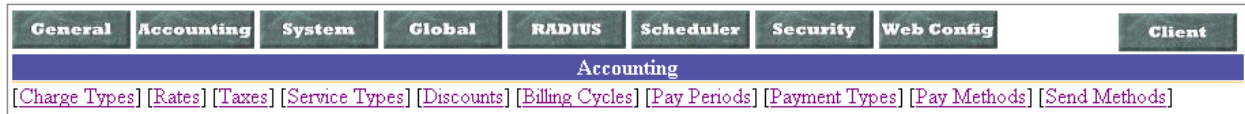
Choosing the **Address Types** General Administrative option will present the display of all existing Address Type entries. Retrieve an existing Address Type entry for view and/or edit by clicking on the desired entry. To remove an Address Type, click the Delete link next on the selected entry. To add a new Address Type, click the **New Address Type** link. The Service Custom Data Field entry is described below.

Address Type	Enter a description of the Address Type. This entry will be displayed as the label for the Address option on the MBR account Addresses entry screen.
Sort Order	Enter a numeric value to indicate the display order of this Address Type entry. The sort order is used to sort the entries from lowest to highest numerical order when the Address Types are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Address Type entry.

Accounting Configuration

The **Accounting** configuration option under the Emerald Administrative menu is where the most of the Master Billing Record and Service accounting related field selections are defined. The Accounting options work closely with the previously described General options by defining additional MBR and Service account selections. The Accounting options include the configuration of Charge Types, Rates, Taxes, Service Types, Billing Cycles, Discounts, Payment options and GL Codes, all of which are presented below.



Charge Types

Emerald Charge Types are used to define the types of non-recurring charges that can be manually applied to an MBR (as account adjustments), or configured as a setup charge on an Emerald Service Type. These charges are typically one-time fees for a service (such as system setup or support calls), hardware purchases, or other miscellaneous account charges/credits. Charge Types defined here will be available to the Emerald Operator to describe and provide charge amount defaults when performing account adjustments.

[New Charge Type](#)

Charge Types	Description	Amount	Tax	Group	
	PPP Setup	20.00	None	Global	Delete
	DNS Registration	35.00	None	Global	Delete
	Reactivation Fee	10.00	None	Global	Delete
	LAN Setup	14.50	WA State	Global	Delete

Choosing the **Charge Types** Accounting Administrative option will present the display of all existing Charge Types. Retrieve an existing Charge Type entry for view and/or edit by clicking on the desired entry. To remove a Charge Type, click the Delete link next on the selected entry. To add a new Charge Type, click the **New Charge Type** link. The Charge Type entry fields are described below.

Charge Type

Description:

Amount:

Tax:

Billing Group:

Sort Order:

Description	Enter an identifying description for the Charge Type. This entry will be presented within the 'Charge Type' selection lists throughout Emerald.
Amount	Enter the default charge amount for this charge type. The Amount can be a credit or a debit entry. This default can be over-riden within the Adjustment entry screen.
Tax	Choose the default Tax Type for this Charge Type. The Tax value indicates the Tax that should normally be applied to this type of account charge. The Tax default can be over-riden on the account adjustment screen.
Billing Group	If the Charge Type is only to be available to MBRs of a specific Billing Group, select the appropriate group from the Billing Group selection pick list. If the 'Global' Billing Group default is accepted, the

	Charge Type will be available to all Emerald MBRs.
Sort Order	Enter a numeric value to indicate the display order of this Charge Type entry. The sort order is used to sort the entries from lowest to highest numerical order when the Charge Types are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Charge Type entry.

Rates

Service account billing within Emerald is based upon a combination of many factors, but is primarily based upon the configuration and MBR assignment of three different elements:

- ?? *Service Types* that define the rates for period-based recurring Service account charges,
- ?? *Charge Types* that define miscellaneous non-recurring account charges, and
- ?? *Rates* that define the rates for account charges based on Service time or data usage.

Rates define the rules at which user's network/service data and time usage will be billed. Once defined, Rates can be applied to Emerald Service Types creating rate structures that include usage-based charges for those services. Rate definitions include specifying the charge amount per data or time interval, the minimum and maximum charges allowable for a pay period, as well as providing the ability to define differing charge rates between peak and off-peak system time periods.

Choosing the **Rates** Accounting Administrative option will present the display of all existing Rate definitions. Retrieve an existing Rate entry for view and/or edit by clicking on the desired entry. To remove a Rate, click the Delete link next on the selected entry. To add a new Rate entry, click the **New Rate** link.

[New Rate](#)

Rates	Description	Type	Interval	Charge	Min Charge	Max Charge	Alt. Time	Alt. Charge	Tax	
	Unlimited	Time	1 Hours	0.00					None	
	Per Minute	Time	1 Minutes	0.05					None	Delete
	25 Hours	Time	1 Hours	0.00					None	Delete
	None	Time	1 Hours	0.00					None	Delete
	\$1/hr \$2/hr	Time	1 Hours	1.00			8:00 18:00	2.00	None	Delete

Emerald allows you to define, per service Rate, two time periods for the service usage – a **Default** and **Alternate** time period. These time ranges generally coincide with peak and off-peak periods of system activity. The Default and Alternate time periods allow different service rates to be charged at different times throughout each day. This option allows your organization to set up rate penalties that discourage service usage during your busiest periods of the day, as well as create rate incentives to encourage service usage during the slower periods.

Each Emerald Rate entry provides general rate information including a rate description, the Alternate time period definition, and rate information for a service for both the Default and Alternate usage time periods.

Rate	
Description:	<input type="text" value="\$1/hr \$2/hr"/>
Type:	<input type="text" value="Time"/>
Interval:	<input type="text" value="1"/>
Tax:	<input type="text" value="None"/>
Interval Unit:	<input type="text" value="Hours"/>
Default Charge:	<input type="text" value="1.00"/>
Alternate Charge:	<input type="text" value="2.00"/>
Default Min Charge:	<input type="text"/>
Alternate Start Time:	<input type="text" value="8:00"/>
Default Max Charge:	<input type="text"/>
Alternate Stop Time:	<input type="text" value="18:00"/>
Over Charge Start Point:	<input type="text" value="50"/> (# of Intervals)
Default Over Charge:	<input type="text" value="0.50"/>
Alternate Over Charge:	<input type="text" value="0.50"/>

The Rate entry fields are described below.

Description	Enter an identifying description for the Rate. This value will be presented within the 'Rate' pick lists throughout Emerald.
Type	Select the type of rate interval that defines how the service will be charged. Choose 'Time' if the charge interval will be associated with time period usage (time measurements such as seconds, minutes, or hours). Choose 'Data' if the charge interval will be associated with data transfer usage (data measurements such as bytes, KB, or MB). The interval Type will apply to both the Default and Alternate time periods.
Tax	Choose the Tax from the pick list that identifies the tax rate that is to be applied to this service rate. Note: This value is not a default value and cannot be over-ridden at any point within the MBR Service configuration. This is the tax for this service Rate only; it does not define the Tax for the Service Type it may be applied to.
Interval and Interval Unit	Enter the time or data interval that will serve as the rate "charge unit". If the interval Type is 'Time', then the Interval Units available will be time-based units (Seconds, Minutes, Hours, Days). If the interval Type is 'Data', then the Interval Units available will be data-based units (Bytes, Kbytes and MB). The Interval value must account for the number of interval units that will be considered one full charge unit. Note: Due to the method of value storage, the Interval Unit displayed may not be the same on the main Rate display, or the same shown during edit. For example, a "60 Minutes" entry may be displayed on the Rate screen as the equivalent "1 Hour".
Default Charge	Enter the amount that the account will be charged per charge unit (defined by the combination of Interval and Interval Unit above) during the Default time period. The charge amount should be entered in decimal format, without currency symbols. For example '.30' for 30 cents, or '5.00' for \$5.00. This value will work in conjunction with the Interval/Interval Unit to determine the charges associated with the service usage over each billing period.
Default Min Charge	Enter the minimum amount that the account will be charged for service usage during the Default time period, per billing period, regardless of the actual account usage totals. If the usage charges for the service do not meet the minimum charge amount, the minimum charge amount will become the usage charge for the billing period. The Minimum Charge value should be entered in decimal form, without currency symbols. For example '.30' for 30 cents, or '5.00' for \$5.00.
Default Max Charge	Enter the maximum amount that the account will be charged for service usage during the Default time period, per billing period, regardless of actual account usage totals. If the usage charges for the service exceed the maximum charge amount, the maximum charge amount will become the usage cost for the billing period. The Maximum Charge value should be entered in decimal form, without currency symbols. For example '.30' for 30 cents, or '5.00' for \$5.00.
Alternate Charge	Enter the amount that the account will be charged per charge unit (defined by the combination of Interval and Interval Unit above) during the Alternate time period. The charge amount should be entered in decimal format, without currency symbols. For example '.30' for 30 cents, or '5.00' for \$5.00. This value will work in conjunction with the Interval/Interval Unit to determine the charges associated with the service usage over each billing period.

Alternate Start Time and Alternate Stop Time	These optional fields define the Alternate time period. They define the time at which the Alternate charge period begins and ends (the time period when the Default Rate interval and charge amounts do not apply, but the Alternate rate schedules do). Enter both the Start and Stop times in 24 hour clock format (hh:mm) values 00:00 to 23:59.
Over Charge Start Point (# of intervals)	The Over Charge Start Point defines the number of intervals that must be reached before the Over Charge rates take affect. For example, if the Over Charge Start Point is 50, when account usage reaches interval 51, the overage rates will be in affect for the remainder of service usage over the billing period.
Default Over Charge	Enter the charge rate for the Default time period to apply once the service usage for this time period has reached the Over Charge Start point. This value should be entered in decimal form, without currency symbols. For example '.30' for 30 cents, or '5.00' for \$5.00. Note: Usage is not totaled over both time periods, the Default Over Charge will only be charged when the Default service usage is beyond the Over Charge Start Point.
Alternate Over Charge	Enter the charge rate for the Alternate time period to apply once the service usage for this time period has reached the Over Charge Start point. This value should be entered in decimal form, without currency symbols. For example '.30' for 30 cents, or '5.00' for \$5.00. Note: Usage is not totaled over both time periods, the Alternate Over Charge will only be charged when the total Alternate time period service usage is beyond the Over Charge Start Point.

Press the **Update** button to save the new or modified Rate entry.

Taxes

Emerald Taxes are used to define the rate and structure of the taxes that can be applied to Emerald MBR and Service accounts during the billing process. Once a Tax rate has been defined, it can be assigned to any number of Emerald Service Types. Taxes are applied to MBR Service accounts during invoice generation, according to the Tax assigned to the Service Type, as well as the Tax Status of the Service account.

[New Tax](#)

Taxes	Description	Tax Type	Limit Type	Cumulative	
	WA State 8.1	Single 8.1000%	None	No	Delete

Emerald supports many types of tax structures, including those with single, double and piggybacked tax calculations, tax floors, tax ceilings and tax limits. Emerald fully supports the complex Internet tax laws that are currently being implemented throughout the United States, such as what has been established recently in the state of Texas.

Taxes	
Tax Type: <input type="text" value="Single"/>	Cumulative: <input type="text" value="No"/>
Amount: <input type="text" value="0"/>	Description: <input type="text"/>
Amount 2: <input type="text" value="0"/>	Description 2: <input type="text"/>
Limit Type: <input type="text" value="None"/>	Limit: <input type="text" value="0"/>
<input type="button" value="Update"/> <input type="button" value="Test"/>	

Choosing the **Taxes** Accounting Administrative option will present the display of all existing Tax Type definitions. Retrieve an existing Tax Type entry for view and/or edit by clicking on the desired entry. To remove a Tax Type, click the Delete link next on the selected entry. To add a new Tax Type, click the **New Tax Type** link. The Tax Type entry fields are described below.

Tax Type	Emerald supports three types of tax structures: ?? Single : Used when there is a single tax rate that is a calculated as a direct percent of the item cost. ?? Double : Used when there are two tax rates that apply to the same item cost, both are calculated independently as a direct percent of the item cost. The two taxes are reported and tracked separately. ?? Piggyback : Used when there are two tax rates that apply to the same item cost. However, the second tax rate is calculated on the sum of the item cost plus the first tax total (This structure is illegal in the United States, but exists in global scenarios). The two taxes are reported and tracked separately.
Cumulative	This option indicates whether the tax is to be applied individually to each charge item, or applied to the cumulative total charges for the MBR over the billing period. Choose 'Yes' if the tax is to be applied over the accumulated MBR billing period charges. Choose 'No' if the tax is to be applied individually per taxable item. Note: This selection will affect the application of Tax Limits, as an accumulative tax will apply the tax limits to the cumulative MBR charge totals and not individually per account charge. For example, if an Accumulative tax with a tax Floor of \$15.00 is applied to an MBR with 2 services charged at \$10/each, Emerald will apply no tax to the first \$10.00 service and only apply tax to the last \$5.00 of the second tax (\$20.00 MBR total, less the \$15.00 floor). A non-accumulative tax with a \$15.00 floor would not apply any tax to the above services, as the \$10.00 charge falls below the \$15.00 Floor in both cases.
Amount	Enter the first tax rate in its direct numeric form. For example, an 8.5% tax rate is entered '8.5'.
Description	Enter an identifying description for the Tax entry. This value will be presented within the 'Tax' pick lists throughout Emerald.
Amount 2	If a Double or Piggyback Tax Type has been selected, enter the second tax rate in its direct numeric form. As above, for an 8.5% tax rate, enter '8.5'. Otherwise, leave this field blank, or 0.
Description 2	Enter an identifying description for the second Tax (Amount2). This value will be presented as the tax description for this tax's totals on the Emerald tax reports.
Limit Type	Emerald supports the following tax Limit Types: ?? None : No tax limits will be imposed. ?? Floor : A Tax Floor defines what amount the item cost must reach before it is taxed. With a Floor Limit, tax will only be imposed if the item total reaches the Floor value. Tax will only be imposed on the item cost, less the Floor Limit amount.
Limit	If a Limit Type was selected, enter the amount of the limit in currency (for example, 40.00).

Press the **Update** button to save the new or modified Tax entry.

For a short example of the use of different tax structures and Tax Limits, the following examples will be based on a \$40.00 Service account being billed. The following table shows five different (non-accumulative) tax scenarios:

Tax Type	Limit Type	Limit Amount	Total Amount	Taxable Amount	Tax Rate	Tax2 Rate	Tax Charges
Single	None	0.00	\$40.00	\$40.00	8.5	0.0	3.40 + 0 = \$3.40
Double	None	0.00	\$40.00	\$40.00	8.5	1.5	3.40 + .60 = \$4.00
Piggyback	None	0.00	\$40.00	\$40.00	8.5	1.5	3.40 + .65 = \$4.05
Single	Floor	10.00	\$40.00	\$30.00	8.5	0.0	2.55 + 0 = \$2.55

Single	Maximum	2.00	\$40.00	\$40.00	8.5	0.0	Min (3.40, 2.00) = \$2.00
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Note:

Tax Types may have a tax floor or a tax maximum, but Emerald does not support having both within the same Tax definition.

Service Types

Emerald Service Types are used to define the rate plans your organization uses to charge for its services. Service Types allow you to define the billing characteristics of each service including the base recurring cost, usage charges, tax category, setup charge and associated billing group. Additionally, they also allow the pre-configuration of other service account characteristics, such as providing a default RADIUS and external systems configuration for users of the service type.

Service Type definition relies on the pre-configuration of several other Emerald configuration options including: Taxes, Rates, Charge Types, Billing Groups, and possibly External Systems, DNIS Groups and RADIUS vendor attributes. Therefore, it is recommended that the Emerald Administrator verify that all the necessary pre-configured options are established prior to beginning the Emerald Service Type configuration.

Choosing the **Service Types** Accounting Administrative option will present the display of all existing Service Types. Retrieve an existing Service Type entry for view and/or edit by clicking on the desired entry. To remove a Service Type, click the Delete link next on the selected entry. To add a new Emerald Service Type, click the **New Service Type** link.

[New Service Type](#)

Service Types	Service Type	Description	Cost	Tax	Setup Charge	External System	Group	RADIUS	Services	
	PPP	PPP Dialup	24.95	None	None	None	None	2	2	
	Shell	Shell Account	14.95	None	None	None	None	2	0	Delete
	ISDN	ISDN	24.95	None	None	None	None	3	0	Delete
	EMail	Email Only	5.00	None	None	None	None	3	0	Delete

Service Type

Service Type: Cost:

Description:

Apply Discount: Tax:

Setup Charge: Rate:

Commission: Group:

External System: DNIS Group:

Sort Order:

The Service Type entry fields are described below.

Service Type	Enter the identifying name for the Service Type. This description will be used within the 'Service Type' selection pick lists throughout Emerald.
Description	Enter a longer comment or description to clarify the Service Type. This description will appear on invoice line items of customers who subscribe to this service.
Cost	Enter the recurring base cost that will be charged for this service. This is the recurring charge that is applied to the account each service account pay period, regardless of the user's time/data usage.
Apply Discount	Choose 'Yes' to honor any discount associated with the Service account's Pay Period assignment (refer to the Emerald Pay Period configuration options). Choose 'No' to indicate that members of this Service Type are not eligible for Pay Period discounts.
Setup Charge	Enter the applicable one-time set up charge for this Service Type. Setup Charge options are configured by the Emerald Administrator within the Charge Types administrative option. If a setup charge is selected, the charge can be manually waived during MBR Service account creation. Setup Charges are only applied on the first service billing period. Leave blank or enter '0' if no Setup Charge applies.
Commission	Currently unused. Please see Administrative option General/Sales Person for additional note.
External System	Select the applicable External System to apply to users of this service type. This indicates the external system option that will be used to process charges for this type of account.
Tax	Select the applicable Tax Rate from the presented selection pick list. The selected Tax determines the tax rate applied each service pay period against the recurring cost of the Service (Service Type Cost field). Note: Service usage charges have an independent Tax rate selection assigned during Emerald Rate configuration.
Rate	If this Service type is to include a Rate structure that additionally charges the user based on time or data usage, select the appropriate Emerald Rate to assign to the Service Type. Any Rate selection will be billed <i>in addition</i> to the recurring service cost specified by the Service Type Cost field. The Emerald Administrator configures Emerald Rates within the Rates administrative option.
Billing Group	If the Service Type is only to be available to MBRs of a specific Billing Group, select the appropriate group from the Billing Group selection pick list. If the 'Global' Billing Group default is accepted, the Service Type will be available to all Emerald MBRs.
DNIS Group	If the Service Type is only able to call into a specific DNIS configuration, enable the DNIS (Dialed Number Identification Service) restrictions by selecting the DNIS Group from the selection pick list. The Emerald Administrator configures the DNIS Group options within the RADIUS administrative option.
Sort Order	Enter a numeric value to indicate the display order of this Service Type entry. The sort order is used to sort the entries from lowest to highest numerical order when the Service Type are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Service Type entry.

