



RESOURCE AND PATIENT MANAGEMENT SYSTEM

Patient Registration MPI Interface

(AG)

Ensemble 2012 Management Portal Manual

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Preface

The purpose of this manual is to provide information about using the Management Portal in Ensemble. Although this manual has been written to describe tools users can use to monitor the Ensemble Integration Engine, the beta testing process has identified that users should not use only these features but should use the full Management Portal for the Integration Engine.

Note: This manual contains screenshots and instructions specific to Ensemble version 2012. Sites using Ensemble version 2009 or 2010 should use the Ensemble Management Portal Manual (ag__0720.01u_ens.pdf) for screenshots and instructions specific to those Ensemble versions.

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 the RPMS 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 (Patient Registration) 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 part of the manual describes to the end user how to use the portal in the day-to-day management of the interface. The second part of the manual describes the portal in more technical detail for Office of Information Technology (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 (AG) MPI Interface/Ensemble 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 AGMPI 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 AGMPIxxx namespace created during the AGMPI installation process (where “xxx” is the site’s production namespace) contains only one production (the **AGMPI.PatientRegistration** production).

Note: The Ensemble installation procedure creates several namespaces for internal use by the Ensemble engine: **%SYS, DOCBOOK, USER, SAMPLES, 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 Management Portal

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

Note: 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 Management Portal to properly monitor the EIE. A training program for the use of the Management Portal is currently under development. This training program must be coordinated with the rollout training offered by OIT in support of the entire enterprise deployment of Ensemble.

Portions of the Ensemble AGMPI documentation will change based on the rollout of final production.

3.1 Navigating in Ensemble

3.1.1 Navigation Links

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

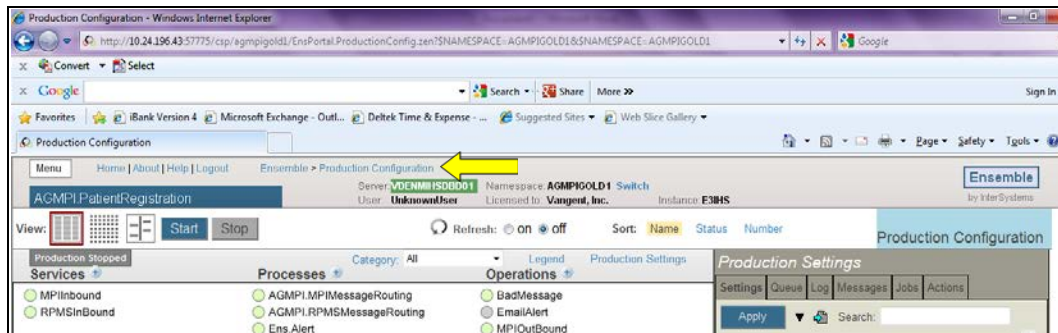


Figure 3-1: Management Portal navigation links

- Use the navigation menu on the left side of the page to navigate to pages required to administer the current production instance. See Section 3.1.4 for a description of each menu item.
- After navigating to another page using a menu item, the navigation links shown in Figure 3-2 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 Page

The **Home** link (Figure 3-2) navigates to the **Management Portal** home page.

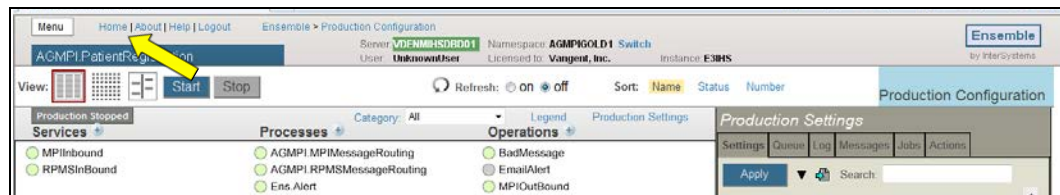


Figure 3-2: Home link

Note: The Management Portal contains sub-menus, each denoted by a right-pointing double angle quotation mark (guillemet). Navigate to the sub-menus by clicking the appropriate menu link, and then clicking the sub-menu link(s), as shown in Figure 3-3.

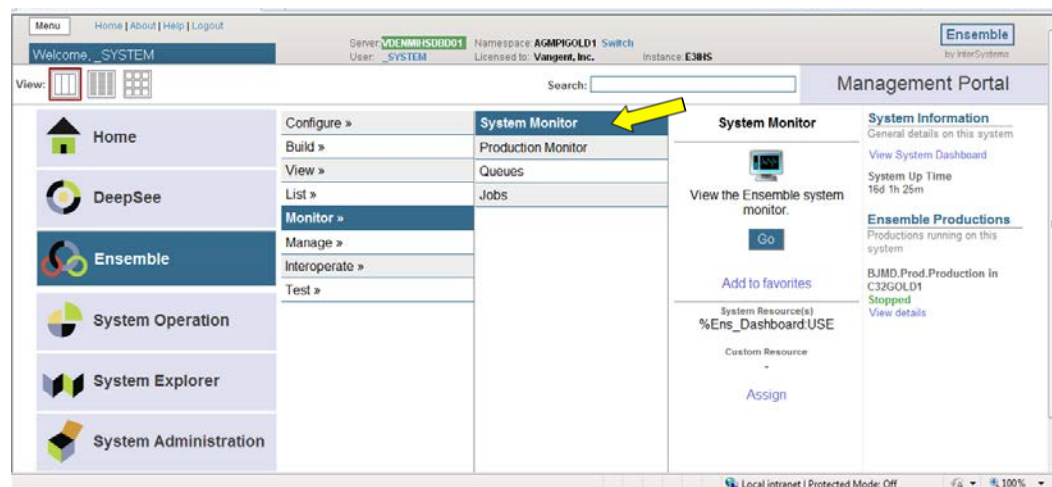


Figure 3-3: The **System Monitor** page is a sub-menu of the **Ensemble Monitor** menu.

3.1.2 Namespace Selection

At the top center, many pages in the Management Portal display the server name, the current user, the current namespace, license and instance information, and a **Switch** link, as shown in Figure 3-4. To manage a specific namespace, click the **Switch** link.

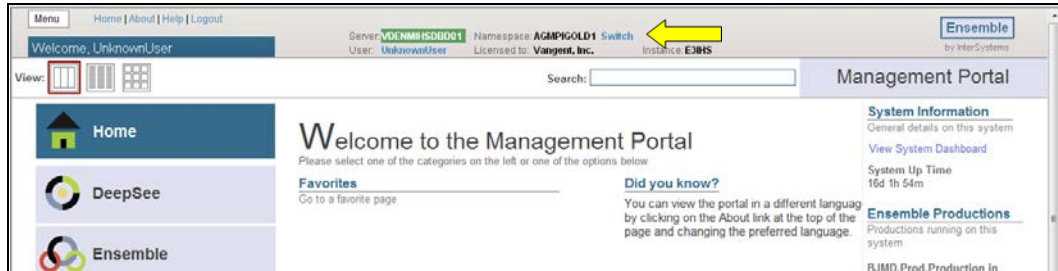


Figure 3-4: **Switch** link

In the **Namespace Chooser** box, select the appropriate MPI namespace. The namespace will consist of "AGMPI" concatenated with the name of your RPMS namespace. For example, if the RPMS namespace is called "PROD", then the associated MPI namespace will be called "AGMPIPROD". Click the **OK** button to select the namespace. The namespace displayed on the **Management Portal** will be updated to reflect the selection.

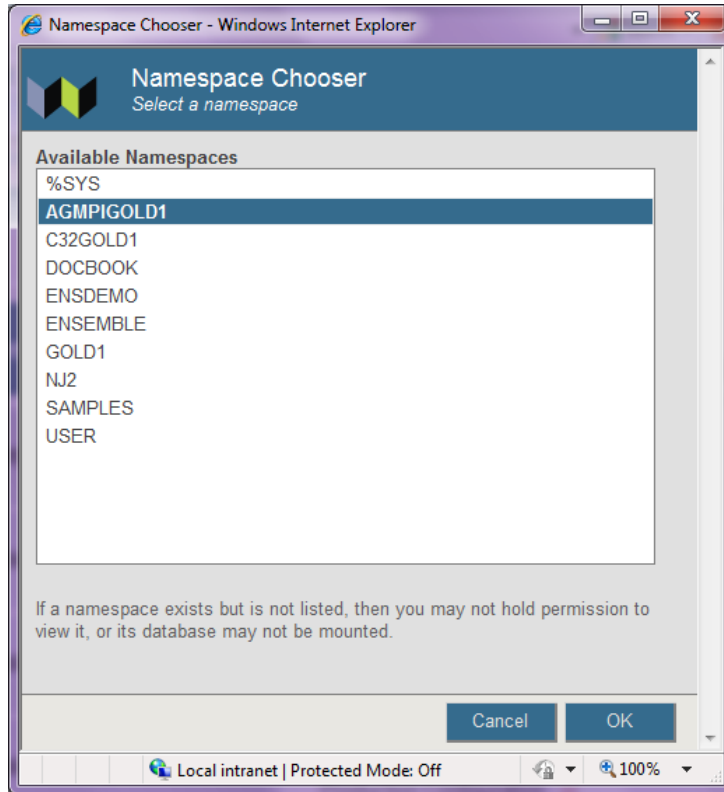


Figure 3-5: **Namespace** Chooser page

3.1.3 Search Function

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

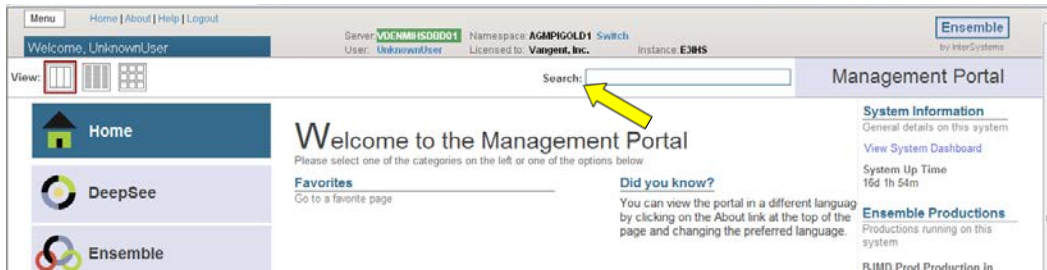


Figure 3-6: **Search** function

- To perform a function search in the **Management Portal**, enter the subject of the search in the **Search** field near the top right of the page and then press **Enter**.

3.1.4 Management Portal Menu

Many pages in the Management Portal have a navigation menu on the left side of the page, as shown in Figure 3-7.

