Internetworking

5-Day Course

Dr. Suppan International Institute

Motivation

Local area networks and LAN/WAN network systems constitute the crucial infrastructure of modern client/server systems environments. In meeting the growing demands on these systems, the installation of more structured, flexible and secure networks has become the central issue in successful and economical telecommunications and data processing architecture. Knowledge of structural principles, coupling technologies, tuning possibilities and risks are thus a necessary part of one's basic professional qualifications.

Target audience, objectives

This seminar is intended for network operators and users who are already acquainted with the basics of LAN and WAN technologies, and offers further instruction in the efficient assembly and operation of networks. This seminar seeks to impart, compactly within 5 days and in a competent and vendor-neutral manner, the structural principles for assembling flexible and operationally efficient networks. Both the prerequisite theoretical background and its application to the practical operation of networks are discussed. Through case studies the participant will receive the most varied information relevant to practical applications. The seminar reflects the latest state of the art in protocol and component technology, thereby providing a solid knowledge base for everyday professional activities.

In this seminar you will learn:

- to understand how such coupling elements as switches and routers function
- how you can operate established and novel Layer 2 / Layer 3 redundancy procedures (IEEE 802.1w, IEEE 802.1v, IEEE 802.1s) in combination with one another, and what their advantages and disadvantages are
- how routing, layer 3 switching, VLAN technology, and frame and cell switching function
- how you can assemble flexibly structured, future-oriented networks
- how multicast applications work, and what you must take into consideration for your network
- case studies for small, medium-size and large network solutions

Topics

Requirements for Future-Proof Network Designing
- Operational areas, typical applications, performance requirements for various types of data
- Capacity requirements; response time performance, reservation requirements, expected development of performance needs and the resulting technology in coming years
- Core requirements and guidelines

Methods for the Planning and Further Development of Evolved Network Structures
- Methodical and need-oriented network assembly. load and capacity optimization
- The effects of Fast Ethernet, Gigabit Ethernet, and 10 Gigabit Ethernet on configuration, configuration errors and their consequences
- Migration from Token Ring, ATM and FDDI
- Expanded capabilities through installation of VLAN and Layer 3 technologies

Layer-2 Technologie
- How switches work with both established and new redundancy procedures such as Spanning Tree, Rapid Spanning Tree (802.1w)
- Multiple Spanning Tree (802.1s), in connection with link aggregation (802.3ad) and VLAN technology, transition to ATM and LAN Emulation
- Broadcasting problems; connecting different MAC levels
- Various products and how they work, examples of entry-level, workgroup and backbone solutions
- Consequences for the overall solution with respect to efficiency and costs

Layer 3 Technology
- Basic principle; packet forwarding, routing in local area networks; routing in a WAN
- static and dynamic routing processes
- RIP, OSPF in interaction with IP address concepts and area structures
- VRRP and HSRP router redundancy processes
- case studies, transition to ATM; combinability of switches and routers
- products and how they function; model entry-level and backbone solutions
- results for the overall solution with respect to efficiency and costs
- comparison between Layer 3 and Layer 2 technology

The Significance of VLAN Technology
- Layer 2 and Layer 3 VLANs with frame technology and ATM
- Available standards IEEE 802.1Q and 802.1v and how and where they continue to be deployed
- Misconfigurations and useful sample configurations with Layer 2 and Layer 3 switches

Multicast Applications / Multimedia
- Case studies in multicast applications; multicast addresses and protocol stacks
- Registration of terminal devices; how routers and switches function in multicasting
- Multicast routing protocols

Management and Operational Aspects
- Necessary monitoring and configuration properties
- Deployment of SNMP and RMON agents and their importance to management; evaluation of management support in the context of overall functionality
- Advantages and disadvantages in tool deployment: minimal tool or platform deployment

WAN Networks
- Demand for LAN/WAN couplings and their objectives, outsourcing interfaces
- Processes such as X.21/PPP, ISDN, Frame Relay, DWDM, DSL, WLL
- Requirements and deployment scenarios for the various services, deployable components

Trends, Switching vs. Routing
- Comparisons and evaluation criteria within the individual product categories
- Product overview, market trends

Planning Exercise
- Joint planning of a sample network suitable for businesses with typical communications requirements (planning to be done in groups). Discussion of switch and router deployment

The Instructor

Petra Borowka, Diplom-Informatik, is director of the consulting agency UBN and is one Germany's leading consultants in the field of communications technology. She has been an instructor at the ComConsult Akademie for many years and is internationally recognized for her expertise, her international publications, her work and her practical orientation, as well as for her independence from vendor affiliations. She has the benefit of many years of successful practical experience in the the planning and realization of network solutions.

Dr. Suppan International Institute

Dr. Suppan International Institute b.v. is an international training and educational organization located in the Netherlands.

In Germany the company is represented through ComConsult Akademie, one of the market leaders in network training and education in Germany, and ComConsult Technologie Information GmbH, a leading testing and information company for network technologies.

Dr. Suppan International Institute b.v. offers courses and in-house training in networking technologies in Western Europe, mainly in the Netherlands, Belgium and Luxembourg. These courses are conducted in English, and the complete course materials are written in English.

The company was founded in 1999 by Dr. Jürgen Suppan, an internationally well known specialist in networking technologies. The courses offered by Dr. Suppan International Institute are based on the latest technology, strictly oriented towards practical needs and strictly vendor independent. All trainers have had several years of networking experience in different types of environments, covering the complete range of networking technologies from small to very large companies. In Germany, where the company has been active since 1989, more then 80% of the top 500 German companies are regular and long-term customers of Dr. Suppan International Institute b.v., with more then 3000 course and congress participants in 2001alone.

If you are interested in these courses, please use the following contact form or send an email to drsuppan@comconsult-akademie.de

Fax: 0031/11337-2088

Internetworking:
Efficient and Available Network Structures

☐ I'm interested in this course, let's make a date.

First Name _____

Last Name _____

Organization _____

Position _____

Address _____

State/Province _____

Zip, Postal Code _____

Country/Region _____

Phone _____

Fax _____

E-Mail _____

Signature _____

Dr. Suppan International Institute b.v.
Ahornenlaan 12
4493 DG Kamperland
The Netherlands
Phone 0031/11337-3178
Fax 0031/11337-2088

Internetworking: Efficient and Available Network Structures

5-Days Course

Dr. Suppan International Institute