



Ensemble Release Notes

Version 2009.1

30 June 2009

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Ensemble Version 2009.1 30 June 2009
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InterSystems Worldwide Customer Support

Tel: +1 617 621-0700
Fax: +1 617 374-9391
Email: support@InterSystems.com

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About This Book

Welcome and thank you for using Ensemble 2009.1.

This book describes the contents of this release of Ensemble and provides important tips for getting started. It contains the following chapters:

- [New Features](#)
- [Enhancements](#)
- [Known Issues](#)
- [Installing Ensemble](#)
- [Upgrading Ensemble](#)
- [Adapter Library](#)
- [Release History](#)

There is also a detailed [Table of Contents](#).

InterSystems Ensemble shares many underlying core technologies with InterSystems Caché. This book refers you to books in both documentation sets. The Caché books are particularly important as you first set up the system. After initial configuration, the Ensemble books become your primary source of information. The following books are the best places to start if you are new to Ensemble:

- *[Introducing Ensemble](#)* provides an overview of product features.
- *[Ensemble Best Practices](#)* describes best practices for organizing and developing Ensemble productions.

For general information, see *[Using InterSystems Documentation](#)*.

1

New Features

Ensemble 2009.1 offers the following new features since Ensemble 2008.2:

- [Ability to Edit and Resend Messages](#)
- [Object Gateway for .NET Services and Operations](#)
- [Create a Studio Project from a Production](#)
- [Automatic Documentation of a Production](#)
- [Support for ebXML](#)
- [Caché 2009.1 Features](#)

The next chapter, “[Enhancements](#),” describes changes in existing features since Ensemble 2008.2.

1.1 Ability to Edit and Resend Messages

You now have the ability to edit virtual document in addition to other message types before resending or resubmitting them. See the following sections in *Managing Ensemble Productions* for details:

- [Resend Messages](#) section of the “Message Browser” chapter
- [Suspended Messages](#) section of the “Maintenance” chapter

1.2 Object Gateway for .NET Services and Operations

In conjunction with Caché introducing the Object Gateway for .NET, Ensemble now contains the following classes in the `EnsLib.DotNetGateway` package which work analogously to their `EnsLib.JavaGateway` counterparts:

- `EnsLib.DotNetGateway.Service`
- `EnsLib.DotNetGateway.ServiceAdapter`
- `EnsLib.DotNetGateway.AbstractOperation`

You can add the service to a production to start, monitor, and shutdown a .NET Gateway server.

See the *Using the Object Gateway for .NET* book for details.

1.3 Create a Studio Project from a Production

You can now create a Studio Project that includes classes, DTL, rules, include files, schema, etc. that are used by the production. A project includes the following items:

- All host and adapter classes
- All custom schema in virtual documents definitions
- All rules, delegated rules, and DTL used by routing engines
- All `<rule>` and `<transform>` elements used by BPL classes
- All `<subtransform>` elements used by DTL classes
- All custom schema used in *SourceDocType* and *TargetDocType*
- All dependent predecessor classes
- All include files used by classes

See the descriptions of the class methods **CreateStudioProject** and **FindStudioProjectItems** in the `Ens.Config.Production` entry of the *Class Reference* for details.

1.4 Automatic Documentation of a Production

The Ensemble Management Portal has a new option to dynamically generate documentation for a production, including a list of all the configuration items and their settings. The **[Ensemble] > [Productions]** page now contains a new column that allows you to generate and subsequently view HTML documentation for a given production.

You can also generate HTML documentation, and additionally PDF documentation, using new methods in the `Ens.Config.Production` class:

- **CreateDocumentHTML** — Creates new documentation in HTML format.
- **RemoveDocumentHTML** — Removes existing HTML-format documentation for a given production in the current namespace.
- **CreateDocumentPDF** — Creates new documentation as a PDF file.

See the [Production Documentation](#) section of the “Productions” chapter of *Managing Ensemble Productions* for details.

1.5 Support for ebXML

The Public Health Information Network (PHIN) standard for message transport across the Internet is the ebXML Messaging Service (ebMS), used to exchange sensitive health data information between partner organizations. It supports a neutral format for carrying messages between different systems, such as between legacy systems and Web services applications. It is designed to work with any communications protocol, and the content of messages carried over ebMS can be in any format. The ebMS standard is a set of layered extensions on the Simple Object Access Protocol (SOAP) to support business-to-business transactions. More information on ebXML and ebMS is available at <http://www.oasis-open.org/home/index.php>.

Ensemble supports this type of message transport.

