
APPLICATION NOTE

AC500 WEBVISU WITH JAVA RUNTIME ENVIRONMENT

WEB VISUALIZATION WITH AC500
– UPDATE APRIL 2019



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1 Introduction

The "Java Runtime Environment" is required if you want to run software that is programmed in Java, such as the AC500 web visualization. Since the update to Java version 8, the security rules provide that Java Applets will only work if they are digitally signed.

The Java Applet that provides the AC500 web visualization, created in Automation Builder V2.0.4 or lower includes an intermediate certificate that expired on Saturday April 13th 2019. After this date the validation procedure for the certificate might fail as it cannot be validated via the "OCSD" procedure.

Depending on your browser and whether your computer is connected to the Internet, the Applet will be blocked after that date.

The following process describes how to run the Web visualization again.

Be aware that ABB has no control on the support of Java Runtime in any free available browsers. Until today (April 2019) only MS Internet Explorer does still support Java Runtime Environment.

2 Affected/Not Affected Devices

AFFECTED DEVICES	NOT AFFECTED DEVICES
<p>Computers and laptops with Java version 8 or higher and any browsers (Firefox, Internet Explorer, ...) that are connected to an AC500 V2 or AC500-eCo V2, which was loaded with</p> <ul style="list-style-type: none"> Control Builder Plus Automation Builder Version $\leq 2.1.0$ or in a profile with Automation Builder Version ≤ 2.1. <p>So even if the PLC was loaded with Automation Builder 2.1.0 or higher, in the case a profile lower than Automation Builder 2.1 was used the device is affected.</p>	<ul style="list-style-type: none"> CP600-WEB HMI panels Smart phones and tablets with Micro-Browser (Android & iPhone/iPad App) AC500 V2 that were loaded with Automation Builder $\geq 2.1.0$ in a profile Automation Builder ≥ 2.1.

Note: The new Java Applet files are included in Automation Builder as of Version 2.1.0. and in all profiles with Automation Builder as of Version 2.1. Hence, all devices with such Automation Builder Version remain unaffected.

3 Solutions

3.1 Solution Selection

There are different approaches:

1. **Upgrade your project to Automation Builder 2.1.0 or newer.**
(recommended) PLC will go to STOP.
→ see chapter 3.2 on page 4.
2. **Recompile and Download** your project with the new provided files (minml.jar and webvisu.jar). PLC will go to STOP.
→ see chapter 3.3 on page 5.
3. **Download** the (minml.jar and webvisu.jar) files to your running PLC. The PLC can stay in run mode.
(should only be used if it's not possible to stop the PLC).
→ see chapter 3.4 on page 6.
4. **Adapt your Java Runtime settings on your PC**
(most quickly and easiest, but will affect the Java security settings for the whole PC.)
→ see chapter 3.5 on page 9.

3.2 Upgrade your Project to Automation Builder Version 2.1.0 or higher

Download the latest Automation Builder Version (at least Version 2.1.0) to upgrade your project from <https://new.abb.com/plc/automationbuilder>.

In order to use an **older profile** in which you created your project (Automation Builder Version lower 2.1.0), you need to exchange the provided files (minml.jar and webvisu.jar) in the CODESYS V2.3 installation folder:

C:\Program Files\3S Software\CODSYS V2.3\Visu (see chapter 3.3.1).

Compile, Redownload and Create Boot Project

1. Open your existing project in Automation Builder 2.1.0 or newer. You can still open the project in an older profile (see above).
2. Open the PLC application.
3. Click **Project-> Clean All** and then **Project-> Compile All**.
4. Login into your PLC and download the program to the PLC.
This will temporarily stop the PLC (display shows "STOP").
5. Afterwards, create a boot project on the PLC.
Click **Online->Login** and then **Online-> Create boot project**.
6. Click **Online> Start** to restart the project.
7. Open the webvisu using your browser and verify that the web visualization is working correctly.

