



IBM WebSphere Host Access Transformation Server Limited Edition Getting Started

Version 4.0



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Version 4.0

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Chapter 1. Introducing HATS LE

Welcome to IBM® WebSphere® Host Access Transformation Server Version 4 Limited Edition (HATS LE). With HATS LE you can quickly transform your 5250 host application into a Web application and make it available to your users through their browsers. HATS LE helps you protect your investment in legacy applications while presenting them to your end users—customers, suppliers, and internal staff—as Web applications accessible from their workstations.

HATS LE transforms the screens of a host application into Web pages that are part of a WebSphere application running on a Web server. End users access the pages from their Web browsers and use the pages to send and receive data from the host application. The end users might not even be aware that they are interacting with a host application; from their perspective, everything is taking place on the Web server.

Host Access Transformation Server Limited Edition is a functional subset of Host Access Transformation Server (HATS). HATS is a toolkit for IBM WebSphere Studio, and enables you to customize thoroughly the Web applications that transform your legacy host applications and make them available on your users' workstations. You can upgrade your HATS LE applications to HATS applications, adding further customization to produce the function and ease of use that you want. HATS' rules-based transformation of host screens and support for iterative development mean you can add features as you are ready. With HATS you can:

- Extend 5250 and 3270 applications to Web browsers
- Deliver HTML directly to the desktop, requiring zero-footprint and zero-download
- Exploit the security and scalability of industry-leading WebSphere Application Server
- Combine information from multiple host screens into one Web page
- Incorporate your own business logic
- Provide legacy applications within enterprise portals through integration with WebSphere Portal
- Get on the Web quickly and customize at your own pace

For more information about HATS, visit the HATS Web site at <http://www.ibm.com/software/webservers/hats>.

This document describes the functions of HATS LE and how to install and configure your HATS LE application. Before installing, be sure to review the HATS LE Readme, which contains late-breaking information.

HATS LE offers simplified customization using an HTML Configuration Wizard and Administrative Console. You can install and configure HATS LE, and activate your application for use, in a very short time. Here are the steps you'll follow:

Install HATS LE:

Review the prerequisites and install HATS LE on WebSphere Application Server. The instructions are in Chapter 2, "Installing HATS LE", on page 3.

Configure your HATS LE application:

Follow the easy-to-use browser-based wizard to configure settings for your HATS LE application. Read all about it in Chapter 3, “Configuring your application”, on page 7.

Review your application:

The completion panel of the configuration wizard includes a link to start your application. Use this link to start your HATS LE application, log onto your host application, and review how the host screens are transformed. If you want to make improvements, restart the Configuration Wizard, make your changes, and review again until you are satisfied.

Manage your application:

After you have configured your HATS LE application, make it available to your users. Use the HATS LE Administrative Console to review the status and settings of your application and manage the connections to it. Learn more in Chapter 4, “Administering Your HATS LE Application”, on page 11.

Chapter 2. Installing HATS LE

This page lists the prerequisites for HATS LE and the steps for installing it.

Prerequisites

To install HATS LE, first make sure that you have installed the required software:

- iSeries Access Family, product ID 5722-XW1
- One of the prerequisite application servers:
 - WebSphere Application Server Advanced Edition Version 4.0 for iSeries, fix pack 4 or higher
 - WebSphere Application Server Advanced Single Server Edition Version 4.0 for iSeries, fix pack 4 or higher
 - WebSphere Application Server Version 5.0 for iSeries
 - WebSphere Application Server Network Deployment Version 5.0 for iSeries (**Note:** federated instances are not supported.)
 - WebSphere Application Server-Express for iSeries, Version 5.0

For information on the latest PTF level for each server, visit

<http://www.ibm.com/servers/eserver/series/software/websphere/wsappserver>.

Your users can access your HATS LE application through any supported browser:

- Microsoft Internet Explorer Version 5.0 or later
- Netscape Navigator Version 6.2 or later
- Netscape Navigator Version 4.72 or later (does not support use of keyboard function keys)

You can use any of these browsers to configure and administer your application.

Please review the HATS LE Readme for last-minute updates to prerequisites.

Copying the HATS4LE.ear file to your iSeries server

To install HATS LE, you will use the file /HA/HATS4LE/HATS4LE.ear on the CD titled "iSeries Access Refresh - Host Access". HA is the volume identifier. The first task required to install HATS LE is to move this file from the CD to your iSeries server.

You can either place the HATS4LE.ear file in the InstallableApps directory for your WebSphere Application Server, or create a new directory. For example, for WebSphere Application Server-Express for iSeries, Version 5.0, you could copy HATS4LE.ear to QIBM/UserData/WebASE/ASE5/<instance>/InstallableApps, where <instance> is the name of the application server instance on which you are installing HATS LE. As an alternative, you could create a temporary directory that will be easier to browse to, and copy HATS4LE.ear to that temporary directory.