Setting up Default Settings for Service Types

While creating Emerald Service Types, defaults can be set up for other additional Service account entry fields. When the Service Type is selected during Service account entry, these default values will be automatically filled in on the account in order to provide a complete default configuration for the Service. The Service Type Default Setting entry fields are described below. All Default Setting entries are optional and can be over-riden on the Service account entry screen.

Default Settings

Only applied during service creation.

Login Limit:

Time Left:
Mins.

Pay Period:

Home Dir Size:

Send Bill:

Remote Access:

IEA Software, Inc.

Login Limit	This field indicates the default number of concurrent logins a Service may establish at one time. Note: Concurrency control must be enabled within RadiusNT/X in order for this feature to work.
Time Left	Used to indicate the default amount of system access time (in minutes) the Service will initially have available each Pay Period. This feature relies on the configuration of the RadiusNT/X Time Banking feature.
Pay Period	Select from the Pay Period selection pick list provided. This value is used to indicate the default Pay Period for billing of this Service. Pay Periods determine how often the Service will be billed (typically Monthly, Quarterly or Yearly).
Home Dir Size	Used to indicate the default directory size limit of the home directory provided for the user of the service.
Send Bill	Used to indicate the default selection regarding whether the service account should receive a copy of the MBR bill.
Remote Access	Used to indicate the default selection regarding whether the service will be eligible for Remote Access to the Emerald Customer Management Site for personal account queries.

Setting up Default RADIUS Configurations for Service Types

The Emerald Management Suite allows the Emerald Administrator to associate a specific RADIUS attribute default configuration per Emerald Service Types. This allows RADIUS to apply attributes to specific groups of users, according to service account Service Type. The provided RADIUS configuration will automatically default on every Service created under this Service Type, although the default configuration can be modified and/or added to on an individual Service account basis.

New RADIUS Service Type Default

RADIUS Service Type Defaults	Vendor	Attribute	Data	Type	
	RADIUS Standard	User-Service	Framed-User	Reply	Delete
	RADIUS Standard	Framed-Protocol	PPP	Reply	Delete

Note:

All Vendor Specific RADIUS Attributes should be configured within the RADIUS Emerald Administrative option prior to attempting to define the Service Type RADIUS default configurations.

Vendor:	RADIUS Standard
Attribute:	User-Service
Value:	Framed-User
Save	

Once a Service Type has been created, retrieve it for view or edit by clicking on the entry within the Service Type display window. Any pre-configured RADIUS Service Type Defaults will be displayed at the bottom of the Service Type entry page. To enter a new RADIUS Service Type default, click on the **New RADIUS Service Type Default** link.

The RADIUS Service Type default entry fields are described below.

Vendor	Select the appropriate Vendor from the pre-configured Vendor selection list for the desired RADIUS attribute.
Attribute	Select the appropriate Attribute ID from the attribute selection list. Only the attributes for the above selected Vendor will be available in the pick list.
Value	Select the desired attribute Value for the from the Value pick list. Only the values for the above selected Vendor/Attribute combination will be available in the pick list. If no Values pick-list is available (no Values currently configured within Emerald for the Attribute), enter the desired value directly in the text box.
Type	Most attributes are reply attributes, meaning they are sent from the RADIUS server back to the RADIUS client in an Access Accept response. However, some attributes can be configured as a check attribute, which tells the RADIUS server to check the attribute received from the RADIUS client against a value. Common check attributes are Caller-ID and NAS-Port-Type to limit a user to calling from a specific phone number or only user a certain type of service.

Press the **Save** button to save the new or modified RADIUS Service Type Default entry.

X-Stop Internet Filtering

If you use the 8e6 Technologies' X-Stop Internet filtering service, Emerald also allows the easy configuration of X-Stop filter settings on certain default attributes associated with a Service Type. An X-Stop configuration link will appear on the screen whenever the RADIUS Standard 'Class' Attribute combination is selected from the Radius Attribute selection screen. To add an X-Stop Filter, click on the **X-Stop Filter** link.

Once the X-Stop Filter Configuration window is open, you can specify what categories you would like to block, allow, monitor, etc., for this Service Type RADIUS Attribute default (please consult your X-Stop documentation for information on the filter settings). As filters are entered, the X-Stop configuration value will be updated and presented within the text field at the top of the page. Press the **Update** button to save the entry and return to the RADIUS Attribute Value entry screen. Click the Save button on the RADIUS Attribute Value screen to save the Class attribute value with the auto-configured X-Stop configuration.

For more information on 8e6 Technologies' X-Stop Internet filtering

service, access their web page at <http://www.8e6technologies.com/>.

Discounts

Emerald provides for the configuration of Discounts that can be applied directly to individual services upon creation, over all members of a particular Service Type, or those MBRs opting for a particular payment method (for example, pre-paying yearly). A typical example is providing an educational discount, in which there may be a 10% discount to educators and students.

Choosing the Discounts

Accounting Administrative option will present the display of all existing Discount entries. Retrieve an existing Discount entry for view and/or edit by clicking on the desired entry. To remove a Discount option, click the Delete link next on the selected entry. To add a new Emerald Discount, click the **Discount** link.

[New Discount](#)

Discounts	Discount	Percentage	Group	
	Normal	0.00%	Global	Delete
	Business	10.00%	Global	Delete
	School	20.00%	Global	Delete
	Tradeout	100.00%	Global	Delete

The Discount entry fields are described below.

Name	Enter the identifying name for the Discount. This description will be used within the 'Discount' selection pick lists throughout Emerald.
Discount	Enter the amount of the discount. Enter the value in decimal form without currency or percentage symbols. For example, '5.00' for either a \$5.00 or 5% discount.
Static	This field indicates the type of Discount. Choose ' Static ' if the value is a flat discount amount, such as \$5.00. Choose ' Percentage ' if the discount will be entered as a percentage of the cost to which it is applied, such as a 5% discount.
Billing Group	If the Discount option is only to be available to MBRs of a specific Billing Group, select the appropriate group from the Billing Group selection pick list. If the 'Global' Billing Group default is accepted, the Discount will be available to all Emerald MBRs
Sort Order	Enter a numeric value to indicate the display order of this Discount entry. The sort order is used to sort the entries from lowest to highest numerical order when the Discounts are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Discount entry.

Billing Cycles

Billing Cycles are a key component in the configuration of your account billing method. Billing Cycles are assigned to Master Billing Records primarily to specify the date in which billing will occur, typically relating the MBR to Monthly, Anniversary or Calendar related billing dates. MBR Billing Cycles are used in conjunction with Service Pay Periods to define both the date and length of an accounts billing period.

When a Billing Cycle is chosen for an MBR, the selection determines many of the primary billing characteristics of the account. Billing Cycles define not only the date alignment of the billing period (monthly, anniversary, calendar), but also whether the MBR account is Balance Forward or Renewal, the number of days in advance the account is billed (renewal notice sent) and possibly charged, if set up for automatic payment (configured for credit card or EFT). It is possible to define multiple custom billing cycles, however in general, the Emerald provided defaults of Monthly, Anniversary are sufficient.

[New Billing Cycle](#)

Billing Cycles	Description	Type	Balance Forward	Invoice Bill Days	EFT Bill Days	Group	
	Anniversary	Anniversary	No	20	5	Global	Delete
	Monthly	Monthly	YES	20	5	Global	Delete
	Calendar	Calendar	YES	20	5	None	Delete

Choosing the **Billing Cycles** Accounting Administrative option will present the display of all existing Billing Cycles. Retrieve an existing Billing Cycle entry for view and/or edit by clicking on the desired entry. To remove a Billing Cycle, click the Delete link next on the selected entry. To add a new Emerald Billing Cycle, click the **New Billing Cycle** link. The Billing Cycle entry fields are described below.

Description	Enter the identifying name for the Billing Cycle. This description will be used within the 'Billing Cycle' selection pick lists throughout Emerald.
Type	Select the type of Billing Cycle being created. The Billing Cycle type determines when the Emerald will perform the billing on the account. The options are described below: ?? Monthly : Sets the start of the billing cycle to the first (1 st) of the month. ?? Anniversary : Sets the start of the billing cycle to match the MBR Start Date, or anniversary, of the service. For example, if a service Start Date is the 18 th of the month, the service will be billed on the 18 th of the month for each subsequent billing period. ?? Calendar : Like the "Monthly" option, also sets the start of the billing period to the 1 st of the month; however, this option will additionally align the Pay Period of the service to a true calendar-based cycle. For example, Quarterly pay period billing will be aligned with standard calendar-based Quarters, instead of just billing at quarterly three month intervals beginning from the service account Start Date. See the Emerald User's guide for more detailed information on MBR Billing Cycle and service Pay Period options and behavior.
Balance Forward	Indicates if this Billing Cycle will configure the assigned MBRs to be Renewal-based or Balance Forward customer accounts. Choose 'Yes' to set the Billing Cycle to a Balance Forward customer type option. Choose 'No' to set the Billing Cycle to a Renewal customer type option. Renewal vs Balance Forward billing methods are described in detail within the Emerald User's Guide. However,

	the primary difference between the two methods is that Renewal customers work, in effect, like a pre-paid account, and Balance Forward customers are billed after the services have already been provided.
Invoice Bill Days	Enter the number of days prior to the billing period due date (service account Expire Date) that an invoice should be distributed to the MBR.
EFT/CC Bill Days	Enter the number of days prior to the billing period due date (service account Expire Date) that the automatic payment transaction (credit card or EFT) for the MBR account should be processed, if configured to do so.
Sort Order	Enter a numeric value to indicate the display order of this Billing Cycle entry. The sort order is used to sort the entries from lowest to highest numerical order when the Billing Cycles are presented in selection pick lists throughout Emerald.
Billing Group	If the Billing Cycle is only to be available to MBRs of a specific Billing Group, select the appropriate group from the Billing Group selection pick list. If the 'Global' Billing Group default is accepted, the Billing Cycle will be available to all Emerald MBRs.
Billing Day	The day of the month that an account should be billed. When an account is created it will pro-rate to this day.

Press the **Update** button to save the new or modified Billing Cycle entry.

Pay Periods

Each MBR Service account is associated with a Pay Period that defines the frequency at which the billing for that particular Service occurs. Used in conjunction with the MBR Billing Cycle, the Pay Period determines the billing period of each MBR Service. Because Pay Periods are defined per Service and not MBR, Emerald provides the ability to create an MBR that may have one service billed at a flat rate quarterly, but have an additional service perhaps based on network usage that is billed monthly. Emerald

[New Pay Period](#)

Payment Periods	Pay Period	Service Type	Period	Discount	Setup Charge	Group	
	Monthly	All	1	0.00%	Yes	Global	
	Quarterly	All	3	20.00%	Yes	Global	Delete
	Six Months	All	6	30.00%	Yes	Global	Delete
	Yearly	All	12	40.00%	Yes	Global	Delete

Pay Periods define the number of months that the pay period spans, any automatic discounts that are applied to services with the Pay Period (for example, offering a 10% discount if the user pre-pays yearly), as well as any setup costs applicable to the pay period.

Payment Periods

Pay Period:

Service Type:

Period: Months

Discount Amount:

Setup Charge:

Billing Group:

Sort Order:

Choosing the **Pay Periods** Accounting Administrative option will present the display of all existing Pay Period options. Retrieve an existing Pay Period entry for view and/or edit by clicking on the desired entry. To remove a Pay Period option, click the Delete link next on the selected entry. To add a new Emerald Pay Period, click the **Pay Period** link. The Pay Period entry fields are described below.

Pay Period	Enter the identifying name for the Pay Period. This description will be used within the 'Pay Period'
------------	--

	selection pick lists throughout Emerald.
Service Type	If the Pay Period option is only to be available to Service accounts of a specific Service Type, select the appropriate type from the Service Type selection pick list. If the 'All' Service Type default is accepted, the Pay Period option will be available to all Emerald Services.
Period	Enter the number of months in the Pay Period.
Setup Charge	Option to indicate if the Setup Charge associated to the Service Type applies to MBR Service accounts using this Pay Period. Choose 'Yes' to apply the setup charge, 'No' if not. For example, Service Setup Charges do not apply to those billed Quarterly.
Discount	Enter the amount of the discount applicable to services using this Pay Period option. Enter the value in decimal form without currency or percentage symbols. For example, '5.00' for either a \$5.00 or 5% discount. Select from the drop down the type of Discount entry. Choose ' Static ' if the value is a flat discount amount, such as \$5.00. Choose ' Percentage ' if the discount will be entered as a percentage of the cost to which it is applied, such as a 5% discount. Leave blank or enter '0' if no Discount applies. The discount can be over-ridden individually per Service account.
Billing Group	If the Pay Period option is only to be available to MBRs of a specific Billing Group, select the appropriate group from the Billing Group selection pick list. If the 'Global' Billing Group default is accepted, the Pay Period will be available to all Emerald MBRs
Sort Order	Enter a numeric value to indicate the display order of this Pay Period entry. The sort order is used to sort the entries from lowest to highest numerical order when the Pay Periods are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Pay Period entry.

Payment Types

Emerald offers several Payment Types used to categorize the payments received from your customers during payment entry. Emerald's default Payment Type options are standard: Cash, Check, Credit Card, Bank Transfer and Other. The Emerald Administrator is not able to add to or delete from the provided Payment Types, but the options can be modified and configured to apply to only specific Billing Groups.

Payment Type	Amount	GL Code
Cash	0.00	None
Check	0.00	None
Credit Card	0.00	None
Bank Transfer	0.00	None
Other	0.00	None

Choosing the **Payment Types** Accounting Administrative option will present the display of all existing Payment Types. Retrieve an existing Payment Type entry for view and/or edit by clicking on the desired entry.

The Payment Type entry fields are described below.

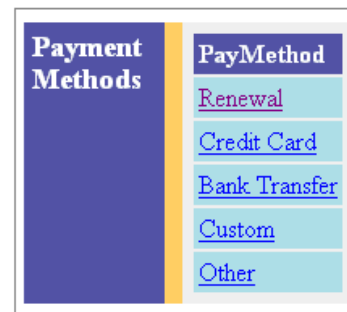
Payment Type	The identifying description of the Payment Type. This description will be used within the 'Payment Type' selection pick lists throughout Emerald.
Billing Group	If the Payment Type is only to be available to MBRs of a specific Billing Group, select the appropriate group from the Billing Group selection pick list. If the 'Global' Billing Group default is accepted, the Payment Type will be available to all Emerald MBRs

Sort Order	Enter a numeric value to indicate the display order of this Payment Type entry. The sort order is used to sort the entries from lowest to highest numerical order when the Payment Types are presented in selection pick lists throughout Emerald.
Charge	This option allows you to charge an addition amount for different payment types.
	The second charge option determines the kind of change to apply. The charge can be a static or a percentage.

Press the **Update** button to save the new or modified Payment Type entry.

Pay Methods

Each MBR is associated with a Payment Method that defines the method in which the account will be billed and paid. The Emerald Payment Method default options include Renewal (Invoice), Credit Card, Bank Transfer, Custom, and Other. The Emerald Administrator is only able to customize the information within the Emerald-provided Pay Methods; Payment Methods cannot be created nor deleted.



Payment Method

Pay Method:

Sort Order:

Choosing the **Pay Methods**

Accounting Administrative option will present the display of all existing Payment Method options. Retrieve an existing Payment Method entry for view and/or edit by clicking on the desired entry.

The Pay Methods entry fields are described below.

Pay Method	Enter an identifying description of the Payment Method. This description will be used within the 'Payment Method' selection pick lists throughout Emerald.
Sort Order	Enter a numeric value to indicate the display order of this Payment Method entry. The sort order is used to sort the entries from lowest to highest numerical order when the Payment Methods are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Payment Method entry.

Quick Tip:

If the 'Custom' and 'Other' Payment Methods options are assigned to an MBR, Emerald will not auto-generate any type of invoice for the MBR, as the formats and methods for bill generation are undefined. This option should only be assigned to MBRs in which your organization has another billing generation option in place.

Send Methods

Emerald Send Methods are configured to define the methods that account billings, such as invoices and statements, can be distributed. The Emerald Send Method default options include Postal Mail and two email format options (text and HTML). The Emerald Administrator is only able to customize the information within the Emerald-provided Send Methods; Send Methods cannot be created nor deleted.

Choosing the **Send Methods** Accounting Administrative option will present the display of all existing Send Method options. Retrieve an existing Send Method entry for view and/or edit by clicking on the desired entry. The Send Methods entry fields are described below.

Description	Enter an identifying description of the Send Method. This description will be used within the 'Send Method' selection pick lists throughout Emerald.
Charge	The first field is the amount to charge for this type of Send Method. Note: This option is only version 4.1 or higher.
	The second field determines the type of charge to be static or a percentage. Note: This option is only version 4.1 or higher.
Sort Order	Enter a numeric value to indicate the display order of this Send Method entry. The sort order is used to sort the entries from lowest to highest numerical order when the Send Methods are presented in selection pick lists throughout Emerald.

Press the **Update** button to save the new or modified Send Method entry.

System Configuration

Most of the configuration options that apply system-wide throughout Emerald are defined using the **System** option under the Emerald Administrative menu. The System options include configuration for the Emerald report set, external systems, system logs and the Emerald Netflow Collection component. Each of the System configuration options is presented below.



