

Natural for Ajax

Configuration and Administration

Version 9.3.1

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About this Documentation

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Document Conventions

Convention	Description
Bold	Identifies elements on a screen.
Monospace font	Identifies service names and locations in the format <i>folder.subfolder.service</i> , APIs, Java classes, methods, properties.
<i>Italic</i>	Identifies: Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
Monospace font	Identifies: Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the symbol.
[]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

Online Information and Support

Product Documentation

You can find the product documentation on our documentation website at <https://documentation.softwareag.com>.

Product Training

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Tech Community

You can collaborate with Software GmbH experts on our Tech Community website at <https://tech-community.softwareag.com>. From here you can, for example:

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- Ask questions and find answers in our discussion forums.
- Get the latest Software GmbH news and announcements.
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- Download products, updates and fixes.
- Search the Knowledge Center for technical information and tips.
- Subscribe to early warnings and critical alerts.
- Open and update support incidents.
- Add product feature requests.

Data Protection

Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

2 About the Logon Page

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Starting a Natural Application from the Logon Page

When you start in the browser, a logon page appears. The entries in this logon page depend on the settings in your [Session Configuration](#).

In order to start a Natural application from the logon page, you enter the following URL inside your browser:

where *<host>* and *<port>* are the host name and port number of your application server.

Examples of Logon Pages

For each session definition that has been configured in the configuration file, an entry appears on the logon page. If the user selects the corresponding entry, only those parameters that were not pre-configured in the configuration file need to be specified in the logon page in order to start the application. Usually, you will preconfigure all connection parameters except user name and password.

The following example shows part of a logon page which results from a configuration file in which no special entries are defined for a session:

The following example shows part of a logon page which results from a configuration file in which many settings are already predefined (including user ID and password):

To log on to a session, you have to specify all required information in the logon page (for example, you select a session from the corresponding drop-down list box). When you choose the **Connect** button, the screen for the selected session appears.

Dynamically Changing the CICS Transaction Name when Starting a Session

The following description applies if you want to switch to a different CICS transaction on a mainframe.

You specify the CICS transaction name in the same text box in which you also specify the dynamic parameters for the Natural environment. So that the CICS transaction name can be evaluated, it is important that you specify it before any Natural parameters, using the following syntax:

```
<TA_NAME=name>
```

where *name* can be 1 to 4 characters long. This must be the name of an existing CICS transaction which applies to a CICS Adapter. It will override the transaction name which is currently defined

in the configuration file for the CICS Adapter on the Natural Web I/O Interface server (NWO) . Ask your administrator for further information.

Make sure to put the entire definition in angle brackets. When this definition is followed by a Natural parameter, insert a blank before the Natural parameter. Example:

```
<TA_NAME=NA82> STACK=(LOGON SYSCP)
```

If the specified CICS transaction name cannot be found, an error message occurs and the session cannot be started.



Note: The above definition for the CICS transaction name can also be specified in the [configuration tool](#) , in the same place where you also specify the Natural parameters, and together with the [URL parameter](#) `natparam` .

Specifying a Password in the Logon Page

The following information applies when the field for entering a password appears on the logon page. This field does not appear when a password has already been defined in the configuration file.

Under Windows and Linux, you always have to enter the operating system password, even if Natural Security is active.

On the mainframe, this is different: When Natural Security is not active, you have to enter the operating system password. When Natural Security is active, you have to enter the Natural Security password.

Changing the Password in the Logon Page

Currently, this functionality is only available for Natural for Linux and Natural for Windows.

The following information applies when the fields for entering a user ID and a password appear on the logon page. These fields do not appear when user ID and password have already been defined in the configuration file; in this case, it is not possible to change the password in the logon page.

When your password has expired, you are automatically asked for a new password. When you try to log on with your current password, an error message appears and input fields for changing the password are shown.

Browser Restrictions

The browser's "Back" and "Forward" buttons do not work with and should therefore not be used.

If you want to run two Natural sessions in parallel, you have to start a new instance of the browser (for example, by choosing the corresponding icon in the Quick Launch toolbar of Windows). You must not use the browser's "New Window" function. This would result in one session running in two browsers, which is not allowed.

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Natural Client Configuration Tool

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Invoking the Configuration Tool

offers a configuration tool. The configuration tool is used to create the session configurations which are then available in the logon page. It can also be used for logging purposes in case of problems; however, this should only be done when requested by Software AG support.

The configuration tool is automatically installed when you install .

➤ To invoke the configuration tool

- Enter the following URL in your browser:

where *<host>* and *<port>* are the host name and port number of your application server.



Note: You might wish to protect the configuration tool against unauthorized access. See [Configuring Container-Managed Security](#) for information on how to restrict the access to sensitive areas of the application server environment. If you have restricted access to the configuration tool, an authentication dialog appears. The appearance of this dialog depends on the authentication model you have chosen.

The configuration tool appears.

The configuration tool has two frames.

The home page of the configuration tool is initially shown in the right frame. It provides brief descriptions for the links provided in the left frame. It also provides links to several Software AG pages on the web.

When you have invoked a function (for example, when you are currently viewing the session configuration), you can always choose the **Home** link in the left frame to return to the home page of the configuration tool.

The functions that are invoked by the other links in the left frame are described below.

Session Configuration

This section explains how to manage the content of the configuration file for the sessions. It covers the following topics:

- [Invoking the Session Configuration Page](#)
- [Global Settings](#)
- [Adding a New Session](#)
- [Editing a Session](#)

- [Overview of Session Options](#)
- [Duplicating a Session](#)
- [Deleting a Session](#)
- [Adding a New User](#)
- [Saving the Configuration](#)

Invoking the Session Configuration Page

The content of the configuration file for the sessions is managed using the **Session Configuration** page.

➤ To invoke the Session Configuration page

- In the frame on the left, choose the **Session Configuration** link.

The **Session Configuration** page appears in the right frame. It shows the global settings and lists all sessions and users that are currently defined. For a session, some of the configuration file information is shown. Example:

Global Settings

The global settings apply for all defined sessions. You can define the following global settings in the configuration file:

Option	Description
Last activity timeout (n seconds)	The number of seconds that the client waits for the next user activity. When the defined number of seconds has been reached without user activity, the session is closed. The default is 3600 seconds.
Trace directory	Optional. Location of a different trace directory. When a different trace directory is not defined, the trace files are written to the default trace directory. By default, the trace files are written to the directory which has been set by the Java property <code>java.io.tmpdir</code>. On Windows, this is normally the environment variable <code>TMP</code> for the user who started the application server. On Linux, this is normally <code>/tmp</code> or <code>/var/tmp</code>. You can also set this property in the start script for the application server. Tracing can be enabled individually for each session (see Overview of Session Options below). However, it should only be enabled when requested by Software AG support.
SSL trust file path	Optional. The path to your trust file. See Configuring SSL for further information.
SSL trust file password	If your trust file is password-protected, you have to specify the appropriate password.

Option	Description
	When you do not specify the password for a password-protected trust file, the trust file cannot be opened and it is thus not possible to open an SSL session. When your trust file is not password-protected, you should not specify a password.

Adding a New Session

You can add a new session to the configuration file.

➤ To add a new session

- 1 Choose the **Add New Session** button.

The **Edit Session** page appears.

- 2 Specify all required information as described below in the section [Overview of Session Options](#).
- 3 Choose the **OK** button to return to the **Session Configuration** page.

The new session is not yet available in the configuration file.

- 4 Choose the **Save Configuration** button to write the new session to the configuration file.

Editing a Session

You can edit any existing session in the configuration file.

➤ To edit a session

- 1 Choose the **Edit** link that is shown next to the session that you want to edit.

The **Edit Session** page appears.

- 2 Specify all required information as described below in the section [Overview of Session Options](#).
- 3 Choose the **OK** button to return to the **Session Configuration** page.

The modifications are not yet available in the configuration file.

- 4 Choose the **Save Configuration** button to write the modifications to the configuration file.

Overview of Session Options

The **Edit Session** page appears when you

- **add** a new session, or
- **edit** an existing session.

Example:

The **Edit Session** page provides the following options:

Option	Description
Session ID	Mandatory. A session name of your choice. On the logon page, the session name is provided in a drop-down list box.
Type	The platform on which user ID and password are authenticated. You can select the required setting from the drop-down list box. ■ Undefined Default. User ID and password can have a maximum of 32 characters. See also the description for Natural for Windows or Linux below. ■ Natural for Mainframes User ID and password can have a maximum of 8 characters. ■ Natural for Mainframes with Natural Security User ID and password can have a maximum of 8 characters. The user ID must comply with the Natural naming conventions for library names . ■ Natural for Windows or Linux User ID and password can have a maximum of 32 characters. When a domain is required, you have to specify it together with the user ID (in the form " <i>domain \ user-ID</i> ").
Host name	The name or TCP/IP address of the server on which Natural and the Natural Web I/O Interface server are running. When this is specified, the corresponding field does not appear on the logon page.
Port number	The TCP/IP port number on which the Natural Web I/O Interface server is listening. When this is specified, the corresponding field does not appear on the logon page.
Use SSL	If set to Yes , a secure connection is established between on the application server and the Natural Web I/O Interface server. Important: If you want to use SSL with Natural for Mainframes, one of the corresponding mainframe types must be selected; the type must not be Undefined or Natural for Windows or Linux . The other way around, if you want to use SSL with Natural for Windows or Linux, you must not select one of the mainframe types; the type may also be Undefined in this case.
User name	Optional. A valid user ID for the current machine. When this is specified, the corresponding field does not appear on the logon page.

