

# WhatsUp Gold Release Notes v11.0.3



## Description

Ipswitch WhatsUp Gold v11 is a powerful, yet easy to use network monitoring application. Within several minutes of installing the software, you can:

- Discover devices on your network and add them to the WhatsUp Gold database for monitoring.
- Set up notifications to alert you when a problem is found.
- Generate out-of-box reports to help you analyze your network up time, and response time.

Ipswitch WhatsUp Gold v11 includes a web interface that parallels its console. This allows you to monitor your network from anywhere with Internet connectivity in much the same way that you can from the console. Beginning in the WhatsUp Gold 11 release, the web interface houses all of the WhatsUp Gold full and workspace reports.

## Ipswitch WhatsUp Gold v11 Premium Edition

The Premium Edition is available for separate purchase. It provides all of the network monitoring capabilities of Ipswitch WhatsUp Gold v11 and extends the product to allow application monitoring, including:

- Microsoft Exchange and Microsoft SQL Server. You have the ability to manage the availability of key application services, rather than just the network visibility of the host server.
- General application monitoring using Microsoft's Windows Management Instrumentation (WMI). You can monitor any performance counter and trigger an alarm if the value changes, goes out of range, or undergoes an unexpected rate of change.

## Ipswitch WhatsUp Gold Central and Remote Site Editions

The WhatsUp Gold Central and Remote Site Editions are available for separate purchase as a distributed network monitoring solution. Both editions come packaged with all of the powerful features of WhatsUp Gold Premium v11.0.3.

## New to this release

**The following are new features in WhatsUp Gold Standard and Premium v11.0.3:**

- Added a Dynamic Group Builder to help users create and validate SQL queries for new Dynamic Groups.
- Reinstated the Group State Summary Report from a previous version of WhatsUp. The report provides device status summary information on the individual device states and group states.
- Added new group report, Quarterly Availability Summary Report, to WhatsUp Gold. This report provides rolled up availability statistics on groups of devices and services that are monitored within WhatsUp Gold.
- Improved list control and tree control behavior for improved usability. Controls respond more quickly, key handling, scrolling, and paging has been improved.
- Corrected an installation defect that prevented IP security data from being migrated correctly.
- Maintenance schedules can now be cleared using Bulk Field Change in the web interface.
- Exported data from the Interface Utilization report now matches the source report data.

### **The following are new features in WhatsUp Gold Central and Remote Editions v11.0.3:**

- Added new Remote/Central Reporting capabilities, powered by WhatsUp Gold v11.0.3. Remote/Central Reporting is available in the WhatsUp Gold Central/Remote installations. The distributed solution provides the capabilities to monitor and report from remote sites back to a WhatsUp Gold Central Site.
- Added new group report, Quarterly Availability Summary Group Level Report, to WhatsUp Gold. This report provides rolled up availability statistics on groups of devices and services that are monitored within WhatsUp Gold.
- Added the Dashboard application that provides the capability to display a series of web pages as a "play list," on one or multiple monitors, increasing the visibility into network and server health.
- Added the new features that are included in the WhatsUp Gold Standard and Premium v11.0.3 products.

### **The following issues have been resolved within v11.0.3 Standard, Premium, and Central/Remote Editions:**

- Multiple Active Monitors can now be selected for deletion in a device's Properties dialog.
- Corrected a "Failed to load credentials" error when editing a Performance Monitor assigned to a device which uses an SNMPv3 credential.
- "Exit" keyword now works correctly in a TCP/IP Active Monitor script.
- Fixed an NmConsole.exe crash when trying to browse certain Cisco MIBs.
- Fixed an issue that could cause device discovery and polling to hang when connecting to a non-responsive SSL application.
- Users are now prevented from selecting "Interface description" in the Interface Utilization Performance Monitor's Advanced Settings dialog if a device has duplicate (non-unique) interface names. This prevents errors during polling.
- Web user information in WebUserData and WorkspaceReportData tables is now cleaned-up when deleting a Web user (prevents a foreign key error in Web User Management dialog).
- Web interface list and tree controls have been updated to improve usability. Controls respond more quickly; key handling, scrolling, and paging have been improved.
- Availability reports have been updated to display 3 decimal places. Export of these reports has been updated to display 7 decimal places.
- Increased database performance while loading the device list in the web interface.
- Corrected a handle leak in NmService.exe and NmWebService.exe if TCP/UDP listeners fail to bind to the configured socket (10048 error).
- Updated the web interface's Device Properties dialog to reload after editing a global Performance Monitor.
- Updated SNMP Trap Passive Monitor regular expressions parser to allow searches to detect an equals sign (=) in a trap's payload.
- Disabled Active Monitors now have "[disabled]" text appended to monitor name when displayed in the web interface.
- Updated dependency code to prevent a device in an unknown state (because of an up dependency to another device) from triggering an up dependency on a device.
- Corrected an issue that caused a foreign key error when enabling the Interface Utilization Performance Monitor on an existing device.
- Added alphabetical sorting to several combo boxes in the web interface.
- Prevented a crash in NmConsole.exe when specifying an interface speed larger than 2.147 Gbps for an interface monitored by the Interface Utilization Performance Monitor.