See the entries for the `EnsLib.ebXML` package in the *Class Reference* for details.

1.6 Caché 2009.1 Features

Ensemble 2009.1 runs on top of Caché 2009.1. This means that, in addition to changes in Ensemble between 2008.2 and 2009.1, the new Ensemble release includes a large number of updates in the underlying Caché technologies.

To learn about the Caché changes that may relate to your Ensemble environment, begin with the InterSystems online documentation set called *Getting Started with Caché*. The “[New and Enhanced Features for Caché 2009.1](#)” chapter of the *Caché Release Notes* contains details of the Caché 2009.1 features.

If you are upgrading, see the “[Upgrading Ensemble](#)” chapter of this guide for a list of additional Caché resources to reference.

2

Enhancements

Ensemble 2009.1 offers enhancements to existing features as follows:

- [Testing Service for Virtual Document Messages](#)
- [Sequence Manager Support for Non-HL7 Messages](#)
- [SQL Adapter](#)
- [Java Gateway Adapters](#)
- [Additional HL7 Schema Definitions](#)
- [Visual Trace](#)
- [Ensemble Automatic Start Setting](#)
- [Documentation Updates](#)

2.1 Testing Service for Virtual Document Messages

This release adds the ability to test virtual document messages (HL7, X12) using the testing service. See the “[Testing Service](#)” chapter of *Managing Ensemble Productions* for details.

2.2 Sequence Manager Support for Non-HL7 Messages

Previous releases introduced the Sequence Manager for HL7 messages. The sequence manager is a business process that accepts incoming messages from multiple sources, then forwards the messages to a target configuration item in a specified order. You can now use the sequence manager for a wider set of non HL7 messages.

You can run the Sequence Manager on messages other than `EnsLib.HL7.Message` as long as those messages support the get and set of a predefined set of fields. Simply subclass `EnsLib.HL7.SequenceManager` and override the following parameter and methods:

- Parameter *MessageClassname* — defines the class name of the new message.
- Method **MessageGetField(pMessage,pFieldCode)** — *pFieldCode* must be one of the values indicated for the following fields:

Name	1
ControlId	2
SequenceNumber	3
SendingApplication	4
SendingFacility	5
ReceivingApplication	6
ReceivingFacility	7

- Method **MessageSetField(pMessage,pFieldCode,pValue)** — sets the value for the defined fields.

2.3 SQL Adapter

This release of Ensemble contains the following enhancements to the SQL Adapter:

- [JDBC Support](#)
- [Large Object \(LOB\) Support](#)

2.3.1 JDBC Support

Support has been added to allow the SQL adapters to use JDBC as an option in place of ODBC. Appropriate settings have been added to the configuration settings for the SQL adapters.

2.3.2 Large Object (LOB) Support

This release adds SQL Adapter Large Object (LOB) SELECT stream support for output from the SQL Adapters; however, it does not yet support input, that is, parameters with large stream values.

2.4 Java Gateway Adapters

This release adds Java Gateway inbound and outbound adapters. Use these adapters in cases where you construct a Java proxy class which Ensemble communicates with by sending and retrieving message objects or data streams in a call-and-response fashion.

2.5 Additional HL7 Schema Definitions

Ensemble now includes schema definitions for HL7 V2.5.1 and HL7 V2.6. Some of the older schema definitions also contain minor corrections.

2.6 Visual Trace

This release contains an enhanced visual trace of a message through Ensemble; you can optionally include events written to the event log. Providing more diagnostic information in the message trace avoids screen transitions and gives a visual sense of the context of the events.

See the [Visual Trace](#) section of the “Message Browser” chapter of *Managing Ensemble Productions* for details.

2.7 Ensemble Automatic Start Setting

There is a new configuration setting, **EnsembleAutoStart** (default is enabled), which you can maintain from the **[Home] > [Configuration] > [Startup Settings]** page of the System Management Portal. If this setting is enabled, the production you set to auto-start in each Ensemble namespace starts when you start Ensemble. To facilitate debugging situations involving troubled productions, you can disable this setting to prevent a production from starting.

See the description of the **Auto-Start Production** field in the [Production Life Cycle](#) section of the “Production Concepts” chapter of *Developing Ensemble Productions* for details on how this new setting works with your Ensemble production settings.

