

How to Apply Updates against the Vulnerabilities CVE-2019-1181 / 1182 CVE-2019-1222 ..1226 (DejaBlue / Seven Monkeys)

Version 1.3 2019-10-21

This document describes the procedure how to apply the Microsoft Updates to R&S devices running Windows 7 SP1 , Windows 8 embedded or Windows 10 operating systems in order to harden against the following exploits:

CVE-2019-1181
CVE-2019-1182
CVE-2019-1222
CVE-2019-1223
CVE-2019-1224
CVE-2019-1225
CVE-2019-1226

Please be aware, that only Windows 7 SP1 , Windows 8 embedded and Windows 10 instruments are affected. Windows XP or other instruments are not affected.

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1 Download Updates to USB Flash Drive

Operating System	Update	Download Link
Windows Embedded 7 32-bit SP1	KB4512486	http://download.windowsupdate.com/d/msdownload/update/software/secu/2019/08/windows6.1-kb4512486-x86_4c88f71af8e9d07e5fb141d7aed0bcc7f532781e.msu
	KB4490628	http://download.windowsupdate.com/c/msdownload/update/software/secu/2019/03/windows6.1-kb4490628-x86_3cdb3df55b9cd7ef7fcb24fc4e237ea287ad0992.msu
	KB4474419	http://download.windowsupdate.com/c/msdownload/update/software/secu/2019/08/windows6.1-kb4474419-v2-x86_6461a8e4e61dddd4426f4755c1f1a85aa86fc355.msu
	KB3138612	http://download.windowsupdate.com/d/msdownload/update/software/updt/2016/02/windows6.1-kb3138612-x86_6e90531daffc13bc4e92ecea890e501e807c621f.msu
Windows Embedded 7 64-bit SP1	KB4512486	http://download.windowsupdate.com/d/msdownload/update/software/secu/2019/08/windows6.1-kb4512486-x64_547fe7e4099c11d494c95d1f72e62a693cd70441.msu
	KB4490628	http://download.windowsupdate.com/c/msdownload/update/software/secu/2019/03/windows6.1-kb4490628-x64_d3de52d6987f7c8bdc2c015dca69eac96047c76e.msu
	KB4474419	http://download.windowsupdate.com/d/msdownload/update/software/secu/2019/08/windows6.1-kb4474419-v2-x64_160414186799f7a367cc6083da216cb49aa66e04.msu
	KB3138612	http://download.windowsupdate.com/d/msdownload/update/software/updt/2016/02/windows6.1-kb3138612-x64_f7b1de8ea7cf8faf57b0138c4068d2e899e2b266.msu
Windows 8 embedded standard	KB4512482	http://download.windowsupdate.com/d/msdownload/update/software/secu/2019/08/windows8-rt-kb4512482-x86_81063c48608d0952b20d3365c9d1077f15c11c22.msu
	KB4504418	http://download.windowsupdate.com/c/msdownload/update/software/secu/2019/07/windows8-rt-kb4504418-x86_d86705f39e99ac2591d6f6e5a76045852a6bf153.msu
Windows 10 1607 32-bit	KB4512495	http://download.windowsupdate.com/c/msdownload/update/software/updt/2019/08/windows10.0-kb4512495-x86_dda3bd29642d369653c592e560233288b5f638c1.msu
	KB4509091	http://download.windowsupdate.com/c/msdownload/update/software/secu/2019/07/windows10.0-kb4509091-x86_836ee31b8a38a3cf15e9b188d4ddd1a5d69a079f.msu
Windows 10 1607 64-bit	KB4512495	http://download.windowsupdate.com/c/msdownload/update/software/updt/2019/08/windows10.0-kb4512495-x64_7d7de063a7001bf5e925d64e976a32cbcc0c9470.msu
	KB4509091	http://download.windowsupdate.com/c/msdownload/update/software/secu/2019/07/windows10.0-kb4509091-x64_1e1039047044a1f632562cd65df3ce6b77804018.msu

2 Check Applicable Instruments

2.1 Instruments, where the updates have been tested and released

The following table shows an overview of applicable instruments:

Device	Windows Embedded 7 32-bit	Windows Embedded 7 64-bit	Windows 8 embedded standard	Windows 10 1607 32-bit	Windows 10 1607 64-bit
CMA		X (IPS2 or later)* ¹			
CMW270, CMW280, CMW290, CMW500, CMWC, CMW-CU		X			
UPV, UPP	X				
DVMS	X				
ETL			X		
FPS		X			
FPL					X
FSW, FSWG, FSWP, ESW, FSWT		X			X
FSV, FSVA, FSVR, ESR, ESRP (FMR9, FMR11)	X			X	
FSV3000, FSVA3000					X
ZVA	X				
ZNA					X
ZNB	X	X			X
ZND, ZNBT		X			X
ZNL					X
RTP					X
RTO2000		X			X
RTE, RTO1000		X			
VTS, VTE, VTC	X				

*1) On first generation of CMA with IPS1+ controller board the updates cannot be installed. To check which controller your CMA is using please press the Hardware Key "setup" and navigate to the tab "SW-/HW-Equipment":



In case you are using a CMA with IPS1+ controller, please contact service or your local sales representative to obtain an upgrade.

2.2 Upgrade kits to Windows 10

Instruments, where upgrade kits to Windows 10 are recommended:

Device
FSV, FSVA,ESR, ESRP
ZNB , ZND, ZNBT
RTO2000

Please contact the R&S Service Center.

2.3 Other instruments not listed above

Please contact the R&S Customer Support.

3 Boot your device with administrator privileges

Boot your R&S device in an account with administrator privileges. Please refer to the manual of the device for details.

Note: The predefined user “instrument” is a suitable administrator account.

4 Determine the operating system

Some instruments are available with different operating system variants. During startup of the instrument, it shows "Windows XP (Embedded)", "Windows Embedded Standard 7" or "Windows 10".

