

# SIEMENS

## SIMATIC

### S7-1500/ET 200MP, S7-1500R/H, SIMATIC Drive Controller, SIMATIC S7-1500 Software Controller, ET 200SP, ET 200pro

## Product Information about Syslog Messages

### Product Information

## Introduction

#### Scope of validity of the product information

This product information supplements the documentation for SIMATIC S7-1500/ET 200MP, S7-1500R/H, SIMATIC Drive Controller, SIMATIC S7-1500 Software Controller, ET 200SP, ET 200pro.

## Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For more information on industrial cybersecurity measures that may be implemented, please visit (<https://www.siemens.com/global/en/products/automation/topic-areas/industrial-cybersecurity.html>).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customers' exposure to cyber threats.

To stay informed about product updates at all times, subscribe to the Siemens Industrial Cybersecurity RSS Feed under (<https://new.siemens.com/global/en/products/services/cert.html>).

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# Chapter 1. Event Details

## 1.1. SE\_LOCAL\_SUCCESSFUL\_LOGON

<b>ID</b>	<b>1</b>
Parameter	<a href="#">fct</a> , <a href="#">result</a>
Description	Valid credentials provided by local logon.
Comment	Successful login of on-site-user, e.g. PLC Display user.
Requirement	<a href="#">SR 1.1 RE 1 - Unique identification and authentication</a>
Severity	<a href="#">Informational</a>

## 1.2. SE\_LOCAL\_UNSUCCESSFUL\_LOGON

<b>ID</b>	<b>2</b>
Parameter	<a href="#">fct</a> , <a href="#">result</a> , <a href="#">errReason</a>
Description	Wrong user name or wrong password (credentials) provided by local logon.
Comment	Unsuccessful login of on-site-user, e.g. PLC Display user.
Requirement	<a href="#">SR 1.1 RE 1 - Unique identification and authentication</a>
Severity	<a href="#">Error</a>

## 1.3. SE\_NETWORK\_SUCCESSFUL\_LOGON

<b>ID</b>	<b>3</b>
Parameter	<a href="#">fct</a>
Description	Valid credentials provided by remote logon.
Comment	This event indicates a successful login of a remote user.
Requirement	<a href="#">SR 1.1 RE 1 - Unique identification and authentication</a>
Severity	<a href="#">Informational</a>

## 1.4. SE\_NETWORK\_UNSUCCESSFUL\_LOGON

<b>ID</b>	<b>4</b>
Parameter	<a href="#">fct</a> , <a href="#">errReason</a>
Description	Wrong user name or wrong password (credentials) provided by remote logon.
Comment	This event indicates a failed login attempt of a remote user.
Requirement	<a href="#">SR 1.1 RE 1 - Unique identification and authentication</a>
Severity	<a href="#">Error</a>

## 1.5. SE\_LOGOFF

<b>ID</b>	<b>5</b>
Parameter	<a href="#">fct</a> , <a href="#">errReason</a>
Description	User session ended - logout.
Comment	A user is logged out.
Requirement	<a href="#">SR 1.1 RE 1 - Unique identification and authentication</a>
Severity	<a href="#">Informational</a>

## 1.6. SE\_DEFAULT\_USER\_AUTHENTICATION\_USED

<b>ID</b>	<b>6</b>
Parameter	<a href="#">fct</a> , <a href="#">result</a>
Description	User logged in with default user name and password.
Comment	Default user credentials are used for session creation, e.g. the 'Anonymous' user.
Requirement	<a href="#">SR 1.5 - Authenticator management</a>
Severity	<a href="#">Informational</a>

## 1.7. SE\_ACCESS\_PWD\_ENABLED

ID	11
Parameter	<a href="#">fct</a> , <a href="#">resource</a> , <a href="#">result</a>
Description	Password protection was enabled for some resource.
Comment	The password for a protection level is enabled, e.g. by PLC Display.
Requirement	<a href="#">SR 1.3 - Account management</a>
Severity	<a href="#">Notice</a>