If you prefer, you can map a Windows network drive to your iSeries machine. This facilitates copying files to and from your iSeries machine. Refer to <http://www.ibm.com/servers/eserver/series/netserver/> for information on how to start the NetServer and create shares.

Regardless of how you do it, you must copy the HATS4LE.ear file to your iSeries server and remember where it is. Each of the following sets of instructions assumes that this file is on your iSeries server and that you can locate it using a Browse function.

Installing on WebSphere Application Server Advanced Edition Version 4

To install on WebSphere Application Server Advanced Edition for iSeries, Version 4.04 or higher, follow these steps:

1. Copy HATS4LE.ear from the CD to the iSeries server as described above.
2. Start the WebSphere Administrative Console.
3. In the left column, right click **Install Enterprise application**.
4. Under **Install application (*.ear)**, browse and find HATS4LE.ear.
5. Continue clicking **Next** until you reach the Completing Installation screen. Click **Finish**.
6. HATS4LE.ear will be displayed in the list of applications on the left. Right click HATS4LE.ear and select **Start**.
7. Under Nodes in the left column, right click the iSeries server where you have installed HATS LE and select **Regen Webserver Plugin**.

To uninstall HATS LE from WebSphere Application Server Advanced Edition for iSeries, Version 4.04 or higher, follow these steps:

1. Start the WebSphere Administrative Console.
2. In the left column, expand **Enterprise Applications**, right click HATS4LE.ear, and select **Stop**.
3. Right click HATS4LE.ear again and select **Remove**. When asked if you want to export this application before removing it, click **No**.
4. When asked if you want to remove this application, click **Yes**.

Installing on WebSphere Application Server Advanced Single Server Edition Version 4

To install on WebSphere Application Server Advanced Single Server Edition for iSeries, Version 4.04 or higher, follow these steps:

1. Copy HATS4LE.ear from the CD to the iSeries server as described above.
2. Start the WebSphere Administrative Console in your browser.
3. In the left column, expand **Nodes** and the node for the iSeries server on which you are installing HATS LE. Click **Enterprise Applications**.
4. On the right side, click **Install**.
5. Browse and find HATS4LE.ear
6. Continue clicking **Next** until you reach the screen that says "Confirm the following" and displays your summary information. Click **Finish**.
7. Click **Configuration needs to be saved**. Click **OK**.
8. Restart WebSphere Application Server.
9. In the left column, click **Enterprise Applications**. If HATS4LE.ear was not autostarted, in the right frame, click the check box next to HATS4LE.ear, and click **Start**.
10. In the left column, expand **Application Servers, Nodes**, and the name of the iSeries server where you are installing HATS LE. Click **Default servers**.

11. In the right frame, click **Webserver Plugin Configuration**. Click **Generate**.
12. Click **Save** at the top of the page. Click **OK**.

To uninstall HATS LE from WebSphere Application Server Advanced Edition Single Server Version 4, select it in the list of applications, and click **Stop**, then **Uninstall**. Then click **Save** to save the updated configuration.

Installing on WebSphere Application Server Version 5

Note to users of WebSphere Application Server Network Deployment Version 5.0 for iSeries: do not install HATS LE to any WebSphere instances that have been federated from WebSphere Application Server to WebSphere Application Server Network Deployment.

To install HATS LE on WebSphere Application Server Version 5.0 for iSeries or WebSphere Application Server Network Deployment Version 5.0 for iSeries, follow these steps:

1. Copy HATS4LE.ear from the CD to the iSeries server as described above.
2. Start the WebSphere Administrative Console in your browser.
3. In the left column, expand **Applications** and click **Install new application**.
4. Browse and find HATS4LE.ear
5. Continue clicking **Next** until you reach the Summary screen. Click **Finish**.
6. Click the link to **Save to Master Configuration**.
7. Click **Save**. You will return to the main page of the WebSphere Administrative Console.
8. In the left column, expand **Applications** and click **Enterprise Applications**. In the right frame, click the check box next to HATS4LE.ear, and click **Start**.
9. In the left column, expand **Environment** and click **OK**.

To uninstall HATS LE from WebSphere Application Server Version 5.0 for iSeries or WebSphere Application Server Network Deployment Version 5.0 for iSeries, select it in the list of applications, and click **Stop**, then **Uninstall**. Then click **Save** to save the updated configuration.