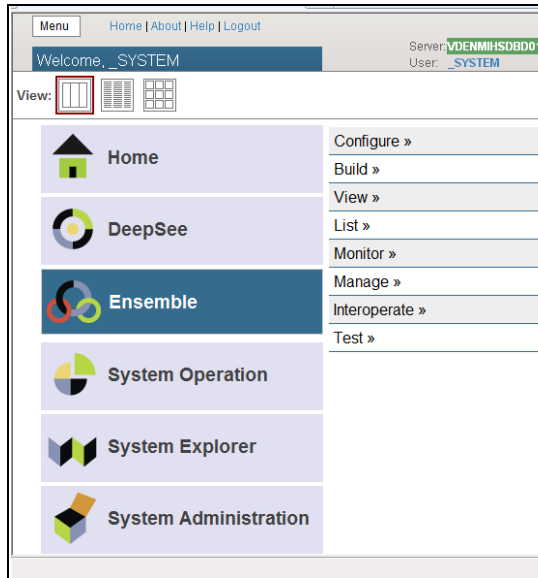


Figure 3-7: Management Portal menu

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



Figure 3-8: The Management Portal menu options

- **Home.** Navigate to the Management Portal home page
- **DeepSee.** Options for managing DeepSee, InterSystems's business intelligence product

- **Ensemble > Configure.** Defines and displays Production Configurations, Business Partner Profiles, Credentials, Schedule Specifications, Data Lookup Tables, System Default Settings, and Message Bank Link in the currently selected namespace
- **Ensemble > Build.** Design and builds Business Processes, Data Transformations, Business Rules, Record Maps, and CSV Records
- **Ensemble > View.** View Messages, Suspended Messages, Event Log, Business Rule Log, Business Process Log, and connect to the Enterprise Message Bank
- **Ensemble > List.** Display Business Processes, Data Transformations, Business Rules, Record Maps, Productions list
- **Ensemble > Monitor.** Monitor System, Production, Queues, and Jobs
- **Ensemble > Manage.** Manage Ensemble System and workflow via Purge Management Data, Auto-Start Production, Local Archive Settings, Workflows, Publish and Subscribe
- **Ensemble > Interoperate.** View and transform documents or import and remove schemas such as ASC X12, ASTM, DICOM, HL7 v2.x, UN/EDIFACT, XML
- **Ensemble > Testing.** Testing Service for Business Processes and Business Operations, and Data Transformations
- **System Operation** Options for the day-to-day management of the Ensemble environment
- **System Explorer** SQL portal, including Execute SQL Statements; options for reviewing class, routine, and global data.
- **System Administration** Configure namespaces and databases; manage users and roles; manage licenses and encryption settings

3.2 Starting the Management Portal

To start the Management Portal:

1. If Ensemble is not currently running, click the Ensemble Cube icon, as shown in Figure 3-9, in the Windows system tray and select **Start Ensemble** from the context menu.



Figure 3-9: Ensemble Cube icon

2. Click the Ensemble Cube and select **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 3-10.



Figure 3-10: Ensemble login page

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

If the login page is displayed, type your **User Name** and **Password** and click **Login** to open the Management Portal, as shown in Figure 3-11.

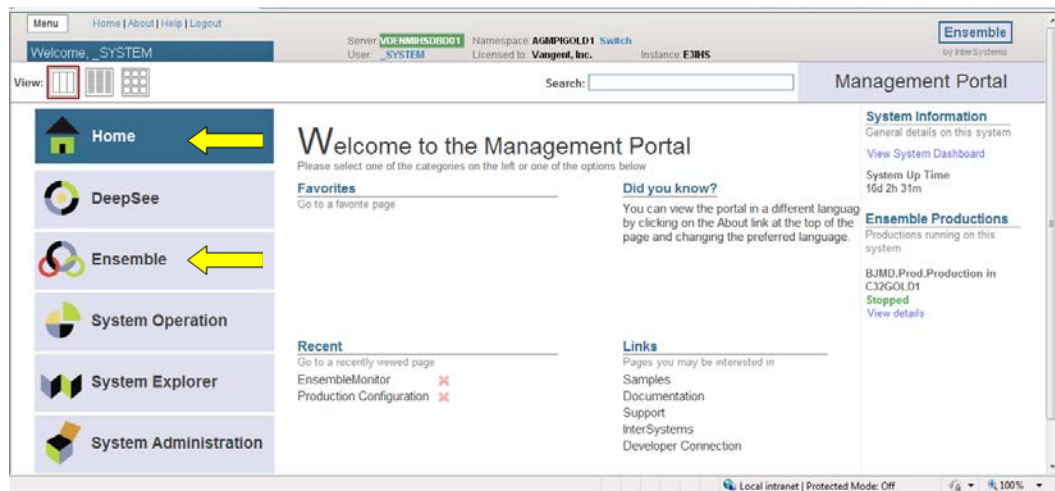


Figure 3-11: Management Portal page showing the Home and Ensemble links

3.3 Ensemble Production Page

As shown in Figure 3-12, the **Ensemble** menu contains sub-menus that link to different Ensemble functional areas.

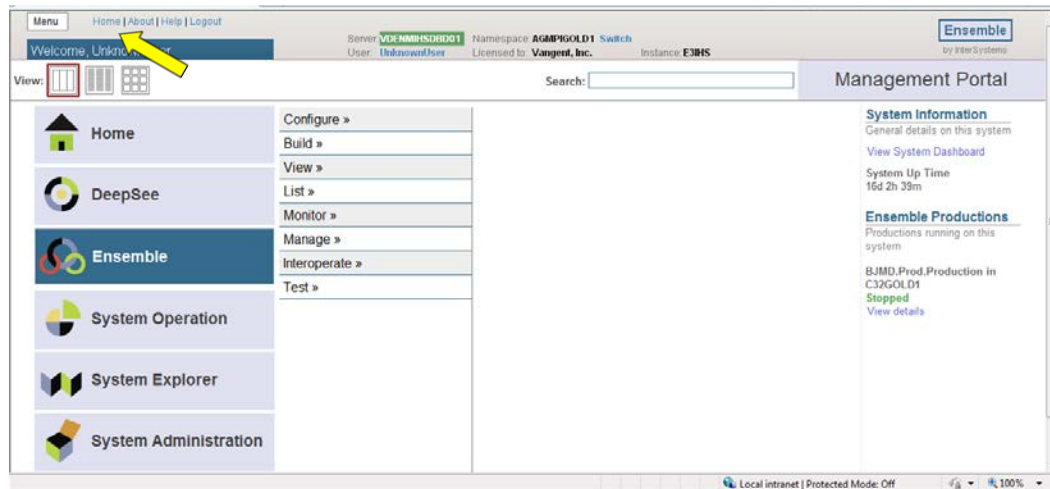


Figure 3-12: Management Portal page

- 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 Management Portal do not have a menu located on the left side. On these pages, return to the Management Portal home page by clicking the **Home** navigation link located at the top of the display area, as shown in Figure 3-12, and use the menu on the home page.

3.3.1 Choosing a Namespace

The **Switch** link appears at the top of the display area, as shown in Figure 3-13.

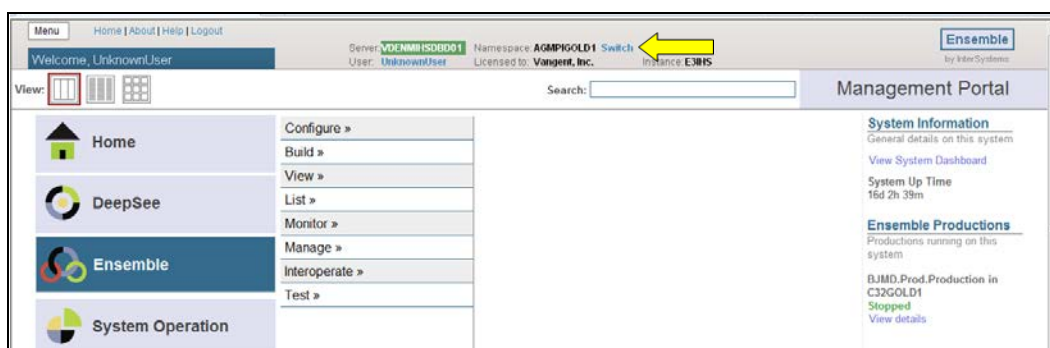


Figure 3-13: Switch link

1. To begin working with the Ensemble options, select the appropriate namespace. At the top center, the main **Management Portal** page displays the server name, the current user, the current namespace, license and instance information, and a **Switch** link.
2. Click the **Switch** link.
3. In the **Namespace Chooser** box, select the appropriate MPI namespace.
 - The namespace will consist of **AGMPI** concatenated with the name of your RPMS namespace.
 - For example, if the RPMS namespace is called **PROD**, then the associated MPI namespace will be called **AGMPIPROD**.
4. Click the **OK** button to select the namespace. The namespace displayed on the **Management Portal** will be updated to reflect the selection.

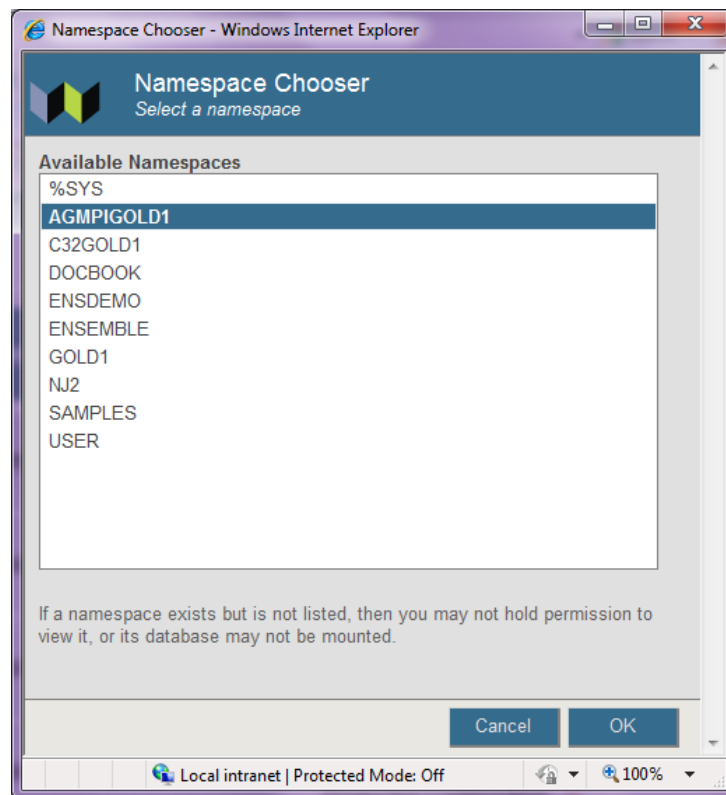


Figure 3-14: **Namespace Chooser**

Note: During the AGMPI installation process, a namespace called AGMPIxxx 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, 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

1. At the **Management Portal**, click **Ensemble**.
2. Select **Configure**, then click **Production**.

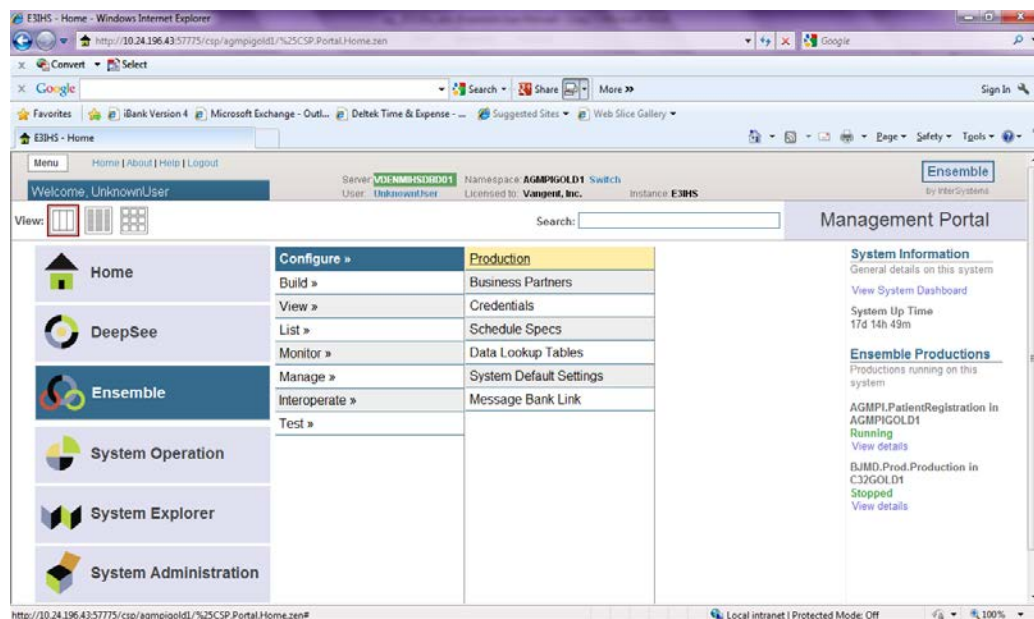


Figure 3-15: Production Configuration screen

The **Production Configuration** screen will update to display the items for the MPI production, as shown in Figure 3-16.

