IEEE 802 LAN/MAN Standards Committee Plenary Session
July 2005 Tutorials Monday, July 18, 2005

Tutorial #1

Date: Monday, July 18, 2005

Time: 6:00 – 7:30pm

Location: TBC

Title: A Proposed Secure Device ID Standard for IEEE 802 Networks

Sponsored by: Tony Jeffree, IEEE 802.1 WG Chair

Presenters:
Mike Borza, CTO, Elliptic Semiconductor Inc.
John Viega, CTO, Secure Software Inc.

Abstract:
The rationale and requirements for a standard Secure Device ID to be used in IEEE 802 networks are presented. Device ID (DevID) provides a unique identifier that is cryptographically bound to a device. This identifier is intended to be used during provisioning, identification and authentication operations. Provision is made for devices to possess both manufacturer and locally significant identities. DevID can provide these capabilities at low incremental cost, making it suitable for application across a broad range of network equipment and technologies. DevID and its relation to related technologies such as TPM is discussed.

Tutorial #2

Date: Monday, July 18, 2005

Time: 7:30 – 9:00 pm

Location: TBC

Title: An Update on Bridging Technologies

Sponsored by: Tony Jeffree, IEEE 802.1 WG Chair

Presenters:
Norm Finn, Cisco Systems Inc.
Mick Seaman, Consultant.

Abstract:
The past few years have seen some considerable changes in the technologies described in the 802.1 Bridging standards – 802.1D and 802.1Q. This tutorial is intended to provide a "refresher" of the current state of Bridging, and an introduction to the most recent developments that are under way within 802.1. Topics will include:

- Bridging basis.
- Rapid Reconfiguration.
- MVRP
- Shortest path bridging.
- Emulated LANs.
- Connectivity Fault Management.

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Tutorial #3

Date: Monday, July 18, 2005

Time: 9:00 – 10:30pm

Location: TBC

Title: Cognitive Radios – How close to reality?

Sponsored by: Stuart Kerry, IEEE 802.11 WG Chair

Presenters:
David Maldonado, Virginia Tech University, John Polson, General Dynamics,
Tom Rondeau, Virginia Tech University, and Scott Seidel, Raytheon.

Abstract:

As wireless communication devices move towards a more software-based and flexible hardware architecture (software defined radio (SDR) technology), these devices are becoming capable of awareness and achieving more intelligent operation. We have seen how this evolution has taken these devices from fixed radios to adaptive-aware ones and experienced first hand the benefits of it. Cognitive radios are the next evolution of such devices due to the addition of a layer of intelligence that provides the ability to better satisfy the users and the network needs. This level of intelligence could include but is not limited to learning the ability to interpret data and the ability make a decision and create a solution. The cognitive radio's capabilities could also be extended by allowing radios to share their acquired knowledge and creating a cognitive network. Even with the range of possible adaptations, a cognitive radio will be constrained to obey given rules provided by any regulatory body.

The realization of cognitive radios (CR) is still in the development stages but not far from reality because it leverages on existing flexible architectures such as software defined radios (SDR) as the enabler. The topic of CR has been garnering a great deal of attention over the past several years and opinions regarding the level of sophistication necessary to qualify a system as cognitive vary widely generating a great deal of discussions.

The success of wireless technologies such as 802.11 and new advances in emerging ones like 802.16 and 802.22 could help translate current CR research into commercial benefits. With the support and involvement of government agencies and their contractors, and some chip manufacturing companies, we can envision cheaper equipment being made available and gaining international acceptance. As cognition is likely to be a part of the new wireless standards, the work and expertise developed under the CR research could greatly influence and benefit the future 802 standards.

This tutorial intends to provide an overview of cognitive radio including some possible applications. A brief description of current developments by various organizations will be provided ranging from chipset and hardware architectures to software and protocol levels.

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Tutorial #4

Date: Tuesday, July 19, 2005

Time: 6:30 - 8:00 pm

Location: TBC

Title: Reducing the Energy Consumption of Networked Devices

Sponsored by: Bob Grow, IEEE 802.3 WG Chair

Presenters:

Ken Christensen, University of South Florida.
Bruce Nordman, Lawrence Berkeley National Laboratory.

Abstract:

Electricity consumption of electronic devices continues to rise in both residential and commercial environments, exceeding $10 billion/year in the U.S. alone. Energy cost of electronic devices is rapidly becoming a visible factor in IT operations and even in personal residences. Digital networks drive energy use in two ways: 1) *induced consumption* by idle devices needing to be fully powered-up to maintain a network presence when they might otherwise be able to go to sleep and 2) *direct consumption* of network interface components and network infrastructure devices. LBNL has investigated this problem for 17 years and advises the EPA Energy Star program.

This tutorial will describe quantitative measures of energy use of electronic devices as measured over the past decade and make predictions for future consumption. We will briefly describe existing work in reducing energy use in server clusters and in LAN switches. We will describe the need for a "Smart NIC" that could maintain network connectivity for a computer (or other device) that has gone to sleep. We will also propose *dynamic link rate reduction* as a means of reducing the energy use of NICs and switch ports without reducing performance. The latter we believe could be immediately taken-up as a study item by 802.3.

Tutorial #5

Date: Tuesday, July 19, 2005

Time: 8:00 - 9:30 pm

Location: TBC

Title: EMS Panel on the IEEE 802 Standards Process

Sponsored by: Pat Thaler, IEEE 802 Vice Chair

Presenters:

Pat Thaler – Moderator. IEEE 802 Vice Chair, Agilent Technologies.
Panel to be added later.

Abstract:

This will be a question and answer session on IEEE 802 Standards process. It will provide the opportunity to ask questions on the standards process and receive responses from experienced standards leaders.