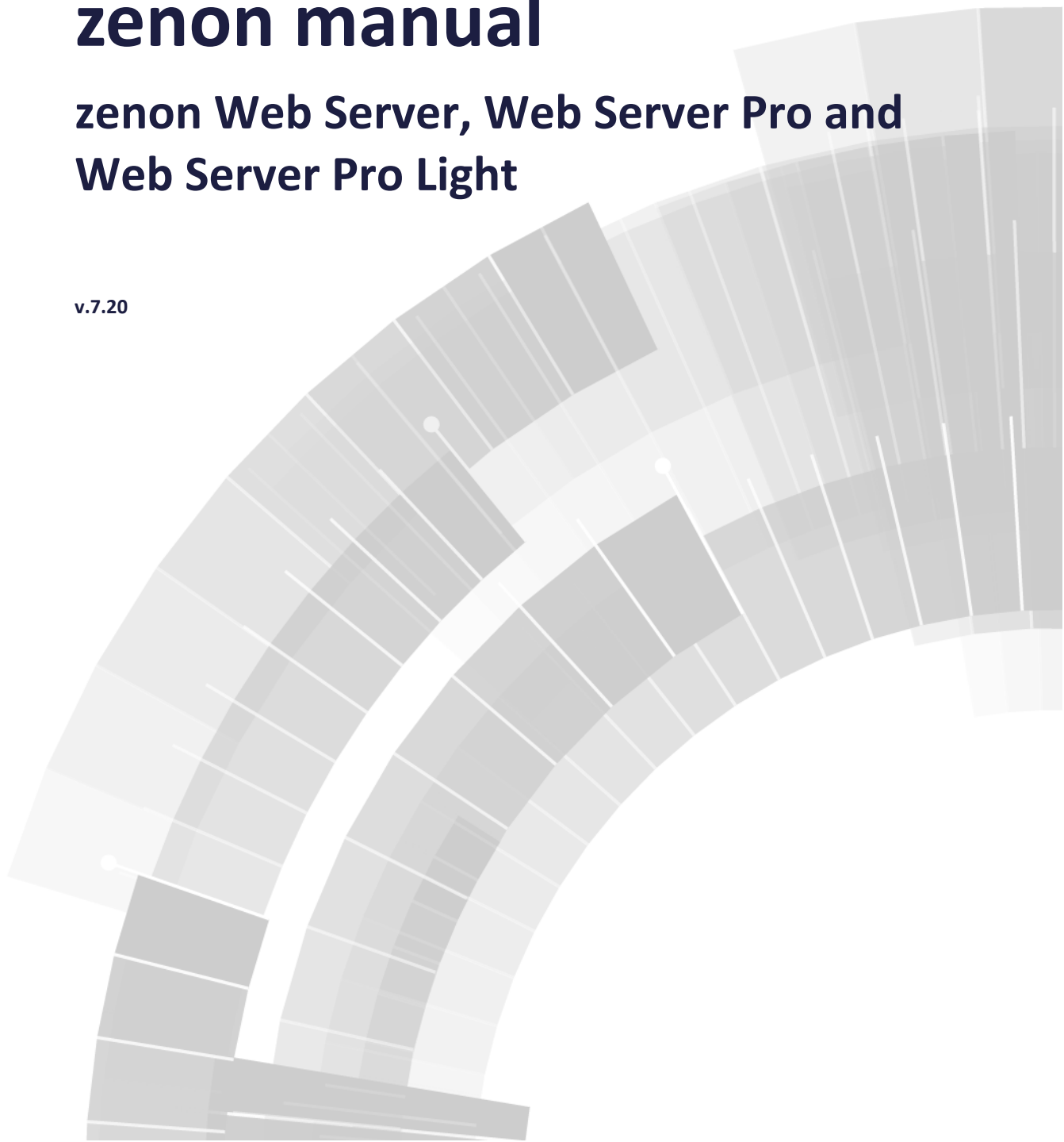


zenon manual

zenon Web Server, Web Server Pro and Web Server Pro Light

v.7.20





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1. Welcome to COPA-DATA help

GENERAL HELP

If you cannot find any information you require in this help chapter or can think of anything that you would like added, please send an email to documentation@copadata.com (<mailto:documentation@copadata.com>).

PROJECT SUPPORT

You can receive support for any real project you may have from our Support Team, who you can contact via email at support@copadata.com (<mailto:support@copadata.com>).

LICENSES AND MODULES

If you find that you need other modules or licenses, our staff will be happy to help you. Email sales@copadata.com (<mailto:sales@copadata.com>).

2. zenon Web Server, Web Server Pro and Web Server Pro Light

zenon Web Server is currently available in three different versions: Their functions are briefly described in the following:



License information

zenon Web Server, zenon Web Server Pro and zenon Web Server Pro Light require a license to run. For more details, see the Licensing (on page 33) chapter.

ZENON WEB SERVER:

- ▶ Forwards data packets from the Primary Server via the zenon Web Server to the zenon Web Client.
- ▶ Handles licensing.
- ▶ Only acts as a viewer.
- ▶ Active operating actions that have an effect on the process, such as write set value, write recipe, save PFS settings, acknowledge alarms etc. are not possible.

Note: Passive operating actions such as screen switching, logging in or logging out are possible.

- ▶ Can be installed on a separate computer, such as in a DMZ for example.
- ▶ Supports network encryption.
- ▶ Supports HTTP tunneling.
- ▶ Many clients possible (depending on the license).

ZENON WEB SERVER PRO:

- ▶ Same functionality as zenon Web Server, except:
 - Allows active user actions with zenon Supervisor and zenon Operator Runtime.
- ▶ Start and operation under Windows CE are subject to certain limitations.
- ▶ Can be installed on a separate computer, such as in a DMZ for example.
- ▶ Supports network encryption.
- ▶ Supports HTTP tunneling.
- ▶ Many clients possible (depending on the license).

ZENON WEB SERVER PRO LIGHT:

- ▶ Allows active user actions with zenon Supervisor and zenon Operator Runtime.
- ▶ The Primary Server that zenon Web Client connects to must be the same computer on which zenon Web Server Pro Light runs.

Note: For projects with redundancy, zenon Web Server Pro Light must be implemented redundantly - one instance on the Server and one on the Standby Server.
- ▶ Maximum 3 clients.

- ▶ No support for encrypted network traffic. It does not start or it ends itself with encrypted communication.
- ▶ HTTP tunneling is not supported.
- ▶ Projects must run on the same computer as the "server". Projects that run on this computer as a client are not supported.
- ▶ Multiple projects are supported if all projects run locally as a server.

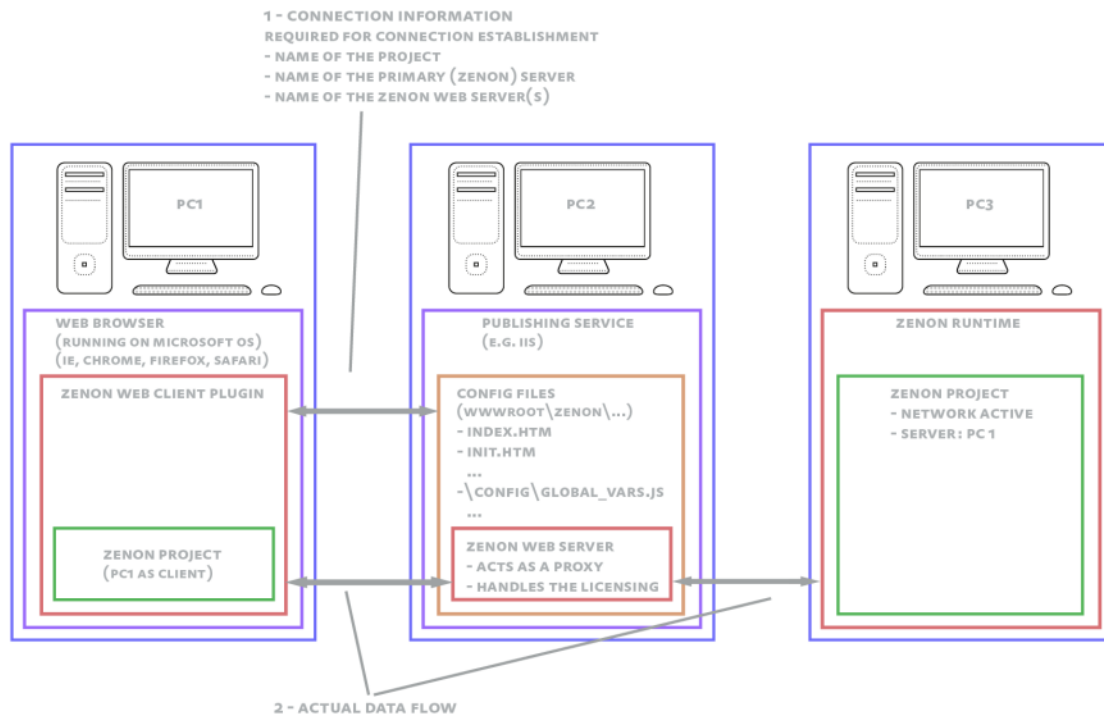
Note: Web Server is supplied as a 32-bit application up to zenon 7.10. From version 7.11 onwards, it has also been available as a 64-bit application.

3. Example of configuration with zenon Web Server:

From PC1, you connect as a client via the Web Server to PC2 as a gateway, to the Primary Server, i.e. to PC3 (see the following illustration). With the help of zenon Web Server and zenon Web Client, the project can be displayed on PC1 in a web browser by PC3, without an additional local installation of Runtime being necessary on PC1. The following installations are necessary for this function:

Note: The following arrangement of components is merely a recommendation. You are free to decide which components are installed on which computer. However it must be noted that a web client for a project **A** cannot be used on a computer that is the server for project **A**.

Also: When using zenon Web Server Pro Light, this must be installed on the computer on which Runtime is running. This is PC3 in our example.



IMPORTANT NOTES

ALSO OTHER CONFIGURATIONS ARE POSSIBLE DEPENDING ON THE CIRCUMSTANCES/ENVIRONMENT/LICENSING

- THE PUBLISHING SERVICE (HOSTING THE CONFIG FILES) COULD BE INSTALLED ON ANOTHER PC THAN THE ZENON WEB SERVER
- THE ZENON WEB SERVER AND THE PUBLISHING SERVICE COULD BE INSTALLED ON THE SAME PC AS THE PRIMARY (ZENON) SERVER (MUST BE INSTALLED ON THE SAME PC FOR ZENON WEB SERVER PRO LIGHT)
- THE WEB CLIENT (FOR THE SAME PROJECT) CANNOT RUN ON THE PC WHERE THE PRIMARY (ZENON) SERVER IS RUNNING
- THERE IS NO NEED FOR THE PUBLISHING SERVICE IF THE CONFIG FILES ARE AVAILABLE LOCALLY RESP. HOSTED SOMEWHERE ELSE (E.G. VIA A NET WORK SHARE) - ALTHOUGH USING THE PUBLISHING SERVICE IS THE MOST COMFORTABLE WAY

1. **PC1:** Install **zenon Web Client** (on page 19) and the **web browser** (on page 42) on this computer.
2. **PC2:** Install the **publishing service** (on page 10) and **zenon Web Server** (on page 12) on this computer.

Note: With regard to the publishing service, this handbook relates to the IIS Publishing Service. If the IIS Publishing Service is installed on this computer, the home page for the zenon Web Client is configured automatically. However there are also alternative publishing services, such as the one from Apache. You are free to decide which of these you use. Furthermore, there is the possibility to not have the publishing service at all. However in this case there are additional steps that you have to carry out manually. You can find these steps in detail in the Publishing service (on page 10) chapter.

3. **PC3:** **zenon Runtime** and the **project** must be on this computer, and optionally also the **zenon Editor**.

Note: If zenon Web Server is not licensed, it starts in demo mode. The automatic start with the operating system does not happen in this case and the web server must be started manually via

the user interface. The session is automatically ended after 30 minutes. A maximum of 2 clients can connect to it.

Configuring the individual components:

Configuration is usually still necessary after installation. For example, after installation of zenon Web Server on PC2, the `global.vars` file is important. This file is, among other things, automatically installed as well and still needs some amendments. For details, read the `global_vars.js settings` (on page 16) chapter.

The Runtime project on PC3 requires the following basic settings (on page 28) in the zenon Editor:

- ▶ Project property -> Network -> Activate active network.
- ▶ Enter project property -> network -> **Server 1** -> computer (name) with Runtime.