Reports

At any time, custom reports can be created against the Emerald user database to expand upon the set of standard reports that the Emerald Management Suite provides. Custom reports are created and managed independently by your organization and can therefore be tailored towards your specific informational needs. On Windows systems, and if using Crystal Reports, after a custom report has been created, it can be configured as one of the regular selections available to the Emerald Operators under the Emerald 'Reports' main menu option. Adding customizable reports, however, is only available on Windows platform installations. On non-Windows installations, any customized reports must be run outside of the Emerald Suite, from within the report environment in which it was created.

[New Report](#)

Report	File Name	Group	
Expired Accounts	expacctts.rpt		Delete
Revenue By Service Type	serv_rev.rpt		Delete
Monthly Call Summary	call_sum.rpt		Delete
Bad CC Transactions	ccbad.rpt		Delete
Daily Payments	payments.rpt		Delete
Daily New Users	newusers.rpt		Delete

Choosing the **Reports** System Administrative option will present the display of the existing report set (including both the standard Emerald reports, plus any custom reports that may have been added). Retrieve an existing Report entry for view and/or edit by clicking on the desired entry. To remove a Report option, click the Delete link next on the selected entry. To add a new Emerald Report, click the **New Report** link.

The Report entry fields are described below.

Report	Enter an identifying description of the Report. This description will be used within the 'Report' selection pick lists throughout Emerald.
File Name	Enter the actual filename of the report. Note: This file should be located in the global Reports path.
Parameters	If a report has parameters, set this option to yes. Emerald will present an interim screen with the list of defined parameters in the report, allowing the operator to specify the parameters.
Billing Group	Allows restricting of which Operators (via their allowed Billing Groups) can view the report.
Operator Group	Allows restricting of which Operator Groups can view the report.

Press the **Update** button to save the new or modified Report entry.

Quick Tip:

Available only on Windows installations: In order to create custom reports, or to modify existing Emerald reports (like adding your company logo to invoices), you will need to separately purchase, install and configure the Seagate Crystal Reports 8.0 Professional application. Run-time versions of the Crystal Reports engine (including the Web Component and Page servers) and Crystal Report Viewer are included as part of the standard Emerald Management Suite for Windows installation package, which will allow you to generate, view and print the standard Emerald report set. For more information on Crystal Reports, see the Seagate Software Crystal Reports Web site at <http://www.seagatesoftware.com/products/crystalreports/>.

External Systems

Emerald allows for the configuration of external systems that will synchronize Emerald user information with other types of systems, such as email servers or authentication sources such as UNIX or NT user accounts, or LDAP synchronization sources. The open nature of the Emerald Suite allows many third party applications to easily interact with the Emerald account data. In order to accomplish this interaction, each

[New External System](#)

External Systems	ESID	Name	Description	Service Types	
	1	Mailsite 4	Mailsite 4	0	Delete

external system and its type must be defined within the Emerald system. Typical installations of Emerald will not use any external systems, or will just use the Message Transport Agent (MTA) to establish interaction with a mail server.

External System

Name:

Description:

Export Type:

Export Format:

Export Mode:

Mail Host:

Login:

Password:

Log File/URL:

Choosing the **External Systems** System Administrative option will present the display of the currently configured external systems. Retrieve an existing External System entry for view and/or edit by clicking on the desired entry. To remove an external system configuration, click the Delete link next on the selected entry. To add a new Emerald external system configuration, click the **New External System** link. The Service Types field indicates the number of Service Types that currently have the External System assigned.

The External System configuration fields are described below.

Name	Enter an identifying description of the External System being configured. This description will be used within the external system/CC/EFT processing selection pick lists throughout Emerald.
Description	Enter a longer description or comment regarding the external system configuration.
Export Type	Select the appropriate External System Type from the available options presented: ?? External: Used for Mailsite, LDAP, or EmerAuth ?? File: Delimited file export ?? HTTP: HTTP post to remote web server ?? XML: XML file export
Export Format	Select the appropriate export format from the available options presented.
Export Mode	Choose the type of export from the following available options:

	?? Append: The exported file will remain and be appended to ?? Overwrite: The exported file will be rewritten each processing cycle.
Mail Host	Enter the name of the mail server that is accepting delivery of mail to these accounts.
Login Password	Enter the login and password values, respectively, for Emerald to login remotely for external system processing, if necessary. Note: Currently these values are only used within Emerald in HTTP post mode to login to the web server.
Log File/URL	Enter the file name of where Emerald should send the export data.

Press the **Update** button to save the new or modified External System entry.

Note:

Some external system configurations should be entered within the Emerald Scheduler. In these cases, within the External System display will show a “Schedule” link on the system entry that when selected will present the Scheduler Configuration screen.

System Log Filters (Sys Log Filters)

Emerald provides the ability to filter the system messages that get saved within the Emerald System logs. A System Log Filter can be defined to “filter out”, or ignore, certain system messages that do not need to be recorded in the log detail file.

Choosing the **Sys Log Filters** System Administrative option will present the display of the currently configured system log filters. Retrieve an existing system log filter entry for view and/or edit by clicking on the desired entry. To remove a system log filter, click the Delete link next on the selected entry. To add a new system log filter, click the **New SysLog Filter** link.

The System Log Filter entry fields are described below.

IP Address	Enter the IP address of the server to which this filter applies. Wildcards are allowed within the IP string in order to filter upon IP Ranges (for example, '207.53.*'). If it is a global filter and applies to all system servers, then enter just the wildcard symbol '*'.
Severity	Select the appropriate system message error type from the available options presented. The severity options are pre-configured and match the types of Emerald system messages that occur during system operation.
Match String	Enter the text string indicative of the messages that you would like filtered from the system log when they are received. The Match String entry is not case sensitive (for example, 'h' will match both 'h' and 'H') and will match partial fragments (for example, 'login' will match and filter all system messages that contain the word 'login'.)

Press the **Update** button to save the new or modified System Log Filter entry.

Flow Filter Groups

[New Flow Filter Group](#)

Flow Filter Groups	Flow Filter Group	Description	Service	
	Testing	Testing	joe	Delete

Once Flow Filters are set up Emerald will provide logging and billing on network flow statistics. A network flow is defined as a unidirectional sequence of packets between given source and destination endpoint. Flow Filter Groups are a set of filters that are associates to a specific service. This allows Emerald to associate the usage data and bill the respective service.

NetFlow Filter Group

Name:

Description:

Sort Order:

Service ID: [Pick](#)

Choosing the **Flow Filter Group** System Administrative option will present the display of the currently configured system log filters. Retrieve a Flow Filter Group entry for view and/or edit by clicking on the desired entry. To remove a Flow Filter Group filter, click the Delete link next on the selected entry. To add a new Flow Filter Group, click the **New Flow Filter Group** link.

The Flow Filter Group entry fields are described below.

Name	Name of the Flow Filter Group
Description	Description of the Flow Filter Group
Sort Order	Enter a numeric value to indicate the display order of this Flow Filter Group entry. The sort order is used to sort the entries from lowest to highest numerical order when the Flow Filter Groups are presented in selection pick lists throughout Emerald.
Service ID	The Service ID to associate the Flow Filter Group to. You can click on the pick option to search for the service and have it automatically filled in for you.

Flow Filters

Flow Filters are used to determine whether a packet should be logged or discarded. A large number of filters can have a performance impact. The order of the filters are very important, as the first filter to match will be used, and no other filters will be search for. A packet may only be associated to one filter.

Retrieve an existing Flow Filter entry for view and/or edit by clicking on the Flow Filter Group and then selecting the entry of the Flow Filter. To remove a Flow Filter entry, click the Delete link next to the selected entry. To add a new Flow

NetFlow Filter Group

Name:

Description:

Sort Order:

Service ID: [Pick](#)

[New Flow Filter](#)

Flow Filters	Filter Type	Src IP	Src Mask	Src Port	Dest IP	Dest Mask	Dest Port	Protocol
No Flow Filters								

Filter entry, click the **New Flow Filter** link. The Flow Filter Group entry fields are described below.

NetFlow Filter		
Filter Type: <input type="text" value="Include"/>	Protocol: <input type="text" value="None"/>	Sort Order: <input type="text" value="2"/>
Source IP: <input type="text"/>	Source Mask: <input type="text"/>	Source Port: <input type="text"/>
Dest IP: <input type="text"/>	Dest Mask: <input type="text"/>	Dest Port: <input type="text"/>
<input type="button" value="Update"/>		

Filter Type	If set to exclude, matching records will be ignored (no further Flow Filters will be searched for). Otherwise matching record will be kept.
Protocol	Protocol to match on. Set to none to match any protocol.
Sort Order	Search Order for the flow filter. Flow Filters are searched in order of their Flow Filter Group Sort Order, then the Flow Filter Sort Order. The first matching filter is used (no other Flow Filter will be searched for). All Flow Filters in the Flow Filter Group are searched, before checking the Filter Group with the next highest sort order. The Sort Order is searched from the lowest to the highest value.
Source IP	Source IP Address to match on. Leave blank for all IP Addresses.
Source Mask	Mask to apply to Source IP Address. Set to 255.255.255.255 for a single IP address to match.
Source Port	Source Port to match on. Leave blank for all ports.
Dest IP	Destination IP Address to match on. Leave blank for all IP Addresses
Dest Mask	Mask to apply to Destination IP Address. Set to 255.255.255.255 for a single IP address to match.
Dest Port	Destination Port to match on. Leave blank for all ports.

Note:

This option is only supported in version 4.1 and higher.
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Global Configuration

The **Global** configuration option under the Emerald Administrative menu is used to define options that are global to the Emerald Management Suite. The system options include your company name and password restrictions, FTP and SMTP settings, invoice formats, RadiusNT/X general configuration options, and system search display limits. The Global configuration options are presented below.

General	Accounting	System	Global	RADIUS	Scheduler	Security	Web Config	Client
Global								
[Client] [FTP] [SMTP] [Reports] [Accounting] [CC Batch] [ACH Batch] [Web] [Logs]								

Client

The Client Global configuration options allow your organization to set some data entry restrictions on Emerald Operators when they are establishing passwords on user accounts. The Global Client options are described below. When the Description value is clicked within the Client options display window, an entry box prompting for the new Value entry for the option will be presented for each of the following Client configuration fields.

Global Configuration (Client)	Description	Value
	Hide Passwords	Show Passwords
	Min Password Length	3
	MBR Requires Address	Yes
	Unique Logins Per Domain	No

Hide Passwords	If activated, this option will hide passwords displayed on the Service account entry screens. If the option is not activated, the full text of all password values will remain visible.
Min Password Length	Enter the desired minimum password length. This is a numeric value, usually between 3 to 8. This option will enforce that all passwords entered for Emerald Service accounts be at least this length in order to be considered valid and saved.
MBR Requires Address	This option controls the enforcement of the entry of an MBR address when they are created. If 'No' is selected then no address information will be required during a new MBR entry.
Unique Logins Per Domain	This option controls the enforcement of the unique logins per domain. If "No" is selected then the login must be unique from all other services. If "Yes" is selected then there can be the same login for two different services if they are in different domains. Note : This is only version 4.2 and higher.

Note:

The Hide Passwords options will only apply to Emerald Operators that do not have 'Administrative' privileges. Emerald Administrators will always be able to see the password values, regardless of whether the 'Hide Passwords' option is activated.

Press the **Update** button to save any new or modified Client option value changes.

FTP

The FTP Global option provides for the set up of default configurations applied toward FTP user accounts established for your users. This is for use when you are using a directly supported FTP server (like Serv-U). The

Emerald Administrator is only able to customize the information within the Emerald-provided Global FTP configuration options; the options cannot be deleted, nor added to.

Choosing the **FTP** Global Administrative option will present the display of the current FTP user attribute configuration. Retrieve an existing attribute value for view and/or edit by clicking on the desired entry. The Global FTP options are described below. When the Description value is clicked within the FTP Configuration display window, an entry box prompting for the new Value entry for the option will be presented for each of the following configuration fields. The FTP Configuration options are described below.

Global Configuration (FTP)	Description	Value
	FTP Allow Directories	No Sub-Directories
	FTP Max Dir Size	4096
	FTP Default DIR UNC	c:\program files\emerald\ftp

FTP Allow Directories	If selected to do so, this option will restrict the users ability to create subdirectories under their FTP user directory. If you select the 'No Sub-Directories' option, users will not be allowed to create their own directories.
FTP Max Directory Size	To restrict users to a maximum FTP directory size, enter the maximum size value.
FTP Default DIR UNC	Specify the base FTP directory for your FTP users by providing the directory path. If specified, Emerald will create this directory for your users upon account creation. Typically this is a directory in UNC format \\server\users . Emerald will append a \username by default to this directory when it is created.

Press the **Update** button to save any new or modified FTP option value changes.

SMTP

The Emerald Management Suite has a built in SMTP client that is used to automatically send invoices and statements, as well as mail other information, to your customers. In order for the mail client to work correctly, it needs to be fully configured before billing. The SMTP Global option provides for the configuration of the SMTP client. The Emerald Administrator is only able to customize the information within the Emerald-provided Global SMTP options; the options cannot be deleted, nor added to.

Global Configuration (SMTP)	Description	Value
	Email Smart Host	mail.ntworld.com
	Email Domain	ntworld.com
	Email Admin	daler@ntworld.com
	Email Accounts	daler@ntworld.com
	Email Re-Write Style	None
	Email AutoSync	No

Choosing the **SMTP** Global Administrative option will present the display of the current SMTP configuration. Retrieve an existing configuration value for view and/or edit by clicking on the desired entry. The Global SMTP options are described below. When the Description value is clicked within the SMTP Configuration display window, an entry box prompting for the new Value entry for the option will be presented for each of the following configuration fields. The SMTP Configuration options are described below.

Email Smart Host	Enter the email server name.
Email Domain	Enter the full email domain name.
Email Admin	Enter the full email address, whereas the value will show in the From: line of all non-accounting related (such as incidents) mailings sent to users.
Email Accounts	Enter the full email address, whereas the value will show in the From: line of all accounting related (invoices and statements) mailings sent to users.

Email Re-Write Style	This option indicates if the from/to email addresses will be labeled with something other than the direct email address. Note: This option is currently not used with any integrations.
Email AutoSync	This option is no longer used. You can configure AutoSync settings using the scheduler.

Press the **Update** button to save any new or modified SMTP option value changes.

Reports

The Reports Global option provides for the configuration of the Emerald report and web servers. Choosing the **Reports** Global Administrative option will present the display of the current Report configuration. Retrieve an existing configuration value for view and/or edit by clicking on the desired entry. The Global Report options are described below. When the Description value is clicked within the Reports Configuration display window, an entry box prompting for the new Value entry for the option will be presented for each of the following option fields. The Emerald Administrator is only able to customize the information within the Emerald-provided Global Report options; the options cannot be deleted, nor added to. The Global Reports Configuration options are described below.

Default Print Format	When exporting Crystal Reports to a web browser, Emerald can convert to several formats including PDF, RTF, and HTML. This sets the default format if the operator has not selected a default format.
HTML Export Format	The HTML Format to export in. There are several formats based on HTML 3.0 only, HTML 3.2 and IE additions to HTML 3.2.
Reports Directory	The directory where all reports reside. This normally should be left blank, and will default to your Web\Reports directory.

Press the **Update** button to save any new or modified Report option value changes.

Note:

The Emerald Management Suite provides a customizable set of standard reports that define the formats for Emerald MBR summaries, invoices and statements. These reports, by default, are located on the report server defined above. The default report formats can be over-ridden on a per Billing Group basis. See the Billing Group configuration earlier for more information on default and pre Billing Group reports.
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Accounting

The Accounting Global options allow you to set the default system wide accounting behavior. This configuration includes setting up the default credit card and ACH batching options and the default behavior for setting and managing Emerald credit limits and account expirations.

Choosing the **Accounting** Global Administrative option will present the display of the current Accounting configuration. Retrieve an existing configuration value for view and/or edit by clicking on the desired entry. The Global Accounting options are described below. When the Description value is clicked within the Accounting Configuration display window, an entry box prompting for the new Value entry for the option will be presented for each of the following option fields. The Emerald Administrator is only able to customize the information within the Emerald-provided Global Accounting options; the options cannot be deleted, nor added to. The Global Accounting Configuration options are described below.

Global Configuration (Accounting)	Description	Value
	Default Expire Grace Period (Days)	7
	Setup Free Period Before Billing (Days)	7
	Setup Expire Grace Period (Days)	7
	Batch Time Min	0
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Default Expire Grace Period (Days)	Enter the number of days that each Service account will be allowed to still work after the Service Expire Date. This allows service to continue when payment is not received on time. This is also considered to be a permanent default grace period for the service.
Setup Free Period Before Billing (Days)	Enter the number of days before the initial billing of the services. The service's billed thru and expire date will initially be set to this value and the service will not be billed for these days.
Setup Expire Grace Period (Days)	Enter the number of days that each MBR account will be allowed to still work after their initial Expire Date. This allows service to continue when payment is not initially received on time. This is also considered to be a temporary default grace period for the MBR and once payment is received, this value is cleared on the MBR.
Batch Time Minimum	Indicates the number of days that an account's bill date must be beyond during billing in order for an interim invoice to be created.
Inactivate MBR w/non-zero balance	When you close an MBR, it is not changed to be inactive, unless the Balance is brought to zero. If you set this to yes, the MBR will be inactivated, regardless of the balance, when you close it.
Prorate Days on Cancel	If you do not want days to be prorated on service/mbr close/cancel, then set this value to no. If set to no, only full months are credited back. If set to yes, unused days and months are credited back.
Invoice Next Term Max Days	This is the maximum number of days between today and a services Billed Thru date for the invoice next term option to include that service.
Print 0 Balance or Credit Statements	When creating statements, if the ending balance of the statement is 0 or a credit and this option is set to yes, the Sent Date of the Statement will be set to today, preventing the statement from being printed/mailed.
Send Receipts	This option indicates the default as to whether the system should automatically email a receipt to the associated account whenever a payment transaction has been completed within the system.

Press the **Update** button to save any new or modified Accounting option value changes.