### **The following issues have been resolved within v11.0.2:**

- Fixed an issue that prevented devices with *multiple* maintenance schedules from entering maintenance according to schedule.
- Fixed an issue which could cause polling and action tasks to stop executing.

### **The following issues have been resolved within v11.0.1:**

- Fixed an upgrade issue from WhatsUp Professional 2005 that caused device type icons not to display.
- Fixed an issue that caused Recurring Reports to display an "Unsupported Browser" message when using a URL other than "localhost" or 127.0.0.1.

- Fixed a scheduled maintenance issue to now allow devices with a *single* maintenance schedule to go into maintenance mode according to the schedule.
- Fixed an issue which prevented devices from exiting a schedule maintenance window if the Ispswitch WhatsUp Engine service was restarted during the maintenance window.
- Fixed a memory leak in the web interface's full reports. This affected IIS as well as `NMWebService.exe`.
- Fixed an issue which prevented utilization graphs from displaying when installed on a non-English version of Windows.
- Fixed an issue which prevented NT Service Active Monitors from working correctly if they were created in the web application.
- Redesigned upgrade scripts to improve database upgrade speed and resource usage from WhatsUp Professional 2006 to a WhatsUp Gold v11 upgrade.

## Major features in WhatsUp Gold v11

Ipswitch's release of WhatsUp Gold v11 includes the following features and enhancements:

- A new web interface design that includes customizable workspaces and workspace reports.
- Added over 100 new workspace reports, which provide summaries of the data in status, performance and historical reports.
- Improved performance in rendering web interface pages.
- The ability to support IPv6 enabled devices.
- Improvements to the Bulk Field Change function.
- Enhanced Dependency capabilities that allow you to place Dependencies on devices' Active Monitors.
- Development measures to handle non-persistent SNMP instances for Performance Monitors.
- An Active Script Performance Monitor.
- Performance Counters in the engine.
- A database size information has been added to the console under **Tools > Database Utilities > Tools > Performance**. You can also view the database size indicator icon in the bottom right corner of WhatsUp Gold v11 console application.
- You can now create multiple devices with the same address.
- SQL Server Active Monitor has been updated to support the monitoring of SQL 2005 Windows services.
- Map improvements:
  - Map icons no longer shift when a shared icon is deleted.
  - You can now click-and-drag multiple map icons.
- Devices are added to maps in more obvious locations.

## System requirements

### Minimum software requirements

- Windows XP Professional SP2 or Windows 2003 Server SP1
- Microsoft Internet Explorer 6.0 SP1 (or later) or Firefox 1.5 (or later)
- Microsoft Windows Scripting Host v5.6 or later.

Windows Scripting Host is installed with the Windows operating system. To verify your version, run `cscript.exe` at a command prompt.

If you need to update Windows Scripting Host, go to the Microsoft Windows Scripting Host site.

- Internet connectivity for activation, connecting Central and Remote Sites, and running the web interface.

### Minimum hardware requirements

- Intel Pentium-compatible 2 Ghz or faster
- 1 GB memory (RAM) (2 GB RAM recommended)
- 256 MB of drive space (up to 3 GB additional for MSDE database and 7200 RPM drive recommended)



**Note:** This is the requirement for installation. You will need more disk space for the database. An MSDE database can grow up to the 2 GB disk space limit.