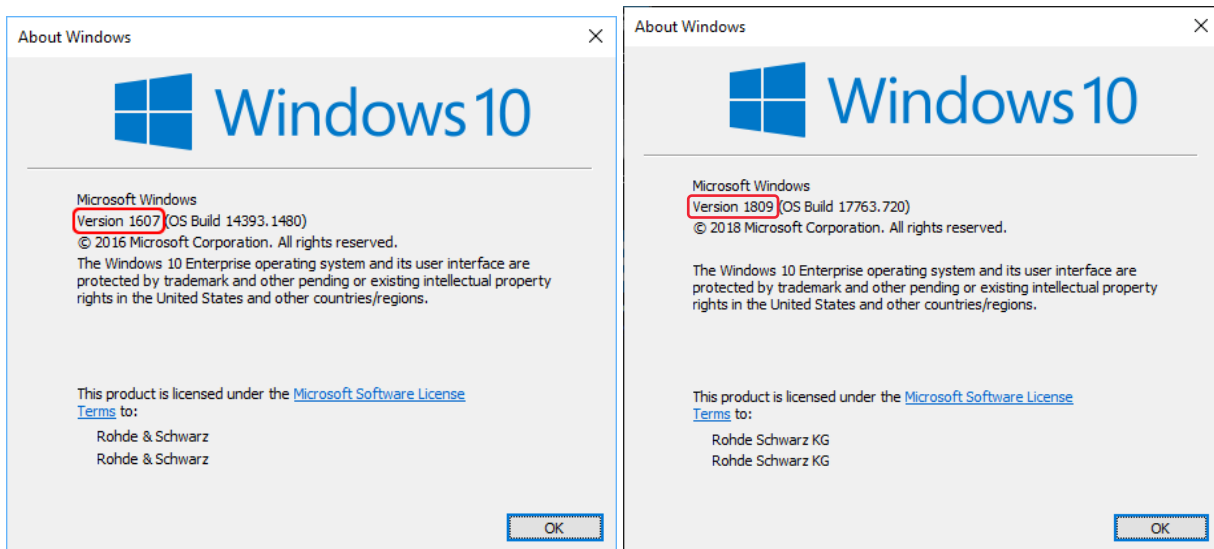
For Windows 7 it is necessary to check if a 32 or 64 Bit version is used. This can be checked under "Control Panel" -> "System and Security" -> "System"

The following is an example for Windows 7 with 64-bit:

System	
Rating:	System rating is not available
Processor:	Intel(R) Core(TM)2 Duo CPU T9400 @ 2.53GHz 2.53 GHz
Installed memory (RAM):	7,93 GB
System type:	64-bit Operating System
Pen and Touch:	No Pen or Touch Input is available for this Display

On Windows 10 devices determinate the specific version of Windows 10 by hitting the Windows-Key (⊞) and "R" at the same time. Type "winver" into the Run dialog and press <ENTER>.

You should see the Windows Version in the About Windows Dialog:



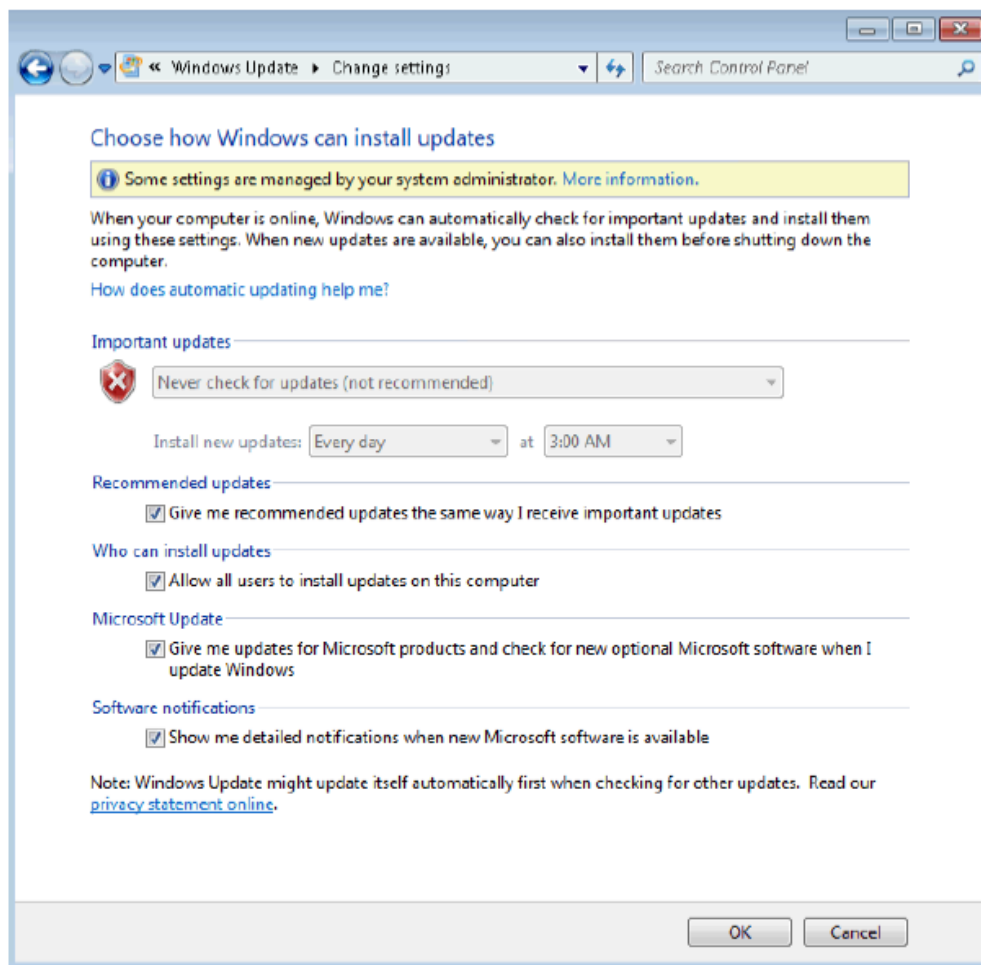
5 Windows 7

5.1 Windows Update

For installation of the Updates the Windows update service needs to be enabled.

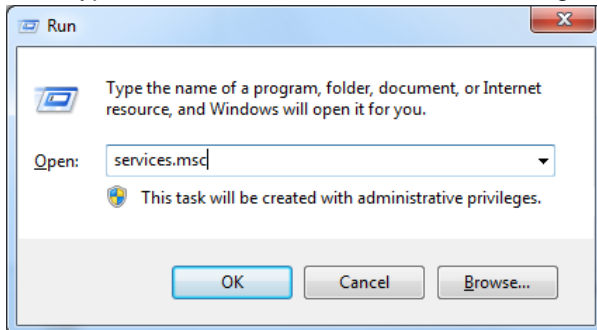
Note: Enabling of the Windows update service does **not yet** install any security updates.