CC Batch

The CC Batch Global option provides for the configuration of the primary external credit card system transaction processing systems. The Emerald Administrator is only able to customize the information within the Emerald-provided Global CC Batch options; they cannot be created nor deleted.

Choosing the **CC Batch** Global Administrative option will present the display of the current Credit Card Batch configuration. Retrieve an existing configuration value for view and/or edit by clicking on the desired entry. The Global CC Batch options are described below. When the Description value is clicked within the display window, an entry box prompting for the new Value entry for the option will be presented for each of the following configuration fields. The CC Batch options are described below.

Global Configuration (CC Batch)	Description	Value
	CC Batch Out	BatchIn.dat
	CC Batch In	BatchOut.dat
	CC Batch Limit	500
	CC Batch Type	IC Verify w/AVS
	CC Batch Merchant-ID	
	CC Batch Store	
	CC Batch Terminal	
	CC Import Type	Leave import file after Import
	CC Export Type	Append to current export file
	Rebatch Tries	0
	Rebatch Interval (days)	0

CC Batch Out	Enter the physical filename of the CC Batch Out file that Emerald will create during the credit card transaction batch out process.
CC Batch In	Enter the physical filename of the CC Batch In file that will be created by the credit card transaction system that Emerald will read in and process during the credit card transaction batch in process.
CC Batch Limit	If the credit card processing system that you are using has a limit to the number of records that can be processed in one batch, specify that limit.
CC Batch Type	Select the name of the CC processing software installed on the system.
CC Batch Merchant ID	Enter the CC Batch Merchant ID assigned and provided by your CC processing company.
CC Batch Store	Enter the CC Batch Store ID assigned and provided by your CC processing company.
CC Batch Terminal	Enter the CC Batch Terminal ID assigned and provided by your CC processing company.
CC Processor Address	For real time formats, enter the Address of the CC processing service.
CC Import Type	Indicates what the system should do with the import batch file after it has been processed.
CC Export Type	Indicates what the system should do with the export batch file after it has been processed.
Rebatch Tries	Enter the number of times that a credit card batch will be re-processed.
Rebatch Interval (days)	Enter the number of days waited in between re-batch attempts
CC Login	If you CC processing system requires a login identity, enter the appropriate login.
CC Password	If you CC processing system requires a login identity, enter the appropriate password.

Press the **Update** button to save any new or modified CC Batch configuration option value changes.

ACH Batch

The ACH Batch Global option provides for the configuration of the primary external credit card system transaction processing systems. The Emerald Administrator is only able to customize the information within the Emerald-provided Global ACH Batch options; they cannot be created nor deleted.

Choosing the **ACH Batch** Global Administrative option will present the display of the current ACH Processing Batch configuration. Retrieve an existing configuration value for view and/or edit by clicking on the desired entry. The Global ACH Batch options are described below. When the Description value is clicked within the display window, an entry box prompting for the new Value entry for the option will be presented for each of the following configuration fields. The ACH Batch options are described below.

Global Configuration (ACH Batch)	Description	Value
	ACH Batch Out	ACHBatchIn.dat
	ACH Batch In	ACHBatchOut.dat
	ACH Batch Limit	0
	ACH Merchant-ID	
	ACH Batch Type	None
	ACH Import Type	Leave import file after Import
	ACH Export Type	Append to current export file

ACH Batch Out	Enter the physical filename of the ACH Batch Out file that Emerald will create during the transaction batch out process.
ACH Batch In	Enter the physical filename of the CC Batch In file that will be created by the credit card transaction system that Emerald will read in and process during the credit card transaction batch in process.
ACH Batch Limit	If the credit card processing system that you are using has a limit to the number of records that can be processed in one batch, specify that limit.

ACH Merchant ID	Enter the ACH Merchant ID assigned and provided by your ACH processing company.
ACH Batch Type	Select the name of the ACH processing software installed on the system.
ACH Import Type	Indicates what the system should do with the import batch file after it has been processed.
ACH Export Type	Indicates what the system should do with the export batch file after it has been processed.
ACH Processor Address	For real time formats, enter the Address of the ACH processing service.
ACH Login	If you ACH processing system requires a login identity, enter the appropriate login.
ACH Password	If you ACH processing system requires a login identity, enter the appropriate password.

Press the **Update** button to save any new or modified ACH Batch configuration option value changes.

Web

The Web Global option provides for the set up of the default web behavior of the system, including limiting the number of entries returned on user database searches and limiting the number of account invoices and statements returned on Emerald Previews. Choosing the **Web** Global Administrative option will present the display of the current web configuration. Retrieve an existing attribute value for view and/or edit by clicking on the desired entry. The Global Web options are described below. When the Description value is clicked within the Web Configuration display window, an entry box prompting for the new Value entry for the option will be presented for each of the following configuration fields. The Web Configuration options are described below.

Global Configuration (Web)	Description	Value
	Idle timeout (Seconds)	3600
	Search Results Max	100
	Preview Results Max	100

Idle timeout (Seconds)	Indicates the maximum amount of time an Emerald session can sit open with no activity before timing out and forcing the user to log back in. Enter the value in number of seconds. This value must be greater than 300.
Search Results Max	To limit the number of items returned on Emerald searches, enter the maximum number desired. Note: This is a physical record limit; there will be no “page” option to see items over the number of records specified here. ‘0’ specifies no maximum. Note: This value must be 25 or more in order to be enforced by the system.
Preview Results Max	To limit the number of items returned on Emerald Previews, enter the maximum number desired.
Customer Website Login URL	The URL file displayed for customers when they login, logoff or enter a bad password. The default is cust_index.ews.
Customer Website Allow Payment	Whether to allow customers to make Credit Card payments on-line or not.

Press the **Update** button to save any new or modified Web option value changes.

Logs

The Logs Global option provides the configuration for the maximum number of days in which to store the Emerald log and other table entries within the system. Choosing the **Logs** Global Administrative option will present the display of the current logging configuration. Retrieve an existing attribute value for view and/or edit by clicking on the desired entry. When the Description value is clicked within the Log Configuration display window, an entry box prompting for the new Value entry for the option will be presented. The Description indicates the log file name, and the Value field is always in number of days the log entries will be stored within the system. Warning: The trimmed records are permanently deleted from the system.

The Logs Configuration options are described below.

Description	Indicates the name of the individual log file.
Value	Enter the number of days for which to keep the log entries stored within the system.

Press the **Update** button to save any new or modified Logs option value changes.

Global Configuration (Logs)	Description	Value
	Trim days for RadLogs	14
	Trim days for Scheduler Logs	183
	Trim days for Audit Logs	183
	Trim days for Syslogs	183
	Trim days for Logs	183
	Trim days for Calls	730
	Trim days for Calls (Stop only)	45

Signup Server

The Signup Server Global option provides the set up of the default configuration for the signup server, some of the options include the default Service Type and Billing Group the user will be assigned to. Choosing the **Signup Server** Global Administrative option will present the display of the current web configuration. Retrieve an existing attribute value for view and/or edit by clicking on the desired entry. When the Description value is clicked within the Signup Server Configuration display window, an entry box prompting for the new Value entry for the option will be presented for each of the following configuration fields. The Signup Server Configuration options are described below.

Global Configuration (Signup Server)	Description	Value
	Home URL	
	Group	Global
	PPP prefix	
	Service type	PPP
	POP3 server	mail.iea-software.com
	SMTP server	mail.iea-software.com
	NNTP server	news.iea-software.com
	Primary DNS server	10.0.0.1
	Secondary DNS server	10.0.0.2
	Billing Cycle	Monthly
	CallerID limiting	Yes
	CallerID signup limit	4
	Log signups	Yes
	Setup charge	Yes

Home URL	The full URL of where you want the user to be returned to after signup is complete.
Group	The Emerald Billing Group where new Master Accounts will be created.
PPP Prefix	If for example you had a convention that all dialup accounts begin with 'P' this option allows you to pre-append that character to every users login name.
Service Type	All new accounts are created using this service type.
POP3 Server	Server information used to automatically configure the users client software.
SMTP Server	Server information used to automatically configure the users client software.
NNTP Server	Server information used to automatically configure the users client software.

Primary DNS Server	The IP Address of the Primary DNS Server.
Secondary DNS Server	The IP Address of the Secondary DNS Server.
Billing Cycle	Billing Cycle configuration set for new Master Accounts created through the signup server.
CallerID Limiting	Enables limiting use of the signup server based upon the callers phone number.
CallerID Signup Limit	When Caller-ID limiting is enabled this sets the maximum amount of successful signups per phone number. The Log signups option must also be enabled to support the signup limiting feature.
Log Signups	If this option is set to yes all the users that sign up will be written to a log file.
Setup Charge	If this option is set to yes a setup charge will be applied to the account.

Press the **Update** button to save any new or modified Signup Server option value changes.

Note:

The Signup Server is only available for Win32 Platforms.
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RadiusNT/X Configuration (RADIUS option)

Much of the RadiusNT/X component configuration is set locally on a per machine basis, performed separately within the RadiusNT/X Configuration Administrator. However, RadiusNT/X also has a run-time configuration set up within the Emerald Administrator that is shared between all system RADIUS servers, loaded directly from the Emerald database upon RADIUS server connection. This section describes the RadiusNT/X run-time configuration options that are configured within the Emerald Administrator.



Note:

In order for many of the Emerald Administrative RadiusNT/X options to function correctly after configuration, features may have to be enabled on each RADIUS server using the RadiusNT/X Configuration Administrator. RadiusNT/X option availability and feature performance may also be affected by the type and capabilities of your NAS (Network Access Server). Therefore, it is strongly recommended that you be familiar with both your RADIUS server configuration and NAS setup when going through this section.

Vendors (Vendor Attributes)

Vendor Attributes are the set of RADIUS attributes and values commonly known as a RADIUS dictionary. The purpose of the dictionary is to translate and define the RADIUS numerical information into human understandable descriptions. Each RADIUS attribute is associated with a particular NAS Vendor, an attribute identifier and associated attribute values.

RadiusNT/X is pre-configured with a standard set of RADIUS attributes that should work for most Network Access Server (NAS) vendors. If your NAS requires a change or additional attributes, the user can add or delete the list of attributes as needed. Please consult your NAS documentation for information on supported attributes.

The screenshot shows a form titled "RADIUS Vendor" with two input fields: "ID:" with the value "0" and "Name:" with the value "RADIUS Standard". Below the fields is an "Update" button.

Choosing the **Vendors** RADIUS Administrative option will present the display of the currently configured RADIUS vendors. Retrieve an existing RADIUS Vendor for view, edit or attribute definition by clicking on the desired entry. To remove a RADIUS Vendor, click the Delete link next on the selected entry. To add a new RADIUS Vendor, click the **New RADIUS Vendor** link.

[New RADIUS Vendor](#)

RADIUS Vendors	ID	Name	
	0	RADIUS Standard	Delete
	5	ACC	Delete
	9	Cisco	Delete
	15	Xylogics	Delete
	18	Wellfleet	Delete
	36	Digital-Equipment	Delete
	43	3Com	Delete
	61	Merit	Delete
	166	Shiva	Delete
	307	Livingston	Delete
	311	Microsoft	Delete

The RADIUS Vendor entry fields are described below.

ID	Enter the IANA enterprise number for this Vendor. Note: The Vendor ID numbers are standard and should be supplied within your
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	NAS documentation.
Name	Enter the identifying descriptive name of the RADIUS Vendor.

Press the **Update** button to save the new or modified RADIUS Vendor entry.

Note:

Before adding a new RADIUS Vendor entry, consult your NAS documentation to find out whether it supports the standard vendor specific attribute format. If it does not, RadiusNT/X may not be able to properly handle attributes from that vendor unless they appear in the standard Emerald-provided Vendor list.

Defining Vendor Attributes

Attributes are associated with RADIUS Vendor entries. To add or display the RADIUS attributes specific to a particular Vendor, click the Name field of the Vendor from the Radius Attribute Vendors display window.

RADIUS Attribute

Attribute ID:

Name:

Attribute Type:

Reply Type:

Alias Vendor:

Alias Attribute:

[New Attribute](#)

Attributes	Name	Attribute ID	Vendor Type	
	User-Name	1	0	Delete
	Password	2	0	Delete
	Challenge-Response	3	0	Delete
	NAS-Identifier	4	0	Delete
	NAS-Port	5	0	Delete
	User-Service	6	0	Delete
	Framed-Protocol	7	0	Delete
	Framed-Address	8	0	Delete
	Framed-Netmask	9	0	Delete

Once a Vendor has been selected, all Attributes associated with the Vendor will be presented. Retrieve an existing Attribute for view, edit or Attribute Value definition by clicking on the desired entry. To remove an Attribute, click the Delete link next on the selected entry. To add a new Attribute entry, click the **New Attribute** link. The Vendor Attribute entry fields are described below.

Attribute ID	Enter the Attribute ID value. Please check with your NAS documentation for information on entering the correct value.
Name	Enter the appropriate Attribute name. Please check with your NAS documentation for information on entering the correct value.
Attribute Type	Select the appropriate type from the selections offered in the pick list. Please check with your NAS documentation for information on entering the correct value.
Reply Type	Select the appropriate Reply Type from the selections offered in the pick list. Please check with your NAS documentation for information on entering the correct value. Note: A check attribute is verified against the attributes in the RADIUS request received from the terminal server. If the value you set does not match the value for the attribute in the request, the user's authentication request will be rejected.
Alias Attribute Alias Vendor	These fields are used by RADIUS when recording accounting data to the Calls table to impersonate a selected attribute. This way you don't need separate columns in the Calls table for each Vendor attribute that share common functionality with another attribute. See the RadiusNT/X documentation for more information on alias attribute functionality. Choose the Vendor and Attribute values from the provided selection lists.

Press the **Update** button to save the new or modified Vendor Attribute entry.

Quick Tip:

You should consult your NAS documentation to find out what attributes and what values it supports. Not all RADIUS clients support all RADIUS attributes.

Defining Vendor Attribute Values

Attribute Values are pre-defined names representing numerical RADIUS attribute identifiers. This allows you to select options based on easier to understand names, rather than remember the numerical value.

RADIUS Attribute Value	
Value:	<input type="text"/>
Name:	<input type="text"/>
<input type="button" value="Update"/>	

Once you have selected a specific Vendor Attribute from the list, you will see a list of the current values for that Attribute. Retrieve an existing Attribute Value for view or edit by clicking on the desired entry. To remove an Attribute Value, click the Delete link next on the selected entry. To add a new Attribute Value entry, click the **New Value** link.

[New Value](#)

Values	Value	Name	
	1	PPP	Delete
	2	SLIP	Delete
	3	ARA	Delete
	4	Gandalf	Delete
	5	Xylogics	Delete
	256	MPP	Delete

The Attribute Value entry fields are described below.

Value	Enter the Attribute Value. Please check with your NAS documentation for information on entering the correct value.
Name	Enter the appropriate Value name. Please check with your NAS documentation for information on entering the correct value.

Press the **Update** button to save the new or modified Attribute Value entry.

IP Groups

IP Groups are used to define sets of reservable IP addresses, or *IP Pools*. Choosing the **IP Groups** RADIUS Administrative option will present the display of the currently configured IP Groups. Retrieve an existing IP Group entry for view and/or edit by clicking on the desired entry. To remove an IP Group, click the Delete link next on the selected entry. To add a new IP Group, click the **New IP Group** link.

The IP Group entry field is described below. Press the **Update** button to save the new IP Group entry.

IP Group	Enter an identifying name for the IP Group.
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[New IP Group](#)

IP Groups	IP Group	
	test IP Group	Delete
	test IP Group2	Delete

Defining IP Addresses for an IP Group

After creating an IP Group, IP Addresses can be assigned to it. Select an IP Group name from the IP Group list to display all current IP Addresses for that group. To add a new IP Address to the IP Group, click the **New IP Address** link.

[New IP Address](#)

IP Addresses	IP Address	Last Used	
	1.2.3.4		Delete
	1.2.3.5	06/07/2001 13:59	Delete

Note:

Please note that each IP address must be added individually. Wildcards and address ranges will not work.

The IP Address entry field is described below. Press the **Update** button to save the new or modified IP Address entry.

IP Address	Enter the IP Address to add to the group.
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IP Service Types

IP Service Types can be used to associate a Server Group with all or specific IP Groups and allow server access to all or only a specific Service Type. Choosing the **IP Service Types** RADIUS Administrative option will present the display of the currently configured IP Service Types. Retrieve an existing entry for view and/or edit by clicking on the desired entry. To remove an IP Service Type, click the Delete link next on the selected entry. To add a new one, click the **New IP Service Type** link.

The IP Service Type entry fields are described below.

Server Group	Select the Emerald Server Group for which this IP Service Type definition applies. The Server Group selection is required and will restrict the Servers that users of the optionally chosen Service Type can access.
Priority	Enter the priority of this entry that will determine the order in which IP Service Types are evaluated and applied by the system. Priorities are numerical values, generally between 1 and 1000.
IP Group	Select the IP Group that will be allowed access to the selected Server Group.
Service Type	Select the Service Type that will be allowed access to the selected Server Group.

Press the **Update** button to save the new IP Service Type entry.

Note:

Please note that all Server Groups should be configured within the RADIUS Server Groups menu option prior to defining any IP Service Types.

Server Types

Server Types are used within RadiusNT/X to track the types of servers that are supported. Configuring the Server Types is primarily used for SNMP Concurrency Checking. The Emerald Management Suite provides a default Server Type list that will typically be sufficient for most system configurations. Emerald only knows how to process these pre-configured Server Types;

therefore, any new Server Types added to the system configuration will not be fully supported.

Choosing the **Server Types** RADIUS Administrative option will present the display of the currently configured Server Types. Retrieve an existing Server Type entry for view and/or edit by clicking on the desired entry. To remove a Server Type, click the Delete link next on the selected entry. To add a new Server Type, click the **New Server Type** link.

The Server Type entry field is described below.