## 1.8. SE\_ACCESS\_PWD\_DISABLED

ID	12
Parameter	<a href="#">fct</a> , <a href="#">resource</a> , <a href="#">result</a>
Description	Password protection was disabled for some resource.
Comment	The password for a protection level is disabled, e.g. by user program.
Requirement	<a href="#">SR 1.3 - Account management</a>
Severity	<a href="#">Notice</a>

## 1.9. SE\_ACCESS\_PWD\_CHANGED

ID	13
Parameter	<a href="#">fct</a> , <a href="#">errReason</a> , <a href="#">result</a>
Description	User changed his password.
Comment	The password for a given user is changed.
Requirement	<a href="#">SR 1.3 - Account management</a>
Severity	<a href="#">Notice</a>

## 1.10. SE\_ACCESS\_GRANTED

ID	19
Parameter	<a href="#">fct</a> , <a href="#">functionRight</a> , <a href="#">result</a>
Description	Restricted access was granted for an user.
Comment	Access is granted to this user to perform a service.
Requirement	<a href="#">SR 2.1 - Authorization enforcement</a>
Severity	<a href="#">Informational</a>

## 1.11. SE\_ACCESS\_DENIED

ID	20
Parameter	<a href="#">fct</a> , <a href="#">functionRight</a>
Description	Restricted access was denied for an user.
Comment	Due to lack of rights the access is denied to this user to perform a service.
Requirement	<a href="#">SR 2.1 - Authorization enforcement</a>
Severity	<a href="#">Error</a>

## 1.12.

## SE\_ACCESS\_DENIED\_NUMBER\_OF\_CONCURRENT\_SESSIONS\_EXCEEDED

ID	51
Parameter	<a href="#">fct</a> , <a href="#">result</a>
Description	When the maximum number of concurrent sessions is exceeded, this event will be raised.
Comment	A login attempt failed due to limited resources. Severity "Error" is used for all products listed in this Product Information
Requirement	<a href="#">SR 2.7 - Concurrent session control</a>
Severity	<a href="#">Warning</a>



## 1.13. SE\_CRITICAL\_DEVICE\_STARTED

<b>ID</b>	<b>52</b>
Parameter	<a href="#">fct, resource</a>
Description	(Initial) start-up of a critical device.
Comment	An application or component is started (e.g. the Webserver or OPCUA-Server).
Requirement	<a href="#">SR 2.8 RE 1 - Centrally managed, system-wide audit trail</a>
Severity	<a href="#">Notice</a>

## 1.14. SE\_CRITICAL\_DEVICE\_STOPPED

<b>ID</b>	<b>53</b>
Parameter	<a href="#">fct, resource</a>
Description	Shut down of a critical device.
Comment	An application or component is stopped (e.g. the Webserver or OPCUA-Server). Severity "Notice" is used for all products listed in this Product Information
Requirement	<a href="#">SR 2.8 RE 1 - Centrally managed, system-wide audit trail</a>
Severity	<a href="#">Alert</a>

## 1.15. SE\_AUDIT\_EVENTS\_OVERWRITTEN

<b>ID</b>	<b>56</b>
Parameter	<a href="#">fct</a>
Description	Ring buffer is full. Audit Trail starts to overwrite old events.
Comment	Events are overwritten and were not transferred to a syslog server. Information is lost. This event will only be triggered when a syslog server is configured. Severity "Error" is used for all products listed in this Product Information
Requirement	<a href="#">SR 2.10 - Response to audit processing failures</a>
Severity	<a href="#">Alert</a>

## 1.16. SE\_OPEN\_RESOURCE

ID	61
Parameter	<a href="#">fct</a> , <a href="#">resource</a> , <a href="#">result</a>
Description	Open the handle of an object.
Comment	A file or folder is opened for read or write access.
Requirement	<a href="#">SR 2.12 - Non-repudiation</a>
Severity	<a href="#">Informational</a>