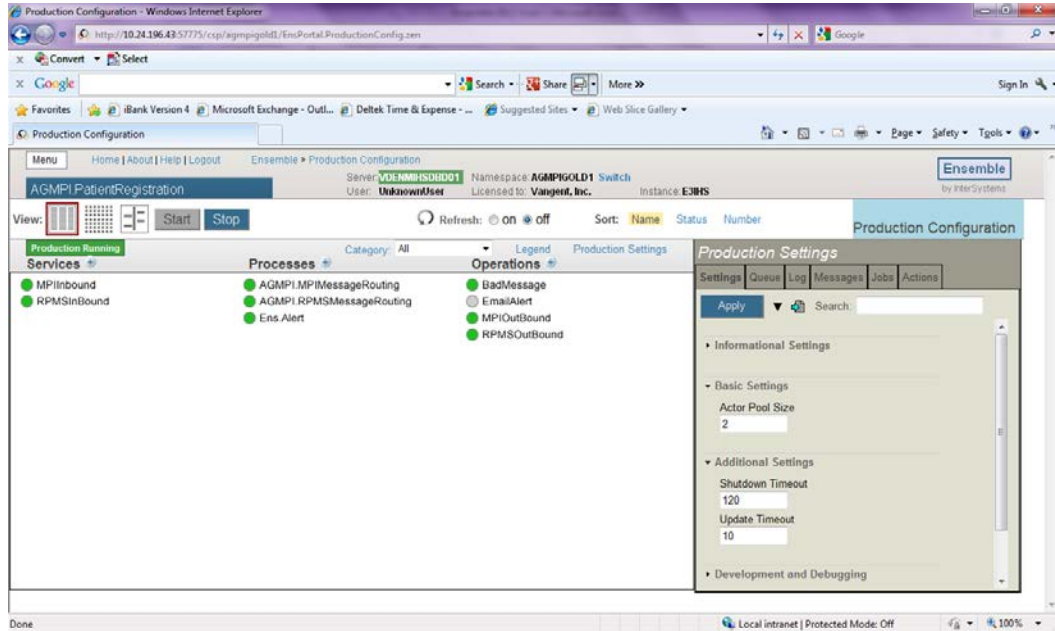


Figure 3-16: Management Portal page showing the AGMPI.PatientRegistration production configuration

3.3.2 Production Configuration Page

The **Production Configuration** screen will display the items for the currently running MPI production, as shown in Figure 3-17.

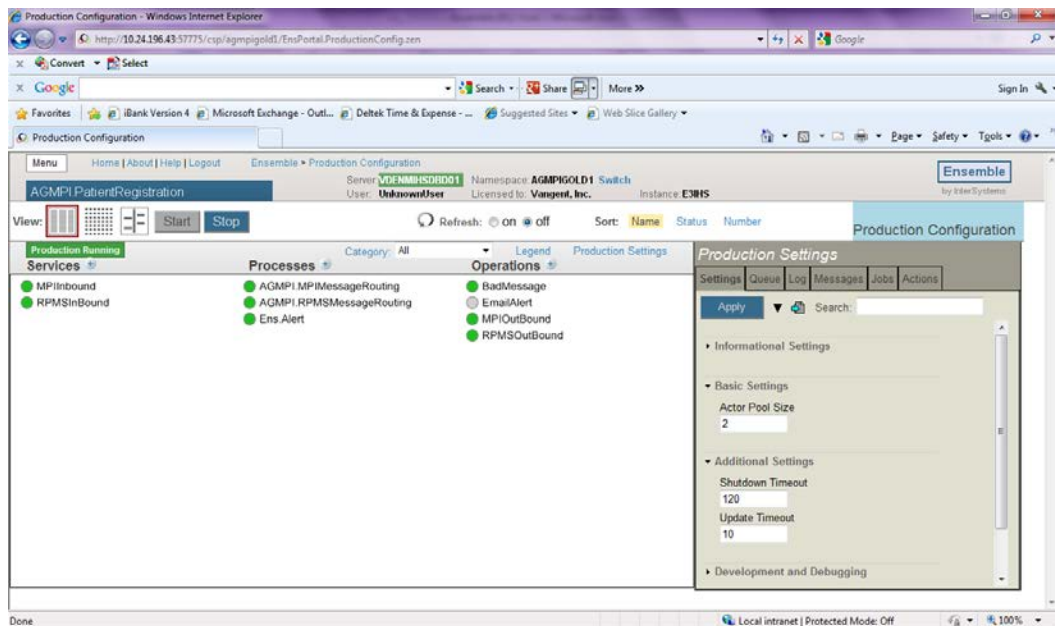


Figure 3-17: AGMPI.PatientRegistration production configuration

The production configuration diagram is a graphical inventory of the business hosts in the production, organized into three columns: Services, Processes, and Operations. At the top left above the column headings, the diagram shows a production status message.

Each production item has a circular status indicator next to its name. This indicator changes color with the status of the production item it represents. Click **Legend** to see the meaning of the status indicator values along with hints on other ways to interact with the production configuration diagram, as shown in Figure 3-18.

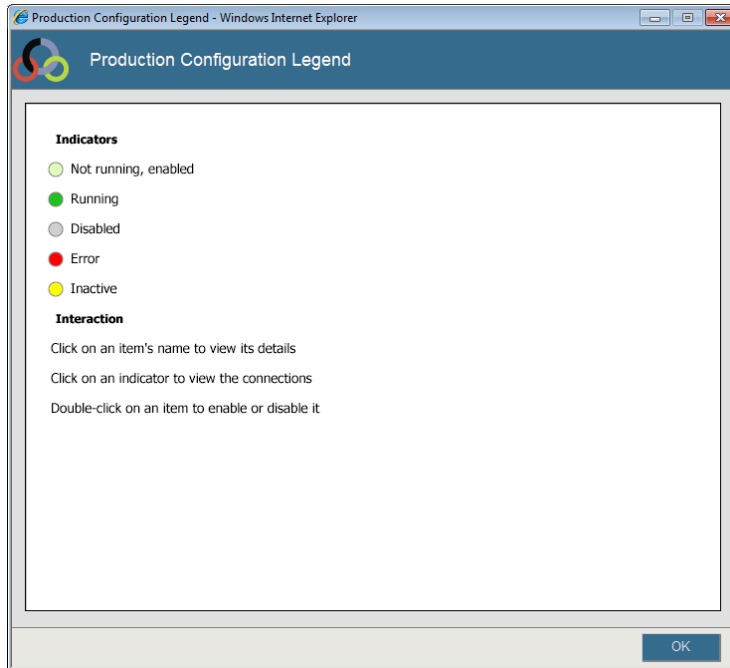


Figure 3-18: Production Configuration Indicators

The following fields appear on the Production Configuration page:

- **Production Name.** The name of the currently running production or the last production run.
- **Production 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, “**Production Stopped**,” “**Production Suspended**,” or “**Production 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**. The button will have one of the following labels:

- **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 **Production Configuration** page when there is a discrepancy between the status of the currently running production and the production as defined in the code:
 - a. Click **Update Production** to update the production and resolve the discrepancy.
 - b. When the confirmation message is displayed, click **OK** to return to the **Production Configuration** 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 opens a Terminal window, but this window was closed by a user action while the production was still running.
- **Recover.** Click to recover a production with a troubled status; this cleans up the troubled instance of the production so that you can run a new instance when you are ready.

Note: Detailed instructions for configuring a production using the configuration diagrams are found in the *Patient Registration (AG) MPI Interface/Ensemble Installation Guide and Release Notes*. For the purposes of this manual, use the AGMPI.PatientRegistration production instance.

- **Production items.** Below the **Stop Production** button are the **Business Services**, **Business Processes**, and **Business Operations** that make up the production. These are discussed in more detail in the *Patient Registration (AG) MPI Interface/Ensemble Installation Guide and Release Notes*.

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 name.

Note: Always monitor Outlook e-mail for alerts from Ensemble.
See Section 10.0 for information about Ensemble e-mail alerts.

If more than one Ensemble namespace is available, be sure that the appropriate namespace is displayed in the **Namespace** field.

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.

Table 4-1: Production Status Values

Status Value	Meaning
Running	When a production has been started and is operating normally, it has a status of <i>running</i> and its row on the Production List page, as well as the status message above the production configuration diagram is green. Running is an acceptable state.
Stopped	A production acquires a status of <i>stopped</i> when, at the end of the shutdown sequence, all of its queues are free of synchronous messages. This is an acceptable state. The status message above the production configuration diagram for a <i>stopped</i> production is gray.
Suspended	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. The status message above the production configuration diagram for a suspended production is yellow. You may start a suspended production. Starting the production again may permit the waiting messages to be processed. However, if you start the suspended production, 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 you must investigate to discover why the incoming messages never complete.
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. The production row on the Production List page is highlighted in purple. The status message above the production configuration diagram for a troubled production is red. When a production acquires a troubled status, a Recover command appears in the ribbon bar on the Production Configuration page for the production. Click this command to clean up the troubled instance of the production so that you can run a new instance when you are ready.

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 Management Portal.

4.2 Production List Page

The **Production List** page, shown in Figure 4-1, lists all the productions defined in the current namespace and provides status information and links for configuring, exporting, deleting, and inspecting each production.

Only one production may run in a namespace at a time. However, if multiple productions are defined, any production on the list can be managed from this page.



Figure 4-1: **Production List** page

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

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

4.2.1 Opening the Ensemble Productions Page

To display the **Production List** page from the **Management Portal**:

1. click the **Ensemble** menu.
2. Click the **List** sub-menu.
3. Click **Productions**, as shown in Figure 4-2.

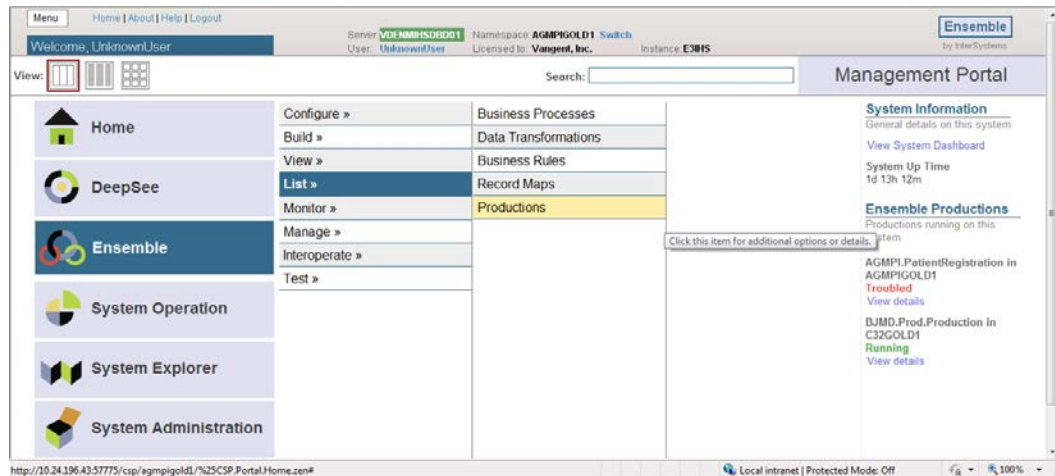


Figure 4-2: **Productions** menu option on the **Management Portal** home page

The **Production List** page is shown in Figure 4-3.