Server Type	Enter a unique numeric identifier for the Server Type.
Vendor	Enter the text information description of the Vendor.
Model	Enter the text information description of the server model.
SNMP Type	Select 'Port Number' or 'Session' to designate the SNMP user type.
SNMP User	Enter the base OID used for SNMP Concurrency checking. It should be a string ending in "." in order to be correctly formatted for the RadiusNT/X user name query. If the SNMP Type is Port, it will append the port number the user is logged onto to the string. If SNMP Type is Session-ID, it will append the user's session ID onto the string.

Press the **Update** button to save the new or modified Server Type entry.

Server Groups/Servers/Server Ports

Server Groups are used to group sets of servers that have similar characteristics or function. Choosing the **Server Groups** RADIUS Administrative option will present the display of the currently configured Server Groups. Edit an existing Server Group by clicking on the desired entry. To remove a Server Group, click the Delete link next on the selected entry. To add a new Server Group, click the **New Server Group** link. Once created, Servers can be assigned to the group on the Server entry screen.

New Server Group			
Server Groups	Server Group	Servers	
	Other	<u>3</u>	Delete
	Test	<u>0</u>	Delete

The Server Group entry field is described below.

Name	Enter an identifying name for the Server Group.
Servers	Automatically tracked by the system to indicate how many Servers are currently assigned under the particular Server Group.

Press the **Update** button to save the new or modified Server Group entry.

Defining Servers under a Server Group

After creating a Server Group, individual Servers can be created and assigned to the group. **Each Network Access Server (NAS) that will interact with Emerald must be defined within the system.** Select a Server Group from the Server Group list to display all Servers currently configured for that group. Retrieve an existing Server entry for view and/or edit by clicking on the desired entry. To remove a Server, click the Delete link next on the

New Server								
RADIUS Servers	Server	Server Type	IP Address	Location	Ports	Security		
	localhost	Generic Start at 0	127.0.0.1	local	1/1	Create	Ignore	Delete
	PM3-1	Livingston Portmaster 3	1.2.3.4	Springfield	48/48	Create	Ignore	Delete
	TestServer	Livingston Portmaster 3	1.2.3.5	local	48/0	Create	Ignore	Delete

selected entry. To add a new Server entry, click the **New Server** link.

The **Create** link within the Ports column is specific to the Server entry screen, allowing the user to indicate to the system to automatically create the Server Ports entries for the particular Server entry. If the Create link is selected, the system will delete any existing Port entries for the Server and auto-generate a complete set of new Port entries according to the 'Server Type' of the Server entry. The Port display presents two port indicators formatted as the "number of specified ports/number of port entries that currently exist within the system" for each Server entry. The Server entry fields are described below.

Server*	Enter an identifying name for the Server. This can be either the fully qualified domain name (FQDN) of the NAS, or just the hostname of the NAS.
Server Group*	Select the Server Group that applies to this Server entry. The default is the currently selected Server Group.
Server Type*	Select the appropriate pre-configured Server Type from the Server Type pick list.
IP Address*	Enter the machine IP Address.
Secret*	Enter the shared RADIUS secret between the NAS and RadiusNT/X. This must be exactly the same as configured on the NAS itself. Refer to the RadiusNT/X documentation for more information on RADIUS Secrets.
Community*	Enter the SNMP community of the NAS, and is used for the SNMP functions of RadiusNT/X.
Location*	Enter the location of the server.
Ports*	Enter the number of ports (Digital and/or Async) in the NAS. This number can vary greatly depending on the type of NAS.
Modems*	Enter the number of server modems.
Phone Number*	Enter the server access phone number.
Contact Name	Enter the name of person in charge of administering the server.
Contact Phone	Enter the phone number of the Contact person for the server.
Contact Page	Enter the pager number of the Contact person for the server.
Comments	Enter any description or comment regarding the server or its configuration.
Dynamic Start Dynamic End	Used for record purposes to define the primary IP Address pool the NAS will use (this is not sent to the NAS).
Rad Roam Server	By selecting a roam server, all requests from this server will be automatically forwarded to the selected roam server and NOT processed locally

*Denotes required field

Press the **Update** button to save the new or modified Server entry.

Server Ports

In order for Emerald to track accounts on-line and control login permissions, the system needs to be aware of each

Port	IP Address	Max Time	SNMPUser	
0		0	13.6.14.1.307.3.2.1.1.4.0	Delete
1		0	13.6.14.1.307.3.2.1.1.4.1	Delete
10		0	13.6.14.1.307.3.2.1.1.4.10	Delete
11		0	13.6.14.1.307.3.2.1.1.4.11	Delete
12		0	13.6.14.1.307.3.2.1.1.4.12	Delete
13		0	13.6.14.1.307.3.2.1.1.4.13	Delete
14		0	13.6.14.1.307.3.2.1.1.4.14	Delete
15		0	13.6.14.1.307.3.2.1.1.4.15	Delete

port on each server. By default, these entries can be auto-generated according to Server Type when the Server is created using the Server entry screen **Create** Port option.

Once generated, Server Port information can be edited, but changes to the automated Server Port configuration, outside of modifications to the SNMP configuration of the port, is generally not recommended. Additionally note, that when a Server entry is deleted, all associated Port entries for that Server will also be deleted.

Retrieve an existing Server Port entry for view and/or edit by clicking on the desired entry. To remove a Server Port, click the Delete link next on the selected entry. To add a new Server Port entry, click the **New Server Port** link. The Server Port entry fields are described below.

Port	Enter the Port identification number. The value must match what the NAS will return in the NAS-Port attribute for accounting requests. Note: Run RadiusNT in -x15 debug mode to see an example of these values.
IP Address	Currently unused.
Max Session Time	Enter the maximum number of seconds a user can be on this port (Session-Timeout). If a Session-Timeout RADIUS attribute is included in either the RADIUS Service Type default configuration or within the Service account specific set of attributes, the lesser of the Session-Timeout and the Server Port Max Session Time values will be applied.
SNMP User	Used by RadiusNT/X when doing SNMP concurrency checking. See the RadiusNT/X documentation for more information on SNMP functionality.

Press the **Update** button to save the new or modified Server Port entry.

Server Security/Port Access

Emerald and RadiusNT/X allow access restrictions to be placed at the Server Port level. Once a Server and its Ports have been defined, select the Server for edit to define specific access levels for specific Server Ports.

Access	Port	Service Type	Start Time	Stop Time	Max Session Length	Delete
	1	DSL			120	Delete
	10	DSL			120	Delete
	All	EMail	2:00	2:00	0	Delete
	All	ISDN			240	Delete

Retrieve an existing Server Access entry for view and/or edit by clicking on the desired entry. To remove a Server Access entry, click the Delete link next on the selected entry. To add a new Server Access entry, click the **New Server Access** link. Note: Entries defined for 'All' Ports cannot be directly edited. Modify these entries by deleting and then re-entering the information. The Server Access entry fields are described below.

Port	Select the Port identification number (specific port values must have been pre-configured for
------	---

	the server). Choose the 'All' option if the configuration applies to all Ports on the Server. Note: If there is already an existing entry for a Port, it will not show up within the Port option listing. In this case it will need to be specifically selected for edit.
Service Type	Enter the Service Type that this Port Access definition applies to.
Start Time Stop Time	Enter the Start/Stop time access restrictions for the Server Port entry. Enter the values in 24 hour clock notation (HH:MM).
Max Session Length	Enter the number of minutes that sessions on this port are limited to.

Press the **Update** button to save the new or modified Server Access entry.

Roam Servers

Emerald Roam Servers are additional RadiusNT/X or other RADIUS compatible servers, typically outside of your system domain, that Emerald can forward requests to. Defining a Roam Server is very similar to adding any other Emerald Server, because Emerald will communicate with it in a similar manner. Coordination with the System Administrator of the Roam Server you are forwarding requests to is required in order to insure the correct RADIUS shared secret is being used.

Choosing the **Roam Servers** RADIUS Administrative option will present the display of the currently configured Roam Servers. Edit an existing Roam Server by clicking on the desired entry. To remove a Roam Server entry, click the Delete link next on the selected entry. To add a new Roam Server, click the **New Roam Server** link. The Roam Server entry fields are described below.

IP Address	Enter the IP Address of the Roam Server.
Server	Enter the name of the Roam Server that Emerald will forward the requests to.
Secret	Enter the RADIUS shared secret of the RADIUS Roam Server. Refer to the RadiusNT/X documentation for more information on RADIUS Secrets.
Timeout	Enter the number of seconds in which forwarded requests will timeout if not acknowledged.
Retries	Enter the number of times that failed forwarded requests should be retried.
Treat as Local	This option indicates whether this server will be receiving requests. Select 'No' in order to forward requests to the server. Select 'Yes' to indicate the server is not receiving requests and Emerald should process the requests locally. Note: This is a handy option when defining your own domains so that login attempts from specific domains will be authenticated locally rather than forwarded.
Strip Domain	This option indicates that RadiusNT/X should remove the domain before forwarding the request. The option descriptions are as follows: ?? None : Do not strip the domain of the request. ?? Accounting : Only strip the domain from the accounting requests. ?? Authentication : Only strip the domain from the authentication requests. ?? Both : Strip the domain from both the authentication and accounting requests. Note: Consult the System Administrator of the Roam Server regarding the format they are expecting to receive.
Auth Port	Enter the port number where RadiusNT/X will forward the Authentication requests to the server. Typically this defaults to 1645, although the System Administrator of the Roam Server may

	request a different port number.
Acct Port	Enter the port number where RadiusNT/X will forward the Accounting requests to the server. Typically this defaults to 1646.

Press the **Update** button to save the new or modified Roam Server entry.

Proxy Attribute Group

Authentication requests can be proxied based on the value of a group of attribute check items (for example, a user logging in with a special character in his name, or from a specific DNIS number). Configure this by creating a Proxy Attribute Group and associating it with an existing Roam Server and a particular set of check attribute values. Once a Roam Server has been defined, select the Roam Server for edit to define the Proxy Attribute Group.

Roam Server: [IEA Software](#)

Retrieve an existing Proxy Attribute Group entry for view and/or edit by clicking on the desired Roam Server and then selecting the entry of the Proxy Attribute Group. To remove a Proxy Attribute Group entry, click the Delete link next to the selected entry. To add a new Proxy Attribute Group entry, click the **New Proxy Attribute Group** link. Note: The delete option for a Proxy Attribute Group will not show if the group has Proxy Attributes assigned to it. The Proxy Attribute must be deleted before you can delete the Proxy Attribute Group. The Proxy Attribute Group entry fields are described below.

Priority	This field defines the priority order of the attribute checks RADIUS performs.
Description	This field gives the description of the Proxy Attribute Group selection.

Press the **Update** button to save the new or modified Roam Domain entry.

Proxy Attributes

A Proxy Attribute is a value that Radius will look for to determine where the packet will be proxied too. Once a Proxy Attribute Group has been defined, select the Proxy Attribute Group for edit to define the Proxy Attributes.

Retrieve an existing Proxy Attribute entry for view and/or edit by clicking on the desired Proxy Attribute Group and then selecting the entry of the Proxy Attribute. To remove a Proxy Attribute entry, click the Delete link next to the selected entry. To add a new Proxy Attribute entry, click the **New Attribute** link. e Proxy Attribute entry fields are described below.

Search Type	This field defines the type of value search to perform. Options include String, Substring, Equal, Less than, Greater than.
String	This field defines the attribute value to search for.
Attribute	RADIUS attribute selection.

Roam Domains

The Roam Domains RADIUS Administrative option is used to define both the domains that will be forwarded, and the Roam Servers to which each domain will be forwarded. Emerald enforces no restrictions or limits (beyond size) on the format of the domains defined.

Note:

To find out more detailed information about RadiusNT/X Roaming functionality, please refer to the RadiusNT/X documentation.

Choosing the **Roam Domains** RADIUS Administrative option will present the display of the currently configured Roam Domains. Edit an existing Roam Domain by clicking on the desired entry. To remove a Roam Domain entry, click the Delete link next on the selected entry. To add a new Roam Domain, click the **New Roam Domain** link. The Roam Domain entry fields are described below.

Roam Server	Select the appropriate Roam Server from the pick list. Only Roam Servers that have pre-configured within Emerald will be presented in the list.
Domain	Enter the domain to be forwarded to the selected Roam Server. Enter the value without the '@' symbol.
Priority	Enter the priority of the server. This is used in the case that there are duplicate entries for a particular Roam Server/Domain combination to allow for the definition of backup servers. Priorities are required to be unique per individual Roam Server/Domain.
Attributes	Indicates that RadiusNT/X needs to override the set of attributes the authenticating RADIUS server replied with, and instead use the default set of RADIUS attributes associated to the selected Service Type.

Press the **Update** button to save the new or modified Roam Domain entry.

Log Messages

The Log Messages RADIUS Administrative option is used to define the list of RadiusNT/X messages that will be logged within the RADIUS logs when encountered. The Emerald Administrator cannot

RADIUS Log Messages	ID	Description	Severity
	0	Generic Message	0
	1	Generic Error	5
	10	User Not Found	3
	11	Bad Password	3
	12	User Expired	2
	13	User OverDue	2
	14	Over Login Limit	1

add or delete from the list, but can change the message descriptions that are logged for specific message types.

Choosing the **Log Messages** RADIUS Administrative option will present the display of the existing RadiusNT/X messages to be recorded in the RADIUS logs. Edit an existing Log Message by clicking on the desired entry. e Log Message entry fields are described below.

ID	The RADIUS message ID. RADIUS message IDs are statically defined within the RadiusNT/X application. Unknown Message IDs will be ignored by the system.
Description	Enter an informative description that will be displayed when the message is encountered and recorded in the RADIUS log.
Severity	Enter the severity level of the RADIUS message from lowest (0) to highest (5).

Press the **Update** button to save the new or modified Log Message entry.

Rejects

The RADIUS Rejects Administrative option is used to define the sets of RADIUS attribute/value matches that RadiusNT/X will reject immediately, without actually processing the request. For instance, if you want to reject any user calling from a specific phone number, you could add an entry to the RADIUS Rejects list with the Caller-ID attribute and the specific phone number.

[New RADIUS Reject](#)

RADIUS Rejects	Vendor	Attribute	Reject	
	RADIUS Standard	User-Name	test	Delete
	RADIUS Standard	Ascend-PPP-Address	1234567	Delete
	RADIUS Standard	User-Name	blah	Delete

Choosing the **RADIUS Rejects** Administrative option will present the display of the existing RADIUS Reject entries. Edit an existing RADIUS Reject by clicking on the desired entry. To remove a RADIUS Reject entry, click the Delete link next on the selected entry. To add a new RADIUS Reject entry, click the **New RADIUS Reject** link. Th RADIUS Rejects entry fields are described below.

Vendor	Select the appropriate Vendor from the selection pick list for the desired RADIUS attribute.
Attribute	Select the appropriate Attribute from the selection pick list. Only the attributes for the above selected Vendor will be available in the pick list.
Data	Enter the Value of the attribute that is to be rejected.

Press the **Update** button to save the new or modified RADIUS Reject entry.

DNIS Groups

The DNIS Groups RADIUS Administrative option is used to define a set of phone numbers the user is allowed to call into. This is not the same thing as Caller-ID (the phone number the user called from). This feature is only available if your terminal server returns the DNIS number in the authenticate request to RadiusNT/X.

There are three steps to using DNIS groups. The first step is to create the DNIS group itself. Once the DNIS group is created you can then assign one or more DNIS Numbers to that DNIS group. Finally, you must select a DNIS Group for each Service Type that should be restricted to only calling into the DNIS numbers for that DNIS group.

[New DNIS Group](#)

DNIS Groups	DNIS Group	Description	Numbers	
	999	Test	3	
	9991	test2	0	Delete
	999	Test	0	Delete

When RadiusNT receives an Authentication request and DNIS groups are enabled, it will see if the NAS-Port-DNIS field matches one of the DNIS telephone numbers for the user's DNIS group. If the DNIS number is not in the DNIS group, it will reject the authentication request. If the terminal server does not include a NAS-Port-DNIS attribute in the authentication request, RadiusNT/X will not enforce the DNIS restrictions.

DNIS Group	
DNIS Group:	<input type="text"/>
Description:	<input type="text"/>
<input type="button" value="Update"/>	

Choosing the **DNIS Groups** RADIUS Administrative option will present the display of the existing DNIS Groups. Edit an existing DNIS Group by clicking on the desired entry. To remove a DNIS Group, click the Delete link next on the selected entry. To add a new DNIS Group entry, click the **New DNIS Group** link. The DNIS Group entry fields are described below.

DNIS Group	Enter an identifying name for the DNIS Group.
Description	Enter a longer DNIS Group description or comment.

Press the **Update** button to save the new or modified DNIS Group entry.

Defining DNIS numbers for a DNIS Group

After creating a DNIS Group, DNIS numbers can be assigned to it. Once a DNIS Group is assigned to a Service Type all users of the service must access the system through one of the defined DNIS numbers associated with the DNIS Group. The DNIS number entry fields are described below.

DNIS Number	
DNIS Group:	<input type="text" value="Test"/>
DNIS Number:	<input type="text"/>
<input type="button" value="Update"/>	

DNIS Group	Select the pre-configured DNIS Group that this DNIS number applies to.
DNIS Number	Enter the DNIS number.

Press the **Update** button to save the new or modified DNIS Number entry.

Scheduler

At the core of the Emerald Management Suite is the Scheduler component which provides for billing tasks, as well as other system activities, to be scheduled to automatically occur at specified times or time intervals throughout the day. The billing process can be set up to run within the Scheduler at user-configured intervals so that the entire process is handled automatically by the system without the need for any Emerald operator intervention or maintenance. Due to its reliability and efficiency, using the Emerald Scheduler is the recommended procedure for performing most billing activities.



Any number of Emerald *Schedule Servers* can be configured and running at one time, allowing the scheduled task workload to be distributed over a number of servers. Tasks that are available for Emerald scheduling must be pre-defined and registered locally on each Schedule Server in which they will be scheduled to run on. Schedule Servers are locally configured within a separate Scheduler Configuration Administrator interface, usually performed during system installation. Please refer to the Emerald Configuration Administrators documentation under Scheduler Configuration for more information on task and Scheduler configuration.

