

Definitive IP CCTV for engineers

A 2 day **Hands on** training course



Description

This hands-on course gives engineers the practical networking knowledge needed to install, configure and troubleshoot modern IP CCTV systems. It covers the key technologies behind networked video, including cameras, NVR/VMS platforms, PoE, VLANs, wireless links, video streams, ONVIF, remote access and security.

The focus is on understanding how IP CCTV works “on the wire”, rather than learning one specific manufacturer’s equipment. Practical sessions are used throughout to reinforce the theory and build confidence in diagnosing real-world CCTV network issues.



Key outcomes

By the end of the course delegates will be able to:

- ✓ Install and connect IP CCTV devices.
- ✓ Configure IP CCTV systems.
- ✓ Explain how IP CCTV protocols, video streams and ONVIF work.
- ✓ Analyse bandwidth, storage and performance issues in IP CCTV networks.
- ✓ Secure and troubleshoot IP CCTV systems.



Training approach

This structured course uses Instructor Led Training to provide the best possible learning experience. Small class sizes ensure students benefit from our engaging and interactive style of teaching with delegates encouraged to ask questions throughout the course. Quizzes follow each major section allowing checking of learning. Hands on sessions are used throughout to allow delegates to consolidate their new skills.



Details

Who will benefit?

Technical staff working with IP CCTV.






Prerequisites

None.

Duration: 2 days

Course rating:



Generic training 	Small class sizes 	Hands On training 	Our courseware 	Customise your course 
<p>Generic training complements product specific courses covering the complete picture of all relevant devices including the protocols “on the wire”.</p>	<p>We limit our maximum class size to 8 delegates; often we have less than this. This ensures optimal interactivity between delegates and instructor.</p>	<p>The majority of our courses use hands on sessions to reinforce the theory.</p>	<p>We write our own courses; courseware does not just consist of slides and our slides are diagrams not bullet point text.</p>	<p>Please contact us if you would like a course to be customised to meet your specific requirements. Have the course your way.</p>
<p><i>“Friendly environment with expert teaching that teaches the why before the how.”</i> G.C. Fasthosts</p>	<p><i>“Excellent course. The small class size was a great benefit...”</i> M.B. IBM</p>	<p><i>“Not many courses have practice added to it. Normally just the theoretical stuff is covered.”</i> J.W. Vodafone</p>	<p><i>“Comprehensive materials that made the course easy to follow and will be used as a reference point.”</i> V.B. Rockwell Collins</p>	<p><i>“I was very impressed by the combination of practical and theory. Very informative. Friendly approachable environment, lots of hands on.”</i> S.R. Qinetiq</p>

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Course content

Introduction

What is IP CCTV? Camera types, Video, Audio, two way audio, NVR/VMS recording and management software.

Hands on: Installing IP CCTV.

How IP CCTV works

TCP, UDP, IP, RTP, RTSP, SIP, PTZ, NTP, Wireshark. Port numbers. ONVIF.

Hands on: Using Wireshark to troubleshoot IP CCTV.

CCTV architecture

Components, servers, storage, LANs, WANs. Centralised, decentralised and cloud/hybrid architectures.

Hands on: Using IP CCTV.

Network issues with IP CCTV

Bandwidth, video resolution, compression, codecs, frame rates, audio. H.264/H.265 and storage impact. QoS. One way versus two way traffic. Packet loss, latency and jitter.

Hands on: Analysing CCTV traffic including packet loss, latency and jitter.

Ethernet

What is Ethernet? Ethernet cabling, Inside versus outside, switches, PoE, PoE budgets, VLANs.

Hands on: Ethernet connectivity.

Security

VPNs, Firewalls. Password policy, firmware updates VLAN separations, secure remote access.

Hands on: CCTV through a firewall.

Wireless

WiFi, other wireless solutions, 802.11 standards, frequencies, WiFi 5/6/6E/7. Access Points, bridges, repeaters. Wireless security including WPA2/WPA3, legacy risks, signal strength and interference.

Hands on: WiFi configuration

Troubleshooting

ping, tracer, arp, ipconfig, pathping, nslookup, Wireshark. Cable issues, switch issues, switch port status, PoE status, VLAN checks. WiFi issues. CCTV issues. Camera and NVR logs.

Hands on: CCTV troubleshooting.

Configuration

Ways to configure, IP addresses, subnet mask, default gateway, DHCP, NAT, secure remote access methods and risks of port forwarding.

Hands on: CCTV configuration.

Miscellaneous

Design issues, multicasting, gateways. DVR/ NVR/VMS/cloud and edge recording. Calculating storage requirements. Basic AI analytics.

