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# Course: Introduction to TCP\_IP and Internet Security

Code	City	Hotel	Start	End	Price	Language - Hours
683	Zurich (Switzerland)	Hotel Meeting Room	2024-12-23	2024-12-27	5450 €	En - 25

## Overview

This is an overview of the TCPIP Suite of protocols. It is designed for audiences new to the world of TCP/IP. It is an instructor led presentation course with some computer based practical exercises

## Objectives

- Be introduced to the various protocols that are covered by TCP/IP
- Learn about the development and limitations of Internet Protocol Addressing
- Learn how to plan and configure a TCP/IP based network
- Learn some of the tools used to troubleshoot TCPIP networks

## Course Outline

### Introduction

- History of TCP/IP
- Standards Bodies - The Internet
- TCP/IP Architecture
- The TCP/IP Suite
- Standards Bodies - ISO
- Open System Interconnection
- ISO OSI 7-layer model
- Layered Protocols



## **The Internet Protocol**

- Internet Protocol
- Internet Protocol Version 4 Addressing
- Internet Protocol Routing
- IPv4 Address Classes
- Classfull IPv4 Address Ranges
- Multicast Addresses
- IPv4 Reserved Addresses
- IPv4 Address Assignment
- IPv4 Private Network Addressing
- Address Exercise
- IP Address Allocation
- Dynamic IP Address Allocation - RARP
- Dynamic IP Address Allocation - BOOTP
- Dynamic IP Address Allocation - DHCP
- Windows DHCP Commands
- The IPv4 Header
- IP Fragmentation
- IP Precedence
- Differentiated Services - DiffServ

## **Address Resolution**

- Protocol Encapsulation with TCP/IP
- Address Resolution Protocol (ARP)
- Default Gateway
- Connecting Hosts

## **IP Address Limitations**

- Limitations of the Classfull System



- Subnet Motivation - IP Addresses
- Subnet Extensions
- Subnetting
- Subnet Mask Application
- Defining Subnetworks
- Subnetworking in Action
- Subnet Granularity
- Subnet Mask Application
- Subnet/Supernet Calculators
- What is IPv6?

## **ICMP**

- Internet Control Message Protocol
- PING
- PING Options
- TraceRoute
- PathPing

## **The Transport Layer**

- TCP Concepts
- Simple Reliability
- TCP Segment
- TCP Port Numbers
- User Datagram Protocol (UDP)
- UDP Segment
- UDP versus TCP

## **IP Routing**

- Routers and Routing
- Static Routing



- Static Routing
- Dynamic Routing
- Dynamic Routing Protocols
- Routing Information Protocol
- RIP Versions
- RIP Responses
- Open Shortest Path First
- An OSPF Network
- OSPF Costs
- Link State Algorithm
- The OSPF Hello Message
- OSPF Convergence

## **NAT & NAT with PAT**

- Introduction
- Overview
- Network Address Translation
- Dynamic NAT with Port Address Translation
- NAT with Port Address Translation

## **The Domain Name System**

- The Domain Name System
- The Domain Name Space
- Windows DNS Configuration
- Testing DNS

## **The Process Layer**

- Processes
- File Transfer Protocol
- Trivial File Transfer Protocol



- Telnet
- Modern Network Management
- Simple Network Management Protocol
- Components of SNMP



**The Scandinavian Academy for Training and Development employs modern methods in training and skills development, enhancing the efficiency of human resource development. We follow these practices:**

- **Theoretical Lectures:**

- We deliver knowledge through advanced presentations such as PowerPoint and visual materials, including videos and short films.

- **Scientific Assessment:**

- We evaluate trainees skills before and after the course to ensure their progress.

- **Brainstorming and Interaction:**

- We encourage active participation through brainstorming sessions and applying concepts through role play.

- **Practical Cases:**

- We provide practical cases that align with the scientific content and the participants specific needs.

- **Examinations:**

- Tests are conducted at the end of the program to assess knowledge retention.

- **Educational Materials:**

- We provide both printed and digital scientific and practical materials to participants.

- **Attendance and Final Result Reports:**

- We prepare detailed attendance reports for participants and offer a comprehensive program evaluation.

- **Professionals and Experts:**

- The programs scientific content is prepared by the best professors and trainers in various fields.

- **Professional Completion Certificate:**

- Participants receive a professional completion certificate issued by the Scandinavian Academy for Training and Development in the Kingdom of Sweden, with the option for international authentication.

- **Program Timings:**

- Training programs are held from 10:00 AM to 2:00 PM and include coffee break sessions during lectures.