Option	Description
User name in upper case	If selected, the input field for the user ID is in upper-case mode.
Password	Optional. A valid password for the above user ID. Under Windows and Linux, this is always the operating system password of the user, even if Natural Security is active. On the mainframe, this is different: When Natural Security is not active, this is the operating system password of the user. When Natural Security is active, this is the Natural Security password. When a password is specified, the corresponding field does not appear on the logon page. The configuration tool saves the password in encrypted form.
Application	■ Natural for Mainframes The name of the Natural program or a command sequence that starts your application as you would enter it on the NEXT prompt. Example: TEST01 data1,data2 ■ Natural for Linux The name of the Linux shell script for starting the Natural application (a file similar to <i>nwo.sh</i>). ■ Natural for Windows The name of the Windows command file (<i>.bat</i>) for starting the Natural application. When this is specified, the corresponding field does not appear on the logon page.
Natural parameters	Optional. Parameters for starting the Natural application. This can be stack parameters, a parameter file/module or other Natural-specific information. ■ Natural for Mainframes Used to pass dynamic Natural profile parameters to the session, for example: SYSPARM=(MYPARMS) STACK=(LOGON MYAPPL) Note: It is recommended to specify the Natural program that starts the application with the option Application instead of passing it with the profile parameter STACK. ■ Natural for Linux and Natural for Windows Used when the above shell script (Linux) or command file (Windows) uses the parameter \$5 after "natural" , for example: PARM=MYPARM STACK=(LOGON MYLIB;MENU)
Double-click behavior	The key that is to be simulated when double-clicking an output field. By default, this is the ENTER key. It is possible to disable the double-click behavior, or to define a function key (PF1 through PF12).

Option	Description
	You can select the required setting from the drop-down list box. Tip: When context-sensitive help has been defined for the output fields, it may be useful to define PF1 . The help function will then be invoked when the user double-clicks an output field.
Screen rows	The number of rows in the output window. Possible values: minimum 24, no upper limit. Default: 24. Not used by Natural for Mainframes which uses the profile parameter <code>TMODEL</code> instead.
Screen columns	The number of columns in the output window. Possible values: minimum 80, no upper limit. Default: 80. Not used by Natural for Mainframes which uses the profile parameter <code>TMODEL</code> instead.
Show function key numbers	If set to Yes , the PF key numbers are shown next to the PF keys.
Trace	Should only be set to Yes when requested by Software AG support.
Check for numeric input	If set to Yes (default), numeric input fields are validated. In this case, only the following characters are allowed in numeric input fields (in addition to the numbers "0" through "9"): <i>blank</i> + (plus) - (minus) _ (underscore) , (comma) . (period) ? (question mark) If set to No , numeric input fields are not validated.
Timeout (in seconds)	The number of seconds that the client waits for a response after an updated page was sent to the Natural session. When the defined number of seconds has been reached without response, the session is closed. The default is 60 seconds. Normally, you need not change this value.
Filler character	Optional. The filler character that is to be removed from the input fields. An application can define, for example, an underscore (<code>_</code>) as the filler character. Trailing filler characters will be removed from the input fields, and leading filler characters will be replaced with blanks.

Duplicating a Session

You can add a copy of any existing session to the configuration file.

➤ To duplicate a session

- 1 Choose the **Duplicate** link that is shown next to the session that you want to duplicate.

A new entry is shown at the bottom of the list of sessions. Its name is "Copy of *session-ID*". The duplicated session is not yet available in the configuration file.
- 2 **Edit** and save the duplicated session as described above.

Deleting a Session

You can delete any existing session from the configuration file.

➤ To delete a session

- 1 Choose the **Delete** link that is shown next to the session that you want to delete.

The session is deleted from the list of sessions. It is not yet deleted in the configuration file.
- 2 Choose the **Save Configuration** button to delete the session from the configuration file.

Adding a New User

You can predefine Natural users and their passwords in the configuration file.

When a Natural page is opened with a URL that specifies a user in the URL parameter `natuser`, the specified user is matched against the list of users in the configuration file. When the specified user is defined in the configuration file, the corresponding password is used to authenticate the user when the Natural session is started. See also [Starting a Natural Application with a URL](#).

Example - when the following URL is used, the password defined for "user1" is used:

➤ To add a new user

- 1 Choose the **Add New User** button.

The **Edit User** page appears.
- 2 Specify a user name and password
- 3 Choose the **OK** button to return to the **Session Configuration** page.

The new user is not yet available in the configuration file.
- 4 Choose the **Save Configuration** button to write the new user to the configuration file.



Note: You edit, duplicate and delete a user in the same way as a session (see the corresponding descriptions above).

Saving the Configuration

When you choose the **Save Configuration** button, all of your changes are written to the configuration file. The server picks up the new settings automatically the next time it reads data from the configuration file.



Caution: If you do not choose the **Save Configuration** button but log out instead or leave the configuration tool by entering another URL, the new settings are not written to the configuration file.

Logging Configuration

The content of the configuration file for logging is managed using the **Logging Configuration** page. See the section [Logging](#) for detailed information.

Logon Page

The configuration tool provides the following link in the left frame:

■ Natural Web I/O Interface Logon

opens the logon page in the right frame.

The logon page uses the current settings in the configuration file. When you select a session from the drop-down list box, you can check whether the connection details are shown as desired. If not, you can go back to the session configuration and modify the settings of the corresponding session.

See also [About the Logon Page](#) .

Logout

When the configuration tool is protected against unauthorized access and you log out of the configuration tool, you make sure that no other user can change the client configuration when you leave your PC unattended for a while.

> **To log out**

- In the frame on the left, choose the **Logout** link.

When the configuration tool is protected against unauthorized access, the authentication dialog is shown again.

When it is not protected, the home page is shown again.

4

Ajax Configuration

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The following topics are covered below:

General `cisconfig.xml` Parameters

The `cisconfig.xml` file contains some general control information. The following is a very basic example:

```
<cisconfig startmonitoringthread="true"
  requestclienthost="false"
  debugmode="false"
  loglevel="EWI"
  logtoscreen="false"
  sessiontimeout="3600"
  xmldatamanager="com.softwareag.cis.xmldata.filebased.XMLDataManager"
  useownclassloader="true"
  browserpopuponerror="false"
  framebufferbuffer="3"
  ↵
onlinehelpmanager="com.softwareag.cis.onlinehelp.projectbased.FrameHelpOHManager"
  textencoding="UTF-8"
  enableadapterpreload="true">
</cisconfig>
```

accessibilityroles	Default: true Defines for controls and container that corresponding role attributes for accessibility are generated.
animatecontrols	Default: true. Defines how Application Designer handles the animation of controls. There are several controls that can be rendered in an animated way and in a standard way. Setting this parameter to "false" can help to improve performance, especially if you are not using the newest hardware. Values: true/false.
buttonctrlenter	Default false. If set to true <ctrl><enter> on a focused button will trigger the button method.
browserpopuponerror	Default: false. Defines how Application Designer handles it if the application behind an Application Designer page throws an error.

	By default (false), the browser switches to an error screen. In the screen, the user can only abort the current function. This is the default way in which any kind of inconsistency is automatically omitted. When you set <code>browserpopuponerror</code> to "true", the browser opens a pop-up window in which the error is output. This setting should only be used during development because it may cause inconsistencies in the application. Values: true/false.
<code>clientsideerrorinstatusbar</code>	Default: false. By default, client-side error messages are displayed as pop-ups. When you set this parameter to "true", client-side error messages are displayed in the status bar. Values: true/false.
<code>collectionorblocklimit</code>	Default: 300. Defines the maximum number of items in a grid after which the framework automatically switches from client-side scrolling to server-side scrolling.
<code>completedateinput</code>	Default: true. By default, partial input in the <code>DATEINPUT</code> control is automatically completed. When you set this parameter to "false", no automatic completion will be done, thus forcing end-users to always enter the complete date. Values: true/false.
<code>createhttpsession</code>	Default: false. Internally, Application Designer does not require HTTP session management that is provided by the servlet container. Some application servers (especially in clustered scenarios in which Application Designer runs in several nodes) require an explicit HTTP session ID to be used in order to route requests from a browser client always to the right application server node in the cluster. Set <code>createhttpsession</code> to "true" in this case. Values: true/false.
<code>debugmode</code>	Default: false. A log is written permanently into Application Designer's <i>log</i> directory. When <code>debugmode</code> is set to "true", a lot of information which normally is not required is written to the log.

	Be aware that you can also set the debug mode dynamically within your running system. Application Designer provides a monitoring tool in which you can switch the debug mode on and off. Values: true/false.
defaulttcss	You can set your own default style sheet for your entire application. For example: <pre>../cis/styles/MY_STYLE.css</pre>
defaultlanguage	Default: en (English). Defines the language that is to be used by default when starting Application Designer. If not set, "en" is used.
designtimeclassloader	By default, Application Designer uses an own class loader for accessing adapter classes at design time. (You can switch this off by specifying useownclassloader="false".) With the designtimeclassloader, you can explicitly select a class loader class that Application Designer is to use. This allows you to use class loaders that offer special functions such as reading encrypted class files. Value: the name of a class loader class.
displayallowtab	Default: true Defines if tabbing into DISPLAY input controls is possible.
enableadapterpreload	Default: true. By default, the server sends all required responses at once to the client, even if different adapters are involved. If set to "false", a separate data transfer occurs for each involved adapter.
errorreactionadapter	In case of an unhandled application error, the Application Designer runtime navigates to an error page. The class name specified in errorreactionadapter is the Java adapter for this error page. If an error reaction adapter is not specified, a default adapter is used which shows the error's stack trace. The Application Designer framework contains a second error reaction adapter with the class name <code>com.softwareag.cis.server.SecureErrorReactionAdapter</code>. For security reasons, this adapter does not show a stack trace but only an error message. You can write your own error reaction adapter and create your own error page. An error reaction adapter must implement one of the

	interfaces com.softwareag.cis.server.ISecureErrorReactionAdapter or com.softwareag.cis.server.IErrorReactionAdapter. For more information, see the corresponding Java documentation.
fieldnumerictypesrightaligned	Default: false. Set this parameter to "true" in order to right-align text within the FIELD control when using the data type <code>int</code>, <code>long</code> or <code>float</code>. Values: true/false.
flushreceivespreviousfocused	Default: false. By default, during a flush event the adapter gets as focus information the input control that <i>received</i> the focus. Set this parameter to "true" if during a flush event your application relies on getting as focus information the input control that <i>lost</i> the focus. For Natural applications this means: By default, the Natural system variable *CURS-FIELD contains during the flush event the value of the Natural system function POS for the input control that received the focus. Values: true/false.
framebuffersize	Default: 3. Each page in the browser client runs inside a surrounding page. This surrounding page offers a couple of internal functions, one of them to buffer contained Application Designer pages: if a user opens the first page and then navigates to a second page, the first page is internally kept inside a frame buffer. If returning to the first page later on, the browser does not have to build up the first page from scratch but just switches to the buffered page. The <code>framebuffersize</code> defines the number of buffered pages. Increasing the <code>framebuffersize</code> means that more resources are used on the client (browser) side. When changing this value, you should test the memory consumption on the client side before rolling out the change to productively running implementations. Value: integer number.
htmlgeneratorlog	Default: false. By default <code>.protocol</code> files are written during the HTML generation. If set to "true", an additional <code>.log</code> file is written for each layout. Only set this to "true", if you cannot resolve generation errors via the Layout Painter error marking. It reduces generation performance.
Itrinlinedisplay	Only set this if you notice rounding issues with pixel-sizing in ITRs while zooming the page in Google Chrome and/or Edge Chromium.

