



RESOURCE AND PATIENT MANAGEMENT SYSTEM

Patient Registration MPI Interface

(AG)

Ensemble Management Portal Manual

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Preface

The purpose of this manual is to provide information about using the *Ensemble Management Portal*. Although this manual has been written to allow users to monitor the Ensemble Integration Engine, the Beta testing process has identified that users should not use these features, but should use the FULL Ensemble System Management Portal and the Ensemble Management Portal for the Integration Engine.

1.0 Introduction

For over a decade, hospitals and health centers of the Indian Health Service (IHS) and numerous tribal health programs have used an information system called the Resource and Patient Management System (RPMS). RPMS is a highly integrated system consisting of some 50 health care and administrative applications. Virtually all of these applications directly interact with one or more, and sometimes many, of the other RPMS applications.

RPMS applications are required to interact with the Master Patient Index (MPI) to meet the needs of the IHS MPI initiative. The RPMS/HL7-Optimized (HLO) interface is a way to send patient information Admission, Discharge, Transfer (ADT) to the MPI and to receive treating facility information from the MPI and store it into the RPMS database.

When the MPI and the RPMS/AG (MPI) Interface are complete, the MPI will be the primary data repository for enterprise-wide patient data.

This manual describes the tools that are provided to manage and monitor the Ensemble Integration Engine (EIE). The first section describes to the end user how to use the portal in the day-to-day management of the interface. The second section describes the portal in more technical detail for OIT personnel to assist the end user in configuring the EIE and in troubleshooting problems.

Note: Detailed instructions for installing and configuring the AGMPI production in Ensemble are found in the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes*.

2.0 Productions and Namespaces

A *production*, the unit of delivery for Ensemble-based development projects, is a package of host classes and configuration items that solves a specific integration problem for an enterprise.

The AGMP interface sends messages between RPMS and the MPI system to maintain the integrity and accuracy of patient records. The AGMPI.PatientRegistration production uses the EIE to provide a suite of tools for managing, monitoring, and troubleshooting the message transport between the two systems.

Productions can be started and stopped, configured, and monitored from the Ensemble Management Portal. In addition, errors such as messaging errors and connection errors trigger e-mail alerts from EIE.

A *namespace* is a collection of one or more productions. The AGMPxxx namespace created during the AGMP installation process (where “xxx” is the site’s production namespace) contains only one production (the AGMPI.PatientRegistration production).

The Ensemble installation procedure creates several namespaces for internal use by the Ensemble engine: %SYS, DOCBOOK, USER, SAMPLES, ENSLIB, ENSEMBLE, and ENSDEMO.

All system-provided namespaces except ENSEMBLE and USER are overwritten upon reinstallation or upgrade. For this reason, InterSystems recommends creating new namespaces, rather than placing custom code in any of the system-provided namespaces, where it could be overwritten and lost.

3.0 Ensemble Management Portal

The Ensemble Management Portal provides access to the tools and components required to manage the AGMP namespace and the AGMPI.PatientRegistration production instance. The Ensemble Management Portal contains a subset of the tools available in Ensemble.

It is critical to get permission from OIT before running a production instance. The patient bulk load file must be activated by OIT before running any Ensemble production instance.

It is highly recommended that sites use the full Ensemble Management Portal to properly monitor the EIE. A WebEx training program for the use of the Ensemble Management Portal is currently under development. This training tool must be coordinated with the roll-out training offered by OIT in support of the entire enterprise deployment of Ensemble.

Portions of the Ensemble AG MPI documentation will change based on the roll out of final production.

3.1 Navigating in Ensemble

3.1.1 Navigation Links

Pages in the Ensemble Management Portal have navigation links (often called “breadcrumbs”) located above the display area (Figure 3-1).



Figure 3-1: Ensemble Management Portal navigation links

- Use the navigation menu on the left side of the page to navigate to pages required to administer the current production instance.

See Section 3.1.2 for a description of each menu item.

After navigating to another page using a menu item, the navigation links shown in Figure 3-1 provide a reference to the page's location within the portal.

- To return to a previous page, click the page name in the navigation links.

3.1.1.1 Navigating to Home Pages

The **Home** link located immediately below the InterSystems logo (Figure 3-2) navigates to the InterSystems **System Management Portal** home page.



Figure 3-2: Home link below the InterSystems logo

The **Ensemble** navigation link (Figure 3-3), as well as the **Home** menu option on many Ensemble Management Portal pages (Figure 3-4), navigate to the **Ensemble Management Portal** home page.



Figure 3-3: Ensemble navigation link



Figure 3-4: Home menu option on Ensemble Management Portal page

- To return to the **Ensemble Management Portal** page, click the **Ensemble** navigation link at the top of any portal page (Figure 3-3), or click the **Home** menu option on the left side of the page (Figure 3-4).

Note: Some pages in the Ensemble Management Portal do not have a menu located on the left side. On these pages, navigate to the Ensemble Management Portal home page by clicking the **Ensemble** navigation link, as shown in Figure 3-5.

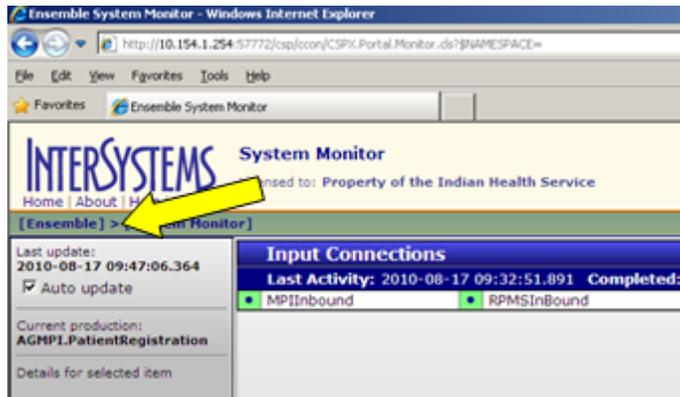


Figure 3-5: The **System Monitor** page does not have a menu. Navigate using the navigation links located at the top of the page.

3.1.2 Namespace List

Many pages in the Ensemble Management Portal have a **Namespace** list at the top of the display area, as shown in Figure 3-6.

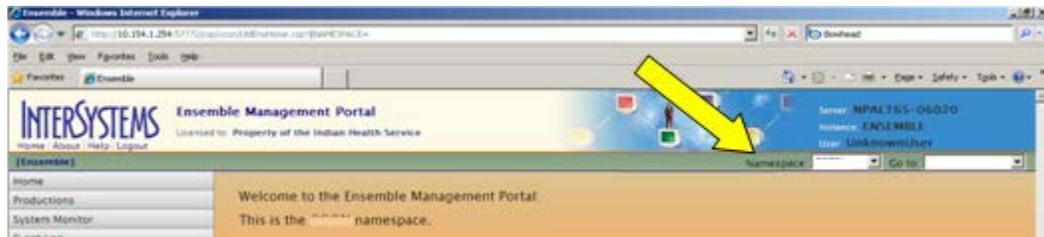


Figure 3-6: **Namespace** list

- To manage a specific namespace, select it in the **Namespace** list.

3.1.3 Go to List

Many pages in the Ensemble Management Portal have a **Go to** list at the top of the display area, as shown in Figure 3-7.

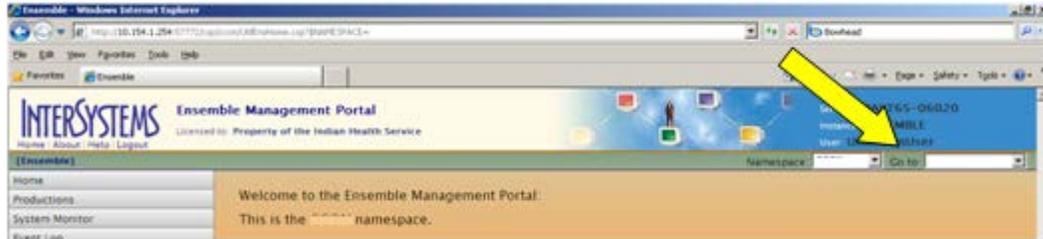


Figure 3-7: **Go to** list

- To return to one of the last seven pages visited in the **Ensemble Management Portal** or the **System Management Portal**, select the page in the **Go to** list.

3.1.4 Ensemble Management Portal Menu

Many pages in the Ensemble Management Portal have a navigation menu on the left side of the page (Figure 3-8).

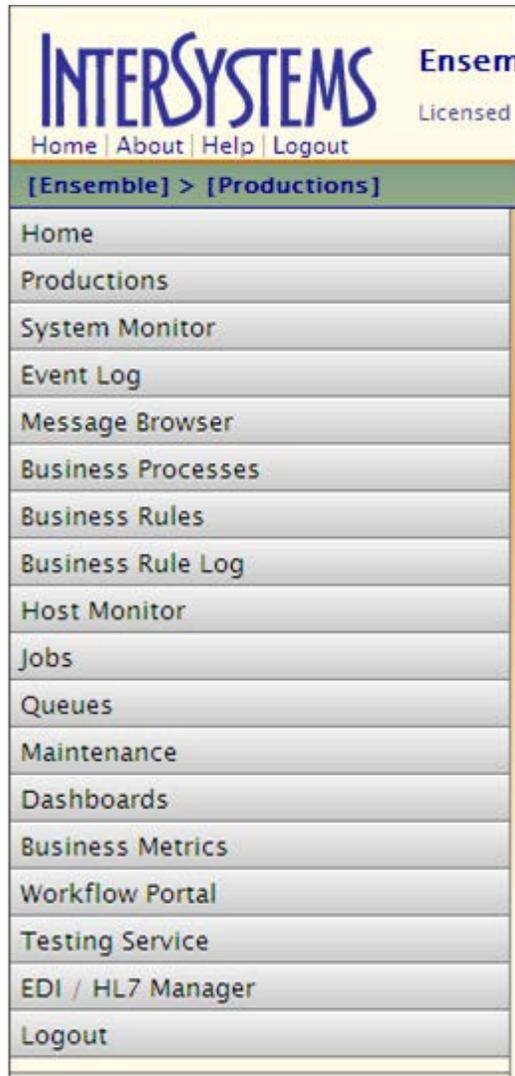


Figure 3-8: Ensemble Management Portal menu

Note: Some pages in the Ensemble Management Portal do not have a menu on the left side of the page. On these pages, navigate to the Ensemble Management Portal home page, which has a menu, by clicking the **Ensemble** navigation link located above the display area, as shown in Figure 3-9.



Figure 3-9: The **System Monitor** page does not have a menu. Return to the Ensemble Management Portal home page by clicking the **Ensemble** link.

Use the options in the Ensemble Management Portal menu to navigate to other pages required to administer the current production instance.

- **Home.** Navigates to the Ensemble Management Portal home page.
- **Productions.** Lists productions in the currently selected namespace
- **System Monitor.** Displays the real-time status of external connections and internal message queues
- **Event Log.** Lists event log entries
- **Message Browser.** Views, filters, and searches the message archive for the currently running production
- **Business Processes.** Lists all business processes in the current namespace
- **Business Rules.** Defines business rules
- **Business Rule Log.** Logs business rules activity
- **Host Monitor.** Displays the status of configuration items in the current production
- **Jobs.** Lists the system jobs doing work for the current production
- **Queues.** Lists the queues in use by the currently running production
- **Maintenance.** Provides access to specialized maintenance tasks
- **Dashboards.** Lists the available Business Activity Monitoring dashboards
- **Business Metrics.** Summarizes the data being collected by business metric classes
- **Workflow Portal.** Provides options to manage workflow, define user roles, and accept tasks

- **Testing Service.** Sends test requests to the currently running production
- **EDI / HL7 Manager.** Provides access to Electronic Data Interchange (EDI) formats such as HL7

3.2 Starting the Ensemble Management Portal

To start the Ensemble Management Portal, follow these steps:



Figure 3-10: Ensemble cube icon

1. If Ensemble is not currently running, click the Ensemble cube icon in the Windows system tray and select **Start Ensemble** from the context menu.
2. Click the Ensemble cube and select **System Management Portal** from the context menu. If your site's system security requires you to log in to Ensemble, the Ensemble login page is displayed, as shown in Figure 3-11.

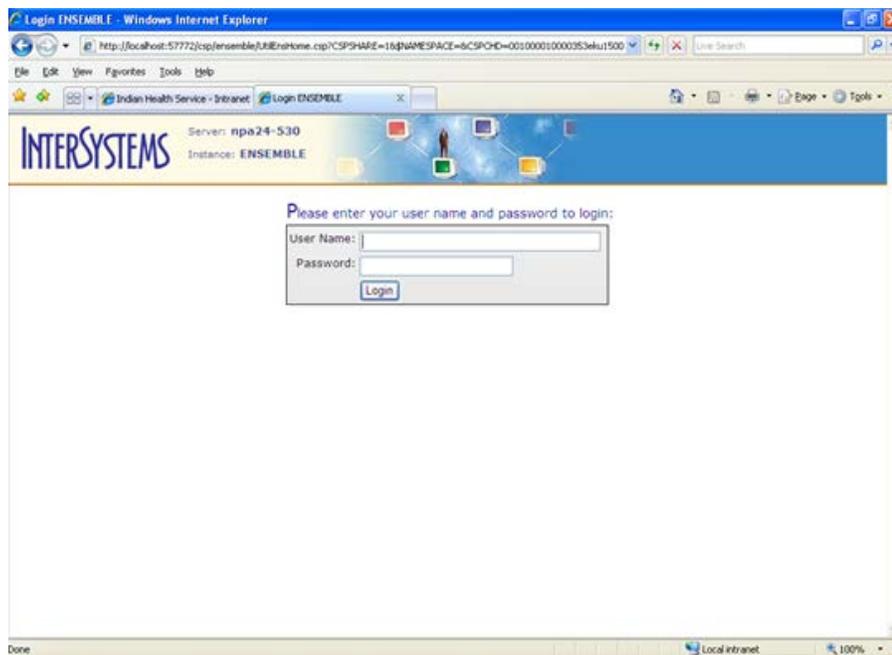


Figure 3-11: Ensemble login page

Note: Login for Ensemble may not be a requirement at your site.

3. If the login page is displayed, type your user name and password and click **Login** to open the System Management Portal, as shown in Figure 3-1.

