Telephony over IP, architectures and solutions

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BPC-136 **2 Days (14 Hours)**

Description

This seminar offers an overview of IP telephony solutions. It presents the founding concepts and purposes. It describes the essentials of the underlying protocols and addresses migration, performance and security issues. The different possible solutions are analyzed and illustrated using real case studies.

Who is this training for ?

For whom

Network managers, study managers, IS managers, project managers, network architects, systems and network engineers.

Prerequisites

Basic knowledge of networks.

Training objectives

- Know the issues and challenges of ToIP Understand the H323 and SIP protocols Prepare the migration to ToIP Manage the QoS and security of ToIP networks

Training program

Rappels réseaux et télécoms

- The PSTN: the Switched Telephone Network.
- The business telephone service.
- Its architecture.
- Its active elements (PABX , Terminals).
- Available services.
- Its constraints and limitations.
- Internet architecture, TCP/IP networks.
- The enterprise data network.
- Its architecture.

La téléphonie sur IP

- Definition and concepts.
- The vocabulary of ToIP.
- Business networks and their developments: Voice and Data, convergence towards a single network.
- Why migrate to ToIP? How to integrate ToIP into the company's information system? How to interoperate with traditional telephone networks? The user functionalities provided by ToIP .
- The market and its actors.

L'essentiel des protocoles (H323, SIP...)

- Role and interest of each protocol.
- H323 presentation and architecture.
- Principles and definitions.
- H323 components: gatekeeper, MCU , gateway.
- Communication H323: RAS, H225, H245.
- Examples of enterprise architectures.
- SIP overview and architecture.
- Principles and definitions.
- SIP components: proxy, registrar, redirection, location.
- SIP communication: registration, location, call, mobility.
- Examples of enterprise architectures.
- Other VoIP protocols.
- MGCP, MEGACO, H248.
- The IAX protocol, the Open Source protocol of Asterisk.

Migrer vers la téléphonie sur IP

- The keys to choosing ToIP.
- The motivations of companies for switching to ToIP.
- The cost: the pluses (communications, maintenance), the least (equipment, skills).
- New services: improving employee productivity (VisioConf, Mobility, etc.).
- The scalability of the network and of its applications.
- The image of the company.
- Business scenarios and market solutions.
- Several solutions, for different companies.
- The PABX-PABX interconnection.
- Migration to the IP PABX: examples of manufacturer solutions, its advantages and constraints.
- IP type solutions Centrex: examples of operator solutions, its advantages and constraints.
- Peer-to-peer: the Skype and Wengo model.
- Satisfaction and maturity of the solutions.
- Managing a ToIP project.
- The different stages.
- Needs analysis and network audit.
- Comparison of available solutions, adaptation of the solution to the company, migration.
- The keys to success.
- The obstacles.
- TPE practical work , SMEs and Large Accounts.
- Functionalities, cost analysis, availability, maintenance.

Intégration et administration

- Manufacturer administration tools.
- QoS measurement probes.
- Integration with user databases: LDAP, SSO.
- Use and update of network equipment: DHCP, TFTP, DNS.
- Mobile telephone terminals (VoIP over WiFi, DECT, dual-mode terminals).
- The links: xDSL, Ethernet, radio links, sizing.

Performance et QoS des réseaux ToIP

- Why do data networks not provide the reliability required for voice transport? The benchmark for reliability: RTC.
- Strengths and weaknesses of networks of data in terms of quality of service.
- QoS concepts.
- Delay, jitter, packet loss.
- The impact of the QoS of an IP network on ToIP.
- Voice transport.
- Voice digitization: use of codecs.
- To compensate for the unreliability of IP networks, use of specific protocols: RTP and RTCP.
- Summary of the flows involved in ToIP.
- Signalling (call routing).
- The media (voice, video).
- Providing performance to IP networks.
- Reinforcing bandwidth.
- Management tools of QoS for IP networks (802.
- 1P/Q, RSVP, DiffServ, MPLS.
-).
- Quality benchmarks in VoIP : E-model, PESQ, PAMS, PSQM.

Sécurité

- Problems of switching to ToIP solutions.
- What should we protect ourselves from, from whom, why can we be attacked? Known threats.
- Confidentiality: protect media streams and signaling type data.
- Integrity: control and prevent data modifications.
- Availability and denial of service.
- Identity theft.
- Fraud.
- Spam.
- Regulation: legal security and obstacles to technological development.
- The problem of emergency services.

L'avenir

- Operator developments: fixed/mobile convergence and abandonment of the RTC model for VoIP.
- Convergence technologies: WiMax, MPLS.
- The new multimedia services and uses.
- IMS, IP Multimedia Subsystem, the multimedia network of tomorrow.