Figure 4-3: **Production List** page

In addition to the list of productions in the current namespace, the **Production List** page contains the Server, User, Namespace, License, and Instance information at the top center of the display area.

- To manage a specific production, select it in the production list and click **Open**.
- To navigate to a different page in the Management Portal, return to the Management Portal home page by clicking **Home** at the top of the page.

4.3 Production List

The **Production List** page displays a list of the Ensemble productions that are defined in the current namespace:

- Use the page to navigate to a specific production in the list to configure, stop, or start it.
- View the **Production List** page of the Management Portal by clicking **Productions** on the Ensemble **List** menu.

Above the list of productions are five buttons:

- Click **New** to start the **Production Wizard** to create a new production in this namespace.
- Click **Open** to display the **Production Configuration** page for the selected production. This is a graphical inventory of the business hosts in the production, organized into three columns: business services, business processes, and business operations. Each item in the diagram displays runtime status indicators. You can select individual elements to monitor and edit the details of performance and configuration.
- Click **Export** to export the selected production.
- Click **Delete** to remove the selected production from the namespace.
- Click **Document** to view or generate configuration documentation for this production in HTML format.



Figure 4-4: List of productions on the **Production List** 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.

Table 4-2: Colors associated with production status

Production Status	Row Color
Running	Green
Stopped	Gray
Suspended	Yellow
Troubled	Red

Under the **Production List** page ribbon bar is a table that lists all the productions associated with the currently active namespace. Each row is devoted to one production and has the following columns of information:

- **Production Name.** The name of the production.
- **Status.** The status of the production: running, stopped, suspended, or troubled, as described in Table 4-1.
- **Last Start Time.** The date and time when the production was last started.
- **Last Stop Time.** The date and time when the production was last stopped.

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

4.4 Starting and Stopping a Production

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

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

4.4.1 Start a Production Manually

To start a production from the **Production Configuration** page:

1. Click **Start** and answer **OK** to launch the **Start Production** dialog. It displays the name of the production, its startup status, and any messages associated with production startup.
2. When the startup dialog shows it is Done, click **OK** at the bottom of the dialog.

You can stop the running production and start another one from the **Production Configuration** page. If you try to start one, and another is already started, a warning message displays and nothing changes. For example:

```
12:05:06.292:Ens.Director: ERROR Ens>ErrProductionAlreadyRunning:
Production 'Demo.Loan.FindRateProduction' is already running
12:05:06.352:Ens.Director: ERROR Ens>ErrProductionAlreadyRunning:
Production 'Demo.Loan.FindRateProduction' is already running
Production 'Demo.Loan.BankUSProduction' not started:
ERROR <Ens>ErrProductionAlreadyRunning: Production
'Demo.Loan.FindRateProduction' is already running
```

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

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

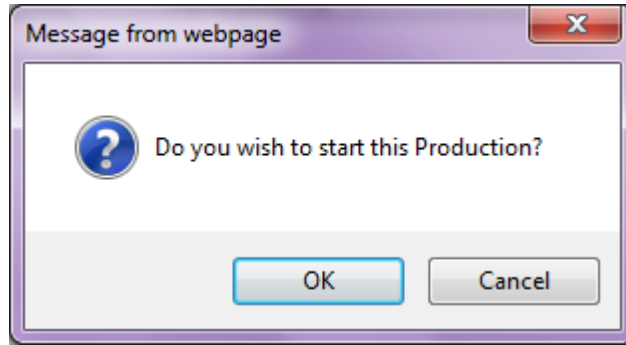


Figure 4-5: **Start Production** confirmation dialog box

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

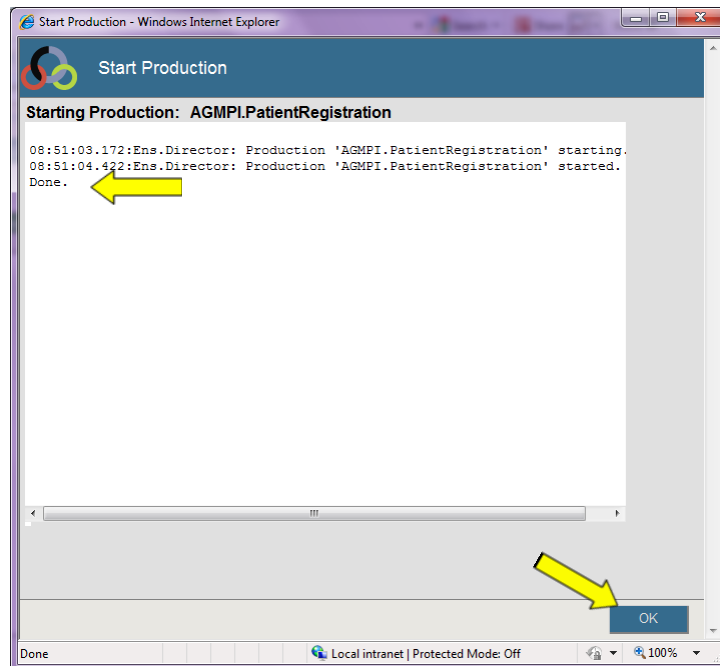


Figure 4-6: **Start Production** page

4. When the **Status** field at the top of the page displays **Done**, click **OK**.

4.4.2 Stop a Production Manually

Stop an Ensemble production from the **Production Configuration** page by performing the following steps:

1. Click **Stop** and answer **OK** to launch the **Stop Production** dialog. The Stop Production dialog displays the name of the production, its shutdown status, and any messages associated with production shutdown.

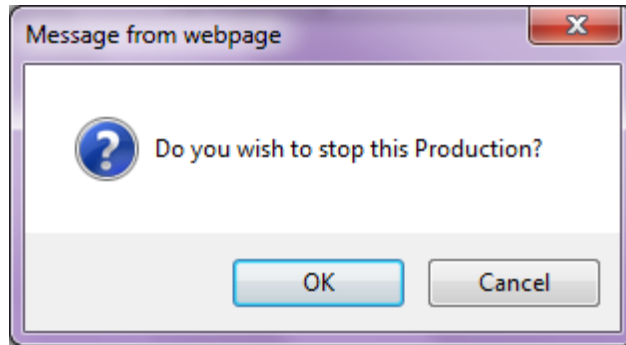


Figure 4-7: **Stop Production** confirmation dialog box

2. When the Stop Production dialog indicates it is **Done**, click **OK**.
3. If the request to stop the production initially fails, the portal displays the message **Production could not stop, do you want to force a shut down?** Click **Yes - Force to Shut Down** to force the production to shut down.

In the portal, you can only stop a production if it is open for configuration and it is running. You will receive an informational message if you try to stop a production that is not running or try to start a production and another production is already running in the namespace. You must open the running production in the **Production Configuration** page before you can stop it.

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

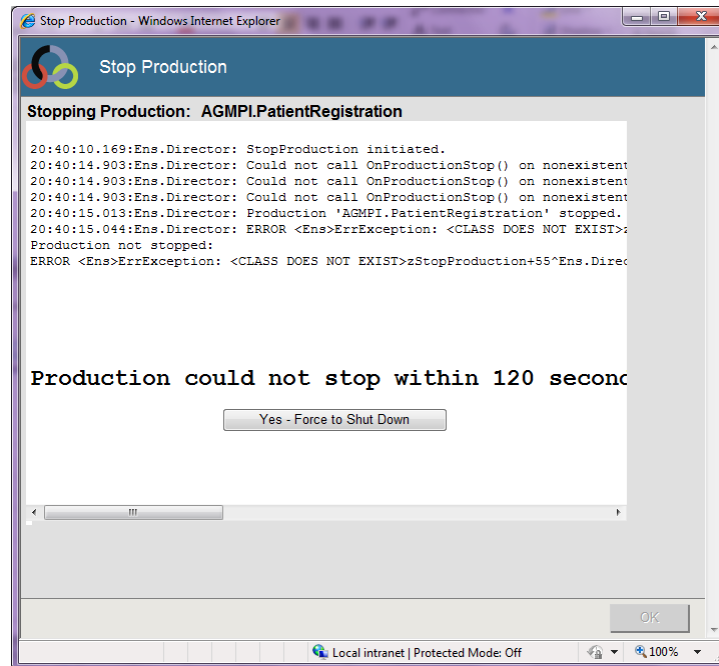


Figure 4-8: Stop Production page

4.4.3 Start and Stop a Production Automatically

The **Auto-Start Production** page allows you to configure Ensemble so that a specific production starts automatically at system startup and stops automatically at system shutdown.

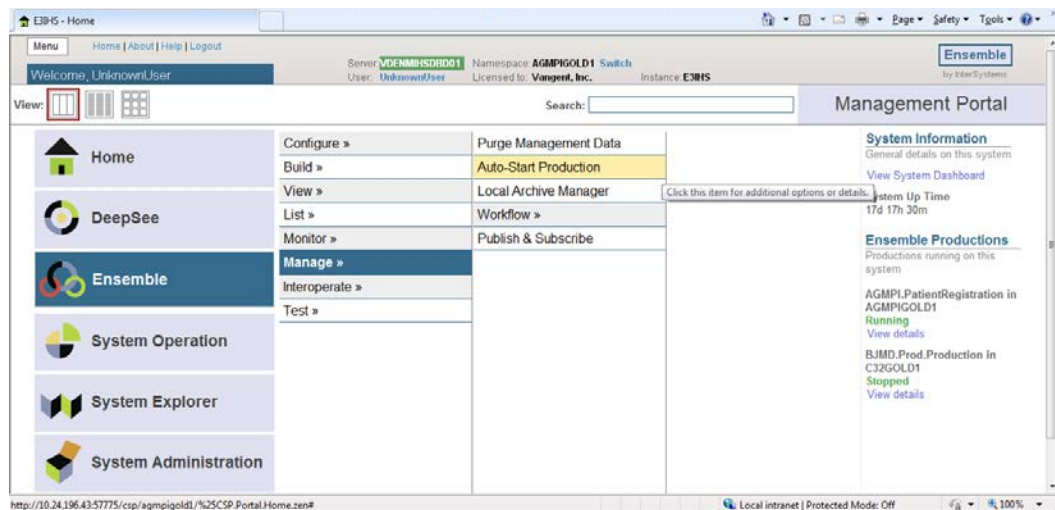


Figure 4-9: Auto-Start Production option

1. On the **Management Portal** menu, click **Ensemble**.

- Click **Manage**, then click **Auto-Start Production** to open the **Auto-Start Production** page, as shown in Figure 4-10.