The installation of the Updates might be blocked because of the Windows Update settings of the Windows embedded environment of the devices: See the screenshot below: Important updates set to “Never check for updates”.



5.2 Enable Windows Update Service

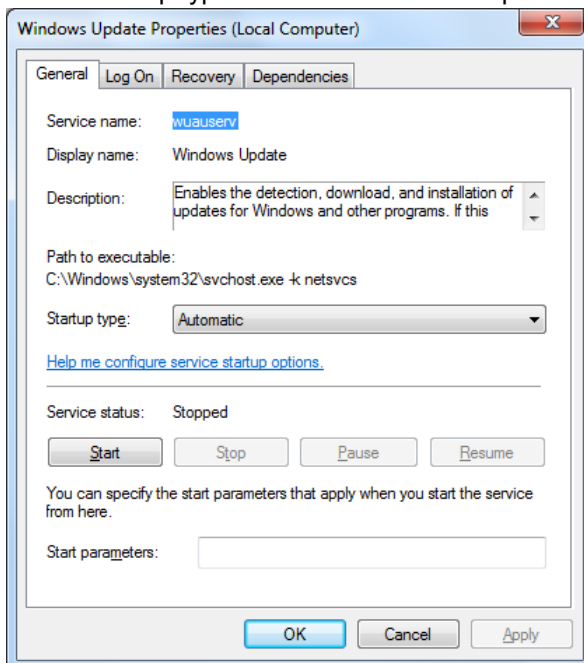
- To open the "Services" Management Console press the Windows-Key (⊞) and "R" at the same time, type "services.msc" into the Run dialog and press <ENTER>.



- Scroll down to the line "Windows Update" and verify that the service is started

Service Name	Description	Status	Startup Type	Log On As
Windows Process Activation Service	The Windows...	Started	Manual	Local System...
Windows Remote Management (WS-Management)	Windows R...	Manual	Manual	Network S...
Windows Search	Provides co...	Disabled	Disabled	Local Syste...
Windows Time	Maintains d...	Manual	Manual	Local Service
Windows Update	Enables the ...	Started	Automatic	Local Syste...
WinHTTP Web Proxy Auto-Discovery Service	WinHTTP i...	Manual	Manual	Local Service
WMI Performance Adapter	Provides pe...	Manual	Manual	Local Syste...

- If the service is not started double click on the line "Windows Update"
- Select Startup type: "Automatic" and then press the "Apply" button



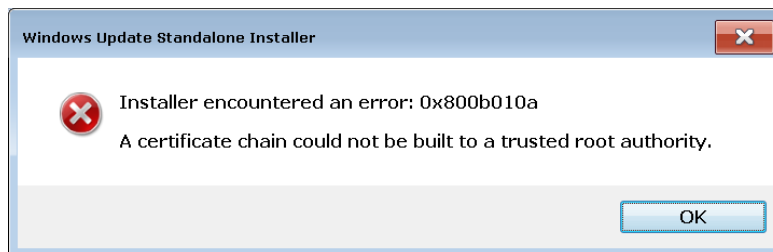
- Start the service by click on the "Start" button.
- Close the dialog by pressing the OK button.

5.3 Install Update(s) for Windows 7

Connect a keyboard, mouse and the USB flash drive to the R&S device, use Windows Explorer to navigate to the USB Flash Drive and install the Updates in this order:

- KB4490628 (Servicing Stack Update)
- KB4474419 (SHA-2 code signing support update)
- Only for CMA, CMW270, CMW280, CMW290, CMW500, CMWC, CMW-CU:
KB3138612 (Windows Update Client for Windows 7)
At least after installation of this update, a reboot is required.
- KB4512486 (Security-only Update August 13, 2019)

If one or more Root Certification Certificates, used to sign the updates, are expired or not present at all, the installation of KB4512486 will fail with the following error message



In such a case the trusted root certification authorities must be updated, before reattempting to install KB4512486. Please see Appendix A for details.

Note: Not all instruments require all update packages. This is the maximum possible. You may get a message that a package is already installed.

5.4 Verify the Installation

After installation of the Update(s) on the R&S device a final verification is possible via the “Installed Updates” Dialog in Windows 7.

This can be found in “Control Panel”-> “Programs and features” -> “Installed Updates”

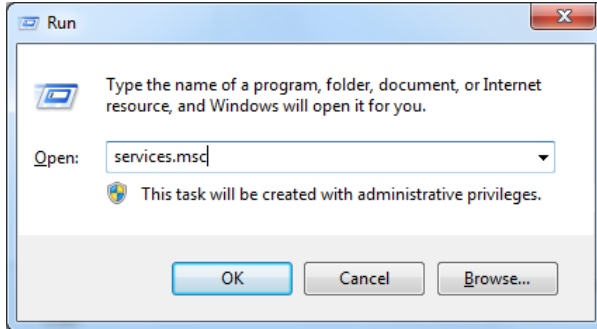
Check if all necessary Updates are installed.

Note: Please be aware that coming monthly rollups may lead to the situation, that the KB is no longer listed. Upcoming monthly rollups may already include previous Updates.

5.5 Disable Windows Update Service

Restore the default setting of the Windows Update Service:

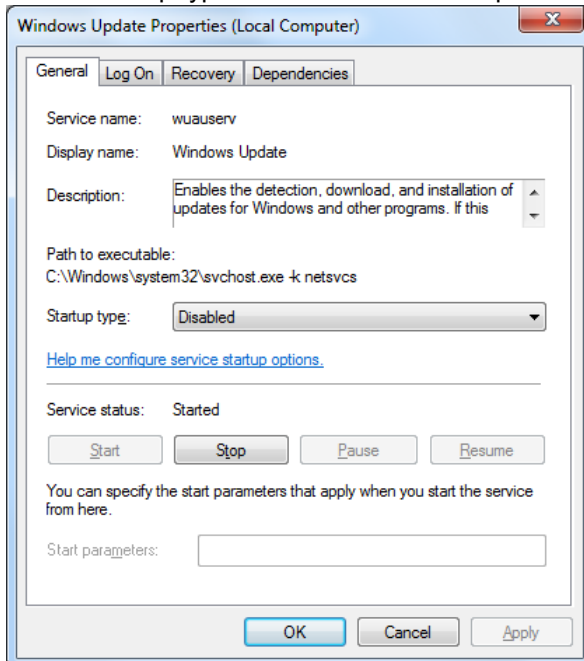
- To open the "Services" Management Console press the Windows-Key (⊞) and "R" at the same time, type "services.msc" into the Run dialog and press <ENTER>.



