PCS 7 Process Visualization on Mobile Devices with RealVNC

SIMATIC PCS 7 V8.2

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The process visualization is an essential part of a system. The larger and more complex a system is, the more information must be processed and visualized. Stationary operating stations are localized over Ethernet cables and are matched to the visualization of specific subsystems. The central control room together with its process operating stations is located far away from the sensors and actuators.

To increase flexibility, there is a requirement to be able to move freely with a mobile operating device within the system and close to the process-proximate components.
2 The solution

2.1 PCS 7 Process visualization on mobile devices with RealVNC

Mobile devices

The use of mobile devices suggests itself as a way of obtaining process-proximity to all information. Thanks to their handiness, weight and computing power, smartphones and tablets offer the best prerequisites for convenient and process-proximate operator control of the system.

RealVNC

The basic functions of “RealVNC” enable transfer of the screen content of a remote PC (server) to a mobile device (viewer). In addition the operator control function of the remote PC can take place by way of the transmission of mouse and keyboard commands.

Note

You can find additional information on this subject in entry 55422236: “How can WinCC or PCS 7 systems be accessed with ‘RealVNC’?”
2 The solution

2.2 Hardware and software components required

PCS 7 Web Option

Implementation is effected via the PCS 7 Web Option. The type of hardware and software components required can be found in the following handbook: "SIMATIC Process Control System PCS 7 Web Option for OS (V8.2)" section 5 "Hardware and software requirements".

Note

Ensure network security and do not connect your system directly to the Internet. You can obtain further information about this from entry 109742220. "SIMATIC Process Control System PCS 7 Compendium Part F - Industrial Security (V8.2)".

Web Client/VNC server

You will find detailed installation and configuration instructions for the VNC server in entry 55422236: "How can WinCC and PCS 7 systems be accessed with 'RealVNC'?"

Mobile device/VNC Viewer

The app "VNC Viewer" is required. This can be downloaded free of charge from the Internet. The mobile device requires one of the following as the operating system:

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Version</th>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>Android (smartphone, tablet)</td>
<td>V4.0 or higher</td>
<td>Google Play Store</td>
</tr>
<tr>
<td>iOS (iPhone, iPad, iPod touch)</td>
<td>V7.0 or higher</td>
<td>Apple App Store</td>
</tr>
</tbody>
</table>

Note

You can obtain further information from the manufacturer's website www.realvnc.com.

DANGER

Please ensure that certified mobile devices are used, if the example is used in explosion hazard zones.

2.3 Validity

This application example is valid for PCS 7 V8.2 and WinCC V7.4.
2 The solution

2.4 Steps

Implementation should take place in the following order:

<table>
<thead>
<tr>
<th>No.</th>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Configure the OS server and WinCC project.</td>
</tr>
<tr>
<td>4.</td>
<td>Install and configure the app &quot;VNC Viewer&quot; on the mobile device (page 8).</td>
</tr>
<tr>
<td>5.</td>
<td>Connect the mobile device via VNC to the Web Client.</td>
</tr>
<tr>
<td>6.</td>
<td>Access via Internet Explorer to the process visualization.</td>
</tr>
</tbody>
</table>
3 Initializing remote access

3.1 Installing the app "VNC Viewer" on the mobile device

Requirements

The mobile device requires one of the following as the operating system:

<table>
<thead>
<tr>
<th>Operating system</th>
<th>Version</th>
<th>Download</th>
</tr>
</thead>
<tbody>
<tr>
<td>Android (smartphone, tablet)</td>
<td>V4.0 or higher</td>
<td>Google Play Store</td>
</tr>
<tr>
<td>iOS (iPhone, iPad, iPod touch)</td>
<td>V7.0 or higher</td>
<td>Apple App Store</td>
</tr>
</tbody>
</table>

Note

The following pictures were recorded with the Samsung Galaxy S6 (Android 6.0). Display and operation using other Android versions and other operating systems, such as iOS, can vary slightly. The functionality is retained.

Procedure

1. Depending on the operating system, open:

<table>
<thead>
<tr>
<th>Android</th>
<th>iOS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Google Play Store" /></td>
<td><img src="image" alt="App Store" /></td>
</tr>
</tbody>
</table>

2. Enter "VNC Viewer" in the search window and then click on the app that appears.
3. Click the "Install" button.

The progress of the download/installation is displayed.

**Note**
You require a valid account to be able to download and install apps. You may be requested to enter your user password before downloading.
3 Initializing remote access

3.2 VNC Viewer—Initialization

Procedure

1. Open the app "VNC Viewer".

2. Click on the "+" symbol to configure a new connection.

   ![VNC Viewer app](image)

3. Enter the IP address of the target computer in the input field "Address".

   ![VNC Viewer app](image)

Note: The corresponding IP address is displayed when you start the VNC server of the target computer.
3 Initializing remote access

4. Enter a name for the connection in the input field "Name".

![VNC Viewer](image)

**Note** The name specified here does not have to match the name of the target computer. It serves as a symbolic name for the connection and is randomly selectable.

5. Click on the "Create" button to create the connection.

![VNC Viewer](image)
### Initializing remote access

6. Some settings are now possible:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture quality</td>
<td>Resolution:</td>
</tr>
<tr>
<td></td>
<td>• Automatic (default)</td>
</tr>
<tr>
<td></td>
<td>• High (fast Internet connection)</td>
</tr>
<tr>
<td></td>
<td>• Low (slow Internet connection)</td>
</tr>
<tr>
<td></td>
<td>Recommendation: Automatic (default)</td>
</tr>
<tr>
<td>View only</td>
<td>Disabled (default): Control of the target computer is allowed</td>
</tr>
<tr>
<td></td>
<td>Enabled: Monitoring only—control of the target computer is not possible</td>
</tr>
<tr>
<td></td>
<td>This option should <strong>not</strong> be enabled.</td>
</tr>
<tr>
<td>Forget sensitive data</td>
<td>Clicking on this option will delete all stored passwords and screen pictures that have been saved in conjunction with this connection.</td>
</tr>
</tbody>
</table>
3.3 VNC Viewer—Connection

Procedure

1. Click on the "Connect" button or on the connection in the overview.

The VNC Viewer now connects to the VNC server of the Web Client.