Installing on WebSphere Application Server—Express Version 5

By default, the Administration Console interface is disabled for WebSphere Application Server-Express. If your administrator has enabled this interface, you can use the steps described above to install HATS LE. Otherwise, you will use the iSeries Tasks panel. To install on WebSphere Application Server-Express for iSeries Version 5.0, follow these steps:

1. Copy HATS4LE.ear from the CD to the iSeries server as described above.
2. Run this command on your iSeries server: `STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)`
3. Start your browser and point it to `http://<servername>:2001`, where `<servername>` is the name of the iSeries server where you wish to install HATS LE.
4. Log in with a user name, which must have `*SECADM` authority, and password that are valid for the iSeries server.
5. Click **IBM WebSphere Application Express for iSeries**.
6. Click the Manage tab at the top of the page.

7. Select from the drop-down list the name of the WebSphere Express server where you wish to install HATS LE.
8. Under Tasks and Wizards, click **Install new application**.
9. Browse and find HATS4LE.ear, or type the file location.
10. Click **Next** until you reach the Summary screen. Click **Finish**.
11. You will see the Manage Installed Applications screen. Initially the status for HATS LE will say Installing. When the installation is complete, the status changes to Stopped. Click the check box for HATS LE and click **Start**.

To uninstall HATS LE from WebSphere Application Server-Express for iSeries Version 5.0, click Applications, then Manage Installed Applications. In the list of applications, select HATS LE and click **Stop**, then **Uninstall**. Then click **Save** to save the updated configuration.

Chapter 3. Configuring your application

After you install HATS LE, you can configure your HATS LE application from a supported browser on the local machine or on any other machine. The application server must be running when you configure your HATS LE application. Review the information in this chapter to see what information you need to supply to configure your HATS LE application. To start the HATS LE Configuration Wizard, enter the following URL in your Web browser:

`http://<servername>/HATSLE/config`

where <servername> is the name of the server machine where you installed HATS LE. You must log in with a user name, which must have *SECADM authority, and password. You can specify the language in which you wish to use the Configuration Wizard. As you use the wizard, click **Help** on any panel for more information.

The welcome page

When you log in to the Configuration Wizard, you will see the welcome page. This page shows the status of your HATS LE application. If you have already configured and activated this application, there could be users connected to the application. These users will not be affected while you are reconfiguring your application. If users are connected to your HATS LE application when you click **Finish** to save your changes, they will remain connected to the host to which they connected when they started your HATS LE application. If you change connection settings, these users will use the new settings the next time they start your HATS LE application. If you make changes to the template or transformation settings, connected users will see the changes when their browser is refreshed.

This page also shows whether any other users are currently configuring this application. If you and another administrator configure your application at the same time, the administrator who saves configuration changes last will overwrite the changes saved by the other administrator.

Click **Continue** to proceed with configuring your HATS LE application.

Configuring your host connection

After you proceed from the Welcome page, your first task will be to configure your HATS LE application's connection to the host. You need to supply this information:

- The hostname or IP address of the host machine
- The port on which your HATS LE application will access the host machine
- The code page your host application uses
- How you want workstation IDs to be assigned
- Whether you want to use Secure Sockets Layer (SSL) security

Using SSL security

Using a secure connection over Secure Sockets Layer (SSL) encrypts data flowing over the connection and thus protects it against observation by a third party. If

your HATS LE application transforms a 5250 application from a different machine, you can use SSL to protect the communications between your HATS LE application and the host machine.

For a connection to be secured, both the HATS LE application and the Telnet server on the host machine must support SSL. To secure the connection, the Telnet server must provide a certificate, which is used to encrypt the data. If the server does not have a certificate signed by a well-known certificate authority (Thawte, Verisign, or RSA), the HATS LE application must have a copy of the certificate to secure the connection.

If you want your HATS LE application to use SSL to communicate with the host, check **Enable SSL** on the Connection Settings panel. If a certificate is required by the HATS LE application, copy the required certificate from the Telnet server to the machine from which you are using the configuration wizard, and either select it from the drop-down list (if you have used it before) or click **Upload** to locate the file and copy it to the machine where your HATS LE application will run.

Using a template to control your application's appearance

Templates enable you to control the appearance of your HATS LE application. A template is a JSP file with an area reserved for the transformed host screen. The template can contain company logos, information, and links to other Web pages. A template also defines the background color for the area where the transformed host screen appears. Templates contain HTML and JSP code to include some or all of the following:

- At least one stylesheet (.css) file
- A banner area across the top of the page
- A navigation area on the left side of the page
- An area for the transformed host screen
- Host and application keypads

HATS LE supplies templates that you can use in your projects. You can see the names of these templates on the Template page of the configuration wizard. When you click the name of a template, a small preview appears on the right. Click **Preview** to see a larger preview.