## 1.17. SE\_CLOSE\_RESOURCE

ID	62
Parameter	<a href="#">fct</a> , <a href="#">resource</a>
Description	Close the handle of an object.
Comment	A file or folder is closed after read or write access.
Requirement	<a href="#">SR 2.12 - Non-repudiation</a>
Severity	<a href="#">Informational</a>

## 1.18. SE\_DELETE\_OBJECT

ID	63
Parameter	<a href="#">fct</a> , <a href="#">resource</a> , <a href="#">result</a>
Description	Delete an object.
Comment	An object is deleted (details in parameters) or the memory card is formatted.
Requirement	<a href="#">SR 2.12 - Non-repudiation</a>
Severity	<a href="#">Informational</a>

## 1.19. SE\_OBJECT\_OPERATION

<b>ID</b>	<b>64</b>
Parameter	<a href="#">fct</a> , <a href="#">resource</a> , <a href="#">newState</a> , <a href="#">resOper</a> , <a href="#">result</a>
Description	Access an object.
Comment	An operation (see parameter fct) is executed on an object (see parameter resource).
Requirement	<a href="#">SR 2.12 - Non-repudiation</a>
Severity	<a href="#">Informational</a>

## 1.20. SE\_SESSION\_CLOSED

<b>ID</b>	<b>75</b>
Parameter	-
Description	Session closed.
Comment	A session is closed.
Requirement	<a href="#">SR 3.8 - Session integrity</a>
Severity	<a href="#">Informational</a>

## 1.21. SE\_INVALID\_SESSION\_ID

<b>ID</b>	<b>76</b>
Parameter	-
Description	Session is invalid.
Comment	An invalid session ID is detected.
Requirement	<a href="#">SR 3.8 - Session integrity</a>
Severity	<a href="#">Error</a>

## 1.22. SE\_BACKUP\_STARTED

<b>ID</b>	<b>79</b>
Parameter	-
Description	Backup started.
Comment	Creation of a backup file is started.
Requirement	<a href="#">SR 7.3 - Control system backup</a>
Severity	<a href="#">Notice</a>

## 1.23. SE\_BACKUP\_SUCCESSFULLY\_DONE

<b>ID</b>	<b>80</b>
Parameter	-
Description	Backup finished.
Comment	Creation of a backup file is finished successfully.
Requirement	<a href="#">SR 7.3 - Control system backup</a>
Severity	<a href="#">Notice</a>

## 1.24. SE\_BACKUP\_FAILED

<b>ID</b>	<b>81</b>
Parameter	-
Description	Backup failed.
Comment	Creation of a backup file failed.
Requirement	<a href="#">SR 7.3 - Control system backup</a>
Severity	<a href="#">Error</a>

## 1.25. SE\_BACKUP\_RESTORE\_STARTED

<b>ID</b>	<b>85</b>
Parameter	<a href="#">fct</a> , <a href="#">resource</a> , <a href="#">dateAndTime</a>
Description	Restore started.
Comment	Restore of a backup file is started.
Requirement	<a href="#">SR 7.4 - Control system recovery and reconstitution</a>
Severity	<a href="#">Notice</a>

## 1.26. SE\_BACKUP\_RESTORE\_FAILED

<b>ID</b>	<b>86</b>
Parameter	-
Description	Restore failed.
Comment	Restore of a backup file failed.
Requirement	<a href="#">SR 7.4 - Control system recovery and reconstitution</a>
Severity	<a href="#">Error</a>

## 1.27. SE\_BACKUP\_RESTORE\_SUCCESSFULLY\_DONE

<b>ID</b>	<b>87</b>
Parameter	-
Description	Restore finished.
Comment	Restore of a backup file is finished successfully.
Requirement	<a href="#">SR 7.4 - Control system recovery and reconstitution</a>
Severity	<a href="#">Notice</a>

## 1.28. SE\_SECURITY\_CONFIGURATION\_CHANGED

ID	94
Parameter	<a href="#">fct</a> , <a href="#">result</a>
Description	Security configuration data changed.
Comment	A security-relevant configuration change is performed for the given application (e.g. certificate management or user configuration).
Requirement	<a href="#">SR 7.6 - Network and security configuration settings</a>
Severity	<a href="#">Notice</a>

