



WLANSmartCard.org

Smart Cards in WLAN & the WLAN-SIM Specification

**WLAN Smart Card Consortium
<http://WLANSmartCard.org>**

Slide 1



WLAN Technology

- WLAN is a radio extension of cable based LAN**
- LAN is based on Ethernet protocols for the lower layers of communication**
- WLAN is based on IEEE 802.11 protocols for the lower layers of communication**
- LAN is based on TCP/IP for the upper layer of data transmission**
- WLAN also uses TCP/IP for the upper layer of data transmission – providing interoperability**
- WLAN is deployed using access points - multiple devices can connect**



WLAN Markets

- Hotspots**
 - Merchant installs access points
 - Offers Internet services to mobile users
 - Some are free; some charge a fee
 - Examples: airports and hotels for frequent travelers

- Enterprise**
 - Employer installs access points in a private or public facility (includes governments)
 - Used by employees and related personnel
 - Lowers infrastructure costs and provides mobility

- Home**
 - Homeowner installs access point
 - Connected to DSL or cable equipment provided by ISP
 - Avoids wiring and provides mobility



WLAN Challenges

- User authentication**
 - LAN: user must be connected to the wire
 - WLAN: anyone with WLAN capability can try to connect
 - WLAN connectivity problem means authentication is important
- Roaming**
 - LAN: mobility is limited
 - WLAN: roaming is a primary benefit
 - WLAN roaming to multiple hotspots requires compliance with multiple ISPs
- Security**
 - LAN: limited access to wire provides a level of security
 - WLAN: interception of signals a constant concern
 - Software security solutions based on 802.1x offer a minimum level of security



WLAN Smart Cards

- Smart cards are secure tokens in the format of a credit card, or smaller**
- Contain a computer system on a chip**
- Have strong embedded hardware and software security measures**
- Capable of advanced cryptography**
- Can generate keys and store identification credentials**
- Convenient means for an individual to carry their electronic identity**
- Access to the chip can be protected by a PIN and/or biometric**



WLAN Operators

- Mobile telecom operators (GSM operators)**
 - **Want to expand services using WLAN technology**
 - **Already use smart cards for authentication, roaming, payment and security**
 - **Can expand services with WLAN while using their existing infrastructure**
- System integrators**
 - **Seek to equip enterprises with WLAN**
 - **Want to extend existing card based authentication to WLAN (e.g., US DoD)**
- Internet Service Providers**
 - **Can extend their fixed line services with WLAN**
 - **Smart cards ensure that services are only accessed by authorized individuals**

WLAN Smart Card Holders

- In all markets smart cards contain credentials and privileges about the card holder
- Issued by a GSM operator – allows roaming on local as well as global GSM networks
- Issued by an enterprise – smart card can provide physical and logical (WLAN) access; could also be used for payment (vending, cafeteria)
- Used at home – insures that the homeowner is the only user of their own WLAN



WLAN Smart Card Consortium

- Founded in February 2003**
- Will develop specifications for interoperable WLAN solutions**
- Specifications will:**
 - Define the architecture of smart card enabled WLANs**
 - Define the interface between smart cards and WLAN security standards and operations**
- Mobile operator specification: an extension of the SIM found in all GSM phones**
- Enterprise specification: an extension of SSL protocol, the Internet security protocol**



WLAN SIM Specification

- Consortium's first specification
- V0.1 published July 15, 2003
- V1.0 published October 15, 2003

- Defines a smart card interface to provide authentication, session key distribution and identity management using a SIM
- Allows hot spot operators to extend SIM technology for WLAN authentication
- Utilizes industry endorsed standards for authentication – 802.1x and EAP

WLAN SIM Specification - Summary

- ❑ **Why WLAN-SIM now?**
 - Hot spot market is growing rapidly
 - Window of opportunity is closing
 - Interoperable with GSM infrastructure
 - WLAN-SIM cards can deliver additional services
 - Track record of interoperability: smart card vendors, platform providers and operators

- ❑ **Benefits to GSM operators**
 - Interoperable with GSM infrastructure
 - Seamless roaming with WLAN-SIM
 - Opportunity for value added services
 - Enhanced security