Using the keyboard and keypads

Users frequently interact with host applications using special keys on the physical keyboard, such as **F1**, **Attn**, and **Clear**. There are two different ways in which the end users of your HATS projects can send keystrokes to the host:

- By pressing keys on the physical keyboard. If you want to enable your users to use these function keys on the keyboard, check **Allow users to interact with the host using function keys on their keyboards**. The keys will be passed directly to the host application. This function is not supported with Netscape Version 4.
- By using a *keypad*—a graphical table of HTML buttons that represent keys on the physical keyboard. The end user clicks on the desired key in the keypad to send that host key to the host.

There are two keypads that you can add to your template:

- The host keypad, with keys (such as **F1**, **F2**, and **Clear**) that represent host keys. These keys control functions on the host. If any of your users will use Netscape Version 4, you must include the host keypad in your application.

- The application keypad, with keys that represent application-level functions. These keys control functions within the HATS LE application. The application keypad keys include:

Reset Clears all the fields on the browser page of any entries made by the end user.

Reverse Screen

Toggles the screen image from a left-to-right image to a right-to-left image or vice-versa, if the application is running on a host with an Arabic or Hebrew code page. If an Arabic or Hebrew code page is not selected in the project connection settings, this button does not appear on the application keypad.

Refresh

Refreshes the current browser screen and performs the current transformation again.

Default

Turns off all configured settings and refreshes the current screen using the default settings. This can be useful if a user has trouble viewing a screen.

Disconnect

Disconnects from the host session. If this key is clicked, a link appears to let the user reconnect to the host.

Keyboard On/Off

Toggles support for using the physical keys on the host keyboard. If keyboard support is not enabled for the application, this button does not appear on the application keypad.

Note: The text of the button seen by the end user depends on the state of the keyboard. The button will read “Keyboard off” when keys are being sent to the host, and “Keyboard on” when keys are being sent to the browser.

By editing the application file, you can control which of these keys appear on the application keypad.

Advanced template configuration

You can perform more advanced configuration by editing the source file for your template. To edit this file, start the HATS LE Administrative Console and click **Advanced**. See Chapter 4, “Administering Your HATS LE Application”, on page 11 for information about starting the HATS LE Administrative Console.

Configuring your transformation

You can determine how your HATS LE application will transform components of the host screen into widgets on a Web page. For example, you can specify that selection lists should be transformed into drop-down lists or lists of links or buttons, how to recognize PF keys on your host screen, and how subfiles should be treated. You can say whether text copied from the host screen should stay the same color or have its color determined by the style sheet. Review the help for details on settings you can configure.

Iterative configuration

When you have finished configuring your HATS LE application, the Configuration Wizards will provide a link to your application. Click this link to start the application, log in to your host system, and review how the host screens are transformed. If you want to make changes, you can restart the Configuration Wizard and change the settings. When you reconfigure your HATS LE application, you might not need to revisit every panel in the Configuration Wizard. For example, if you decide to change your template, you do not have to go back through the Transformation Settings panel. Whenever you have completed your changes, you can click **Finish** to save your changes and exit the wizard.

The first time you configure your HATS LE application, you will see a check box labeled **Activate application**. By default this box is checked, so that your HATS LE application will be activated when you click **Finish**. The Configuration Wizard remembers the status of this check box and uses it when you click **Finish** from an earlier panel. This means that if you have left the box checked, your application will be activated when you click **Finish** from any panel; if you cleared the check box, your application will not be activated when you click **Finish**. When you click **Finish**, your browser will show the completion page, which displays the URL for accessing your application.

Advanced configuration

The configuration wizard enables you to create a working Web application with a pleasing appearance. If you want to make further changes to your application, and you have HTML and JSP skills, you can edit your HATS LE application's file and template to perform further configuration. To edit these files, start the HATS LE Administrative Console and click **Advanced**. See Chapter 4, "Administering Your HATS LE Application", on page 11 for more information on the Administrative Console. See Chapter 5, "Modifying your application file", on page 17 for a description of the tags used in the application file.

Chapter 4. Administering Your HATS LE Application

The HATS LE Administrative Console enables the system administrator to view sessions initiated for your HATS LE application. The application server must be running when you administer your HATS LE application.

To start the HATS LE Administrative Console, enter the following URL in your Web browser:

`http://<servername>/HATSLE/admin`

where <servername> is the name of the server machine where your HATS LE application runs.

You can perform these tasks using the HATS LE Administrative Console:

View or change application status

The home page shows the status of the application. You can enable or disable your application from this panel. You can also see the number of active connections.

Manage Sessions

Click **Manage Sessions**. This page displays a list of the active sessions connected to your HATS application. You can sort the list by any column by clicking the column header. You can shut down a connection that has a problem.

Perform advanced configuration

Click **Advanced**. By editing the application file or the template file, you can use your HTML and JSP skills to make changes not supported by the configuration wizard. You can also export your HATS LE application to a zip file that can be imported to HATS. Visit the HATS Web site at www.ibm.com/software/webservers/hats to find out what level of HATS is required for importing your HATS LE application.