2.8 Documentation Updates

Ensemble 2009.1 introduces the following new books:

- *Ensemble 2009.1 Release Notes* (this book)
- *Ensemble Best Practices*
- *Using the Object Gateway for .NET*

Ensemble 2009.1 offers significant updates to the following books:

- *Using the Java Gateway*
- *Developing Ensemble Productions*
- *Managing Ensemble Productions*

Ensemble no longer contains the following book:

- The *Getting Started with Ensemble* book has been merged into *Ensemble Best Practices*

3

Known Issues

Important: For an updated list of known problems in this release, contact the [InterSystems Worldwide Response Center](#).

Review the following issues carefully to determine if they affect your system:

- [Compatibility Issues for Upgrades](#)
- [Business Rule Export and Import](#)
- [DTL Validation Errors](#)
- [HL7 Schema Errors](#)

3.1 Compatibility Issues for Upgrades

The following changes in this release may affect the operation of your existing system. Review the following issues before upgrading a previous instance of Ensemble:

- [Changes in HL7 Storage Structure](#)
- [New Setting in Business Process and Business Operation Classes](#)
- [New Mechanism for Editing Messages Replaces the %DrawEditForm\(\) Method](#)
- [Increased Alert Level for Data Transformation Errors](#)
- [Changes to Pool Size Configuration Behavior on TCP Service](#)
- [Renamed Column in Statistics Queries](#)
- [Alert Support for Services Invoked Outside Ensemble](#)

- [Changes in Empty Schema Category Behavior](#)

3.1.1 Changes in HL7 Storage Structure

This release of Ensemble changes the storage structure for HL7 message segments to avoid block contention and improve throughput of large systems.

Ensemble now stores message segments in the new format and converts old message segments to the new format the first time it opens the message as an object. Access to HL7 messages from SQL and from the Management Portal is compatible with both formats.

This change is transparent to most applications; however, if you have code that directly accesses or manipulates the segment globals, you must modify it to be compatible with the new structure. Contact the [InterSystems Worldwide Response Center](#) (WRC) for advice and guidance if you need to make such changes.

3.1.2 New Setting in Business Process and Business Operation Classes

This release introduces a new setting, **ReplyCodeActions**, for all business process and business operation classes. Formerly, this setting was available only on HL7 TCP business operations.

This change adds a boolean return value to the existing business operation callback method **OnFailureTimeout**. If you added an override of this method to your business operation classes, you must add `Quit 0` to your implementation to preserve your custom behavior, and `As %Boolean` to your method signature for it to compile.

3.1.3 New Mechanism for Editing Messages Replaces the %DrawEditForm() Method

This release removes the **Ens.Util.MessageBodyMethods.%DrawEditForm()** method, which the Ensemble Management Portal called to display a message-specific content editor. A different mechanism now provides this functionality. See the [Ability to Edit and Resend Messages](#) section.

3.1.4 Increased Alert Level for Data Transformation Errors

In previous releases, Ensemble did not trigger an alert when it encountered an error in a data transformation; errors were only logged in the Event Log. Ensemble now reports such errors as alerts if you enable the *AlertOnError* setting for the routing engine configuration item.

3.1.5 Changes to Pool Size Configuration Behavior on TCP Service

For TCP Services, *JobPerConnection* causes each new incoming socket connection to be handled by a freshly spawned job rather than by the listener job itself. Only one job at a time can be the listener, and one job must be the listener, so TCP Services configured with *PoolSize* greater than 1 still only start one listener job. However, this listener can spawn an unlimited number of connection jobs if *JobPerConnection* is set to True. This release of Ensemble makes the *PoolSize* setting, if configured to a value greater than 1, serve as a limit on the number of simultaneous connection jobs that can exist. When this limit is reached, the listener does not accept any more connections until one or more of the existing connection jobs quits or dies. An Event Log warning appears when it first reaches the limit.

3.1.6 Renamed Column in Statistics Queries

This release of Ensemble renames a column in the **EnumerateHostStatus** and **EnumerateJobStatus** queries in the `Ens.Util.Statistics` class from *LastAction* to *LastActivity*. If your application refers to the column by name, you must update it.

3.1.7 Alert Support for Services Invoked Outside Ensemble

This Ensemble release adds error alerting and logging to the **ProcessInput()** method of Business Service classes when you invoke the service from a job not started by Ensemble and, therefore, not running in its **OnTask()** loop. The main examples of Services invoked in this way are SOAP services and CSP Web pages, but may also include Language Binding and Stored Procedure calls.

3.1.8 Changes in Empty Schema Category Behavior

In previous releases, if a data transformation processed an HL7 message that had no schema category associated with it, Ensemble modified the source message to have the schema category expected by the data transformation. In this release, the schema category remains empty. It is possible that if a message passed through multiple data transformations or routing engines, it may now fail in subsequent transformations or routing engines. To avoid this problem, specify the schema category in the business service.

