EE 599 Individual Project, due October 29, 2002
Wireless Internet and Pervasive Computing
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This is an individual study project, which involves an updated literature survey, case studies, and documentation of research findings on a selected topic in 6 weeks. This project counts 30% of your course performance. The individual study report will be due on October 29, 2002. The research and reporting requirements are specified below. The topics to select from are given on page 2.

A. Research Requirements:

1. This project is designed to give each EE 599h student the opportunity to engage in an intensive independent study on a selected topic relevant to the course. You should select the topic that best matches with your own technical interest and background. However, each topic selected will be studied by at most 2 students independently. Read the relevant articles and references posted in the class web site, before you narrow down your choices from the suggestion list.

2. First, submit a 2-page proposal within one week via an Email attachment to Prof. Hwang at kaihwang@usc.edu and to the TA at tanachai@usc.edu before September 24. In this proposal, each of you selects two topics from the following list of 24 research topics. Identify your first choice and the second choice. You must justify your choices. In case of conflicts with your fellow classmates, I will arbitrate among the conflicting choices. The sooner you submit the proposal, the higher the chance you will get your first choice.

3. We will review your proposal and return with the approved topic assignment and some feedback suggestions. At the end of the proposal, you must provide a short list 5 most relevant references to your first-choice topic and 3 references to your second-choice topic. You should have read the identified references and done some background checking before writing the proposal.

4. Your first choice must be selected from the suggested topics. The second choice can be either from the given list or you have the freedom to propose your own topic within the scope of the course. The proposed topic must be relevant to the lectures of the first 8 weeks of the course, subject to the approval by Prof. Hwang. In case that your proposed topic gets denied, you must reselect from the suggested list of topics.

B. Study Report Documentation and Submission Procedures

1. The individual study report is limited to 20 - 25 pages in a original written word document. An abstract is needed on the cover page and reference listing must be provided at the end. All figures and tables must be generated by yourself, no clipping of published material is allowed. In addition to submitting a hard-copy report, you must submit the Word file through E-mail attachment. The term paper should be well-documented as an investigated report with some technical depth and reference value. Graphical illustrations and tabulation summaries are highly encouraged.

2. All referenced material must be cited explicitly in the text body and listed at the References at the end. The report must include a list of 10-15 references. Attach the hard copies and on-line files of the two most relevant papers or reports as appendices to your report. The attached papers must be relevant to your study and appeared within the last 3 years. There is no limit to the size of appendices attached.

C. List of Suggested Topics for Individual Study:

Listed below are 24 research topics that you can select from: Study Hwang's lecture notes, presentation slides, background papers, and book chapters cited in class before making your choices.
(1) Case study of three anti-virus software packages, porting environments, and assess their effectiveness and performance reported from the open literature.

(2) Study of three reported Denial-of-Service (DoS) attacks and the countermeasures taken in a protected network environments.

(3) Case studies of three commercially available host-based intrusion detection systems (HIDS) including the functional architecture and performance reported

(4) Case studies of three commercially available network intrusion detection systems (NIDS) including the functional architecture and performance reported

(5) Study of cost models and risk assessment techniques that have been proposed for proactive intrusion detection and response in the last 3 years

(6) Study of two distributed intrusion detection systems (DIDS) that have been developed by academic or industrial research centers in the last 5 years

(7) Study of two intrusion response systems (IRS), other than the RADAR system at USC, that have been developed by academic or industrial research centers in the last 5 years

(8) Study and evaluation of three application-level proxies built in gateway firewalls

(9) Study of two commercial firewall systems and their performance released in the last 3 years.

(10) Survey of Linux firewalls and intrusion detection tools in a Linux environment

(11) Study and evaluation of the RSA and the elliptic-curve algorithms for encryption, decryption, and authentication in wireless accessed Internet environment.

(12) Study and evaluation of five trust propagation models for WPKI applications

(13) Study of smart cards, PKI, and digital signatures for M-commerce and pervasive computing applications over WLANs.

(14) Study of two commercial virtual private networks with authentication, authorization, and accounting (AAA) services

(15) Bridging wireline backbone networks and wireless networks with specific gateways, security protocols, PKI, and WPKI support.

(16) Evaluation and assessment of the proposed Korean wireless PKI standards and possible deployment in the next three years

(17) Comparative study of the 3G UMTS and WCDMA network requirements and wireless Internet services, that have been proposed or deployed in Japan, Korea, Europe, and USA

(18) Comparative study of Bluetooth and IrDA technologies for short-range wireless communication

(19) Comparative study of the architecture, mechanisms, and Jini and UpnP for service advisement and discovering in wireless LANs and ad hoc networks

(20) Study of XML systems for enforcing dynamic security policies in a network environment

(21) Survey of software support in the area of Java, operating system, security, and middleware for pervasive computing devices

(22) Study of the security infrastructure and software support for grid metacomputing

(23) Updated survey of SET services and techniques for Web Security

(24) Updated survey of Kerberos authentication services and extensions (Version 5 and beyond)