## 1.29. SE\_SESSION\_ESTABLISHED

ID	95
Parameter	<a href="#">fct</a> , <a href="#">result</a>
Description	A session is created after a successful login from a client.
Comment	A session is established, e.g. when an open secure channel request is processed by OPC UA.
Requirement	-
Severity	<a href="#">Informational</a>

## 1.30. SE\_CFG\_DATA\_CHANGED

ID	96
Parameter	<a href="#">fct</a> , <a href="#">interface</a> , <a href="#">MACaddress</a> , <a href="#">IPv4Suite</a> , <a href="#">NTPserver</a> , <a href="#">DNSserver</a> , <a href="#">hostName</a> , <a href="#">domainName</a> , <a href="#">PNDeviceName</a> , <a href="#">resource</a> , <a href="#">result</a> , <a href="#">resOper</a> , <a href="#">withMeasurements</a>
Description	Significant configuration changed. E.g. a new project configuration was loaded to the device.
Comment	A configuration change is performed for the given application (e.g. HW-Configuration, DCP commands or DHCP notifications). Detailed information is contained in parameters.
Requirement	-
Severity	<a href="#">Notice</a>

## 1.31. SE\_USER\_PROGRAM\_CHANGED

ID	97
Parameter	<a href="#">fct</a> , <a href="#">result</a> , <a href="#">checksum</a>
Description	A program that is executed by the device is modified.
Comment	User program is changed by a download or is being prepared for execution after boot sequence.
Requirement	-
Severity	<a href="#">Notice</a>

## 1.32. SE\_OPMOD\_CHANGED

ID	98
Parameter	<a href="#">fct</a> , <a href="#">oldState</a> , <a href="#">newState</a>
Description	Operating mode is changed. This has an impact on the behavior of the device.
Comment	Operating mode of PLC is changed. A separate message informs about the originator of this command.
Requirement	-
Severity	<a href="#">Notice</a>

## 1.33. SE\_FIRMWARE\_LOADED

ID	99
Parameter	<a href="#">fct</a> , <a href="#">result</a>
Description	Firmware successfully loaded.
Comment	A firmware is downloaded to PLC.
Requirement	-
Severity	<a href="#">Notice</a>

## 1.34. SE\_FIRMWARE\_ACTIVATED

<b>ID</b>	<b>100</b>
Parameter	<a href="#">fct</a> , <a href="#">oldState</a> , <a href="#">newState</a>
Description	Firmware successfully activated after download.
Comment	A firmware is activated after a successful download.
Requirement	-
Severity	<a href="#">Notice</a>

## 1.35. SE\_SYSTEMTIME\_CHANGED

<b>ID</b>	<b>101</b>
Parameter	<a href="#">fct</a>
Description	Modification of system time.
Comment	The system time of PLC is changed.
Requirement	-
Severity	<a href="#">Notice</a>

## 1.36. SE\_OPMOD\_CHANGE\_INITIATED

<b>ID</b>	<b>102</b>
Parameter	<a href="#">newState</a>
Description	A client initiated a change of the operating state of the device.
Comment	A change of the operating mode is initiated. A separate message informs when the change is executed.
Requirement	<a href="#">SR 2.1 RE 1 - Authorization enforcement for all users</a>
Severity	<a href="#">Notice</a>



## 1.37. SE\_RESET\_TO\_FACTORY

ID	103
Parameter	-
Description	The device is set back to factory settings. All data is set to default values and retentive buffers are empty.
Comment	PLC is reset to factory settings. This command deletes all retentive data on the device and initiates a reboot. It is not guaranteed that the message is sent before reboot to the syslog server. A separate message informs during subsequent boot up about the last reboot reason.
Requirement	<a href="#">SR 4.2 - Information persistence</a>
Severity	<a href="#">Notice</a>