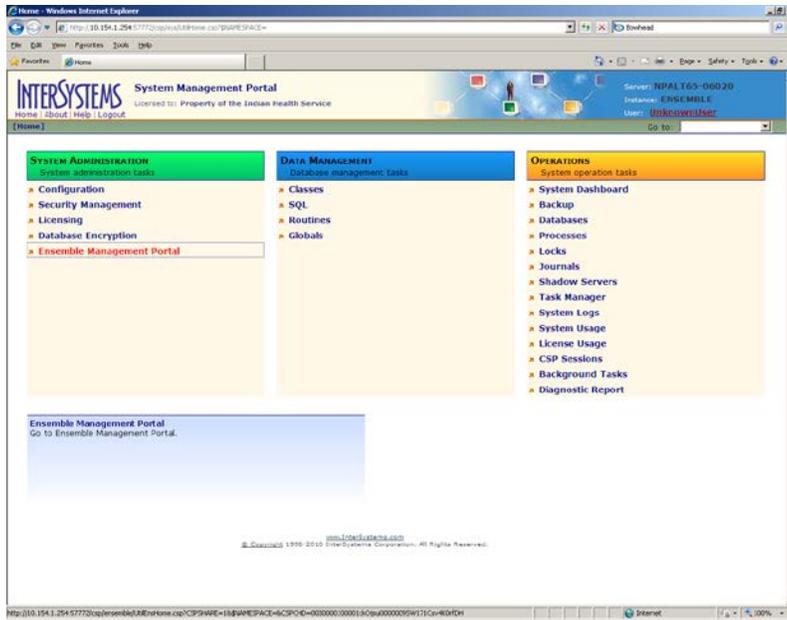


Figure 3-12: **System Management Portal** page showing link to the Ensemble Management Portal

4. Click the **Ensemble Management Portal** link to open the Ensemble Management Portal, as shown in Figure 3-13.

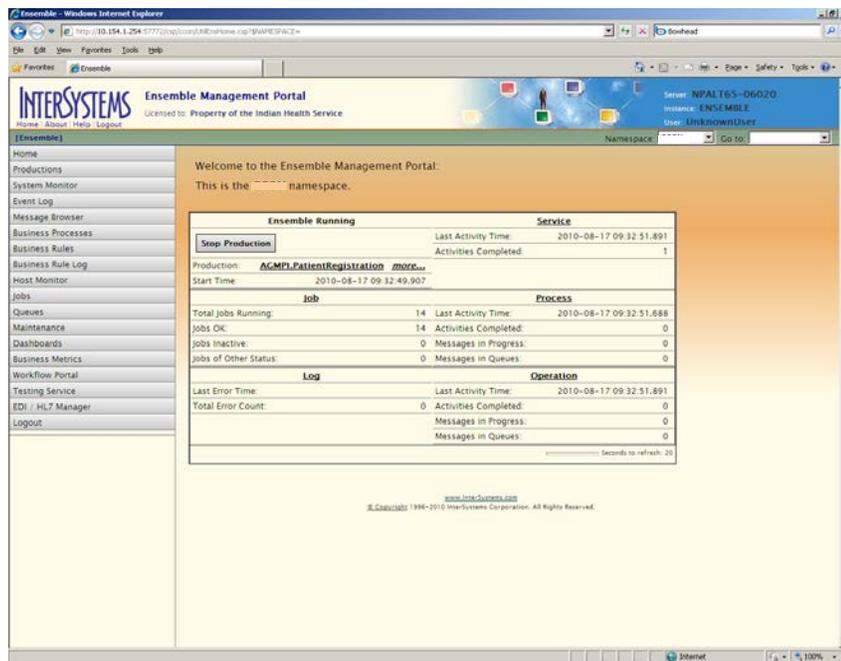


Figure 3-13: **Ensemble Management Portal** page

3.3 Ensemble Management Portal Page

References to “home page” in this section refer to the Ensemble Management Portal home page.

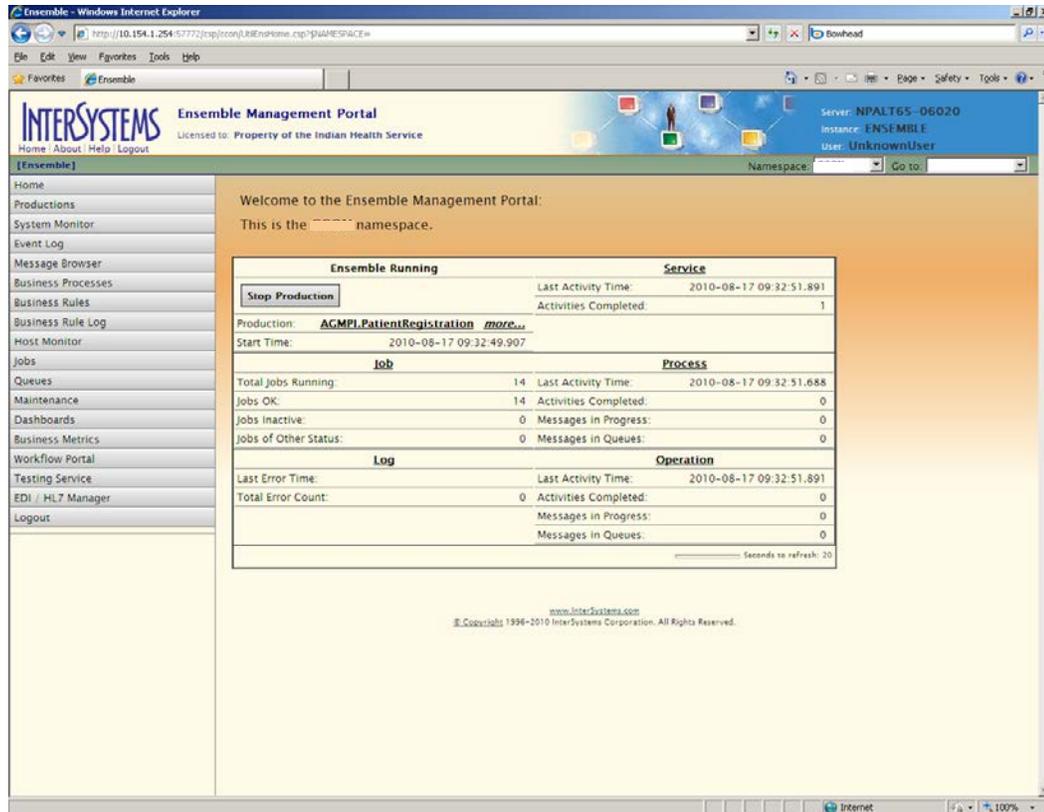


Figure 3-14: Ensemble Management Portal page

As shown in Figure 3-14, the **Ensemble Management Portal** page contains a welcome message, the Ensemble Management Portal menu, and a production instance table containing information about the currently active Ensemble production.

- Use the menu on the left side of the page to navigate to other pages required to administer the AGMPIxxx production instance.

Note: Some pages in the Ensemble Management Portal do not have a menu located on the left side. On these pages, return to the Ensemble Management Portal home page by clicking the **Ensemble** navigation link located at the top of the display area, as shown in Figure 3-5, and use the menu on the home page.

- The main area of the **Ensemble Management Portal** page contains a production instance table with information about the current production and the Ensemble installation.

The production instance table includes information about production activity in the currently active namespace, as well as summary statistics about Ensemble processes and operations. The numbers in this table reflect a snapshot of Ensemble at the time when the home page was last refreshed.

- To refresh a page, click the browser's refresh button.

3.3.1 Choosing a Namespace

The **Namespace** list appears at the top of the display area, as shown in Figure 3-15.

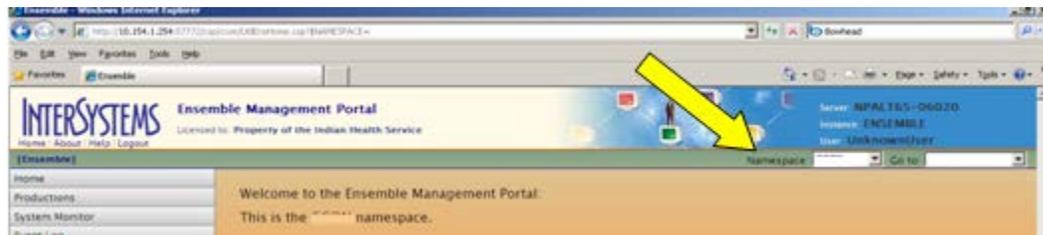


Figure 3-15: **Namespace** list

- To begin working in the Ensemble Management Portal, select the appropriate namespace from the **Namespace** list.

Note: During the AGMP installation process, a namespace called AGMPxxx was created, where “xxx” is your production namespace. Work in this namespace when using this manual.

The Ensemble installation procedure creates several namespaces for internal use by the Ensemble engine: %SYS, DOCBOOK, USER, SAMPLES, ENSLIB, ENSEMBLE, and ENSDEMO.

All system-provided namespaces except ENSEMBLE and USER are overwritten upon reinstallation or upgrade. For this reason, InterSystems recommends creating new namespaces, rather than placing custom code in any of the system-provided namespaces, where it could be overwritten and lost.

3.3.1.1 Opening the AGMPI Namespace Production

- To open the AGMPI.PatientRegistration production, select the AGMPIxxx namespace in the **Namespace** list.

The production instance table for the AGMPI.PatientRegistration production is displayed on the **Ensemble Management Portal** page, as shown in Figure 3-16.

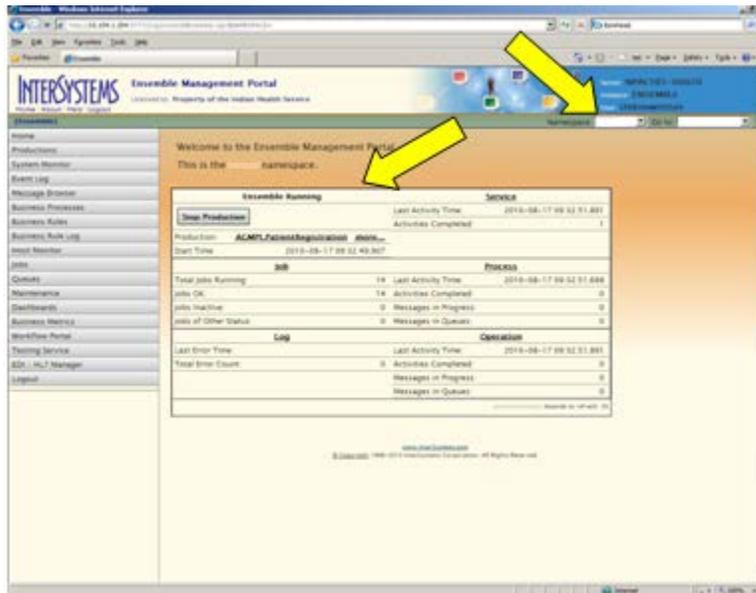


Figure 3-16: **Ensemble Management Portal** page showing the AGMPI.PatientRegistration production instance table

3.3.2 Production Instance Table

A production instance table containing information about the currently running production appears in the main display area on the Ensemble Management Portal home page. The table for the AGMPI.PatientRegistration production is shown in Figure 3-17

Ensemble Running		Service	
Stop Production		Last Activity Time:	2010-05-18 09:20:21.463
Production: AGMPI.PatientRegistration more...		Activities Completed:	9
Start Time: 2010-05-17 11:48:05.030			
Job		Process	
Total Jobs Running:	16	Last Activity Time:	2010-05-17 20:08:26.231
Jobs OK:	12	Activities Completed:	3
Jobs Inactive:	3	Messages in Progress:	0
Jobs of Other Status:	1	Messages in Queues:	0
Log		Operation	
Last Error Time:	2010-05-18 08:51:09.101	Last Activity Time:	2010-05-18 14:11:47.962
Total Error Count:	4	Activities Completed:	16
		Messages in Progress:	1
		Messages in Queues:	5
Seconds to refresh: 22			

Figure 3-17: AGMPI.PatientRegistration production table

The following fields appear in the production instance table:

- **Ensemble *Running*** (or another status). This field describes the status of the Ensemble execution engine. The status “**Running**” appears if any Ensemble production is running. Otherwise, “**Ensemble Stopped**,” “**Ensemble Suspended**,” or “**Ensemble Troubled**” appears.
- **Stop Production**. Depending upon the status of the production, the button above the Production field may appear as “**Start Production**,” “**Stop Production**,” “**Update Production**,” or “**Recover**.”

To start, stop, update, or recover the production listed in the **Production** field, click **Start Production**, **Stop Production**, **Update Production**, or **Recover**.

- **Start Production**. The **Start Production** button is available only if no production is currently running. Click **Start Production** to start the production listed in the **Production** field.
- **Stop Production**. The **Stop Production** button is available only if a production is currently running. Click **Stop Production** to stop the production listed in the **Production** field.

- **Update Production.** The **Update Production** button becomes available on the **Ensemble Management Portal Home** page when there is a discrepancy between the status of the currently running production and the production as defined in the code.

Click **Update Production** to update the production and resolve the discrepancy. When the confirmation message is displayed, click **OK** to return to the **Ensemble Management Portal Home** page.

Examples of discrepancies include the following:

- A specific business host experienced an error and has died (the most likely cause).
 - The user changed a configuration parameter for a business host in a running production, so that the host now needs to be restarted.
 - A production typically opens a Terminal window, but this window was closed by a user action while the production was still running.
- **Production.** The name of the currently running production or the last production run. The name of the production in the **Production** field is a link to other portal pages.
 - Click the production name to display the **Ensemble Configuration** page, which displays a configuration diagram (a graphical representation of the business hosts in a production). Each item in the diagram displays a runtime status indicator.

Note: Detailed instructions for configuring a production using the configuration diagrams are found in the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes*.

- Click **more** to the right of the production name to display a list of productions to start or stop on the **Ensemble Productions** page. There may only be one production instance listed.

Note: For the purposes of this manual, use the AGMPI.PatientRegistration production instance.

- **Start Time.** The start time of the currently running production. The **Start Time** field is never reset while the production is running, even if **Reset Counter** is clicked to reset other fields. If there is no production running, the **Start Time** field is blank.

3.3.3 Checking Production Status

- Upon successful login, check to make sure that the production instance is still running, and that there is no warning message listed next to the **Production** button.

Note: Always monitor Outlook e-mail for alerts from Ensemble. See Section 11.0 for information about Ensemble e-mail alerts.

- If more than one Ensemble namespace is available, be sure that the appropriate namespace has been chosen from the **Namespace** list.

Note: If only one Ensemble namespace is available, the login page automatically selects that namespace.

4.0 Working with Productions

4.1 Production Status

A production may be in any one of the states listed in Table 4-1. The corresponding status is displayed on the **Ensemble Management Portal** page and on the **Ensemble Productions** page.

Table 4-1: Production Status

State	Meaning
Running	When a production has been started and is operating normally, it has a status of Running. This is an acceptable state.
Stopped	A production acquires a status of Stopped when, at the end of the shutdown sequence, all of its queues are free of synchronous messages. This is an acceptable state.
Suspended	<p>A production acquires the Suspended status if, at the end of the shutdown sequence, some queues still contain synchronous messages, waiting for a response. Depending on how the production has been designed, this may or may not indicate a problem.</p> <p>A Suspended production can be started. Starting the production again may permit the waiting messages to be processed. However, if the Suspended production is started, and more messages arrive while those in front of them in the queue cannot be resolved, queues may simply continue to fill. In that case investigate to discover why the incoming messages never complete.</p> <p>A Suspended production may be stopped. InterSystems advises stopping a production only during initial development and not on a deployed, live installation. For instructions, see the Stopping a Suspended Production section in the “Creating a New Production” chapter.</p>
Troubled	A production acquires a status of Troubled if Ensemble is stopped but the production did not shut down properly. This can happen if you restarted Ensemble or rebooted the machine without first stopping the production. In this case you need to issue a command to recover the production. For instructions, see the next section, Production Life Cycle.

Any changes made to a production while it is running are applied immediately, without requiring the stop and restart of the production. When a production is running, monitoring and diagnostic tasks can be performed from the Ensemble Management Portal.

4.2 Ensemble Productions Page

The **Ensemble Productions** page, shown in Figure 4-1, lists all the productions defined in the current namespace and provides status information and links for configuring, starting and stopping, and inspecting each production.

A namespace may contain only one production. However, if multiple productions are listed, any production on the list can be managed from this page.