	For more information, see <i>ITR in Google Chrome and Edge Chromium in Natural</i> and Java.
licwarningsfor	Semicolon separated list of hostnames. When the web application is called with an URL containing one of these hostnames and the license is in the expiration period of 40 days, an alert box with a license warning is shown once per day.
loglevel	Default: EWI. Defines the message types that are to be logged. Values: E (error) W (warning) I (information) D (debug) N (no logging) You can specify any combination of message types by concatenating the message types. Example: "EW" logs all error and warning messages. "EWI" additionally logs information messages. Specify "N" (no logging) to switch off writing log messages to a logfile. Caution: When having set <code>debugmode</code> to "true", the <code>loglevel</code> filter is automatically bypassed and all messages are logged. <code>debugmode</code> is stronger than <code>loglevel</code>.
logtoscreen	Default: false. If this parameter is set to "true", all Application Designer log information is also output to the command screen from which you started Application Designer. This parameter should only be set to "true" if running in development mode. Values: true/false.
maxitemsinfieldcombo	Default: 100. The FIELD control provides for a predefined pop-up method <code>openIdValueComboOrPopup</code>. Depending on the size of the list of valid values, the list is either shown in a combo box or in a pop-up. Use this parameter to control the maximum number of entries that are to be shown in the combo box. Value: integer number.
maxserverlogage	Default: -1 (log files are not automatically deleted). When setting <code>maxserverlogage</code> to a value > 0, <code>ServerLog*.log</code> files, which are older than the set number of days, are automatically deleted.

	For example, if <code>maxserverlogage</code> is set to 3, all <code>ServerLog*.log</code> files, which are older than 3 days are automatically deleted. If <code>startmonitoringthread</code> is set to false, this parameter has no effect.
<code>maxworkplaceactivities</code>	Default: -1 (unlimited). The maximum number of workplace activities in a workplace application.
<code>monitoringthreadinterval</code>	Default: 5000. The interval in milliseconds for the wake-up of the monitoring thread. If <code>startmonitoringthread</code> is set to false, this parameter has no effect.
<code>multilanguagemanager</code>	Internally, Application Designer uses an interface to retrieve the translation information for a certain text ID and a certain language. A default implementation is available that stores the corresponding language information in files that are part of the web application. Value: the name of the class that supports Application Designer's multi-language interface.
<code>natuppercase</code>	Default: false. Set this parameter to "true" if your Natural program only allows Latin upper-case characters. This is the case, for example, if your Natural program uses the Hebrew codepage CP803. Important: Set the parameter <code>natuppercase="true"</code> <i>before</i> you implement your main program with Natural for Ajax. If you set this parameter after the implementation, you will have to change all Latin lower-case characters to upper-case manually. Values: true/false.
<code>notifyparentonpopupclosed</code>	Default: true. If this parameter is set to "false", no <code>nat:page.default</code> will be sent to the parent Natural program after a pop-up is closed. Otherwise the parent Natural program will receive a <code>nat:page.default</code> event after a pop-up is closed. Values: true/false.
<code>onlinehelpmanager</code>	Application Designer accesses a certain URL when the user presses F1 on certain controls (for example, fields, check boxes and others). Application Designer transfers a corresponding help ID that is defined with the control into a URL and opens this URL in a pop-up window. If you have your own mechanisms for defining this URL, you can implement a corresponding Application Designer Java interface (<code>com.softwareag.cis.onlinehelp.IOHManager</code>).

	Value: the name of the interface.
pagepopupenterhotkey	Default: false. By default, the <code>reactOnPagePopupEnterKey</code> event is not triggered when ENTER is pressed in the page pop-up. When setting this parameter to "true", the event <code>reactOnPagePopupEnterKey</code> is triggered when ENTER is pressed in the page pop-up. This event can be processed in the Natural program. Values: true/false.
pagepopuphorizontal	Use this to automatically adapt the size of a page pop-up if it does not fit to its parent because the parent width is not big enough. Supported values are "zoom" and "resize". If set to "resize" the width of a page pop-up is reduced. If set to "zoom" the page pop-up will automatically be zoomed in. Values: resize/zoom.
pagepopuponresize	Default: false. If set to true an open page pop-up is resized when it's parent is resized. Values: true/false.
pagepopupvertical	Use this to automatically adapt the size of a page pop-up if it does not fit to its parent because the parent height is not big enough. Supported values are "zoom" and "resize". If set to "resize" the height of a page pop-up is reduced. If set to "zoom" the page pop-up will automatically be zoomed in. Values: resize/zoom.
popupparentdisabled	Default: false. When setting this parameter to "true", the parent page of a page pop-up is rendered disabled while the pop-up is open. It only applies to page pop-ups. Values: true/false.
reloadpageonbackbutton	Default: false. If set to true, the Ajax framework tries to reload the page when the back button is pressed. A corresponding message box is displayed to inform the end-user about the reload.
requestclienthost	Default: false. If a client sends an HTTP request, it is determined for the first request from which client this request is coming. This operation is sometimes quite expensive. For this reason, you can switch it off. If switched off, there is no disadvantage in normal operation, besides in the monitoring tool you cannot identify which session belongs to which client.

	Values: true/false.
requestdataconverter	Application Designer allows to pass each value that is input by the user through an explicit data converter on the server side, prior to passing this value to the application. In the data converter, you can implement certain security checks, for example, you can prevent users from inputting string sequences containing inline JavaScript or SQL scripting. See the interface <code>com.softwareag.cis.server.IRequestDataConverter</code> for more information. Value: name of a class that implements the interface <code>com.softwareag.cis.server.IRequestDataConverter</code>.
resetstatusbarbefore	Default: false. When set to true, the status bar messages are reset in the browser before a server roundtrip is done. Values: true/false.
sessionidasthreadname	Default: true. On start of each page request processing, the Application Designer runtime calls the method <code>Thread.setName</code> with the current session ID (default). You can set this parameter to "false" to instruct the Application Designer runtime not to touch the thread's name. Values: true/false.
sessiontimeout	Default: 3600 (1 hour). Application Designer sessions are timed out according to the value defined with this parameter. This is the definition of the timeout phase in seconds. By default, 3600 is defined in the configuration file. If no parameter is specified in the configuration file, 7200 is used. Value: integer number.
sdofullpath	Default: false The default setting enables the product's XSLT processor implementation. If switched to true, the 3rd party Xalan implementation is used instead of the product's functionality. Should you decide to use Xalan, download Xalan 2.7.2 from the Apache download sites. Note: Xalan 2.7.2 contains a vulnerable.
startmonitoringthread	Default: true. If set to "true", a monitoring thread is opened which by default wakes up every 5 seconds. You can customize this value by setting the

	<code>parameter monitoringthreadinterval</code>. The thread performs the following activities: 1. It initiates a garbage collection periodically (every two minutes). 2. It writes all log information into a log file (every n milliseconds. Where n represents the interval length defined in the <code>monitoringthreadinterval</code> parameter). 3. It calls the clean up of sessions which are timed out (every two minutes) 4. It checks for user interface component updates, which need to be deployed. What happens if the monitoring thread is not started? 1. No garbage collection will be triggered by Application Designer. This is then the task of the servlet container around. 2. The log is not automatically written to the file location specified in the <code>web.xml</code> file, but is written to the servlet container's logging. 3. Timing out sessions is not done every two minutes but every thousand requests. 4. No user interface deployment will be done. Caution: Some servlet containers do not allow to let the web application start new threads (for example, the Sun reference implementations do so). For these containers, the parameter must be set to "false". Values: true/false.
<code>suppressfocusmanagement</code>	Default: false. If you set this parameter to "true", no focus management in the client will be done after a server round trip. This means: The focus will not be set to focus-requesting controls such as "EDIT" fields with "ERROR" status after a server round trip. Usually, you do not set this parameter. If you need to suppress focus management for specific server round trips, you usually do this from within your adapter code for these specific server round trips. See also the <code>focusmgtprop</code> in the NATPAGE control. Only set this parameter to "true" if your application needs to do it vice versa: Suppress focus mangement for nearly all server round trips and only explicitly activate focus management for some specific server round trips from within your adapter code. Values: true/false.
<code>takeoutfieldpopupicon</code>	Default: false.