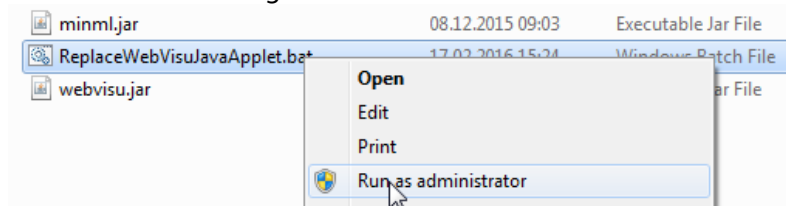
3.3 Replace Java Applets with full download

This approach involves replacing the Java applets with a newer version and redownload the project to the controller. This will stop the PLC program.

3.3.1 Copy the supplied files to your IEC61131 programming installation folder

This can be done either by using a batch file or by copying the files manually.

If you want to use the supplied batch file, execute the file "ReplaceWebVisuJavaApplet.bat" with administrative rights.



If you want to copy the files manually, proceed as follows:

1. Locate the IEC61131 programming installation directory:

On Windows 32-bit versions usually following path:

C:\Program Files\3S Software\CoDeSys V2.3\Visu

On Windows 64-bit versions usually following path:

C:\Program Files (x86)\3S Software\CoDeSys V2.3\Visu

2. Copy the supplied files **webvisu.jar**, **minml.jar** in the appropriate directory from step 1. and overwrite existing files if necessary.

3.3.2 Compile, Redownload and create boot project

1. Open your existing project in Control Builder Plus or Automation Builder.
2. Open the PLC application
3. Click **Project-> Clean All** and then **Project-> Compile All**.
4. Login into your PLC and download the program to the PLC.
This will temporarily stop the PLC (display shows "STOP").
5. Afterwards, create a boot project on the PLC.
Click **Online->Login** and then **Online-> Create boot project**.
6. Click **Online> Start** to restart the project.
7. Open the webvisu using your browser and verify that the web visualization is working correctly.

3.4 Replace Java Applets on a running PLC

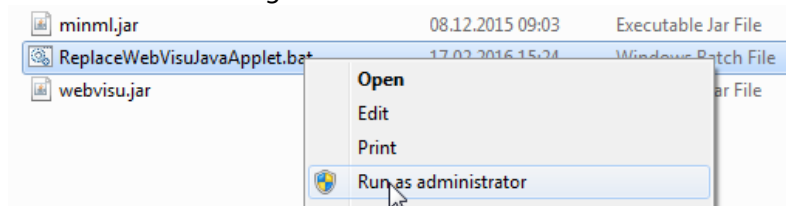
This approach involves replacing the Java applets with a newer version and transfers new versions of minml.jar and webvisu.jar to a running PLC.

This can be done using Automation Builder and PLC browser commands or also using FTP server.

3.4.1 Copy the supplied files to your IEC61131 programming installation folder

This can be done either by using a batch file or by copying the files manually.

If you want to use the supplied batch file, execute the file “ReplaceWebVisuJavaApplet.bat” with administrative rights.



If you want to copy the files manually, proceed as follows:

1. Locate the IEC61131 programming installation directory:

On Windows 32-bit versions usually following path:

C:\Program Files\3S Software\CoDeSys V2.3\Visu

On Windows 64-bit versions usually following path:

C:\Program Files (x86)\3S Software\CoDeSys V2.3\Visu

2. Copy the supplied files **webvisu.jar**, **minml.jar** in the appropriate directory from step 1. and overwrite existing files if necessary.

3.4.2 Update a running project via Automation Builder and PLC Browser

This is only recommended if it is not possible to stop the PLC and update like described in chapter 3.2.