If you have finished the installation and configuration, you can have Runtime displayed on **PC1**. To do this, you open a web browser and enter: `RechnernamePC2\zenon\index.htm`

4. Required components and their definitions

Components	Description
Primary Server (on page 7)	The server on which Runtime, the Editor and the project is running and to which a client connects via the zenon Web Server.
zenon Web Server (on page 5)	Forwards data packets from the Primary Server via the zenon Web Server to the zenon Web Client. Also handles licensing. Cannot write values.
zenon Web Server Pro (on page 5)	Allows active user actions with zenon Supervisor. Starting and operation with Windows CE is subject to certain limitations.
zenon Web Server Pro Light (on page 5)	Allows active user actions with zenon Operator and zenon Supervisor.
Publishing service (on page 10)	For publishing documents, such as HTML pages, via the HTTP protocol.
zenon Web Client (on page 19)	The zenon Web Client is a program that runs in a standard web browser and displays a project. It connects to a Primary Server using a zenon Web Server. It shows the project of the Primary Server, just as a normal client would do. Only difference: With the zenon Web Client the project is displayed in a browser.
Web browser (on page 42)	Web browsers are special computer programs for the display of web sites in the World Wide Web or the general display of documents and data. Source: http://de.wikipedia.org/wiki/Webbrowser

Administrator rights are required for installation and/or configuration of zenon Web Server, zenon Web Client and the publishing service.

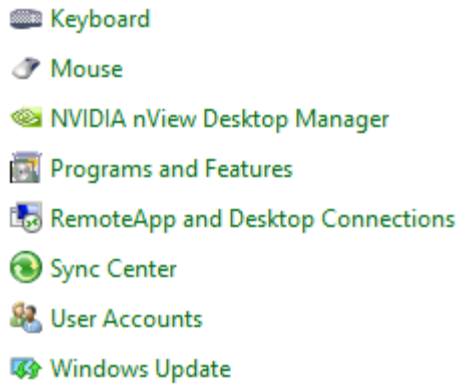
Note: No administrator rights are required for normal operation. The normal user rights are sufficient.

4.1 Publishing service installation

If you use a Windows operating system on your computer, it is no longer necessary to install the publishing service. This need only be activated via Windows features. The following example relates to the IIS Publishing Service. However others can also be used, such as the one from Apache. In this case, the file storage locations may be different. Please note the following info box in this case.

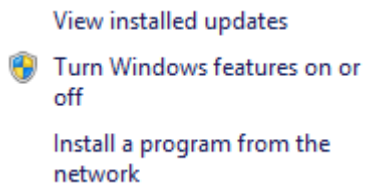
To activate the IIS Publishing Service, proceed as follows:

1. Open the Control Panel of your PC.
2. Click on **Programs and Features**.



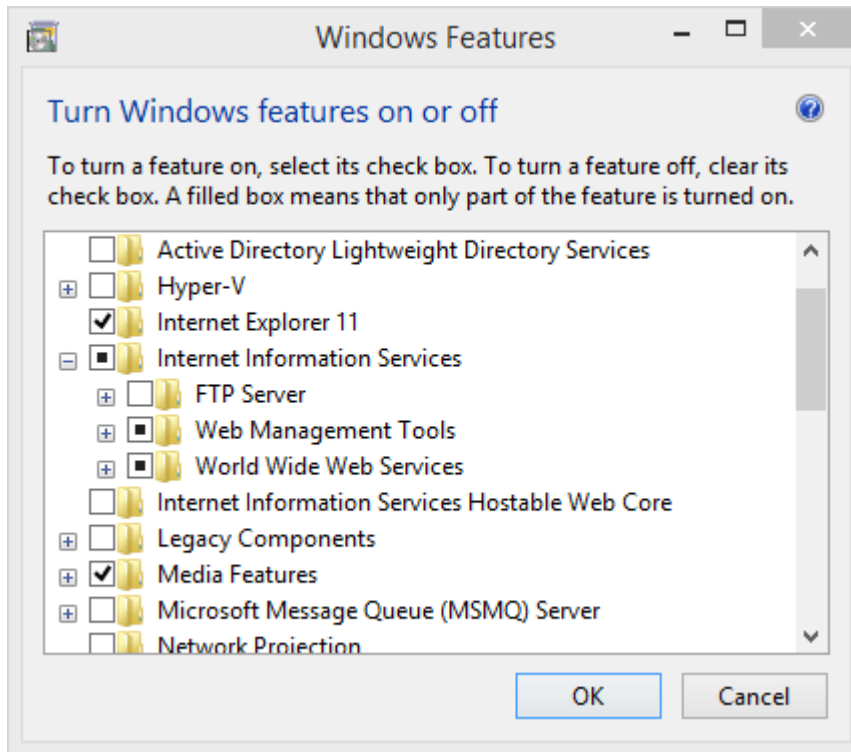
Note: The arrangement of the icons in the Control Panel may look different on your computer.

3. Click on **Turn Windows features on or off**.



4. Activate the **Internet Information Services** option

5. Activate all **World Wide Web Services** there.



If the services have been activated successfully, you will find the following folder in the root directory:
`C:\inetpub\wwwroot`



Info

If the zenon Web Server was already installed before the publishing service or if a different publishing service is used, the folder created during installation of the Web Server `C:\Program Files (x86)\COPA-DATA\zenonWebserver\zenon` must be moved manually to `C:\inetpub\wwwroot` or to the root folder of the alternative publishing service.

Note: The publishing service provides easier access to the configuration files for the web browser. However if the configuration files are accessible locally or in the network, the publishing service need not be used at all.

4.2 zenon Web Server Installation

Note the following criteria when selecting the computer for the Web Server or publishing service:

- ▶ TCP communication from the Web Server to the Primary Server must be possible.
- ▶ There must be complete naming resolution between the Web Server and the Primary Server in the network.

Hint: If the Web Server is to be contactable from outside, it is strongly recommended that a VPN connection is used and the Web Server and the computer with the publishing service is placed in a DMZ.

It is recommended that the zenon Web Server is installed on the same computer on which you have installed the publishing service.

To do this:

1. Start the installation from the installation medium.
2. Follow the instructions given to you by the installation wizard.
3. Restart the computer

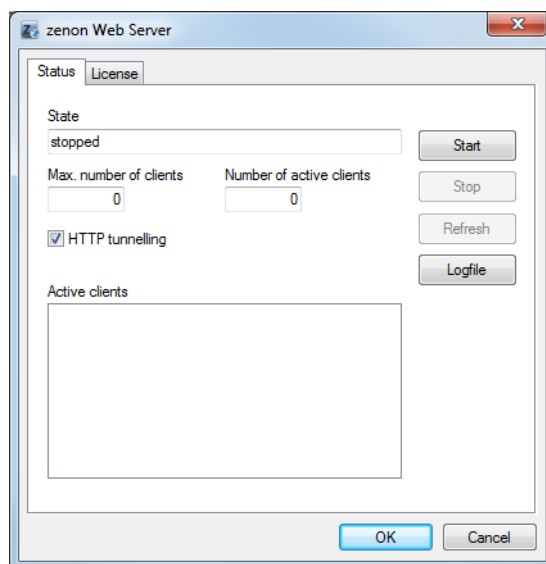
The **zenon** folder is automatically created in the **wwwroot** folder of the IIS publishing service. This folder contains, among other things, some important configuration files that must be installed. For example, **global_vars.js**. is an important file You must amend some settings in this file. Read more about this in the zenon Web Server configuration (on page 13) chapter.

4.2.1 zenon Web Server configuration/start

To configure the Web Server, or start it manually:

1. Open the **Control Panel** or the **Start Menu**.
2. Click on **zenon Web Server**.

The dialog for configuration and licensing (on page 33) opens:



3. Select a connection via TCP or HTTP

Attention: Only activate the option for `HTTP tunneling` if you have also explicitly configured all web clients for this. TCP is used as a standard.

4. Click on the `start` button to start the web server manually.

Note: In normal operation, zenon Web Server is automatically started with the computer as a Windows service. If it has been closed or if you are in the process of entering a new license number, it must be restarted manually. If there is no valid license, the Web Server is not started as a service but in demo mode via the dialog.

Parameters	Description
State:	<p>Displays version and status of the Web Server:</p> <p>Possible versions:</p> <ul style="list-style-type: none"> ▶ zenon Web Server ▶ zenon Web Server Pro ▶ zenon Web Server Pro Light <p>Possible status messages:</p> <ul style="list-style-type: none"> ▶ running: Web Server is running with valid license ▶ stopped: Web Server stopped: ▶ Demo mode: Web Server is running in demo mode without license ▶ not installed: Web Server not registered as service or installation error
Max. number of clients:	<p>Maximum number of clients that are permitted to connect to the Web Server. The number is defined by the license.</p> <p>Two clients are licensed for 30 minutes in demo mode.</p>
Number of active clients:	Displays the number of clients currently connected.
Start	Starts the Web Server
Stop	Stops the Web Server
Refresh	Refreshes the display.
Diagnosis Viewer	Opens the Diagnosis Viewer.
HTTP tunneling (on page 39)	<p>Active: HTTP tunneling is activated.</p> <p>Not available in the Web Server Pro Light version.</p> <p>Note: Can only be changed if the Web Server has the status <i>stopped</i>. Cannot be switched during operation.</p>
Active clients	List of connected clients.
OK	Applies settings and closes the dialog.
Cancel	Discards the changes and closes the dialog.

STARTING AND CONFIGURING UNDER WINDOWS CE.

There is no start dialog for Windows CE. zenon Web Server is already integrated into Runtime.

To start zenon Web Server under Windows CE, the following must be the case:

- ▶ The `Network active` property must be activated in the project,
- ▶ Runtime must have been started,

- zenon Web Server must be licensed

Note: HTTP tunneling is not available with Windows CE.

With Windows CE, the functionality is subject to all the limitations that are generally applicable for Windows CE and zenon Web Server under Windows CE.

Info: No publishing service is installed with Runtime and the integrated Web Server. However any desired publishing service can be used on a Windows computer with the corresponding configuration files.

Settings in global_vars.js

The connection parameters that are required to establish the connection from the web client to the Primary Server are in the `global_vars.js` configuration file. This file is in the `C:\inetpub\wwwroot\zenon\config\` folder if IIS Publishing is being used.

Amend the content of this file by entering into each line what the comments request from you.

INHALT GLOBAL_VARS.JS:

```
// Here enter the exact string how your project is named
var PROJECTNAME = "ENTER_PROJECTNAME_HERE";

// Please enter here the computername, where your zenon Runtime is installed and running
var RUNTIMESERVER= "ENTER_RUNTIMESERVERNAME_HERE";

// Here you have to enter computername, where you installed the zenon Web Server
var WEBSERVER = "ENTER_WEBSERVERNAME_HERE";

// Enter an optional init-zenon-function to be executed when the zenon Web Clients connects
to its server. Defaultvalue = "Init"
var INITFUNCTION = "Init";

// Enable zoom feature (will stretch the project resolution to the size of the zenon Web
Client control) OFF = "0" / ON = "1"
var ZOOM = "0";

// Here you have to enter the version number corresponding to the zenon Web Client.
var VERSION = "7,20,0,0";

// Enable HTTP tunnelling feature: 0 = inactive (available on zenon WebClient version 7.00 and higher)
var HTTP = "1";
```


PARAMETERS

Parameters	Description
Projectname	<p>Defines the name of the Runtime project.</p> <p>Example:</p> <pre>var PROJECTNAME = "PROJECTNAME";</pre> <p>Note: The project must as a server project on the stipulated Runtime server.</p>
Primary Server	<p>Denotes the target computer on which Runtime for the project runs.</p> <p>Example:</p> <pre>var RUNTIMESERVER = "SERVERNAME";</pre> <p>The name must correspond with the server name in the project configuration.</p> <p>Note: The IP address must not be used here. There must be naming resolution between the computer with the Web Server and the Primary Server in the network in both directions. Pinging the name must produce identical results on both computers.</p> <p>Primary Server redundancy</p> <p>Only the name of the Primary Server is given for redundant Runtime projects, not the name of the Standby Server. The name of the Standby Server is saved in the project's <code>project.ini</code> file. zenon Web Client saves this locally the first time it connects with the Runtime Server. That means: The Primary Server has to be online the first time a connection to a redundant project is made. For each further connection, the redundancy concept then will work, i.e. the zenon Web Client first tries to establish a connection to the Primary Server. If it cannot be reached, it automatically connects to the standby server.</p> <p>Web Server redundancy</p> <p>If, in addition to zenon Primary Server, the zenon Web Server is also to be operated as redundant, the following must be the case:</p> <ul style="list-style-type: none"> ▶ Two copies of zenon Web Server installed and licensed on different computers ▶ Both copies of zenon Web Server, separated by a comma, must be entered in the variable declaration on the HTML page: <pre>var WEBSERVER = "WEBSERVER,WEB-STANDBY-SERVER";</pre>
Web Server	<p>Denotes the target computer on which zenon Web Server was installed.</p> <p>Attention: That is not the publishing server!</p>

	<p>Example:</p> <pre>var WEBSERVER = "WEBSERVER";</pre> <p>Note: Instead of the name of the computer with the Web Server, the IP address of the computer with the Web Server can also be used here. If the Web Server is behind an NAT router and port forwarding is configured on the computer with the Web Server, the IP address of the NAT router can also be used.</p>
Initfunction	<p>Defines a zenon function that is executed when a project is started in the browser.</p> <pre>var INITFUNCTION = "Init";</pre> <p>For example:</p> <pre>var INITFUNCTION = "Init";</pre> <p>Default: "Init"</p> <p>Note: The wording must correspond to the function names in zenon (capitalization).</p>
Zoom	<p>Defines if the project can be zoomed in or out of in the browser view.</p> <pre>var ZOOM = "WERT";</pre> <p>0: OFF 1: ON</p> <p>For example:</p> <pre>var ZOOM = "0";</pre> <p>Note: The zoom adjustment is only considered on initializing, not when the Runtime is running. If a certain size is wanted, it has to be defined by the ActiveX control. If you do not open the browser window as maximized and then maximize it later, this can lead to display problems.</p>
var VERSION	<p>Defines the zenon Web Client version.</p> <pre>var VERSION = "WERT";</pre> <p>for example:</p> <pre>var VERSION = "7,20,0,0";</pre> <p>This must always be the same or higher than the version of zenon Runtime.</p>

Note: When entering parameters in the `global_vars.js` file, note capitalization.

