EcoStruxure™

DCS Advisor

PSS 41S-2DCSAdv

Product Specification

June 2022

Schneider Electric™

https://www.se.com

Legal Information

Overview

Schneider Electric is taking remote product supportability to an advanced level in the process control industry.

Utilizing machine-to-machine technology, DCS Advisor continuously monitors and reports information about I/A Series and Control Software system performance health status. Schneider Electric Remote Services experts perform analysis with the assistance of tools that reside in a DCS Advisor server located at the client site, and a Communications server (mailbox) and a Remote Services server located at Schneider Electric's Remote Operations Center. These servers communicate using secure protocols and processes.

DCS Advisor facilitates remote connectivity and diagnostics by continuously monitoring key performance indicators (KPI) on the I/A Series or Control Software system's process.

The DCS Predictive Analytics module is an optional element in the Customer FIRST Agreement. The module has been developed with customized predictive analytics algorithms designed by Schneider Electric to provide early indications of potential problems with Control Processors (CPs) and switches.

The predictive analytics in the DCS Advisor module allow maintenance and operations personnel to better understand the health of the control system and facilitate predictive maintenance. Schneider Electric support engineers can provide guidance for immediate remediation of predicted problems until field service engineers can come to site, if needed.

This predictive maintenance information helps you quickly respond to potential vulnerabilities and can help reduce the number of issues that could impact production.

Features

Clients increasingly are looking to Schneider Electric to take on more responsibility in providing support and maintenance of automation systems as their skilled personnel resources retire. Also, as products and systems become more complex, reliance on Schneider Electric remote system monitoring and troubleshooting becomes even more compelling.

DCS Advisor can help maximize your system's availability by reducing the time to detect initial performance anomalies, examine and analyze data to determine root cause, and then implement the resolution. Through continuous DCS Advisor monitoring, trends and errors can be detected early in their development, helping avoid situations that could adversely impact system performance.

Offered as a component of the Customer FIRST Support and Services Agreement, Remote Services include:

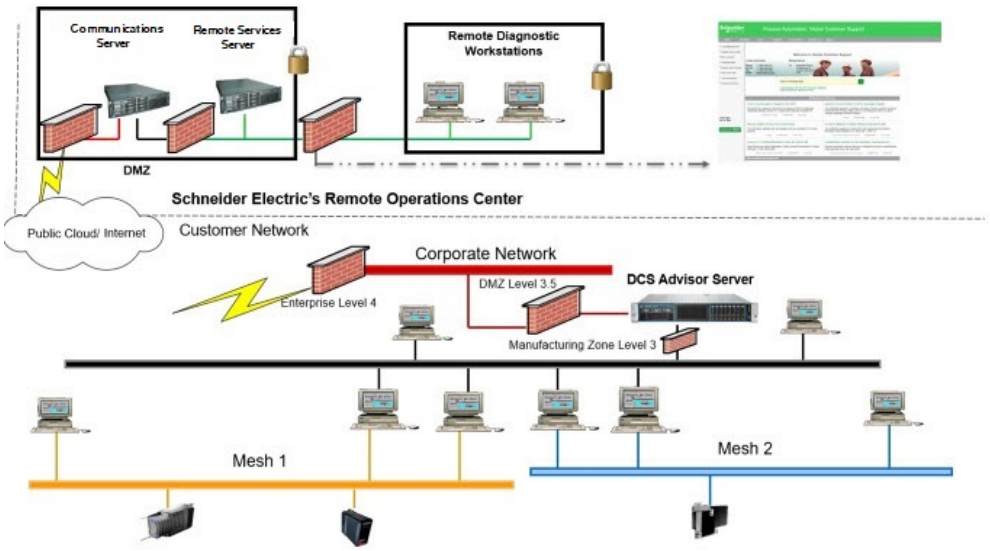
- Best available applications and protocols for secure remote connections
- Monitoring of critical resources to help prevent process degradation
- DCS Advisor server platform for advanced diagnostic tools (that is, Control Network or switch analysis)
- Staging of critical system patches
- "Tool Box" of diagnostic scripts

DCS Advisor technology coupled with access to Schneider Electric experts from a variety of disciplines helps ensure faster resolution and helps decrease potential downtime. It also helps reduce costs by:

- Historizing service data on a regular basis provides better, more accurate site-specific views that can result in earlier identification of potential problems.
- Engaging the **right** expert from anywhere in the world speeds up diagnosis and remediation.
- Presenting experts with the ability to immediately **see** what is displayed at site and to view historical data significantly decreases the time it takes to resolve an issue once identified.
- Decreasing the need to send a Service Engineer to site saves time, money and potential lost production.
- Increasing the effectiveness of a Service Engineer engaged in a site visit for corrective assistance, through advance knowledge and better preparation for the reported issue.
- Collaborating on complex issues with the right **group of experts** to solve the problem.
- Automating manual tasks (for example, delivering patches/fixes, security), helping to prevent problems while freeing your personnel resources to perform more valuable functions.

