

Webinar SINEC NMS Network Management 7 Maj 2021

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V1.0

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Industriell Kommunikation Sverige - Introduktion

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Global trends are creating new challenges for our customers





A comprehensive network management system has become essential





Network reliability



Economic efficiency



Compatibility



Support & guarantee

SINEC NMS – Versatile for all industries





SINEC NMS monitors communication networks in all industries

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SINEC NMS WHAT IS SINEC NMS?



SINEC NMS – a new network management system

The new **network management system** for industrial networks, SINEC NMS, is a web server application. SINEC NMS combines the previous functionalities of SINEMA Server and RUGGEDCOM NMS, and is designed to meet future challenges. With the **SINEC NMS platform**, users can monitor and manage industrial networks varying from small to large size with a single SINEC NMS installation. Thanks to the distributed approach of SINEC NMS, the network management system can be dynamically adapted to the network requirements of the respective customer facilities.

Control:

The control is the central instance in SINEC NMS, which displays the overall condition of the network. It gives the user an overview of the overall network status. Furthermore, the distributed SINEC NMS Operations are centrally managed in the control.

Operation:

The Operations detects the network devices and reads the respective information from the devices. In addition, the SINEC NMS Operations is distributed throughout the network and implement the configuration parameters (policies) from the Control on the devices.



SINEMA Server versus SINEC NMS



	SINEMA Server	SINEC NMS
User management	 Local users must be created for each SINEMA Server installation 	 Local users in SINEC NMS for Control and Operation Central user management via UMC and active directory
Complete overview	 The SINEMA Server overview gives the user a complete overview of the network 	 In the SINEC NMS Control, the overall condition of the network can be viewed at a glance on the dashboard
Quantity structures	 SINEMA Server supports up to 500 devices per installation 	 SINEC NMS supports 37500 devices and max. 500 devices per SINEC NMS Operation
Reports	 Creation of reports in every SINEMA Server installation 	 Creation of reports is centrally initiated by SINEC NMS Control for all SINEC NMS Operations Central Inventory list with overview of all installed devices in the monitored network
Configuration	 Device configuration and firmware update via CLI jobs for single or multiple SCALANCE components 	 Device configuration and firmware update for single or multiple SCALANCE components Rule-based configuration of a wide range of network functions (policy-based) such as LAN/WLAN parameters Backup/restoring and comparison of the device configuration of SCALANCE components
System management	 The basic parameters for the communication with the devices must be set up in each SINEMA Server installation 	 Distributed network management system with central management of the basic parameters for the SINEC NMS Operations in the SINEC NMS Control Central role/rights management in SINEC NMS Control

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SINEC NMS to Face the Challenges









Network Management Definition – FCAPS (universal) following ISO standard 10040

SIEMENS Ingenuity for life

The term "network management" usually refers to the administration, the operating technology and the monitoring of IT and telecommunication networks.

The International Organization for Standardization (**ISO 10040**) defined five pillars of state-of-the-art network management und developed **FCAPS**, an ISO model.

(F) Fault Management:

Identify, save, report and solve any error status that occur

(C) Configuration Management:

Record and manage all components the must be monitored

(A) Accounting Management:

Record network usage to generate an invoice

(P) Performance Management:

Gather performance data, maintain statistics and define limit values

(S) Security Management:

Authenticate users and authorize access and users



SINEC NMS goes further than FCAPS, and also offers two overarching functions focused especially on industrial demands on networks and rounding out the functions of our NMS: "System Management" and Northbound Interface"

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SINEC NMS Architecture





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SINEC NMS offers full conformity to the IT-related ISO for Network Management - but developed to solve OT challenges

Network Management Definition – FCAPS (universal) following ISO standard 10040



1. Distributed, scalable system approach

- 1x Control with 75x Operations
- per Operation max. 500 nodes > 37.500 nodes
- License for 50, 100, 250, 500 network devices (nodes)
- Add licenses (50 + 250 = 300)



3. Device-/Inventory list and topology

- Asset-/Inventory list (37.500 devices)
- UpToDate Overview of all network devices inclusive most important device properties
- NW-Topology (HTML5 based)