	Set this parameter to "true" in case you are using right-aligned FIELD controls with value help. This will avoid overlapping of the right-aligned text and the corresponding drop-down icon. Values: true/false.
testtoolidhtml4	Default: false. If set to "true", the HTML attribute generated for the test tool IDs has the name "testtoolid". Otherwise, the name is "data-testtoolid". See also the information on standards mode and HTML5 in the Natural for Ajax documentation.
textencoding	Default: UTF-8. By default, Application Designer reads and writes text files in UTF-8 format. You can tell Application Designer to use a different format (for example, for writing XML layout definitions). But be very careful and very aware of what you are doing.
urlbackbuttonpressed	When the browser back button is pressed, in some cases the page is not synchronized with the server anymore and the session has to be closed. In these cases a default page is displayed. Instead of this default page you can define a URL to a custom page. Value: the URL of the page that is to be shown instead of the default page.
urlsessiontimeout	When Application Designer times out a session (see the <code>sessiontimeout</code> parameter) and the user tries to continue to work with the session, a page will be displayed inside the user's browser, indicating that a timeout happened with the user's session. By default, this page is an Application Designer page that you might not want to show to your application users. Value: the URL of the page that is to be shown instead of the default page.
urlopenstreetmapgeocoder	URL used to access the third party geocoder for the OPENSTREETMAP controls. You usually do not have to specify this parameter. However, if the URL of the server of this third party geocoder changes, you can adapt the URL here correspondingly.
uselatestbootstrap	If set to true Bootstrap 4 is used. If set to false Bootstrap 3 is used. When changing this setting you need to regenerate you page layouts. Default: true. Bootstrap 4 is used. Values: true/false.
usemessagepopup	Default: false. Set this parameter to "true" in order to show status messages as message pop-ups.

	Values: true/false.
useownclassloader	Default: true. If set to "true", Application Designer uses its own class loader to load application classes. This parameter may be set to "false" in certain environments, for example, if you use Application Designer inside an environment which requires all application classes to run in the environment's own class loader environment. Caution: The Application Designer class loader automatically searches for classes in certain directories (<code><project>/appclasses/classes</code> and <code><project>/appclasses/lib</code>). If you do not use the Application Designer class loader, you have to set up your environment accordingly. Values: true/false.
usepagepopup	Default: false. Set this parameter to "true" in order to open Natural for Ajax pop-ups as page pop-ups instead of browser pop-ups. Values: true/false.
valuehelpkeys	You can specify your own keys to open the value help pop-up and/or combo box in a FIELD control. The keys are specified in the same way as hot keys. Example: <pre>valuehelpkeys = "ctrl-65;ctrl-alt-66"</pre>
workplacehotkeys	You can specify hot keys with which you can switch back and forth between the activities in a workplace. The first entry defines the key for forward switching and the second entry defines the key for backward switching. The following example defines CTRL page up and CTRL page down as corresponding hotkeys: <pre>workplacehotkeys = "ctrl-34;ctrl-33"</pre>
xmldatamanager	This parameter defines the file name of the class which implements the <code>com.softwareag.cis.xmldata.IXMLDataManager</code> interface. You can specify an own class here. The <code>com.softwareag.cis.xmldata.XMLDataManagerFactory</code> creates an instance using a constructor without any parameter.
zipcontent	Default: true. Between the browser and the server, data content is exchanged. By default, Application Designer zips the content before sending a response from the server to the browser client.

	Sometimes you may want to actually “see” what is being sent (maybe you have a test tool that captures the HTTP protocol). Set <code>zipcontent</code> to “false” if you do not want Application Designer to zip the data content returned to the client. Values: true/false.
--	--

Directory for Performance Traces

The `requestrecording` section of the `cisconfig.xml` file indicates the directory in which recorded performance traces are stored.

```
<cisconfig ...>
  <requestrecording recordrequests="false"
                    recorddirectory="c:/temp/traces/">
  </requestrecording>
</cisconfig>
```

Central Class Path Extensions for Development

If you want to use your own class path extension, you may add a subsection to the `cisconfig.xml` file in which you extend the class path of the Application Designer class loader at development time:

```
<cisconfig ...>
  <classpathextension path="c:/development/centralclasses/classes"/>
  <classpathextension path="c:/development/centralclasses/libs/central.jar"/>
</cisconfig>
```

Each class path extension is listed with a reference to its physical path.

5

Design Time Mode and Runtime Mode

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Application Designer may run in two different modes:

Design Time Mode

All resource files which are required by Application Designer are read from the file system using the `cis.home` parameter value inside the *web.xml* configuration file.

The Application Designer class loader may be used. This means you can use the feature to dynamically reload application classes without having to restart the web application all the time.

Runtime Mode

All resource files are read internally via mechanisms of the servlet container, by which a web application can access its resource files.

The Application Designer class loader must not be used.

When to Use which Mode

The design time mode is typically used in the following scenarios:

- During development.
- With productive installations, if they are not clustered.

The runtime mode is used in the following scenarios:

- Productive installations which are distributed by the servlet container or application server on several cluster nodes.

The design time mode has the advantage that all resources are read from the file system, and are not blocked after access. This means that you can recreate and change these resources without restarting the web application. This simplifies the development a lot.

Setup

The switch from design time mode and runtime mode is configured in the *web.xml* file:

- If the `cis.home` parameter is set, the design time mode is switched on.

```
<init-param id="CISHOME">
  <param-name>cis.home</param-name>
  <param-value>REALPATH</param-value>
</init-param>
```

- If the `cis.home` parameter is not set, the runtime mode is switched on.

```
<!--
<init-param id="CISHOME">
  <param-name>cis.home</param-name>
  <param-value>REALPATH</param-value>
</init-param>
-->
```

Class Loader Considerations

Application Designer may use its own class loader below the web application's class loader. The purpose of this class loader is to dynamically replace classes during development in order to run newly compiled versions of your software without having to restart the web application all the time.

In the configuration file [cisconfig.xml](#), you can switch this possibility on or off.

See *Appendix D - Class Loader Concepts* for more information on what it means to change between “own Application Designer class loader” and “standard runtime with web application class loader”. Both expect classes to be located at different locations. As a consequence, you have to copy classes accordingly in order to bring your application from design time mode to runtime mode.

File Access Considerations

In design time mode (having a defined `cis.home` directory), classes and Application Designer resources (multi-language files) are read from the file system. The reason is that classes can be re-loaded without restarting the web application. In runtime mode, this is not done anymore: classes are read by the web application class loader, resources are read via the servlet context.

Consequence: there is no dependency from any file access to a predefined directory - Application Designer is completely clusterable.

6 Natural Web I/O Style Sheets

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Name and Location of the Style Sheets

Several aspects on a page (such as font, font style or color) are controlled by a style sheet (CSS file).



Note: For more information on style sheets, see <http://www.w3.org/Style/CSS/> .

Editing the Style Sheets

It is recommended that you have a basic understanding of CSS files.

You can edit the predefined style sheets or create your own style sheets.

It is recommended that you work with backup copies. When a problem occurs with your style sheet, you can thus always revert to the original state.

To see your changes in the browser, you have to

1. delete the browser's cache, and
2. restart the session.

Modifying the Position of the Main Output and of the PF Keys

Applies when only the named PF keys are displayed. This feature cannot be used when all PF keys are displayed, since they are always displayed at the same position. See also [Overview of Session Options](#) .

The following elements are available:

Element Name	Description
.mainlayer	Controls the position of the main output in the output window. Used for languages that are written from left-to-right (LTR).
.mainlayer_rtl	Controls the position of the main output in the output window. Used for languages that are written from right-to-left (RTL).
.pfkeydiv	Controls the position of the PF keys in the output window. Used for languages that are written from left-to-right (LTR).
.pfkeydiv_rtl	Controls the position of the PF keys in the output window. Used for languages that are written from right-to-left (RTL).

The `*_rtl` elements are only used if Natural sends the web I/O screen with a right-to-left flag (`SET CONTROL 'VON'`). In the browser, the screen elements are then shown on the right side (instead of the left side).

For web I/O in applications where only the left-to-right orientation is used, the `*_rtl` elements are not required.

If the PF keys are to appear at the bottom, define the elements as shown in the following example:

```
/* Defines the main screen position */ .mainlayer { top: 5px;
    left: 0px;
    height: 550px; } /* Defines the main screen position for right-to-left */ ↵
.mainlayer_rtl { top: 5px;
    right: 30px;
    height: 550px; } /* Defines the PF keys screen position */ .pfkeydiv { height: ↵
70px;
    left: 0px;
    top: 580px; width: 100%; } /* Defines the PF keys screen position for ↵
right-to-left */ .pfkeydiv_rtl { height: 70px;
    right: 30px;
    top: 580px; width: 100%; }
```

Modifying the Font Size

Depending on the screen resolution, one of the following style sheets for defining the font size is used in addition to the default style sheet:

- *model2.css*
- *model3.css*
- *model4.css*
- *model5.css*

These style sheets are located in the *tmodels* subdirectory of the *resources* directory in which all style sheets are located.

Depending on what comes closest to the standard 3270 screen model, the corresponding style sheet from the *tmodels* subdirectory is automatically used. It is selected according to the following criteria:

Standard 3270 Screen Model	Criteria	Style Sheet
Model 2 (80x24)	30 rows or less.	<i>model2.css</i>
Model 3 (80x32)	Between 31 and 40 rows.	<i>model3.css</i>
Model 4 (80x43)	41 rows or more.	<i>model4.css</i>
Model 5 (132x27)	30 rows or less, and more than 100 columns.	<i>model5.css</i>

The font sizes in the above style sheets can be adjusted. Example for *model4.css* :

```
body { font-size: 10px; }
```

The default font sizes for the above 3270 screen models are:

Standard 3270 Screen Model	Default Font Size
Model 2	16px
Model 3	14px
Model 4	10px
Model 5	12px

Modifying the Font Type

As a rule, you should only use monospace fonts such as Courier New or Lucida Console. With these fonts, all characters have the same width. Otherwise, when using variable-width fonts, the output will appear deformed.