## 1.38. SE\_MEMORY\_RESET

ID	104
Parameter	-
Description	A client initiates a reset of the user relevant memory areas.
Comment	Memory reset is performed and deletes all non-retentive data. Operating mode changes caused by this command are reported in separate messages.
Requirement	<a href="#">SR 4.2 - Information persistence</a>
Severity	<a href="#">Notice</a>

## 1.39. SE\_SECURITY\_STATE\_CHANGE

ID	105
Parameter	<a href="#">fct</a> , <a href="#">result</a>
Description	The device itself or a subcomponent changed an important state.
Comment	An application or component is running in provisioning mode. Security may be lowered down as long as this special mode is active.
Requirement	<a href="#">CR 3.13 - Provisioning product supplier roots of trust</a>
Severity	<a href="#">Notice</a>

## 1.40. SE\_DEVICE\_STARTUP

<b>ID</b>	<b>106</b>
Parameter	<a href="#">fct, result</a>
Description	The startup of the device itself (and not components inside) is indicated and provides additional information.
Comment	PLC is booting up after power on or a reboot sequence. The reason for the last shut down reason is given in the parameters.
Requirement	<a href="#">CR 3.14 - Integrity of the boot process</a>
Severity	<a href="#">Notice</a>

## 1.41. SE\_TIME\_SYNCHRONIZATION

<b>ID</b>	<b>201</b>
Parameter	<a href="#">fct, result</a>
Description	Internal system time is affected by a change or issue of time synchronization.
Comment	Time synchronization is started, stopped, got lost or has returned.
Requirement	-
Severity	<a href="#">Notice</a>

## 1.42. SE\_DEVICE\_CONNECTED

<b>ID</b>	<b>301</b>
Parameter	<a href="#">fct, interface</a>
Description	USB device or SD card was connected, but not mounted.
Comment	A device is connected to PLC, e.g. Simatic memory card.
Requirement	-
Severity	<a href="#">Informational</a>

## 1.43. SE\_DEVICE\_DISCONNECTED

<b>ID</b>	<b>304</b>
Parameter	<a href="#">interface</a>
Description	USB device or SD card was disconnected.
Comment	External device (SMC, USB) has been disconnected.
Requirement	-
Severity	<a href="#">Informational</a>

## 1.44. SE\_SESSION\_TERMINATED

<b>ID</b>	<b>307</b>
Parameter	<a href="#">fct</a> , <a href="#">errReason</a>
Description	A local or remote session was terminated due to missing operator acknowledgement, timeout or network issues.
Comment	The session to a PLC application is terminated.
Requirement	-
Severity	<a href="#">Notice</a>

