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Operational Technology

Network Mapping

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Operational Technology (OT) network mapping provides clear visibility into how industrial systems communicate across the plant floor. Many OT environments change over years, often without up-to-date documentation. This lack of visibility increases operational risk, cybersecurity exposure and downtime during incidents, or upgrades. Accurate network mapping is the foundation for secure IT/OT convergence, risk management and compliance.

1. Tools and Technology

1.1 Passive network monitoring tools

Passive network monitoring tools listen to network traffic without actively scanning devices, ensuring zero impact on production systems. They automatically discover programmable logic controllers (PLCs), human-machine interfaces (HMIs), supervisory control and data acquisition (SCADA) servers, sensors and industrial protocols.

Why it is used: OT environments are sensitive. Passive discovery avoids downtime while providing accurate, real-time visibility.

1.2 Industrial protocol analysis

Specialised protocol decoders identify device roles, communication paths and data flows unique to OT systems.

Why it is used: Traditional IT tools do not understand industrial traffic. Protocol analysis reveals how control systems truly operate.

1.3 Network topology and visualisation platforms

Mapping software converts raw network data into clear diagrams showing zones, conduits and trust boundaries aligned to the Purdue enterprise reference architecture (PERA).

Why it is used: Visual maps help engineers, cybersecurity teams and auditors quickly understand system dependencies and risks.

1.4 Asset identification and digital fingerprinting technologies

These tools identify device type, vendor, firmware version and operating system without logging into the device.

Why it is used: Asset identification and digital fingerprinting technologies enable accurate asset inventories and highlight legacy or unsupported systems that require protection.

2. Business Outcomes

OT network mapping is used to:

- Establish a trusted foundation of the OT environment
- Identify undocumented connections and insecure pathways
- Support cybersecurity assessments and segmentation design
- Improve incident response and troubleshooting speed
- Enable compliance with standards such as IEC 62443 and NIS2

3. Fortify Your Operational Resilience

Establish a trusted foundation of your OT environment to ensure secure IT/OT convergence, risk management and compliance. Contact our industrial network mapping specialists today to discuss how we can implement an OT network mapping solution for your OT environment.

Email Karina Geyser, Business Unit Manager: Infrastructure Solutions and Operational Technology at Datacentrix on kgeyser@datacentrix.co.za.

4. National Contact Details

Corporate office
Tel: +27 87 741 5000

Corporate Park North
238 Roan Crescent, 1685
Old Pretoria Road, Midrand

PO Box 50722
Randjiesfontein
Midrand, 1683

Logistics centre
Tel: +27 12 657 5000

26 Landmarks Avenue
Kosmosdal, Extension 11
Samrand, Midrand

PO Box 50722
Randjiesfontein
Midrand, 1683

Coastal

Cape Town office
Tel: +27 21 529 0700

18 Oxbow Crescent
The Estuaries
Century City, 7441

PO Box 181
Century City
Cape Town, 7446

East London office
Tel: +27 43 705 8000

Suite 2, 11 Cavendish Road
Vincent
East London, 5217

PO Box 19066
Tecoma
East London, 5214

Gqeberha office
Tel: +27 41 391 0200

Southern Life Gardens
Ground Floor, Block B, 70 2nd Avenue
Newton Park, Gqeberha

PO Box 63657
Greenacres, 6057

Durban office
Tel: +27 31 389 0500

1st Floor, 30A The Boulevard
Dawncliffe, Westville
Durban, 3629

PO Box 1645
Westville, Durban, 3630

Middle East

Doha office
Tel: +974 4007 1793

Eighteen Tower
Zone 69, Street 303, Building 230
19th Floor, Office 1972
Lusail, Doha, Qatar
PO Box 23107

Rest of Africa

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