3.2 Business Rule Export and Import

InterSystems has identified a known problem with the Xerces parser version used in the current and past releases for Ensemble. The symptom related to Ensemble business rules is that Ensemble wrongly reports errors when importing a previously exported production from an XML file. The symptom

occurs only when the XML file contains definitions of general business rules that define “assign” actions in addition to simply returning a result.

There are two techniques for working around this problem. One makes import simple and places the burden on the person exporting the production. The other makes export simple and places the burden on the person importing the production. You only need to use one of the following equally effective techniques:

Import

Use the following approach to facilitate the import task:

1. Find each general business rule that defines “assign” actions in addition to returning a result.
2. Export each of these rules to a separate file. Make sure you are exporting one rule per file.
3. Export everything else in the production, including other rules, to a different file.
4. Import (and compile) each of the exported files individually.

Export

Use the following approach to facilitate the export task:

1. Export everything to one file.
2. Upon Import, do not use Studio. Instead, start Terminal, change to the namespace where you need to import, and enter one of the following commands (either works):

```
do $system.OBJ.Load("C:\MyDir\MyFile.xml", "-i")  
  
do $system.OBJ.Load("C:\MyDir\MyFile.xml", "/checkschema=0")
```

3.3 DTL Validation Errors

In Ensemble 2008.1 and later, including this release, DTL validation is more strict than in the past. As a result, if a DTL code block contains an <assign> element with `value= ' '` and any of the following action values:

```
action='append'  
action='insert'  
action='set'
```

The code fails to compile, because a non-empty value is mandatory in these cases. Upon upgrade from a previous version to Ensemble 2008.1 and later, errors appear when user classes are recompiled. The error message is:

ERROR <Ens>ErrDTLNodeValidation: 'value' must NOT be empty string for action 'Assign'

If you have any DTL <assign> elements with value=' ' you must change this text to:

```
value=''''
```

This convention adds a pair of double quotes to indicate the null string.

3.4 HL7 Schema Errors

The HL7 schema definitions loaded into Ensemble were generated directly from the respective standards (HL7 2.1, 2.2, 2.3, 2.3.1, 2.4, 2.5, 2.5.1, and 2.6). They replicate any errors, omissions, or discrepancies that exist in these standards as published by the Health Level Seven organization. There are a few known exceptions, as follows:

- In the HL7 2.3.1 standard, the data structure XCN is the “extended composite ID number and name for persons.” The standard leaves XCN field 3 undefined by mistake. The Ensemble schema definition for HL7 2.3.1 corrects this so that XCN field 3 is correctly identified as “given name.”
- In the HL7 2.5, 2.5.1, and 2.6 standards, the segment structure SUR_P09 refers to undefined segment type ED. The Ensemble schema definitions correct this by renaming the reference to type ED1 and defining a segment type ED1 that contains one field named “Data” with data structure type ED.
- In the HL7 2.3 standard, the ADT_A37 message type contains the incorrect message structure of ADT_A37 which does not exist in this HL7 version. The Ensemble schema definition for HL7 2.3 corrects the message structure to ADT_A24. In later HL7 versions there is a message structure ADT_A37 so no correction is necessary.
- In the HL7 2.4 standard, the OBR segment structure contains mislabeled data structures in Field 15; namely there are CE data structures that have their code table number appended to them (CE0070, for example). The Ensemble schema definition for HL7 2.4 changes the data structures named CE0070, CE0163, and CE0369 to CE.

4

Installing Ensemble

Ensemble runs on several different platforms. Before installing, check the *Supported Platforms* document provided with the Ensemble kit to verify it runs on your particular version of the supported operating system. The document also lists browsers, Web servers, and other technologies for use with InterSystems products. To upgrade from previous releases of Ensemble, see the “[Upgrading Ensemble](#)” chapter.

For installation instructions, see the appropriate *Caché Installation Guide* chapter for [Windows](#), [OpenVMS](#), [UNIX](#), or [Mac](#). The primary difference for Ensemble is that, where the Caché installation sequence offers a choice between 8-bit and Unicode, Ensemble automatically performs a Unicode installation.

There are additional considerations as described in the following topics:

- [Licenses](#)
- [Namespaces](#)
- [OpenVMS](#)
- [UNIX](#)
- [Failover Configurations](#)

If you have any questions or encounter any problems while installing Ensemble, contact the [InterSystems Worldwide Response Center](#) (WRC) for support.