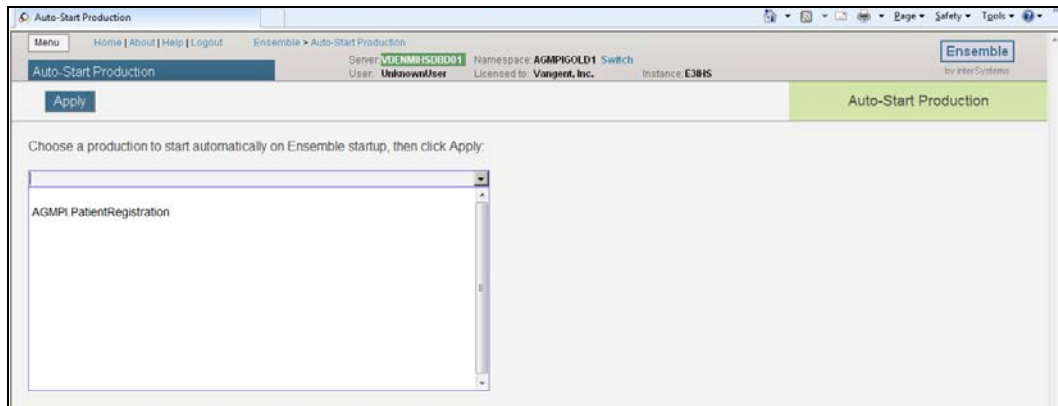


Figure 4-10: **Auto-Start Production** page

- In the **Auto-Start Production** list, select a production to start automatically at system startup and stop automatically at system shutdown. To disable automatic production start and stop, click the blank entry.
- Click **Apply**.

4.4.4 Ensemble Manage Menu

Use the **Ensemble Manage** menu for cleanup operations, such as purging outdated records, specifying automatic startup for a specific production, managing local archives, managing workflow (roles, users, tasks, worklist), and defining publish and subscribe settings.

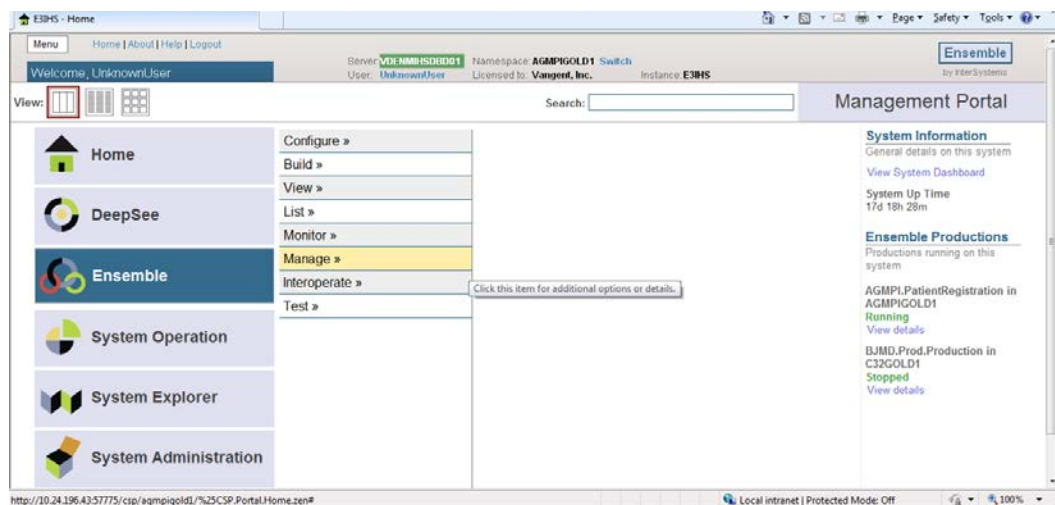


Figure 4-11: **Ensemble Manage** menu

On the Management Portal menu, click **Ensemble**, then click **Manage** to open the **Manage** sub-menus, as shown in Figure 4-12.

Figure 4-12

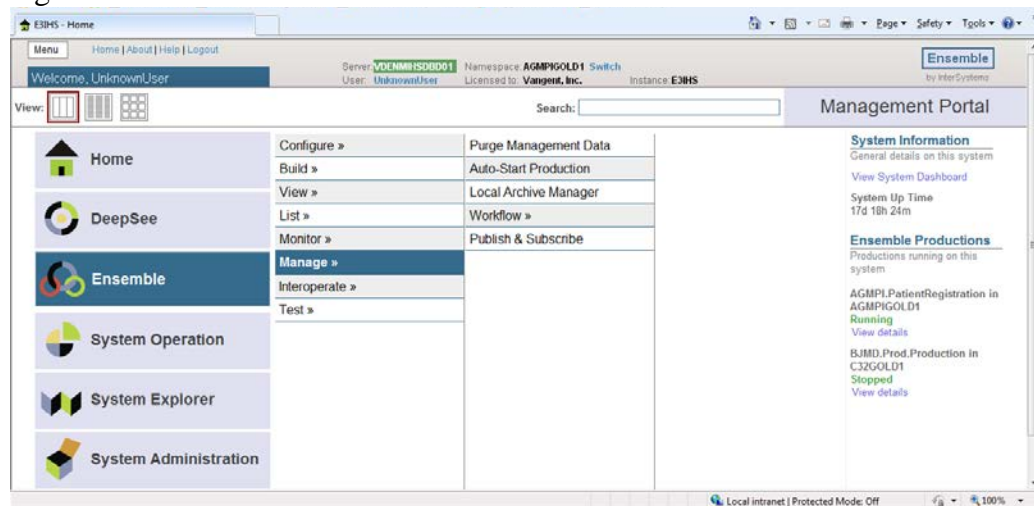


Figure 4-12: Ensemble Manage page

The **Manage** menu contains the following options:

- **Purge Management Data.** Purge messages, logs, and monitor records
- **Auto-Start Production.** Configure Ensemble to start a specific production automatically at system startup and to stop the production automatically at system shutdown
- **Local Archive Manager.** Define or run local archives
- **Workflow.** Create, view, or edit workflow roles, users, tasks, and worklists
- **Publish and Subscribe.** View or edit Subscriptions, Domains and Subscribers

5.0 Purge Management Data Page

The **Purge Management Data** page allows you to delete outdated entries from the event log, message warehouse, business process log, business rule log, and I/O archive log. You can only purge entries associated with the active namespace. To navigate to this page, click **Purge Management Data** on the Ensemble **Manage** menu. Only entries associated with the currently running production can be purged.

To open the **Purge Management Data** page:

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

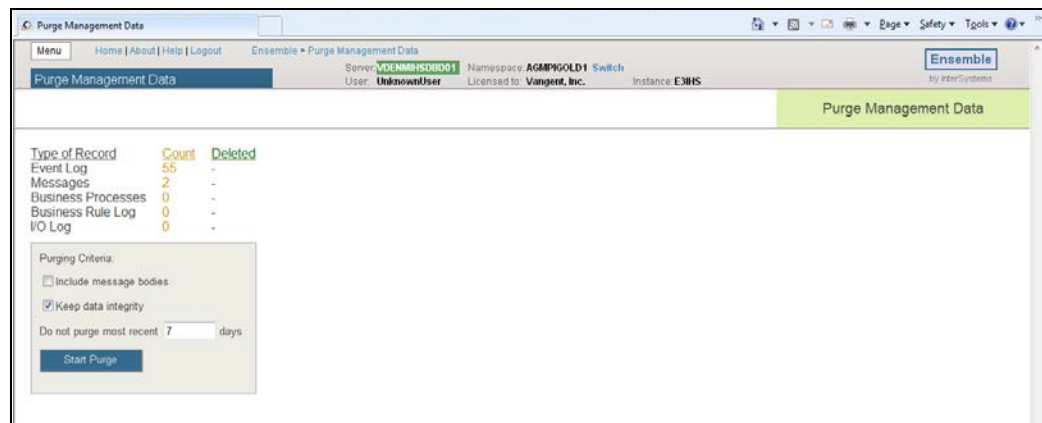


Figure 5-1: **Purge Management Data** page

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 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).
- **Count.** Total number of entries of this type stored for this production. Use the **Count** to decide whether or not it is worthwhile to purge the records and if so, how many days' worth of records you want to keep.
- **Delete.** Total number of entries of this type that the purge operation deleted after you click **Start Purge** and the purge completes.

5.1 Starting a Purge Operation

To start a purge operation, perform the following steps:

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 the messages.
 - 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 one 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.

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

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 Management Portal. Credentials are managed from the **Credentials** page, which is accessed by clicking **Credentials** on the Ensemble **Configure** menu. The **Credentials** table, shown in Figure 6-1, allows credentials to be managed easily and protects login data from unauthorized access.

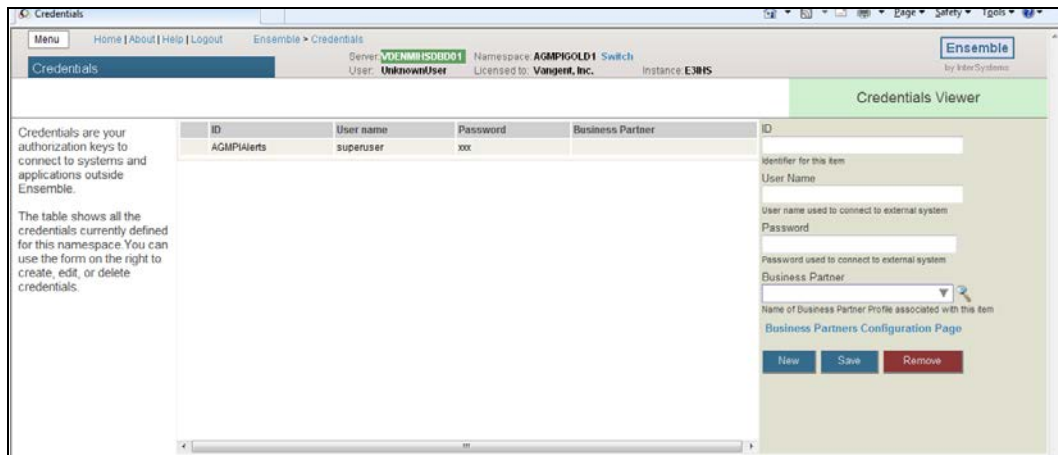


Figure 6-1: Credentials table

Each entry in the Credentials table has an ID which is used as the value of the Credentials setting when configuring production items that require logging in to a remote system. Adding an entry to the Credentials table for a production consists of assigning an ID to a username/password pair. You can also store an informational business partner name with the credential.

6.2 How Credentials Are Used

Some 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 and the remote system requires authentication, then the adapter 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 (AG) MPI Interface/Ensemble Installation Guide and Release Notes*.

6.3 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 Management Portal and navigating to the **Credentials** page.

The **Credentials** page displays a list of defined credentials associated with the current namespace. Each row in the table has the following columns:

- **ID** — Unique string that identifies this username-password pair; the name you use in the **Credentials** setting when configuring a business service or business operation to establish a remote connection.
- **User name.** Username with which to log on to the remote system.
- **Password.** Password corresponding to the username.
- **Business Partner** (*optional*). Name of the business partner profile associated with this item.

When editing a credential, you can choose a business partner from the list and view its details by clicking the magnifying glass. You can also create or edit a profile by clicking the **Business Partners Configuration Page** link.

When you select a credential by clicking on its row in the table, the **Credentials Viewer** pane displays the current settings. If you do not select a credential, the right pane shows empty fields for you to create a new credential. Enter values in the fields as outlined in the table description. You have the choice of two actions to perform in the **Credentials Viewer**:

- Click **Save** to store the updated or new values as a credential and display it in the table. If you choose to edit a row and change the ID, when you click **Save**, you must verify that you want to rename the credential.
- Click **Remove** to delete the selected credential.