4.3 zenon Web Client Installation

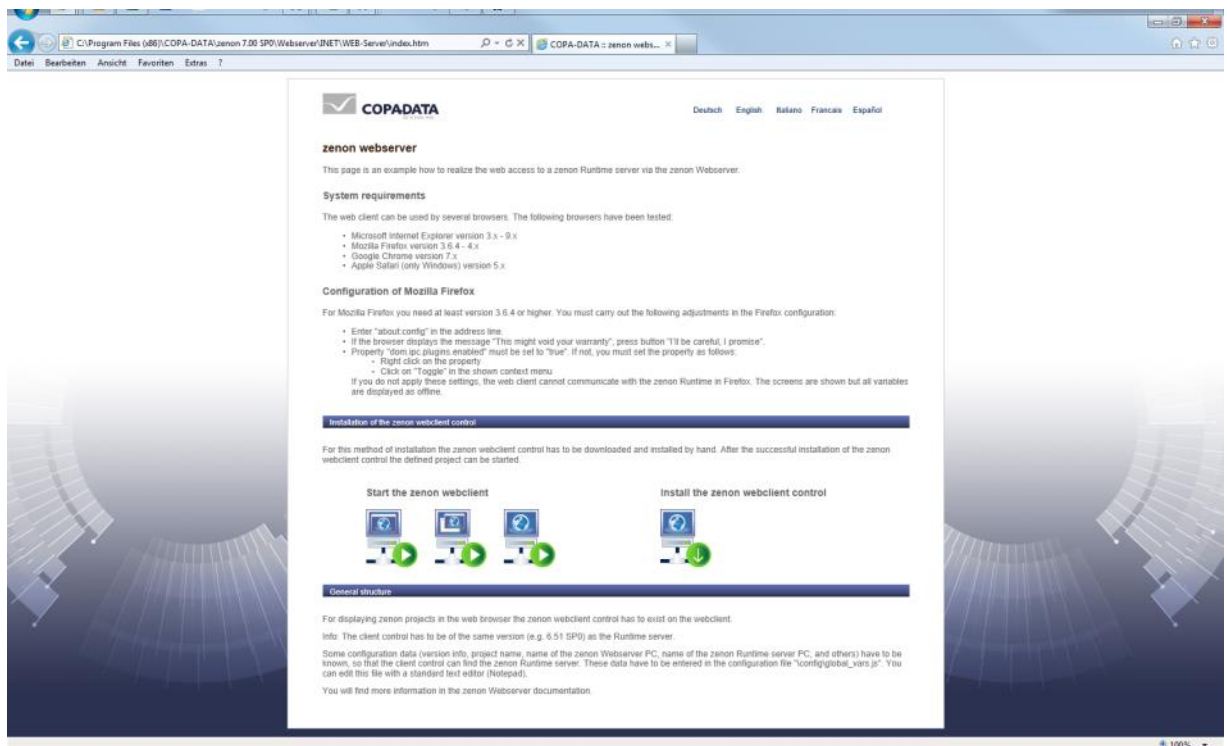
There are four possibilities for installation of zenon Web Client as a 32-bit application.

Note: It is recommended that you carry out the installation using the first option.

1. VIA THE INDEX.HTM PAGE:

It is recommended that you carry out the following steps on the computer on which the Publishing service has been installed or activated. It is PC2 in this example. For details, see the screen in the Example configuration with zenon Web Server (on page 7) chapter. However the Web Client is not necessarily required on this computer. You are free to choose the computer.

1. Start the `index.htm` page by entering the following in the web browser:
`http://Publishingserver//zenon/index.htm`



2. Then click on the **Starting the zenon Web Client** icon.
3. The `WebClientSmall` setup must be carried out first.

Note: Administrator rights are required for this. The `WebClientSmall` setup also requires an Internet connection during installation, in order to download further components. If your computer does not have an Internet connection, use the major installation and one of the other methods of installation.

4. The `init.htm` page continues to be called up by the `index.htm` page.

5. The `init.htm` uploads the Javascript files. These then load the zenon Web Client plug-in.

Note: If you need the larger file from the Web Client, you must amend the `index.htm` page manually. You can read more about this in the `index.htm` (on page 24) chapter.

You can also, as an option, open the `index.htm` page from the `zenon` folder. This folder is automatically created in the `wwwroot` directory when the Web Server is installed.

2. VIA COPY AND PASTE

After installation of the Publishing service (IIS) and the zenon Web Server, the installation files for the zenon Web Client are in the subdirectory.

`C:\inetpub\wwwroot\zenon\controlversions\version720SP0\WebClient.exe` or `WebClient_small.exe`.

Copy the `WebClient_small.exe`. bzw. `WebClient.exe`. application from there.

1. Add these into your preferred local save location.
2. Install the application.

3. VIA THE START INSTALLATION MEDIUM:

1. Copy, from the folder
`...\Setup\wwwroot\controlversions\version720SP0\WebClient.exe`, the `WebClient.exe` bzw. `WebClient_small.exe` application.
2. Add these into your preferred local save location.
3. Install the application.

Note: zenon Web Client primarily consists of an ActiveX control. This provides the information in a browser exactly as in a normal Runtime client. The connection to the Runtime server is implemented with zenon Web Server. zenon Web Client logs errors in the local diagnosis server. The diagnosis server is also installed when zenon Web Client is installed.

4. VIA THE INIT.HTM PAGE:

Start the web browser and go to the `init.htm` page, in which you enter the following:
`http://Publishingserver/zenon/init.htm`

1. From there, start the `WebClient.exe` application

Note: The number of web clients that can be used at the same time depends on your license.

Attention: This may need to be added as a "**trusted site**" in the Internet Explorer settings under Extras -> Internet options -> Security.

To do this:

- ▶ Open the web browser.
- ▶ Click on **Internet Options**.
- ▶ Click on **Security**.
- ▶ Click on **Trusted sites**
- ▶ Click on **Sites**.
- ▶ Enter the page.

4.3.1 zenon Web Client - compatibility

With the zenon Web Client, you access different versions of Runtime, along the lines of Runtime compatibility. The version number of the Web Client must only be the same or higher than the Runtime version.

The Runtime online compatibility makes interoperability of Runtime systems (also via Web Clients) in the zenon network possible even if the version of the client Runtime is higher than the version of the server Runtime.

The current Runtime can load projects of the following versions:

- ▶ 6.20 SP4
- ▶ 6.21 SP0
- ▶ 6.21 SP1
- ▶ 6.22 SP0
- ▶ 6.22 SP1
- ▶ 6.50 SP0
- ▶ 6.51 SP0
- ▶ 7.00 SP0
- ▶ 7.10 SP0
- ▶ 7.11 SP0

Due to the multi-project administration projects from different versions can be loaded. For example the Integration project can have version 7.11, a sub-project version 7.00 and another sub-project version 6.51.

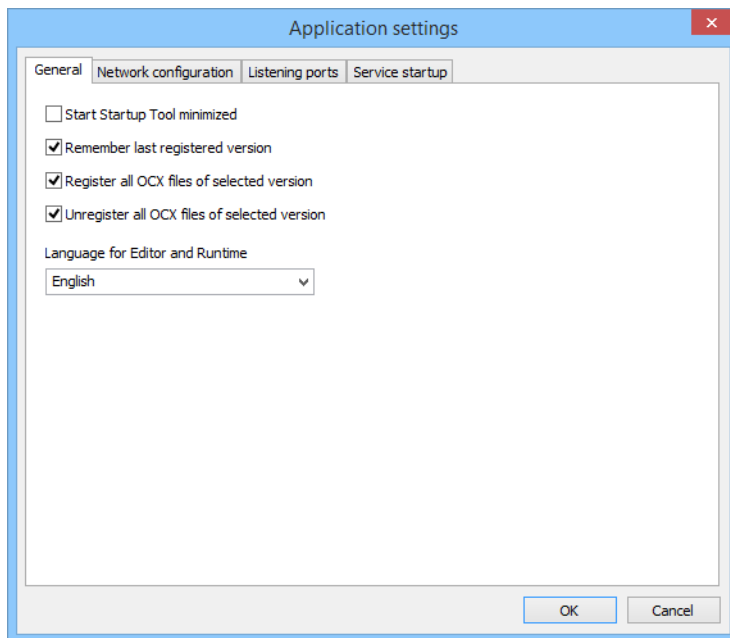


Information

It is best to always use the zenon Web Client with the highest Service Pack number within a version.

4.3.2 Language setting of zenon Web Client

TO CONFIGURE THE LANGUAGE FOR THE WEB CLIENT:



1. Start the Startup Tool.
2. Select the General menu entry.
3. Select the desired language in the Language for Editor and Runtime drop-down list.

AVAILABLE LANGUAGES FOR THE WEB CLIENT:

- ▶ Chinese
- ▶ German
- ▶ English
- ▶ French
- ▶ Italian
- ▶ Russian
- ▶ Spanish
- ▶ Czech



Information

You can get further information for the language setting in the Startup Tool in the Tools manual in the General chapter.

4.3.3 Creation of the HTML page for the project entry

A project start page (on page 24) is required, so that the web browser can start zenon Web Client and then connect to the corresponding Primary Server. This page contains the necessary code. Java Script is used as a script language.

Requirements:

- ▶ JavaScript must be activated in the browser.
- ▶ The zenon Web Client must also be installed locally on the computer on which the web browser is executed.

Recommendation: Switch, before the project entry page (`init.htm`) (on page 23), to a start page (`index.htm`) (on page 24) , that allows the download of the Web Client. This start page contains hyperlinks:

- To download the zenon Web Client controls
- To project entry page `init.htm`, which carries out a browser check and makes the connection from zenon Web Server to the Primary Server.

Example of project start page `init.htm` for TCP and HTTP

On the project entry page (on page 24), a browser check checks to see which browser the Web Client uses. Depending on the result, the Web Client is started or an error message is given.