4.1 Licenses

You can enter an Ensemble 2009.1 license key during installation, or at any time after installation. Use the instructions in the “[Managing Caché Licensing](#)” chapter of the *Caché System Administration Guide*.

If you have questions or encounter any problems in this regard, contact the [WRC](#).

4.2 Namespaces

In InterSystems products, a *namespace* is a collection of data and programs in a virtual work space. InterSystems documentation provides a great deal of information about namespaces.

Important: The Ensemble installation procedure creates several namespaces: %SYS, DOCBOOK, USER, SAMPLES, ENSLIB, ENSEMBLE, and ENSDEMO. A reinstall or upgrade of Ensemble overwrites all system-provided namespaces except ENSEMBLE and USER. For this reason, InterSystems recommends that you always create new namespaces in which to work, rather than placing custom code in any of these system-provided namespaces.

This book frequently refers to something called an *Ensemble namespace* or an *Ensemble-enabled namespace*. This is a namespace that has the Ensemble classes loaded into it. Of the system-provided namespaces, only ENSLIB, ENSEMBLE, and ENSDEMO are Ensemble-enabled. Only ENSEMBLE is intended for your use; the other system-provided namespaces are reserved.

Once you have successfully installed Ensemble, any new namespace that you create is automatically Ensemble-enabled. You can create a new namespace by using the **[Home] > [Configuration] > [Namespaces] > [New Namespace]** page of the System Management Portal. For instructions, see the [Configuring Data](#) section in the “Configuring Caché” chapter of the *Caché System Administration Guide*.

4.3 OpenVMS Considerations

If you are running the Ensemble 2009.1 server on OpenVMS, the installation requires extra steps. Follow the instructions in the “[Installing Caché on OpenVMS](#)” chapter of the *Caché Installation Guide*, paying special attention to the “[Post-installation Tasks](#)” section, which guides you to the additional references listed below:

- When you install the Ensemble 2009.1 server on OpenVMS, you must install an Ensemble 2009.1 client (or a server, which includes the client) on a Windows system so that you can use browser-based interfaces such as the System Management Portal, Ensemble Management Portal, BPL Visual Editor, and DTL Visual Editor.

For instructions, see the “[Accessing the System Management Portal](#)” section in the “Using Caché on OpenVMS” chapter of the *Caché System Administration Guide*.

- There is no internal or private Web server installed with Ensemble 2009.1 on OpenVMS. Therefore, to use the System Management Portal and the Ensemble Management Portal, you must configure an external Web server.

For instructions, see the “[Install Caché on a Web Server](#)” section in the “Installing Caché on OpenVMS” chapter of the *Caché Installation Guide*.

4.4 UNIX Considerations

If you are running the Ensemble 2009.1 server on a UNIX-based platform, follow the instructions in the “[Installing Caché on UNIX and Linux](#)” chapter of the *Caché Installation Guide*, paying special attention to the “[Post-installation Tasks](#)” section.

When you install the Ensemble 2009.1 server on UNIX, you must install an Ensemble 2009.1 client (or a server, which includes the client) on a Windows system so that you can use browser-based interfaces such as the Ensemble Management Portal, BPL Visual Editor, and DTL Visual Editor. For instructions, see the “[Install Caché Client on Windows for Development](#)” section in the “Installing Caché on UNIX and Linux” chapter of the *Caché Installation Guide*.

4.5 Failover Configurations

The *Caché High Availability Guide* explains how to install Ensemble 2009.1 on multiple clustered machines to provide failover capabilities in case of problems on the primary server. Chapters include:

- [Caché Cluster Management](#)
- [Caché Clusters on Tru64 UNIX](#)
- [Caché and Windows Clusters](#)
- [ECP Failover](#)

If you require further information to help you develop a failover and backup strategy tailored for your environment, or to review your current practices, please contact the [InterSystems Worldwide Response Center](#) (WRC).

5

Upgrading Ensemble

Before upgrading Ensemble, first review the product changes in this release that may affect the operation of your system. See the [Compatibility Issues for Upgrades](#) section for a detailed list.

Important: You cannot upgrade an Ensemble instance that has a running production; in fact, the upgrade procedure shuts down Ensemble if it is running. It is best to stop any running productions and then cleanly shutdown Ensemble before you begin the upgrade installation.

Before running an upgrade installation, review the information referenced in this chapter to determine if there are any tasks to complete before upgrading. The following upgrade paths to Ensemble 2009.1 are supported:

- [Ensemble 2008.2](#)
- [Ensemble 2008.1](#)
- [Ensemble 2007.1](#)
- [Ensemble 4.0.1](#)
- [Ensemble 4.0](#)

If you have an Ensemble version prior to 4.0, or if you have been using a field test version of Ensemble and you want to upgrade it to the released Ensemble 2009.1 product, contact the [InterSystems Worldwide Response Center](#) (WRC) for guidance.