All pre-configured automated Emerald tasks are scheduled and monitored within the **Scheduler** Emerald Administrative options, described below.

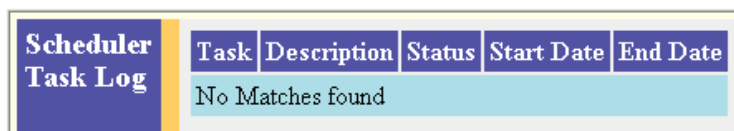
Search Task History

The **Search Task History** Scheduler Administrative option provides the ability to search and verify the status of current and past scheduled tasks.

When selected, the user is prompted for the following search criteria:

Starting	Enter the date (in any valid date/time format) to search from. All tasks scheduled on or after the given date will be presented and displayed. The default is today's date.
Status	Enter the Status of the tasks to be displayed. Choose 'All' to get a list of all tasks, regardless of status.
Task Type	Enter the Type of the tasks to be displayed. Choose 'All' to get a list of all tasks, regardless of type.
Description	Enter the Description of the task to be searched for. The Description search is non-case sensitive and will perform a partial text search (for example, entering 'Clear' will return all task entries with a description that contains the word 'Clear').

Press the **Search** button to initiate the task search. When complete, a task list containing the tasks that meet the search criteria will be presented in the display window. The tasks



will be presented with their task ID, description, current or final status, the date the task was started and completed.

Current Status

The **Current Status** Scheduler Administrative option provides the ability to view the status of all currently running Scheduler tasks. When selected, the user will be presented with a list of all currently running tasks describing the Server the task is running on, the task description, current status and when the task was started.

Running Tasks	Server	Task	Status	Start Date
	No tasks currently running			

Configure Schedules

The **Configure Schedules** Administrative option provides the ability to configure and manage the Scheduler task list. When selected, the list of all scheduled tasks will be presented. Edit an existing scheduled task by clicking on the desired entry. To remove a scheduled task, click the Delete link next on the selected entry. To schedule a new task, click the **Add** link.

General	Accounting	System	Global	RADIUS	Scheduler	Security	Web Config	Client	
Scheduler									
[Search task history] [Current status] [Configure schedules]									
[Add]									
Scheduled Tasks	ID	Task Name	Description	Active	Aligned	Interval	Start	Server	Options
	6	ccimport		Yes	No	Run Once		Auto Assign	Delete
	3	taskcharges	Create Usage Charges	Yes	Yes	Monthly	01/01/2000 05:00	Auto Assign	Delete
	4	taskinvoice	Create Invoices	No	Yes	Daily	01/01/2000 06:00	Auto Assign	Delete
	5	taskstatement	Create Statements	No	Yes	Run Once	01/01/2000 07:00	Auto Assign	Delete
	1	tasksummary	Calls Table Nightly Processing	Yes	Yes	Daily	01/01/2000 01:30	Auto Assign	Delete
	2	tasksummary	Netflow Nightly Processing	No	Yes	Daily	01/01/2000 03:00	Auto Assign	Delete

Tasks must be predefined before they can be scheduled to run. A default set of schedulable billing Tasks are provided as part of the Emerald installation package. The Emerald Enterprise version offers a Scheduler **Tasks** option that will allow you to define and configure new tasks that can be run within the scheduler. Contact the IEA Software Customer Support department for more information on creating custom scheduler tasks.

Note:

One-time tasks will be automatically removed from the Task list once the task has been completed and/or expired.

Scheduled Tasks (New Task)

Task Type: Schedule Server:

Parameter:

Description:

Run Interval: Interval based on:

Start Date: Max Concurrent:

Target Run-Time: Maximum Run-Time:

Active:

The Schedule Task entry fields are described below. Press the **Save** button to save the Scheduled Task entry.

Task Type	Select the task type from the task list. Only the tasks predefined by the Emerald Administrator within the Scheduler Tasks option will be presented in the pick list.
Schedule Server	Select the Schedule Server on which the selected task is to run. Choosing the ‘Auto Assign’ option will allow the Scheduler to make the appropriate decision based on current Schedule Server workload.
Parameter	If the task is configured to accept parameters qualifying the task action, enter the value for the parameter here. Common parameter descriptions are provided below: ?? System/Shell commands – the parameter is the command or script to run ?? Database query – the parameter is the SQL command ?? Summary – the parameter specifies which data to consolidate (1 = RADIUS) ?? User Export – the parameter specifies the External System ID
Description	Optionally enter a description of the scheduled task.
Run Interval	Choose the appropriate interval in which to run the task. The task can be set to run once, or at a set reoccurring interval, based either upon the set Start Date of the task, or the time of the last scheduled run.
Interval based on	Select ‘Last Run Date’ to align the reoccurring interval each time with the time the task was last run. Or, select ‘Start Date’ to align the reoccurring interval with the time the task was initially scheduled to run. The ‘Last Run Date’ allows staggered task run times that force the task to finish before it is rescheduled to run again.
Start Date	Enter the Start date and time of the task. The start date should be entered in “mm/dd/yy hh:ss” format. If time is left off the date/time field value, 12:00 AM (midnight) is assumed.
Target Run-Time	Enter the length of time the task should run. This value can be used to extend the run time of a task to lessen the load on the server
Max Concurrent	Enter the maximum number of instances of this task that can be running at any one time.
Maximum Run-Time	Enter the maximum length of time (in minutes) that this task should run in one session.

Quick Tip:

Other applications, OS system commands, and/or batch processes can be configured to run on an automated schedule by creating a “shell” task type and providing the specific command string (including the file directory path) as the parameter value.

Tasks

The **Tasks** Administrative option will allow you to define and configure new tasks that can be run within the scheduler. When selected, the list of all tasks will be presented. Edit an existing task by clicking on the desired entry. To remove a task, click the Delete link next on the selected entry. To create a new task, click the **Add** link.

Task	Type	Description	Options
achexport	Exports	ACH export	Delete
achimport	Imports	ACH import	Delete
ccexport	Exports	Credit Card export	Delete
ccimport	Imports	Credit Card import	Delete
query	Scheduler	Run database query	Delete
rpt	Scheduler	Run External Programs	Delete
usagecharges	Usage Charges	Create Usage Charges	Delete
invoice	Invoices	Create Invoices	Delete
statements	Statements	Create Statements	Delete
usagesummary	Usage Summary	Create Usage Summary Records	Delete
userreport	Exports	Account export (Enter ESID as parameter)	Delete

The Task entry fields are described below. Press the **Update** button to save the Task entry.

Task: Type:
 Description:

Task	The name of the task to be added.
Type	The type of tasks being added (Ex: Import, Export, etc.).
Description	The description of the added Task.

Security Configuration

The Emerald Management Suite relies on several layers of system security, enforcing security restrictions at the application level as well as relying on the security model of the back-end database server. The basic security layout is based on the definition of Emerald Operators that are assigned to specific Operator Groups having specific access/privilege levels that are enforced throughout the application. Emerald allows Operator Group access and privileges to be defined down to the Emerald object (invoices, statements, incidents, etc.) and MBR Billing Group levels, allowing strict control over what type, as well as what MBR groups, of information each Emerald Operator has access to.



The first step in implementing the Emerald security model is to define the Emerald Operator Groups and provide their access and privilege levels.

Operator Groups

Operator Groups are used to define a collection of Operators that all have the same access privileges. The Emerald Management Suite provides a default set of Operator Groups that can be modified and/or expanded upon (shown within the screen shot to the right).

[[New Operator Group](#)]

Operator Groups	Group	Description	IP Security
	Accounting	Accounting Operators	0 Add
	Admin	No Security Checking	1 Add
	CustomerAccess	Customer Access	0 Add
	Tech	Tech Support Operators	0 Add

Quick Tip:

Operator Groups can be used to define Reseller groups that only have access and reporting rights to specific MBR Billing Groups. Create a new Operator Group for each supported Reseller.

Choosing the **Operator Groups** Security Administrative option will present the display of the existing Emerald Operator Groups. Edit an existing Operator Group and view its current access privileges by clicking on the desired entry. To remove an Operator Group, click the Delete link next on the selected entry (default Emerald Operator Groups cannot be removed). To add a new Operator Group entry, click the **New Operator Group** link.

The Emerald Operator Group entry fields are described below.

Operator Group	Enter an identifying descriptive name for the Operator Group. This value will be presented within the Operator Group selection pick lists throughout Emerald.
Description	Enter a longer description or comment regarding the Operator Group entry.

Press the **Update** button to save the new or modified Operator Group entry.

Quick Tip:

A summary of the Operator Group's IP Security configuration, used to restrict Emerald group access to a specific set of IP Addresses, is presented in the Operator Group display. Click on the **Add** link under the Security column to directly access the group's IP Security configuration window

Defining Operator Group Access/Privileges

Once an Operator Group has been created, system and Emerald object-level access privileges can be defined for the group. Select and click on an Operator Group from the Operator Group list to display the current privileges configured for that group.

Each Operator Group Access entry can be individually changed and updated. Once the **Access** field has been modified to the appropriate access privilege value (the access options are described below), and press the **Update** button on the entry row to save the change.

Operator Group Access				
[New Operator Group Access Entry]				
Object Group	Billing Group	Access	Access	Update
Accounting	Global	ALL	ALL	Update
System Config	Global	ALL	ALL	Update
Client	Global	Read	Read	Update
MBR	Global	Read/Add/Change	Read/Add/Change	Update
Services	Global	Read/Add/Change	Read/Add/Change	Update
Incidents	Global	Read/Add/Change	Read/Add/Change	Update

Additional

Operator Group Access entries can be added at any time, perhaps to further refine the Operator Group access permissions, or specify Billing Group restrictions on some sections of Emerald data. To add a new Group Access entry, click the **New Operator Group Access Entry** link. The Operator Group Access entry fields are described below.

Operator Group	<p>There will be two selections available to specify the Operator Group:</p> <p>?? Global: Choose this option to specify the Object Group Access entry to be globally applied over all Operator Groups.</p> <p>?? Current Operator Group: Choose this option to only the apply the Object Group Access entry to the currently selected Operator Group.</p>
Object Group	<p>The Object Group identifies what information within the system is being restricted (or non-restricted) with the chosen option. The Object Group definitions are associated with Emerald “objects” that define a certain set of related Emerald information, options and data.</p> <p>The Object Groups and a description of the information that each pertains to follows:</p> <p>?? Accounting: The Emerald Administrative ‘Accounting’ options</p> <p>?? Admin: All Emerald Administrative options</p> <p>?? All: All Emerald options and informational fields</p> <p>?? Batch: All Emerald Client ‘Batch’ options</p> <p>?? Client: All Emerald Client options</p> <p>?? Customer Access: The online Emerald Remote ‘Customer Access’ component allowing remote access to an MBR account</p> <p>?? General: The Emerald Administrative ‘General’ configuration options</p> <p>?? Incidents: All MBR/Service incident information</p> <p>?? Invoices: All MBR/Service invoice information</p> <p>?? MBR: All MBR account information</p> <p>?? MBR Acct: All MBR accounting related (billing configuration) information</p> <p>?? MBR Basic: All basic non-accounting related MBR information</p> <p>?? Other: No Emerald information</p> <p>?? RADIUS: The Emerald Administrative ‘RADIUS’ options</p> <p>?? Reports: The Emerald Client ‘Reports’ and printing options</p> <p>?? Security: The Emerald Administrative ‘Security’ options</p>

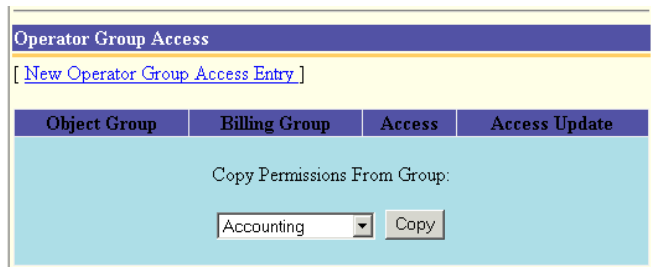
	<p>?? Service Mail: Service Email settings (forwards/aliases)</p> <p>?? Service RADIUS: Individual MBR Service RADIUS configuration</p> <p>?? Service: All online MBR Service account information</p> <p>?? System: The Emerald Administrative Systems configuration</p> <p>?? System Config: The Emerald Administrative 'Global' options</p> <p>?? System Log: The Emerald Client Reports 'System Log' options</p> <p>?? Web: The Emerald Administrative 'Web Config' options</p>
Billing Group	Selection of a specific Billing Group within the provided selection pick list indicates restricting or providing access (according to the given Access level) to the chosen Object Group data for MBRs only of the specified Billing Group.
Access	<p>Select the appropriate pre-configured access privilege to apply to the Object Group/Billing Group information for members of this Operator Group. Access specifications range from:</p> <p>?? All: No access restrictions</p> <p>?? Read: Read access only</p> <p>?? Add: Allows record additions</p> <p>?? Changes: Allows record modification</p> <p>?? Delete: Allows record deletion</p> <p>?? A Pre-configured combination</p>

Press the **Add Operator Group Access** button to save the new or modified Operator Group entry.

Note:

Modifications to Operator Group privileges or Operator/Operator Group assignments will only take effect after the information has been reloaded into system memory. This can be achieved by using the Emerald Admin/Web Config/**Reload Security** option. Reloading of the security cache also occurs with a manual Start/Stop of the Emerald Web Server.

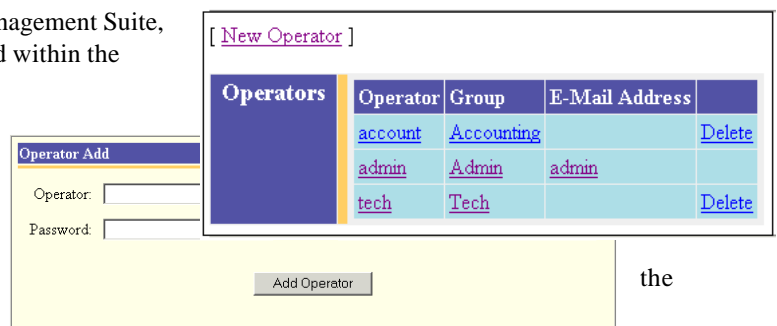
When Group Access is initially being configured for a new Operator Group, or for an Operator Group that has no established Group Access entries, the Administrator will be provided the option to copy the Group Access configuration of another existing Group. To establish the same initial group permissions as another Operator Group, select the group from the selection pick list and press the **Copy** button. To establish the Group Access permissions from scratch, press the **New Operator Group Access Entry** link to navigate to the access entry screen to enter them individually.



Operators

Before an Emerald user can login to the Emerald Management Suite, they must have an Emerald Operator account created within the system.

Choosing the **Operators** Security Administrative option will present the display of the existing Emerald Operator entries. Edit an existing Operator by clicking on the desired entry. To remove an Operator, click the Delete link next on



selected entry. To add a new Operator Group entry, click the **New Operator** link.

The Emerald Operator entry fields are described below.

Operator	Enter an identifying login name for the Operator. This value will be presented as identification within the Operator selection pick-lists throughout Emerald and will also be the audit value recorded to associate most system additions, deletions and modifications to the Operator who performed them.
Password	Enter the Operator's password for Emerald system login.
Group	Select the appropriate Operator Group appropriate for this Operator. The Operator will inherit all access privileges from the selected Operator Group definition.
Email	Enter the full email address of the Emerald Operator. The email address is for informational purposes only and is not currently used functionally within the system.

Press the **Add Operator** button to save the new entry, or the **Update Operator** button to save a modified Operator entry.

IP Security

Operator login and system access to the Emerald Management System can also be restricted to a specific list of IP Addresses. IP address restrictions are defined per Operator Group. Once one IP Address is specified for an Operator Group, all group access of the system will be restricted to the defined list of IP Addresses for the group.

Choosing the **IP Security** Administrative option will present the display of the existing Emerald IP Security entries for each Emerald Operator Group. Edit an existing, or add a new, IP Security configuration by clicking on the Operator Group entry. The Emerald IP Security entry fields are described below.

IP Security	Operator Group	IP Address	Description	
	Admin	*	Allow everyone in every group	Delete

Admin

IP Address:

Description:

[New IP Address](#)

Admin	Allowed IP Address	Description	
	*	Allow everyone in every group	Delete

IP Address	Enter the full valid IP Address (no wildcard symbols will be accepted) of the machine in the selected Operator Group. Once an IP Address has been defined, all Emerald access by this Operator Group will be restricted to the defined IP Addresses. The default ('*'), if accepted, will allow access to Emerald from any IP Address.
Description	Enter the description of the IP Address entry.

Press the **Add** button to save the new entry, or the **Edit** button to save a modified IP Security entry.

Web Configuration (Web Config)

The Emerald Management Suite is based on a web interface that is fully configurable, allowing the Emerald Administrator to customize the appearance, performance and default options of the system. The Web Configuration options are used to perform these configuration tasks.



Web Configuration

Choosing the **Web Configuration** Administrative option will present the display of the Emerald Management Suite web appearance configuration options. These settings configure the colors of each of the listed items. Edit an existing web configuration option by clicking on the desired entry.

The Emerald Web Configuration entry fields are described below.

Name	Name of the web configuration option.
Value	The value of the configuration option. Generally these are color standard HTML color values (identifier or hex value). These standard values can be found the following link: http://www.w3.org/TR/html4/types.html#h-6.5

[[New Web Config Entry](#)]

Web Configuration Options	Name	Value
	ALink	Red
	BGColor	White
	Edit_BG	LightYellow
	Field_BG	LightBlue
	Field_Error	cc5555
	Field_HighLight	ffff00
	Field_Warn	eedddd
	InActive	bbbbbb
	Link	Blue
	LogoLarge	emerald.png

Press the **Update Option** button to save the modified Web Configuration entry.

Web Links

Choosing the **Web Links** Administrative option will display the web and file links accessible from the Emerald Management Suite Home Page for Emerald Operators, or from the Emerald Remote Access component for external customer access and query.

Edit an existing Web Link by clicking on the desired entry. To remove a Web Link, click the Delete link next on the selected entry. To add a new Web Link entry, click the 'New Web Link' link.