If you want to define a different font type, you should define the same font type for the body, the output fields and the input fields as shown in the following example:

```
body {  
    background-color: #F3F5F0;  
    font-family: Lucida Console;  
}  
  
.OutputField {  
    white-space:pre;  
    border-width:0;  
    font-family: Lucida Console;  
    font-size: 100%;  
}  
  
.InputField {  
    background-color: white;  
    font-family: Lucida Console;  
    border-width: 1px;  
    font-size: 100%;  
}
```

```
border-color: #A7A9AB;
}
```

Use the CSS at-rule `@font-face` to specify a custom font with which to display text.

For example, Arabic fonts to be used with `InputFields` for the presentation of "Arabic-Indic numerals" instead of "European numerals":

```
@font-face {
font-family: CustomFont;
src: url( CustomFont.woff );
}
```

Defining Underlined and Blinking Text

The following elements are available:

Element Name	Description
<code>.natTextDecoUnderline</code>	Defines underlined text.
<code>.natTextDecoBlinking</code>	Defines blinking text.
<code>.natTextDecoNormal</code>	Defines normal text (no underline, no blinking).

Example:

```
/* Text decoration */
.natTextDecoUnderline { text-decoration:underline; }
.natTextDecoBlinking {text-decoration:blink; }
.natTextDecoNormal {text-decoration:normal;}
```

Blinking text is not supported by the Internet Explorer.

Defining Italic Text

The following elements are available:

Element Name	Description
<code>.natFontStyleItalic</code>	Defines italic text.
<code>.natFontStyleNormal</code>	Defines normal text (no italics).

Example:

```
/* font style */
.natFontStyleItalic {font-style:italic;}
.natFontStyleNormal {font-style:normal;}
```

Defining Bold Text

The following elements are available:

Element Name	Description
<code>.natFontWeightBold</code>	Defines bold text.
<code>.natFontWeightNormal</code>	Defines normal text (not bold).

```
/* Font weight */
.natFontWeightBold {font-weight:bolder;}
.natFontWeightNormal {font-weight:normal;}
```

When you define bold text (`{font-weight:bolder;}`) for the default font Courier New, your text always has the same width as with normal text (`{font-weight:normal;}`).

However, when you define bold text for Courier or Lucida Console, the bold text will be wider than the normal text and your output may thus appear deformed. It is therefore recommended that you switch off bold text for Courier and Lucida Console:

```
.natFontWeightBold {font-weight:normal;}
```

Defining Different Styles for Output Fields

The following elements are available:

Element Name	Description
.FieldVariableBased	Defines the style for output fields that are based on a variable.
.FieldLiteralBased	Defines the style for output fields that are based on a literal.

Example:

```
.FieldVariableBased {
    /* font-style:italic; */
}

.FieldLiteralBased {
    /* font-style:normal; */
}
```



Note: In the above example, as well as in the standard CSS files delivered by Software AG, the variable-based output fields are defined as italic, but are commented out.

Modifying the Natural Windows

The following elements are available:

Element Name	Description
.naturalwindow	Controls the rendering of the Natural windows.
.wintitle	Controls the rendering of the titles of the Natural windows.

Example:

```
.naturalwindow {
    border-style: solid;
    border-width: 1px;
    border-color: white;
    background-color: black;
}

.wintitle {
    left: 0px;
    top: 1px;
    height: 17px;
    width: 100%;
    color: black;
    font-size: 100%;
    font-weight: bold;
    background-color: white;
    text-align: center;
    font-family: Verdana;
}
```

```
border-bottom-style: solid;
border-bottom-width: 2px;
}
```



Note: In a mainframe environment, you have to set the Natural profile parameter `WEBIO` accordingly to enable this feature.

Modifying the Message Line

The rendering of the message line is controlled by the `.MessageLine` element.

Example:

```
.MessageLine {
  color: blue;
}
```



Note: In a mainframe environment, you have to set the Natural profile parameter `WEBIO` accordingly to enable this feature.

Modifying the Background Color

The background color is defined in the `body` element.

Example:

```
body {
  background-color: #F3F5F0;
  font-family: Lucida Console;
}
```

Modifying the Color Attributes

You can define different colors for all Natural color attributes. These are:

Red
Green
Blue
Yellow
White
Black

Pink
Turquoise
Transparent

You can define these color attributes for input fields and output fields, and for normal output and reverse video.

The following examples show how to define the color attribute “Red” .

Define the color for a normal output field:

```
.natOutputRed {color: darkred;}
```

Define the foreground and background colors for an output field with reverse video:

```
.reverseOutputRed {background-color: darkred; color:#F3F5F0;}
```

Define the color for a normal input field:

```
.natInputRed {color: darkred;}
```

Define the foreground and background colors for an input field with reverse video:

```
.reverseInputRed {background-color: darkred; color:#F3F5F0;}
```

Modifying the Style of the PF Key Buttons

The following elements are available:

Element Name	Description
.PFButton	Controls the style for normal rendering.
.PFButton:hover	Controls the style that is used when the mouse hovers over a PF key button.

Example:

```
.PFButton {
  text-align: center;
  width: 90px;
  border-style: ridge;
  border-width: 3px;
  padding: 2px;
  text-decoration: none;
  font-family: Verdana;
  font-size: 12px;
  height: 22px;
```

```
}  
  
.PFButton:hover {  
    color: #FFFF00;  
    background-color: #222222;  
}
```



Note: In a mainframe environment, you have to set the Natural profile parameter `WEBIO` accordingly to enable this feature.

JavaScript and XSLT Files

In addition to the CSS files described above, uses XSLT files with specific names for the conversion of the Natural Web I/O Interface screens from the internal XML format to HTML. The HTML also contains calls to JavaScript. For Web I/O screens the following conversion is done:

- Input text is placed into the HTML element `<input>`.
- Output text is placed into the HTML element `<input>` (with attribute `readonly="readonly"`).
- A message line is placed into the HTML element `<span>`.
- PF keys are embedded in an XML island and then rendered with JavaScript.
- Window elements are embedded in an XML island and then rendered with JavaScript.

The conversion is done at runtime by the following product files of your web application:

1. `<mywebapp>/WEB-INF/transuni.xml`
2. `<mywebapp>/scripts/natuniscript.js`

The XSLT file `transuni.xml` is only read once when the server is started.



Important: Do not change the above files. Software AG may change the functionality of these files in new versions or service packs of the product, which would overwrite your changes.

Customizing JavaScript

You can copy your own JavaScript file with extended JavaScript functionality into the directory `<mywebapp>/scripts`. This file must have the name `usernatuniscript.js`. Define your new functionality in this JavaScript file.

If a `usernatuniscript.js` is found when the server is started, it is read additionally to the JavaScript file `natuniscript.js`.

For the new JavaScript functionality to be executed, you may also need to [customize the XSLT file](#).

Customizing XSLT

Make a copy of `<mywebapp>/WEB-INF/transuni.xml` and save it as `<mywebapp>/WEB-INF/usertransuni.xml`. Modify the XSL elements to your needs.

After making changes to `usertransuni.xml` user file, you have to restart the server so that your changes become effective. If a `usertransuni.xml` file is found when the server is started, it is read instead of the default XSLT file.

Customizing Overwrite / Insert mode in Input fields

Up to NJX 9.1.1, Internet Explorer always used “overwrite” mode whereas all other browsers used “insert” mode. With NJX 9.1.2 this inconsistency was fixed. The default behavior is now “overwrite” mode for all browsers. This reflects the default behavior of Natural applications.

If you prefer "insert" mode, do the following:

1. Copy the file `WEB-INF/transuni.xml` to `WEB-INF/usertransuni.xml` – refer to the section [customize the XSLT file](#) above.
2. Open `usertransuni.xml` in a text editor. Search for the following line:

```
<xsl:attribute name="onkeypress">handleKeyPress(this.name, this);</xsl:attribute>
```

3. Remove this line and save the file.

Packaging Customized Files in Natural for Ajax WAR Files

When using the *Deployment Wizard for Web Applications* of NaturalONE to deploy your Natural for Ajax `.war` file, you can automatically package a custom `usertransuni.xml` in the `.war` file for deployment:

- Add a `webconfig` directory to your NaturalONE project as described in the documentation *NaturalONE > Natural for Ajax > Deploying the Application > Content of the Sample webconfig Directory*.
- Copy your `usertransuni.xml` to the `webconfig/web-inf` folder of your NaturalONE project.

7

Multi-Language Management

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■ Tool for Creating Languages	52
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The multi-language management is responsible for changing the text IDs into strings that are presented to the user.

There are two translation aspects:

- All literals in the GUI definitions of a layout are replaced by strings which are language-specific.
- Literals you output within your adapter code (e.g. status messages) must be translated.

The multi-language management is internally kept cleanly behind an internal interface. This means that in the future a different implementation will be available to provide a solution to find a string for a given text ID. In this, the default implementation which simply uses comma separated value files is described.

The information provided in this is organized under the following headings:

Writing Multi-Language Layouts

When defining properties of controls inside a layout definition, there are always two options to specify fix labels: either use property `name` or property `textid`. In case your pages support multi-language ability, you only have to use the `textid` property. At runtime, the corresponding labels are found in the following way:

- Each PAGE has the property `translationreference`. This property may be the name of the HTML file - or it may be a logical name, used by different HTML pages.
- Inside Application Designer, there are defined directories and files in which the text information is stored: each application project is represented by a directory under the web application directory of Application Designer. Inside the project directory, there is a directory `/multilanguage/`. Under this directory, each language is represented by its own directory, e.g. by the directory `/multilanguage/de/` for German translations.
- Inside each language directory, there is one comma separated value (CSV) file for each page name. The name of the file is `<pagename>.csv` (for example, `Login.csv`).
- Inside the CSV file, each line contains the text ID, a semicolon and the label text, e.g. "Label1;Login name".

