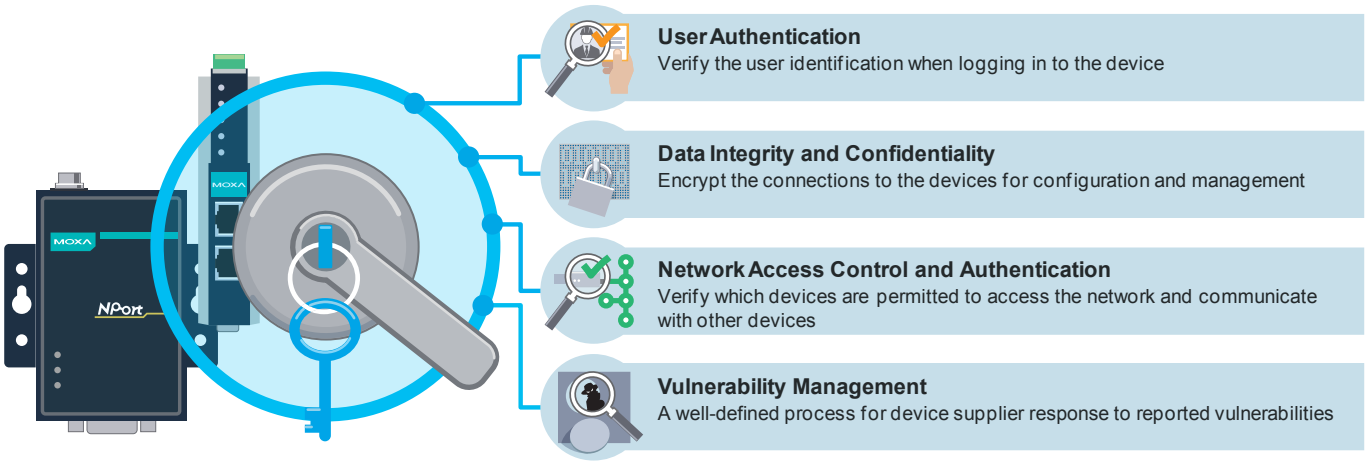
Checklist for Implementing Industrial Cybersecurity on Your Serial-to-Ethernet Devices

Serial-to-Ethernet devices are capable of remotely managing industrial edge devices, such as power meters, or factory equipment, such as CNC machines. As the Industrial Internet of Things (IIoT) has accelerated the adoption of IP-enabled industrial applications, the importance of information security is being stressed more than ever because systems are now all connected. Device security measures should include a number of built-in attributes and need to be implemented when serial-to-Ethernet devices are in operation.



To establish a solid foundation for network security, the following checklist lists security measures that you need to implement when configuring your serial-to-Ethernet devices.

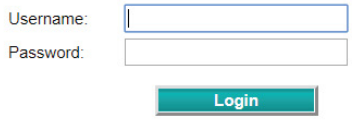
User Authentication

1 Enable user/password protection
Verifies the identity of a user

2 Enforce password complexity
Enhances access control

3 Define User Level
Only authorized personnel has the right to manage the system's administration

1



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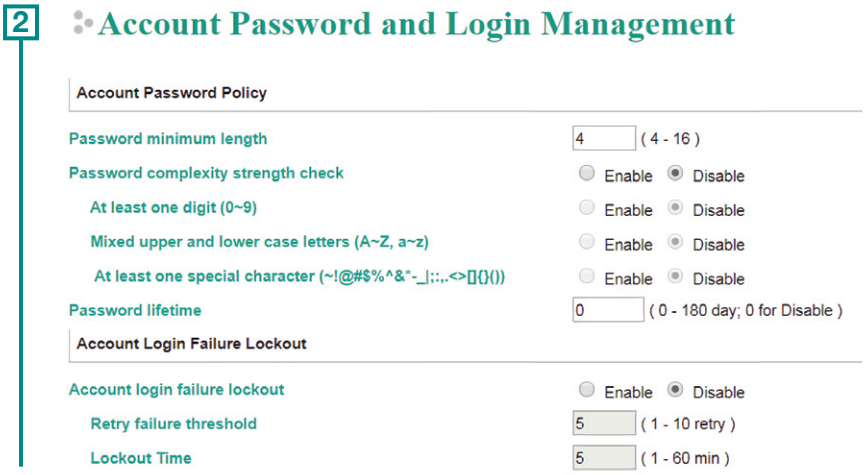

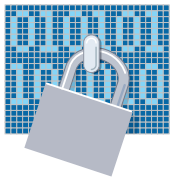

Data Integrity and Confidentiality

1 Turn down unused ports and services after device configuration has been done
Allows secure connections (e.g., HTTPS) only