2. In the "Username" field, enter the user name of the Windows user who is configured for the Web Client.
In the input field "Password", enter the password of the specified *Windows user*.

3. Click the "CONTINUE" button.

**Note**
If you enable the "Remember password" option, the password entered for future reuse is saved and does not have to be entered again.

You are now connected to the VNC server/Web Client.
3 Initializing remote access

3.4 VNC Viewer—Operation

Procedure

At the first connection attempt the VNC Viewer suggests that you should familiarize yourself with the gesture control. You can say reject this with the "SKIP" button or agree to it with the "NEXT" button.

Hiding the access bar

It is possible to hide the access bar so as to be able to use the complete screen. To do so, click on the pin symbol (top left) on the access bar.
Operation functions intuitively in the same way as you are already familiar with from other applications with multi-touch. Here is an overview of this:

### How to control

**Using VNC Viewer**

Your finger moves the mouse cursor rather than clicking where you touch, as you might expect with a touchscreen. This gives you more precise control of a high-resolution computer desktop.

<table>
<thead>
<tr>
<th>Gesture</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="hand_pinching.png" alt="Pinch gesture" /></td>
<td>Pinch with two fingers to zoom.</td>
</tr>
<tr>
<td><img src="hand_tap.png" alt="Tap gesture" /></td>
<td>Touch with one finger and drag to position the mouse cursor.</td>
</tr>
<tr>
<td><img src="hand_double_tap.png" alt="Double tap gesture" /></td>
<td>Tap with one finger to left-click.</td>
</tr>
<tr>
<td><img src="hand_two_finger_tap.png" alt="Two finger tap gesture" /></td>
<td>Double tap with one finger to double-click.</td>
</tr>
<tr>
<td><img src="hand_three_finger_tap.png" alt="Three finger tap gesture" /></td>
<td>Tap with two fingers to right-click.</td>
</tr>
<tr>
<td><img src="hand_middle_click.png" alt="Middle click gesture" /></td>
<td>Tap with three fingers to middle-click.</td>
</tr>
<tr>
<td><img src="hand_scroll.png" alt="Scroll gesture" /></td>
<td>Touch with two fingers and drag to scroll.</td>
</tr>
<tr>
<td><img src="hand_drag_and_hold.png" alt="Drag and hold gesture" /></td>
<td>Double tap and drag to click and hold, or select text.</td>
</tr>
<tr>
<td><img src="hand_swipe_down.png" alt="Swipe down gesture" /></td>
<td>Swipe down from the top of the device to reveal the toolbar. The toolbar is pinned by default.</td>
</tr>
</tbody>
</table>

### Notes

- Tap ![Virtual keyboard](keyboard.png) to open the virtual keyboard, above which a scrolling key bar containing function and other special keys is displayed. Double tap a modifier key (for example, Shift or Ctrl) to hold that key down. Some keys, such as Scroll Lock, are not available.

  **Note:** If a hardware keyboard is detected, the virtual keyboard is not displayed. However, tapping the keyboard icon will still open the scrolling key bar.

- You can type international characters providing the target computer is running VNC and its operating system supports the language you want to type in (note this must be the currently- selected language under Mac OS X).

- You can copy and paste text between device and target computer providing the latter is running VNC.

- Tap ![Mouse mode](mouse.png) to open mouse mode. Virtual left, middle, and right mouse buttons, and a vertical scroll bar, are superimposed on the desktop, to provide an alternative to gestures.
3.5 Process control/visualization on the mobile device

Requirement

- Connection to the Web Client with the aid of the "VNC Viewer" app is established
- Web Client is installed.
- Plugins are installed.
- OS runtime is enabled

Procedure

1. Start Internet Explorer.
2. Enter your server address or IP address in the input field "Address".
3. Enter your WinCC user name and the password in the dialog box "Enter network password". If you want to save your password, activate the "Remember password" option button.

Note

You can obtain further information on process control from the handbook "Simatic Process Control System PCS 7 Web Option for OS (V8.2)" in section 9.6 "How to start process control on the Web Client" via the following link: https://support.industry.siemens.com/cs/ww/en/view/109485959

To get to the process visualization as efficiently as possible and free of barriers, the following settings are recommended:

- Integrate Internet Explorer into the taskbar
- Set the Internet page of the Web Navigator as the start page
- Enable full screen in Internet Explorer (F11)
4 References

Table 4-1

<table>
<thead>
<tr>
<th></th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Siemens Industry Online Support</td>
</tr>
<tr>
<td></td>
<td><a href="http://support.automation.siemens.com">http://support.automation.siemens.com</a></td>
</tr>
<tr>
<td>2</td>
<td>Download page for this entry</td>
</tr>
<tr>
<td>3</td>
<td>WinCC / WebNavigator</td>
</tr>
<tr>
<td>4</td>
<td>Web Server / Web Client / Web Option</td>
</tr>
<tr>
<td>5</td>
<td>RealVNC</td>
</tr>
<tr>
<td></td>
<td><a href="https://www.realvnc.com/">https://www.realvnc.com/</a></td>
</tr>
</tbody>
</table>

5 History

Table 5-1

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1.0</td>
<td>01/2017</td>
<td>First edition</td>
</tr>
</tbody>
</table>