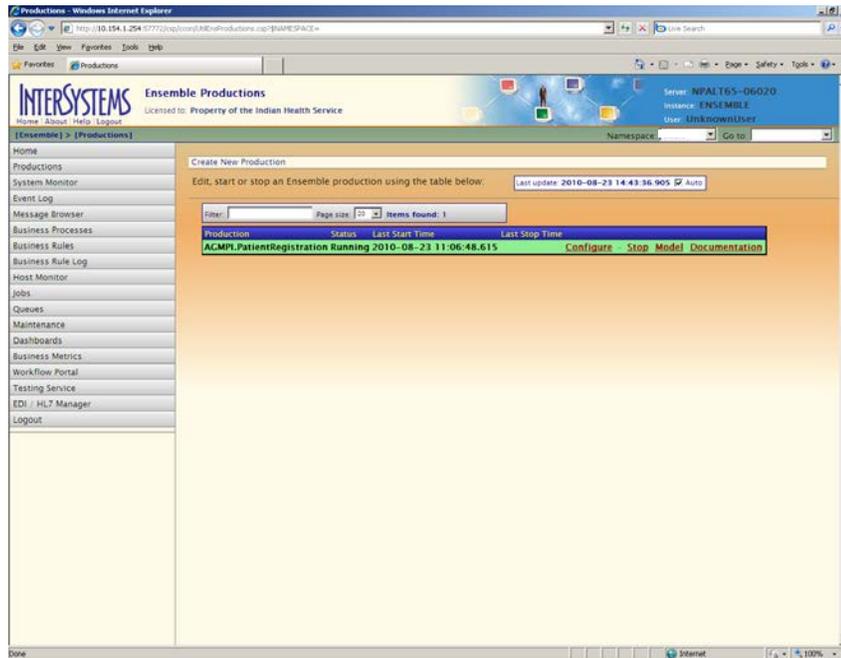


Figure 4-1: Ensemble Productions page

Configuration pages for each production can be accessed from the Ensemble Productions page. Configuration settings affect the behavior of the production, as well as the various configuration items within the production, such as services, processes, and operations.

Note: Detailed instructions for using a production's configuration pages are found in the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes*.

4.2.1 Opening the Ensemble Productions Page

To display the **Ensemble Productions** page from the **Ensemble Management Portal**, use one of the following options, as shown in Figure 4-2:

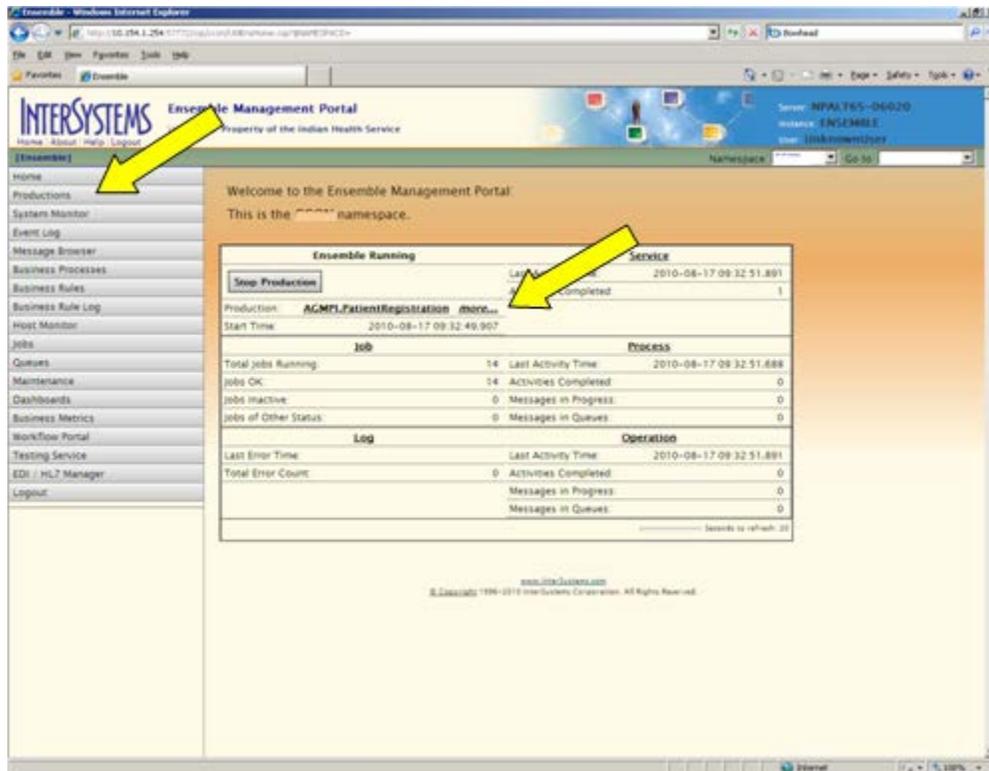


Figure 4-2: **Productions** menu option and **more** link on the **Ensemble Management Portal** page

- In the **Ensemble Management Portal** menu, click **Productions**.
- In the production instance table on the **Ensemble Management Portal** home page, click the **more** link next to the production name.

The **Ensemble Productions** page is shown in Figure 4-3.

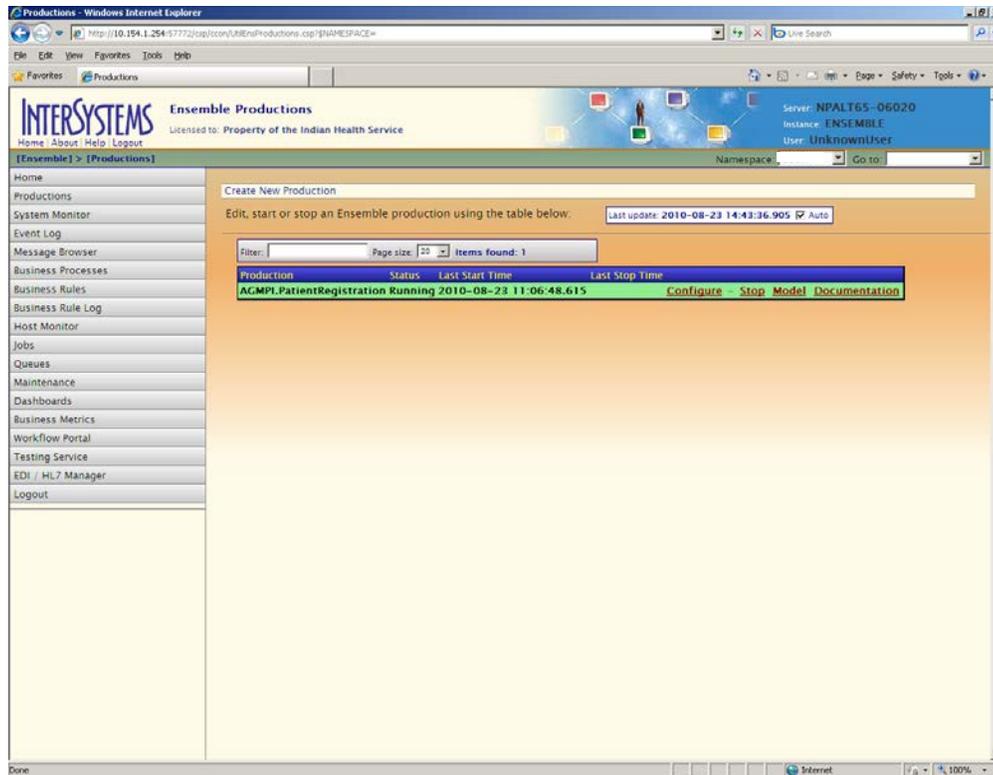


Figure 4-3: **Ensemble Productions** page

In addition to the list of productions in the current namespace, the **Ensemble Productions** page contains the **Namespace** and **Go to** lists at the top of the display area. Many pages also contain the Ensemble Management Portal menu on the left.

- To manage a specific production, select it in the **Namespace** list.
- To return to one of the last seven pages visited in the **Ensemble Management Portal** or the **System Management Portal**, select the page in the **Go to** list.
- To navigate to a different page in the Ensemble Management Portal, click an option in the Ensemble Management Portal menu.

4.3 Production List

The list on the **Ensemble Productions** page includes all Ensemble productions defined in the current namespace. A namespace may contain only one production, as shown in Figure 4-4. However, if multiple productions are listed, any production in the list can be managed and configured from this page.



Figure 4-4: List of productions on the **Ensemble Productions** page

The color of each row indicates the status of the production, as specified in Table 4-2. See Section 4.1 for information about the production status values of “Running,” “Stopped,” “Suspended,” and “Troubled.”

Table 4-2: Colors associated with production status

Production Status	Row Color
Running	Light green
Stopped	Light gray
Suspended	Orange
Troubled	Light gray

The list of productions includes the following columns and links for each production:

- **Production.** The name of the production.
- **Status.** The status of the production (“Running,” “Suspended,” “Troubled,” or “Stopped,” as described in Table 4-1)
- **LastStartTime.** The date and time when the production was last started
- **LastStopTime.** The date and time when the production was last stopped
- **Configure** link. Displays the configuration diagram, a graphical representation of the business hosts in the production, for this production. Each item in the diagram displays a runtime status indicator.

Note: Detailed instructions for configuring a production using the configuration diagrams are found in the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes*.

- **Start/Stop** link (depending on current production status). Starts the named production if it is not running, or stops the production if it is running
- **Model** link. Displays a high-level diagram of the production

- **Documentation** link. Displays or generates configuration documentation for this production in HTML format

4.4 Starting and Stopping a Production

Only one production can be run at a time. If a production is running and a user tries to start a different production, a warning message is displayed and nothing changes.

- To start a different production, stop the currently running production on the **Ensemble Productions** page, and then start another one.

4.4.1 Start a Production Manually

Start a production from the **Ensemble Management Portal** page or from the **Ensemble Productions** page.

1. Select the production to be started.

On the **Ensemble Management Portal** page, follow these steps:

- a. If the production instance table displays a **Stopped** status and a **Start Production** button, examine the name in the **Production** field.
- b. To start the production named in the **Production** field, click **Start Production**.
- c. To start a different production, click the *more* link and follow the instructions for the **Ensemble Productions** page.

On the **Ensemble Productions** page, locate the production in the list and click the **Start** link to the right of the production name.

- d. To view a production's configuration diagram before starting the production, click the **Configuration** link to the right of the name.

Note: Detailed instructions for configuring a production using the configuration diagrams are found in the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes*.

2. In the confirmation dialog box, click **Yes** to display the **Ensemble Production Start** page, as shown in Figure 4-5, including the name of the production, its startup status, and any messages associated with production startup.

Note: If any Terminal windows are displayed during production startup, do not close them manually.

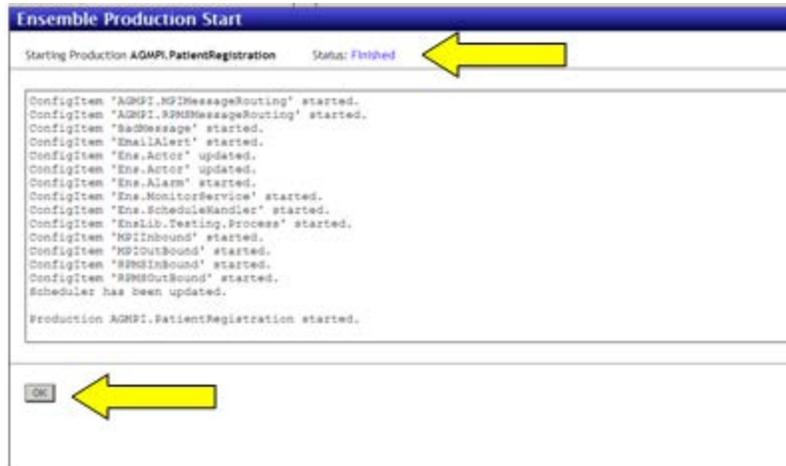


Figure 4-5: Ensemble Production Start page

3. When the **Status** field at the top of the page displays “Finished,” click **OK** at the bottom of the page.

4.4.2 Stop a Production Manually

An Ensemble production can be stopped from various pages in the Ensemble Management Portal, including the **Ensemble Management Portal** page and the **Ensemble Productions** page.

1. Do one of the following:
 - a. On the **Ensemble Management Portal** page, if the production instance table displays an **Ensemble Running** status and a **Stop Production** button, click **Stop Production**.
 - b. On the **Ensemble Productions** page, locate the production in the list and click the **Stop** link to the right of the production name.

To view a production’s configuration diagram before starting the production, click the **Configuration** link to the right of the name.

Note: Detailed instructions for configuring a production using the configuration diagrams are found in the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes*.

2. In the confirmation dialog box, click **Yes** to display the **Ensemble Production Stop** page, as shown in Figure 4-6, including the name of the production, its startup status, and any messages associated with production shutdown.

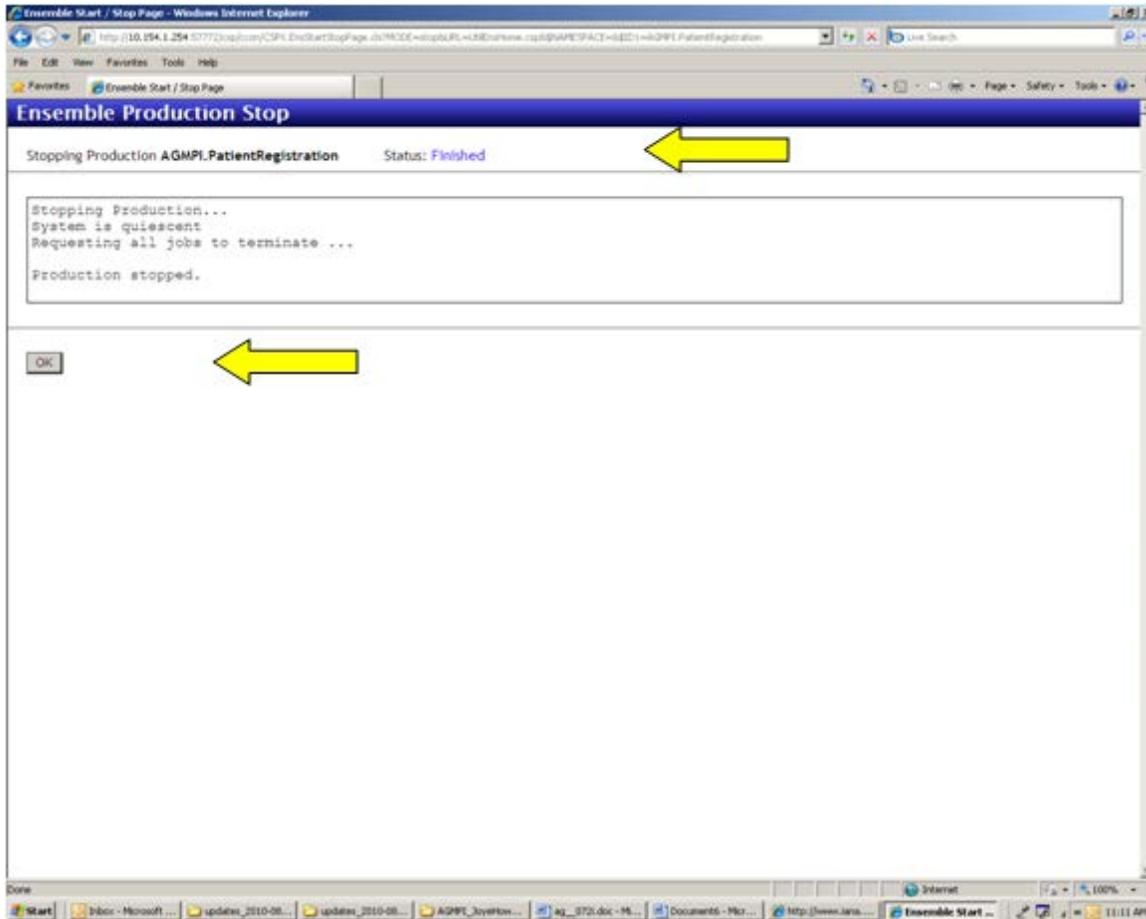


Figure 4-6: Ensemble Production Stop page

3. When the **Status** field at the top of the page displays “Finished,” click **OK** at the bottom of the page.
4. If the request to stop the production fails initially, the following message is displayed: “Production could not stop, do you want to force a shut down?”
Click **Yes - Force to Shut Down** to force production shutdown.