This method is not working with AC500 V2 PLC Firmware less than FW2.4.0

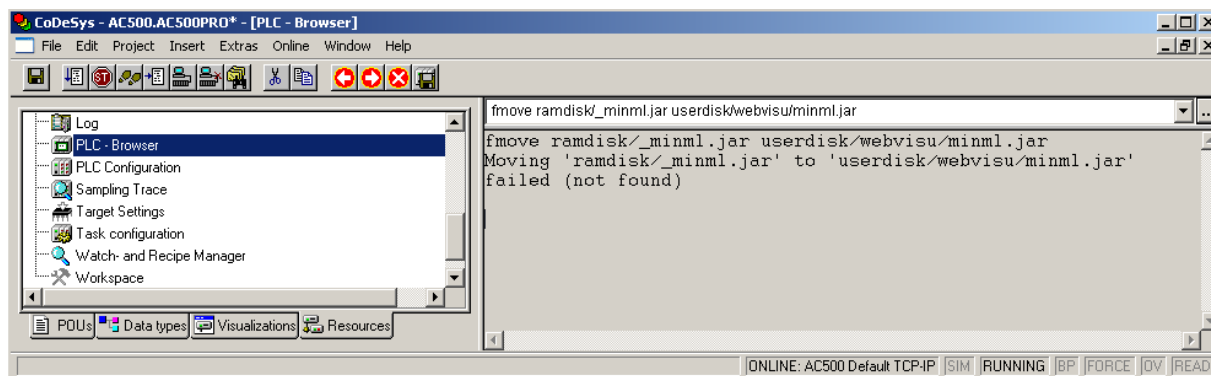
1. Rename the supplied file “minml.jar” to “_minml.jar”.
2. Rename the supplied file “webvisu.jar” to “_webvisu.jar”.
3. Open the PLC application with Automation Builder or Control Builder Plus.
4. Go online and download the file to the PLC: **Online -> Write file to PLC: _minml.jar**
5. Wait for at least 30 seconds.
Online -> Write file to PLC: _webvisu.jar
6. Wait for at least 30 seconds.
7. For using PLC Browsers commands, move the files from RAM Disk to the PLC:
Switch to the Resources tab, open the PLC Browser and type the following commands:

“fmove ramdisk/_minml.jar userdisk/webvisu/minml.jar”

Two additional lines will appear with the following text:

“Moving 'ramdisk/_minml.jar' to 'userdisk/webvisu/minml.jar'
failed (success)”

8. Wait for at least 30 seconds.

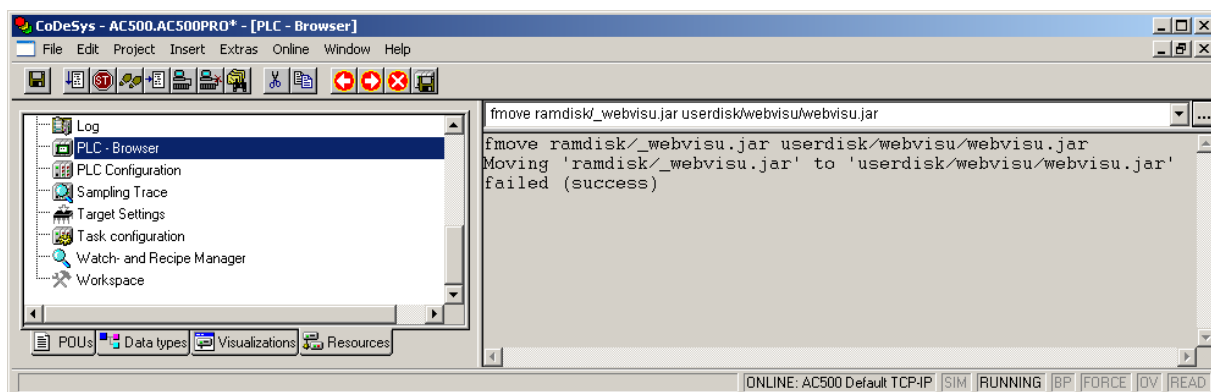


“fmove ramdisk/_webvisu.jar userdisk/webvisu/webvisu.jar”

Two additional lines will appear with the following text:

“Moving 'ramdisk/_webvisu.jar' to 'userdisk/webvisu/webvisu.jar'
failed (success)”