Note: You cannot undo the **Remove** 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 message headers 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 **Message Viewer** 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 **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 Viewer
Filter the message log for the currently running production by entering search criteria such as time of day or session identifier.	Message Viewer, Filter
View message body contents.	Message Viewer, Contents

Message Task	Navigation Sequence
View message header contents for a message.	Message Viewer, Header
View message body contents for a message.	Message Viewer, Body
Periodically save older messages to a separate archive for long term storage.	Manage, Local Archive Manager
Resend selected messages.	Message Viewer, Resend
View messages that have entered a Suspended state. Resend selected messages.	View, Suspended Messages
View a visual trace of the delivery of a message, from original source all the way through to fulfillment (or failure).	Message Viewer, Trace
Test HL7 or X12 messages, by viewing and transforming them.	Interoperate, HL7 v2.x, HL7 v2.x Message Viewer Interoperate, ASC X12, ASC X12 Document Viewer
Test a production by sending request messages and receiving responses.	Test, Business Hosts

7.3 Message Viewer Page

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

To open the **Message Viewer** page, navigate to the **Management Portal** home page and click **Ensemble**, then click **View**, then click **Messages**. The **Message Viewer** page is shown in Figure 7-1.

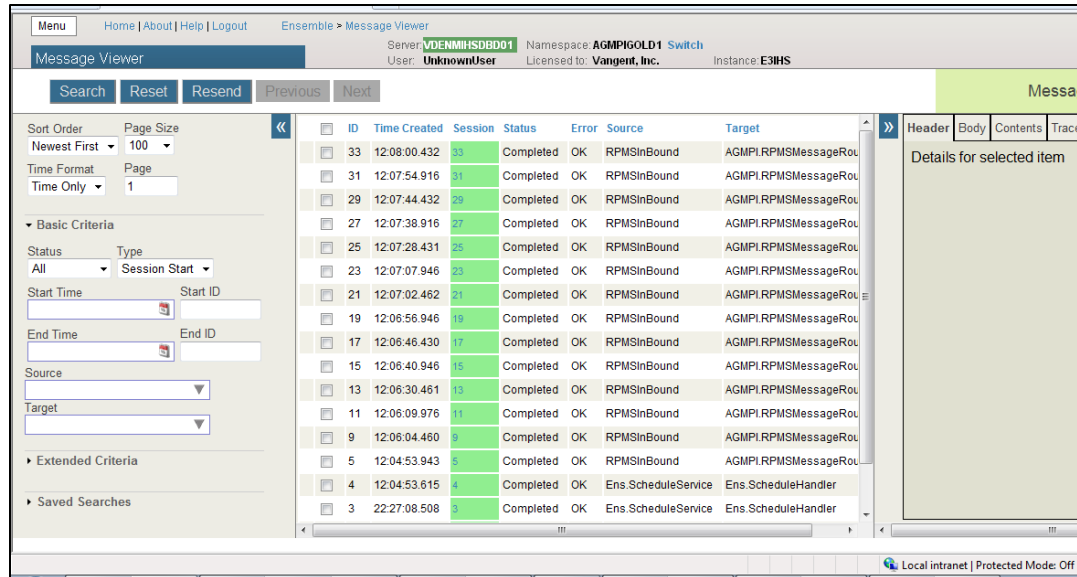


Figure 7-1: Message Viewer page

The **Message Viewer** page contains three panes:

- The left pane contains fields for searching, sorting, and filtering the messages in the message list.
- The center pane contains the message list, showing all messages in the persistent message store for the currently running namespace.
- The right pane displays details about a message selected in the center pane.

The panes on the left and right may be hidden to provide more display space for the remaining panes. To hide a pane, click the pane's corresponding double angle quotation (<< and >>), as shown in Figure 7-2.

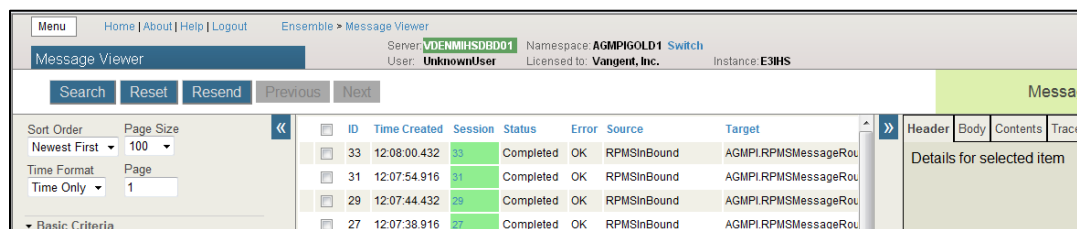


Figure 7-2: Buttons to hide the left and right panes on the Message Viewer page

7.3.1 Message List

The message list in the center of the **Message Viewer** page includes the following columns:

- **Check box.** Select messages for the **Resend** button.

- **ID.** The unique identifier for the instantiated message; the object identifier (<ObjectId>) of the message header.
- **Time Created.** 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 7.3.5 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. 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, navigate to the **Management Portal** home page and click **Ensemble**, then click **View**, then click **Suspended Messages**.

- **Error.** The results returned by the message to the configuration item that sent it. Possible error values are:
 - **OK**, indicating normal behavior
 - **Retry**, indicating the message experienced a failure but the system is configured to retry sending the failed message

- **Error**, indicating an error was reported somewhere in the activity
 - **Inactive**, indicating 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 (business service, business process, or business operation) that sent the message.

The right pane includes the following tabs that display additional message information:

- **Header**. Displays the fields in the message header object.
- **Body**. Displays the fields in the message body object.
- **Contents**. Displays the contents of the message body in an appropriate format. Contains a **View Full Contents** link that opens the message contents in a new window.
- **Trace**. Visually traces the path of the message object through the production. Contains a **View Full Trace** link that opens the message trace in a new window.

The background color of the **Session** field 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.
Green	The message marks the start of a session.
Silver	The message arrived after a timeout expired and is marked as Discarded.
Orange	The message is suspended.
White and pale tan, in alternating rows	These messages are complete or queued.

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.

The message status values apply to instances of request and response messages individually. Request/response “pairs” are not tracked together for multiple reasons:

- A request might be repeated several times before it is successfully delivered.
- Some requests have an optional response that can be ignored if the message does not arrive.
- Some responses can be deferred for later delivery.
- 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. The message can be resent by clicking Resubmit on the Suspended Messages page or by clicking Resend on the Message Viewer page.

7.3.2 Header Tab

Click the **Header** tab to display the message header fields for the selected message in the right pane of the **Message Viewer** page, as shown in Figure 7-3.

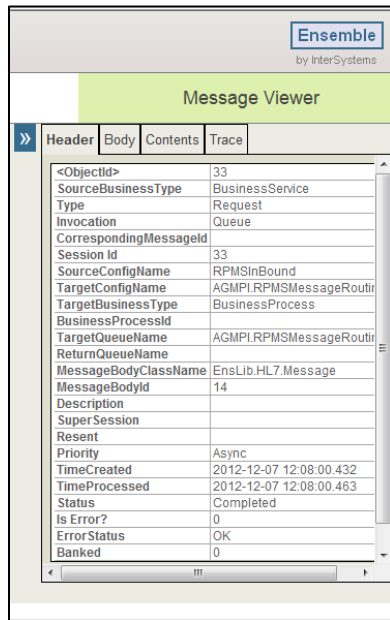


Figure 7-3: Message header details displayed by clicking the **Header** tab

7.3.3 Body Tab

Click the **Body** tab to display the message body fields for the selected message in the right pane of the **Message Viewer** page, as shown in Figure 7-4.

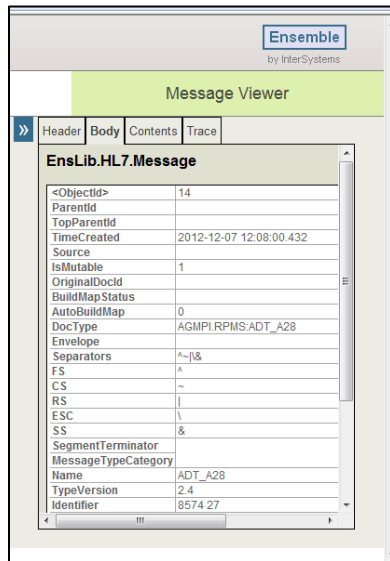


Figure 7-4: Message body details displayed by clicking the **Body** tab

7.3.4 Contents Tab

Click the **Contents** tab to display the message contents for the selected message in the right pane of the **Message Viewer** page, as shown in Figure 7-5. The **Contents** tab is used by advanced users.

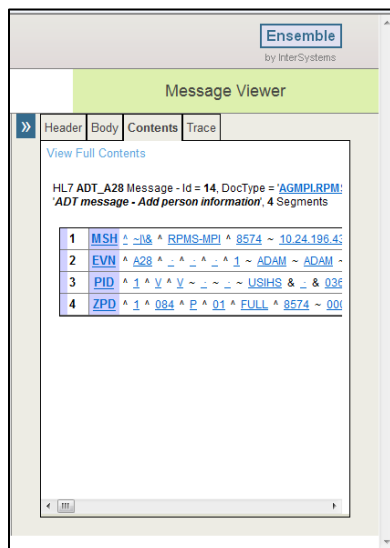


Figure 7-5: Message contents displayed by clicking the **Contents** tab

To display the message contents in a new window, as shown in, click the **View Full Contents** link.

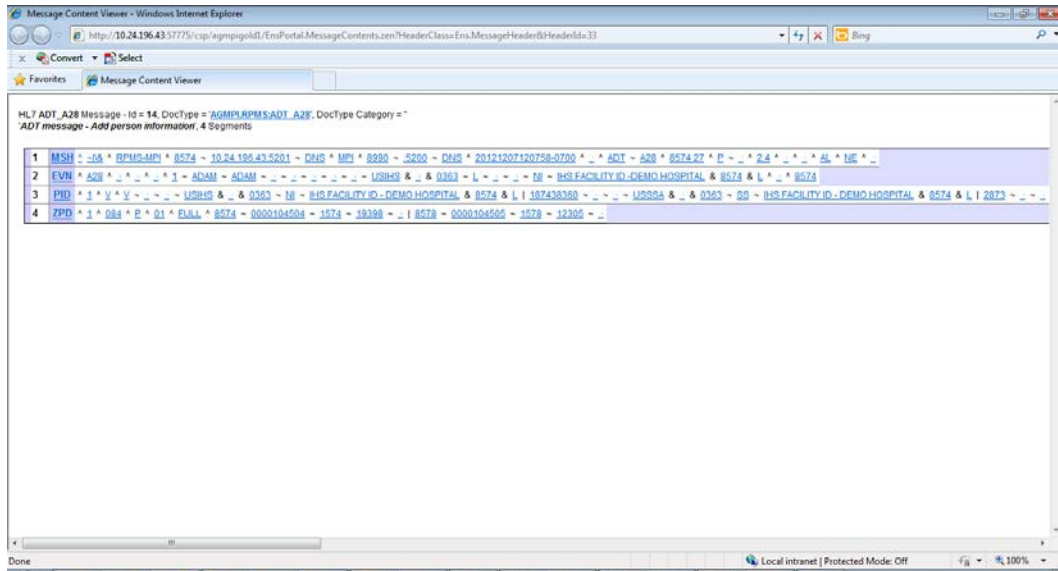


Figure 7-6: Message Contents displayed in a new window

To display a tooltip with a brief description of an item in the Contents pane, move the pointer over the item and hold it there briefly, as shown in Figure 7-7.