# Chapter 2. Parameter Details

## 2.1. checksum

Description: overall signature for user program

## 2.2. dateAndTime

Description: date and time

## 2.3. devProduct

Description: Device Product Name

## 2.4. devVendor

Description: Device Vendor Name

## 2.5. DNSserver

Description: DNS server addresses

## 2.6. domainName

Description: domain name

## 2.7. errReason

Description: error reason

## 2.8. fct

Description: Function

## 2.9. functionRight

Description: the requested function right

## 2.10. FWVersion

Description: Firmware Version

## **2.11. hostName**

Description: host name

## **2.12. interface**

Description: interface name

## **2.13. IPv4Suite**

Description: IP v4 Suite

## **2.14. MACaddress**

Description: MAC address

## **2.15. newState**

Description: new state or version

## **2.16. NTPserver**

Description: NTP server addresses

## **2.17. oldState**

Description: old state or version

## **2.18. PNDeviceName**

Description: PROFINET device name

## **2.19. protocolType**

Description: Protocol Type

## **2.20. resOper**

Description: resOper

## **2.21. resource**

Description: object or file name

## **2.22. result**

Description: Result

## **2.23. sessionID**

Description: Session ID

## **2.24. userMgmt**

Description: type of the user authentication

## **2.25. userName**

Description: name of the user

## **2.26. withMeasurements**

Description: withMeasurements

## Chapter 3. APP-NAME field content

AppName	Description
Backup/Restore	Software component implementing Online Backup and Restore
Cert-Store	Software component implementing certificate management
DCP-Server	DCP server
DHCP-Client	DHCP client
Display	Display of PLC
FW-Update	Software component managing firmware update
HW-Configuration	Software component managing hardware configuration
Memory-Card	Software component managing Memory Card
Memory-Mgt	Memory management
OPCUA-Server	Software component OPC UA
Operating-Mode-Mgt	Software component managing operating mode changes
PG/HMI-Comm	Software component managing the communication to Engineering system and HMI devices
PLC-Program	Software component for user program execution
PUT-GET-Server	Server for PUT/GET access from a client via unsecured S7 communication
RIB	Software component Real-time information backbone on a SIMATIC IPC with an S7 1500 Software Controller
Syslog	Software component syslog
Test-Functions	Test system for commissioning
Text-Lists	Text list manager
Time-System	Software component responsible for time system
UMAC	User management and access control
Webserver	Software component web server

# Chapter 4. Requirements

## 4.1. CR 3.10 - Support for updates

Description	The support for updates requirements are component-specific and can be located as requirements for each specific device type in Clauses 12 through 15. (Specific information for several device types can be found in EDR 3.10, HDR 3.10 and NDR 3.10)
Source	IEC 62443-4-2:2019

## 4.2. CR 3.13 - Provisioning product supplier roots of trust

Description	The provisioning product supplier roots of trust requirements are component-specific and can be located as requirements for each specific device type in Clauses 12 through 15. (Specific information for several device types can be found in EDR 3.13, HDR 3.13 and NDR 3.13)
Source	IEC 62443-4-2:2019

## 4.3. CR 3.14 - Integrity of the boot process

Description	The integrity of the boot process requirements are component-specific and can be located as requirements for each specific device type in Clauses 12 through 15. (Specific information for several device types can be found in EDR 3.14, HDR 3.14 and NDR 3.14)
Source	IEC 62443-4-2:2019

## 4.4. SR 1.11 - Unsuccessful login attempts

Description	The control system shall provide the capability to enforce a limit of a configurable number of consecutive invalid access attempts by any user (human, software process or device) during a configurable time period. The control system shall provide the capability to deny access for a specified period of time or until unlocked by an administrator when this limit has been exceeded.
Source	IEC 62443-3-3:2013



## 4.5. SR 1.13 - Access via untrusted networks

Description	The control system shall provide the capability to monitor and control all methods of access to the control system via untrusted networks.
Source	IEC 62443-3-3:2013

## 4.6. SR 1.1 RE 1 - Unique identification and authentication

Description	The control system shall provide the capability to uniquely identify and authenticate all human users.
Source	IEC 62443-3-3:2013

## 4.7. SR 1.1 RE 2 - Multifactor authentication for untrusted networks

Description	The control system shall provide the capability to employ multifactor authentication for human user access to the control system via an untrusted network (see 5.15, SR 1.13 - Access via untrusted networks).
Source	IEC 62443-3-3:2013

## 4.8. SR 1.1 RE 3 - Multifactor authentication for all networks

Description	The control system shall provide the capability to employ multifactor authentication for all human user access to the control system.
Source	IEC 62443-3-3:2013

## 4.9. SR 1.2 - Software process and device identification and authentication

Description	The control system shall provide the capability to identify and authenticate all software processes and devices. This capability shall enforce such identification and authentication on all interfaces which provide access to the control system to support least privilege in accordance with applicable security policies and procedures.
Source	IEC 62443-3-3:2013

## 4.10. SR 1.3 - Account management

Description	The control system shall provide the capability to support the management of all accounts by authorized users, including adding, activating, modifying, disabling and removing accounts.
Source	IEC 62443-3-3:2013

## 4.11. SR 1.4 - Identifier management

Description	The control system shall provide the capability to support the management of identifiers by user, group, role or control system interface.
Source	IEC 62443-3-3:2013