- Scroll down to the line "Windows Update" and double click on it

Windows Remote Management (WS-Management)	Windows R...	Started	Manual	Local System...
Windows Search	Provides co...	Disabled	Manual	Local System...
Windows Time	Maintains d...	Manual	Manual	Local Service
Windows Update	Enables the ...	Started	Automatic	Local System...
WinHTTP Web Proxy Auto-Discovery Service	WinHTTP i...	Manual	Manual	Local Service
WMI Performance Adapter	Provides pe...	Manual	Manual	Local System...

- Select Startup type: "Disabled" and then press the "Apply" button



- Stop the service by click on the "Stop" button.
- Close the dialog by pressing the OK button.

6 Windows Embedded 8 Standard

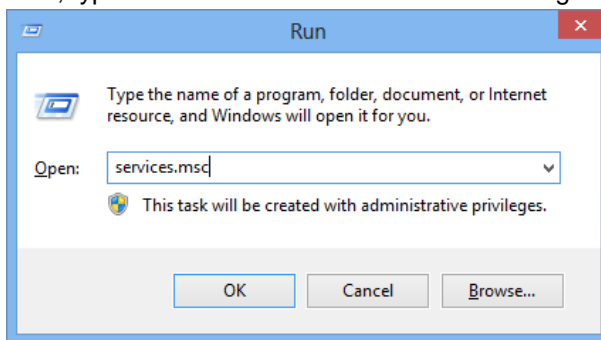
6.1 Windows Update

For installation of the Updates the Windows update service needs to be enabled.

Windows Embedded 8 Standard might try to download all available updates from a WSUS server. Please disconnect the device from the network in order to assure that only the relevant updates listed in 6.3 are installed.

6.2 Enable Windows Update Service

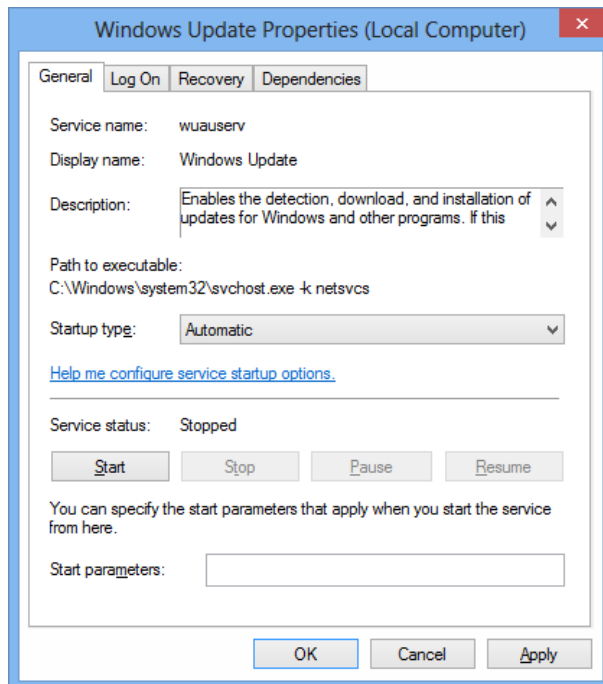
- To open the "Services" Management Console press the Windows-Key (⊞) and "R" at the same time, type "services.msc" into the Run dialog and press <ENTER>.



- Scroll down to the line "Windows Update" and verify that the service is started.

Windows Store Service (WSService)	Provides inf...	Manual (Trig...	Local Service
Windows Time	Maintains d...	Manual (Trig...	Local Service
Windows Update	Enables the ...	Running Automatic (D...	Local System
WinHTTP Web Proxy Auto-Discovery Service	WinHTTP i...	Running Manual	Local Service
Wired AutoConfig	The Wired ...	Manual	Local System

- If the service is not running double click on the line “Windows Update”.
Select Startup type: “Automatic” and then press the “Apply” button.



Start the service by click on the “Start” button.

Close the dialog by pressing the OK button.

6.3 Install the Update(s)

Connect a keyboard, mouse and the USB flash drive to the R&S device, use Windows Explorer to navigate to the USB Flash Drive and install the Updates in this order:

1. KB4504418 (Servicing Stack Update)
2. KB4512482 (Security-only Update, August 2019)

Note: The updates must be installed in the above order.

6.4 Verify the Installation

After installation of the Update(s) on the R&S device a final verification is possible via the “Installed Updates” Dialog in Windows Embedded 8 Standard.

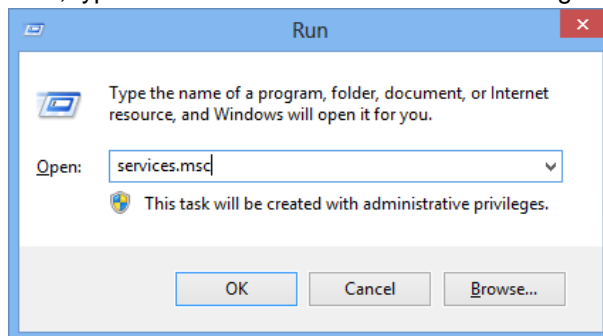
This can be found in “Control Panel” -> “System and Security” -> “Windows Update” -> “Installed Updates”.

Check if all necessary Updates are installed.

6.5 Disable Windows Update Service

Restore the default setting of the Windows Update Service:

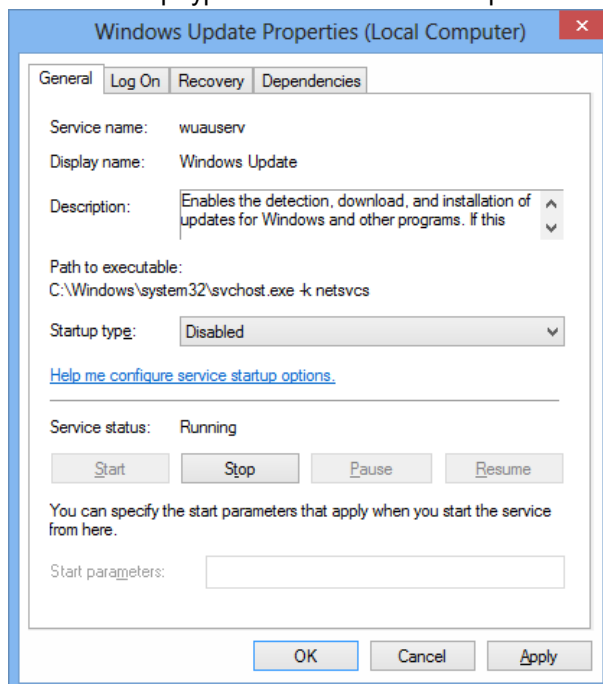
- To open the "Services" Management Console press the Windows-Key (⊞) and "R" at the same time, type "services.msc" into the Run dialog and press <ENTER>.