- CD-ROM drive
- Network Interface Card (NIC)
- Modem and phone line (for pager, SMS, or beeper actions; modem pooling is not supported)
- SAPI v5.1 and supporting sound card (for Text to Speech Actions; SAPI v5.1 can be downloaded from the Microsoft Speech site <http://www.microsoft.com/speech/download/sdk51/>)

### MSDE 2000 requirements

- MSDE has a 2 GB data limit; however, up to an additional 1 GB may be used for temporary storage. Make sure you select a large enough capacity disk drive for data storage.
- File and Print Sharing must be enabled to run MSDE 2000.

#### To verify that file and print sharing are enabled:

- 1 Select **Start > Control Panel**.
- 2 On the Control Panel, select **Network Connections**.
- 3 From the menu bar, select **Advanced > Advanced Settings**.
- 4 On the **Adaptors and Bindings** tab, make sure the **File and Print Sharing** for Microsoft Networks option is selected.

## Installing or upgrading



**Important:** This WhatsUp Gold 11.0.2 patch update can only be applied to a WhatsUp Gold 11.0.1 installation. It cannot be installed on a system without WhatsUp Gold installed on it, nor will it update any version prior to 11.0.1 (including 11.0.0). The WhatsUp Gold 11.0.3 installs will patch existing 11.0.x installations or upgrade from WhatsUp Professional 2006.

The installation program is similar whether you are installing WhatsUp Gold Standard Edition (or WhatsUp Gold Premium Edition) for the first time or upgrading a previous installation. Steps that apply only to a first-time installation, or only to an upgrade, are identified as such. For more information about installing the WhatsUp Gold Central and Remote Sites, see Installing Central and Remote Sites in the application Help.

#### To install or upgrade WhatsUp Gold:

- 1 Log in to an Administrator account.
- 2 Start the installation program:
  - If you purchased a WhatsUp CD-ROM, insert the CD-ROM into the appropriate drive. If it does not run automatically, click **Start**, select **Run**, then enter the CD path followed by `AutoRun.exe`. For example:  
`D:\AutoRun.exe`
  - If you downloaded WhatsUp Gold Standard Edition or WhatsUp Gold Premium Edition from our Web site, run the downloaded installation application.
- 3 Read the Welcome screen.

The Welcome screen recommends that you disable any running antivirus software, estimates how long it takes to install the application, and displays a button that, when clicked, displays the release notes.

Click **Next** to continue.
- 4 Read the license agreement. Select the appropriate option, then click **Next**.
- 5 Select the default install directories for Microsoft SQL Server Desktop Engine (MSDE) 2000, then click **Next** (For first-time installation only).



**Note:** If you want to customize your database setup, you need to first complete the installation, then manually configure your database as described in Alternative database setups in the application Help.

The application and data files will be installed in default directories. If you want to change the locations, click the browse buttons to find and select a different directory.



**Important:** Make sure that you have a large capacity drive selected for data storage. Data files can grow up to the 3 GB MSDE limit.

**6** Select the installation directory for the WhatsUp application files. (For new install only.)

The default path is C:\Program Files\Ipswitch\WhatsUp. We recommend that you use the default path. Some users prefer to put application files on a partition separate from the operating system, which is usually installed on the C: drive, to isolate the application from an operating system crash.

**7** Choose whether to backup your current WhatsUp database (for upgrade installation only). We strongly suggest that you do this!

**8** Choose how to handle existing Web and Report files. (For upgrade installation only.)

If you have previously installed WhatsUp Gold, you may already have Web and Report files stored in your installation directory. You can choose to either delete them or back them up during the install. Backup is recommended.

**9** If a sound card is installed and it has SAPI-compatible drivers, the install program asks whether you want to install Text to Speech capabilities. If you select **No**, you can always return and install Text to Speech at a later date.

**10** Choose whether to enable the web server during install and enter a port for this installation.



**Note:** This dialog will not be displayed during an upgrade if you have already enabled the WhatsUp web server in an older version of WhatsUp.

**11** Click **Install** to install the WhatsUp Gold application files. WhatsUp Gold gives you the option to go back and change options or cancel prior to completing the installation.



**Important:** When you use an alternative database setup, you will need to run the database upgrade scripts when installing a new release of WhatsUp Gold. The installation program will warn you if it detects a non-default database. For information on running the upgrade scripts, see Upgrading the database schema in the application Help.