## 4.12. SR 1.5 - Authenticator management

Description	The control system shall provide the capability to: h) initialize authenticator content; i) change all default authenticators upon control system installation; j) change/refresh all authenticators; and k) protect all authenticators from unauthorized disclosure and modification when stored and transmitted.
Source	IEC 62443-3-3:2013

## 4.13. SR 2.1 - Authorization enforcement

Description	On all interfaces, the control system shall provide the capability to enforce authorizations assigned to all human users for controlling use of the control system to support segregation of duties and least privilege.
Source	IEC 62443-3-3:2013

## 4.14. SR 2.10 - Response to audit processing failures

Description	The control system shall provide the capability to alert personnel and prevent the loss of essential services and functions in the event of an audit processing failure. The control system shall provide the capability to support appropriate actions in response to an audit processing failure according to commonly accepted industry practices and recommendations.
Source	IEC 62443-3-3:2013

## 4.15. SR 2.12 - Non-repudiation

Description	The control system shall provide the capability to determine whether a given human user took a particular action.
Source	IEC 62443-3-3:2013

## 4.16. SR 2.1 RE 1 - Authorization enforcement for all users

Description	On all interfaces, the control system shall provide the capability to enforce authorizations assigned to all users (humans, software processes and devices) for controlling use of the control system to support segregation of duties and least privilege.
Source	IEC 62443-3-3:2013

## 4.17. SR 2.1 RE 3 - Supervisor override

Description	The control system shall support supervisor manual override of the current human user authorizations for a configurable time or event sequence.
Source	IEC 62443-3-3:2013

## 4.18. SR 2.1 RE 4 - Dual approval

Description	The control system shall support dual approval where an action can result in serious impact on the industrial process.
Source	IEC 62443-3-3:2013

## 4.19. SR 2.2 - Wireless use control

Description	The control system shall provide the capability to authorize, monitor and enforce usage restrictions for wireless connectivity to the control system according to commonly accepted security industry practices.
Source	IEC 62443-3-3:2013

## 4.20. SR 2.5 - Session lock

Description	The control system shall provide the capability to prevent further access by initiating a session lock after a configurable time period of inactivity or by manual initiation. The session lock shall remain in effect until the human user who owns the session or another authorized human user re-establishes access using appropriate identification and authentication procedures.
Source	IEC 62443-3-3:2013

## 4.21. SR 2.6 - Remote session termination

Description	The control system shall provide the capability to terminate a remote session either automatically after a configurable time period of inactivity or manually by the user who initiated the session.
Source	IEC 62443-3-3:2013

## 4.22. SR 2.7 - Concurrent session control

Description	The control system shall provide the capability to limit the number of concurrent sessions per interface for any given user (human, software process or device) to a configurable number of sessions.
Source	IEC 62443-3-3:2013

## 4.23. SR 2.8 RE 1 - Centrally managed, system-wide audit trail

Description	The control system shall provide the capability to centrally manage audit events and to compile audit records from multiple components throughout the control system into a system-wide (logical or physical), time-correlated audit trail. The control system shall provide the capability to export these audit records in industry standard formats for analysis by standard commercial log analysis tools, for example, security information and event management (SIEM).
Source	IEC 62443-3-3:2013

## 4.24. SR 2.9 RE 1 - Warn when audit record storage capacity threshold reached

Description	The control system shall provide the capability to issue a warning when the allocated audit record storage volume reaches a configurable percentage of maximum audit record storage capacity.
Source	IEC 62443-3-3:2013

## 4.25. SR 3.1 - Communication integrity

Description	The control system shall provide the capability to protect the integrity of transmitted information.
Source	IEC 62443-3-3:2013

## 4.26. SR 3.2 - Malicious code protection

Description	The control system shall provide the capability to employ protection mechanisms to prevent, detect, report and mitigate the effects of malicious code or unauthorized software. The control system shall provide the capability to update the protection mechanisms.
Source	IEC 62443-3-3:2013