4.4.3 Start and Stop a Production Automatically

An Ensemble production can be configured to start automatically at system startup and to stop automatically at system shutdown.



Figure 4-7: **Maintenance** option on the Ensemble Management Portal menu

1. On the Ensemble Management Portal menu, click **Maintenance** to open the **Ensemble Maintenance** page, as shown in Figure 4-8.

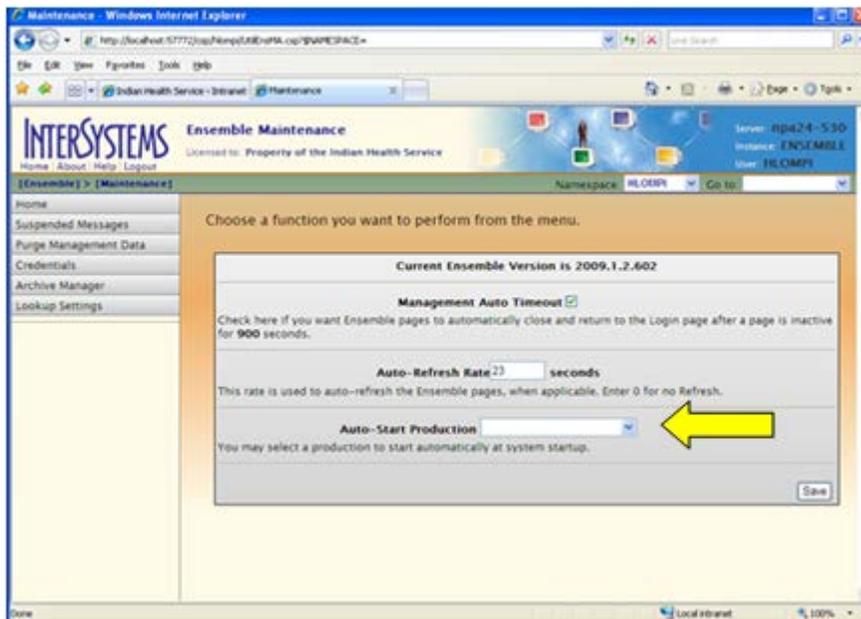


Figure 4-8: **Auto-Start Production** setting on the **Ensemble Maintenance** page

2. In the **Auto-Start Production** list, select a production to start automatically at system startup and stop automatically at system shutdown.
3. Click **Save**.

Ensemble Maintenance Page

Use the **Ensemble Maintenance** page for cleanup operations, such as resending suspended messages, purging outdated records, setting up user credentials for remote connections, and specifying automatic startup for a specific production.



Figure 4-9: **Maintenance** option on the Ensemble Management Portal menu

1. On the Ensemble Management Portal menu, click **Maintenance** to open the **Ensemble Maintenance** page, as shown in Figure 4-10.

- **Management Auto-Timeout.** Enables or disables the period of inactivity, after which the Ensemble Management Portal logs the user out and displays a login page
- **Auto-Refresh Rate.** The number of elapsed seconds after which the Ensemble Management Portal refreshes the portal page the user is currently viewing.

The default refresh rate is every 23 seconds. Refreshing the page as frequently as every 5 seconds might be helpful or distracting, depending on how you are using the portal.

 - To change the refresh rate, enter a new value in this field.
 - To never automatically refresh the pages, set the value to 0 (zero).
- **Auto-Start Production.** Configures Ensemble to start a specific production automatically at system startup and to stop the production automatically at system shutdown
 - To configure a production to start automatically at startup, select its name in the **Auto-Start Production** list.
 - To disable automatic production start, select the blank entry in the **Auto-Start Production** list. This is the default setting.

After making changes in the **Maintenance** page, click **Save** to apply the changes.

5.0 Purge Management Data Page

Use the **Purge Management Data** page to delete outdated records in the event log, message warehouse, business process archives, and business rule log. These records can consume a large amount of space on the system where Ensemble is running.

Only entries associated with the currently running production can be purged.

To open the **Purge Management Data** page, follow these steps:

1. On the Ensemble Management Portal menu, click **Maintenance**.
2. On the Maintenance menu, click **Purge Management Data** to display the **Purge** page, as shown in Figure 5-1.

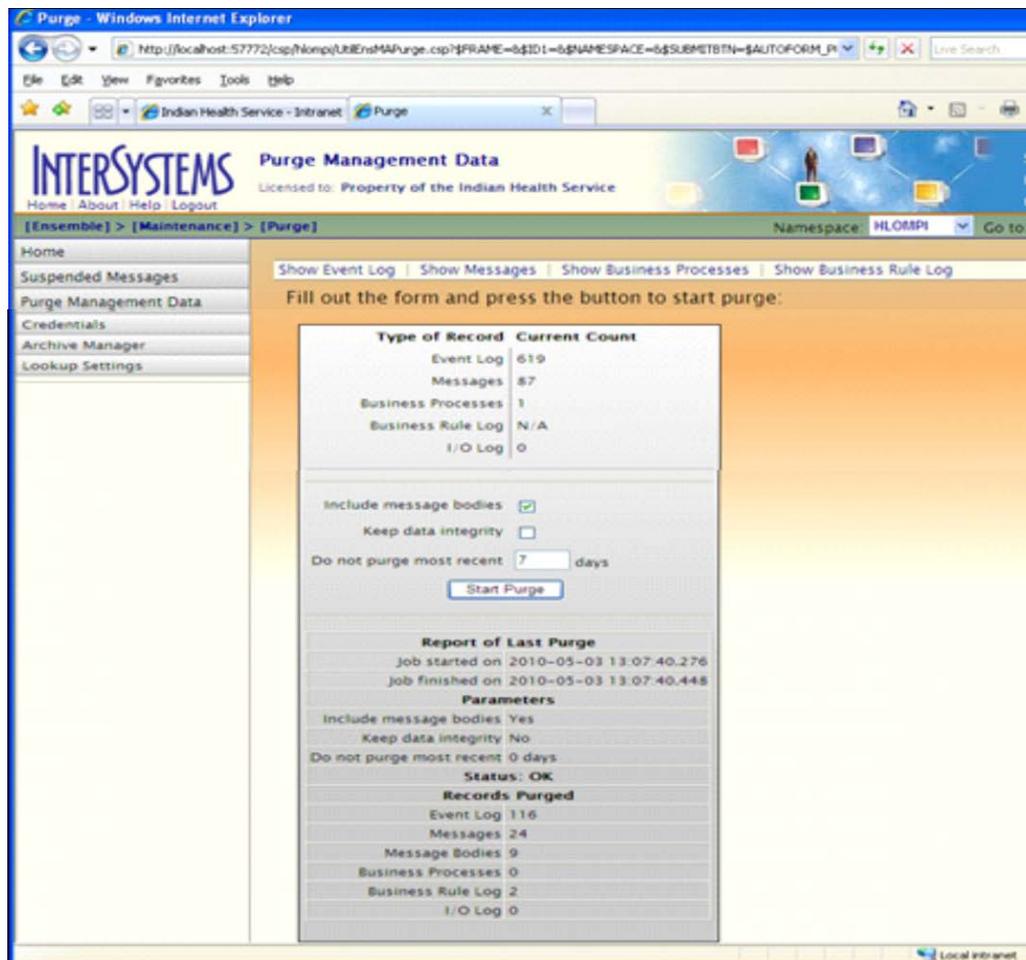


Figure 5-1: Purge Management Data page

The **Purge Management Data** page contains the Maintenance menu, a row of navigation buttons at the top of the display area, and status information about the current record count and the last purge operation.

If a purge operation is not currently running, the **Start Purge** button is displayed. If a purge operation is running, a highlighted row displays the status of the operation.

The following navigation buttons appear at the top of the display area:

- **Show Event Log.** Displays the **Event Log** page. Use this page to determine which event log entries should be purged and which should not.
- **Show Messages.** Displays the **Messages** page. Use this page to determine which messages should be purged and which should not.
- **Show Business Processes.** Displays the **Business Processes** page. Use this page to determine which business process instances should be purged and which should not.
- **Show Business Rule Log.** Displays the **Business Rule Log** page. Use this page to determine which business rule log entries should be purged and which should not.

The following status information appears in the display area:

- **Type of Record.** Each row in the table lists one type of artifact that the currently running production is producing on an ongoing basis (Event Log, Messages, Business Processes, Business Rule Log, and I/O Archive).
- **Current Count.** Total number of entries of each type currently in this production's persistent store. Use the **Current Count** to decide whether or not to purge the records and, if so, how many days of records to keep.

5.1 Starting a Purge Operation

1. Select the **Include message bodies** check box.

If this check box is selected, Ensemble will purge associated message bodies along with message headers. Ensemble verifies that body classes exist and are persistent before purging them.

If this check box is cleared (the default setting), message header data is purged, but message body data is retained.

2. Clear the **Keep data integrity** check box.

If this check box is selected (the default setting), a message will not be deleted unless its status is Complete, even if it meets the age criterion for purging.

Ensemble considers messages to be “complete” if they are marked Complete, Error, Aborted, or Discarded.

- This option is important to support long-running business processes. Usually this is the desired behavior. However, if there are old messages in the system whose incomplete status is not significant, it may be time to purge them. To purge old messages whose incomplete status is insignificant, uncheck the **Keep data integrity** check box.

Note: To delete messages, **Include message bodies** *must* be selected and **Keep data integrity** *must* be deselected.

3. In the **Do not purge most recent** box, type the number of days of records to retain.
 - The default setting for **Do not purge most recent** is “7,” which retains records from the past seven days.
 - If this setting is 0 (zero), no messages are retained, and all entries that exist at the time of the purge operation are deleted.
 - The specified number of days includes “today,” so keeping messages for 1 day keeps the messages generated on the current day, according to local server time.
4. Click **Start Purge**.

When this button is clicked, Ensemble immediately purges the persistent store according to the settings specified on the **Purge Management Data** page.

The purge operation runs as a background job, and the **Purge Management Data** page displays a highlighted row describing the status of the purge operation, as shown in Figure 5-2.

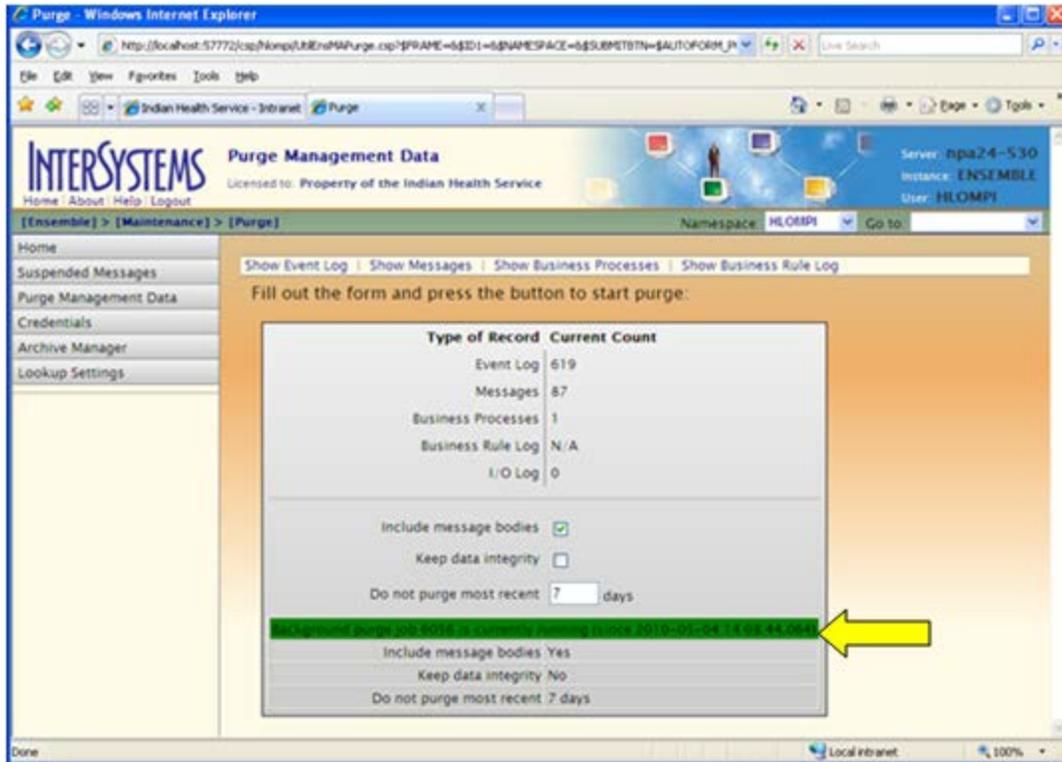


Figure 5-2: **Purge Management Data** page showing a purge operation running in the background.

Refer to caption and subsequent text for more information.

The results of the last-run purge, as well as a status code or a notice if the background job has failed to run, are displayed below the **Start Purge** button.

The **Start Purge** operation cannot be undone.

Note: Auto purge will be available to sites after Beta testing.

6.0 Credentials Page

6.1 About Credentials

Some remote systems require a username and password to log in. In Ensemble, a username/password pair can be stored as a “login credential.” Ensemble then uses the login credentials in place of the username and password to access the remote system.

Ensemble stores login credentials in a centralized table that can be viewed and edited only by users with access to the Ensemble Management Portal. The Credentials table, shown in Figure 6-1, allows credentials to be managed easily and protects login data from unauthorized access.