- [Example](#)

■ Page Name Strategy

Example

Let us assume you have defined an application project "accountmgmt". Inside the application project, there is a layout definition *account.xml* that points via the `translationreference` property of PAGE to "account". The file structure inside your application project directory now looks as follows:

```
<webapp-directory>/
  accountmgmt/
    account.html           // generated HTML file
    multilanguage/
      de/
        account.csv       // German text
      en/
        account.csv       // English text
    xml/
      account.xml         // layout definition
```

Page Name Strategy

The previous section explained how a translation file is found for a certain HTML page. Basically, the translation reference is used to link the layout definition and the Application Designer multi-language management.

In general, there are two strategies for using this translation reference, and a mixture of both:

- Specify one central page name for a couple of pages. Therefore, all pages share the same multi-language information (i.e. the same *.csv* file).
- Specify one page name for each page. Therefore, every page has its own *.csv* file.

For larger projects, it makes sense to combine different literal information into one file - in order to keep consistency and to avoid redundancy. Of course, you have to synchronize the naming of text IDs for each page.

Creating the Translation File

The translation file (*account.csv* in the [example](#) of the previous section) is a simple comma separated file with the following format:

```
textid1;text1  
textid2;text2  
textid3;text3
```

If your text itself contains a semicolon, then write "\;".

You can either create the file by using a text editor or you can use Application Designer's Literal Assistant which is integrated in the Layout Painter.

Pay attention: when using text editors of your own, you must configure your editor to store the text using UTF-8 character encoding. Otherwise, any characters that are not "ASCII characters < 128" will not be properly displayed. Make sure that your editor is UTF-8 capable.

Tools for Translating Text IDs

There are two tools. One is the Literal Assistant that is part of the Layout Painter. The other is the Literal Translator.

Tool for Creating Languages

Application Designer comes with two languages: "en" for English and "de" for German. When creating a new language abbreviation, you have to take care of the following:

- You have to create language directories in your projects.
- You have to copy certain files in which Application Designer holds text information that is language dependent.

The Language Manager automates the creation of language abbreviations.

Unicode

Pay attention to the fact that Application Designer is fully based on Unicode and its UTF-8 format. All multi-language files must be in UTF-8 format. Especially pay attention when maintaining CSV files with programs like MS Excel.

8

Starting a Natural Application with a URL

The connection parameters available in the configuration file for the session and on the logon page can also be specified as URL parameters of the logon page URL. This allows bookmarking the startup URL of a Natural application or starting an application by clicking a hyperlink in a document.

The URL parameters overrule the definitions in the configuration file, with the exception described in the table below.

The following URL parameters are available for the logon page:

URL Parameter	Corresponding Option in the Session Configuration
natsession	Session ID
natserver	Host name
natport	Port number
natuser	User name
natprog	Application
natparam	Natural parameters
natparamext	Natural parameters The URL parameter <code>natparamext</code> extends an existing Natural parameter definition in the configuration file. The extension works in the following way: the Natural parameters defined in the configuration file come first. Then, the Natural parameters defined in the URL parameter <code>natparamext</code> are added, separated by a space character. If you want to overrule the definition in the configuration file, use the URL parameter <code>natparam</code> instead.
nattimeout	Timeout (n seconds)



Important: All parameter values must be URL-encoded.

9 Configuring Container-Managed Security

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General Information

comes as a Java EE-based application. For the ease of installation, the access to this application is by default not secured. You might, however, wish to restrict the access to certain parts of the application to certain users. An important example is the [configuration tool](#), which enables you to modify the Natural session definitions and the logging configuration of .

This section does not cover the concepts of JAAS-based security in full extent. It provides, however, sufficient information to activate the preconfigured security settings of and to adapt them to your requirements.

Name and Location of the Configuration File

Activating Security

Great care must be taken when editing and changing the configuration file *web.xml* . After a change, the application server must be restarted.

Edit the file *web.xml* and look for the section that is commented with "Uncomment the next lines to add security constraints and roles." . Uncomment this section by removing the comment marks shown in boldface below:

```
<!-- Uncomment the next lines to add security constraints and roles. -->
<!--
<security-constraint>
  <web-resource-collection>
    <web-resource-name>Configuration Tool</web-resource-name>
    <url-pattern>/conf_index.jsp</url-pattern>
    <url-pattern>/faces/*</url-pattern>
  </web-resource-collection>
  ...
<security-role>
  <description>Administrator</description>
  <role-name>nwoadmin</role-name>
</security-role>
-->
```

Defining Security Constraints

The security constraints defined by default are just examples. A `<security-constraint>` element contains a number of `<web-resource-collection>` elements combined with an `<auth-constraint>` element. The `<auth-constraint>` element contains a `<role-name>`. The whole `<security-constraint>` element describes which roles have access to the specified resources.

Example - the following definition specifies that only users in the role "nwoadmin" have access to the configuration tool:

```
<security-constraint>
  <web-resource-collection>
    <web-resource-name>Configuration Tool</web-resource-name>
    <url-pattern>/conf_index.jsp</url-pattern>
    <url-pattern>/faces/*</url-pattern>
  </web-resource-collection>
  <auth-constraint>
    <role-name>nwoadmin</role-name>
  </auth-constraint>
</security-constraint>
```

In the following section, you will see where and how the roles are defined.

Defining Roles

A few lines below in the file *web.xml*, there is a section `<security-role>`. Here, the roles that can be used in `<security-constraint>` elements are defined. You can define additional roles as needed. The assignment of users to roles is done outside this file and will often be done in a user management that is already established at your site.

Example:

```
<security-role>
  <description>Administrator</description>
  <role-name>nwoadmin</role-name>
</security-role>
```

Selecting the Authentication Method

In the file *web.xml*, there is a section `<login-config>`. The only element that should possibly be adapted here is `<auth-method>`. You can choose between the authentication methods "FORM" and "BASIC". Form-based authentication displays a specific page on which users who try to access a restricted resource can authenticate themselves. Basic authentication advises the web browser to retrieve the user credentials with its own dialog box.

Example:

```
<login-config>
  <auth-method>FORM</auth-method>
  ...
</login-config>
```

Configuring the UserDatabaseRealm

In the *tomcat-users.xml* file (which is located in the *conf* directory), specify the role "nwoadmin" for any desired user name and password. For example:

```
<user username="pepe" password="pepe123" roles="nwoadmin"/>
```

For detailed information on the necessary realm configuration for Tomcat, see <http://tomcat.apache.org/tomcat-6.0-doc/realm-howto.html#UserDatabaseRealm>.

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Configuring SSL

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General Information

Trust files are used for a secure connection between the Natural Web I/O Interface server and . Server authentication cannot be switched off. A trust file is always required.

A trust file contains the certificates that you trust. These can be certificates of a CA (Certificate Authority) such as VeriSign, or self-signed certificates.

To establish a secure connection, you have to proceed as described in the topics below.

Creating Your Own Trust File

To create your own trust file, you can use, for example, Sun's `keytool` utility which can be found in the `bin` directory of the Java Runtime Environment (JRE). Here are some helpful examples:

- Create an empty, password-protected trust file:

```
keytool -genkey -alias foo -keystore truststore.jks -storepass "your-password"  
keytool -delete -alias foo -keystore truststore.jks
```

- Import a certificate:

```
keytool -import -alias "name-for-ca" -keystore truststore.jks -storepass ↵  
"your-password" -file server.cert.crt
```

You should use a meaningful name for the alias.

- List the certificates in a trust file:

```
keytool -list -v -keystore truststore.jks
```

- Delete a certificate from a trust file:

```
keytool -delete -alias "name-for-ca" -keystore truststore.jks
```

When you modify the trust file or its password, you have to restart the application server so that your modification takes effect.

Defining SSL Usage in the Configuration File

Invoke the [configuration tool](#) and proceed as follows:

1. In the global settings for all defined sessions, define the **SSL trust file path** and, if required, the **SSL trust file password** . See also [Global Settings](#) in *Natural Client Configuration Tool* .

With the server authentication, checks whether the certificate of the Natural Web I/O Interface server is known. If it is not known, the connection is rejected.

When a trust file is not defined in the configuration tool, tries to read the file *calist* from the *lib/security* directory of the Java Runtime Environment (JRE). The default password for this file is "changeit" .

2. Define a session and set the session option **Use SSL** to **Yes** . See also [Overview of Session Options](#) in *Natural Client Configuration Tool* .

11

Logging

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General Information

uses the Java Logging API. In case of problems with , you can enable logging and thus write the logging information to an output file. This should only be done when requested by Software AG support.

You configure logging using the [configuration tool](#) .



Note: Some logging information is also written to the console, regardless of the settings in the configuration file. The console shows the information which is normally provided by the logging levels SEVERE , WARNING and INFO .

Name and Location of the Configuration File

The name of the configuration file is *natlogger.xml* .

Invoking the Logging Configuration Page

The content of the configuration file *natlogger.xml* is managed using the **Logging Configuration** page of the [configuration tool](#) .

➤ To invoke the Logging Configuration page

- 1 In the frame on the left, choose the **Logging Configuration** link.

The **Logging Configuration** page appears in the right frame. Example:

- 2 Specify the characteristics of the output file as described below in the section [Overview of Options for the Output File](#) .
- 3 Specify the log levels for individual modules by selecting the log level from the corresponding drop-down list box.

A brief description for each log level is provided on the **Logging Configuration** page.

- 4 Choose the **Save Configuration** button to write the modifications to the configuration file.



Caution: When you do not choose the **Save Configuration** button but log out instead or leave the configuration tool by entering another URL, your modifications are not written to the configuration file.

Overview of Options for the Output File

The following options are provided for specifying the characteristics of the output file:

Option	Description
File pattern name	The pattern for generating the output file name. Default: "%h/nwolog%g.log" . The default value means that an output file with the name <i>nwolog <number> .log</i> will be created in the home directory of the user who has started the application server. For detailed information on how to specify the pattern, see the Java API documentation .
File type	The format of the output file. Select one of the following entries from the drop-down list box: ■ Text format Output in simple text format (default). ■ XML format Output in XML format. The corresponding formatter class is then used.
File size	The maximum number of bytes that is to be written to an output file. Zero (0) means that there is no limit. Default: "0" .
Number of files	The number of output files to be used. This value must be at least "1" . Default: "10" .
File enabled	If set to Yes (default), the file handler is enabled. If set to No , the file handler is disabled.
Append mode	If set to Yes , the logging information is appended to the existing output file. If set to No (default), the logging information is written to a new output file.