- Scroll down to the line "Windows Update" and verify that the service is started.

Windows Store Service (WSService)	Provides inf...	Manual (Trig...	Local Service
Windows Time	Maintains d...	Manual (Trig...	Local Service
Windows Update	Enables the ...	Running	Automatic (D...
WinHTTP Web Proxy Auto-Discovery Service	WinHTTP i...	Running	Manual
Wired AutoConfig	The Wired ...	Manual	Local System

- Select Startup type: "Disabled" and then press the "Apply" button.



- Stop the service by click on the "Stop" button.
- Close the dialog by pressing the OK button.

7 Windows 10

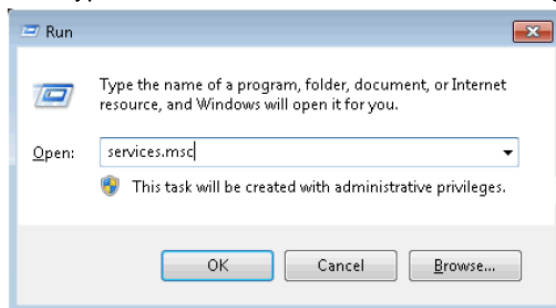
7.1 Windows Update

For installation of the Updates the Windows update service needs to be enabled.

Windows 10 might try to download all available updates from a WSUS server. Please disconnect the device from the network in order to assure that only the relevant updates listed above are installed.

7.2 Enable Windows Update Service

- To open the "Services" Management Console press the Windows-Key (⊞) and "R" at the same time, type "services.msc" into the Run dialog and press <ENTER>.

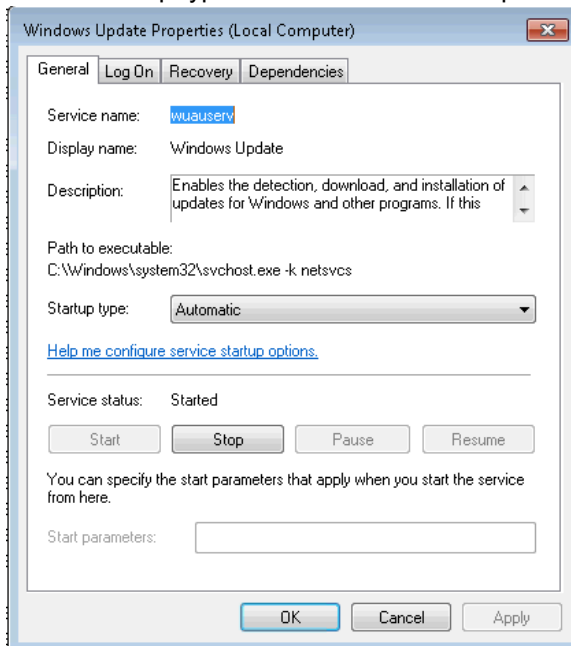


- Scroll down to the line "Windows Update" and verify that the service is started.

Windows Remote Management (ws-Management)	Windows R...	Manual	Network S...
Windows Search	Provides co...	Disabled	Local Syste...
Windows Time	Maintains d...	Manual	Local Service
Windows Update	Enables the ...	Started	Automatic
WinHTTP Web Proxy Auto-Discovery Service	WinHTTP i...	Started	Manual
WMI Performance Adapter	Provides pe...	Manual	Local Syste...
Workstation	Creates and ...	Started	Automatic

If the service is not started double click on the line "Windows Update"

- Select Startup type: “Automatic” and then press the key “Apply”



- Start the service by click on the “Start” button

7.3 Install the Update(s)

Connect a keyboard, mouse and the USB flash drive to the R&S device, use Windows Explorer to navigate to the USB Flash Drive and install the Updates in this order:

1. KB4509091 (SSU - Servicing Stack Update)
2. KB4512495 (Cumulative Update for Windows 10 Version 1607)

Note: The updates must be installed in the above order.

7.4 Verify the Installation

After installation of the Update(s) on the R&S device a final verification is possible via the “Installed Updates” Dialog in Windows 10.

This can be found in “Windows Settings”-> “Update & Security” -> “Installed Updates” -> View Update history

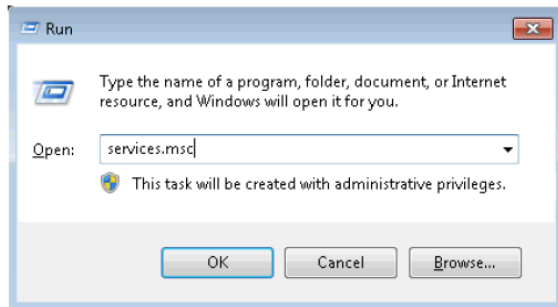
Check if all necessary Updates are installed.

Note: Please be aware that coming monthly rollups may lead to the situation, that the KB is no longer listed. Upcoming monthly rollups may already include previous Updates.