Operational Overview

The DCS Advisor server at the client site communicates via a Communications server (mailbox server) with the Schneider Electric Remote Services server, which is located in a DMZ behind the Schneider Electric corporate firewall. The site's DCS Advisor server and the Schneider Electric Remote Services server do not communicate directly with each other.



Client Site

- Once per minute, the DCS Advisor server at the client's site sends a heartbeat message to the Communications server located at Schneider Electric. This heartbeat is deposited in a mailbox designated for that site on the Communications server.
- Once per minute, the DCS Advisor server at the client's site checks its inbox to see if there is a connection request (i.e., the heartbeat message) coming from Schneider Electric's Remote Operations Center.
- If a connection request is present, and after authenticating certificates, the client's DCS Advisor server establishes a secure communication pathway to the Communications server at Schneider Electric.
- Once per hour, the client's DCS Advisor server sends data packets containing system health data to its mailbox on the Communications server.

Remote Operations Center

- Once per minute, the Schneider Electric Remote Services server checks the Communications server's client mailbox for incoming messages (heartbeat or data).
- If the Communications server reports that a client's incoming heartbeat data is missing over a predetermined interval, a critical alarm is set that is viewed by Schneider Electric on its Remote Services server.
- Incoming system health data is then transferred to the Remote Diagnostic Workstation and processed to display alarm conditions, if present.

- If a Schneider Electric support engineer requests a remote connection to the client's system for the purpose of providing technical assistance involving remote diagnostic activity, a flag is set in the Communications server mailbox and is processed the next time the client's DCS Advisor server checks in.
- The Schneider Electric support engineer will also place a telephone call to the client's designated staff member to request authorization to log on for the purpose of remote diagnostics.

Connection Requirements

Client Site

Schneider Electric works with clients to allow HTTPS/TLS (Hypertext Transfer Protocol over Transport Layer Security) communication through **Port** 443 to two IP addresses at Schneider Electric. No inbound rules are required. The client supplies the source IP address that will be seen at the Schneider Electric firewall (customer Internet IP address).

Schneider Electric Remote Services Communications Server

Firewall rules are modified to allow access from the source IP address originating at the customer site to the Communications server at Schneider Electric.

Security

Schneider Electric employs the most secure technology available to help protect against unauthorized access to the client's system.

The DCS Advisor server communication package (on the client system) uses HTTPS/TLS protocol/port to implement a secure communication pathway between itself and Schneider Electric's Remote Operations Center servers.

The data transfer mechanism between Schneider Electric's Remote Services diagnostic server and the DCS Advisor server at the client site uses IP connectionless data packets on the TLS port to transfer data to the Schneider Electric Communication server (the Communication server has two IP addresses, one for data transfer and another for remote access). HTTPS is used as the data protocol that includes key exchange and encryption.

- HTTPS/TLS protocol provides end-to-end encryption, and along with the client-server application software, is used to implement a secure communication path connecting the DCS Advisor server at the client site and the Remote Operations Center at Schneider Electric.
- All communication is initiated from the customer site and targeted to either the Communications server data IP address or the remote session IP address.
- The system architecture and the secure communication pathway help to prevent communication between different customer sites.

Schneider Electric has these additional infrastructure security measures and staff restrictions:

- All Remote Operations Center infrastructures are physically secured, and only authorized staff is allowed access.
- Remote Communications and Remote Services servers and diagnostic workstations are dedicated to remote support and have no other applications available.
- All DCS Advisor (client site) and Remote Operations Center servers and workstations use McAfee security software that is kept up to date with the latest virus protection patches and malware security.
- Schneider Electric Remote Services staff is trained on the correct procedures for logging into a customer site.
- Prior to logging onto a client DCS Advisor server, a designated customer contact must give permission for the specific connection session. If no approved customer contacts are available, the Schneider Electric engineer cannot initiate the session.
- All Remote Services components and licenses are the property of Schneider Electric, and are provided only to clients covered by a Schneider Electric LifeTime Service Agreement.

Predictive Analytics Add-on Service

Supported Devices

Predictive Analytics can currently detect 30+ failure conditions and make predictions on the FCP270 the FCP280, and switches. Support for additional failure conditions and devices is added continuously.

Installation Requirements

Predictive Analytics requires that DAS 5.3 or later be installed and active at the site with an active connection to the Schneider Electric Remote Operations Center. Predictive Analytics installs additional data collectors to collect System Monitor logs and network information. These additional collectors are installed on the system management hosts and the Network Information Monitor host.