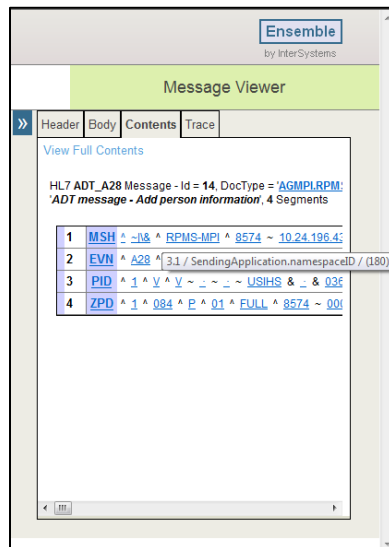
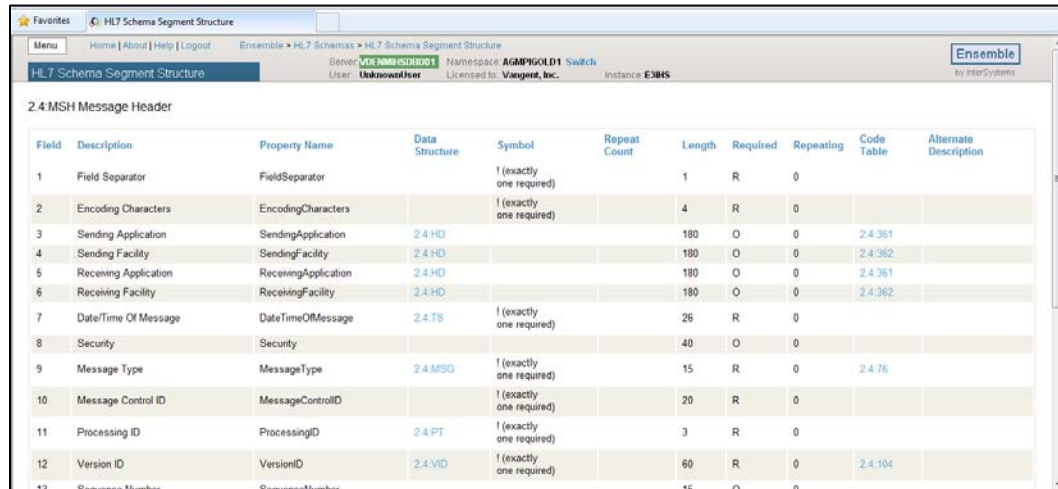


Figure 7-7: Hovering in the **Contents** tab to show a tooltip

Each line displayed in the Contents pane is a message segment containing fields, subcomponents, and end components.

To display detailed information about a message segment, click the segment to display the **HL7 Schema Segment Structure** window, as shown in Figure 7-8.



The screenshot shows the 'HL7 Schema Segment Structure' window with a table of segments for a 2.4 MSH Message Header. The table has columns for Field, Description, Property Name, Data Structure, Symbol, Repeat Count, Length, Required, Repeating, Code Table, and Alternate Description.

Field	Description	Property Name	Data Structure	Symbol	Repeat Count	Length	Required	Repeating	Code Table	Alternate Description
1	Field Separator	FieldSeparator		(exactly one required)		1	R	0		
2	Encoding Characters	EncodingCharacters		~ (exactly one required)		4	R	0		
3	Sending Application	SendingApplication	2.4.HD			180	O	0	2.4.361	
4	Sending Facility	SendingFacility	2.4.HD			180	O	0	2.4.362	
5	Receiving Application	ReceivingApplication	2.4.HD			180	O	0	2.4.361	
6	Receiving Facility	ReceivingFacility	2.4.HD			180	O	0	2.4.362	
7	Date/Time Of Message	DateOfMessage	2.4.TS	! (exactly one required)		26	R	0		
8	Security	Security				40	O	0		
9	Message Type	MessageType	2.4.MSG	! (exactly one required)		15	R	0	2.4.76	
10	Message Control ID	MessageControlID		! (exactly one required)		20	R	0		
11	Processing ID	ProcessingID	2.4.PT	! (exactly one required)		3	R	0		
12	Version ID	VersionID	2.4.VID	! (exactly one required)		60	R	0	2.4.104	
13	Sequence Number	SequenceNumber				16	O	0		

Figure 7-8: Clicking an RPMS-MPI MSH segment structure in the **Contents** tab displays additional information

7.3.5 Trace Tab

Click the **Trace** tab to display the **Visual Trace** page, which displays a graphic representation of the Services, Processes, and Operations related to the selected message, as shown in Figure 7-9.

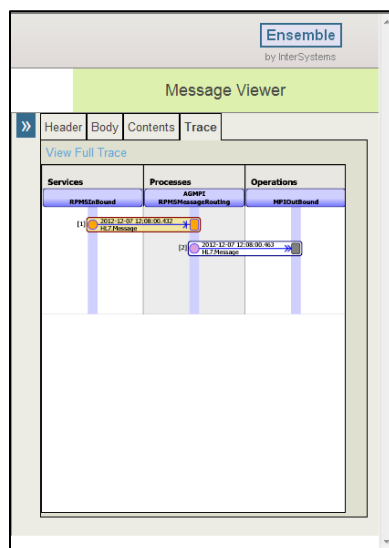


Figure 7-9: A message trace is visually represented in the **Trace** tab

To display the message trace in a new window, click the **View Full Trace** link. The new window contains the **Visual Trace** page, as shown in Figure 7-10.

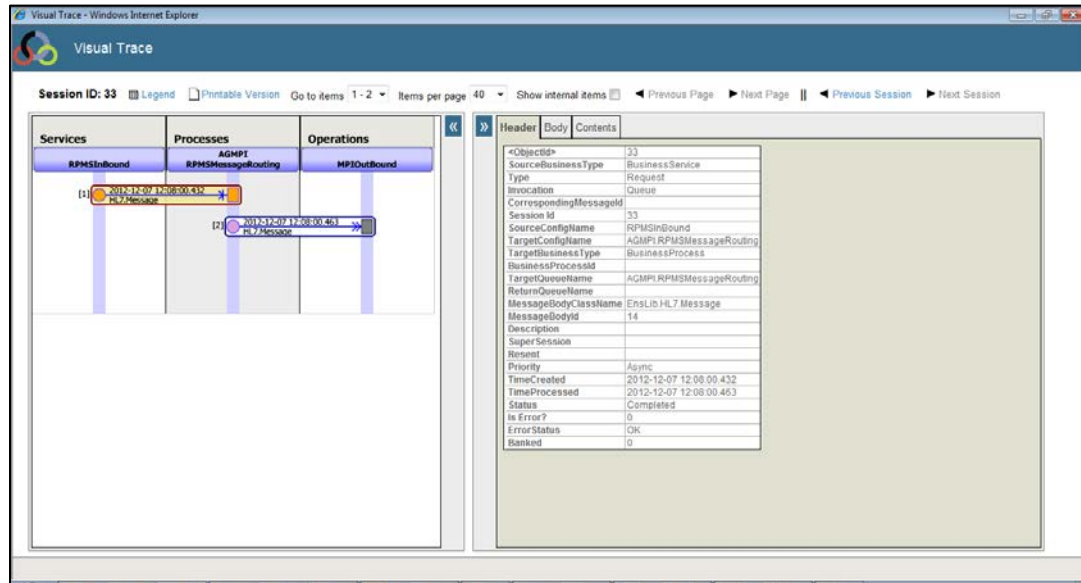


Figure 7-10: **Visual Trace** page displayed by clicking the **View Full Trace** link

The display area of the **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 left pane of the **Visual Trace** page.

To display additional details about a business service, business process, or business operation in the right pane, click an item in the left pane.

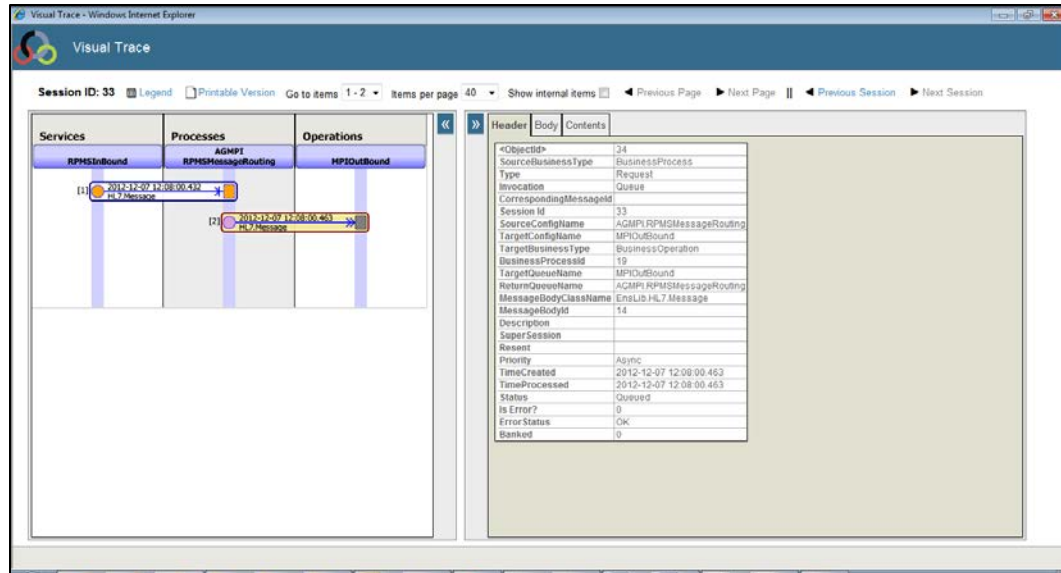


Figure 7-11: A trace selected in the **Visual Trace** page

If the graphical representation for a visual trace contains a mail alert, then there may be a problem in the system.

7.3.6 Messages in Progress

It is not always possible for a message to be immediately delivered. Most host classes provide some level of recovery from initial obstacles that a message might encounter. Obstacles to delivery can arise for a number of reasons, including circumstances outside the Ensemble system, such as an external server going down, or the need to wait for a decision from another business process or participant, such as workflow issues. Message status values help track what is happening to a message that is not yet delivered.

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 **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 **Management Portal** home page and then clicking **Ensemble**, then clicking **View**, then clicking **Suspended Messages**.

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 **Suspended Messages** page and clicking **Resubmit**. Suspended messages can also be resent by clicking **Resend** on the **Message Viewer** 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 Viewer** page by users with appropriate security levels.

To resend message, follow these steps:

1. In the message list, check the check boxes next to the message(s) to be resent, and then click **Resend** to display the **Message Resend** page, as shown in Figure 7-12.

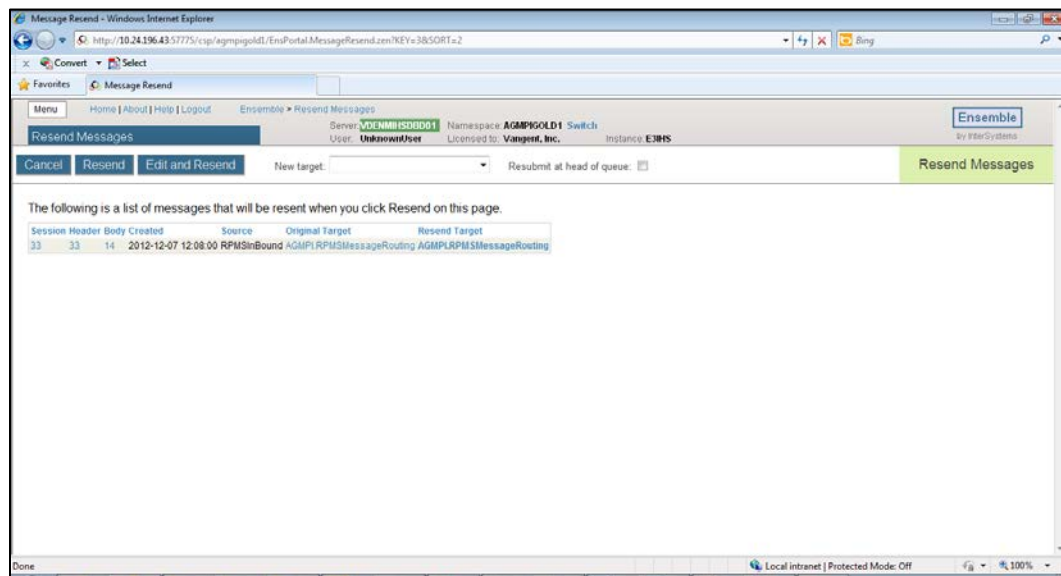


Figure 7-12: Resend Messages page

2. To edit the message before resending it, click **Edit then Resend** to display the **Message Edit and Resend** page.
3. Click **Resend** to resend the message. A message will display 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. System events 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, i.e., 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, which 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 **Ensemble**, then click **View**, then click **Event Log** on the **Management Portal** home page. The **Event Log** page is shown in Figure 8-1.