Message logs and traces

When a HATS LE application runs in the WebSphere Application Server, logging and tracing is performed for the application. Logging and tracing is controlled by the settings of the `runtime.properties` file, in the root directory of `HATS4LE.ear`. In the drive and directory where you installed WebSphere Application Server, there is a folder named `installedApps`, which contains a folder named `HATSLE`.

You can use any text editor to modify the `runtime.properties` file. If you modify the file, you must stop and restart the server that is running the application for the changes to take effect.

The `runtime.properties` file contains the following basic properties:

Note: Names of the properties are case-sensitive. Do not change the property names.

maxTraceFiles

The maximum number of trace information files. The default is 5.

The base trace file name in runtime.properties is used as a template to generate unique sets of trace files for each application server. The default base name for a trace file is *trace.txt*, which can be changed.

An index (1, 2, 3, and so forth) is added to this name to distinguish multiple trace files. When *trace1.txt* reaches `maxTraceFileSize`, it is closed and renamed to *trace2.txt*. A new *trace1.txt* file is opened.

When the `maxTraceFiles` number is exceeded, the oldest file is deleted.

The *trace*.txt* files are created in the HATSLE directory.

maxTraceFileSize

Specifies the maximum size, in kilobytes, that a trace file reaches before an additional trace file is opened.

The value is a decimal integer. The default is 1024 KB.

traceFile

The name used as a template to generate file names for each set of application server files to which trace messages are written. The default base name for a trace file is *trace.txt*.

maxLogFiles

The maximum number of message files. The default is 2.

The base message log file name in runtime.properties is used as a template to generate unique sets of message log files for each application server. The default base name for a log file is *messages.txt*, which can be changed.

An index (1, 2, 3, and so forth) is added to this name to distinguish multiple message log files. When *messages1.txt* reaches `maxLogFileSize`, it is closed and renamed to *messages2.txt*. A new *messages1.txt* file is opened.

When the `maxLogFiles` number is exceeded, the oldest file is deleted.

The *messages*.txt* files are created in the HATSLE directory.

maxLogFileSize

Specifies the maximum size, in kilobytes, that a message log file reaches before an additional log file is opened.

The value is a decimal integer. The default is 512 KB.

logFile

The name used as a template to generate file names for each set of application server files to which log messages are written. The default base name for a trace file is *messages.txt*.

The runtime.properties file contains the following HATS LE application tracing properties:

trace.RUNTIME

Specifies the level of tracing for the main runtime and for all settings under `RUNTIME.*` that do not specify a trace level.

The value is an integer from 0–9. The default is 0.

See the description of the `tracelevel.*` keys for information on values for this setting.

trace.RUNTIME.WIDGET

Specifies the level of tracing for HATS widgets. This setting overrides the setting of `trace.RUNTIME` for tracing of widgets.

The value is an integer from 0–9. The default is 0.

See the description of the `tracelevel.*` keys for information on values for this setting.

trace.RUNTIME.ACTION

Specifies the level of tracing for HATS event actions. This setting overrides the setting of `trace.RUNTIME` for tracing of event actions.

The value is an integer from 0–9. The default is 0.

See the description of the `tracelevel.*` keys for information on values for this setting.

trace.RUNTIME.COMPONENT

Specifies the level of tracing for HATS components. This setting overrides the setting of `trace.RUNTIME` for tracing of components.

The value is an integer from 0–9. The default is 0.

See the description of the `tracelevel.*` keys for information on values for this setting.

trace.UTIL

Specifies the level of tracing for HATS runtime utilities.

The value is an integer from 0–9. The default is 0.

See the description of the `tracelevel.*` keys for information on values for this setting.

tracelevel.x

Each of the `tracelevel` keys specifies as its value a hexadecimal digit string. This string is a mask which is applied to the tracing feature for components which use that trace level. Each bit of the digit string controls one type of tracing for HATS.

The values of `tracelevel.1` through `tracelevel.7` should not be changed unless requested by IBM support. Otherwise, specifying these seven `tracelevel.*` properties is not necessary.

`Tracelevel.8` and `tracelevel.9` values can be used to create customized tracing levels.