Example of project start:

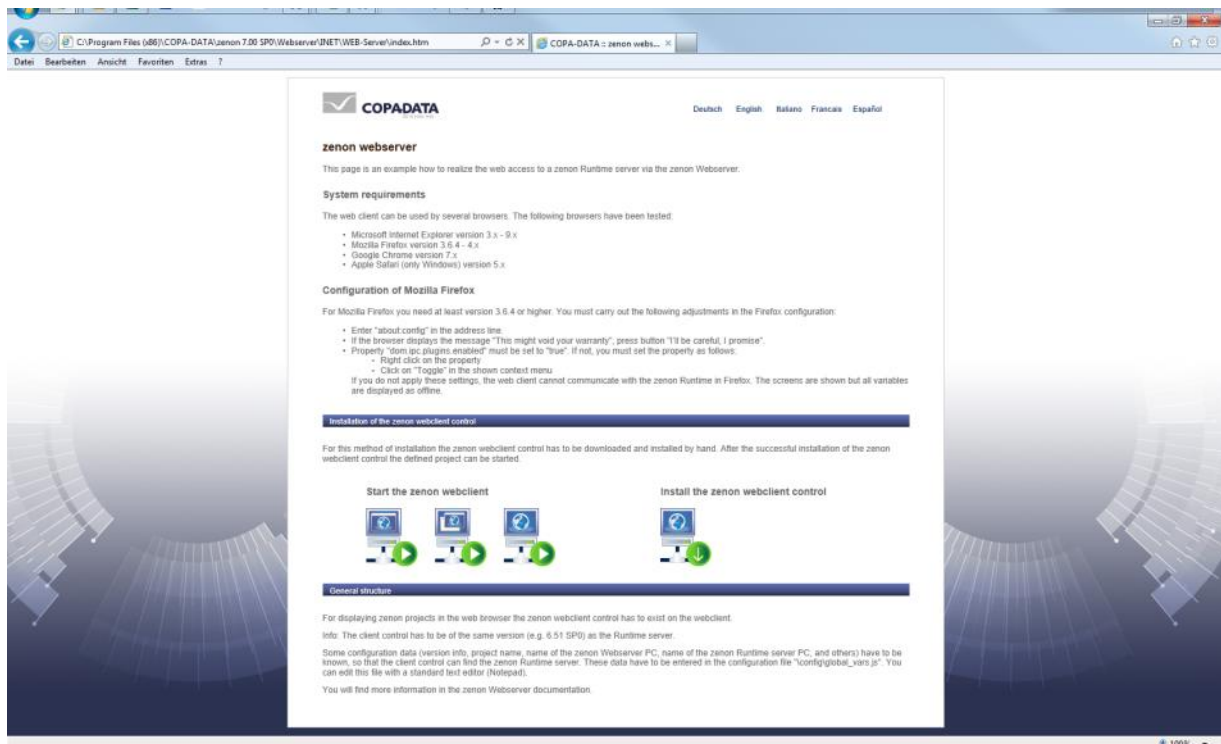
The start page (on page 24) calls up three scripts in order to check the browser used and either to establish a connection to Runtime or to issue an error message:

- ▶ `global_vars.js` (on page 16): Defines values of transfer parameters to start the Web Client
- ▶ `browsercheck.js` (on page 26): Checks the version of the browser
- ▶ `initcode.js` (on page 26): Defines functions that are used to start the Web Client

Note: The settings only differ for connections using TCP and HTTP in terms of the `useHTTP` entry.

4.3.4 index.htm

The page **index.htm** is the start page for our example. It starts by default in English and can be switched to other languages directly on the page on the top right.



The page **index.htm**:

- ▶ Informs you about compatible browsers
- ▶ Offers links to start the zenon Web Clients
- ▶ Offers a link to the installation of zenon Web Client controls; this is necessary if zenon is not installed on the computer with the Web Client
- ▶ Calls up the project entry page **init.htm** (on page 23) when the Web Client is started, which carries out the browser check

4.3.5 init.htm

The **init.htm** file checks the browser being used and then either starts the project or gives an error message.

Scripts are used for this:

1. The configuration is loaded from **global_vars.js** (on page 16).
2. The browser is determined by **browsercheck.js** (on page 26).
3. If it is a supported browser, the appropriate function to include the zenon Web Client from **initcode.js** (on page 26) is executed.

EXAMPLE:

```
<html>
<head>
<title></title>
</head>
<BODY scroll="no" leftmargin="0" topmargin="0" marginwidth="0" marginheight="0"
BGCOLOR=#FFFFFF>
<script language="javascript" type="text/javascript" src="global_vars.js"></script>
<script language="javascript" type="text/javascript" src="browsercheck.js"></script>
<script language="javascript" type="text/javascript" src="initcode.js"></script>
<script language="JavaScript" type="text/javascript">
switch(browsercheck()) {
    case "IEXPLORER":

        runIexplorer (PROJECTNAME,RUNTIMESERVER,WEBSERVER,INITFUNCTION,ZOOM,VERSION) ;
        break;
    case "NPAPI":
        runNPAPI (PROJECTNAME,RUNTIMESERVER,WEBSERVER,INITFUNCTION,ZOOM,VERSION) ;
        break;
    case "UNSUPPORTED_BROWSER":
        alert(navigator.appName + ' : ' + navigator.appVersion + ' is not
supported!');
        break;
    default:
        alert("invalid parameter");
        break;
}
</script>
</html>
```

4.3.6 browsercheck.js

This JavaScript finds out which browser the the Web Client wants to start and gives the result back to **init.htm** (on page 24).

```
function browsercheck(){
    var UserAgent = navigator.userAgent;
    var fWin32 = (UserAgent.lastIndexOf('Win') != -1) &&
(UserAgent.lastIndexOf('Windows 3.1') == -1) && (UserAgent.lastIndexOf('Win16') == -1);
    var fMSIE = (UserAgent.lastIndexOf('MSIE ') != -1);
    var fNPAPI = (UserAgent.lastIndexOf('Firefox/') != -1) ||
(UserAgent.lastIndexOf('Chrome/') != -1) || ((UserAgent.lastIndexOf('Safari') != -1) &&
(UserAgent.lastIndexOf('Version/') != -1));
    if(fWin32)
    {
        //Win32-Browser
        if(fMSIE)
        {
            //Internet Explorer --> use ActiveX-Control
            return "IEXPLORER";
        }
        if(fNPAPI)
        {
            //Firefox, Chrome or Safari --> use NPAPI-Plugin
            return "NPAPI";
        }
    }
    //Non-Win32-Browser or not supported Browser (Opera, ...)
    return "UNSUPPORTED_BROWSER";
}
```

4.3.7 initcode.js

This Javascript sets:

- ▶ The **<embed>** entry to start zenon Web clients in Apple Safari, Google Chrome or Mozilla Firefox
- ▶ The **<object>** entry to start zenon Web clients in Microsoft Internet Explorer

Script:

```
function runNPAPI(PROJECTNAME,RUNTIMESERVER,WEBSERVER,INITFUNCTION,ZOOM,VERSION) {
```

```

document.write ('<embed type="application/x-zenon"');
document.write ('    width=100%');
document.write ('    height=100%');
document.write ('    Project="' +PROJECTNAME+ '");
document.write ('    Server="' +RUNTIMESERVER+ '");
document.write ('    WebServer="' +WEBSERVER+ '");
document.write ('    Load="-1");
document.write ('    ScrollV="0");
document.write ('    Scrollh="0");
document.write ('    InitFunction="' +INITFUNCTION+ '");
document.write ('    Zoom="' +ZOOM+ '");
document.write ('    UseHTTP = "' +HTTP+ '");
document.write ('>');
document.write (' </EMBED> ');
}

function runIexplorer(PROJECTNAME,RUNTIMESERVER,WEBSERVER,INITFUNCTION,ZOOM,VERSION) {
    document.write ('<object');
    document.write ('    id="CD_IClient1");
    document.write ('
classid="clsid:2A3BC66B-03D7-11D4-991A-080009ABB492");
    document.write ('    codebase="zenWebCli.ocx#version=' +VERSION+ '");
    document.write ('    width=100%');
    document.write ('    height=100%');
    document.write ('>');
    document.write ('    <PARAM NAME="Project" VALUE="' +PROJECTNAME+ '">');
    document.write ('    <PARAM NAME="Server" VALUE="' +RUNTIMESERVER+ '">');
    document.write ('    <PARAM NAME="WebServer" VALUE="' +WEBSERVER+ '">');
    document.write ('    <PARAM NAME="Load" VALUE="-1">');
    document.write ('    <PARAM NAME="ScrollV" VALUE="0">');
    document.write ('    <PARAM NAME="Scrollh" VALUE="0">');
    document.write ('    <PARAM NAME="InitFunction" VALUE="' +INITFUNCTION+
'">');

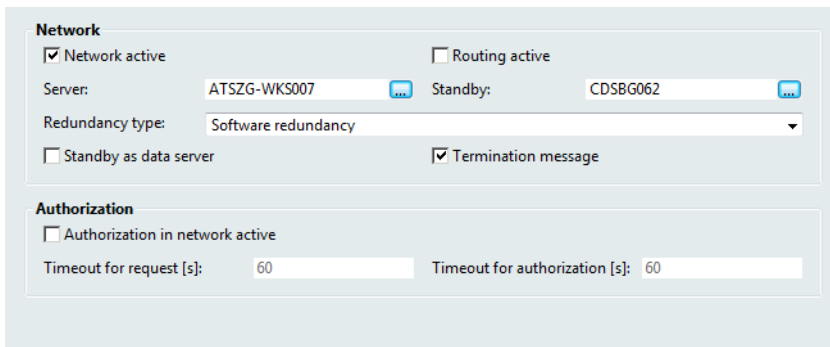
    document.write ('    <PARAM NAME="Zoom" VALUE="' +ZOOM+ '">');
    document.write ('    <PARAM NAME="UseHTTP" VALUE="' +HTTP + '">');
    document.write ('</object>');
}

```

5. Project configuration

The project that is to be started using zenon Web Server requires the following basic settings in the zenon Editor:

- ▶ Project property -> Network -> Activate active network.
- ▶ Project property -> Network -> Server 1 -> Enter computer (name) with Runtime.
- ▶ This computer name must also be started in the project start page (`globalvars.js` (on page 16)) so that a connection can be established.



The screenshot shows two configuration panels in the zenon Editor. The top panel is titled 'Network' and contains the following settings: 'Network active' is checked, 'Routing active' is unchecked, 'Server' is set to 'ATSZG-WKS007', 'Standby' is set to 'CDSBG062', 'Redundancy type' is set to 'Software redundancy', 'Standby as data server' is unchecked, and 'Termination message' is checked. The bottom panel is titled 'Authorization' and contains the following settings: 'Authorization in network active' is unchecked, 'Timeout for request [s]' is set to 60, and 'Timeout for authorization [s]' is set to 60.

START UP THE ZENON WEB SERVER:

To put the zenon Web Server into operation:

1. Ensure that the `WWW` publishing services were started and that the entry page (on page 23) is ready
2. Start the `Runtime` project on the computer
3. Start the `zenon Web Server`.



Attention

VBA/VSTA AND DATA EXECUTION PREVENTION

Via function **Data Execution Prevention (DEP)** the operation prevents that the VBA code is executed in the browser.

Microsoft Internet Explorer 8 and 9:

The Microsoft Internet Explorer version 8 and higher offers the possibility to deactivate DEP for the browser.

- ▶ go to Extras -> Internet options -> Advanced-> Security
- ▶ deactivate the option **Activate memory protection in order to reduce the risk of online attacks**

Other browsers and Internet Explorer from Version 10 (Windows 8)

DEP must be turned off completely as the browser process cannot be excepted explicitly. This is not recommended due to security issues.

to deactivate DEP:

- ▶ Run the command line with administrative rights
- ▶ Execute the following command:
`bcdedit.exe/set {current} nx AlwaysOff`
- ▶ restart the computer

The setting can be undone with the command `bcdedit.exe/set {current} nx AlwaysOn`

General recommendation: Use VSTA instead of VBA.

5.1 General limitations

Projects that are operated using zenon Web Client have the following limitations:

- ▶ Alarms:
Acknowledgement of alarms is only possible when **zenon Web Server Pro** is used.
- ▶ User administration
AD and ADAM/ADLDS only work with certain limitations (as on standard clients too):
AD: The computers must be in the same domain
ADAM/ADLDS: The zenon Web Client needs a physical connection to the zenon Web Server (plus an open port) and to the ADAM/ADLDS server
- ▶ Screens:

- The screen of type Archive revision is not available.

► Print:

Before the first printing on the zenon Web Client the function `Select printer` has to be executed. Here the printers for the client can be defined. These settings are saved in the `zenon6.ini` so that this procedure does not have to be executed again with each new print job.

► IPA:

The Industrial Performance Analyzer (IPA) module is only available on zenon Web Clients in an intranet, because no connection can be made to the database via the internet. If there is an intranet connection, the database authorizations have to be set accordingly, so that a remote computer can access the database as a zenon Web Client.

► Menus

On the zenon Web Client Main menus are not displayed.

► Monitor Administration:

The Monitor Administration works only with limited functionality. The web client can only be operated with one monitor.

► PFS:

The Production & Facility Scheduler (PFS) is only available in versions 6.01 or higher.

► Status information:

The status information, which is displayed by pressing the right mouse button, is not available.

► Keyboard combinations:

The key combinations on buttons like e.g. F3 are not available.

► VBA:

VBA is only available if VBA has been installed on the zenon Web Client manually. For detailed information, please contact zenon Support.

Note: VBA macro message boxes are not shown in the web client when Internet Explorer is used.

► VSTA: zenon Web Server and zenon Web Client support different versions of VSTA.

In general, zenon Web Client supports VSTA, with the exception of:

- Debugging
- `Display VSTA editor` function
- Compiling

For details, see the VSTA with zenon Web Client, zenon Web Server and zenon Web Server Pro (on page 45) chapters.

ADDITIONAL RESTRICTIONS FOR WINDOWS CE:

- ▶ A maximum of three zenon Web Clients can connect with a CE Runtime simultaneously.
- ▶ The zenon Web Server must be running on the same device as the CE Runtime to which it is connected. It is not possible to connect to a CE Runtime on another device.