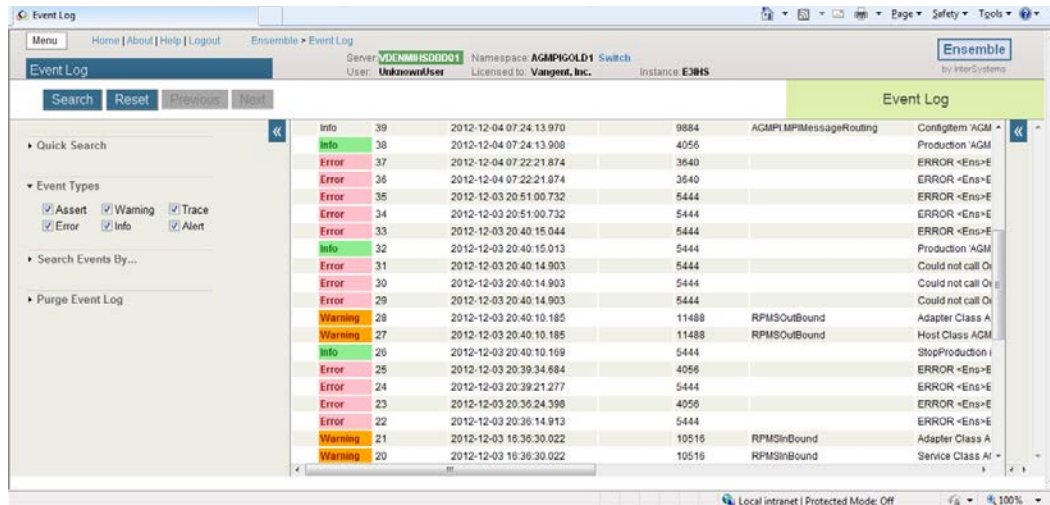


Figure 8-1: Event log messages are color coded

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	Pink
Warning	Orange
Info	Green
User Trace	Blue

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

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

9.0 Production Monitor

The **Production Monitor** page displays real-time status information about the currently running production in a condensed, one-page format. The **Production Monitor** page provides quick access to additional pages for further information. To display the **Production Monitor** page in the **Management Portal**, click **Production Monitor** on the **Ensemble Monitor** menu. The **Production Monitor** page is shown in Figure 9-1

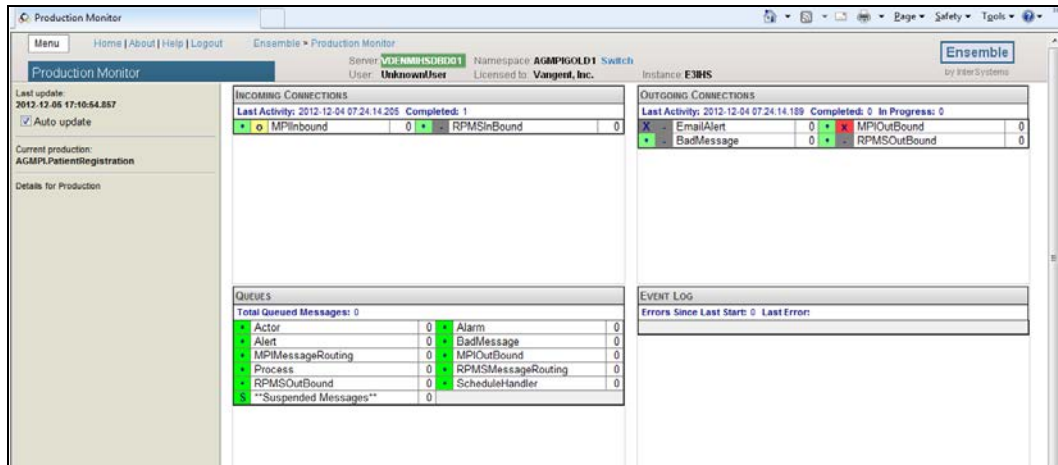


Figure 9-1: **Production Monitor** page



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 the **Event Log** page.

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




- **Incoming Connections** (upper left) Lists all incoming connections from external systems
- **Outgoing 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

By default, the system monitor is automatically updated at frequent intervals. In the left area, you can clear the **Auto update** check box to disable these updates.

Each entry on the system monitor page 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 mark) 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.

10.0 Ensemble E-Mail Alerts

If an e-mail alert is received from Ensemble or an 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 the *Patient Registration (AG) MPI Interface/Ensemble Installation Guide and Release Notes*.

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

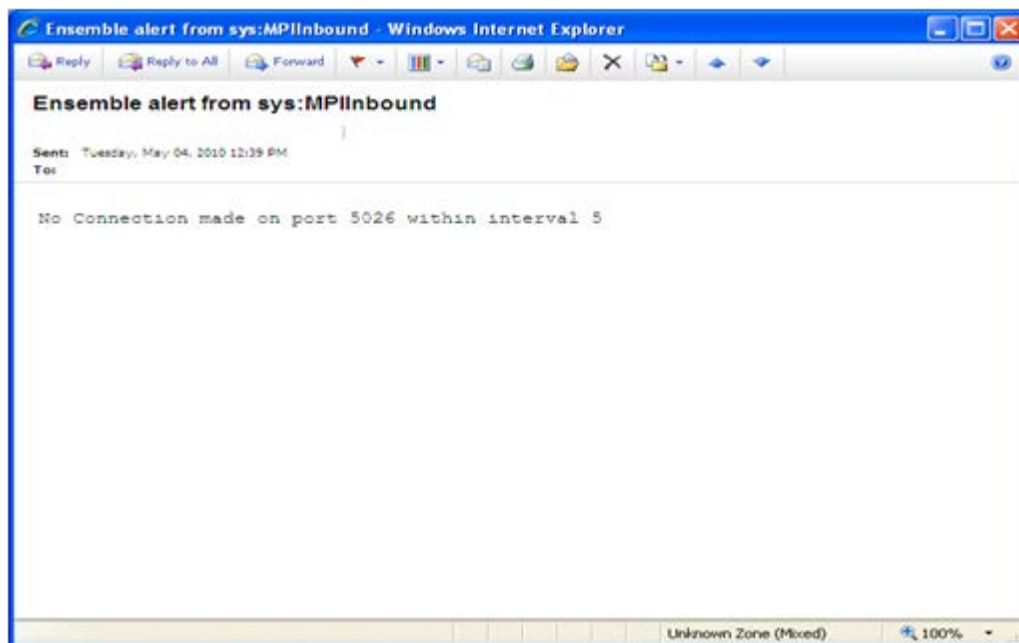


Figure 10-1: Ensemble e-mail alert for MPIInbound

This alert from MPIInbound can be ignored because it does not represent a significant issue. The MPIInbound alert indicates that the listener is not receiving messages within five 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. Contact the OIT Help Desk for assistance with this alert.

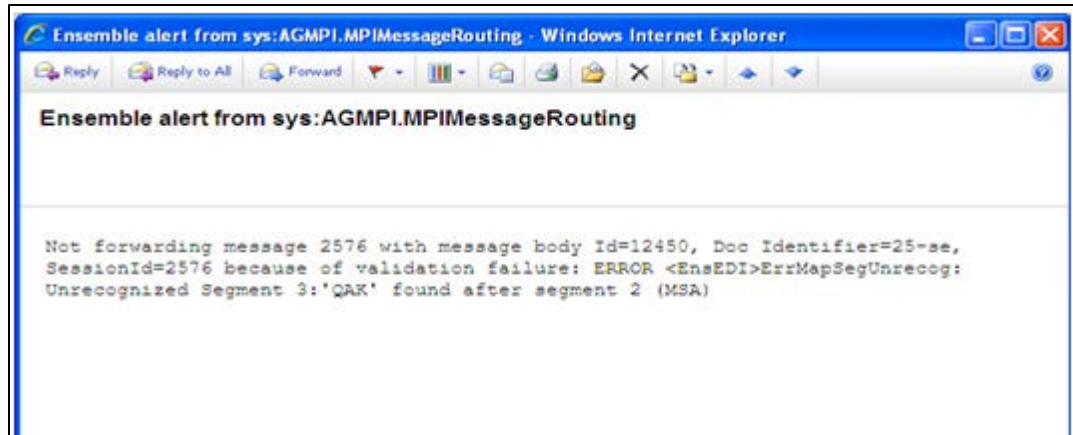


Figure 10-2: Ensemble e-mail alert for AGMPI.MPIMessageRouting

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

```
From: Ensemble_AGMPI@HLOMPI_rpms [Ensemble_AGMPI@HLOMPI_rpms]
Sent: Friday, May 07, 2010 9:20 AM
To:
Subject: Ensemble alert from sys:RPMSInBound

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

Figure 10-3: Ensemble e-mail error alert

Figure 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 HLOGlobalOutound 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 HLOGlobalOutound adapter failed to Process Message (an ACK) because the 'B' reference node did not exist for Message Control ID"
```

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

```
"Alert: The HLOGlobalOutound 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 HLOGlobalOutound adapter failed to find an open IEN after 100 tries"
```

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

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

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

```
"Failure: The HLOGlobalOutound 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 and 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

A “TCP Read timeout” 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

A “No Connection made on port ##### within interval 5” alert indicates that the site might not be receiving acknowledgment messages from the MPI. If a site receives several of these messages, check Ensemble settings or contact OIT. The alert 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

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

Appendix A: 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 ROB 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 ROB 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., 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 nonpublic 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 their *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 jobs 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 functions 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.
- Log out of the system whenever they leave the vicinity of their personal computers (PCs).
- 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.
- Abide by all Department and Agency policies and procedures and guidelines related to ethics, conduct, behavior, and information technology (IT) information processes.

A.1.4 Confidentiality

RPMS users shall

- Be aware of the sensitivity of electronic and hard copy information, and protect it accordingly.
- Store hard copy 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 Health Insurance Portability and Accountability Act (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 their systems 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 their 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 five 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 passwords immediately if password has been seen, guessed, or otherwise compromised, and report the compromise or suspected compromise to their ISSO.
- Keep user identifications (IDs) 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 eight 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 their ISSO that they have identified an IT security incident and 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 the 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 nonrecovery of temporary files created in processing sensitive data, virus protection, and intrusion detection, and provide 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.
- Not access live production systems without obtaining appropriate written access, and shall only retain that access for the shortest period possible to accomplish the task that requires the access.
- Observe separation of duties policies and procedures to the fullest extent possible.
- 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.
- Use checksums or other integrity mechanism when releasing their certified applications to assure the integrity of the routines within their RPMS applications.
- Follow industry best standards for systems they are assigned to develop or maintain, and abide by all Department and Agency policies and procedures.
- 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.
- 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, Chief Information Security Officer (CISO), and systems owner.
- Protect the supervisor, superuser, 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 backup 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, and 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.
- 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.
SQL	Structured Query Language

Contact Information

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

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

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