Ensemble 2009.1 runs on top of Caché 2009.1. This means that, in addition to changes in Ensemble between 2008.2 and 2009.1, the new Ensemble release includes a large number of changes in the underlying Caché technologies as outlined in the following table.

IF you are upgrading from...	THEN the underlying changes resemble...
Ensemble 2008.2 to Ensemble 2009.1	Caché 2008.2 to Caché 2009.1
Ensemble 2008.1 to Ensemble 2009.1	Caché 2008.1 to Caché 2009.1
Ensemble 2007.1 to Ensemble 2009.1	Caché 2007.1 to Caché 2009.1
Ensemble 4.0.1 to Ensemble 2009.1	Caché 5.2.3 to Caché 2009.1
Ensemble 4.0 to Ensemble 2009.1	Caché 5.2.1 to Caché 2009.1

The following books and chapters are particularly helpful when you are upgrading from previous Ensemble versions:

- *Caché Release Notes*
 - *New and Enhanced Features for Caché 2008.2*
 - *New and Enhanced Features for Caché 2008.1*
 - *New and Enhanced Features for Caché 2007.1*
 - *New and Enhanced Features for Caché 5.2*
- *Caché Upgrade Checklists*
 - *Caché 2008.2 Upgrade Checklist*
 - *Caché 2008.1 Upgrade Checklist*
 - *Caché 2007.1 Upgrade Checklist*
 - *Caché 5.2 Upgrade Checklist*

5.1 Upgrading from Ensemble 2007.1 or Later

If you are upgrading from Ensemble 2007.1 or later to Ensemble 2009.1, in addition to deleting the files outlined in the Caché upgrade documentation, the upgrade procedure deletes the following Ensemble files:

- Any user files in the ENSDEMO namespace
- Any user files in the packages normally reserved for Ensemble (CSPX, Demo, Ens, or EnsLib)

To preserve such files, export them before proceeding with the upgrade. You may import them to any namespace after the upgrade is complete.

To upgrade an existing Ensemble installation to Ensemble 2009.1:

1. Stop all running productions.
2. Perform exports to preserve files that are deleted on upgrade.
3. Prepare for an upgrade to Ensemble 2009.1 as described in the “[Upgrading Caché](#)” chapter of the *Caché Installation Guide*.
4. Install Ensemble 2009.1 using the instructions in the appropriate platform-specific chapter of the *Caché Installation Guide*:
 - [Installing Caché on Microsoft Windows](#)
 - [Installing Caché on OpenVMS](#)
 - [Installing Caché on UNIX and Linux](#)
 - [Installing Caché on Mac](#)

Each chapter provides special instructions for upgrades.

5. If you exported custom schemas or any other production components or classes from a previous Ensemble installation, you may now import them using Ensemble Studio or the Caché System Management Portal. Be sure to import each item into the same namespace from which you exported it.
6. After upgrading Ensemble, open a Terminal window and issue the following command to recompile objects in all namespaces:

```
Do $system.OBJ.CompileAllNamespaces("u")
```

This method both upgrades and then compiles the class dictionaries in every namespace.

7. Regenerate proxy classes if you previously generated them using the Java Gateway, Web Services, or one of the Caché language bindings, by following the instructions in the appropriate guides:
 - [Using the Java Gateway](#)
 - [Using SOAP and Web Services with Caché](#)
 - Other books in the [Caché Language Bindings](#) set
8. Remove all Ensemble-related code from the user startup routine `^%ZSTART`; there are replacement mechanisms for providing the same functionality:
 - Replace any production startup code by configuring the **Auto-Start Production** setting to control the automatic startup of Ensemble productions. A new **EnsembleAutoStart** setting enables (default) and disables this feature. See the [Ensemble Automatic Start Setting](#) section in the “Enhancements” chapter for details.

- Move any code that is dependent on Ensemble being started when it executes by overriding the **OnStart** method in the production class and placing these code statements into this method.
- Move any code that is designed to act on specific business hosts upon production startup by overriding the **OnProductionStart** method in the corresponding business service, business process, or business operation class and placing these code statements into this method.

See the [Production Life Cycle](#) section of the “Production Concepts” chapter of *Developing Ensemble Productions* for details.