**12** Make your selections, then click **Finish**.

If you choose to launch now, the next screen asks you to activate the application. For more information, see Activating the WhatsUp Application in the application Help.

After the activation screen, you are introduced to the Discover Devices wizard, which lets you set options on how to discover your network. If you choose to postpone these steps, click **Cancel**.

## MSDE information

An MSDE 2000 Release A installation will fail if the following security policy is set to **Do not allow installation**:

### The Unsigned non-driver installation behavior local security policy for Windows 2000:

If you use the **Do not allow installation** setting, you must change it to Silently succeed before installing MSDE 2000 Release A. If necessary, you can return the policy to its previous setting after the installation is complete.



**Note:** Do not allow installation is not the default setting for these security policies.

### To enable the MSDE 2000 'Do not allow installation' policy:

- 1** Select **Start > Control Panel**.
- 2** Select **Administrative Tools**.
- 3** Select **Local Security Policy**.
- 4** Expand the Local Policies folder and select **Security Options**.
- 5** Ensure that the following option is set to **Silently Succeed**:

- For Windows XP and Windows 2003: **Devices: Unsigned driver installation behavior**
- For Windows 2000: **Unsigned driver installation behavior**

## Microsoft Data Access Components

MSDE 2000 Release A includes updates to Microsoft Data Access Components (MDAC). When you install MSDE Release A, MDAC 2.7 SP1a is also installed, unless the installation wizard Setup detects the same version or a newer version of MDAC.

## For more configuration information

Refer to the KB article <http://support.ipswitch.com/kb/WP-20050303-DM03.htm> or the `readme.txt` file in the DB Scripts folder in WhatsUp Gold for more information on how to configure Ipswitch WhatsUp Gold v11 and later to work with Microsoft SQL Server or other instances of MSDE 2000.

### To access the DB Scripts folder:

- 1 From the drive where Ipswitch WhatsUp Gold v11.x is installed on your computer, navigate to your **Program Files** folder.
- 2 From the Program Files folder, select `\Ipswitch\WhatsUp`.

For more information on manually upgrading the database from WhatsUp Professional 2006 to Ipswitch WhatsUp Gold v11, see the `DB_Upgrade.txt` file in the `\DB Scripts\Upgrade Scripts` folder.

## Uninstalling Ipswitch WhatsUp Gold v11.x

### To uninstall Ipswitch WhatsUp Gold v11.x:

- 1 Select **Start > Settings > Control Panel**, then select **Add or Remove Programs**.
- 2 Select Ipswitch WhatsUp Gold v11.x.
- 3 Select **Remove**.

You can also run the Ipswitch WhatsUp Gold v11.x installation program, then select **Remove**.

Select one of the following dialog options:

- Remove the WhatsUp Gold application, but leave network data I have collected intact.
- Remove both the WhatsUp Gold Premium application, and all network data I have collected.
- Also, remove the "WhatsUp" copy of MSDE-2000 Server.

## Migrating configuration information

The WhatsUp Gold Data Migration utility, included in the WhatsUp console, migrates data from WhatsUp Gold 7 or 8 into Ipswitch WhatsUp Gold v11.x. The following list of items is migrated with this utility:

- Maps
- Service definitions
- Events library definitions
- Notification library definitions
- Custom device type definitions
- Trap definitions

Before you use the migration utility, we recommend that you back up your WhatsUp Gold database, using Back Up SQL Database (located in the WhatsUp console **Tools > Database Utilities**)

To start migration, from the WhatsUp console, select **Tools > WhatsUp Gold Migration Utility** and follow the directions provided by the migration utility wizard.

You can run this utility at any time during the operation of WhatsUp Gold, and it can be run multiple times. When you run the utility, imported maps and devices will be duplicated each time, but duplicate definitions are not

imported or updated. If XYZ exists in the database, XYZ is ignored, even if the definition was updated in WhatsUp Gold.



**Note:** The migration results may not map directly to the terminology and dialogs you've seen in WhatsUp Gold 7 or 8, as Ipswitch WhatsUp Gold v11 uses different terminology and work flow. When the migration utility is run, items added to the database begin polling, even if the migration wizard has not been completed.