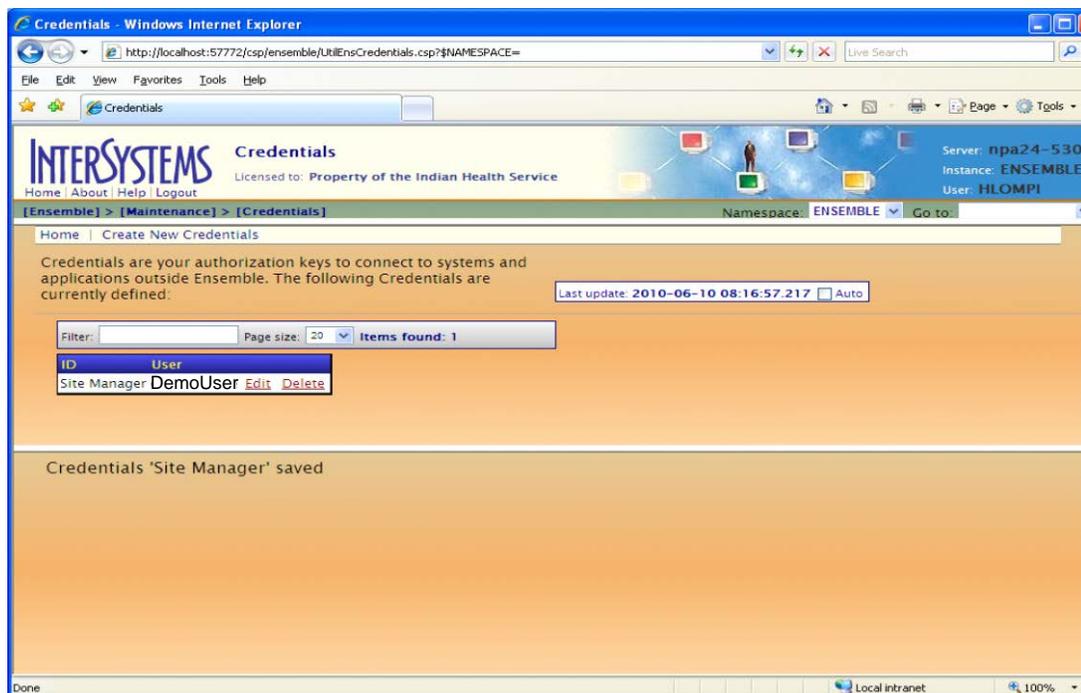


Figure 6-1: Credentials table

In Ensemble, each login credential is associated with an ID, such as “Site Manager” or “MPI Manager,” that identifies the role of the user whose username/password pair are stored in the credential. (The users name may also be used as the ID.) The Credentials table on the **Credentials** page displays an ID and a username for each credential stored in the table.

6.1.1 How Credentials Are Used

Many adapters in an Ensemble production use login credentials to log in to remote systems. Using an ID supplied during configuration, an adapter retrieves the username and password from the Credentials table, and then sends them to the remote system with a request to log in.

When a production is being configured, the ID for the appropriate user's credentials must be entered on the configuration page for each adapter that requires credentials.

- If the **Credentials** field is present on an adapter's configuration page, it *must* contain an ID from the Credentials table. The adapter will not function without the credentials.
- If the **Credentials** field is not present, the adapter does not use credentials to access a remote system.

Note: Detailed instructions for configuring a production using the configuration pages, including specifying credentials for adapters that require them, are found in the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes*.

6.2 Creating and Editing Credentials

If the Credentials table does not contain an appropriate entry for a particular adapter, a new login credential must be created. Credentials can only be created or edited by logging in to the Ensemble Management Portal and navigating to the **Credentials** page.

- Follow the instructions in Section 4.12.1 of the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes* to create a new credential.

A system administrator can log in to the Ensemble Management Portal to change the username and password values for an ID, without disturbing any other data in the production configuration.

Table 6-1: Credentials tasks in Ensemble lists the Ensemble tasks related to credentials and the navigation sequence from the **Ensemble Management Portal** page to the relevant pages.

Table 6-1: Credentials tasks in Ensemble

Credentials Task	Navigation Sequence
Establish credentials for remote connections to external systems.	Maintenance, Credentials
Configure the remote connection settings for a business service.	Productions, Configure, Service
Configure the remote connection settings for a business operation.	Productions, Configure, Operation

7.0 Messages and the Message Browser

7.1 About Messages

All communication that passes between configuration items in Ensemble is accomplished using messages. Each message has a header, which contains data fields that help route the message through the system; all messages contain the same data fields. Each message also has a body, which includes different fields depending on the message contents.

Each message belongs to a specific message class, which may be either a request class or a response class. While every response class is conceptually paired with a request class, there may be request classes that do not have a corresponding response class defined.

A request class may be synchronous (waits for a response) or asynchronous (does not wait) in its implementation. This decision is made by the class developer, and it is not configurable in a completed production.

Ensemble offers some built-in message classes to handle specific types of message content, and other message classes may be defined by class developers to fulfill a specific production need.

Complete tracking information is stored in the Ensemble message warehouse for all instantiated messages. This information is available at all times on the **Ensemble Message Portal** page and the associated pages devoted to messages.

7.2 Managing Messages in Ensemble

Messages are the primary “currency” of action and communication within Ensemble, so many management tasks are associated with messages. Table 7-1 lists the Ensemble tasks related to messages and the navigation sequence from the **Ensemble Management Portal** page to the relevant pages.

Table 7-1: Message tasks in Ensemble

Message Task	Navigation Sequence
Filter and view messages in various ways.	Message Browser
Filter the message log for the currently running production by entering search criteria such as time of day or session identifier.	Message Browser, Filter
View the contents of two messages and compare them, side by side.	Message Browser, Compare Messages

Message Task	Navigation Sequence
View message body contents.	Message Browser, Contents
View message header and body contents for a message.	Message Browser, Details
Periodically save older messages to a separate archive for long term storage.	Maintenance, Archive Manager
Resend selected messages.	Message Browser, Resend Messages
View messages that have entered a Suspended state. Resend selected messages.	Maintenance, Suspended Messages
View a visual trace of the delivery of a message, from original source all the way through to fulfillment (or failure).	Message Browser, Trace
Test HL7 or X12 messages, by viewing and transforming them.	EDI / HL7 Manager, Message Viewer
Test a production by sending request messages and receiving responses.	Testing Service

7.3 Ensemble Message Browser Page

The **Ensemble Message Browser** page lists messages that the Ensemble production has sent or queued and provides tools for filtering, inspecting, and managing the messages.

To open the **Ensemble Message Browser** page, do one of the following:

- On the Ensemble Management Portal menu, click the **Message Browser** option.
- On the **Purge Management Data** page, click the **Show Messages** navigation button at the top of the page.

The Ensemble Message Browser page is shown in Figure 7-1.

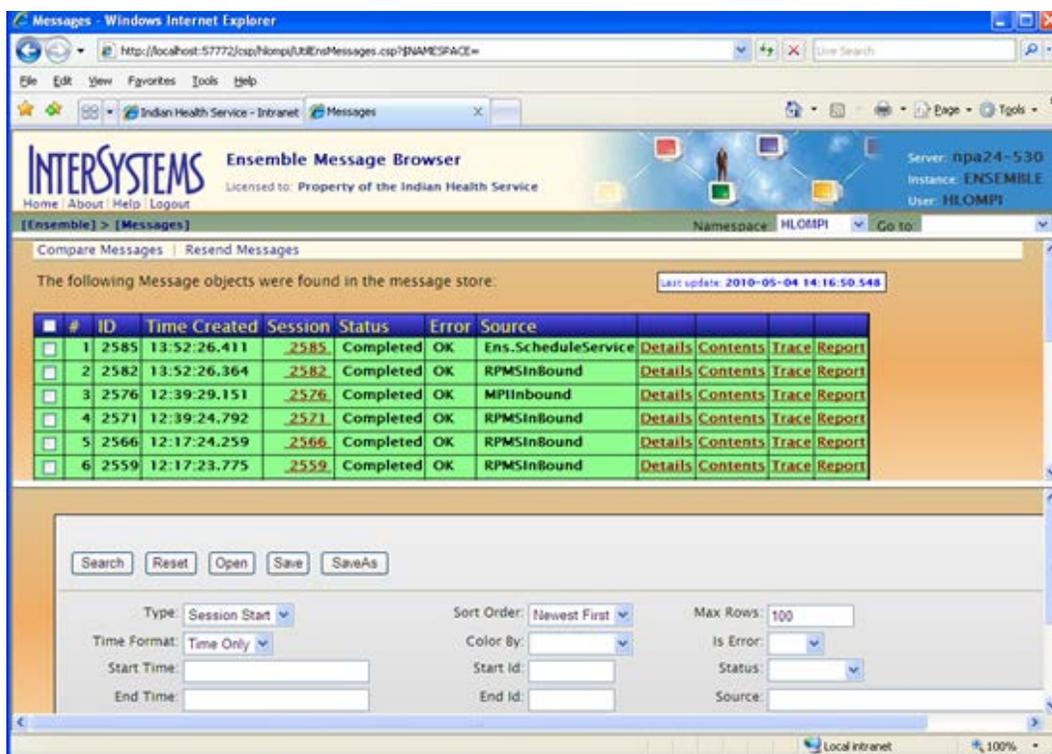


Figure 7-1: Ensemble Message Browser page

The **Ensemble Message Browser** page does not contain an Ensemble Management Portal menu. To return to the **Ensemble Management Portal** page, click the **Ensemble** navigation link at the top of the page.

The Message Browser contains two horizontal display areas with a separator bar between them. Click and drag the separator bar to resize the display areas.

- The top of the page contains the message list, showing all messages in the persistent message store for the currently running namespace.
- The bottom of the page contains other tools for working with messages. When the Message Browser is first opened, the bottom of the page contains fields for searching, sorting, and filtering the messages in the message list.

If the message list is empty, click **Search** in the filter area in the bottom of the window. If the bottom of the window is empty, click the **Messages** navigation link at the top of the page.

The following navigation buttons appear at the top of the display area:

- **Compare Messages.** Displays the message contents of two messages side by side. Choose the messages to display by selecting the check box next two messages in the list.

To return to the **Message Browser** page from the contents display, click the browser's **Back** button.

- **Resend Messages.** Navigates to the **Resend Messages** page. Choose the messages to resend by selecting the check box of one or more messages.

7.3.1 Message List

The message list at the top of the **Ensemble Message Browser** page includes the following columns:

- **Check box.** Select messages for the **Compare Messages** and **Resend Messages** commands.
- **#.** An incremental number assigned to each entry in the list.
- **ID.** The unique identifier for the instantiated message; the object identifier (<ObjectId>) of the message header.
- **TimeCreated.** The date and time when this message was instantiated.
- **Session.** The unique identifier for the session that is (or was) associated with this message. A session marks the beginning and end of all the activities prompted by a primary request message from outside Ensemble. The primary request message has an **ID** value that is identical to the **Session**. Several additional messages may be instantiated within Ensemble during the session to fulfill the primary request. All of these messages share the same **Session**, but each has a different **ID** value.
 - Click the **Session** number in any row of the table to see a visual trace of the message object through the production. See Section 8.3.4 for more information about the **Ensemble Visual Trace** page.
- **Status.** The status of the message within its normal life cycle. Status values are Created, Queued, Delivered, Deferred, Completed, Discarded, or Suspended.

For a request-response pair, the value does not indicate an overall status for the pair; a request may end up with a different status from its corresponding response.

A message in transit has a status of Created, until it is placed on a queue, at which time it has a status of Queued. A message that reaches its destination has a status of Delivered, then Completed. An asynchronous response has a status of Discarded if the response arrives after the timeout period for the corresponding request expired. A message response can be deferred by a business operation and be sent later on; when a message with a status of Deferred is finally sent, it has a status of Completed.

Some business operations are designed to set the status of any failed messages to Suspended. Alternatively, an administrator can suspend a message from the Instances display on the **Host Monitor** page. In either case, such a message is moved to a special queue where Ensemble keeps all suspended messages. An administrator can use the **Suspended Messages** page to examine suspended messages, diagnose problems, and, if possible, resend suspended messages after the problem is fixed.

- To open the **Suspended Messages** page, click the **Suspended** option on the **Ensemble Maintenance** page.
 - **Error.** The results returned by the message to the configuration item that sent it. Error values are OK, Error, Retry, or Inactive.
 - “OK” indicates normal behavior
 - “Retry” indicates the message experienced a failure, but the system is configured to retry sending the failed message.
 - “Error” indicates an error was reported somewhere in the activity.
 - “Inactive” indicates that the item that sent the message has been idle for longer than its Inactivity Timeout setting, and may require diagnostic action.
- When filtering messages for diagnostic purposes, use the **Error** field to quickly select only those messages with errors.

- **Source.** The configuration item (service, process, or operation) that sent the message.

Each row includes the following links that display additional message information:

- **Details.** Displays the fields in the message object in the bottom half of the Message Browser display.
- **Contents.** Displays the contents of the message body in an appropriate format.
- **Trace.** Visually traces the path of the message object through the production.
- **Report.** Displays all the fields in the message header and message body in XML format.

The background color of each row in the message list indicates the status of the message. Table 7-2 lists the meaning of each color.

Table 7-2: Message list status indicators

Color	Indication
Red	The message encountered an error.
Orange	The message is queued.
Green	The message marks the start of a session.

Color	Indication
Silver	The message arrived after a timeout expired and is marked as Discarded.
Orange	The message is suspended.
White and pale blue, in alternating rows	These messages are OK.

7.3.1.1 Message Status

Each message object has a status value that indicates its current status in a normal life cycle. These status values, which are visible on most pages within the Message Browser, are Created, Queued, Delivered, Deferred, Completed, Discarded, or Suspended.

These status values apply to instances of request and response messages individually. Request-response “pairs” are not tracked together, because (1) a request might be repeated several times before it is successfully delivered, (2) some requests have an optional response that can be ignored if the message does not arrive, (3) some responses can be deferred for later delivery, and (4) some requests have no response defined for them at all.

Table 7-3: Message status meanings

Message Status	Meaning
Completed	The intended recipient has received the message and has finished processing the message.
Created	The message is in transit between sender and target.
Deferred	The message response has been deferred by the business operation for later delivery.
Delivered	The intended recipient has received the message.
Discarded	The message is a response that reached its destination after the timeout period for the corresponding request expired.
Queued	The message is on a queue.
Suspended	The message was suspended by the business operation after failing to reach its external destination, or by an administrator from the Instances display on the Host Monitor page. In either case, the message can be resent from clicking Maintenance and then Suspended Messages or by clicking Resend Messages on the Messages page.

7.3.2 Details Pane

Click the **Details** link in any row to display the message header and message body for the selected message in the bottom pane of the Message Browser, as shown in Figure 7-2.

The screenshot shows the Ensemble Message Browser interface in a Windows Internet Explorer browser window. The browser address bar shows the URL: `http://localhost:57772/csp/Hlomp/URIs/Msgs.csp?NAMESPACE=`. The page title is "Messages - Windows Internet Explorer". The browser tabs show "Indian Health Service - Intranet" and "Messages".