12

Browser Configuration

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JavaScript Enabling

Ajax pages are interactive pages: the interactivity is internally implemented by the usage of JavaScript inside the pages. As a consequence, JavaScript has to be enabled.

Browser Caching

When working with Ajax pages as a client front-end, make sure to set up the browser caching in such a way that it does not reload a page every time it is accessed by the browser. The reason for this is, that Ajax HTML pages remain stable in the browser. They do not contain any application data and are more comparable to small programs. The actual application data is filled into the pages dynamically at runtime. Also other files like JavaScript files are stable for each Natural Ajax version. If the browser is not allowed to cache them, the JavaScript files will be reloaded with each access of an Ajax HTML page.

The following sections contain recommendations on how to optimize browser caching:

- [Natural Ajax JavaScript Files](#)
- [Ajax HTML Files and Styles](#)
- [Images](#)
- [Setting HTTP Headers in web.xml](#)
- [Internet Explorer](#)

Natural Ajax JavaScript Files

The Natural Ajax JavaScript framework only loads a few JavaScript files. In previous versions of Natural for Ajax, for different controls single JavaScript files were loaded. Especially with slow connection lines, the number of files influences the loading time of an Ajax page.

For the Natural JavaScript files it is important to have the correct version of the JavaScript files in the cache of the browser. The JavaScript files usually change with different Natural for Ajax versions. It is important to run the pages exactly with the JavaScript file version for which it was generated. In previous versions of Natural for Ajax the only solutions were:

1. Letting the browser cache the files and then make sure that the browser cache is cleared when the Natural for Ajax version is upgraded.
2. Instructing the browser to always ask the server if the JavaScript file has changed before using the cached file – by setting a corresponding HTTP header in the server or the web application.

Both solutions were not optimal. The first solution required the end-users to always make sure that their cache is cleared. The second solution does not allow for optimal performance because at least a corresponding server request for the last modified date of the file had to be done.

Instead of the previous approach, Natural for Ajax uses versioned JavaScript for the JavaScript of the frequently used controls. These files now have the build version of the *cisversion.xml*.

Example

- `ciscentralCIS_Vvrs_YYYYMMDD_HHMM_NJX.js`
- `cisbasicCIS_Vvrs_YYYYMMDD_HHMM_NJX.js`
- `cisadvancedCIS_Vvrs_YYYYMMDD_HHMM_NJX.js`

Where *vrs* is the Natural for Ajax version used (e.g. 841) and *YYYYMMDD* and *HHMM* represent the date and timestamp.

It is not required to add corresponding HTTP headers to check for newer versions of *ciscentral*.js*, *cisbasic*.js* and *cisadvance*.js*. Every Ajax page will request exactly the JavaScript file for which it is generated. Browser and server can be configured so that these JavaScript files are cached and always accessed from the cache without any additional request to the server.

Ajax HTML Files and Styles

The Ajax HTML files and styles for an Ajax page are generated files from corresponding source files (**.xml*, **.info*). During development you may want to reload them whenever the sources are modified, which can be every few seconds. In a production environment, you usually want to reload them whenever a new version of your web application is released in your production environment.

In a development environment we recommend to set the HTTP header to:

```
Cache-Control: max-age=0, must-revalidate
```

Alternatively, you can opt for not allowing any caching at all:

```
Cache-Control: no-cache
```

In a production environment we recommend to set an HTTP header such that the client only checks the age of these files every hour:

```
Cache-Control: max-age=3600
```

This results in all clients being forced to load the new version with a maximum delay of an hour after upgrading your production environment. You can of course still force reload earlier by clearing the browser cache manually for test purposes.

Images

In contrast to the Ajax HTML files and styles, images are not generated and usually do not change so frequently. You might think about allowing an age higher than that granted for the generated files but in most applications this does not have advantages. The recommendation is to use the same settings as for the generated files described above.

Setting HTTP Headers in web.xml

The HTTP headers recommended above can be set at different places. They can be set in the configuration files of web applications and web application servers. They can also be set in the *web.xml* file and then apply exactly to this web application. The Natural Ajax framework contains a ready to use `HttpHeader` filter which you can easily configure in your *web.xml* file. Search for `HttpHeader` in the *web.xml* file and you should find commented configuration tags, which you can use.

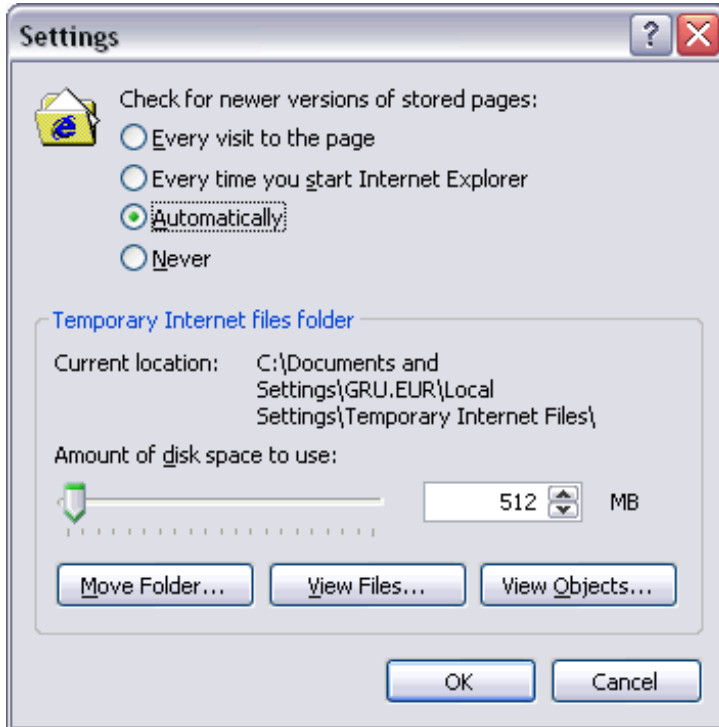
Example

```
<filter>
  <filter-name>HttpHeader</filter-name>
  <filter-class>com.softwareag.cis.server.filter.HttpHeaderFilter</filter-class>
  <init-param>
    <param-name>Cache-Control</param-name>
    <param-value>max-age=3600</param-value>
  </init-param>
</filter>
...
<filter-mapping>
  <filter-name>HttpHeader</filter-name>
  <url-pattern>*.gif</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>HttpHeader</filter-name>
  <url-pattern>*.jpg</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>HttpHeader</filter-name>
  <url-pattern>*.html</url-pattern>
</filter-mapping>
...
```

Internet Explorer

Internet Explorer supports to switch off caching via settings in the browser itself. You need to make sure that the browser is configured so that it allows caching at all.

In Internet Explorer, you set up caching via **Tools > Internet Options**. On the **General** tab of the resulting dialog box, choose the **Settings** button in the **Temporary Internet files** group box. The following dialog box appears:



Either select the option **Automatically** or **Every time you start Internet Explorer**.

Pop-Up Blocker

The default browser setting in most browsers is to block pop-ups.

By default, Natural Ajax pop-ups are opened as page pop-ups, instead of browser pop-ups. See the attribute `usepagepopups` in the [cisconfig.xml](#).

Only some controls like the `DATEINPUT` controls use browser pop-ups. There is a newer `DATEINPUT2` control, which does not use browser pop-ups. If you use controls requiring browser pop-ups in your application, you need to switch off the browser's pop-up blocker. You can find the corresponding setting in the **Security** tab of the browser options.

Browser Standards Mode and HTML5

- [General Information](#)
- [Enabling Standards Mode in the Browser](#)
- [Upgrading an Application to HTML5](#)
- [Upgrading a Test Environment to HTML5](#)
- [Upgrading a Production Environment to HTML5](#)

General Information

Natural for Ajax applications up to version 8.3.4 were running in quirks mode in the browsers, which does not support HTML5 and CSS3 and which behaves differently in the different browsers. With Internet Explorer 11, Firefox and Chrome, Natural for Ajax applications now run in standards mode, which supports HTML5 and CSS3. In standards mode, the browsers should behave as described by the W3C HTML and CSS specifications.

The following sections explain what you need to do when switching to standards mode and HTML5 in the browsers.

Enabling Standards Mode in the Browser

The HTML pages that are generated with Natural for Ajax contain the following declaration:

```
<!DOCTYPE html>
```

This tells the browser to run in standards mode. If you have not defined specific configurations settings in your browser, you do not have to do anything. The browser will automatically use the correct mode.

Upgrading an Application to HTML5

There are differences between HTML4 and HTML5. Page layouts are written in XML and Natural for Ajax takes care of the correct generation into HTML5. Therefore, you do not need to adapt anything in your layouts in most cases. You only have to do the following: Regenerate the HTML of your layout pages and the *.css files of your application.

When using NaturalONE this is automatically done when you rebuild your projects: When packaging your application as a .war file using a NaturalONE *wardeploy.xml* file, the HTML and CSS files are automatically regenerated. The prerequisite for this is a *wardeploy.xml* file that has been generated with version 8.3.4 or above.

If you are not using the NaturalONE *wardeploy.xml* files you can do the regeneration in your Natural Ajax production or test environments using command line jobs. See *Starting the Deployment from the Command Line* for details.

You need to check whether your implementation is HTML5/CSS3-compliant if you are using the following advanced features:

Style Sheet Settings

Some style settings have changed in CSS3. One major change is that for attributes such as `height`, `width` and `padding`, a number only is no longer a valid value. The value must now also include a unit such as "px", "cm" or "%", or it must be one of the predefined values.

For your **.info* files and if your application is using its own **.css* files, we recommend that you check at least whether "px" is properly applied to the corresponding attribute values.