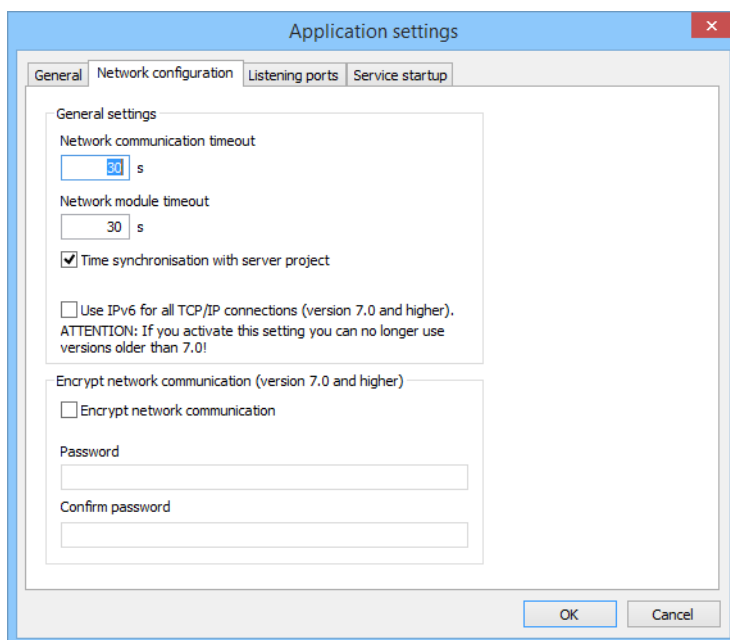
The zenon Web Server for CE is licensed via the Remote Licensing.

5.2 Encryption of the communication in the network.

From zenon version 7, communication in the network can be protected with strong encryption. From zenon version 7.11, the configuration for the encryption of the communication of the Web Server has been integrated into the Startup Tool.

TO ACTIVATE ENCRYPTION IN THE WEB CLIENT:

1. Start the Startup Tool
2. Select the **Options...** menu entry
3. Switch to the **Network configuration** tab
4. Activate the **Encrypt network communication** checkbox to activate encrypted Web Client communication.





Information

You can get further information for the network configuration in the Startup Tool in the Tools manual in the Network Configuration chapter.

6. IPv6

As of zenon version 7 you can use IPv6 in the network.



Information

With IPv6, more users and devices can communicate via the Internet in that they use greater numbers to create IP addresses. With IPv4, each IP address is 32- bits long, as a result of which 4.3 billion unique addresses can be formed. Example for an IPv4 address:

172.16.254.1

For comparison: IPv6 addresses are 128- bits long, which allows formation of approximately 340 sextillion (3,4e+38) unique IP addresses. Example of an IPv6 address:

2001:db8:ffff:1:201:02ff:fe03:0405

However IPv6 offers other advantages for network traffic. In most cases, computers and programs recognize IPv6-compatible networks and use the corresponding advantages without the user having to do anything more. IPv6 also frees other network problems that can occur due to the limited addressing area of IPv4. Example: IPv6 reduces the necessity of network address translations (NAT), a service that allows several clients to use a joint IP address, but which does not always work reliably.

The zenon network allows the choice of using IPv6 or IPv4. Dual operation is not possible. The setting is made via:

- ▶ Network configuration in the Startup Tool
or
- ▶ In zenon6.ini

Attention: IPv6 only works with version 7 onwards.

No versions prior to version 7 can be started if this is active. This concerns zenAdminSrv, zenSysSrv, zenLogSrv and zenDBSrv in particular.

The following components are not affected by the setting; they always use IPv4:

- ▶ Driver communication with the PLCs
- ▶ Protocol communication in the Process Gateway plug-ins
- ▶ Workbench and Runtime communication in zenon Logic

DIAGNOSIS VIEWER

The Diagnosis Server also works with Diagnosis Clients which addresses via IPv6 addresses. For this the format of the log file has been adapted. The Diagnosis Viewer only reads the new format of the log files. If files from older zenon versions are opened (or vice versa), the IP address of the Diagnosis Client is not displayed correctly.

7. Licensing

The licensing determines:

- ▶ The version of zenon Web Server that runs:
 - zenon Web Server
 - zenon Web Server Pro
 - zenon Web Server Pro Light
- ▶ Number of possible parallel zenon Web Client connections (Concurrent Use License)

Note: `zenon Web Server` runs in demo mode without a valid license. In doing so, the following restrictions apply:

- ▶ the `zenon Web Server` can only be started manually
- ▶ The duration that the program can run for is limited to 30 minutes
- ▶ The number of possible clients is limited to 2

To switch from demo mode to a valid license, stop the `zenon Web Server` and enter a valid license number in the License (on page 33) tab. Restart the `zenon Web Server` manually.

ZENON OPERATOR AND WINDOWS CE:

zenon Web Server Pro Light is available for zenon Operator.

For Windows CE, there is zenon Web Server Pro Light built into Runtime available - Runtime must be started in order for zenon Web Server Pro Light to run. This is limited in functionality due to the platform. Licensing is checked via Remote Transport in the Editor with remote licensing.

You can also enter the license for the web server via the licensing:

1. Please open `Start -> All programs -> COPA-DATA -> Tools 7.11 -> Licensing`.
or:
Start the `zenon Web Server` via `Control panel -> zenon Web Server`.
2. The dialog for entering license data opens.

- Select **Web Server**
3. enter the serial number and the activation number

You find the data for this:

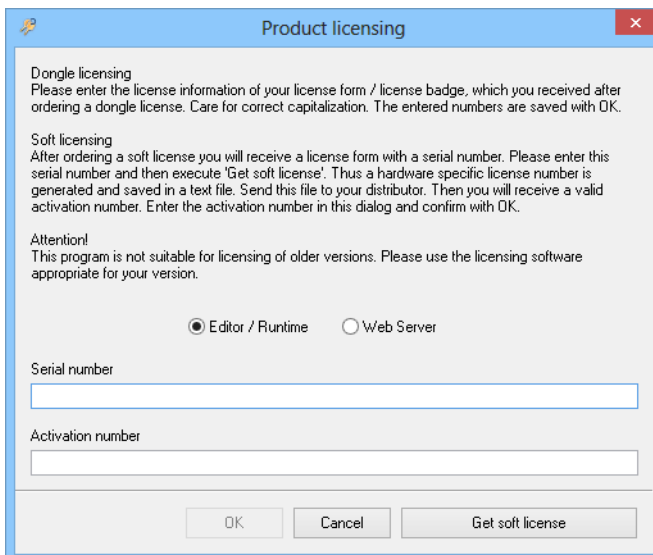
- on your license certificate
- On the license sticker

Path Windows 7/8: C:\Users\Public\Documents\zenon_Projects\

Note: Pay attention to capital letters and small letters when entering the data!

4. restart the **zenon Web Server** on the **state** tab.
5. Once you have restarted the computer, you will use zenon Web Server with the license entered.

LICENSING DIALOG



The image shows a Windows-style dialog box titled "Product licensing". It contains instructions for both "Dongle licensing" and "Soft licensing". Under "Soft licensing", there are two radio buttons: "Editor / Runtime" (which is selected) and "Web Server". Below these are two text input fields labeled "Serial number" and "Activation number". At the bottom, there are three buttons: "OK", "Cancel", and "Get soft license".

Product licensing

Dongle licensing
Please enter the license information of your license form / license badge, which you received after ordering a dongle license. Care for correct capitalization. The entered numbers are saved with OK.

Soft licensing
After ordering a soft license you will receive a license form with a serial number. Please enter this serial number and then execute 'Get soft license'. Thus a hardware specific license number is generated and saved in a text file. Send this file to your distributor. Then you will receive a valid activation number. Enter the activation number in this dialog and confirm with OK.

Attention!
This program is not suitable for licensing of older versions. Please use the licensing software appropriate for your version.

☒ Editor / Runtime ☐ Web Server

Serial number

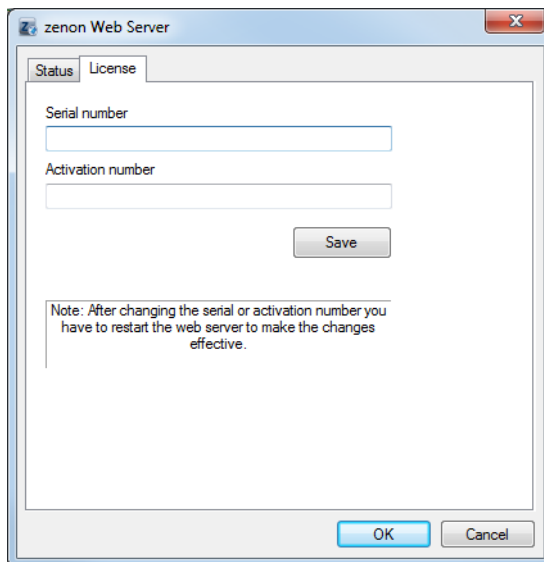
Activation number

OK Cancel Get soft license

Parameters	Description
Editor/Runtime	<i>Active:</i> License is valid for the zenon Editor and/or the zenon Runtime.
Web Server	<i>Active:</i> License valid for zenon Web Server.
Serial number	License serial number. If there is already a license available, its serial number is displayed here. Enter the current serial number here.
Activation number	License activation number. If there is already a license available, its activation number is displayed here.
OK	Import data and start zenon with this license when it is next started.
Cancel	Discard entries and use zenon with the previous license or no license.
Request soft license	Opens the dialog to request a soft license.

Alternative:

1. Start the Web Server via **Control panel -> zenon Web Server**.
2. Enter, in the **License** tab in zenon Web Server, the serial number and the activation number that is shown on the license form.



3. Click on **save** in order to save the two numbers.
4. Restart the **zenon Web Server** on the **state** tab.



Attention

The zenon Web Clients that are connected lose their connection when restarted. The zenon Web Clients will do an automatic reconnect after a certain timeout.

Note: License number and activation number are entered in the **zenWebSrv.ini**.

7.1 Dongle licensing

zenon supports the **WIBU key** and **Codemeter** systems for licensing via a dongle. For details on this, see the Dongle licensing section in the Licensing handbook.

Licensing via a dongle is implemented by means of:

- ▶ A computer-based dongle or
- ▶ Network dongle

COMPUTER-BASED DONGLE:

Using a computer-based dongle:

1. You receive a dongle and a license certificate with a serial number and activation number.
2. Close the dongle with the same computer on which you have installed the zenon Web Server.
3. Register the license (on page 33) in the system.

NETWORK DONGLE:

As an alternative to the dongle on the same computer, you can also use the central COPA-DATA network dongle. This can be plugged into any desired computer in the network. Licensing is carried out in the same way as the computer-based dongle.



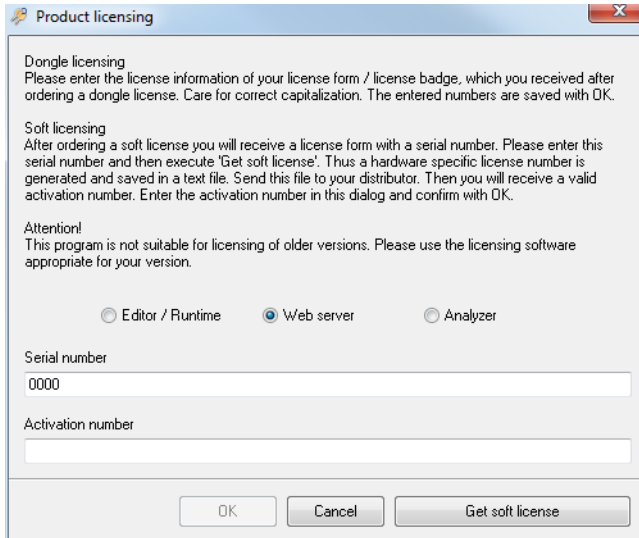
Information

If a copy of zenon Web Server licensed with Codemeter loses the connection to the dongle, the Web Server is ended.

7.2 Soft licensing

For soft licensing:

1. Start the Web Server licensing program.



Product licensing

Dongle licensing
Please enter the license information of your license form / license badge, which you received after ordering a dongle license. Care for correct capitalization. The entered numbers are saved with OK.

Soft licensing
After ordering a soft license you will receive a license form with a serial number. Please enter this serial number and then execute 'Get soft license'. Thus a hardware specific license number is generated and saved in a text file. Send this file to your distributor. Then you will receive a valid activation number. Enter the activation number in this dialog and confirm with OK.

Attention!
This program is not suitable for licensing of older versions. Please use the licensing software appropriate for your version.