5.2 Upgrading from Ensemble 4.0 or 4.0.1

Upgrading from Ensemble 4.0 or 4.0.1 to Ensemble 2009.1 uses the same procedure as upgrading from later versions of Ensemble, but with additional considerations. These are:

- **CAUTION:** If you are upgrading from Ensemble 4.0 or 4.0.1 to Ensemble 2009.1, the upgrade procedure deletes any HL7 custom schema definitions (*.HL7). To preserve such files, export them before proceeding with the upgrade. You may import them to any namespace after the upgrade is complete:
- For each Ensemble-enabled namespace, run these commands from your Terminal session:

```
ZN "nextEnsembleNamespace"  
DO ##class(Ens.MessageHeader).%PurgeIndices()  
DO ##class(Ens.MessageHeader).%BuildIndices()  
DO ##class(EnsLib.HL7.Message).%PurgeIndices()  
DO ##class(EnsLib.HL7.Message).%BuildIndices()  
DO ##class(EnsLib.HL7.Message).%BuildIndices(($LB("Extent")))
```

These commands are required for the ENSDEMO and ENSEMBLE namespaces, and for any user-defined Ensemble-enabled namespaces. They are not required for the ENSLIB namespace.

6

Adapter Library

Ensemble 2009.1 provides the following built-in adapters:

Email

Receives email messages via POP3 and sends email messages via the Simple Mail Transfer Protocol (SMTP).

File

Reads and writes files on the local network. Able to open, create, delete, modify, and move files. File content can be characters or binary data.

FTP

Receives and sends files between local and remote systems via the File Transfer Protocol (FTP). File content can be characters or binary data.

HTTP

Provides an HTTP listener for custom port listening, XML listening, or raw HTML handling. Supports the standard HTTP operations Post, Get, and Put. Allows the use of proxy servers.

iWay

The iWay XTE server is the gateway to more than 250 different adapters that connect Ensemble with diverse enterprise application and database systems and data formats. Ensemble provides three adapters for use with the iWay XTE server:

- The iWay adapter sends application service requests to external systems via an iWay XTE server that is listening on a TCP port. The iWay adapter handles inbound service requests from external systems by acting as a TCP listener for an XTE server.

- The iWay.DSN adapter sends database service (DSN) requests to external systems via an iWay XTE server that is listening on a TCP port.
- The iWay.IBO adapter sends iWay Business Object (IBO) invocation requests to an iWay XTE server that is listening on a TCP port.

LDAP

The outbound LDAP adapter can send requests to an LDAP server and receive responses.

MQSeries

Receives and sends messages in IBM WebSphere MQ (MQ Series) format. Message content can be a specific data type or a binary data stream. The adapter can simply send the message, or send it and then pull the corresponding response from the message queue.

MSMQ

Receives and sends messages in Microsoft Message Queue (MSMQ) format. Message content can be a specific data type or a binary data stream.

Pipe

Able to execute a shell command and communicate with it via pipes. Capable of handling character data or a binary data stream.

SAP

Sends requests to the iWay adapter for SAP and returns responses.

Siebel

A subclass of the HTTP adapter that sends requests to a Siebel server and returns responses.

SOAP

Listens for SOAP requests on a local TCP port or via a standard Web Server. Dispatches outbound requests by acting as a SOAP client to an external SOAP server.

SQL

Executes SQL statements against a remote database via an ODBC-defined or JDBC-defined Data Source Name (DSN).

TCP

Manages an incoming or outgoing TCP connection. Allows simultaneous handling of multiple connections. Supports character and binary data streams, and counted data blocks.

Telnet

Directly initiates and manages a Telnet connection. Uses a lower level interface than the iWay Telnet adapter.

TN3270

Initiates a Telnet connection via the iWay 3270/5250 Telnet adapter. Also known as a “screen-scraping” adapter for interactions with character-based terminals.

7

Release History

The Ensemble product was developed to meet the need for a comprehensive, high-performance enterprise application and data integration platform with tightly integrated development, management, and supervisory tools.