[New Web Link](#)

Web Links	Title	URL	Type	
	Release Notes	/docs/releasenotes.htm	Operator	Delete
	IEA Software Support	http://www.iea-software.com/support	Operator	Delete

Quick Tip:

The Emerald Management Suite provides two default Operator web links. The first is to the Emerald Management Suite Version 4.0 Release Notes ([/docs/releasenotes.html](#)), providing information on the current Emerald installation. The second link is to the IEA Software Support department web page (www.iea-software.com/support) to access Customer Support links. These links are very useful to retain, but they may be deleted at any time with the Delete link next to the entry.

Web Link	
Link Type:	Operator ▾
Sort Order:	2
Title:	
URL:	http://
Update	

The Emerald Web Link entry fields are described below.

Link Type	Choose ' Operator ' if the web link is to show and be available on the Emerald Client home page for Emerald Operators. Choose ' Customer ' if the web link is to show on the Emerald Remote Access component for online customer queries.
Sort Order	Enter a numeric value to indicate the application order of this Flow Filter Definition. The sort order is used to determine the order in which the individual NetFlow definitions are checked and applied (smallest to largest) within this NetFlow Filter Group.
Title	Title of the web link for the home page display.
URL	Enter the URL or full network file path of the link file.

Press the **Update** button to save the new or modified Web Link entry.

Reset Query Cache

Choosing the **Reset Query Cache** Administrative option will immediately flush and reload the web cache. This can be used to refresh all Emerald data displays.

Starting reset ... **Query Cache reset complete.**

[[Return](#)]

Reload Config

Choosing the **Reload Config** Administrative option will immediately read in and reload the Emerald Management Suite security settings. This option can be used to refresh the security data to reliably assure that any recent security modifications are made immediately effective.

Reloading configuration... **Configuration reloaded successfully.**

Reloading security... **Security database reloaded successfully.**

[[Return](#)]

License Keys

Emerald license keys are configured within the **License Keys** Administrative option. This option is used to register your initial license key during installation, as well as update your license information (for example to add a license for more MBRs) any time.

[\[Add License\]](#)

License Keys	Company	License Key	Status	
	IEAS	example license key	500 MBRs Expires 6/25/2001	Delete

Adding a License

To add a new license key, choose the **Add License** option.

When you purchase Emerald, Evaluate Emerald, or add additional MBRs, you will receive an E-mail with your License information. You need to enter the *exact* Company Name and License Key that you receive in the E-mail. The best way to copy the information is to cut and paste it from your mail package. This will insure that you do not enter the wrong information into the license manager. Press the Add Key button once the information has been entered. The license key will only be effective once you have logged out of the Emerald system and log back in.

License Keys	
Company:	<input style="width: 95%;" type="text"/>
License Key:	<input style="width: 95%;" type="text"/>
<input type="button" value="Add Key"/>	

Emerald Management Suite – Edition Descriptions

The following section outlines the Emerald Management Suite Editions and the Add-on features available with this release. Professional, Enterprise and Add-on Features are available only when the appropriate Emerald license is purchased and registered within the system. Details regarding the use and configuration of each of the features of each edition are provided under the associated sections of the Emerald User's and Administrator Guides, and the Radius Administrative Guide.

Emerald – Standard Edition

RadiusNT/X Standard Version Features

- ?? IP Pooling
- ?? Limited Smart Cache
- ?? Limited Accounting Spooling
- ?? Database Fail-over

Emerald – Professional Edition

RadiusNT/X Professional Version Features (includes Standard features)

- ?? Proxy
- ?? Advanced Smart Cache
- ?? Accounting Spooling
- ?? SNMP
- ?? Rate Limiting
- ?? Load Balancing

Emerald – Enterprise Edition

RadiusNT/X Enterprise Version Features (includes Professional features)

- ?? Store and Forward Proxy
- ?? Authentication API
- ?? LDAP Authentication
- ?? Token Support
- ?? Tacacs
- ?? Unlimited Smart Cache

Emerald – Available Add-on Features

- ?? LDAP Synchronization
- ?? EmerAuth External Systems Authentication API

Appendices

Appendix A: Trouble Shooting and Frequently Asked Questions

Installation Issues

?? *What installation option and components should I choose during install?*

The 'Typical' installation option will be sufficient for most Emerald sites. Typical installations include the Emerald Web Server, the Emerald Scheduler, and RadiusNT/X components. The 'Complete' installation option will install all of the additional Emerald components and the 'Custom' installation option will allow you to specifically choose the additional components you would like installed. All installation options include installation of the full set of Emerald documentation. The additional components available outside of the 'Typical' installation are:

- ?? *Crystal Reports*: Optional component required on Windows installations for all Emerald report printing activities.
- ?? *EmerAuth*: Required to be installed on the machines running your mail server (if it supports EmerAuth), FTP server (serv-u) or News server (Dnews).
- ?? *SysLog*: An Emerald Enterprise feature used to log errors within systems external to Emerald.

?? *Previous versions of Emerald required separate installations on each of the intended client machines. Is this required with Emerald Version 4.0?*

Emerald Version 4.0 is browser-based, requiring only one Emerald Server installation. Client access to the Emerald server is gained through the use of a standard web browser.

?? *Can I install RadiusNT/X on multiple machines? Does it have to be installed on a machine running Emerald? Can I install RadiusNT/X from the Emerald installation disk?*

RadiusNT/X can be installed on multiple machines within the restrictions of your Emerald and/or RadiusNT/X license agreements. The RadiusNT/X server should be installed on a machine that is dedicated to network services, and it does not need to run on the same machine as the Emerald server. It can be installed on either the machine running your Emerald database server, or on another server. The RadiusNT/X component can be individually selected within the Emerald 'Custom' installation option.

?? *Can I install Emerald 4.0 into a directory where a prior version of Emerald is installed?*

It is recommended that the Emerald Version 4.0 files be installed into a separate directory. There is no need to uninstall the previous version of the software, although it will cause no problems if you do so. In addition, the Emerald Version 4.0 database can be created on the same database server as any prior Emerald versions. Note: The Version 4.0 upgrade procedure will require local database server access to the Emerald Version 2.5 database and will create a copy of your existing data prior to performing any conversion activities on the data for compatibility with the new version of the application.

?? *During installation, I receive an error telling me that a file is in use. What should I do?*

Typically when a file is in use, it means another program (like a service on Windows) is running and has the file open. Usually you can just ignore the error without causing any problems. However, if Emerald fails to run after

the installation, you will need to stop the program using the file and re-run installation. Generally, all conflicting programs should be shut down before attempting installation.

?? *Does the Emerald Server support SSL transactions?*

The Emerald Server does not natively support SSL (Secure Socket Layer) transactions. However, the Emerald server can be configured to either run as an ISAPI module under an external web server that does support SSL (Windows systems only), or it may be configured to use an SSL tunnel to accomplish secure communication between it and remote web browsers. Please refer to the **Emerald Secure Socket Layer (SSL) Support/Configuration** section of this document for more information.

Setup Issues

?? *Can I install the reports to a directory other than the Emerald default reports directory?*

Yes. To do so you need to copy the *.rpt files from the installation directory to the new directory and redefine the Emerald global reports directory specified within the Emerald Administrator. Make sure that the Emerald server has at least read access to the new reports directory as well. The directory should be a global directory in which all users have access.

?? *I have installed and configured my report server, but Emerald is displaying a report server not found message when I try to print a report. What should I do?*

There are two common causes of this problem. First, verify that the Report Server has been started and is currently running. Secondly, verify that the correct Global Report Path has been defined with the Emerald Administrative options. Contact the customer support department if both of these cases have been verified and the problem still exists.

?? *While attempting to run the Emerald Version 4.0 upgrade database conversion script, I encounter an error regarding the format of my existing credit card expiration dates and the conversion halts. What can I do to correct this?*

Emerald Version 4.0 now enforces a valid date (*mm/yy* or *mm/yyyy* format) for credit card expiration dates. Prior versions of the application allowed free form entry of expiration dates that may not conform to a standard date format that will cause errors during the database conversion procedure. The credit card expiration dates can be manually converted into an *mm/yy* format, or there is a SQL credit card expiration date conversion script provided within the Emerald installation directory that may be run directly against your existing Emerald Version 2.5 database that will perform the conversion for you (see the Release Notes for a further description of this script and its side-affects). Once the credit card expiration date formats have been corrected and all entries have been verified as valid, the Emerald Version 4.0 upgrade/data conversion can be re-attempted.

?? *The Emerald database creation failed and now I can't re-create the database. How can I fix this?*

Most likely the problem is that the prior database device still exists. Use your database server management tool to delete and verify that both the failed database device and the associated physical database and log files have been deleted.

Startup Issues

?? *When I access the Emerald application for the first time, there is no information in the login prompt. What should I initially login with?*

The first time you log into the Emerald Suite after installation, the default Username and Password values provided for the Emerald Administrator are **'Admin'** and **'Pass1'**, respectively. *It is strongly recommended that the default Emerald Administrative account password be changed immediately upon initial login to the system.*

?? *When I access the Emerald Web Configuration Server, it is not accepting my Emerald Administrative password. What should I login with?*

When prompted, enter any **Username** and provide the general Configuration **Password** provided during installation and initial start of the Web Configuration Server (or other Emerald Management Suite Administrator). The creation and access of this password is described above within the Installation section of this document under **Initial Database Configuration**.

?? *When I attempt to access the Emerald application from my web browser, I keep being returned to the login screen. The browser window validation and drop-down selections do not appear to be correctly updating.*

It is critical for the operation of the Emerald Management Suite that both *cookies* and *java script* be enabled within the web browser accessing the Emerald Server. Within Microsoft this is done within the Browser Tools/Internet Options/*Security/Custom* options. Within Netscape this is done within the Edit/Preferences *Advanced* options.

?? *The Emerald screen display and available menu options change depending upon which user has logged onto the system. Is this normal application behavior?*

Emerald Version 4.0 security allows the Emerald Administrator to control Emerald Operator access on a page, menu option, and field detail level. The menu options available and the format of the pages displayed directly depend upon the privileges assigned to the Operator Group associated with the logged in Emerald Operator.

Configuration Issues

?? *When I try to delete a value under the Administrative options, I receive an error saying the delete failed. What causes this and how can I delete the item?*

The database constraints will not let you delete items that are being referenced by other items. For example, to delete a billing group, there can not be any items referencing it (like region, services, etc) as well as no MBR can be using that billing group.

?? *Some of the changes that I make within the Emerald Administrative options do not seem to be immediately applied by the system. How can I make Emerald apply changes immediately?*

Some database values are cached in memory to speed up server access and display. The Emerald Administrator has the ability to reload and update both the memory cache and security cache with options available within the Emerald Administrative *Web Configuration* option.

?? *The Emerald screen display and available menu options change depending upon which user has logged onto the system. Is this normal application behavior?*

Emerald Version 4.0 security allows the Emerald Administrator to control Emerald Operator access on a page, menu option, and field detail level. The menu options available and the format of the pages displayed directly depend upon the privileges assigned to the Operator Group associated with the logged in Emerald Operator.

?? *What is an external system and why would I need one of them?*

External systems are only needed if Emerald will be used with an application or system that is not specifically integrated with Emerald. These are typically mail, FTP or news systems. Refer to the information within this guide regarding the configuration of external systems, or the EmerAuth documentation for more information.

?? *How do I create reports and add them to Emerald?*

Windows installations of the Emerald Suite include an integrated run-time report engine, currently based upon Crystal Reports 8.0+. New custom reports can be created outside of Emerald within the Crystal Reports 8.0+ report writer (Professional version). Once you have created the report and copied the report file into the Emerald global reports directory, add the report to the Custom Report list within the Emerald Administrative options and the report will be available within the Emerald Report list.

?? *What types of taxes does Emerald support?*

Emerald supports single tax, dual tax (two taxes based on the original amount) and piggyback tax (two taxes where the first tax is based on the original amount, and the second tax is based the original amount plus the first tax). All taxes are tracked by type and amount for flexible and accurate reporting.

?? *How do I create a setup charge for a service?*

Applicable setup charges are configured when a Service Type is created or updated. The Emerald Administrator defines the available Setup Charge options within the *Accounting/Charge Types* Emerald Administrative menu option. Once a Setup Charge has been selected for a Service Type, the charge will only be applied on the first billing period of the Service and can be waived on an individual Service account basis.

?? *How do I configure Emerald to bill service usage at two different rates based on the time of the call?*

Define a Rate Schedule (within the Emerald Administrative *Accounting/Rates* option) with both Default time period charges and Alternate time period charges. The Rate allows the definition of the range of the Alternate time period and anything outside of this range is considered the Default time period. Multiple rate schedules can be defined for the billing of usage during both time periods.

?? *Can I specify a separate invoice format for each Billing Group?*

The Emerald Administrative *General/Billing Groups* option allows you to define individual company data, as well as individual invoice and statement formats for use with each Emerald Billing Group.

?? *My external system batch file format is not supplied in the select list. Can I define a new one that will be supported by the system?*

Emerald Version 4.0 provides a default set of supported external systems batch file formats. Currently, new formats must be requested through our customer support department and may, or may not, require a software development contract to create. It is planned that a future version of Emerald will provide a utility that will allow users to define and create their own batch file formats.

?? *How come some options do not have the Delete option available?*

In general, throughout the Emerald Administrative options, once an option has been assigned, there is no longer the option to Delete the entry. This guarantees the integrity of the Emerald data by not allowing values in use by other parts of the system to be removed. For example, once a Billing Group has been assigned to an MBR, the Billing Group can only be removed if the MBR Billing Group value is re-assigned to a different value.

Security Issues

?? *How are Emerald Operator privileges assigned? Can an Operator be in more than one Operator Group?*

Each Emerald Operator must belong to one and only one Operator Group. The permissions of each Operator are based on the privileges configured for the Operator Group of which they are assigned. Note: If the Emerald Version 4.0 installation was an upgrade from the Emerald 2.5 version, all Operators were initially placed in the 'Administrator' Operator Group. These initial Operator Group assignments should be evaluated and modified prior to Emerald Operator access.

Appendix B: Supported Third Party External Systems

The Emerald Management Suite works with many different third-party products. The open nature of the Emerald database and the technical specifications of the suite allow third party applications to easily interact with Emerald. Below is a table that shows Internet URL addresses to Third party products which support Emerald or can work with Emerald. Please see the IEA Software web site for an up-to-date list.

Category	Product	Comments	URL
Credit Card	Authorize.net	Batch Out / In	www.authorize.net
Credit Card	CardSoft PC	Batch Out	www.cardsvc.com
Credit Card	CCard (UK)	Batch Out / In	
Credit Card	CyberCash	Batch Out / In, AVS	www.cybercash.com
Credit Card	IC Verify	Batch Out / In, AVS and non-AVS	www.icverify.com
Credit Card	Domain POS	Batch Out	
Credit Card	Global Retail PC	Batch Out/In AVS and non-AVS	
Credit Card	MAPP-PC	Batch Out	www.mastercard.com
Credit Card	PC-Charge	Batch Out	www.godoftinc.com
Credit Card	PC Authorize	Batch Out/In	
Credit Card	PC-Transact_IT v1.2	Batch Out/In	www.novainfo.com
Credit Card	PC-Transact_IT	Batch Out/In	www.novainfo.com
Credit Card	PTC	Batch Out, AVS and non-AVS	www.firstdata.com
Credit Card	TelePC	Batch Out	www.audiotel.com
Credit Card	Visanet POS-Partner	Batch Out	
Mail	NTMail	Authentication DLL	www.microsoft.com
Mail	MailSite	Direct Database Support	www.rockliffe.com
Mail	VOPMail	Direct Database support	www.vircom.com
Mail	Imail	Authentication DLL	www.ipswitch.com
FTP	Serv-U	Authentication DLL	www.cat-soft.com

Mail Server Support

Emerald supports several different Mail Server vendors. Most mail servers support either directly connecting to the Emerald database, or using the EmerAuth DLL to connect to the Emerald database. However, some mail servers only support a one-way synchronization

Emerald also supports Serv-U FTP and DNews authentication. Both of these are also included in the EmerAuth DLL and documented in the EmerAuth documentation.

Rockliffe Mailsite Configuration

The Emerald Management System supports Rockliffe Mailsite. Mailsite comes out of the box ready to work with Emerald. To use it, simply configure an ODBC DSN pointing to the Emerald database and configure the Mailsite database plug-in to use the newly created Emerald ODBC DSN. Additionally during Mailsite configuration, it must be identified as an External system (using the Mailsite external system ID) within the Emerald Administrator options.

Emerald can be configured to create a mail list of all Emerald users. Emerald includes a stored procedure called “*SendMailUsers.sql*” that will return the list of users stored within Emerald in the format that Mailsite is expecting. If you want to restrict the list, you can modify the stored procedure as needed. Users do not have to be manually added within the Mailsite configuration program. Mailsite will synchronize the systems by specified domain. When you configure the database mailbox plug-in, you can tell it to automatically create accounts for certain domains. With that enabled for the domains configured in Emerald, the user will automatically be created when they first receive a message or first check their mail.

Internet Shopper NTMail Configuration

The Emerald Management System supports Internet Shopper NTMail, although the NTMail user API is only supported through the EmerAuth DLL, included within the Emerald Management Suite package. Please see the Emerald EmerAuth component documentation for more details on using it.

Note: Although NTMail supports aliases and forwards, the NTMail API does not include features to support them within Emerald. The NTMail admin can be used to configure aliases or forwards for accounts within NTMail, but NTMail will not use the forward information configured within Emerald user accounts.

Appendix C. Batch Credit Card Formats

For the majority of the Credit Card/EFT external system packages listed above, the Emerald system performs a data exchange using processing files between the two systems. A batch file is used to send transactions from Emerald to the software, and another batch file is used to return the results of the transactions back to Emerald.

Note: *These files are typically described from the batch software’s point of view, therefore the **batch in** file is what Emerald creates and is read in by the batch software. The **batch out** file is written by the batch software and read in by Emerald.*

Many software packages allow you to configure the fields in the batch file. The following sections detail each of the specific batch formats expected per supported external system.

