SSVP™ SIP School VoIP Professional Certification

Exam Objectives

The SSVP™ exam is designed to test your skills and knowledge on the basics of Networking and Voice over IP. Everything that you need to cover in order to pass this test is covered in the **Networking 4 VoIP** training program but if you decide to 'train' elsewhere then these are the topics that you should learn about in order to be prepared for the test.

This list is the same as the 'course topics' list also found under the 'outline' button next to the course name in the Catalog.

Please note that if you go along an alternate training path it is possible that you may get a question that may not have been covered in that path. It's up to you!

Topics:

What is Voice over IP?	This is an introduction module that sets out the scope of the course and introduces the concepts of LANs and WANs.
Networking Components	This module is designed to introduce you to Data networks and how devices connect to them. It does this by describing the most commonly used topologies and cabling types in use today. **Topologies** **What is a Protocol?** **UTP and STP Cables** **RJ-45 Connectors** **UTP Implementations** **Power over Ethernet** **Fiber Optics**
Ethernet	Ethernet is the predominant force in networking today and this module introduces all of the concepts needed to understand this specification along with introducing basic network components like LAN cards and LAN switches. **Ethernet and 802.3** **NIC Cards** **Hubs and Ethernet** **Collisions and CSMA/CD** **Repeaters** **Bridges** **LAN switches** **Routers** **Bandwidth**

The OSI Model

The OSI Model was designed to break networking components and software into 'bite-size' interoperable chunks. This module explains the 7 layers of the OSI model and compares them to the real world implementation of the TCP/IP layered model.

- The Reasons for OSI
- The 7 Layers
- Role of the 'Application' layers
- Role of the 'Data' layers
- OSI v TCP/IP
- Physical Layer functions
- Datalink Layer functions and MAC addresses
- IEEE 802.2/3 Frame format
- Switches and the Datalink layer
- Network Layer Functions
- Transport Layer Functions
- Encapsulation / De-encapsulation

WANS

Wide Area Networks connect buildings, homes and people together. This module aims to explain what a WAN is and how they work along with explaining some WAN protocols such as PPP, ADSL and Frame Relay.

- What is a WAN?
- DTE/DCE
- Synchronous communications
- The Point to Point Protocol – PPP
- DSL
- ADSL @ Home
- ADSL Channels and Contention ratios
- Frame Relay
- WAN Physical Layer implementations

TCP/IP Networks

This module explains how TCP/IP networks work by describing the functionality of each TCP/IP layer. By understanding these layers you will understand how a TCP/IP network works which will give you a good understanding of how voice can be carried across an IP network.

- TCP/IP Protocol Stack
- Application Layer overview
- Transport Layer overview
- Ports and Sockets
- TCP/IP Internet Layer – Overview
- Address Resolution Protocol – ARP
- IP Datagrams
- ICMP

TCP/IP Addresses

IP Addresses, Subnet Masks, Default Gateways. It's all here and delivered to you in a way so that you will understand what these

numbers are for and how they work with each other.

Analogies
Binary and Hexadecimal
The IP address
IP Address Classes – A, B, C and more!
Special IP addresses
TCP/IP addressing quizzes
The Subnet mask
IP Address and Subnet mask 'in combination'
Sample IP networks
Addressing without subnets
Why subnet at all?
How many Subnets do you need?
Easy Subnetting

DHCP

This Module introduces the Dynamic Configuration protocol (DHCP) and describes what it is, how it works and how it works in a multi-network environment along with introducing some troubleshooting commands.

Overview of DHCP
Static or Dynamic addressing
DHCP Discovery
DHCP Offers
Lease and Renewal Times
Multiple DHCP Servers
Relay Agents
IPconfig utility

Troubleshooting

Follow the tips in this module and you will be able to solve the majority of problems you will encounter on a Network.

Troubleshooting Rules
Layer 8
Are you connected?
Ping utility
Loopback address
IPconfig utility
APIPA addresses
Ping Tests
Troubleshooting exercises

LAN Monitoring

This module teaches you how to use a Network monitoring program to analyse traffic on the network in order to help troubleshoot even the trickiest problems.

Lan Monitoring Tools
Capturing Traffic

Analyzing Frames
Filtering to assist in analysis

Switches and VLANS

This module explains the fundamental operation of a LAN switch along with the important concepts of Virtual LANs (VLANS).

Switch Functions
Address learning
Filtering and Forwarding Frames
Broadcast Frames
Redundant Topologies
Broadcast Storms and Loops
Multiple Frame Copies
MAC table instability
The Spanning Tree Protocol
How STP works
VLANS
802.1Q/P Tagging
Connecting VLANs
Router Sub-interfaces
Layer 3 Switches

Routing

Routers are used on the edge of networks to pass data onto a WAN and within Layer 3 LAN switches. This module describes how routers work along with a brief explanation of Routing protocols such as RIP, IGRP and EIGRP.

What is Routing?
Routers
Port guides
Static and Dynamic routes
Default Routes
Routing Decisions
Distance Vector Routing Protocols
RIP and Routing Table updates
Interior Gateway Protocol – IGRP
Other Routing Protocols
Testing Routes with TraceRT (Trace Route)

Wireless

Wireless is one of the fastest moving areas in the world of networking. This module explains the basics of Wireless networking along with information on securing your wireless network.

Wireless Networks
Wireless Bridging
WiFi
WiMax
Wireless Security

Bluetooth
Other Wireless Technologies

IP Applications and Services

So many other services can be found on a network and some, if not all, will have an impact on how your voice will work. This modules looks at services such as FTP, TFTP, Firewalls, NAT, Proxy Server, DNS and VPNS.

IP Applications
FTP – File Transfer Protocol
Setting up FTP
The FTP Default directory
Connecting to FTP
Transferring files
FTP Clients
TFTP - Trivial File Transfer Protocol
Firewalls
Network Addresses Translation
Proxy Servers
Telnet
DNS – The Domain Name System
VPNs – Virtual Private Networks

VoIP

This module introduces the different implementations of Voice over IP and describes the basics of codecs, signalling, the real time protocol (RTP), quality of service (QoS) and the basics of network design to reduce delay and jitter that can affect the quality of voice on a network.

What is Voice over IP
VoIP over the Internet
Branch to Branch VoIP
IP PBX
Encoding
Codec types
RTP – The Real Time Protocol
Bandwidth Requirements
Delay, Jitter and Packet Loss
Measuring Delay
Jitter and Packet Loss
VoIP acceptance criteria
LAN guidelines for Voice quality
Dedicated voice LAN
Shared LAN for Voice and Data
Utilizing VLANS and 802.1Q
VLAN Tagging and Priority
Quality of Service for Wide Area Networks