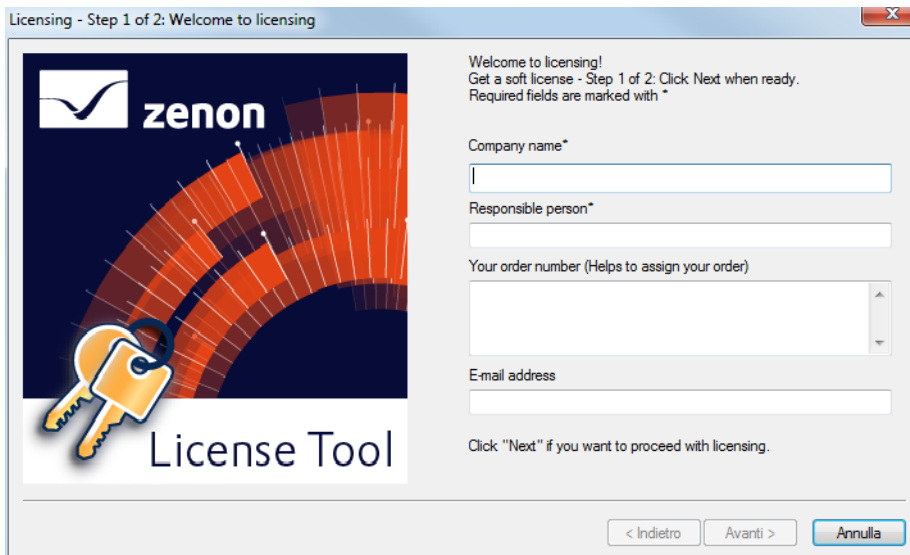
☐ Editor / Runtime ☒ Web server ☐ Analyzer

Serial number
0000

Activation number

OK Cancel Get soft license

2. Click on the **License request** button for **soft licensing**.
3. The form for your license data is opened.



Licensing - Step 1 of 2: Welcome to licensing

Welcome to licensing!
Get a soft license - Step 1 of 2: Click Next when ready.
Required fields are marked with *

Company name*

Responsible person*

Your order number (Helps to assign your order)

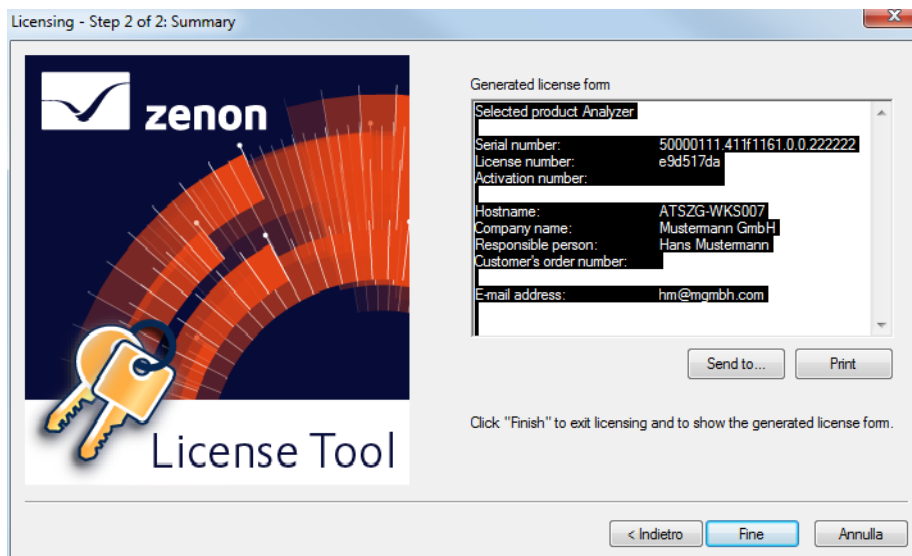
E-mail address

Click "Next" if you want to proceed with licensing.

< Indietro Avanti > Annulla

4. Fill out all fields and click on **Next**

5. The program creates a license request certificate with the license number that is valid for your computer.

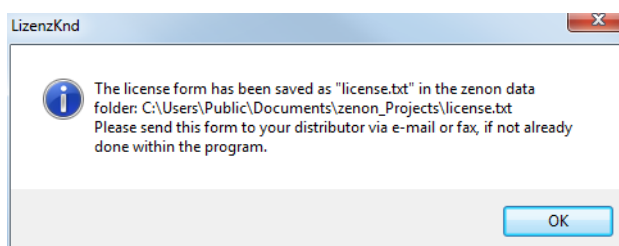


6. Send your license request to your sales partner:

- a) By clicking "Send via email"
- b) By clicking "Print as print-out or fax"

The license number is also included on the license certificate and must correspond to that of your computer.

7. An infobox summarizes the process.



8. As soon as you have received your license data, register the license (on page 33) in the system.

8. Redundancy operation

The zenon Web Server can also be operated as redundant. If a zenon Web Server fails or is stopped, the zenon Web Client automatically switches to the Standby Web Server.



Attention

An automatic switch back - as with the Primary Server - is not carried out. zenon Web Client remains connected to the zenon Standby Web Server until:

- ▶ zenon Web Client is restarted or
- ▶ The zenon Standby Web Server is stopped or fails

Then the zenon Web Client tries to connect with the first zenon Web Server defined as standard.

When using just one zenon Web Server, we recommend that you do not use it on the same computer as the Primary Server or the Primary Standby Server, because the zenon Web Server would also fail in the event that this computer fails.

9. HTTP tunneling

The zenon Web Server can also, instead of TCP connections, accept HTTP connections. HTTP connections are only accepted by zenon Web Clients. The connection from the Web Server to Primary Server is always made via TCP. A separate HTTP connection is created for each connection from the Web Client to the Web Server.

Connections are made via TCP by default.

To use HTTP tunneling, the following must be the case:

- ▶ HTTP must be activated using the configuration dialog or the entry in `zenon6.ini`
- ▶ Port 8080 or the alternative port configured in `zenon6.ini` on the PC Web Server must be reachable
- ▶ The Project entry page for Web Clients, which should connect to the Web Server with HTTP tunneling, should have the **UseHTTP** parameter with a value that is not 0 in the `<embed>` and `<object>` entry

Note: HTTP tunneling is not available with Windows CE.

CONFIGURATION OF THE PORT:

On the computer with zenon Web Server:

1. Open the `zenon6.ini` file.
2. Navigate to the **NET_PROXYPORT=** entry or create this
3. Configure the desired port

Default: 8080

The Web Server listens on the port, the Web Client connects to the port.

4. Save the `zenon6.ini` file.

On the computer with zenon Web Client:

- Configure the HTTP port in the `zenon6.ini` file on the computer with the web client by carrying out the above-mentioned steps again on this computer.

Note: Each change to the port number in `zenon6.ini` on the computer on which the web server is running must also be created accordingly on all computers configured with zenon Web Client. Furthermore, the HTTP port may need to be configured manually on the computer with the web server in the Windows Firewall, as an exceptional port for incoming connections.

PROCEDURE:

The Web Client sends its messages for the Runtime server to the Web Server via HTTP POST. This forwards it to the assigned connection to the Runtime server via TCP. The Runtime server sends its messages for the Web Client via TCP to the Web Server, which buffers them.

The buffer of a connection is emptied by the Web Client through HTTP GET requests. If no message is available for a connection, the client waits for a configurable time (**POLLING_INTERVALL** entry in `zenon6.ini` with a standard value of 2 seconds).

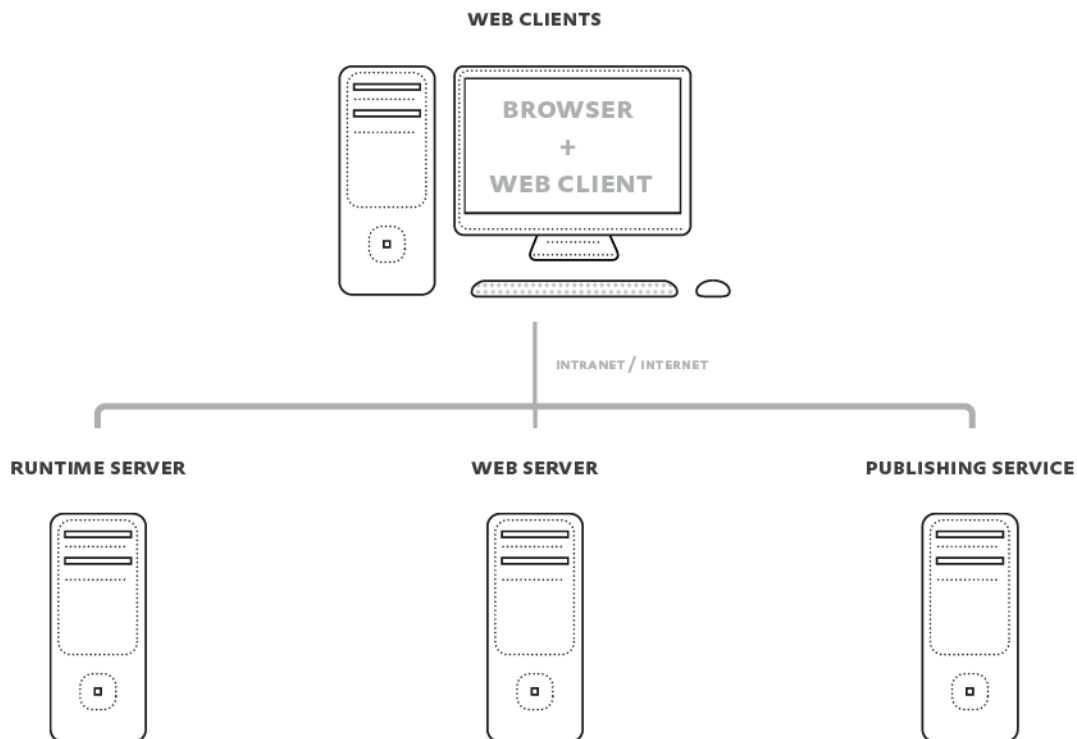
For details, see the Procedure for HTTP connection (on page 41) chapter.

ERROR MESSAGES:

If the HTTP connection is active, network-specific messages are sometimes shown in the Diagnosis Viewer instead of HTTP-specific messages. For example, if a connection is made or disconnected or in the event of an HTTP error.

9.1 Procedure with HTTP connection

If a Web Client is started, it connects to the Primary Server via the zenonWeb Server:



1. The user starts the browser and opens the project entry page (on page 24).
2. The project entry page instigates the browser to start the Web Client with the pre-defined HTTP tunneling configuration.
3. The Web Client makes 3 HTTP connections (control, data and file synchronization connection) to the Web Server:
 - a) A connection ID is requested from the Web Client.
 - b) The Web Server sends a free connection ID if one is available. The ID sent is entered into the list of connection IDs issued. This happens so that no ID can be issued twice and to transfer the HTTP connection to a TCP connection.
 - c) The network init packet is sent to the Web Server via the HTTP connection.
 - d) The Web Server checks to see if this Web Client is already in the list of active clients. If the client is new, a check is made to see if the maximum number of clients has already been reached. If the client connection can be accepted, a TCP connection is made in Runtime and the init packet is forwarded. The accepted client connection and the server connection that has been made are mapped to each other until the connection has ended: Data from the client connection is forwarded via the server connection and vice versa.

4. Data exchange:
 - a) The Web Server works as a protocol translator between TCP and HTTP and buffers the messages.
 - b) Data from Runtime for the Web Client is buffered on the server. The Web Client calls this up by means of GET requests.
 - c) Data from the Web Client for Runtime is sent by the Web Client by means of a POST request and forwarded to Runtime by the Web Server.
5. If the Web Client is ended in the browser (browser is closed or the project entry page is left), the connections to the Web Client are disconnected.
 - a) The web client sends a network-end package to Web Server. The Web Server forwards this to Runtime, ends the connection and clears the occupied resources (working memory, ports, connection ID ...).
 - b) When the client is cleared, an additional HTTP end packet is sent to the Web Server, to ensure that the connection ID was removed from the list.

10. Supported web browsers:

zenon Web Client supports the following browsers:

- ▶ Microsoft Internet Explorer

Attention: zenon Web Client, as a 32-bit application, must be used with the 32-bit version of Internet Explorer.

The 64-bit version cannot be used.

- ▶ Mozilla Firefox

- ▶ Google Chrome up to version 41

Attention: From version 42, Google Chrome no longer supports NPAPI plugins. Chrome can thus no longer be used as a zenon web client from version 42.

- ▶ Apple Safari

It is recommended that you always use the most up to date version.



Information

The browser for zenon Web Client must support one of the following operating systems:

- ▶ Windows 7
- ▶ Windows 8 and 8.1
- ▶ Windows Server 2008 and 2008 R2
- ▶ Windows Server 2012

Other operating systems, such as Windows CE, Linux or others are only usable in combination with a terminal server.