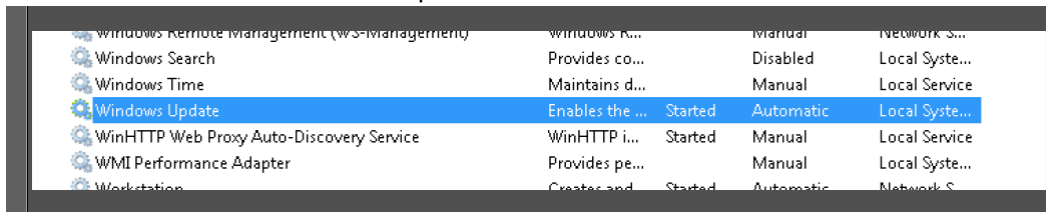
7.5 Disable Windows Update Service

Restore the default setting of the Windows Update Service:

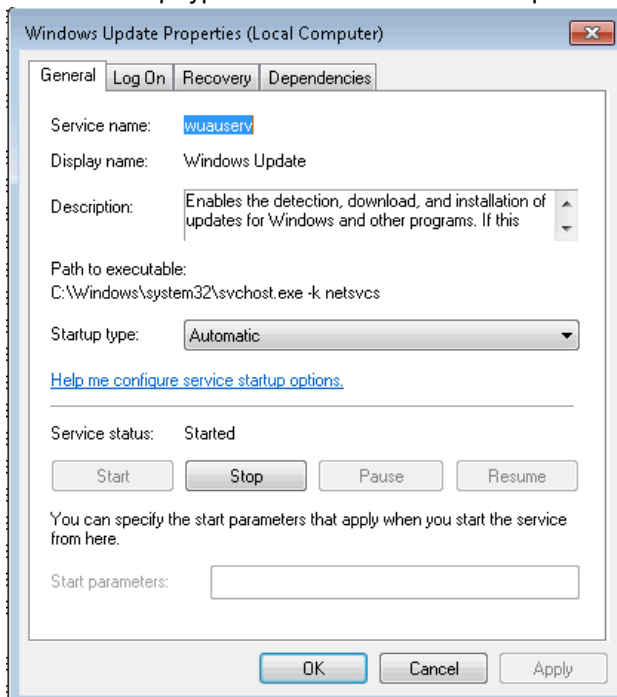
- To open the "Services" Management Console press the Windows-Key (⊞) and "R" at the same time, type "services.msc" into the Run dialog and press <ENTER>.



- Scroll down to the line "Windows Update" and double click on it.



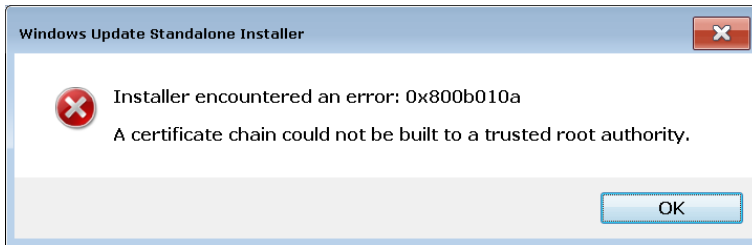
- Select Startup type: "Deactivated" and then press the key "Apply"



- Stop the service by click on the "Stop" button

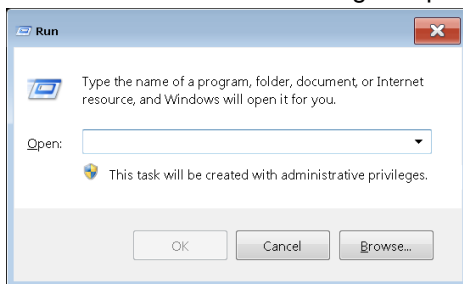
8 Appendix A

This Appendix describes the necessary steps if one or more Root Certification Certificates, used to sign the updates, are expired or not present at all.

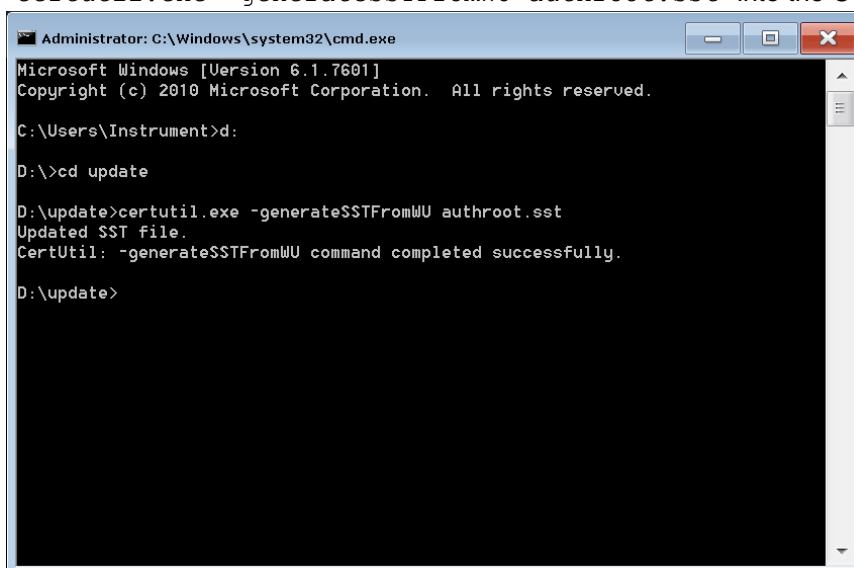


8.1 Download Trusted Root Certification Authority Update to USB Flash Drive (on PC with internet Connection)

- To open the Command Prompt press the Windows-Key (⊞) and "R" at the same time, type "cmd.exe" into the Run dialog and press <ENTER>.

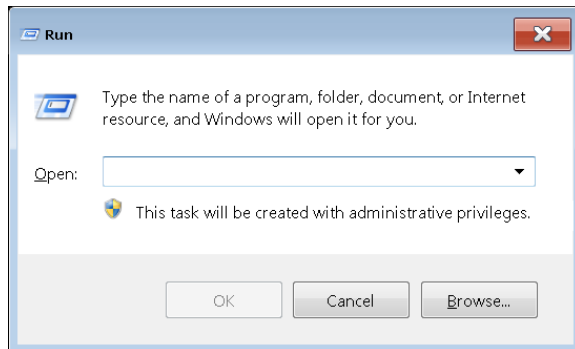


- Type "<VolumeLetter>:" and subsequently "cd <FolderPath>:" into the Command Prompt, to navigate to the volume and it's subfolder, where the update shall be stored. To generate the Trusted Root Certification update, type "certutil.exe -generateSSTFromWU authroot.sst" into the Command Prompt.