The default values are:

tracelevel.1

0000000000020000

tracelevel.2

00000000000020f

tracelevel.3

000000000004023f (minimum)

tracelevel.4

0000000000041a3f

tracelevel.5

0000000000c1bbf (normal)

tracelevel.6

0000000000c1bbf

tracelevel.7

0000000001c1bbf (maximum)

tracelevel.8
0000000001c1bbf

tracelevel.9
0000000001c1bbf

To customize the trace masks, add together the following (hex) values:

x000001
Informational messages

x000002
Warning messages

x000004
Error messages

x000008
Critical error messages

x000010
API traces

x000020
Callback API traces

x000080
Method entry

x000100
Method exit

x000200
Exceptions

x000400
Miscellaneous traces

x000800
Object creation

x001000
Object disposal

x020000
Reserved

x040000
Miscellaneous data - level 1

x080000
Miscellaneous data - level 2

x100000
Miscellaneous data - level 3

The runtime.properties file contains the following Host On-Demand tracing properties:

Note: You should not enable the Host On-Demand traces (except for PSEVENT, OIAEVENT, and COMMEVENT) unless requested by IBM Support.

trace.HOD.PS

Specifies the level of Host On-Demand presentation space tracing.

The value is an integer from 0–3. The default is 0.

trace.HOD.DS

Specifies the level of Host On-Demand data stream tracing.

The value is an integer from 0–3. The default is 0.

trace.HOD.TRANSPORT

Specifies the level of Host On-Demand transport tracing.

The value is an integer from 0–3. The default is 0.

trace.HOD.USERMACRO

Specifies the level of tracing for trace actions in Host On-Demand macros.

The value is an integer from 0–3. The default is 0.

trace.HOD.SESSION

Specifies the level of Host On-Demand session tracing.

The value is an integer from 0–3. The default is 0.

trace.HOD.PSEVENT

Specifies the level of Host On-Demand PS events.

The value is an integer from 0–1. The default is 0.

trace.HOD.OIAEVENT

Specifies the level of Host On-Demand OIA events.

The value is an integer from 0–1. The default is 0.

trace.HOD.COMMEVENT

Specifies the level of Host On-Demand COMM events.

The value is an integer from 0–1. The default is 0.

Chapter 5. Modifying your application file

The application file contains XML tags that define the settings you select when you configure your HATS LE application. You can perform advanced configuration by editing the application file. To edit the file, start the HATS LE Administrative Console and click **Advanced**. This page describes the tags used in the application file.

<application> tag

The <application> tag is the enclosing tag for the application.

The attributes of the <application> tag are:

description

Contains an optional description for the application.

template

Specifies the name of the template for the application, which you select when you configure the application.

<sessions> tag

The <sessions> tag is the enclosing tag for the session characteristics.

The attributes of the <sessions> tag are:

default

Specifies the session configured for the application. This value should always be main, and main is the default.

<session> tag

The <session> tag specifies the session characteristics for the application.

The attributes of the <session> tag are:

codePage

Specifies the numeric code page number for the code page used in the application. The default value is 037. You select the codePage value when you configure the application. A code page number might be used for more than one location or usage. See the description of the codePageKey attribute for the code page numbers.

codePageKey

Specifies the usage key that corresponds to the numeric codepage. The default value is KEY_US. Valid values for codePage and the location or usage key are:

Table 1. Code pages and usage keys

Code page	Usage key
037	KEY_BELGIUM KEY_BRAZIL KEY_CANADA KEY_NETHERLANDS KEY_PORTUGAL KEY_US
273	KEY_AUSTRIA KEY_GERMANY
274	KEY_BELGIUM_OLD
275	KEY_BRAZIL_OLD
277	KEY_DENMARK KEY_NORWAY
278	KEY_FINLAND KEY_SWEDEN
280	KEY_ITALY
284	KEY_SPAIN KEY_LATIN_AMERICA
285	KEY_UNITED_KINGDOM
290	KEY_JAPAN_KATAKANA_EX
297	KEY_FRANCE
420	KEY_ARABIC
424	KEY_HEBREW
500	KEY_MULTILINGUAL
803	KEY_HEBREW_OLD
838	KEY_THAI
870	KEY_BOSNIA_HERZEGOVINA KEY_CROATIA KEY_CZECH KEY_HUNGARY KEY_POLAND KEY_ROMANIA KEY_SLOVAKIA KEY_SLOVENIA
871	KEY_ICELAND
875	KEY_GREECE
924	KEY_MULTILINGUAL_ISO_EURO
930	KEY_JAPAN_KATAKANA
933	KEY_KOREA_EX
937	KEY_ROC_EX
939	KEY_JAPAN_ENGLISH_EX
1025	KEY_BELARUS KEY_BULGARIA KEY_MACEDONIA KEY_RUSSIA KEY_SERBIA_MONTEGRO
1026	KEY_TURKEY

Table 1. Code pages and usage keys (continued)