2 Encrypt configuration data
To increase confidentiality

3 Encrypt serial data if it is considered to be confidential
To ensure data integrity (This feature is now only supported by the NPort 6000 Series)

1

Console Settings

HTTP console	Enable	Disable
HTTPS console	Enable	Disable
Telnet console	Enable	Disable
Serial console	Enable	Disable
Moxa Service	Enable	Disable
Maximum Login Users For HTTP+HTTPS	6 (1~6)	
Auto Logout Setting (min)	5 (1~1440)	
Reset button protect	No	Yes

2

Pre-shared Key

Pre-shared Key

Cipher key for encrypting the configuration file

3

Cipher Settings

Port 1

Use up/down to sort the cipher list.

Secure Mode (SSL/TLS) Ciphers

ECDHE-ECDSA-AES256-GCM-SHA384
ECDHE-RSA-AES256-GCM-SHA384
ECDHE-ECDSA-AES128-GCM-SHA256
ECDHE-RSA-AES128-GCM-SHA256
ECDHE-ECDSA-AES256-SHA384
ECDHE-RSA-AES256-SHA384
ECDHE-ECDSA-AES128-SHA256
ECDHE-RSA-AES128-SHA256

Up
Down

SSH/Reverse SSH Ciphers

aes128-cbc
3des-cbc
aes192-cbc
aes256-cbc
twofish256-cbc
twofish-cbc
twofish128-cbc
blowfish-cbc

Up
Down

Apply the above settings to P1 P2 All ports

Submit

Network Access Control and Authentication

1 Whitelist the IP addresses that have the right to access the system
Verify authorized devices before they gain access to the network and communicate with other devices

1

Accessible IP List

Activate the accessible IP list (Operation modes are NOT allowed for the IPs NOT on the list)

Apply additional restrictions (All device services are NOT allowed for the IPs NOT on the list)

No.	Activate the rule	IP Address	Netmask
1			
2			
3			
4			
5			
6			
7			
8			

Vulnerability Scan

1. Check and subscribe to vendors' security advisories to keep up to date on vulnerability fixes
2. Patch device firmware to ensure timely security protection

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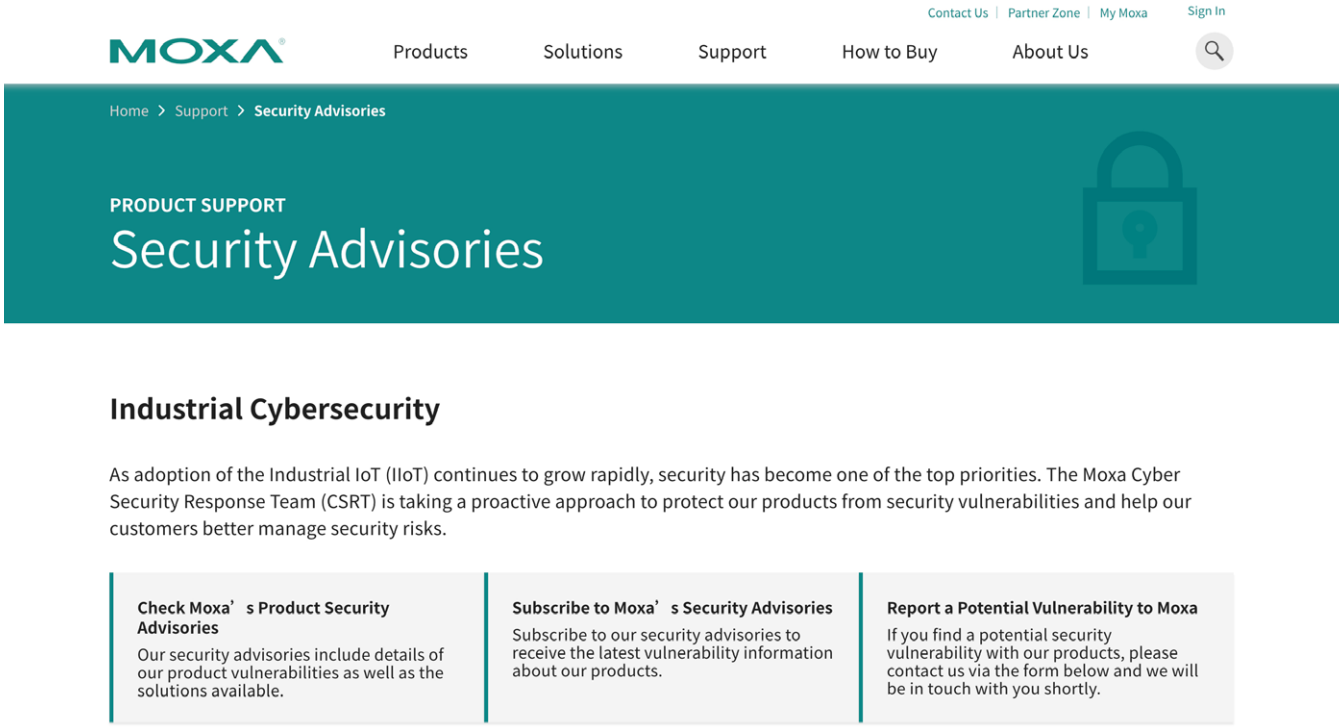

