Networks and the Internet, new advances

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BPC-135 **3 Days (21 Hours)**

Description

This seminar presents an overview of the most recent advances in the field of networks and telecommunications, emerging technologies and their integration into current environments. The different solutions will be explained from a technological and economic angle. This seminar also shows the current centralization of network architectures, the inexorable extension of mobile and Cloud-oriented architectures, and the joining of networks, storage and computing to form a new operational vision of the company.

Who is this training for ?

For whom

This seminar is aimed at network managers, study managers, system engineers who have to manage the evolution of their networks.

Prerequisites

Aucune

Training objectives

- Develop a global vision of the evolution of network technologies
- Understand Cloud networking
- Understand mobile networks
- Integrate network security issues

Training program

Réseau d'aujourd'hui et de demain

- The essential functions of IP: addressing, routing (BGP, RIP, OSPF).
- Problems and solutions.
- Internet protocols: IPv4, IPv6, UDP, TCP, etc.
- VLANs and their extensions.
- VPNs and today's network security.
- The problem of energy management in networks.
- The state of play, the challenges and approaches.
- The principle of network virtualization.
- The transition from hardware networks to software networks.
- The integration of calculation, storage, networks: a new vision of corporate IT architecture.

Évolution des technologies d'acheminement dans les réseaux

- Routing versus switching.
- Switching: very high speed, labeling and signaling.
- Overlays, content distribution and P2P.
- Carrier grade networks.
- Traffic engineering and optimization of network throughput.
- Control techniques.
- Automation of management and control .
- Operation and support.

Les technologies réseaux et leur évolution

- ATM, the myth of the universal network.
- Ethernet for everything! From 10 Mbit/s to 400 Gbit/s.
- The different types of Ethernet switching.
- MPLS and the Internet Telecom generation.
- Label switching.
- Origins and motivations.
- Generalization G -MPLS.
- VLAN and its many extensions: Q-in-Q, Mac-in-Mac, PBB, etc.
- The new generation of protocols: TRILL and LISP.

Le Cloud networking

- Network cloudification and SDN (Software Defined Networking).
- The standardized architecture of SDN by the ONF (Open Network Foundation).
- The layers of the ONF architecture: application, control, infrastructure.
- The interfaces: north, south, east and west.
- The protocols of the southern interface: OpenFlow, I2RS, OpFlex, etc.
- Controllers: Open DayLight (ODL), Open Contrail, ONOS, etc.
- NFV (Network Function Virtualization).
- L 'orchestration and chaining.
- The open source architecture of the future: OPNFV.

Les réseaux sans fil

- WPANs.
- New generation, IEEE 802 standards.
- 15 and WiGig.
- WLANs.
- The Wi-Fi environment with IEEE 802.
- 11a/b/g/n.
- The new generations of Wi-Fi: 802.
- 11ac/ad/af/ah/ax.
- Handovers, quality of service and security.
- Low and high level access controllers.
- The Wi-Fi Passpoint telecom generation.
- The impact of SDN and OpenFlow on the Wi-Fi environment.

Les réseaux de mobiles

- The generations of mobile networks.
- The increase in speed.
- The integration of Wi-Fi and mobile networks.
- 4G and 5G: the rise of mobile networks.
- Mobility: handover, multi-technology access, multi-access, etc.
- Mobile IP and its derivatives.
- New technologies: Software-defined Radio, network coding, cognitive radio, etc.
- The massive arrival of things, the Internet of Things and Fog Networking.
- Sensors, RFID, NFC, how to connect them.
- Ad hoc and mesh networks.
- The Participatory Internet.
- The new generations D2D, D2D2D, autonomous and optimized.
- Drone networks.

Sécurité

- Is the Internet security model still viable? Authentication and IEEE 802.
- 1x.
- Encryption and electronic signature.
- Classification of flows for security purposes.
- The new generation of firewalls.
- Solutions based on secure elements.
- The problems in mobile payment.
- SDN security.
- The Security Cloud.

Les perspectives futures

- Does centralization have a chance of establishing itself? Very high wireless density (stadium, large assembly, etc.
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- Distributed SDN.
- The “green” and the solutions envisaged to reduce consumption.
- The integration of storage, calculation, network: towards a new globalized architecture.
- Open source, network intelligence and automation.
- Conclusions.