BROWSER START:

The project entry page (on page 24) decides the basis of browser identification, if and how the Web Client is started:

- ▶ Internet Explorer: Start as ActiveX component
- ▶ Firefox: Start as plug-in
- ▶ Chrome: Start as plug-in
- ▶ Safari: Start as plug-in
- ▶ Other browsers or non-supported versions: An error message is displayed; the zenon Web Client does not start

SUPPORTED VERSIONS:

Browser	From version	Remark
Microsoft Internet Explorer	▶ 6.0	▶ Recommended from: 8.0 ▶ 32-bit version only ▶ Note the information on memory protection for IE 8/9
Mozilla Firefox	▶ 3.6:4 Plug-in container must be activated manually	▶ Recommended from: 4.0 (plug-in container is activated as standard) ▶ Note the information on configuration and keyboards
Google Chrome	▶ 1.0 ▶ up to version 41	▶ recommended: from version 7.0
Apple Safari	▶ 3.0	▶ recommended: from version 5.0

MOZILLA FIREFOX CONFIGURATION

For all versions of Mozilla Firefox before version 4, it is necessary to activate the plug-in containers manually.

To do this:

1. Enter the following in the address line: `about:config`
2. The browser may bring up a warning: **The guarantee may be invalid here!**
3. Click on the button: **I'll be careful, I promise!**
4. Navigate to the **dom.ipc.plugins.enabled** property
5. This must be set to `true`
6. To set this status:
 - a) Right-click on the property
 - b) select, in the context menu, the entry: **Switching**
7. Close the browser

Note: If these settings are not made, the zenon Web Client in Firefox (on page 56) cannot communicate with Runtime. Screens are displayed, but all variables are displayed as offline; screen elements thus have no values and are highlighted in blue.

11. Folder for Runtime files

zenon Web Server saves the Runtime files in the %Temp%\zenWebCli folder as standard.

%Temp% signifies the temporary file folder under Windows. This is saved individually for each user and can be changed under **System control -> System -> Advanced system settings -> Environment variables**.

Note: The %Temp% folder is user-dependent. Each Windows user thus loads the Runtime files from the Primary computer.

You can define any desired folder as the storage location for the Runtime files with the **zenon6.ini** entry:

1. Open the **zenon6.ini** file.
2. Navigate to the section
[PATH]
3. Create or modify the entry

WEB_PROJECT_PATH=

12. VSTA and VBA with zenon Web Client, zenon Web Server and zenon Web Server Pro

Note: VBA is supported by zenon in zenon Web Server and zenon Web Server Pro. However for security reasons, we recommend that you switch to VSTA. You can find out further information on VBA in the macro list.

VSTA is supported by zenon with different versions of zenon Web Server und zenon Web Server Pro (on page 5).

Function	zenon Web Client with zenon Web Server Standard	zenon Web Client with zenon Web Server Pro
Show VSTA macro dialog	+	+
Execute VSTA macro	+	+
Open VSTA editor	-	-
VSTA events	+	+
Remark	<ul style="list-style-type: none"> ▶ No values are written to zenon variables. ▶ Windows messages boxes can be opened. ▶ Compiling and debugging is not possible. To do this, a standard zenon Runtime must be used. 	<ul style="list-style-type: none"> ▶ All zenon VSTA functionalities are available in full. ▶ Compiling and debugging is not possible. To do this, a standard zenon Runtime must be used.

INSTALLATION:

For the use of VSTA

- ▶ The following applications must be present on the system or installed manually:
 - Microsoft Visual Studio Tools for Applications 2.0 (VSTA 2.0)
 - Microsoft .NET Framework 3.5

Both programs are on the installation medium for zenon Web Server and/or zenon 7.20.

- ▶ **VSTAIntegration.dll** must be in the zenon program directory.
This is installed automatically when zenon is installed.

INI ENTRIES:

The following entries must be set in **zenon6.ini**:

[VSTA]

ON=1

CSHARP=1

[VBA]

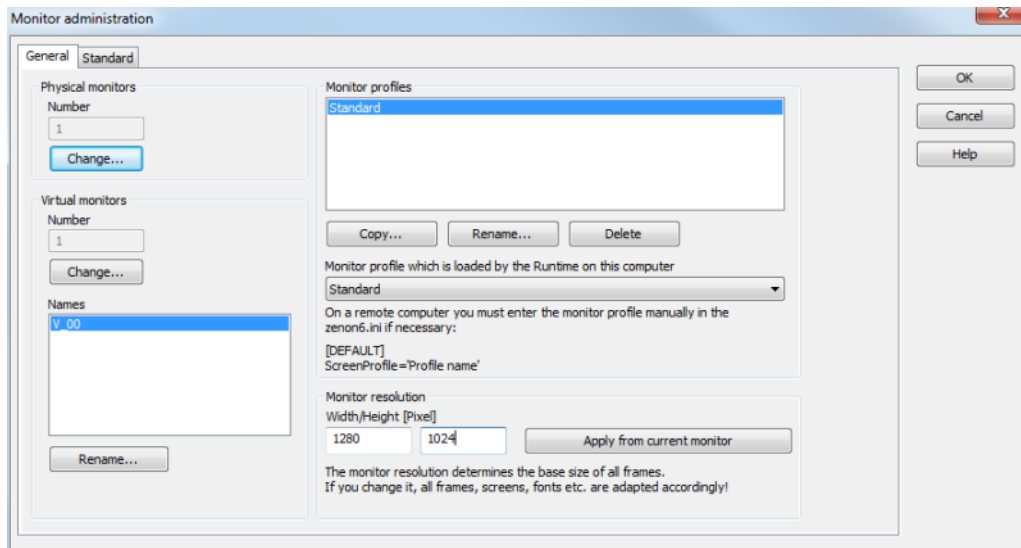
EIN=1

EVENT=1

13. Screen resolution and monitor administration

zenon monitor administration is available in zenon Web Client with limitations.

Important for configuration: The automatic adaptation of the resolution to the client cannot be used for web use. For this reason, the screen size must be set accordingly during configuration. zenon Web Client uses the screen size set for the project as standard: **Project properties** -> **Graphical design** -> **Monitor administration** -> Click on the ... button -> Tab **General** - **Screen resolution**.



The resolution can be scaled using the zenon Web Client setting. For details, see Configuration of the example page chapter.

With the help of the zoom property, zenon Web Client can be zoomed to the size of an ActiveX element.

SIZE IN THE BROWSER:

The browser always needs some screen area for menus and scroll bars. So the area, which is available for the zenon Web Client, is always smaller than the defined monitor resolution. If you would like to have a full screen of the project in the browser, you must set the screen size as smaller than the screen size on the zenon Web Client.

For example:

Monitor resolution on zenon Web Client PC: 1024x768 pixel

Screen size in monitor administration: 800 x 600.



Information

If you want to use the multi-project administration on the zenon Web Client, the screen size has to be the same for all projects!

MULTI-MONITOR SYSTEM:

On a multi-monitor system, the process screens are opened as defined in the profile, on different real monitors. When using a Web Client, these are then outside of the visible area, but can be reached by scrolling.

Recommendation: Configure the monitor profile in such a way that all monitors are on Main monitor mapped; you then have access to all monitors.



Information

*The standard profile is always loaded by default on the zenon Web Client. However, you can stipulate a different monitor profile using the **SCREENPROFILE=** entry in `zenon6.ini`.*

14. Implementing the zenon Web Server in the internet environment

Note: If a web client is to contact a web server via the Internet, it is strongly recommended that a VPN connection is set up between the network with the Web Client computer, the network with the Web Server computer, and the Primary Server.

To integrate zenon Web Server into an internet environment:

- ▶ Any firewall that may be present must be configured accordingly:
 - **Port 1102** on the firewall must be open for incoming packages, so that a zenon Web Client can access a zenon Web Server and therefore access a Primary Server.
 - NAT (Network Address Transformation) must run on the gateway station. NAT transforms the internal LAN address to the address of the gateway station. If, for example, somebody surfs inside the LAN, it always looks as if the gateway station were sending the requests from outside.
 - Static IP address for zenon Web Server:
The firewall on the gateway station has to be configured in such a way that all incoming packages for port 1102 are **automatically** sent to the station with the zenon Web Server. That means: This station must have a static IP address.

- ▶ The project entry page has to be adapted so that zenon Web Client knows which station to access in the internet: The amendment is made in `global_vars.js` or, for older versions, in `project_A_X.html` (X stands for the language version, such as G for German) :
 - Under Webserver **VALUE=** `WEB-SERVERNAME`, the `computer` name of the gateway station (the station visible from the internet and not the computer name of the real zenon Web Server) has to be entered. The real zenon Web Server is not visible from the internet. The gateway station then automatically forwards the requests from the zenon Web Client to port 1102, then automatically to the real zenon Web Server.

15. Error treatment

Known error messages or execution errors:

- ▶ Crash after browser refresh (on page 49)
- ▶ ActiveX control failed to load (on page 50)
- ▶ ActiveX control not installed correctly (on page 51)
- ▶ Exceptional Web Client error in Internet Explorer 8 (on page 51)
- ▶ HTTP error messages (on page 52)
- ▶ Init Runtime Error (on page 56)
- ▶ Keyboards in Firefox (on page 56)
- ▶ Max. clients (on page 57)

15.1 Crash after browser refresh

Using Internet Explorer 6 with the zenon Web Client can lead to Internet Explorer crashing if the browser **refresh** button is clicked. We therefore recommend that you do not use the **refresh** button.

This button causes a complete closure and restart of the zenon Web Client. This means, that the connection to the Runtime server is closed and has to be re-established by the Web Client.

ERROR 101

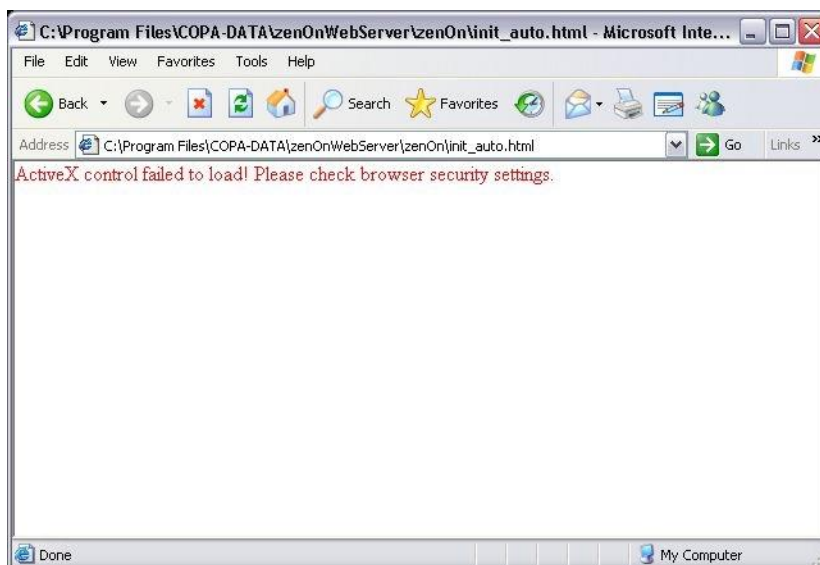
If zenon Web Client was already installed on the client computer, the following error message can be displayed when zenon Web Client connects to zenon Web Server or Runtime:

Error 101

Project XXX was edited with version XXX and cannot be opened here
In this case:

1. Uninstalling Web Client
2. Restart the computer
3. New installation of zenon Web Client

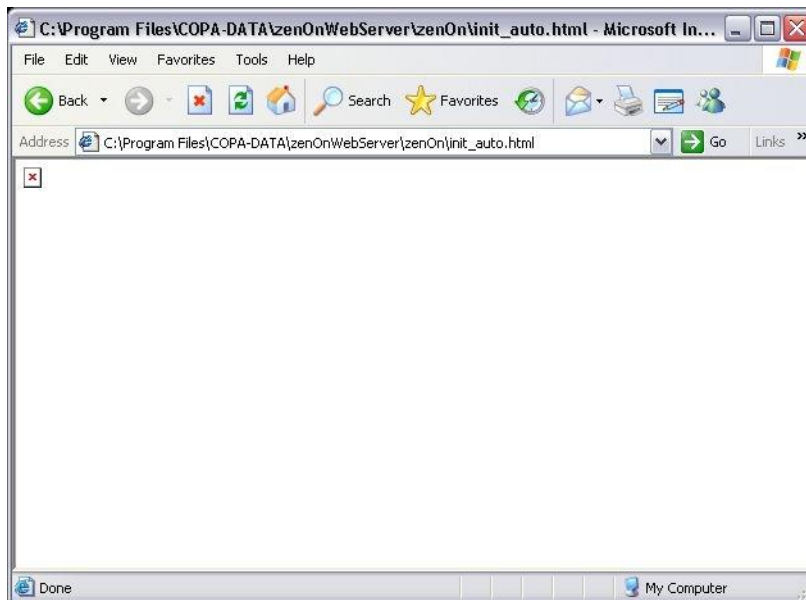
15.2 ActiveX control failed to load



If the browser displays an Init Runtime Error, there are several possible reasons for that. The most probable thing:

- The browser's security settings prevent the correct execution of the ActiveX control.

