

# Networking - Advanced TCP/IP and Wireless Networking Technologies

Course code: GOC186

This advanced five-days instructor led course builds on the basic knowledge obtained at the prerequisite course and extends administrator abilities to understand, configure, operate and troubleshoot advanced networking and wireless technologies, such as routers, (L3) switches, VLAN, VPN, SNMP, R/STP, quality of service, wifi and access points, multicasting, IGMP. Students will be presented with lab environment based on a few current hardware vendor products such as Cisco, HP or DELL and others.

## Who is the course for

The course is designed for IT specialists who have TCP/IP protocol knowledge which encompasses the Previous course and who will have to implement, plan and solve the network infrastructure - controllable switches, WiFi access points, RADIUS server, VPN access for the employees working from home or from another place, but they have a little experience with these elements.

## What we teach you

Plan and implement wireless networks

Manage RADIUS server for monitoring the access to the network

Optimize the switches

Extend the access to the company network for the employees outside the workplace via the VPN

Monitor the load of network elements and prevent the network from overloading

Use the possibilities of central settings in Group Policy

## Required skills

The knowledge of courses listed in Previous Courses and Related Courses section

Good knowledge of TCP/IP and DNS technologies

## Course outline

WiFi networks

Frequency for wireless network transmission

Presentation of spectral analysis

Types of antennas and their application according to clients' /AP position

Fresnel zone

Overview of 802.11 standards

Transmission technologies, encoding, reach, interference

Data, control and management frameworks

Access devices, repeaters, bridges

Constructing of simple networks

Extension of simple networks

Administration of large networks and roaming, LightWeight AP, Wireless Controller Switch

Radius server

### GOPAS Praha

Kodaňská 1441/46  
101 00 Praha 10  
Tel.: +420 234 064 900-3  
[info@gopas.cz](mailto:info@gopas.cz)

### GOPAS Brno

Nové sady 996/25  
602 00 Brno  
Tel.: +420 542 422 111  
[info@gopas.cz](mailto:info@gopas.cz)

### GOPAS Bratislava

Dr. Vladimíra Clementisa 10  
Bratislava, 821 02  
Tel.: +421 248 282 701-2  
[info@gopas.sk](mailto:info@gopas.sk)



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# Networking - Advanced TCP/IP and Wireless Networking Technologies

Reasons for implementation - security, dynamic access assignment

Politics administration

Certificates implementation

Checking the access to switches and wireless networks via security groups in Active Directory

Implementation of network clients verifying via Group Policy

Virtual LANs / Virtual local networks

Reasons for deployment - security, field of all-directional transmission

VLANs principles

802.1q frame tagging

VLAN interconnection

Switching over on the 3rd layer

Spanning Tree Protocol

Solving the loops in the network

Root switch option

Routes closing principle

Optimization of protocol for various VLAN data transmissions

Quick convergence via RPVST

Ports aggregation

Principles of ports aggregation

Protocols for ports aggregation

Multicasting / Group transmission

Principles of groups' transmission

Support on the 2nd layer switching level

IP protocol group transmission

Group addressing

Groups administration: IGMP protocol

Group transmission routing

Multicasting application

Virtual Private Networks

Types of VPN solution

Implementation of VPN server on Microsoft Windows platform

Central setting of VPN access

Central monitoring of VPN access use

## **GOPAS Praha**

Kodaňská 1441/46  
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# Networking - Advanced TCP/IP and Wireless Networking Technologies

Quality of Services / Ensuring the quality services

Qos requirements

Qos ensuring principles

QoS implementation

QoS priority/DiffServ

NBAR, classification and marking

Queuing, LLQ

WRED

Network Management / Networks administration

SNMP protocols development

MIB database

Implementation of networks supervision via Nagios / Paessler presentation

Preparation for certification exams

Microsoft certification exams, except MCM certifications, do not require students to attend the official MOC course to pass the exam

Official Microsoft MOC courses as well as our own GOC courses are suitable for preparation for Microsoft certification exams such as MTA, MCP, MCSA, MCSE or MCM

A prime goal of the course is not the preparation for the certification exams of its own, but learning the theoretical principles and managing the practical skills which are necessary for the effective work with the certain product

MOC courses usually cover almost all topics required for the relevant certification exams, but they do not always give every topic the same amount of time and emphasis as the completion of certification exam may require

Students can always use e.g books from MS Press (so called Self-paced Training Kit) and also the electronic self-test software for they exam preparation

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