



WebWare Components Security

Purpose:

Advisory and recommendations for using WebWare SDK, WebWare Server and S4 PC Products

Target Audience:

IT professionals wanting to improve security of applications including WebWare components.

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1. Summary

1.1. Background

WebWare Server is a three tier application (Server, Data Collector, Web client) installed at ABB robotics customers to fulfill robot backup and logs monitoring. The information is gathered from the Data Collector connected to the robot and transferred to the Server. The user interface is done through a Web Client.

WebWare SDK is a toolkit used to develop application installed at ABB robotics customers related to reading writing information from/to the robot. The information could be IO values, Rapid Variables, files, programs, and backup. WebWare SDK is designed to develop standalone WebWare Desktop applications.

RobotStudio S4 and QuickTeach are applications to simulate an S4 ABB Robot and contains some of the components from the WebWare SDK and WebWare Server

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S4 OPC Server or OPC-Backup is an OPC server and a backup tool which contains some of the WebWare components from the WebWare SDK and WebWare Server.

1.2. Target

This document is dedicated to IT professionals who want to improve security of applications including these WebWare components.

2. Problem summary

The technology used for the development of WebWare is a widely used Microsoft technology called COM/ActiveX objects. This technology is now old and could present some security and vulnerabilities in some specific cases:

- Some installed COM components are called locally by an unfriendly application
- Some installed COM components are called locally by an unfriendly web page through a web browser.

3. Solution summary

3.1. Mitigation

These WebWare applications are not widely spread and are mostly used internally at some robotics customers. It would require a lot of effort and internal knowledge to be misused and provide harm to the computers or application, but this risk could potentially still exist with the COM technology and the WebWare implementation.

A safe measure is to

- Always know what is installed on a computer and allow installation to only trusted and signed applications by a trusted user.
- Limit user with administrative, network and installation privileges
- Limit access to Internet to only authorized and trusted sites
- Prevent web browser to run unnoticed COM/ActiveX components

3.2. How to Protect your PC

- **Configure Browser Settings:** Although Active X controls can contain some very useful programs, configure your browser settings to notify you each time an Active X is trying to download to your PC. This way you have control over the installation of Active X controls.
- **Use Browser Security Software:** You can purchase browser security software that will manage your browser security settings for you and customize downloads, so you can choose what you want installed on your PC.

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- **Install Antivirus Software:** Install antivirus software that includes anti-malware and anti-adware programs and configure the firewall on your Windows operating system.
- **Practice Safe Surfing:** Only surf the websites that you trust and be careful what you click on. If it does not feel or look right, do not click.
- **Keep Machine Up to date:** Use Windows Security mechanisms like the Windows Update to keep the machine updated with the security patches. If an Internet connection is provided for this Windows update it should be firewalled and used only for the automatic Windows Update.

4. Architecture best practices

4.1. WebWare server

The WebWare server shall be installed on a machine with very limited access to outside world like any server applications in a server room. The only access on this machine shall be given to administrator user for local tuning or to the Data Collector to transfer Data from Robot and to the WebWare Client through the HTTP port.

4.2. WebWare Data Collector and Desktop Applications

The Data Collector and Desktop Applications are usually installed on PC's in the production area close to a group of robots. The Data Collector shall not have access to Internet, this is not necessary. The only connection to the Data Collector shall be to the robots on a local production network and to the WebWare Server to transfer data and to access the Server through the Web Client.

4.3. WebWare Client

The WebWare Client shall be installed on the WebWare Server PC for administration tasks on the Data Collector for configuration with an intranet connection to the WebWare server through HTTP.

The WebWare Client could also be installed on operator PC for remote configuration and reporting. In this case these PC's may also have Internet access. It is important then to have a protected PC and secured browser which notifies or stops running COM/ActiveX components.

Same remarks for simulation applications like RobotStudio S4/Lite and QuickTeach which contains the same COM/ActiveX components.

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5. Components used from Browser

WebWare client is using some components in the WebWare page.
Only these components shall be allowed to be loaded in Internet Explorer.
These components shall be allowed only when running WebWare Server page
<http://WebWareServerAddress/WebWare> .

These components are Minilink.dll, WWVerChk3.dll and WWSClient.ocx.

Any other components installed by WebWare shall not be allowed to be loaded on a Web browser.

6. Naming

WebWare Server : The server installation which consist of a Windows service connected to the Data Collector and an SQL Database and a file repository.

WebWare Data Collector: The Data collection installation which consists of a Windows Service connected to a robot and to the server

WebWare Client: The intranet Web User interface which consist of web pages installed on the server and COM/ActiveX components installed locally.

WebWare Desktop Applications: This consists of application developed using WebWare Components connected to the Robot.

Simulation tools: This consists of simulation application tools like RobotStudio S4/Lite and QuickTeach who contains WebWare Components to connect to a virtual or real robot. These applications can be considered as WebWare Desktop applications if they run locally in the production network connected to real robots.

COM: Component Object Model. Microsoft technology for callable binary components.

ActiveX: ActiveX is a COM user interface object which could be dynamically loaded from an exe application or a web browser like Internet explorer.