15.3 ActiveX control not installed correctly



If the browser only displays an X, instead of Runtime, after the project start page has been called up:

- ▶ The ActiveX control for zenon Web Client was not installed correctly
- ▶ The wrong version (on page 21) of zenon Web Client is installed

15.4 Exceptional Web Client error in Internet Explorer 8

ERROR

The Web Client is ended with an exceptional error if VSTA or VBA is executed in the project in the project.

REASON

Microsoft Internet Explorer has a setting for memory protection from version 8. If this is active, executing VBA leads to an exceptional error and Internet Explorer ends. VSTA always activates VBA too.

SOLUTION

Deactivate the memory protection in Internet Explorer under:

Extras->Internet options->Advanced->Enable memory protection to help mitigate online attacks

15.5 HTTP error messages

Error messages and what they mean:

Entry	Level	Description
NetSrv Error Do Send HTTP failed! HTTP-Status: [HTTP-Status]	ERRORS	The HTTP Web Server has responded to an HTTP POST request with an error.
NetSrv Error Do Send HTTP failed!	ERRORS	The HTTP POST request failed (time-out, for example timeout).
NetSrv Error Do Send HTTP Server failed! Data Management Class Error!	ERRORS	An error occurred when saving a message in the buffer to the HTTP Web Server. The error occurred in the data management class.
NetSrv Error Do Send HTTP Server failed!	ERRORS	An error occurred when saving a message in the buffer to the HTTP Web Server. The error occurred in the buffer list.
NetSrv Error Do Recv HTTP failed! HTTP status: [HTTP-Status]	ERRORS	The HTTP Web Server has responded to an HTTP GET request with an error.
NetSrv Error Do Recv HTTP failed!	ERRORS	The HTTP Get request failed (time-out, for example timeout).
NetSrv Error Do Recv HTTP Server failed! Data Management Class Error!	ERRORS	An error occurred when reading a message in the buffer to the HTTP Web Server. The error occurred in the data management class.
NetSrv Error Do Recv HTTP Server failed! Buffer Too Small!	ERRORS	The packet read from the buffer list is too large for the data buffer. Note: Due to the uniform maximum packet size, which also serves as a buffer length definition, this should never occur.
NetSrv Error Do Recv HTTP Server failed! Error While Copying Data Into Buffer!	ERRORS	An error occurred when copying data from the buffer list.
Error Out Of Memory While Adding Data to HTTP GET Response	ERRORS	Creation of a memory area was not possible when compiling an HTTP response at the HTTP Web Server.
Error On Adding Data to HTTP GET Response	ERRORS	An error occurred when copying data from the buffer list in the HTTP response.
HTTP Send Get Response Failed: [Status]	ERRORS	Sending of a response to an HTTP GET request has failed. The status code is a system error code (can be looked up in the MSDN library).
Error Out Of Memory While Receiving Data from HTTP POST	ERRORS	Creation of a memory area was not possible when reading off an HTTP POST response at the HTTP Web Server.
Error on Receiving Data from HTTP POST [Status]	ERRORS	Reading off data from the HTTP-POST request has failed. The status code is a system error code (can be looked up in the MSDN library).
Error Data Block Of HTTP Post Request Too Large	ERRORS	The data from the request received exceeds the defined maximum packet size.
HTTP Send Post Response Failed: [Status]	ERRORS	Sending of a response to an HTTP POST request has failed. The status code is a system error code (can be looked up in the MSDN library).
Error Out Of Memory While Parsing HTTP Request	ERRORS	Creation of a memory area was not possible when forwarding an HTTP response to the relevant thread.
Memory Error on Creating Receive Buffer	ERRORS	Creation of a memory area when creating the HTTP receipt buffer

		was not possible.
Error on Creating HTTP Request Event	ERRORS	Creation of events for the receipt of HTTP requests has failed.
Error While Waiting For HTTP Request: [Status] --> Exiting Listening Thread	ERRORS	An error occurred when waiting for an HTTP request. The status code is a system error code (can be looked up in the MSDN library).
Unexpected Result While Waiting For HTTP Request: [Status] --> Exiting Listening Thread	ERRORS	waiting for an HTTP request provides an unexpected result. The status code is a system error code (can be looked up in the MSDN library).
HTTP Request Without ID Received	ERRORS	The connection ID was not present in the HTTP request.
Error on Extracting HTTP-Request-ID From URL	ERRORS	The connection ID of the HTTP request cannot be read off.
Error: Closing HTTP Connection ID [ID] Could Not Be Resolved	ERRORS	An attempt was made to close a connection that does not exist or was already closed. This error is less critical because the request to delete the connection ID when clearing connection resources can be made more than once after it has ended.
HTTP Request With Incompatible ID Format Received	ERRORS	The connection ID in the HTTP request does not have the expected format.
Could Not Assign New HTTP ID Because The Map Is Full	ERRORS	A new connection could not be accepted because there is no more space in the connection list. The list contains space for over 4.2 billion connections, so this message should therefore never appear.
Error During HTTP Accept	ERRORS	An error occurred when accepting the HTTP connection.
Error On Sending HTTP ID: [Status]	ERRORS	The sending of an HTTP response with the connection ID for the new client connection has failed. The status code is a system error code (can be looked up in the MSDN library).
Error: HTTP Connection ID [ID] Could Not Be Resolved	ERRORS	The connection ID of the HTTP request cannot be resolved.
Error: HTTP Request Could Not Be Assigned To The Socket	ERRORS	the HTTP request could not be forwarded to the relevant thread.
Unsupported HTTP-Request Received	ERRORS	An unsupported HTTP request was received. GET and POST requests are supported.
Error While Receiving HTTP Request: [Status] --> Exiting Listening Thread	ERRORS	An error occurred when receiving an HTTP request.
Error on Removing HTTP Connection ID From The Map!	ERRORS	An error occurred when removing a connection ID from the list. Connection IDs are removed if a connection is closed.
Removing HTTP Connection ID [ID] From The Map!	DEBUG	The connection was closed and the ID was removed from the list.
Error on Removing Non-Active HTTP Connection ID From The Map!	ERRORS	An error occurred when removing an inactive connection ID. A connection is then active if no HTTP requests have been received for 5 minutes. Such a connection should really already be removed due to the lack of a watchdog.

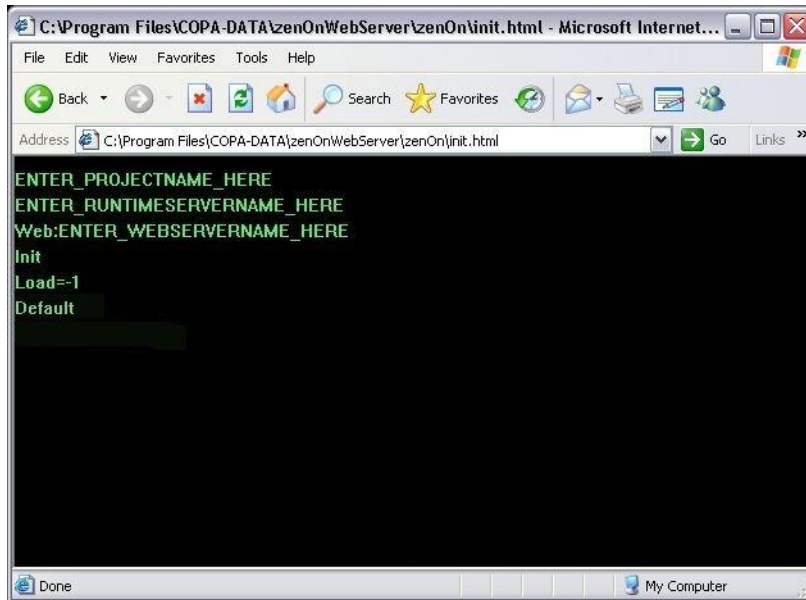
Removing Non-Active HTTP Connection ID [ID] From The Map!	DEBUG	The connection ID was removed from the list because the connection is inactive. A connection is then active if no HTTP requests have been received for 5 minutes. Such a connection should really already be removed due to the lack of a watchdog.
Error While Waiting for HTTP Connection Map Check [Status]!	ERRORS	The thread to check the connection ID established an error when waiting for the next cycle and is ended. The status code is a system error code (can be looked up in the MSDN library).
NetSrv Accept HTTP Client Socket Error On Starting HTTP Reply Thread	ERRORS	The thread to respond to HTTP requests could not be started.
NetSrv Info Accept HTTP Client IP:[IP-Adressr]:[Port] Ok	DEBUG	The HTTP connection has been accepted successfully.
NetSrv Memory Error Do Recv HTTP failed!	ERRORS	An error occurred due to too little memory being available when receiving data via HTTP tunneling.

LOG ENTRIES FROM CNSBLOCKINGSOCKETEXCEPTIONS

Level: Always ERRORS

Entry: Exception text	Description
Connect: HTTP error	The HTTP Web Server has responded to a connection ID request with an error.
Connect: ID-Data did not have the expected Format	The connection ID provided by the HTTP Web Server does not have the expected format.
Connect: Server denied HTTP ID	The HTTP Web Server has rejected the granting of a connection ID.
Connect: Error during ID-Acquisition	An error occurred when requesting a connection ID (a time-out, for example).
HttpInitialize Failed	HTTP server API could not be initialized
HttpCreateHttpHandle Failed	The HTTP request list could not be created
HttpAddUrl Failed	The server could not enter list mode

15.6 Init Runtime Error



If the browser displays an Init Runtime Error, there are several possible reasons for that:

- ▶ Runtime is not active on Runtime Server
- ▶ SERVER NAME in `Globalvars.js` (on page 16) is spelled or defined incorrectly (always use capital letters).
- ▶ PROJECT NAME in `Globalvars.js` (on page 16) is spelled or defined incorrectly (always use capital letters).
- ▶ The naming resolution between the Web Server and the Primary Server is not present in the network.
- ▶ The zenon Web Server is not started.

You may find notes on the causes of errors in the `zenNetErr.txt` file. This logs network information.

15.7 Keyboards in Firefox

If individual keyboards do not work correctly in Firefox, consider the following note:



Attention

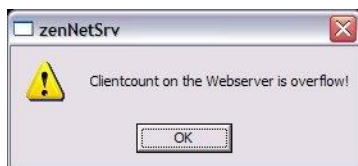
*Individually adapted screens of type **Keyboard** may under certain circumstances not work properly with the Mozilla Firefox browser.*

Reason: Mozilla Firefox loads new windows in the background without putting the focus on them. Depending on the project configuration, individually-adapted keyboard screens are closed as soon as they are no longer in focus.

Solution: Use a different browser such as Microsoft Internet Explorer or Google Chrome, or use the "Close on loss of focus" frame option".

Automatic keyboards are not affected!

15.8 Max. clients



Message to the zenon Web Client.

More clients than are licensed (on page 33) are attempting to connect to the zenon Web Server.

15.9 Behavior of Web Client in the event of a loss in connection

In the event of a loss of the connection to the Primary Server, the zenon Web Client uses the next connection configuration.

Possible reasons for a loss of connection:

- ▶ The Primary Server fails and the Primary Standby Server takes on its role.
- ▶ The Primary Server comes back and resumes its role again (= the Primary Standby Server end the connection).
- ▶ The Web Server that is currently being used fails.

The connection configurations are gone through in this sequence (from the start again once the end has been reached):

1. Web Server and Primary Server
2. Web Server and Primary Standby Server

3. Web Standby Server and Primary Server
4. Web Standby Server and Primary Standby Server

If a Web Standby Server has been configured but cannot be contacted, the following happens if the Primary Server comes back:

1. The Web Client is currently in connection configuration 2 and loses the connection because the Primary Server takes over the process management again.
2. The Web Client attempts to connect with connection configuration 3 again, but times out because the Web Standby Server cannot be reached.
3. The Web Client attempts to connect with connection configuration 4 again, but times out because the Web Standby Server cannot be reached.
4. The Web Client attempts to connect again with connection configuration 1, which also works. The web client is online again.

In the event of a failed connection, the Web Client cannot establish whether it is the Web Server (or the Web Standby Server) or the Primary Server (or Primary Standby Server) that cannot be contacted, which is why these four connection possibilities must be gone through.