## Application notes

WhatsUp Gold uses Windows Management Instrumentation (WMI) to monitor and restart NT Services. For each device that is assigned an NT Service Active Monitor, you must supply the Windows credentials. Also, when creating a Service Restart Action, you must supply Windows credentials for each Action. Credentials must have administrative permissions on the remote server. Local accounts with credentials that match remote accounts are no longer required to monitor remote servers.

Credentials are configured in the WhatsUp Gold Credentials Library and used in several places throughout WhatsUp Gold. They can also be associated to devices in **Device Properties > Credentials**, or through **Bulk Field Change for Credentials**.

The use of WMI could have some implications if target devices are behind a firewall. To successfully monitor and/or restart NT Services, you need to modify firewall settings so that:

- 1 The RPC port (135) is open for connections.
- 2 The DCOM port range is defined and open for connections.

In some cases, WMI monitors are known to report false negatives, in that a service is shown as down when it is in fact up. It may help if you increase the length of your RPCPingTimeout registry value.

### To edit the RPCPingTimeout registry value:

- 1 Go to **Start > Run > Regedit.exe**
- 2 From the Registry Editor go to:  
`HKEY_LOCAL_MACHINE\SOFTWARE\Ipswitch\Network Monitor\WhatsUp Engine\2007\Settings`
- 3 Within the Settings folder, select **RPCPingTimeout** and right-click. From the right-click (context) menu, select **Modify**.
- 4 In the Edit DWORD Value dialog, enter in a new value for the timeout (in milliseconds) and click **OK**.



**Important:** The default timeout is 5 seconds. We strongly recommend that you do not exceed a timeout of 30 seconds.



**Note:** The default value of 0xffffffff (hexadecimal) is equivalent to 5000 milliseconds, or 0x00001388 (hexadecimal).

After making any changes to the registry, you need to restart the WhatsUp Engine.

### To restart the WhatsUp Engine:

- 1 Go to **Control Panel > Administrative Tools > Services**.
- 2 Select **Ipswitch WhatsUp Engine** from the list of services, then click **Restart** on the left side of the Services dialog.

## Known issues

- The Telnet protocol handler is disabled by default in Microsoft Internet Explorer 7. In order to use the Telnet tool in WhatsUp Gold, you need to re-enable the Telnet protocol.

### To re-enable the Telnet protocol:

- 1 Click **Start > Run**. The Run dialog box opens.

- 2 In the Open box, enter: `Regedit`, then click **OK**. The Registry Editor opens.
- 3 Go to the following key:  
`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Internet Explorer\Main\FeatureControl`
- 4 Under the `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Internet Explorer\Main\FeatureControl`, create a new key named `FEATURE_DISABLE_TELNET_PROTOCOL`.
- 5 Add a `DWORD` value named `iexplore.exe` and set the value to 0 (decimal).
- 6 Close the Registry Editor and restart Microsoft Internet Explorer 7. The Telnet protocol is enabled.
  - There is a payload limitation for SNMP, Syslog Passive Monitors, and Windows Event Log Passive Monitors.

## Passive Monitor payload limitation

It is important to note that Passive Monitors have a payload limitation of 3 KB for both WMI, SNMP, and Syslog Passive Monitors.

This could cause a couple of things to take place:

- 1 A payload to not show up in a trap or event log when expected.
- 2 An assigned action to fire with no payload that sends a blank email if you are trying to grab data from the payload.
  - Shortcuts created for the 2006 web interface may not work with the Ispswitch WhatsUp Gold v11 web interface. You may need to update the WhatsUp Gold shortcut URL. To do this, connect to `http://whatsup-computer-ip-address-or-hostname:port/` and create a new shortcut.
  - Any recurring reports created prior to Ispswitch WhatsUp Gold v11 needs to be recreated to use the updated URL format.
  - If you use IIS for your web server for the WhatsUp Gold v11 web interface, you need to change the path of the NmConsole virtual directory. The new path is `<installation directory>\HTML\NmConsole\`. For more information, see *Configuring the web interface to use IIS in the application Help*.

## Stopping services before installing MSDE 2000 Release A

You can install MSDE 2000 Release A without shutting down services. If you do not shut down services, the WhatsUp Gold setup will attempt to shut down the following services prior to MSDE installation. The setup will attempt to restart the services following installation. You should confirm that all services restarted following MSDE 2000 installation. You may be prompted to reboot the computer when Setup is complete. Without rebooting, the following services will fail to start:

- Microsoft Component Services
- Microsoft Message Queuing
- Microsoft COM Transaction Integrator

You can reduce the possibility of having to restart your computer after installing MSDE 2000 Release A by stopping these services and applications before running Setup.