Code page	Usage key
1047	KEY_OPEN_EDITION
1112	KEY_LATVIA KEY_LITHUANIA
1122	KEY_ESTONIA
1123	KEY_UKRAINE
1137	KEY_HINDI
1140	KEY_BELGIUM_EURO KEY_BRAZIL_EURO KEY_CANADA_EURO KEY_NETHERLANDS_EURO KEY_PORTUGAL_EURO KEY_US_EURO
1141	KEY_AUSTRIA_EURO KEY_GERMANY_EURO
1142	KEY_DENMARK_EURO KEY_NORWAY_EURO
1143	KEY_FINLAND_EURO KEY_SWEDEN_EURO
1144	KEY_ITALY_EURO
1145	KEY_LATIN_AMERICA_EURO KEY_SPAIN_EURO
1146	KEY_UNITED_KINGDOM_EURO
1147	KEY_FRANCE_EURO
1148	KEY_MULTILINGUAL_EURO
1149	KEY_ICELAND_EURO
1153	KEY_BOSNIA_HERZEGOVINA_EURO KEY_CROATIA_EURO KEY_CZECH_EURO KEY_HUNGARY_EURO KEY_POLAND_EURO KEY_ROMANIA_EURO KEY_SLOVAKIA_EURO KEY_SLOVENIA_EURO
1154	KEY_BELARUS_EURO KEY_BULGARIA_EURO KEY_MACEDONIA_EURO KEY_RUSSIA_EURO KEY_SERBIA_MONTEGRO_EURO
1155	KEY_TURKEY_EURO
1156	KEY_LATVIA_EURO KEY_LITHUANIA_EURO
1157	KEY_ESTONIA_EURO
1158	KEY_UKRAINE_EURO
1160	KEY_THAI_EURO
1364	KEY_KOREA_EURO
1371	KEY_ROC_EURO
1388	KEY_PRC_EX_GBK

Table 1. Code pages and usage keys (continued)

Code page	Usage key
1390	KEY_JAPAN_KATAKANA_EX_EURO
1399	KEY_JAPAN_ENGLISH_EX_EURO

delayInterval

Specifies the time (in milliseconds) that the server waits until a full host screen that is not the first host screen has arrived. The initial default value is 1500 milliseconds.

delayStart

Specifies the time (in milliseconds) that the server waits until the first full host screen has arrived. The initial default value is 1500 milliseconds.

description

Specifies a description for the session configured for the application. This value is always empty.

SSL Specifies whether SSL is enabled. Valid values are:

true SSL is enabled for the application.

false SSL is not enabled for the application.

host Specifies the name of the host to which the application connects.

name Specifies the session configured for the application. This value should always be main, and main is the initial default.

port Specifies the number of the port through which the connection to the host is made. The initial default is 23.

screenSize

Specifies the number of rows and columns that the host terminal displays. Valid values for screenSize are:

- 24 x 80
- 27 x 132
- 32 x 80 (3270 only)
- 43 x 80 (3270 only)

The initial default screen size is 24 x 80.

workstationID

Sets the workstationID property, which is used during enhanced negotiation for 5250. Values are in string format. If the value of workstationIDSource is "automatic" or "prompt", this value is ignored. If the value of workstationIDSource is "value", this value is used as the workstation ID. If the value of workstationIDSource is "session", this value specifies the name of the HTTP session variable from which the workstation ID is derived.

workstationIDSource

Specifies how the workstation ID value is set. Valid values are "automatic", "value", "prompt", and "session". The options are described in the help for the connection settings panel of the Configuration Wizard.

<otherParameters> tag

The <otherParameters> tag specifies additional Host On-Demand session parameters.

Host On-Demand session parameters supported by HATS are:

Lamalef

Sets the LamAlef property, which determines whether LamAlef should be expanded or compressed. This property applies to Arabic sessions only. Values are in string format. Valid values are:

- LAMALEF_ON
- LAMALEF_OFF

The default is LAMALEF_OFF .

numeralShape

Sets the numeralShape property. This property applies to bi-directional sessions only. Values are in string format. The default is NOMINAL.

numericSwapEnabled

Sets the Numeric swapping property. This property applies to Arabic 3270 sessions only. Valid values are true and false. The default is true.

roundTrip

Sets the roundTrip property. This property applies to bi-directional sessions only. Values are in string format. Valid values are:

- ROUNDTRIP_ON
- ROUNDTRIP_OFF

The default is ROUNDTRIP_ON.

SecurityProtocol

Sets the SecurityProtocol property, which indicates whether to use the TLS v1.0 protocol or the SSL protocol for providing security. Values are in string format. The default is TLS.

SSLServerAuthentication

Sets the SSLServerAuthentication property, which indicates whether SSL server authentication is enabled. Valid values are true and false. The default is false.

textOrientation

Sets the textOrientation property. This property applies to bi-directional sessions only. Values are in string format. Valid values are:

- LEFT_TO_RIGHT
- RIGHT_TO_LEFT

The default is LEFT_TO_RIGHT.