Alert Workflow

System Monitor logs, network information, and the Station counter health data already collected by DCS Advisor are sent via secure communication to the Remote Operations Center, where an artificial intelligence (AI) engine provides alerts on current and predicted failures. These alerts are visible to Remote Services operators, who notify the designated person (for example, the customer at site or a service engineer).

Functional Specifications

DCS Advisor currently uses server model HP DL380 GEN9. The specifications for this server are listed in this table.

Processor Type	Intel Xeon
Memory	8 GB DDR4 Registered Memory
Devices Served	SAS Peripherals: • Three internal system disk drives Controller Peripherals: • One SATA CD-RW/DVD drive Video Displays (Up to 2): • 23-inch LCD Monitor Interfaces to External USB Devices: • Mouse • Alphanumeric Keyboard
Internal Diagnostics	Self-checking performed at power-up.
Video	Output Type: • Dual head DisplayPort/DVI PCIe video card (default) (up to 1600 x 1200 resolution) Screen Presentation: • Refresh Rate: Up to 85 Hz • Colors: 32 bit Resolution: ◦ Standard (4:3) ◦ Up to 1600x1200 pixels ◦ Widescreen (16:9) ◦ Up to 1920x1080 pixels
Serial Interface Port	Type: RS-232-C compatible
Ethernet Interface Communications	Four Integrated Ethernet ports (10/100/1000Base-T)
Power Supplies	Two redundant, hot swappable, 800 W auto-switching input power supplies, each with a separate power cord.
Power Requirements	Input Power: 100-240 V ac, 50 to 60 Hz, auto ranging Power Parameters: • 100-120 V ac, 13.32A maximum • 200-240 V ac, 6.65A maximum Inrush Current: 30 A power supply for 20 ms Heat Dissipation: • 3207 BTU/hr (at 100 V ac) • 3701 BTU/hr (at 200 V ac)
Cooling	Hot swappable, redundant I/O and processor fans. Each redundant power supply contains a fan. Temperature Specification may be extended up to 40°C (104°F) with the Optional High Temperature DL380 Gen9 High Performance Fan Kit, Foxboro Part Number P0928NE. This fan kit does increase the fan noise of the machine.

Regulatory Compliance, Electromagnetic Compatibility (EMC)	U.S. and Canada: Complies with FCC Part 15, Class B EU: Complies with the Low Voltage Directive 2014/35/EU and the following Harmonized Standards: • EN 55022:2010 CLASS A • EN 55024:2010 • EN 61000-3-2:2014 • EN 61000-3-3:2013
Regulatory Compliance, Product Safety[a]	U.S. and Canada: UL® and cUL Listed EU: Complies with the Low Voltage Directive 2014/35/EU and the following Harmonized Standards: • EN 60950-1:2006+A11:2009+A1:2010 +A12:2011+A2:2013 • EN 62479:2010
RoHS Compliance[a]	Complies with EU RoHS Directive 2011/65/EU under the following Harmonized Standard: EN 50581:2012 Complies with the following International Standards: IEC 60950-1:2005 2nd ED +A1:2009
(a) Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.	

Environmental Specifications

	Operating	Storage
Temperature	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft); no direct sustained sunlight Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. 10 to 40°C (50 to 104°F) with the optional P0928NE HP DL380 Gen9 High Performance Fan Option Kit System performance may be reduced if operating with a fan fault or above 30°C (86°F)	-30° to 60°C (-22° to 140°F) Maximum rate of change is 20°C/hr (36°F/hr)
Relative Humidity	10% to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, noncondensing	5% to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, noncondensing
Maximum Vibration	0.26 G at 5 to 350 Hz in operational orientations	1.54 G rms at 10 Hz to 250 Hz in all orientations
Shock	Half sine shock in all operational orientations of 31 G +/-5% with a pulse duration of 2.6 ms +/-10%	Half sine shock on all six sides of 71 G +/-5% with a pulse duration of 2 ms +/-10% Square wave shock on all six sides of 27 G with velocity change at 235 in/sec or greater
Altitude	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min)	-16 to 10,600 m (-50 ft to 35,000 ft)
Processor Environmental		
Location	UL/UL-C listed as suitable for use in ordinary locations and meets ordinary safety standards for fire and shock hazards	
Contamination	Class G1 (Mild) as defined in ISA Standard S71.04	

Physical Specifications

	Keyboard	Chassis
Dimensions	• Height: 35 mm (1.4 in) • Width: 445 mm (17.5 in) • Depth: 150 mm (5.9 in)	Maximum outside dimensions with bezel and feet: • Height: 87.3 mm (3.44 in) with bezel • Width: 445 mm (17.5 in) • Depth: 680 mm (26.75 in)
Weight	1.8 kg (4.0 lbs)	Rack: 23.6 kg (51.5 lbs) maximum configuration

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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