9. Wait for at least 30 seconds



10. Check if the move command was successful by comparing the file size of the new copied files:

“fdir userdisk/webvisu”

```

PLC - Browser
fdi userdisk/webvisu

fdi userdisk/webvisu

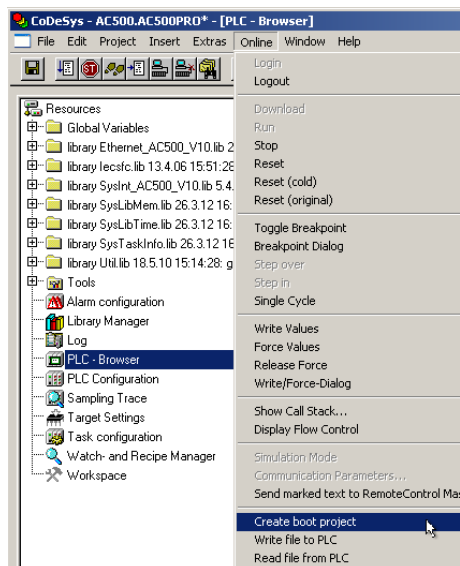
Volume 2nd RAM-DISK (userdisk)
01.01.1980 00:00 <DIR>      .
01.01.1980 00:00 <DIR>      ..
02.01.1980 00:30           58 FILE_MAP.XML
02.01.1980 00:30          113 APPLIVIS.TXT
02.01.1980 00:30         1,529 VISU_INI.XML
02.01.1980 00:30          956 ALM_INI.XML
02.01.1980 00:30         21,332 MINML.JAR
02.01.1980 00:30        375,703 WEBVISU.JAR
02.01.1980 00:30         1,205 WEBVISU.HIM
02.01.1980 00:30         1,682 PLC_VISU.XML
02.01.1980 00:30           7 APPLIEND.TXT
9 file(s) 402,585 Bytes
2 dir(s), 1,011,712 of 1,417,216 Bytes free

done.

```

MINML.JAR	must be of	21.332
WEBVISU.JAR	must be of	375,703

11. Create a boot project to save the copied files: **Online -> Create boot project.**



3.4.3 Update a running project via FTP Server

If the FTP server is configured in a running PLC it is possible to update the Java applets file via FTP file transfer.

1. Login to PLC's FTP server.
2. Upload the supplied minml.jar and webvisu.jar files to the remote folder **userdisk/web-visu/** and replace the existing ones.
3. With Automation Builder or Control Builder Plus open the PLC application.
4. Login to the PLC and create a boot project to save the copied files:
Online -> Create boot project.

Note: After the next reboot, although a new webvisu.jar and minml.jar file is available, it will be still possible to login without download/online change.

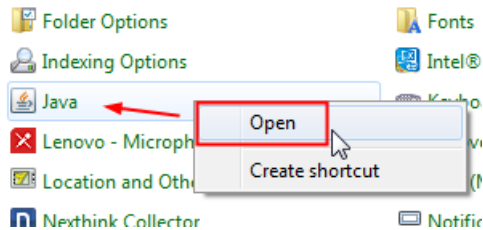
3.5 Adapt your Java settings on the PC

This method provides an easy way of getting the webvisu accessible again, without changing the PLC. However, be aware that the Java certification check method and the security settings are changed for the whole PC!

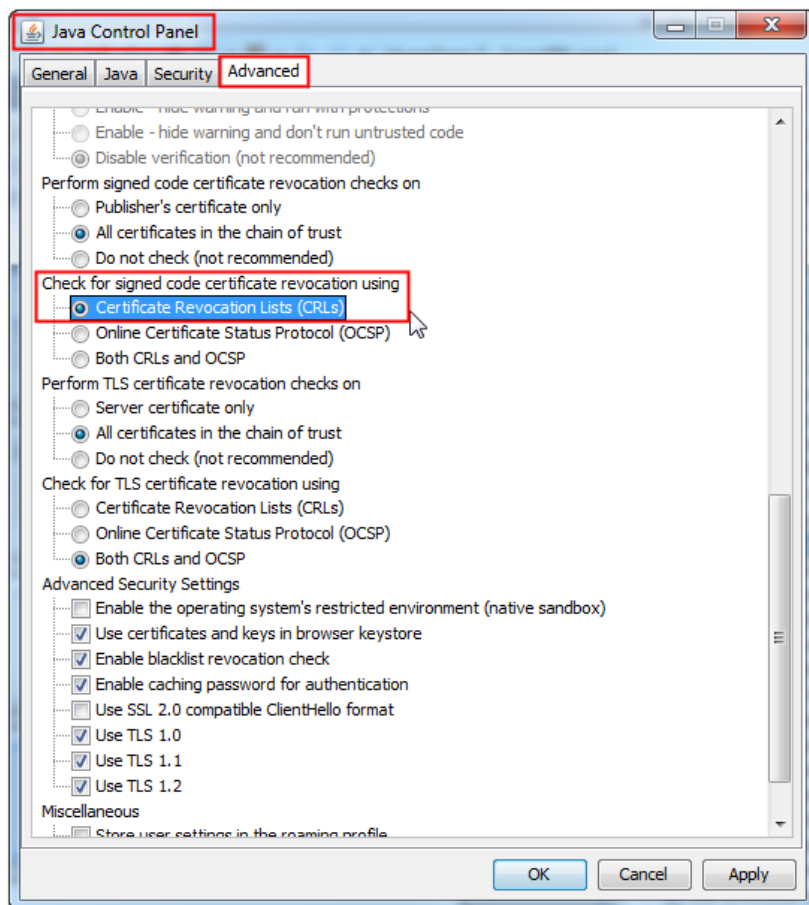
Note: This option must only be implemented, if it is compliant with all applicable local security regulations. The changed security of the affected PC regarding the certification check method has to be compensated by appropriate actions.