ThaiDisplayMode

Sets Thai display mode property. This property applies to Thai sessions only. Values are in string format. The default is THAI_MODE_5.

<classSettings> tag

The <classSettings> tag is the enclosing tag for the Java classes you include in the application.

<class> tag

The <class> tag specifies the Java classes that can be included in an application.

The attributes of the <class> tag are:

name Specifies one of the following Java classes:

- com.ibm.hats.common.ApplicationKeypadTag
- com.ibm.hats.common.HostKeypadTag
- com.ibm.hats.common.KeyboardSupport
- com.ibm.hats.component.*

where * is the name of a component for which you have customized a setting

- com.ibm.hats.widget.*

where * is the name of a widget for which you have customized a setting.

- com.ibm.hats.common.ClientLocale

The class names on the name attribute must be enclosed in quotes.

<setting> tag

The <setting> tag specifies the methods included in the Java class.

The attributes of the <setting> tag are:

name Specifies the name of the Java method or a customized setting for a component, a widget or the locale. The names listed depend on the Java class in which the methods reside or the name of a component or widget setting.

For the com.ibm.hats.common.ApplicationKeypadTag class, the methods are:

show If value=true, shows a keypad in the application.

style Depending on the value attribute, shows the keys defined with value=true as either a button or a link in the application keypad.

showKeyboardToggle

If value=true, shows a key in the application keypad for toggling display of a host keyboard.

showReset

If value=true, shows a Reset key in the application keypad to clear all the fields on the browser page of any entries made by the end user.

showReverse

If value=true, shows a Reverse key in the application keypad for bi-directional support.

showRefresh

If value=true, shows a Refresh key in the application keypad to refresh the browser window contents using the original transformation, and restore the input fields to their original value.

showDisconnect

If value=true, shows a Disconnect key in the application keypad to disconnect from the host.

showDefault

If value=true, shows a Default key in the application keypad to change the presentation to the default transformation.

For the com.ibm.hats.common.HostKeypadTag class, the methods are:

show If value=true, shows a host keypad in the application.

style Depending on the value attribute, shows the keys defined with value=true as either a button or a link in the host keypad.

showAttention

If value=true, shows an ATTN key in the host keypad.

showPrint

If value=true, shows a PRINT key in the host keypad for printing output.

showSystemRequest

If value=true, shows a SYSREQ key in the host keypad.

showClear

If value=true, shows a CLEAR key in the host keypad.

showPageUp

If value=true, shows a Page Up key in the host keypad.

showPageDown

If value=true, shows a Page Down key in the host keypad.

showPA1

If value=true, shows a PA1 key in the host keypad.

showPA2

If value=true, shows a PA2 key in the host keypad.

showPA3

If value=true, shows a PA3 key in the host keypad.

showEnter

If value=true, shows an Enter key in the host keypad.

showAltView

If value=true, shows an AltView key in the host keypad.

showHelp

If value=true, shows a Help key in the host keypad.

showF1 – showF24

If value=true, shows a Function key with a number in the host keypad.

For the com.ibm.hats.common.KeyboardSupport class, the methods are:

enable

Depending on the value attribute, enable specifies whether keyboard support is available in the application.

initialState

If value=true, the initial state of the host keyboard is on (the physical keys on the keyboard are active).

For the `com.ibm.hats.component.*` class or `com.ibm.hats.widget.*` class, `name` specifies a customized component or widget setting.

For the `com.ibm.hats.common.ClientLocale` class, `name` is always `locale`.

value For definitions of keypad keys, specifies whether to show the key in the keypad. Valid values are `true` and `false`.

For `name=style`, specifies how keys defined with `value=true` are displayed in the in the host keypad. Valid values are the following:

- Buttons
- Links

For component or widget settings, `value` specifies what you specified for the customized setting.

For the `com.ibm.hats.common.ClientLocale` class, `value` specifies characters that identify the country code of the `locale`.

<textReplacement> tag

The `<textReplacement>` tag is the enclosing tag for any text replacement values you define in the application.

<replace> tag

The `<replace>` tag specifies the text replacement values in a application.

The attributes of the `<replace>` tag are:

caseSensitive

Specifies whether the case of text replacement values must match before text replacement occurs. Valid values are `true` and `false`.

from Specifies the text you want to replace. The text on the `from` attribute must be enclosed in quotes.

to Specifies the text you want to insert in place of the value specified on the `from` attribute. The text on the `to` attribute must be enclosed in quotes.

Note: Care should be taken when using text replacement. Text replacement with a disparate number of characters in the strings can cause changes in the HTML representation of the screen. Depending on the widget used for presenting a region of a screen, text on a line of the screen could be contracted, expanded, or forced to a new line.

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