IHTML Controls

In IHTML controls, the Natural programs provide plain HTML at runtime. We recommend that you check whether this plain HTML is HTML5/CSS3-compliant.

*style and *styleprop Properties

Many controls support properties such as `textstyle` and `textstyleprop` to directly set CSS attributes at design time and/or runtime. In attributes such as `height`, `width` and `padding`, any missing "px" units are automatically applied by the Natural for Ajax framework. You do not need to take care of this. In rare cases, you might want to check for attributes which are no longer supported with CSS3.

Custom Controls

If you have built your own macro controls, changes are usually not required. For custom controls, however, for which you generate your own HTML, you need to check whether the generated HTML is HTML5-compliant.

Upgrading a Test Environment to HTML5

According to the HTML5 standard, all custom attributes must start with the string "data-". For this reason, the Natural for Ajax framework generates the attribute `data-testtoolid` into the HTML files by default.

In earlier versions, this attribute was called `testtoolid`. In the layout XML, the property name `testtoolid` is kept - you need not change any layouts. This is just the default for the attribute in the HTML which is changed to `data-testtoolid`. If you are using this attribute in automated tests, you need to change your tests accordingly.

As an alternative solution, the Natural for Ajax framework still supports the `testtoolid` attribute. This allows you to perform the upgrade step by step: You can first upgrade your application without touching the test suite. When this is stable, you can adapt your test suite. The attribute `testtoolid` does not adhere to the naming convention of the HTML5 specification. Therefore, the

resulting HTML will not be 100% valid HTML5. But the currently supported browsers still accept this attribute.

If you want the Natural for Ajax framework to generate the attribute `testtoolid` in the HTML files instead of the default `data-testtoolid`, do the following:

1. In the *cisconfig.xml* file, set the parameter `testtoolidhtml4` to "true".
2. Regenerate the HTML files for your layouts.
3. Make sure that your test environment also contains a *cisconfig.xml* file in which `testtoolidhtml4` is set to "true".



Note: There is no guarantee that future browser versions will still tolerate the `testtoolid` attribute. You may have to switch to `data-testtoolid` sooner or later, but you do not have to do it immediately.

Upgrading a Production Environment to HTML5

If your application needs to support Internet Explorer 10, or if you need to do any compatibility settings in Internet Explorer to run other applications, you have to add the following entries to the *web.xml* file in your production environment:

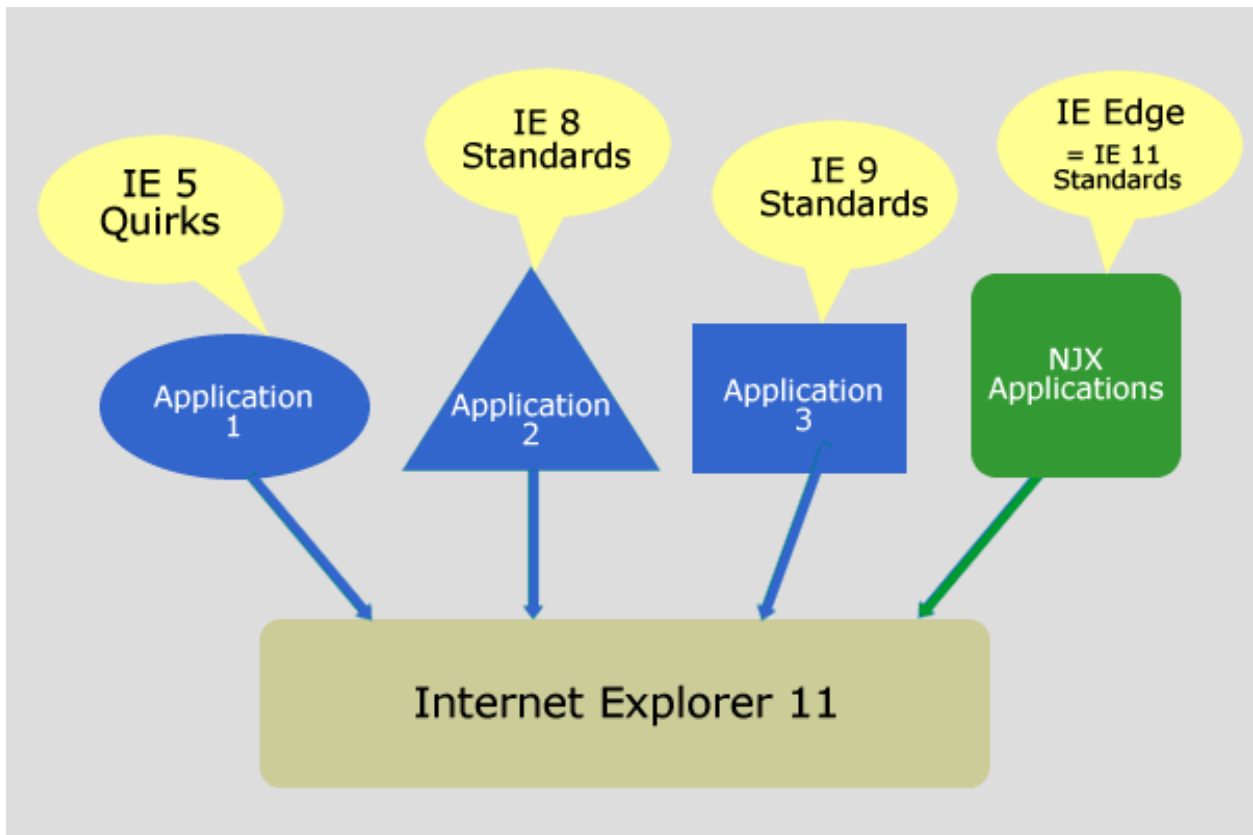
```
<filter>
  <filter-name>BrowserCompatibility</filter-name>
  <filter-class>
    com.softwareag.cis.server.filter.BrowserCompatibilityFilter
  </filter-class>
</filter>
<filter-mapping>
  <filter-name>BrowserCompatibility</filter-name>
  <url-pattern>*.html</url-pattern>
  <servlet-name>StartCISPage</servlet-name>
</filter-mapping>
<filter-mapping>
  <filter-name>BrowserCompatibility</filter-name>
  <servlet-name>StartDynamicPage</servlet-name>
</filter-mapping>
```

For an example, see the *web.xml* file that is shipped with Natural for Ajax.

Mastering Internet Explorer Browser Modes

- Applications Setting the Required Browser Mode
- Applications not Setting the Required Browser Mode

You are running Internet Explorer 11 (IE11) because it provides up-to-date security. But you have different applications with different needs regarding the browser mode. IE11 supports all these browser modes, but someone has to tell the browser which application should run in which mode.



Applications Setting the Required Browser Mode

In an ideal world all applications tell IE11 which mode they require and all applications are rendered correctly. In this case: Do not configure any compatibility settings in your IE11.

Natural for Ajax applications tell the browser, which mode they require. You only have to add the `BrowserCompatibility` filter in your production or test environments as described in [Upgrading a Test Environment to HTML5](#) and [Upgrading a Production Environment to HTML5](#) above.

Applications not Setting the Required Browser Mode

If some of your applications do not set the required browser mode automatically but expect some specific mode, you have the following options.

Configuring your Application and/or Web Server/Web Container

Applications can tell IE11 in which mode they require to run by setting the HTTP header "X-UA-Compatible". For more information see <https://msdn.microsoft.com/en-us/library/ff955275%28v=vs.85%29.aspx>.

If these applications are deployed in a web server/web container that is under your control, it is possible to configure the HTTP response header, which is sent for these applications.

In this case: Do not configure any compatibility settings in your IE11.

Configuring your Internet Explorer 11

In case you do not have a chance to configure the application and/or its web server/web container, IE11 supports an "Enterprise Modus", see <https://msdn.microsoft.com/de-de/library/dn640687.aspx>.

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Timeout Configuration

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In Natural for Ajax applications, timeouts between the browser and the web application as well as timeouts between the web application and the Natural server can be configured.

Timeout Between the Browser and the Web Application

Most users keep their browser open with several applications running in multiple browser tabs for many hours or even days. More often than not, they do not remember which of the applications are still running in one of the browser tabs. For security reasons and to avoid resource bottlenecks, web applications should therefore timeout after a certain period of inactivity of the user.

By setting `sessiontimeout` in the *Ajax Configuration* which is included in the Natural for Ajax documentation for the standalone version of this product you can configure such a timeout.

Timeout Between the Web Application and the Natural Server

Between the web application and the Natural server each user of your application usually has one or several Natural connections active. There are two situations in which you would like to close these connections automatically:

- [Situation A](#)
- [Situation B](#)

Situation A

When the web application does not receive an appropriate answer for a request from the Natural server in a defined time, thereby indicating that something could be wrong with

- either the server side execution,
- the Natural server or
- the connection to the Natural server.

Using the parameter **Timeout (in Seconds)** the timeout for this situation can be configured for each session individually. For details, refer to the description of this parameter in the table under *Overview of Session Options* in section *Session Configuration* which is included in the Natural for Ajax documentation for the standalone version of this product.

Situation B

When the Natural server does not receive any more requests from the web application for a defined time, thereby indicating that something could be wrong with

- either the web application or
- with the connection from the web application to the Natural server
- or the user unintendedly did not close/end the application.

Using the global setting **Last activity timeout (in seconds)** the timeout for this situation can be configured for all sessions globally. For details, refer to the description of this setting in *Global Settings* under *Session Configuration* which is included in the Natural for Ajax documentation for the standalone version of this product.

Dependencies Between Timeouts

We recommend, that you use the same value for the **Last activity timeout** (as in [Situation B](#)) and the `sessiontimeout` in the Ajax configuration.

The **Last activity timeout** covers a subset of situations to which the `sessiontimeout` applies. The `sessiontimeout` also applies to "non-Natural" Ajax pages such as workplace applications.