In almost all cases during Emerald credit card processing, Emerald will provide a unique transaction number (transid) for each record it batches out to the credit card system for processing. It is important that the external credit card processing system return this transaction identifier unchanged so that Emerald can correlate the transaction results with the original transaction recorded within the Emerald account database.

MAPP-PC

The MAPP-PC batch out file consists of nine fields, each delimited by the “|” character. There are an additional five blank fields on the end of each line after these nine fields. The only different between the 9.x version and the prior version is the type for 9.x is “10\$” for capture, whereas the prior version was “09\$” for auth only.

Batch In

#	Description	Details
1	Type/Transaction ID/ Date/Time	09\$XXXXXXXX mm-dd-yyyyhh:mm:ss 09 = Auth/AVS, \$ = Manual, XXXXXXXX=TransID Date/Time: mm-dd-yyyyhh:mm:ss
2	N/A	
3	N/A	
4	Credit Card Number	The credit card number 13-16 numeric digits
5	Credit Card Expire	four numeric digits in the form mmyy
6	Credit Card Auth Name	The name on the card
7	AVS	The billing Address Verification numbers
8	Zip Code	The billing zip code
9	Amount	The amount of the transaction.

Batch Out

The Batch Out file must contain at least 17 fields, comma delimited. Field 1 has the same format as Field 1 in the Batch in file. The rest of field 17 contains the approval and response codes. If the first four characters of field 17 is “APPR” then the transactions was approved

Card Soft

The Card Soft batch out file consists of six fields, each delimited by a comma. All fields are quoted as well.

Batch In

#	Description	Details
1	Type	C1 = Capture
2	Username	The Emerald operator's name
3	Transaction ID	The Transaction ID
4	Credit Card Number	The credit card number 13-16 numeric digits
5	Credit Card Expire	4 numeric digits in the form mmyy
6	Amount	The amount of the transaction.

Batch Out

The Batch Out file contains two lines per transaction. The first line is the exact same line Emerald wrote out in the Batch In file. The second line must contain six fields, comma delimited. Field 1 and 2 is the process date and time. Field 3 is the response code, and first 4 is the approval code. If the first characters of field 4 is "A" then the transactions was approved.

TelePC

The TelePC batch out file consists of five fields, each delimited by a comma.

Batch In

#	Description	Details
1	Credit Card Number	The credit card number 13-16 numeric digits
2	Credit Card Expire	four numeric digits in the form mmyy
3	Amount	The amount of the transaction
4	Zip Code	The billing zip code
5	AVS	The billing Address Verification numbers

Batch Out

Batch out support for TelePC is not supported.

PTC AVS

The PTC batch out file consists of 16 fields, each delimited by a comma. All fields except the CC Number, Zip Code, Tip, and Amount are quoted.

Batch In

#	Description	Details
1	Type	S = Capture
2	Credit Card Number	The credit card number13-16 numeric digits
3	Credit Card Expire	four numeric digits in the form mmyy
4	Credit Card Auth Name	The name on the card
5	AVS	The billing Address Verification numbers
6	Zip Code	The billing zip code
7	Transaction ID	The transaction ID
8	OperatorID	The Emerald Operator's ID. Currently this is always set to 0.
9	"1"	
10	Blank	
11	Blank	
12	"2"	
13	Blank	
14	Blank	
15	Tip	Always 0.00
16	Amount	The amount of the transaction

Batch Out

The Batch Out file must contain six fields, comma delimited. Field 1and 2 is the process date and time. Field 3 is the response code, and field 4 is the approval code. The Transaction ID is field 5. If the first character of field 3 is not a "C" or an "S", the transaction is ignored. If field 4 starts with "AUTH/TKT" the transaction was approved, otherwise the transactions was denied.

PTC non-AVS

The PTC non-AVS batch out file consists of six fields, each delimited by a comma. All fields except the CC Number, and Amount are quoted.

Batch In

#	Description	Details
1	Type	S = Capture
2	Credit Card Number	The credit card number13-16 numeric digits
3	Credit Card Expire	four numeric digits in the form mmyy
4	Credit Card Auth Name	The name on the card
5	Transaction ID	The transaction ID
6	Amount	The amount of the transaction

Batch Out

The Batch Out file must contain six fields, comma delimited. Field 1 and 2 is the process date and time. Field 3 is the response code, and field 4 is the approval code. The Transaction ID is field 5. If the first character of field 3 is not a “C” or an “S”, the transaction is ignored. If field 4 starts with “AUTH/TKT” the transaction was approved, otherwise the transactions was denied.

PC-Charge

The PC-Charge batch out file consists of nine fields, each delimited by a comma. All fields are quoted.

Batch In

#	Description	Details
1	Type	1 = Capture
2	Credit Card Number	The credit card number13-16 numeric digits
3	Credit Card Expire	four numeric digits in the form mmyy
4	Amount	The amount of the transaction
5	Transaction ID	The transaction ID
6	Zip Code	The billing zip code
7	Street Address	The billing street address

Batch Out

PC-Charge writes two batch out files, one with a .app extension (the approved ones) and one with a .bad extension (the declined ones). When you specify the batch out file in Emerald, do not include the extension, as Emerald will add the extensions for you. The Batch Out file must contain at least 8 fields, comma delimited. Field 5 is the transaction ID and field 8 is the approval code.

IC Verify non-AVS

The IC Verify non-AVS batch out file consists of six fields, each delimited by a comma. All fields are quoted.

Note: This batch format may not work with the DOS version of IC Verify.

Batch In

#	Description	Details
1	Type	C1 = Capture
2	Transaction ID	The transaction ID
3	Company Name	The Company Name (if any)
4	Credit Card Number	The credit card number13-16 numeric digits
5	Credit Card Expire	four numeric digits in the form mmyy
6	Amount	The amount of the transaction

Batch Out

The Batch Out file contains two lines per transaction. The first line is the exact same line Emerald wrote out in the Batch In file. The second line must contain at least six fields, comma delimited. Fields 1 and 2 are the process date and time. Field 3 is the response code and field 4 is the response code. If the first characters of field 4 is "A" then the transactions was approved.

IC Verify

The IC Verify AVS batch out file consists of nine fields, each delimited by a comma. All fields are quoted.

Note: This batch format may not work with the DOS version of IC Verify.

Batch In

#	Description	Details
1	Type	C1 = Capture
2	Transaction ID	The transaction ID
3	Company Name	The Company Name (if any)
4	Credit Card Number	The credit card number 13-16 numeric digits
5	Credit Card Expire	four numeric digits in the form mmyy
6	Amount	The amount of the transaction
7	Approval	Blank for request, filled in for response file
8	Zip Code	The billing zip code
9	Street Address	The billing street address

Batch Out

The Batch Out file contains two lines per transaction. The first line is the exact same line Emerald wrote out in the Batch In file. The second line must contain at least six fields, comma delimited. Fields 1 and 2 are the process date and time. Field 3 is the response code and field 4 is the response code. If the first characters of field 4 is "A" then the transactions was approved.

CyberCash

The CyberCash batch out file consists of nine fields, each delimited by a comma. All fields are quoted except for the transid, zip code and amount.

Batch In

#	Description	Details
1	Transaction ID	The transaction ID
2	Credit Card Auth Name	The name on the card
3	Credit Card Number	The credit card number 13-16 numeric digits
4	Credit Card Expire	four numeric digits in the form mmyy
5	AVS	The billing Address Verification numbers
6	Zip Code	The billing zip code
7	Amount	The amount of the transaction

Batch Out

The Batch Out file must contain 4 fields, comma delimited. Field 1 is the transaction ID, and if field two is greater than 0, the transaction was approved. Field 3 is the approval code and field 4 is the process data.

Domain POS

The Domain POS batch out file consists of nine fields, each delimited by a comma.

Batch In

#	Description	Details
1	Credit Card Number	The credit card number13-16 numeric digits
2	Credit Card Expire	four numeric digits in the form mmyy
3	Amount	The amount of the transaction
4	AVS	The billing Address Verification numbers
5	Zip Code	The billing zip code
6	Credit Card Auth Name	The name on the card
7	Transaction ID	The transaction ID
8	Tax	Always 0.00

PC-Transact_IT

The PC-Transact_IT uses a set length, non-configurable batch file for both batch in and batch out. This file format is fairly extensive and covered in detail in the PC-Transact_IT user manual.

PC Authorize

The PC Authorize batch out file consists of eleven fields, comma delimited

Batch In

#	Description	Details
1	Transaction ID	The Transaction ID
4	Credit Card Number	The credit card number13-16 numeric digits
5	Credit Card Expire	four numeric digits in the form mmyy
6	Credit Card Auth Name	The name on the card
7	AVS	The billing Address Verification numbers
8	Zip Code	The billing zip code
9	Amount	The amount of the transaction.
10	CustomerID	The MBR's ID in Emerald
11	InvoiceID	The Invoice's ID in Emerald

Batch Out

The Batch Out file must contain seven fields, comma delimited. Field 1 is the transaction ID, Field 3 is the response code, and field 4 is the approval code. If the first character of field 4 is "A" the transaction was approved.

Generic

The Generic batch out file consists of six fields, each comma delimited. This is designed to be used by a system that isn't compatible with one of the previously listed formats.

Batch In

#	Description	Details
1	Transaction ID	The Transaction ID
2	Credit Card Number	The credit card number 13-16 numeric digits
3	Credit Card Expire	four numeric digits in the form mmyy
4	Amount	The amount of the transaction.
5	Zip Code	The billing zip code
6	Address	The billing address

Batch Out

The Batch Out file must contain at least six fields, comma delimited. Field 1 and 2 is the process date and time. Field 3 is the response code, and field 4 is the approval code. The Transaction ID is field 5. If the first character of field 4 is "A" or field 3 starts with "AUTH/TKT" the transaction was approved, otherwise the transactions was denied.

Appendix D. SNMP User Settings

One of the main problems with concurrency control is when RadiusNT does not correctly track the on-line users. This can cause a user to be inadvertently denied access when they should not be. To prevent this from happening, RadiusNT can verify that the user is on-line at the time of authentication by using SNMP. This feature only allows RadiusNT to do a real time verification check to see if the user is still on-line. It will not update the calls online list or correct any other problems pertaining to the calls online. It is designed to prevent incorrect concurrency denial rather than to always prevent logins because of concurrency limits.

SNMP Concurrency Control

For RadiusNT to query the NAS to verify the user, it must know the SNMP community and the specific OID for the port the user is listed to be on. The SNMP Community is stored in the Servers table, Community field. Although this is typically *public*, you may have changed it for security reasons. The OID for each port is stored in the ServerPorts table, SNMPUser field. The contents of this field will change for each port. Currently, it must be a static entry for each port and may differ from NAS models and vendors.

For a Livingston Portmaster 2, the OID is *.1.3.6.1.4.1.307.3.2.1.1.1.4.x* where x is the port number. From an SQL perspective, you can populate the ServerPorts table by using a derivative of the following SQL statement. For other NAS vendors you should consult the NAS documentation to see how it supports SNMP and what the specific OID is.

Update ServerPorts

```
Set SNMPUser = .1.3.6.1.4.1.307.3.2.1.1.1.4. + convert(varchar(5), Port+1)
Where ServerID = x
```

The ServerID should match an entry from the Servers table for the NAS you want to update. The following table shows the Base OID for several popular vendors and terminal servers:

Vendor	Model	Base OID	Comments
Lucent	Portmaster2	.1.3.6.1.4.1.307.3.2.1.1.1.4.x	Ports are 1 to 30 or 1 to the number of ports in the PM.
Lucent	Portmaster3	.1.3.6.1.4.1.307.3.2.1.1.1.4.x	1 on the PM3 is S0. The ports are 2-25/26-49 (T1) or 2-24/26-48 (PRI).
Cisco	AS5248	.1.3.6.1.4.1.9.2.9.2.1.18.x	Ports are 1-48 for a 48 port dual T1.
Ascend	Max 4xxx	.1.3.6.1.4.1.529.12.3.1.4.	ServerType MUST be set to 5-8 for this to work. Do not add a port number at the end and make sure each line ends with a period.
USR	HyperARC	.1.3.6.1.4.1.429.4.10.1.1.18.x	Starts at 1513 for the first port and increment in same formula as the ports are reported to RadiusNT.
Nortel	5399	.1.3.6.1.4.1.15.2.16.1.2.1.3.1.x	

Server Types

RadiusNT uses a field called ServerType in the Servers Table to track the type of server. This is primarily used for SNMP Concurrency Checking, although in the future it will probably be used for more. Here is a list of the current Server Types and their meanings:

Vendor	Model	ServerType	SNMP Method
Generic	Starts at 0	0	Use SNMPUser as OID
Generic	Starts at 0	1	Use SNMPUser as OID
Lucent	Portmaster 2	2	Use SNMPUser as OID
Lucent	Portmaster 3	3	Use SNMPUser as OID
Lucent	Portmaster 4	4	Use SNMPUser as OID
Ascend	MAX 40xx/60xx T1	5	Add ASID To SNMPUser
Ascend	MAX 40xx/60xx E1	6	Add ASID To SNMPUser
Ascend	MAX 1800	7	Add ASID To SNMPUser
Ascend	MAX TNT	8	Add ASID To SNMPUser
Cisco	AS 5x00	9	Use SNMPUser as OID
3Com	Total Control	10	Use SNMPUser as OID
Computone	Power Rack	11	Use SNMPUser as OID
Microcom	6000	12	Use SNMPUser as OID
3Com/USR	HiPer ARC	13	Use SNMPUser as OID
Nortel	5399	14	Use SNMPUser as OID

Use SNMPUser as OID: The SNMPUser field should be a fully qualified OID to the name of the user on that port. The port number will usually be the last number of the OID.

Add ASID To SNMPUser: The SNMPUser field should not be fully qualified, but rather should be the path to where the Acct-Session-ID values are found. RadiusNT will append the Acct-Session-ID onto the OID before checking it.

Appendix E. Livingston Support: RadUsers and Det2odbc

There are two programs that enable Emerald to receive and send data to Livingston. They are RadUsers and det2odbc.

RadUsers

Overview:

RadUsers is a simple program that reads your RadiusNT/X compatible database and stores information in a file format that Livingston can read. Its very simple, and easy to use. RadUsers can be used in a time where you still want to run RadiusNT/X to authenticate users, but need to take your Database down. RadiusNT/X also has a text fail over mode where if the Database dies, it can use a users file. RadUsers can create that file.

Usage:

To use RadUsers, you need to setup an ODBC datasource for the database, which you want to retrieve data from. The database must conform to the RadiusNT specifications. See the RadiusNT readme file for detailed information on creating the database.

The command line parameters are:

```
RadUsers [FILE] [DSN] [Username] [Password] [Timeout]
```

FILE - Output File where Livingston data will sent.
DSN - ODBC datasource
USERNAME - username used to connect with the ODBC datasource
PASSWORD - password used to connect with the ODBC datasource
TIMEOUT - ODBC Timeout in seconds, the default is one second.

So, to retrieve the data from the database and put it in a file called c:\detail.log and using a datasource called Radius, username sa1 and password sa you would use this syntax:

```
RadUsers c:\detail.log Radius sa1 sa
```

When processing the file, you will see the following.

```
Checking For License ( Valid license found )  
Loading RadConfigs Users...Writing...1  
Loading AccountTypes...4  
Loading RadATConfigs Users...Writing...3
```

In this case, a total of 4 records would have been written to the file c:\detail.log.

Det2ODBC

Overview:

Detail to ODBC is a simple program that reads in your detail log files, and places the data into a RadiusNT compatible database. Its very simple, and easy to use. Det2odbc can be used to bring in accounting records from RadiusNT/X as well as a Livingston compatible accounting file. Like in the above example, if you do take your Database down for a while, you can use Det2odbc to get the accounting records received when the Database was down, back into the Database.

Usage:

To use Det2odbc, you need to setup an ODBC datasource for the database, which you want to convert. The database must conform to the RadiusNT specifications. Basically you used the attribute names out of the dictionary EXCEPT that you must remove all dashes. See the RadiusNT readme file for detailed information on creating the database. Det2ODBC also assumes there is a Unique constraint on the three fields AcctSessionID, ClientID, and AcctStatusType. If you do not have this constraint on the DATABASE side, then you will get duplicates. With Access you can make those three fields the key while you do your import. With SQL Server, just create a unique constraint on the three fields using Enterprise Manager. (See your docs for other databases). You will also need a Radius dictionary file in the directory where you run the executable file.

The command line parameters are:

```
det2odbc [detail] [dsn] [username] [password] ([DEBUG] | [MSACCESS] | [STOP] )
```

The four required fields are:

DETAIL - file to convert

DSN - ODBC datasource

USERNAME - username used to connect with the ODBC datasource

PASSWORD - username used to connect with the ODBC datasource

There are three additions command line parameters you can use. These are not case sensitive and can be added AFTER the four required parameters.

DEBUG - This will print a lot of debug to a file called det2odbc.log, which will be found in the same directory, where the application is run from. Use this if you are seeing a lot of errors and would like to figure out what is going on. If you report problems, please include a PORTION of this.

STOP - This will process ONLY the stop records, skipping all start records. This is VERY handy and can save a lot of time/disk space if all you want to do is query on-line time in the database.

MSACCESS - This should be used if the destination is an MSACCESS database. It will change the date quote from an ' to a #, and also change the date format slightly. The Year will always be the current year (not the year in the record) when using this.

So, to convert your c:\radius\acct\ts1.blah.com\detail file to a datasource called Radius, username sa and password sa, you would use this syntax:

```
det2odbc c:\radius\acct\ts1.blah.com\detail Radius sa sa
```

Also, if you are using an MS Access database, and only want stop records, the above example would be:

```
det2odbc c:\radius\acct\ts1.blah.com\detail Radius sa sa STOP MSACCESS
```

When processing the file, you will see five counters.

Percent - The percentage of the detail file parsed.

Good - The number of GOOD transactions

Duplicates - The number of Duplicates (ODBC 3267 errors)

Skips - The number of Start records (if stop was used)

Errors - The number of ODBC errors