You can also try manually installing MSDE and then install Ispswitch WhatsUp Gold v11. For more information see the Knowledge Base article, *How to manually install MSDE* <http://support.ipswitch.com/kb/wp-20050818-DM01.htm>.



**Note:** Only default instances will be upgraded by the install.

## Potential installation errors

- MSDE 2000 installation failure with 1639 error code.  
There are several potential causes for this error:
  - Ensure that all prerequisites listed above has been met:
    - File and printer sharing enabled
    - Server service is started



- Local Securities Policies set, etc.
- A previous install of MSDE 2000 failed or was removed. The MSDE install does not completely clean up behind itself, and Microsoft recommends manual clean-up prior to re-installation. For more information, refer to the Microsoft article *How to manually remove a Microsoft SQL Server 2000 Desktop Engine (MSDE 2000) instance* <http://www.support.microsoft.com/kb/320873>.
- DO NOT Use Terminal Services or Remote Desktop for the installation.
- Check other Services that may be running and Stop the Service during the install operation. These services include:
  - Microsoft SQLServerAgent (for the "WhatsUp" instance)
  - Microsoft COM Transaction Integrator
  - Microsoft Distributed Transaction Coordinator (MS DTC)
  - Microsoft Message Queuing
  - Microsoft Search
  - MSSQLServerOLAPService
- If there was a previous, non-default installation of WhatsUp Gold or WhatsUp Professional that has been removed, a "WhatsUp" Data Source (DSN) may still exist.
  - Remove the WhatsUp DSN and allow the install to configure a default database, or upgrade an existing "WhatsUp" database residing on the WhatsUp MSDE 2000 instance.

## For more information

Following are information resources for WhatsUp Gold. This information may be periodically updated and available on the WhatsUp Gold support page <http://www.ipswitch.com/support/whatsup/index.asp>.

- **Release Notes.** The release notes, located in the **Start > Programs > Ipswitch WhatsUp Gold > Release Notes**, provide an overview of changes, known issues, and bug fixes for the current release. The notes also contain instructions for installing, upgrading, and configuring WhatsUp Gold. Release notes are also available on the Ipswitch WhatsUp Gold Release Notes <http://www.ipswitch.com/WUG1103relnotes> Ipswitch Web site.
- **Application Help for the console.** Contains dialog assistance, general configuration information, and how-to's that explain how to use the features. The Table of Contents is organized by functional area, and can be accessed from the main menu or by clicking **Help**.
- **Application Help for the web interface.** Contains dialog assistance, how-to's that explain how to use features, table of contents, index, and search. Click **?** to access the Help.
- **Getting Started Guide.** Provides an overview of WhatsUp Gold, information to help you get started using the application, the system requirements, and information about installing and upgrading. To view or download the Getting Started Guide, go to the Ipswitch Web site <http://www.ipswitch.com/WUG1103GSG>.
- **User Guide.** This guide describes how to use the application out-of-the-box. It is also useful if you want to read about the application before installing. To view or download the User Guide, select **Help > WhatsUp Gold User Guide** or go directly to the guide on the Ipswitch Web site <http://www.ipswitch.com/WUG1103Guide>.
- **Distributed Deployment Guide.** This guide provides instructions on how to plan and deploy a distributed installation of WhatsUp Gold MSP Edition or WhatsUp Gold Multi-Site Edition. To view or download this guide, go to the Ipswitch Web site <http://www.ipswitch.com/WUG11dsdg>.
- **Translation Guide.** This guide describes how to use the translation features to create a localized version of the WhatsUp Gold web interface. To view or download this guide, go to the Ipswitch Web site <http://www.ipswitch.com/WUG11Trans>.
- **WhatsUp Gold Forum** <http://forums.ipswitch.com/>. Provides a resource for you to interact with other WhatsUp Gold users to share helpful information about the application.
- **The Ipswitch Knowledge Base** <http://support.ipswitch.com/kb/>. Search the Ipswitch Knowledge Base of technical support and customer service information.