## 4.27. SR 3.4 - Software and information integrity

Description	The control system shall provide the capability to detect, record, report and protect against unauthorized changes to software and information at rest.
Source	IEC 62443-3-3:2013

## 4.28. SR 3.7 - Error handling

Description	The control system shall identify and handle error conditions in a manner such that effective remediation can occur. This shall be done in a manner which does not provide information that could be exploited by adversaries to attack the IACS unless revealing this information is necessary for the timely troubleshooting of problems.
Source	IEC 62443-3-3:2013

## 4.29. SR 3.8 - Session integrity

Description	The control system shall provide the capability to protect the integrity of sessions. The control system shall reject any usage of invalid session IDs.
Source	IEC 62443-3-3:2013

## 4.30. SR 3.9 - Protection of audit information

Description	The control system shall protect audit information and audit tools (if present) from unauthorized access, modification and deletion.
Source	IEC 62443-3-3:2013

## 4.31. SR 3.9 RE 1 - Audit records on write-once media

Description	The control system shall provide the capability to produce audit records on hardware-enforced write-once media.
Source	IEC 62443-3-3:2013

## 4.32. SR 4.2 - Information persistence

Description	The control system shall provide the capability to purge all information for which explicit read authorization is supported from components to be released from active service and/or decommissioned.
Source	IEC 62443-3-3:2013

## 4.33. SR 7.1 - Denial of service protection

Description	The control system shall provide the capability to operate in a degraded mode during a DoS event.
Source	IEC 62443-3-3:2013

## 4.34. SR 7.3 - Control system backup

Description	The identity and location of critical files and the ability to conduct backups of user-level and system-level information (including system state information) shall be supported by the control system without affecting normal plant operations.
Source	IEC 62443-3-3:2013

## 4.35. SR 7.3 RE 1 - Backup verification

Description	The control system shall provide the capability to verify the reliability of backup mechanisms.
Source	IEC 62443-3-3:2013

## 4.36. SR 7.4 - Control system recovery and reconstitution

Description	The control system shall provide the capability to recover and reconstitute to a known secure state after a disruption or failure.
Source	IEC 62443-3-3:2013

## 4.37. SR 7.5 - Emergency power

Description	The control system shall provide the capability to switch to and from an emergency power supply without affecting the existing security state or a documented degraded mode.
Source	IEC 62443-3-3:2013

## 4.38. SR 7.6 - Network and security configuration settings

Description	The control system shall provide the capability to be configured according to recommended network and security configurations as described in guidelines provided by the control system supplier. The control system shall provide an interface to the currently deployed network and security configuration settings.
Source	IEC 62443-3-3:2013

# Chapter 5. Severities

## 5.1. Alert

Value	1
Meaning	System conditions requiring immediate attention. E.g. corrupted system database, insufficient disk space, run out of file descriptors, audit log corrupt / stopped / deleted.

## 5.2. Critical

Value	2
Meaning	Indicates failure in a primary system. Mostly serious system/application malfunctioning, such as failing hardware (hard device errors) or software. Usually non-recoverable. E.g. H-System not available.

## 5.3. Error

Value	3
Meaning	Mostly correctable errors, for example errors other than hardware device errors. Continuation of the operation is possible. Usually all error conditions are automatically recoverable. E.g. authentication / autorisation failures, CPU and resource issues, any problems that do not infect 'normal operation'.

## 5.4. Warning

Value	4
Meaning	Not an error, but indication that an error will occur if action is not taken. E.g. file system 85% full.

## 5.5. Notice

Value	5
Meaning	Events that are unusual but not error conditions. Change of any authorized security setting. Non-error conditions that might require special handling. E.g. configuration event, commands executed by user (after successful authentication), change of security policy by administrator, activation AV scanner.



## 5.6. Informational

Value	6
Meaning	Normal operational messages based on valid security policy. E.g. successful authentication / autorisation event, commands executed by user (after successful authentication), firewall has passed a frame (only by special FW-setting).