The following sections outline a brief history of Ensemble releases starting with the most recent:

- [Ensemble 2008.2](#)
- [Ensemble 2008.1](#)
- [Ensemble 2007.1](#)
- [Ensemble 4.0](#)
- [Ensemble 3.1](#)
- [Ensemble 3.0](#)
- [Ensemble 2.1](#)
- [Ensemble 2.0](#)
- [Ensemble 1.0](#)

7.1 Ensemble 2008.2

Ensemble 2008.2 was released in October 2008 and introduced the following new features:

- Digital Signatures and WS-Security
- Ensemble Recovery and Auto-Start

- Caché 2008.2 Features

Ensemble 2008.2 offered enhancements to the following features:

- Licenses and Jobs
- BPL <xpath> Element
- Production-Wide Settings
- Support for Rule Notification
- Default Security Settings for Ensemble CSP Applications
- Revised Error Logging and Handling
- Refinements to ACK and NACK Message Handling
- HTTP Options on HL7 Wizard Pages
- Forced Shutdown Option
- Abort All on Queue Contents Page
- Ensemble Monitoring Using SNMP
- Archive Manager Improvements
- Lookup Table Improvements
- Sequence Manager Improvements

7.2 Ensemble 2008.1

Ensemble 2008.1 was released in July 2008 and introduced the following new features:

- MultiValue
- ASTM E 1394–97 Support
- Caché 2008.1 Features

Ensemble 2008.1 offered enhancements to the following features:

- HL7 Segment Architecture Changes
- DTL <subtransform> Element
- Publish and Subscribe Messaging
- HL7 Sequence Manager

- Ensemble Archive Manager
- Ensemble Lookup Settings
- Ensemble System Monitor
- HL7 Version 2 Message Routing
- X12 Message Routing
- Ensemble Monitoring Using WMI
- Ensemble Diagnostic Report
- Ensemble Management Portal Style
- Time Stamp Specifiers

7.3 Ensemble 2007.1

Ensemble 2007.1 was released in October 2007 and introduced the following new features:

- Underlying Caché 2007.1 Technologies
- BPL Exception and Compensation Handling
- X12 Support
- Adapter SSL/TLS Support

Ensemble 2007.1 offered enhancements to the following features:

- BPL and XSLT
- BPL Syntax Additions
- BPL Connect Elements
- DTL Syntax Additions
- DTL Visual Editor
- Studio Assist in BPL and DTL
- Utility Functions
- Time Stamp Specifiers
- Link to System Management Portal
- Alerts in the Configuration Diagram

- Message Filter and Search
- Message Browser Indices
- Message Resend
- HL7 Routing Productions
- HL7 Routing Rules
- HL7 Search Tables
- HL7 Batch Support
- HL7 Virtual Properties in Routing Rules
- HL7 Content in Error Messages
- HL7 Pages Removed
- Maintenance Purge Page
- Trace Messages in the Event Log

7.4 Ensemble 4.0

Ensemble 4.0 was released in June 2006 and introduced the following new features:

- Underlying Caché 5.2 Technologies

Ensemble 4.0 offered enhancements to the following features:

- Namespaces
- Default Login
- Command Line
- Management Portals
- BPL Syntax
- BPL Visual Editor
- BPL Components
- Utility Functions
- DTL Visual Editor
- Adapters

7.5 Ensemble 3.1

Ensemble 3.1 was released in April 2006 and introduced the following new features:

- HL7 Support

Ensemble 3.1 offered the following major enhancements:

- Message Contents
- How Data is Purged
- Business Process Context
- Business Process Actor Pools
- Business Hosts
- Ensemble Management Portal
- Configuration Page
- Dashboards
- Business Rules
- Java Gateway
- DTL Visual Editor
- DTL Syntax
- BPL Visual Editor
- BPL Syntax
- Adapters
- Workflow

7.6 Ensemble 3.0

Ensemble 3.0, released in November 2004, was the first public release of Ensemble.

Ensemble 3.0 introduced the following new features:

- Business Activity Monitoring
- Workflow Management

- Business Rules
- Java Gateway

Ensemble 3.0 enhanced the following existing features:

- Business Hosts
- Business Process Language
- BPL Visual Editor
- Management Portal

7.7 Ensemble 2.1

Ensemble 2.1 was released to InterSystems customers in November 2003; it enhanced the following existing features:

- Business Process Language
- BPL Visual Editor
- Management Portal
- Adapter Library

7.8 Ensemble 2.0

Ensemble 2.0 was released to InterSystems customers in August 2003. This release enhanced existing features and introduced the following new features:

- Universal Services Architecture
- Business Hosts
- Messaging Engine
- Adapter Library
- Business Process Language
- Data Transformation Language
- Management Portal

- Message Visual Trace
- Code Generation Wizards
- BPL Visual Editor
- DTL Visual Editor
- Event Log
- Monitoring Service
- Testing Service
- Documentation
- Sample Code

7.9 Ensemble 1.0

Ensemble 1.0 was released to InterSystems customers in 2002 and introduced the following features:

- Application Integration
- Data Integration
- Data Abstraction
- Persistence Engine
- Storage Engine
- SQL Gateway
- Studio