3.5.1 Change the “Check for signed code certificate revocation”

1. Open the Control Panel on your PC and open the **Java Control Panel** by right click on the Java symbol:



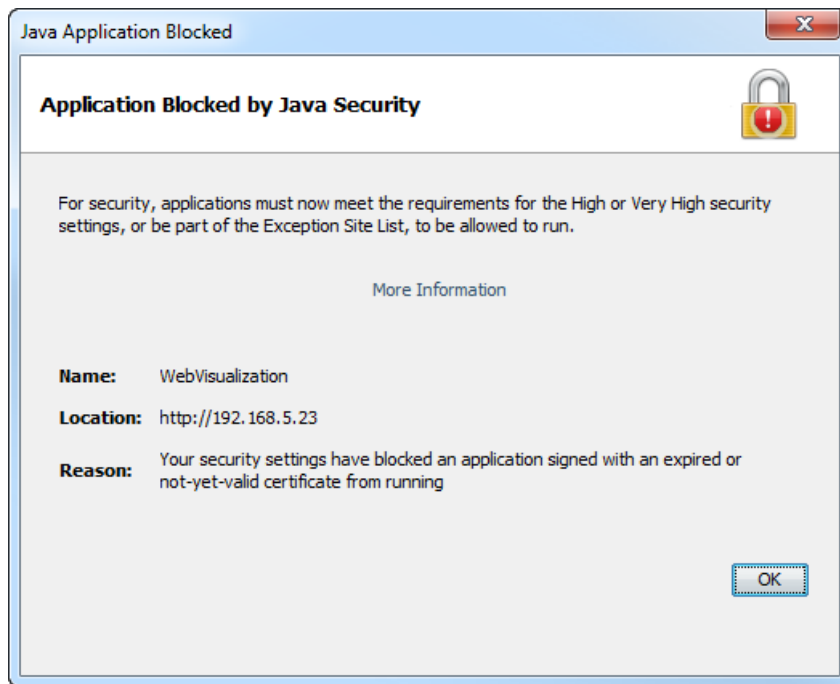
2. Switch to the “Advanced” tab and scroll down to the section “Check for signed code certificate revocation using”. Select “Certificate Revocation Lists (CRLs)” instead of “Both CRLs and OCSP”.



