



Netted Sensors Community 2005 Workshop

Information Security

Dr. Vipin Swarup
25 October 2005



MITRE





Security of Netted Sensors

- **Netted sensing in the presence of adversaries**
- **Broad view of netted sensors**
 - Few powerful networked sensors as well as many tiny networked sensors
 - Collaboration is the unifying theme
- **Security-relevant characteristics**
 - Collaboration
 - Self-organizing networks with dynamic topologies
 - Scale factors
 - Resource constraints
 - Unattended netted sensors



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Issues & Challenges

- **Key issues:**

- What are the threats that face netted sensors?
- How can we secure the collaborative behavior of self-organizing netted sensors?
- How can we protect unattended netted sensors deployed in hostile environments?

- **These issues drive a number of technical challenges:**

- Hardware support for security
- Key management and cryptographic protocols
- Secure services, e.g., localization, clock synchronization
- Secure collaboration, e.g., in-network aggregation
- Authentication and access control
- Intrusion detection
- Stealth





Session Agenda

- 1010 – 1015 Session Introduction – Dr. Vipin Swarup (MITRE)
- 1015 – 1035 Dr. Virgil Gligor (University of Maryland)
“On the Evolution of Adversary Models in Security Protocols from the Beginning to Sensor Networks”
- 1035 – 1055 Dr. Radha Poovendran (University of Washington)
“Secure Range-Independent Localization for Wireless Sensor Networks”
- 1055 – 1115 Dr. Anup Ghosh (DARPA)
“Challenges in Mobile Networking and Unattended Devices”
- 1115 – 1135 Mr. Jeffrey Leach (IBM)
“Trusted Computing and Netted Sensors”
- 1135 – 1200 Speaker Questions and Answers





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Dr. Virgil Gligor

- **Professor of Electrical and Computer Engineering at University of Maryland, College Park**
 - 30 years of research in access control, penetration analysis, denial-of-service protection, cryptographic protocols, applied cryptography, etc.
 - Leading role in setting security research agenda at national level
 - Winner of 2005 National Information Systems Security Award
- **Editorial Board of leading security journals**
 - Previously, Information Systems & Journal of Computer Security
 - Currently, ACM Transactions on Information Systems Security, IEEE Transactions on Dependable and Secure Computing, and IEEE Transactions on Computers
- **Chair of ACM Special Interest Group on Security Audit and Control (SIGSAC)**





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Dr. Radha Poovendran

- **Assistant Professor of Electrical Engineering at University of Washington, Seattle**
 - Director of the Network Security Lab (NSL) and Associate Director for Research at the UW Center for Information Assurance and Cybersecurity
 - Research interests are in applied cryptography for multi-user environments, networking, and information theory
 - Author of over 60 peer-reviewed publications
- **Recipient of numerous awards**
 - NSF CAREER Award, NSA Rising Star Award, ARO Young Investigator Award, ONR Young Investigator Award, Presidential Early Career Award for Scientists and Engineers (PECASE)
 - Awards for teaching and advising





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Dr. Anup Ghosh

- **Senior Scientist and Program Manager in Advanced Technology Office of DARPA**
 - Program Manager of several information assurance and operations programs
- **Previously Vice President of Research at Cigital, Inc.**
 - Principal investigator on several DARPA, NSA, & NIST grants
 - Author of over 40 peer-reviewed publications
 - Author of three books on e-commerce security
- **Editorial boards of publications**
 - IEEE Security and Privacy & IEEE IT Professional
 - Guest editor for special issues of IEEE Software (“Building Software Securely from the Ground Up”) and IEEE Journal on Selected Areas in Communications (“Security in Wireless Ad Hoc Networks”)





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Mr. Jeffrey Leach

- **Senior WebSphere IT Architect for IBM**

- Informational Technical Architect assigned to Deloitte Consulting
- Provided architectural assistance to NASA, TSA Homeland Security, Deloitte's Security Practice, Boeing Aerospace, Lockheed Martin, USAF, US Naval Air Force, IRS, FDIC, and several state governments
- Responsible for implementing one of the first 10 WebSphere MQ sites in the world in the Chicago Mercantile Exchange
 - **Merc cleared \$100 trillion in 1995; earned the Merc a Computerworld Smithsonian industry award**

- **Invited speaker and awards**

- Guest speaker at MQ Latin American Launch
- IBM Transaction Messaging Conference, WebSphere Technical Exchange, MQ Windy City User Group
- IBM team award, Directors award, Vice President award, IBM 100 percent sales club





Speaker Questions and Answers



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