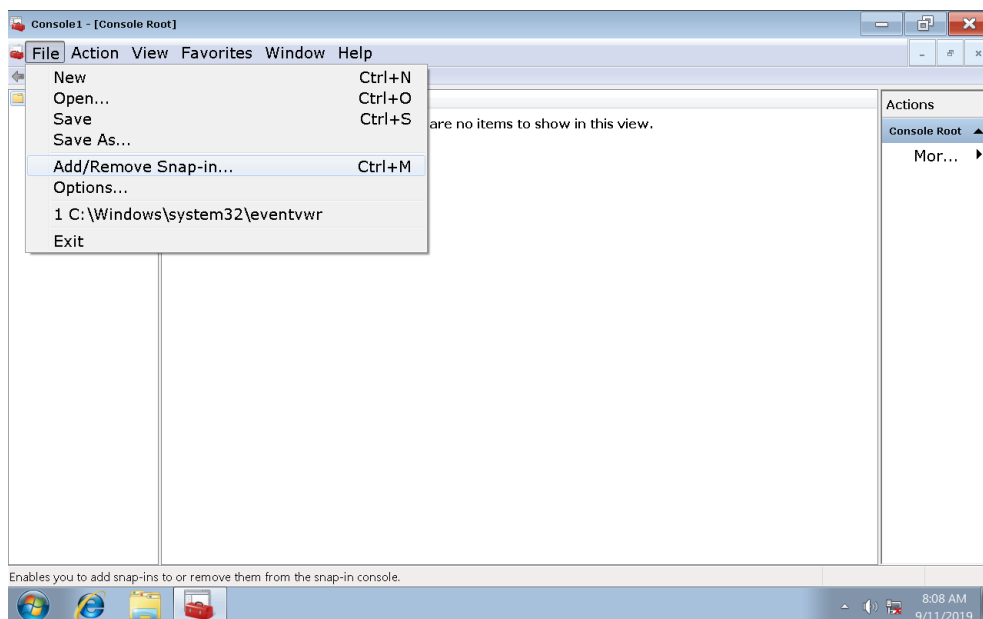


8.2 Install Trusted Root Certification Authority Update for Windows 7 (on target instrument)

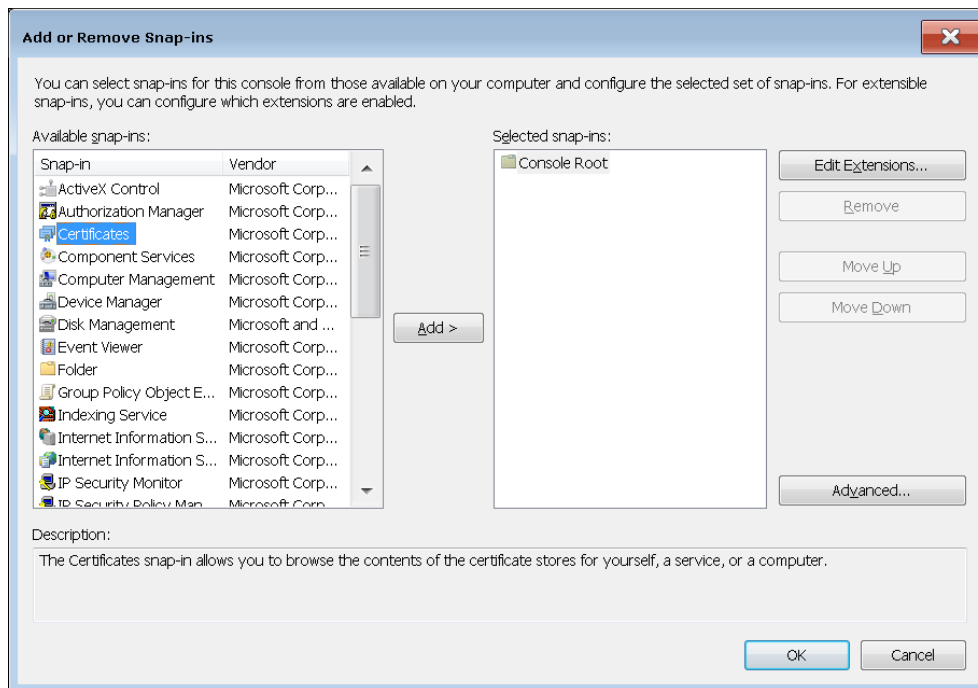
- To open a Management Console press the Windows-Key (⊞) and "R" at the same time, type "mmc.exe" into the Run dialog and press <ENTER>.



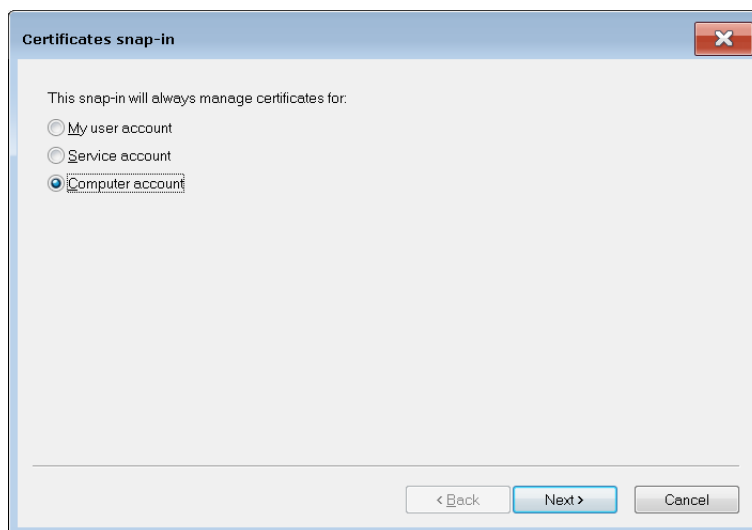
- Select "File" and subsequently "Add/Remove Snap-In..." from the dropdown menu.



