

# Operational Technology (OT) Network Training

2021 Course List



# Background

*Information Technology* (IT) networks are optimised for the storage, recovery, transmission, manipulation and protection of data, for *business use*.

On the other hand, *Operational Technology* (OT) networks are more oriented to the control of *processes* through the monitoring and control of devices, for *industrial use*:

- Key to the operation of many industries, such as manufacturing, transport, utilities and mining
- Core to *building management systems* that operates key facility systems such as fire systems, lights, elevators, and heating and cooling systems
- Ever expanding and varied applications, for example, providing connectivity for automated vehicles at a remote mine site or the control system of a power station
- Critical to the safe operation of these diverse applications.

While OT networks run critical systems, paradoxically the resources being tasked to operate and support these networks have (historically) not been adequately trained:

- The lack of skills to triage network issues can lead to lengthy outages and loss to production
- Conversely, a small increase in availability can lead to substantial increases in productivity (and/or financial savings).

For over 6 years, Vernetzen has focused on developing the tools, training and procedures to be able to build, operate, maintain and support OT networks.

# Operational Technology (OT) Network Courses

Role based training aimed at addressing the upskilling and cross-skilling needs for all areas of the OT network operating model

## Specialisation Courses

- The specialisation courses ensure candidates have the skills to design, operate, maintain and troubleshoot industrial networks.
- It provides **Field, Operations and Design** staff with an understanding of the networking technologies needed in critical industrial network environments.



## Foundation Course

- Understanding the foundations of networking is paramount for any Operational Technology (OT) professional.
- This course covers the very basics and introduces network concepts and technologies.

Operating Technology Network Foundation  
(2 Day Course)

# OT Network Foundation Course

## (2 Days)

### Overview

This course gives the participant foundational networking theory and practical skills, in the following way:

- A networking concept is introduced
- Networking gear (hardware and software) is used to demonstrate concepts and reinforce theory
- The next networking concept that builds on previous ones will be introduced and the cycle repeated.

### Benefits

Operational Technology can be deployed and operate much more efficiently, if functions reliant on these networks have a greater understanding of them. This course aims to build the awareness across an organisation.

### Target Audiences

Any candidate requiring a better understanding of networks, including non-technical staff such as management. This course assumes no prior network knowledge.

### Key Topics

- The Emergence and Evolution of OT Networks in Mining
- The Risks associated with OT Networks
- The Challenges faced with OT Networks
- Technology Solutions and Strategies for Securing OT Networks

# OT Network Field Specialisation Course

## (5 Days)

### Overview

This course focuses on the practical understanding of networks and is hands on focused, reinforcing theory through problem solving practicals. At the end of the course, an exam is conducted to verify specialist knowledge.

### Benefits

OT Network Field Specialists have the ability to correctly and safely install, maintain and troubleshoot critical networks, increasing network availability.

### Target Audiences

Electricians, maintenance technicians or cabling that have completed the [OT Network Foundation Course](#).

### Key Topics

- Revise IP Addressing, Subnetting and VLANs
- Implement and Troubleshoot Industrial Switches
- Revise Wireless LANs
- Implement and Troubleshoot Wi-Fi Networks
- Revise Network Topologies for Underground Mines and Industrial Control Systems
- Implement and Troubleshoot Industrial Networks for Automation

# OT Network Operational Specialisation Course

## (5 Days)

### Overview

This course is intended to increase the understanding of network monitoring and management best practices in an OT environment. At the end of the course, an exam is conducted to verify specialist knowledge.

### Benefits

Candidates learn how to perform network management functions such as cybersecurity monitoring, network monitoring, control, resource allocation, deployment, coordination and planning; resulting in more efficient operations.

### Target Audiences

IT, Process Control or Engineers that have completed the [OT Network Foundation Course](#).

### Key Topics

- Network Management and Operation
- Network Management Architecture, Protocols and Components
- Examine OAM&P Functions and Procedures
- OTSM Functions (Fault, Configuration, Monitoring, Performance and Security)
- Key Concepts (Syslog, SNMP, protocols and standards)

# OT Network Design Specialisation Course

(5 Days)

## Overview

This course builds advanced knowledge of the network design concepts and principles required to develop industrial networks. It prepares an individual for selecting the right network technology for implementations to accommodate network growth and new applications such as automated vehicles.

At the end of the course, an exam is conducted to verify specialist knowledge.

## Benefits

OT Network Design Specialists are capable of selecting the appropriate network technology to meet the connectivity requirements of the applications needing to be used.

## Target Audiences

IT staff, engineers, electricians, technicians or cabling that have completed the [OT Network Foundation Course](#).

## Key Topics

- Select the correct network technology and topology
- Introduction to IIoT network technologies
- Design LAN for industrial networks (surface and underground)
- Design secure networks for an industrial network
- Design QoS for optimised end device experience
- Understand wired and wireless deployments.

# Chief Instructor

**Dr Bradley King** is Vernetzen's chief instructor and responsible for course development and delivery. Brad has a Traditional Engineering background and moved into the Network Engineering and Cybersecurity fields. Brad has a diverse set of skills and experience and understands first hand the challenges of the merging fields of IT and OT.

## Relevant Experience

- Network Engineer specialising in Wireless and Cyber Security for approximately 6 years
- Widely recognised industry certifications:
  - CCNA (Routing & Switching)
  - CCNA (Wireless)
- Experienced Project Manager (particular in deployment of industrial networks and their configuration)
- Prior to Network Engineering, Bradley was a chemical engineer with a PhD from the University of Queensland
  - Primarily novel process development projects



# Vernetzen

Vernetzen is an industrial network and cybersecurity specialist, focused on delivering practical solutions to enhance and secure Australian industry.

Our technical team consists of a mix of electricians, IT programmers, network engineers and traditional engineers such as chemical, electrical and mechanical that provides the ideal spectrum of skill sets in Industrial Networks where engineering and IT converge.

Vernetzen has a track record of providing entire life cycle solutions: from conception to implementation, and operations.



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