The main content area displays the "Ensemble Message Browser" logo and navigation links. Below the logo, there is a search bar and a "Go to" dropdown menu. The main content area shows a list of messages found in the message store. The table below is a representation of the data shown in the screenshot:

#	ID	Time Created	Session	Status	Error	Source	Details	Contents	Trace	Report
1	2585	13:52:26.411	2585	Completed	OK	Ens.ScheduleService	Details	Contents	Trace	Report
2	2582	13:52:26.364	2582	Completed	OK	RPMSInBound	Details	Contents	Trace	Report
3	2576	12:39:29.151	2576	Completed	OK	MPIInbound	Details	Contents	Trace	Report
4	2571	12:39:24.792	2571	Completed	OK	RPMSInBound	Details	Contents	Trace	Report
5	2566	12:17:24.259	2566	Completed	OK	RPMSInBound	Details	Contents	Trace	Report
6	2559	12:17:23.775	2559	Completed	OK	RPMSInBound	Details	Contents	Trace	Report

Below the table, the "Details of the selected request message:" section is displayed. It shows the "Message Header" and "Message Body" (Message Type: EnsLib.HL7.Message). The Message Header table is as follows:

Property	Value
<Objectid>	2582
Type	Request
Priority	Normal
Invocation	Queue
TimeCreated	2010-05-04 13:52:26.364
TimeProcessed	2010-05-04 13:52:26.379

Figure 7-2: Message details displayed by clicking the **Details** link

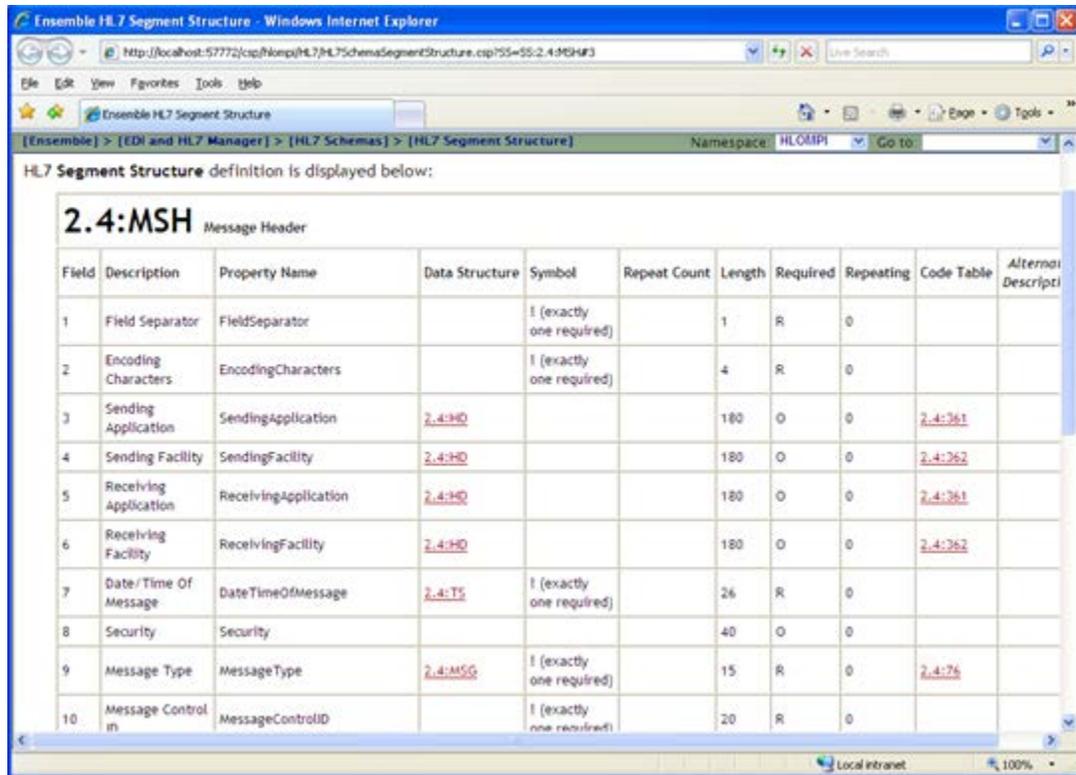


Figure 7-5: Clicking an RPMS-MPI MSH segment structure in the **Contents** pane displays additional information

7.3.4 Ensemble Visual Trace Page

Click the **Trace** link in any row of the message list to display the **Ensemble Visual Trace** page, which displays a graphic representation of the Services, Processes, and Operations related to the selected message, as shown in Figure 7-6.

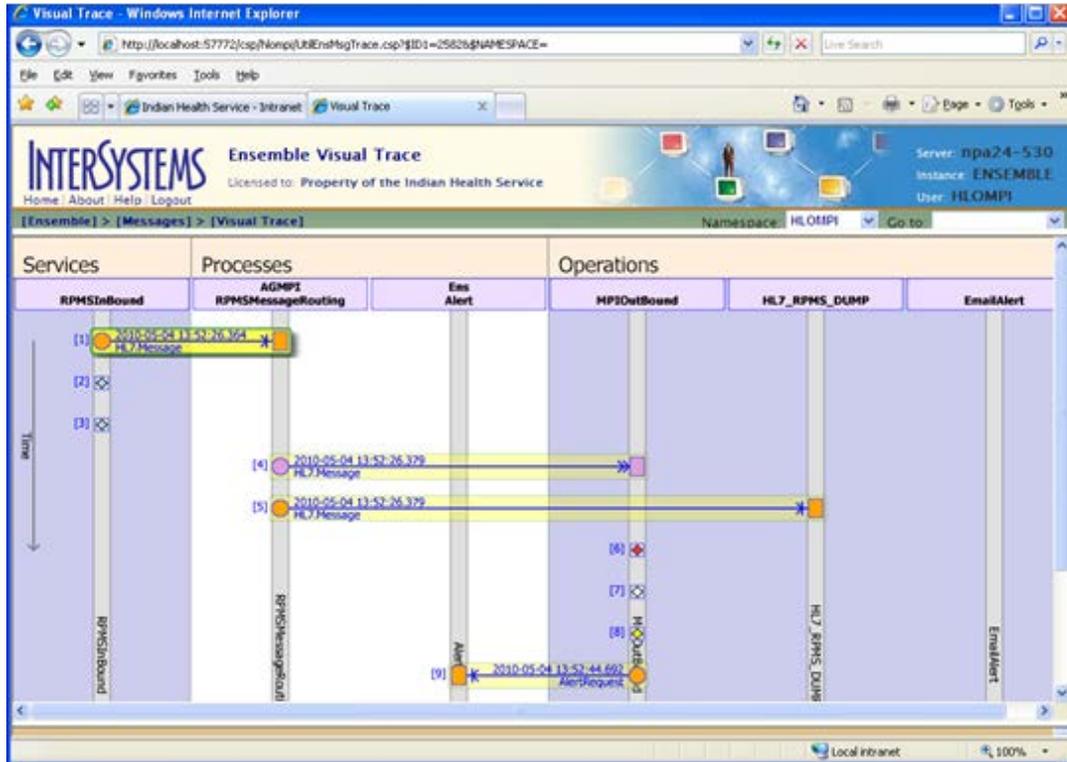


Figure 7-6: An error trace is visually represented in the **Ensemble Visual Trace** page. The bottom pane is minimized in this example.

The display area of the **Ensemble Visual Trace** page contains two panes. A visual representation of each message as it travels from one configuration item to the next is displayed in the top pane of the **Ensemble Visual Trace** page.

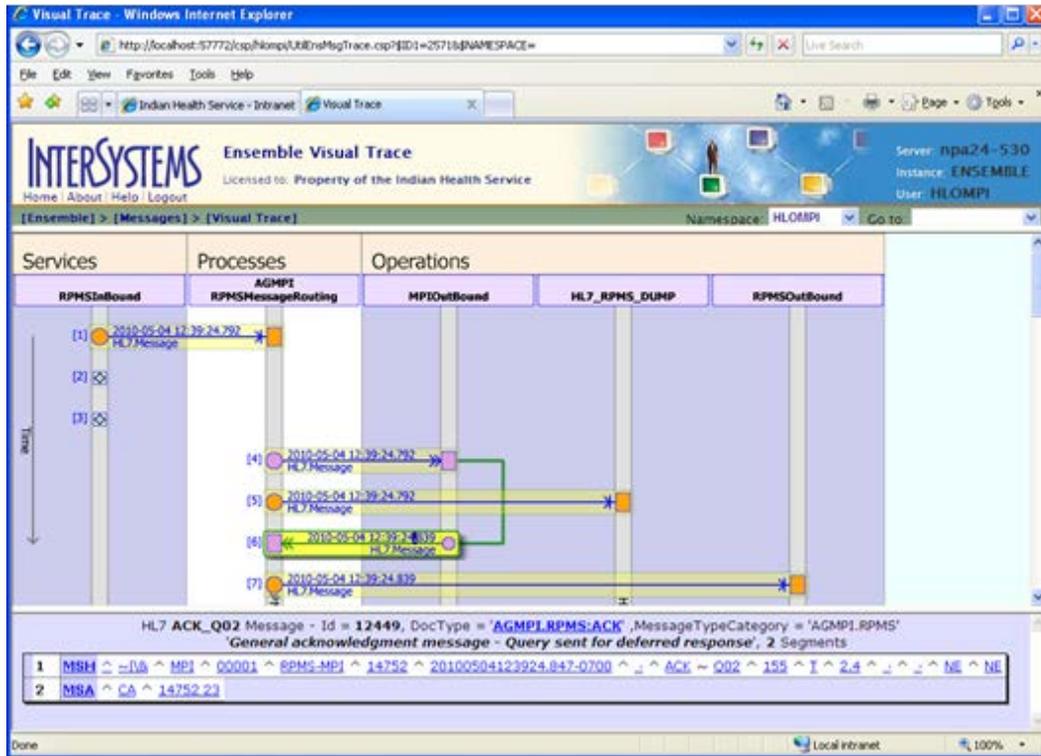


Figure 7-8: CA message in the **Ensemble Visual Trace** page

In Figure 7-8, the CA message went from RPMS to MPI, and MPI responded with a CA ACK signaling that the MPI successfully received the message.

In many cases, business operations are designed to resend a message a given number of times, at given intervals, before declaring the message failed or announcing a timeout. Many outbound adapters offer configurable parameters that control the time interval and number of retries to make in message delivery. Set the values for time and retries when configuring specific settings for the business operation using the **Ensemble Management Portal**, without changing any classes in **Studio**.

Some business operations are designed to set the status of any failed messages to Suspended. Ensemble automatically places all suspended messages on a special queue. A system administrator can find these messages by going to the **Maintenance** page and then clicking **Suspended Messages** in the menu on the left.

An inspection of the routing information or contents of a specific message might reveal the reason why the message failed. For example, if the problem is that an external destination went out of service, a change can be made to reestablish communication with that server. Then suspended messages can be resent to the external server by navigating to the **Maintenance** page and then the **Suspended** page and clicking **Resend**. Suspended messages can also be resent by clicking **Resend Messages** on the **Messages** page.

The deferred status does not indicate either delivery or failure. A business operation can set the status of a response message to be deferred before exiting. The deferred response can be picked up and sent back to the original requester by any business host in the production. Between the time when the business operation defers the response, and when the response is finally sent, the response message has a status of Deferred. The sender of the original message is unaware of the fact that the message was deferred. If the original call was synchronous, the call does not return to the sender until the deferred response is sent.

7.3.7 Resending Messages

Messages can be edited and resent from the Message Browser by users with appropriate security levels.

To resend a message, follow these steps:

1. In the message list, click a message to select it, and then click **Resend Messages** to display the **Resend Messages** page, as shown in Figure 7-10.

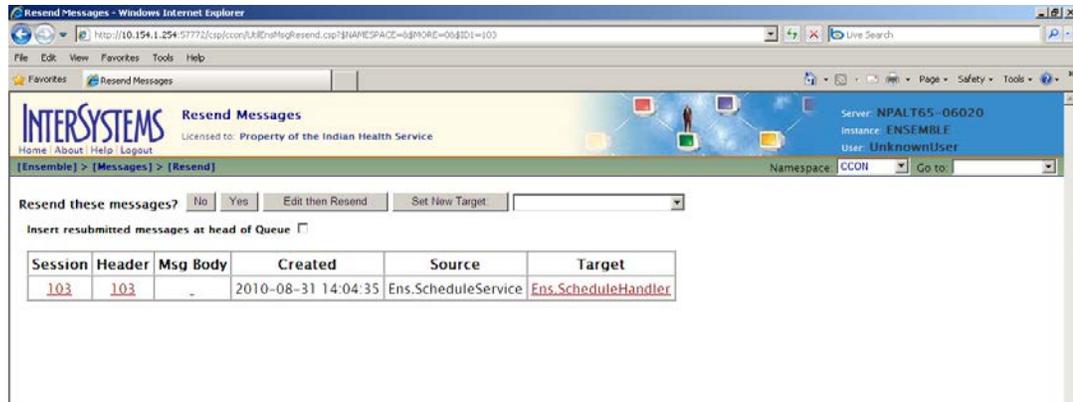


Figure 7-10: **Resend Messages** page

2. Click **Edit then Resend** to display the **Ensemble Resend Editor** page.
3. Edit the body of the message and then click **Resend**. The EIE will attempt to send the message using the edited contents.

The user will see a message indicating whether the message was successfully resent or whether there was a problem.

8.0 The Event Log Page

8.1 System Events

System events occur naturally throughout the life cycle of a production. They are generated and handled internally by Ensemble. Among the ways that system events are used is putting background processes (jobs) to sleep and waking them up. System events are also involved in notification of the arrival of messages on a queue; an event tells the queue owner that a message has arrived, so that the owner knows to take the message from the queue.

It is not necessary to have a detailed knowledge of system events to develop an Ensemble production. System events are handled automatically by the Ensemble infrastructure. The important thing to remember is that system events are not the same as alerts, alarms, event log entries, or Ensemble messages.

8.2 Ensemble Events

The Ensemble event log does not provide any information about system events. The event log collects certain types of text message generated by Ensemble host classes. A developer or system administrator can view event log entries from the **Event Log** page. Viewing the event log is a way to “take the pulse” of a production by scanning the informational text messages that it produces while it runs. Event log entries are stored persistently in the Ensemble database and may be purged according to age, as they accumulate.

Some event log entries are generated automatically in all Ensemble productions, such as the entries that acknowledge production startup or shutdown. These reflect normal occurrences in the life cycle of the production.

However, most event log entries are generated because the developer of an Ensemble class decided that certain information would be of interest to a system administrator in case a problem occurs while the production is running.

To view event log entries, click **Event Log** on the Ensemble Management Portal menu. The **Ensemble Event Log** page is shown in Figure 8-1.

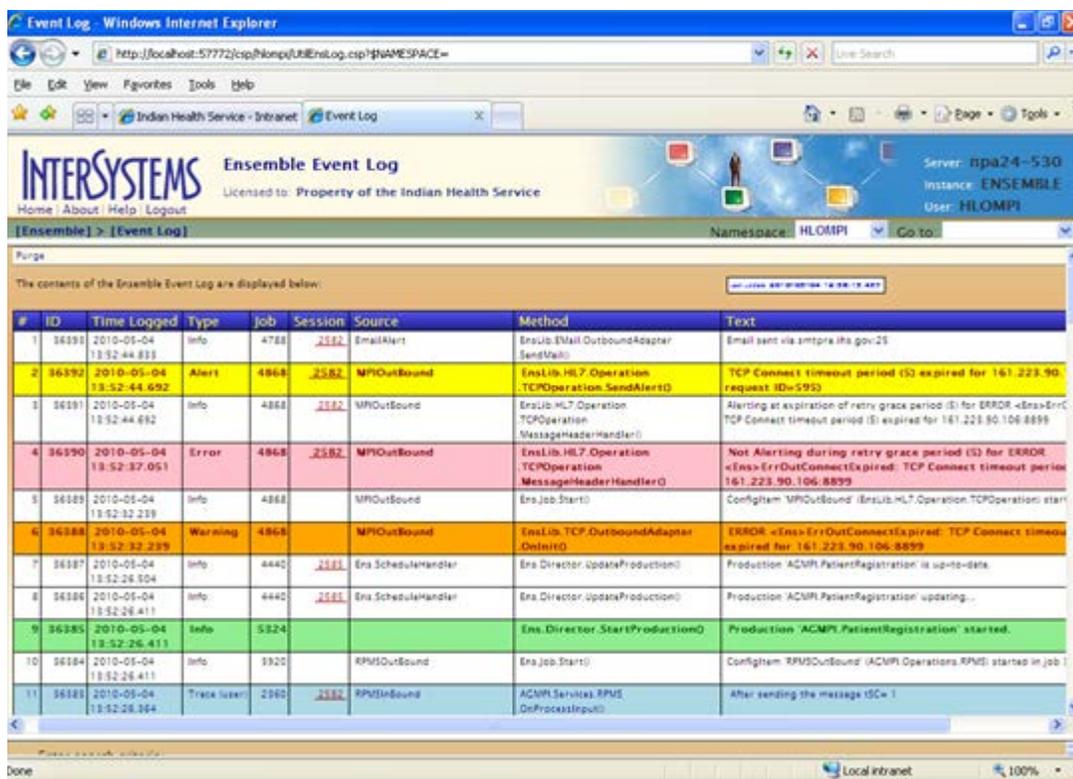


Figure 8-1: Event log messages are color coded

Events listed in the event log are color-coded using the colors shown in Table 8-1.