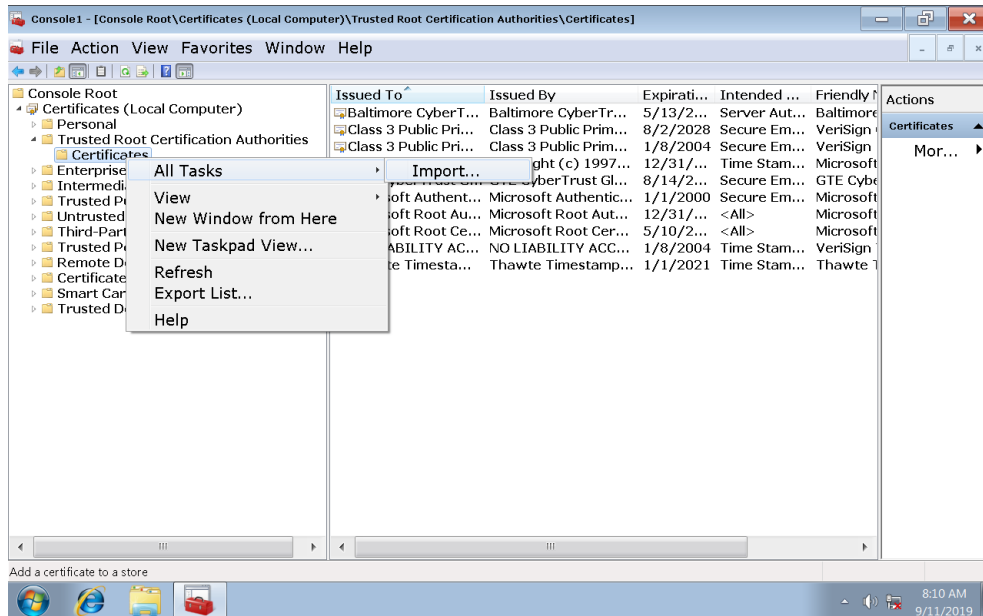
- Select "Certificates" from the available snap-ins and click the "Add" button.



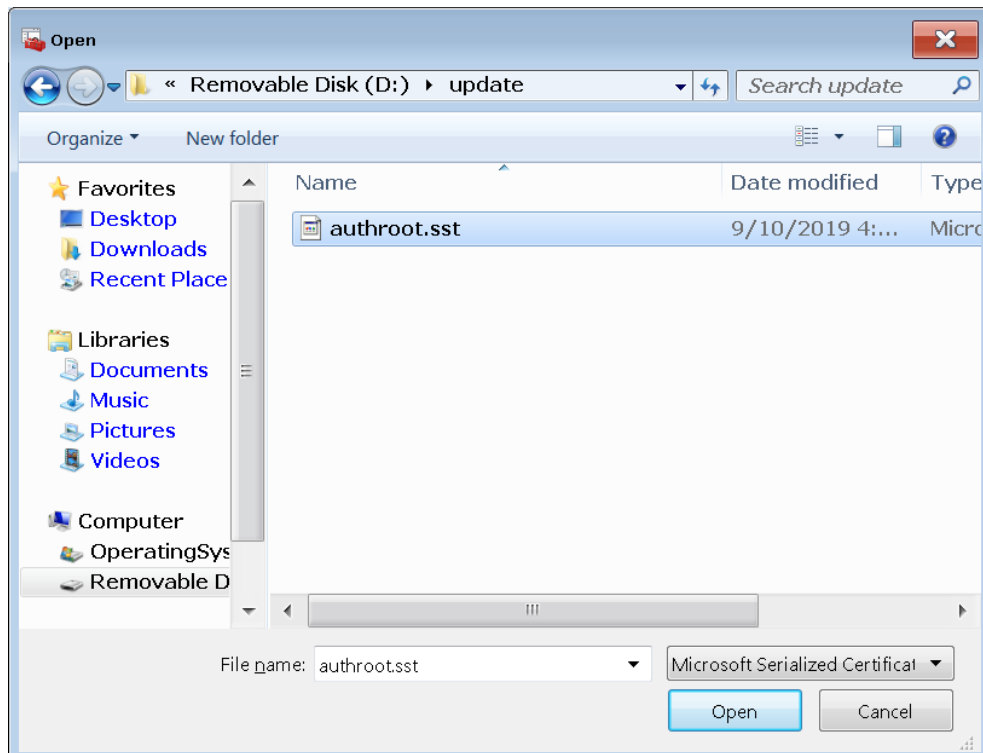
- Enable the "Computer account" radio button.



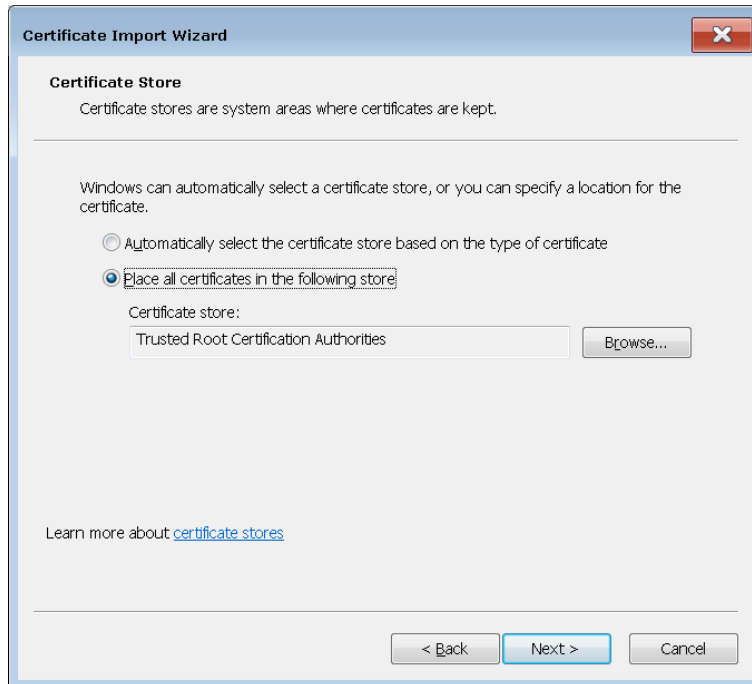
- Confirm any remaining dialogs and navigate to the "Console Root\Certificates (Local Computer)\Certificates" folder in the "Certificates" Management Console.
Mark the "Certificates" folder, click the right mouse button and choose "All Tasks - Import...".



- Click the "Browse..." button in the next dialog and navigate to the folder on the USB Flash Drive, where you previously stored the "authroot.sst" file.
Make sure that "Microsoft Serialized Certificate Store (*.sst)" is selected in the "File type" combobox next to the "File name" textbox.
Otherwise the "authroot.sst" file won't be displayed in the "Open" dialog.



- Select the "Place all certificates in the following store" radio button and click the "Next>" button.



- Confirm any remaining dialogs. Another attempt can be made to install KB4512486.

9 Customer Support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz equipment, contact one of our Customer Support Centers. A team of highly qualified engineers provides telephone support and will work with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz equipment.

Up-to-date information and upgrades

To keep your instrument up-to-date and to be informed about new application notes related to your instrument, please send an e-mail to the Customer Support Center stating your instrument and your wish. We will take care that you will get the right information.

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