Moxa's serial-to-Ethernet devices actively scan for vulnerabilities periodically to check whether Moxa's devices are affected by any new vulnerabilities that require a remedy patch.

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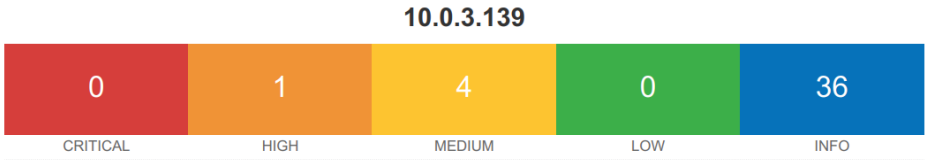

Vulnerabilities — Total: 41

SEVERITY	CVSS	PLUGIN	NAME
HIGH	7.5	41028	SNMP Agent Default Community Name (public)
MEDIUM	6.4	51192	SSL Certificate Cannot Be Trusted
MEDIUM	6.4	57582	SSL Self-Signed Certificate
MEDIUM	5.8	42263	Unencrypted Telnet Server
MEDIUM	5.0	42873	SSL Medium Strength Cipher Suites Supported

It is not only the key components of a system that matters, but also the management process behind the running of the system. Therefore, securing the device first is a good start.

Choose Product Designs Based on IEC 62443-4-2 Standard

Choosing a product that eases your security concerns is essential. Our NPort and MGate Series of products have various security features that meet the IEC 62443 standard, keeping your devices safe and sound.

Product Category	Product Features Based on IEC 62443-4-2 Standard
Serial Device Servers	**NPort 5100A Series** 1-port RS-232/422/485 serial device servers
	NPort P5150A Series 1-port RS-232/422/485 PoE serial device servers
	NPort 5200A Series 2-port RS-232/422/485 serial device servers
	NPort 5400 Series 4-port RS-232/422/485 serial device servers
	NPort 5600 Series 8 and 16-port RS-232/422/485 rackmount serial device servers
	NPort 5600-DT Series 8-port RS-232/422/485 serial device servers
	NPort 5600-DTL Series 8-port RS-232/422/485 serial device servers
	NPort IA5000A Series 1, 2, and 4-port serial device servers for industrial automation
	NPort 5000AI-M12 Series Railway 1, 2, and 4-port RS-232/422/485 serial device servers
	NPort 6100/6200 Series 1/2-port RS-232/422/485 secure terminal servers
	NPort 6400/6600 Series 4/8/16/32-port RS-232/422/485 secure terminal servers
	NPort S9450I Series 4-port rugged device server with managed Ethernet switch
	NPort S9650I Series 8/16-port rugged device server with managed Ethernet switch
Industrial Protocol Gateways	**MGate MB3170/3270 Series** 1 and 2-port advanced serial-to-Ethernet Modbus gateways
	MGate MB3180/3280/3480 Series 1, 2, and 4-port standard serial-to-Ethernet Modbus gateways
	MGate MB3660 Series 8 and 16-port redundant Modbus gateways
	MGate 5101-PBM-MN Series 1-port PROFIBUS-to-Modbus TCP gateways
	MGate 5102-PBM-PN Series 1-port PROFIBUS-to-PROFINET gateways
	MGate 5103 Series 1-port Modbus RTU/ASCII/TCP/EtherNet/IP-to-PROFINET gateways
	MGate 5105-MB-EIP Series 1-port Modbus RTU/ASCII/TCP-to-EtherNet/IP gateways
	MGate 5109 Series 1-port Modbus RTU/ASCII/TCP-to-DNP3 serial/TCP/UDP gateways
	MGate 5111 Series 1-port Modbus/PROFINET/EtherNet/IP to PROFIBUS slave gateways
	MGate 5114 Series 1-port Modbus RTU/ASCII/TCP/IEC 101-to-IEC 104 gateways
	MGate 5118 Series 1-port CAN-J1939 to Modbus/PROFINET/EtherNet/IP gateways
	MGate W5108/W5208 Series 1 and 2-port IEEE 802.11a/b/g/n wireless Modbus/DNP3 gateways