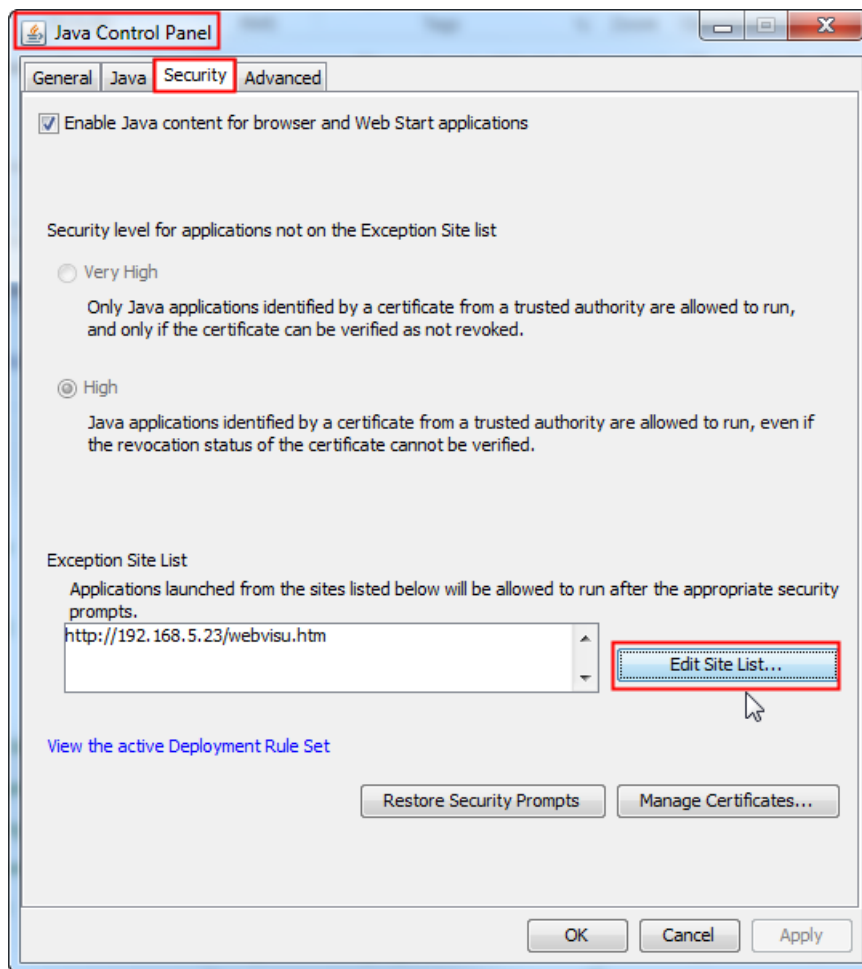
3. Reopen your browser and accept the upcoming warning.
4. Reopen your browser **again**.
5. Depending on your security settings for Java you might receive an error message “Application Blocked by Java Security”. In this case continue with the next step.

3.5.2 Add your PLC webserver site to the “Exception Site List”

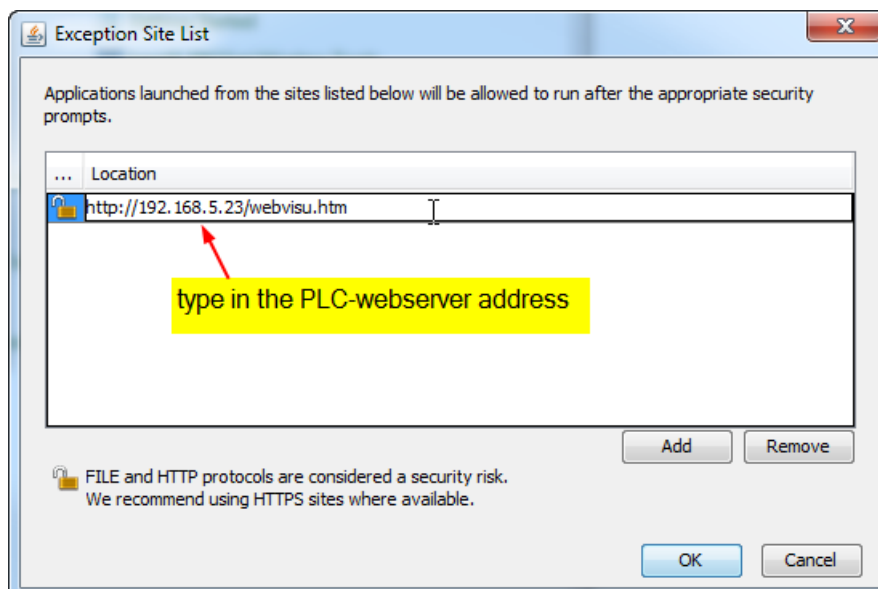
If the error message “**Application Blocked by Java Security**” appears you can add the PLC webserver to your trusted sites list.



1. Open the “Java Control Panel” and switch to the “Security” tab:



2. Click the button **Edit Site List** to add your PLC webserver to the **Exception Site List**.



3. Confirm the warning message to add the AC500 website without https.
See the example in screenshot: `http://192.168.5.23/webvisu.htm`

ABB Automation Products GmbH
Eppelheimer Straße 82
69123 Heidelberg, Germany
Phone: +49 62 21 701 1444
Fax : +49 62 21 701 1382
E-Mail: plc.support@de.abb.com
www.abb.com/plc

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