Table 8-1: Colors associated with event status in the Event Log

Event Status	Row Color
Alert	Yellow
Error	Red
Warning	Orange
Info	Green
User Trace	Blue

Ensemble should send an e-mail alert for each event classified as an error (yellow). If an error message is displayed in the Event Log window, but does not appear as an Outlook message in your Inbox, report the problem by copying and pasting the error message into an email to the OIT Help Desk.

Note: There will be times when messages will display in this window, but will not generate an email in Outlook.

9.0 System Monitor

The **System Monitor** page displays real-time status information about the currently running production in a condensed, one-page format.

To display the **System Monitor** page, as shown in Figure 9-1 click **System Monitor** on the Ensemble Management Portal menu.

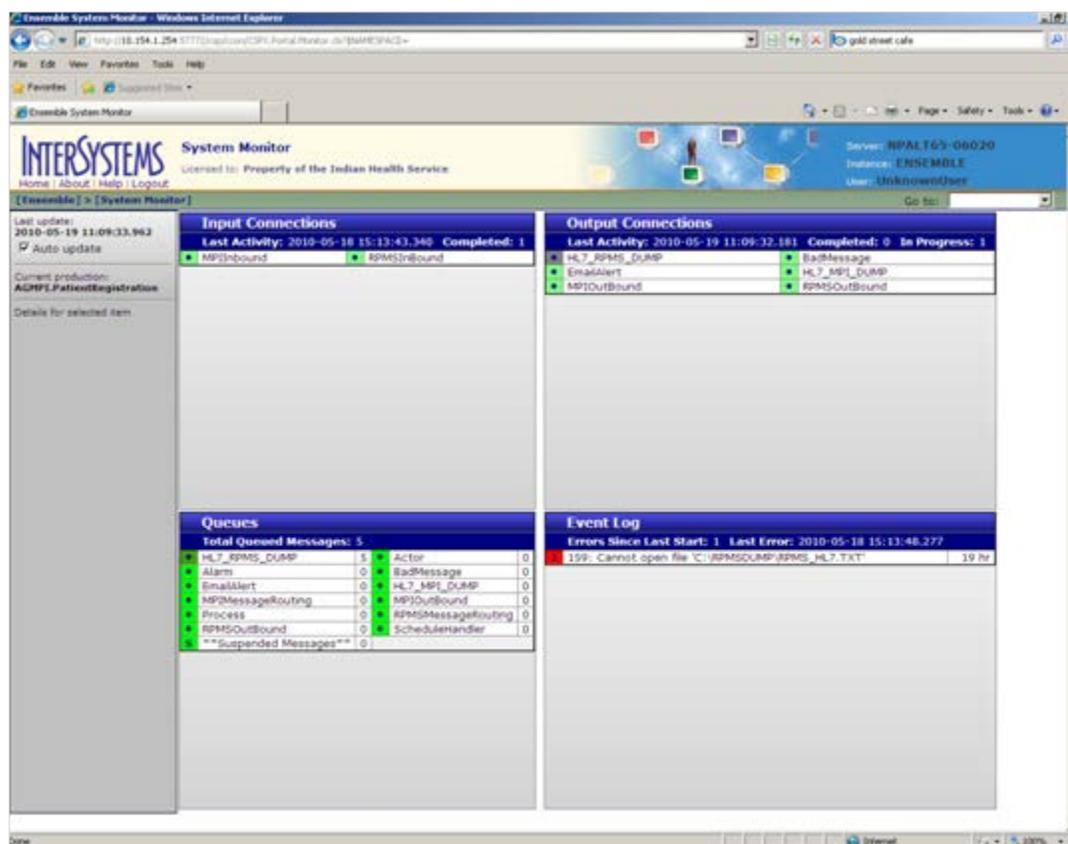


Figure 9-1: **System Monitor** page

The system monitor is another way to see what is happening in the system, including a summary of the Event log. Viewing the Event Log here can be quicker than navigating to it on the **Event Log** page.

The display area of the **System Monitor** page is a grid containing the following tables:

- **Input Connections** (upper left). Lists all incoming connections from external systems
- **Output Connections** (upper right). Lists all outgoing connections to external systems

- **Queues** (lower left). Lists the status of Ensemble internal message queues and how many messages are currently waiting in each queue
- **Event Log** (lower right). Summarizes recent entries in the event log

Each entry includes an icon and a color to indicate the item's status.

The following status indicators appear for connections and queues:

-  **Green dot.** Indicates a status of Active and OK
-  **Yellow dash.** Indicates a status of currently inactive, but otherwise OK

The following status indicators appear for the event log:

-  **Red !** (exclamation point). Indicates an error
-  **Orange W.** Indicates a warning
-  **Yellow A.** Indicates an Alert

Click an entry displayed in any of these tables to display details and links to more information. The links are displayed in the vertical display area at left, under the **Auto update** check box.

Clear the **Auto update** check box to disable frequent real-time updates of the information on the **System Monitor** page.

10.0 Ensemble E-Mail Alerts

If an e-mail alert is received from Ensemble or a VA alert is received from within RPMS, there is a problem that must be resolved. If there is an error within the Ensemble production, e-mail alerts are sent to individuals listed in the Ensemble e-mail alert configuration.

Note: Detailed instructions for configuring e-mail alerts and recipients in Ensemble are found in Section 4.12 of the *Patient Registration MPI Interface/Ensemble (AG) Installation Guide and Release Notes*.

Figure 10-1 shows an example of an Ensemble e-mail alert for the MPIInbound adapter.

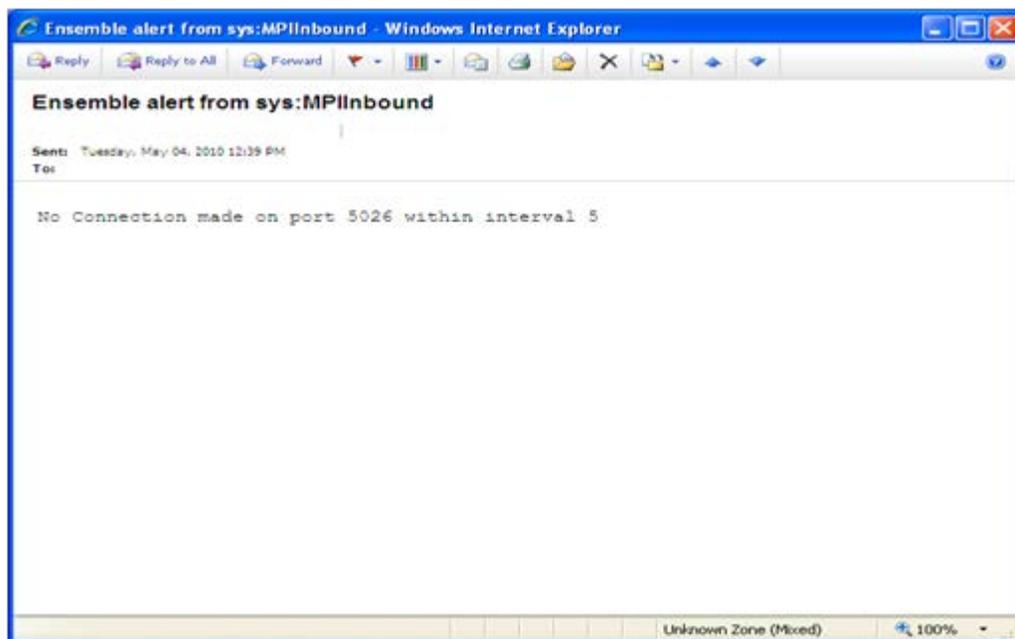


Figure 10-1: Ensemble e-mail alert for MPIInbound

This alert from MPIInbound can be ignored because it is erroneous. The MPIInbound alert indicates that the listener is not receiving messages within 5 seconds from initially receiving a message.

If the alert shown in Figure 10-2 is received, it means that the MPI is sending a message with a segment that is undefined or unknown in Ensemble. Call the OIT Help Desk for assistance with this alert.

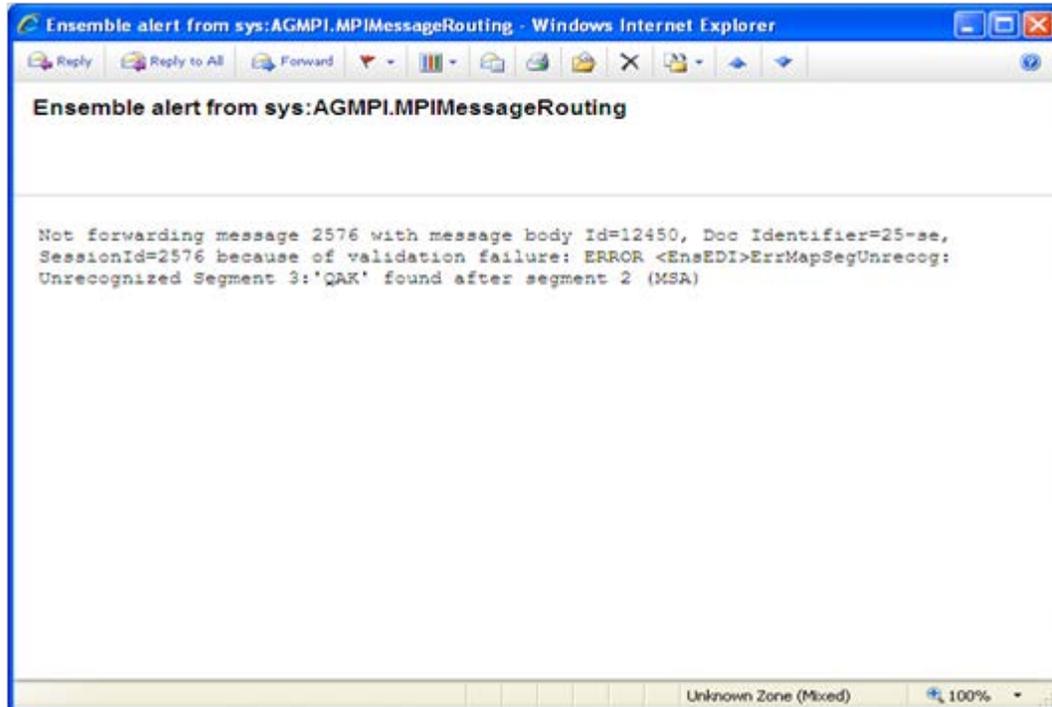


Figure 10-2: Ensemble e-mail alert for AGMPI.MPIMessageRouting

The alert from Ensemble shown in Figure 10-3 can be sent if an RPMS AGMPI routine had an error.

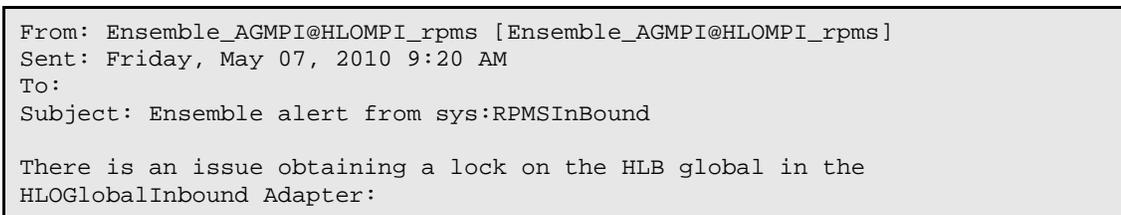


Figure 10-3: Ensemble e-mail error alert

Figures 10-4 through Figure 10-23 show e-mail alerts that may be sent from Ensemble.

Note: If any of these e-mail alerts are received, notify the OIT Help Desk.

"ERROR in Configuration"

Figure 10-4: Configuration Error Message

```
"There is an issue obtaining a lock on the HLB global in the  
HLOGlobalInbound Adapter:"
```

Figure 10-5: HLB global Error Message

```
"There is an issue obtaining a lock on the HLA global in the  
HLOGlobalInbound Adapter:"
```

Figure 10-6: HLA global Error Message

```
"There was an issue creating a valid HL7 message in the HLOGlobalInbound  
Adapter: "
```

Figure 10-7: HL7 Error Message

```
"There was an error in the HLOGlobalInbound Adapter:"
```

Figure 10-8: HLOGlobalInbound Adapter Error Message

```
"There is an issue obtaining a lock on the HLB global in the  
HLOGlobalOutbound Adapter:"
```

Figure 10-9: HLB global in the HLOGlobalOutbound Error Message

```
"There is an issue obtaining a lock on the HLA global in the  
HLOGlobalOutbound Adapter:"
```

Figure 10-10: HLA global in the HLOGlobalOutbound Error Message

```
"Failure: The HLOGlobalOutbound adapter failed to Process Message (an ACK)  
because it did not contain a Message Control ID:"
```

Figure 10-11: ACK without a Message Control ID Error Message

```
"Failure: The HLOGlobalOutbound adapter failed to Process Message (an ACK)  
because the 'B' reference node did not exist for Message Control ID"
```

Figure 10-12L ACK without a B reference node Error Message

```
"Alert: The HLOGlobalOutbound adapter received message (an ACK message) that  
did not contain an 'AA' or 'CA' Acknowledgment Code: The MessageControl ID  
is"
```

Figure 10-13: Missing AA or CA ACK Code Error Message

```
"Failure: The HLOGlobalOutbound adapter failed to find an open IEN after 100  
tries"
```

Figure 10-14: Failure to find an open IEN Error Message

```
"Failure: The HLOGlobalOutbound adapter failed while looping though an HL7
message segments: MessageID="
```

Figure 10-15: Failure with MessageID in HL7 Error Message

```
"Failure: The HLOGlobalOutbound adapter failed: Error="
```

Figure 10-16: HLOGlobalOutbound adapter Error Message

```
"Failure: The HLOGlobalOutbound adapter failed: Error="
```

Figure 10-17: HLOGlobal Patient Record Number (also known as DFN or IEN) Error Message

```
"MPI DFN="_DFN_" :: "_ERROR WHEN CREATING A01"
```

Figure 10-18: Patient Record Number (also known as DFN or IEN) Error Message for A01

```
"MPI DFN="_DFN_" :: "_ERROR WHEN CREATING A03"
```

Figure 10-19: Patient Record Number (also known as DFN or IEN) Error Message for A03

An e-mail alert containing the message “The HLOGlobalOutbound adapter failed” indicates that a programming error occurred within the adapter. This error must be reported to OIT. The Ensemble production should be shut down until the error is investigated.

```
Failure: The HLOGlobalOutbound adapter failed: Error= 0
```

Figure 10-20: HLOGlobalOutbound adapter error

This error occurs when the MPI sends an unusually large ERR segment back to the client.

```
TCP Read timeout (5) expired waiting for terminator SegTerminatorAscii=13,
on |TCP|8899|2984, data received =''
```

Figure 10-21: TCP Read timeout error

If a TCP Connect timeout error is occurring repeatedly, the MPI is down and the OIT Help Desk must be notified immediately.

```
TCP Connect timeout period (5) expired for 161.223.90.106:8899
```

Figure 10-22: TCP Connect timeout error

This Ensemble email alert message indicates that the site might not be receiving AA messages from the MPI. If a site receives several of these messages, check Ensemble settings or contact OIT. This could be an indication that there is a problem with the station number, or it could mean that the network or MPI server is not responding quickly.

```
No Connection made on port 5026 within interval 5
```

Figure 10-23: No connection error

```
Failure: The HLOGlobalOutound adapter failed to Process Message 308834 (an  
ACK) because the 'B' reference node did not exist for Message Control ID  
14752 345:::
```

Figure 10-24: Failure to process message error

The IP address set in the HLO SYSTEMS PARAMETER file is incorrectly setup for another system.