2. Monitoring/diagnostics, statistics

Central monitoring and diagnostics

- via ICMP, **SNMP**, **PROFINET IO**, **SIMATIC** Diag.
- PN IO channel diagnostics / GSDML-Import
- NW-statistics collecting, saving evaluating

4. Policy-based NW-configurations

- Saves time for configuration of network devices and troubleshooting in case of miss configurations
- For example Device hardening
 - Deactivate unsecure protocols
 - Change Password every 6 month



For SCALANCE and RUGGEDCOM

SINEC NMS V1.0 Network management "Top 10"



5. Policy-based FW-Update

- Central FW-Update based on topology know-how (path-based enforcement order)
 - During device restart, consider the order of each device
- Integrated TFTP-Server



6. Device configuration management

- SCALANCE Device configurations:
 - save
 - edit
 - compare
 - restore

7. Centralized User-management

- Central user-management with User-Management-Component (UMC from TIA Portal)
- Connection to Windows Active Directory (AD) for SINEC NMS and SCALANCE (via UMR)

8. Validation report

- Specified <> Actual comparison
- Results as .pdf



SINEC NMS V1.0 Network management "Top 10"



9. NAT-Network / Firewall

- Monitoring of networks with identical IP-Address structure
- For NAT-router with NATv2 MIB (SC-600, S615/M800)



10. Integration in overlaying systems

- Standardized northbound interface for integration into overlaying systems like HMI/SCADA, PCS 7, SIEM...
- e.g. OPC UA, HTTPS, E-MAIL, .csv/json export of device list
- From SP 1:
 - Syslog-connection to Syslog-Server (e.g. SIEM-System Integration)





For SCALANCE and RUGGEDCOM

Comparison of TIA Portal and SINEC NMS



There are overlaps between the TIA Portal and SINEC NMS with regard to the configuration of network components.

TIA Portal



Here, the respective mode of operation of the customer must be taken into account when considering the best solution.

SINEC NMS



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SINEC NMS Combination of TIA Portal and SINEC NMS





SINEC NMS Configuration of network components via SINEC NMS



SINEC NMS

- SINEC NMS knows all participants in the network and automatically determines which network parameters are configurable on the different components.
- By means of "policies", rules for a central configuration of the network can be defined.
- By means of time controls, it can also be ensured long-term that the rules for the network are adhered to.

Policy-based network configuration

By means of rules, devices in the network can be described into which the desired configuration is then loaded.

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SINEC NMS Configuration of PROFINET via TIA Portal



TIA Portal – PROFINET

- PROFINET devices (including network components) are configured in the TIA Portal.
- This configuration is uploaded to the SIMATIC CPU and from there distributed to the PROFINET devices.
- All PROFINET-relevant parameters on the network components are locked for the configuration via web/SNMP/ CLI during active PROFINET communication.
- All other network parameters are not configured via the TIA Portal!

PROFINET in the TIA Portal

All PROFINET-relevant parameters are configured in the TIA Portal and then transferred to the SIMATIC CPU.

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SINEC NMS – Complete configuration of the network components in the TIA Portal



TIA Portal – network configuration

- For many SCALANCE components, all available network parameters can be directly configured in the TIA Portal.
- These created configurations are transferred from the TIA Portal directly to the network components.
- For this function, the option "SINEMA configuration interface" must be activated on the device (activated by default).

SINEMA configuration interface

If the "SINEMA configuration interface" is activated, network components can be configured via the TIA Portal.

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Deep Dive

Sinec NMS





SINEC NMS – Online Certification training

Objectives

In this course, participants will learn how to use the network monitoring and management system SINEC NMS to monitor, Document, and configure their network from a central location. Through in-depth practical exercises you will put the Theoretical knowledge into practice.

Following the training, there is an option of taking a certification test. This test is part of the certification to become a "Siemens Certified Expert for Industrial Networks, which consists of several individual tests.

Certification (Siemens CEIN-LEVEL)

Reach out to us for more information and for available training sessions.

Туре	Online-Training
Duration	3.5 days
Language	en

Ordernumber: 9TF1276-0CC10-2UN7





Expertise in Industrial Networks ...





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