Note: If any of the above e-mail alerts are received, notify OIT Help Desk.

Appendix A: RPMS Rules of Behavior

The Resource and Patient Management (RPMS) system is a United States Department of Health and Human Services (HHS), Indian Health Service (IHS) information system that is **FOR OFFICIAL USE ONLY**. The RPMS system is subject to monitoring; therefore, no expectation of privacy shall be assumed. Individuals found performing unauthorized activities are subject to disciplinary action including criminal prosecution.

All users (Contractors and IHS Employees) of RPMS will be provided a copy of the Rules of Behavior (RoB) and must acknowledge that they have received and read them prior to being granted access to a RPMS system, in accordance IHS policy.

- For a listing of general Rules of Behavior for all users, see the most recent edition of *IHS General User Security Handbook* (SOP 06-11a).
- For a listing of system administrators/managers rules, see the most recent edition of the *IHS Technical and Managerial Handbook* (SOP 06-11b).

Both documents are available at this IHS web site,

<http://security.ihs.gov/>

The Rules of Behavior listed in the following sections are specific to RPMS.

A.1 All RPMS Users

In addition to these rules, each application may include additional RoBs that may be defined within the documentation of that application (e.g., PCC, Dental, Pharmacy).

A.1.1 Access

RPMS users shall

- Only use data for which you have been granted authorization.
- Only give information to personnel who have access authority and have a need to know.
- Always verify a caller's identification and job purpose with your supervisor or the entity provided as employer before providing any type of information system access, sensitive information, or non-public agency information.
- Be aware that personal use of information resources is authorized on a limited basis within the provisions *Indian Health Manual* Part 8, "Information Resources Management," Chapter 6, "Limited Personal Use of Information Technology Resources."

RPMS users shall not

- Retrieve information for someone who does not have authority to access the information.
- Access, research, or change any user account, file, directory, table, or record not required to perform your OFFICIAL duties.
- Store sensitive files on a PC hard drive, or portable devices or media, if access to the PC or files cannot be physically or technically limited.
- Exceed their authorized access limits in RPMS by changing information or searching databases beyond the responsibilities of their job or by divulging information to anyone not authorized to know that information.

A.1.2 Information Accessibility

RPMS shall restrict access to information based on the type and identity of the user. However, regardless of the type of user, access shall be restricted to the minimum level necessary to perform the job.

RPMS users shall

- Access only those documents they created and those other documents to which they have a valid need-to-know and to which they have specifically granted access through an RPMS application based on their menus (job roles), keys, and FileMan access codes. Some users may be afforded additional privileges based on the function they perform such as system administrator or application administrator.
- Acquire a written preauthorization in accordance with IHS policies and procedures prior to interconnection to or transferring data from RPMS.

A.1.3 Accountability

RPMS users shall

- Behave in an ethical, technically proficient, informed, and trustworthy manner.
- Logout of the system whenever they leave the vicinity of their PC.
- Be alert to threats and vulnerabilities in the security of the system.
- Report all security incidents to their local Information System Security Officer (ISSO).
- Differentiate tasks and functions to ensure that no one person has sole access to or control over important resources.
- Protect all sensitive data entrusted to them as part of their government employment.

- Shall abide by all Department and Agency policies and procedures and guidelines related to ethics, conduct, behavior, and IT information processes.

A.1.4 Confidentiality

RPMS users shall

- Be aware of the sensitivity of electronic and hardcopy information, and protect it accordingly.
- Store hardcopy reports/storage media containing confidential information in a locked room or cabinet.
- Erase sensitive data on storage media, prior to reusing or disposing of the media.
- Protect all RPMS terminals from public viewing at all times.
- Abide by all HIPAA regulations to ensure patient confidentiality.

RPMS users shall not

- Allow confidential information to remain on the PC screen when someone who is not authorized to that data is in the vicinity.
- Store sensitive files on a portable device or media without encrypting.

A.1.5 Integrity

RPMS users shall

- Protect your system against viruses and similar malicious programs.
- Observe all software license agreements.
- Follow industry standard procedures for maintaining and managing RPMS hardware, operating system software, application software, and/or database software and database tables.
- Comply with all copyright regulations and license agreements associated with RPMS software.

RPMS users shall not

- Violate Federal copyright laws.
- Install or use unauthorized software within the system libraries or folders
- Use freeware, shareware, or public domain software on/with the system without your manager's written permission and without scanning it for viruses first.

A.1.6 System Logon

RPMS users shall

- Have a unique User Identification/Account name and password.
- Be granted access based on authenticating the account name and password entered.
- Be locked out of an account after 5 successive failed login attempts within a specified time period (e.g., one hour).

A.1.7 Passwords

RPMS users shall

- Change passwords a minimum of every 90 days.
- Create passwords with a minimum of eight characters.
- If the system allows, use a combination of alpha, numeric characters for passwords, with at least one uppercase letter, one lower case letter, and one number. It is recommended, if possible, that a special character also be used in the password.
- Change vendor-supplied passwords immediately.
- Protect passwords by committing them to memory or store them in a safe place (do not store passwords in login scripts, or batch files).
- Change password immediately if password has been seen, guessed, or otherwise compromised; and report the compromise or suspected compromise to your ISSO.
- Keep user identifications (ID) and passwords confidential.

RPMS users shall not

- Use common words found in any dictionary as a password.
- Use obvious readable passwords or passwords that incorporate personal data elements (e.g., user's name, date of birth, address, telephone number, or social security number; names of children or spouses; favorite band, sports team, or automobile; or other personal attributes).
- Share passwords/IDs with anyone or accept the use of another's password/ID, even if offered.
- Reuse passwords. A new password must contain no more than five characters per 8 characters from the previous password.
- Post passwords.
- Keep a password list in an obvious place, such as under keyboards, in desk drawers, or in any other location where it might be disclosed.

- Give a password out over the phone.

A.1.8 Backups

RPMS users shall

- Plan for contingencies such as physical disasters, loss of processing, and disclosure of information by preparing alternate work strategies and system recovery mechanisms.
- Make backups of systems and files on a regular, defined basis.
- If possible, store backups away from the system in a secure environment.

A.1.9 Reporting

RPMS users shall

- Contact and inform your ISSO that you have identified an IT security incident and you will begin the reporting process by providing an IT Incident Reporting Form regarding this incident.
- Report security incidents as detailed in the *IHS Incident Handling Guide* (SOP 05-03).

RPMS users shall not

- Assume that someone else has already reported an incident. The risk of an incident going unreported far outweighs the possibility that an incident gets reported more than once

A.1.10 Session Timeouts

RPMS system implements system-based timeouts that back users out of a prompt after no more than 5 minutes of inactivity.

RPMS users shall

- Utilize a screen saver with password protection set to suspend operations at no greater than 10-minutes of inactivity. This will prevent inappropriate access and viewing of any material displayed on your screen after some period of inactivity.

A.1.11 Hardware

RPMS users shall

- Avoid placing system equipment near obvious environmental hazards (e.g., water pipes).
- Keep an inventory of all system equipment.

- Keep records of maintenance/repairs performed on system equipment.

RPMS users shall not

- Eat or drink near system equipment

A.1.12 Awareness

RPMS users shall

- Participate in organization-wide security training as required.
- Read and adhere to security information pertaining to system hardware and software.
- Take the annual information security awareness.
- Read all applicable RPMS Manuals for the applications used in their jobs.

A.1.13 Remote Access

Each subscriber organization establishes its own policies for determining which employees may work at home or in other remote workplace locations. Any remote work arrangement should include policies that

- Are in writing.
- Provide authentication of the remote user through the use of ID and password or other acceptable technical means.
- Outline the work requirements and the security safeguards and procedures the employee is expected to follow.
- Ensure adequate storage of files, removal, and non-recovery of temporary files created in processing sensitive data, virus protection, intrusion detection, and provides physical security for government equipment and sensitive data.
- Establish mechanisms to back up data created and/or stored at alternate work locations.

Remote RPMS users shall

- Remotely access RPMS through a virtual private network (VPN) whenever possible. Use of direct dial in access must be justified and approved in writing and its use secured in accordance with industry best practices or government procedures.

Remote RPMS users shall not

- Disable any encryption established for network, internet, and web browser communications.

A.2 RPMS Developers

RPMS developers shall

- Always be mindful of protecting the confidentiality, availability, and integrity of RPMS when writing or revising code.
- Always follow the IHS RPMS Programming Standards and Conventions (SAC) when developing for RPMS.
- Only access information or code within the namespaces for which they have been assigned as part of their duties.
- Remember that all RPMS code is the property of the U.S. Government, not the developer.
- Shall not access live production systems without obtaining appropriate written access, shall only retain that access for the shortest period possible to accomplish the task that requires the access.
- Shall observe separation of duties policies and procedures to the fullest extent possible.
- Shall document or comment all changes to any RPMS software at the time the change or update is made. Documentation shall include the programmer's initials, date of change and reason for the change.
- Shall use checksums or other integrity mechanism when releasing their certified applications to assure the integrity of the routines within their RPMS applications.
- Shall follow industry best standards for systems they are assigned to develop or maintain; abide by all Department and Agency policies and procedures.
- Shall document and implement security processes whenever available.

RPMS developers shall not

- Write any code that adversely impacts RPMS, such as backdoor access, "Easter eggs," time bombs, or any other malicious code or make inappropriate comments within the code, manuals, or help frames.
- Grant any user or system administrator access to RPMS unless proper documentation is provided.
- Not release any sensitive agency or patient information.

A.3 Privileged Users

Personnel who have significant access to processes and data in RPMS, such as, system security administrators, systems administrators, and database administrators have added responsibilities to ensure the secure operation of RPMS.

Privileged RPMS users shall

- Verify that any user requesting access to any RPMS system has completed the appropriate access request forms.
- Ensure that government personnel and contractor personnel understand and comply with license requirements. End users, supervisors, and functional managers are ultimately responsible for this compliance.
- Advise the system owner on matters concerning information technology security.
- Assist the system owner in developing security plans, risk assessments, and supporting documentation for the certification and accreditation process.
- Ensure that any changes to RPMS that affect contingency and disaster recovery plans are conveyed to the person responsible for maintaining continuity of operations plans.
- Ensure that adequate physical and administrative safeguards are operational within their areas of responsibility and that access to information and data is restricted to authorized personnel on a need to know basis.
- Verify that users have received appropriate security training before allowing access to RPMS.
- Implement applicable security access procedures and mechanisms, incorporate appropriate levels of system auditing, and review audit logs.
- Document and investigate known or suspected security incidents or violations and report them to the ISSO, CISO, and systems owner.
- Protect the supervisor, super user, or system administrator passwords.
- Avoid instances where the same individual has responsibility for several functions (i.e., transaction entry and transaction approval).
- Watch for unscheduled, unusual, and unauthorized programs.
- Help train system users on the appropriate use and security of the system.
- Establish protective controls to ensure the accountability, integrity, confidentiality, and availability of the system.
- Replace passwords when a compromise is suspected. Delete user accounts as quickly as possible from the time that the user is no longer authorized system. Passwords forgotten by their owner should be replaced, not reissued.

- Terminate user accounts when a user transfers or has been terminated. If the user has authority to grant authorizations to others, review these other authorizations. Retrieve any devices used to gain access to the system or equipment. Cancel logon IDs and passwords, and delete or reassign related active and back up files.
- Use a suspend program to prevent an unauthorized user from logging on with the current user's ID if the system is left on and unattended.
- Verify the identity of the user when resetting passwords. This can be done either in person or having the user answer a question that can be compared to one in the administrator's database.
- Shall follow industry best standards for systems they are assigned to; abide by all Department and Agency policies and procedures.

Privileged RPMS users shall not

- Access any files, records, systems, etc., that are not explicitly needed to perform their duties
- Grant any user or system administrator access to RPMS unless proper documentation is provided.
- Not release any sensitive agency or patient information.

Glossary

Archiving

The storing of historical or little-used data off-line (often on tape).

Entry Point

Entry point within a routine that is referenced by a “DO” or “GOTO” command from a routine internal to a package.

File

A set of related records or entries treated as a single unit.

FileMan

The database management system for RPMS.

Flowsheet

A tabular format for organizing and displaying data in a special section of the health summary.

Global

In MUMPS, “global” refers to a variable stored on disk (global variable) or the array to which the global variable may belong (global array).

INDEX (%INDEX)

A Kernel utility used to verify routines and other MUMPS code associated with a package. Checking is done according to current ANSI MUMPS standards and RPMS programming standards.

This tool can be invoked through an option or from direct mode (>D ^%INDEX).

Kernel

The set of MUMPS software utilities that function as an intermediary between the host operating system and application packages, such as Laboratory and Pharmacy. The Kernel provides a standard and consistent user and programmer interface between application packages and the underlying MUMPS implementation. These utilities provide the foundation for RPMS.

Menu

A list of choices for computing activity. A menu is a type of option designed to identify a series of items (other options) for presentation to the user for selection. When menu-type options are displayed, the prompt includes the name of the menu preceded by the word “Select” and followed by the word “option,” as in “Select Menu Management option” (the menu’s “Select” prompt).

Namespace

A unique set of two to four alpha characters assigned by the database administrator to a software application.

Option

An entry in the Option file. As an item on a menu, an option provides an opportunity for users to select it, thereby invoking the associated computing activity. Options may also be scheduled to run in the background, non-interactively, by TaskMan.

Panel

A tabular format for presenting a series of clinical measurements or results in the health summary.

Queuing

Requesting that a job be processed at a later time rather than within the current session.

Routine

A program or sequence of instructions called by a program that may have some general or frequent use. MUMPS routines are groups of program lines that are saved, loaded, and called as a single unit via a specific name.

Utility

A callable routine line tag or function. A universal routine usable by anyone.

Acronym List

AG	Namespace for Patient Registration
ICD	International Classification of Diseases.
IHS	Indian Health Service
IEN	Internal Entry Number. The number used to identify an entry within a file. Every record has a unique internal entry number.
IRM	Information Resource Management. The IHS personnel responsible for information systems management and security.
MPI	Master Patient Index
RPMS	Resource and Patient Management System. A series of integrated software components that includes clinical, administrative, and financial functions.

Contact Information

If you have any questions or comments regarding this distribution, please contact the OIT Help Desk (IHS).

Phone: (505) 248-4371 or (888) 830-7280 (toll free)

Fax: (505) 248-4363

Web: <http://www.ihs.gov/GeneralWeb/HelpCenter/Helpdesk/index.cfm>

Email: support@ihs.gov