Network Architectures: Internet Security

Preparatory Meeting

Technische Universität Berlin
Intelligent Networks / Intelligente Netze (FG INET)

Gregor Schaffrath
grsch@net.t-labs.tu-berlin.de
Overview

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Seminar Overview

2 SWS / 3 LP

Exam: talk and paper

Prerequisites:
- Profound knowledge in computer networks and cryptology
- GOOD English for reading scientific papers
Seminar Content

- Recent findings and scientific insights concerning Internet security, e.g.:
  - BGP security
  - Intrusion Detection and Network Debugging
  - Botnets and Spam
  - Wireless Security
  - Service and Network Access Security
  - Cryptographic Protection and Covert Channels
Intention of the seminar

- Practice to work with original literature
- Practice of professional/scientific talks
- Practice to organize yourself/work autonomously
- Occupation with a small, definite and recent matter
Seminar Certificate

To receive the seminar certificate we require:

- A successful presentation/talk
- A seminar paper accepted by us
- Continuous attendance and active participation and contribution
  - in the group meetings as well as during the presentations
Timeline

Preparatory Meeting
October 16th, 2009

Talks
End of semester
Timeline: Register

Registration until October 20th, 2009 (12:00)
Select topics and language:
(If you don't have an ISIS account, contact Doris or Gregor by Email AsSoonAsPossible!)

Via ISIS (web):

https://www.isis.tu-berlin.de/course/view.php?id=2504 ("Seminar NPA: IS")

Registration
October 20th,
2009 (12:00h)
Timeline: Topic Choices

Announcement of assigned topics until October 23rd, 2009
Topic <-> student matching
Via web or email

Announcement of assigned topics
October 23rd, 2009
Timeline: Topic Elaboration

- Elaborate the topic
  - Search for additional literature
  - Read and understand it
Timeline: Meeting

Meeting with supervisor until November 13th, 2009

It is recommended to send your advisor a short structural draft as a discussion basis one or two days earlier.
Timeline: Literature Summary

- Summarise literature in a seminar paper
  - 10 pages (pdf or ps)
  - Guidelines for writing can be found on our web site:
    http://www.net.t-labs.tu-berlin.de/teaching/gl_seminar_en.shtml#ausarbeitung
  - Until December 14th, 2009

Literature Summary
December 14th, 2009
(08:00h)
Timeline: Peer Review

- Read and correct the seminar paper of other participants in the group
  - Guidelines are linked on the seminar web page

- Subsequently: exchange comments in a group meeting (attendance is mandatory!)
  - Appointment will be discussed for every group

Peer Review
January 4th, 2010
Timeline: Paper Revision

Incorporate results of the group meeting in seminar paper

Paper Revision
January 15th, 2010
(12:00)
Timeline: Slides

- Start to prepare slides after January 15th
- Send first version of your slides to your supervisor until January 29th

First Version of Slides
January 29th, 2010
(12:00)h
Timeline: Slides

- Meet with supervisor and discuss slides (around February 5th)
  - Incorporate comments of supervisor in slides and send the final version until February 12th

Final Version of Slides
February 12th, 2010 (12:00h)
Timeline: Talks

- Talks will be after the lecture period (Vorlesungszeit)
  - Blockseminar: 2-3 days
  - Present the paper
  - 45 min incl. discussion per talk (30 mins talk)
Timing in General

- Deadlines are fixed and hard!
  - (-0.3 penalty/day of delay on the final mark)
- Organize yourself
  - Appointments with your supervisor
  - Group discussions
  - ...
- Discuss schedule in advance
  - Vacation is no excuse!
Topics

- 26 pre-defined topics
- Can be found on the seminar page
- Given Literature is a starting point, additional research is required
- Additional topics may be suggested, but may be rejected (contact Gregor or Doris)
BGP Security

- „Pretty Secure BGP (psBGP)”
- „Beware of BGP Attacks”
- „The Performance Impact of BGP Security”
- „Securing BGP through Keychain-based Signatures”
Intrusion Detection and Network Debugging

- „Enriching Network Security Analysis with Time Travel”
- „NetReview: Detecting when Interdomain Routing goes wrong”
- „Shunting: A Hardware/Software Architecture for Flexible, HighPerformance Network Intrusion Prevention”
Botnets and Spam

- „Your Botnet is My Botnet: Analysis of a Botnet Takeover”
- „Spamalytics: An Empirical Analysis of Spam Marketing Conversion”
Wireless Security

- „Is your Cat infected with a Computer Virus?”
- „Routing Security in Ad Hoc Networks”
- „A Survey on Integrating MANETS with the Internet: Challenges and Designs”
- „On Data-Centric Trust Establishment in Ephemeral Ad Hoc Networks”
- „Implications of Radio Fingerprinting on the Security of Sensor Networks”
- „Anonymity and Security in Delay Tolerant Networks”
Service and Network Access Security

- "Towards Optimal Firewall Rule Ordering Utilizing Directed Acyclical Graphs"
- "Secure Web Browsing with the OP Web Browser?"
- "Security Considerations for Peer-to-Peer Distributed Hash Tables"
- "Protecting DNS from Routing Attacks"
- "Lessons Learned: A Security Analysis of the Internet Chess Club"
Cryptographic Protection and Covert Channels

- "SPATE: Small-group PKI-less Authenticated Trust Establishment"
- "Implementing Public-Key Infrastructure for Sensor Networks"
- "Wireless Client Puzzles in IEEE 802.11 Networks"
- "Keyboards and Covert Channels"
Suggesting Additional Topics

- You can suggest own topics
  - No guarantee that they'll be accepted!
- Some requirements on papers for the seminar:
  - Scientifically relevant
  - Good quality paper
- Self-contained description in one paper or set of papers
- See next slide how to find those
How to Find Topics

Related Conferences / Workshops

ACM SIGCOMM
http://www.sigcomm.org/learn/sigcomm-conference/sigcomm-conference

ACM CoNEXT
http://conferences.sigcomm.org/co-next/

ReArch 2008
http://conferences.sigcomm.org/co-next/2008/rearch_technicalprogram.html

ACM MobiCom (Wireless)
http://www.sigmobile.org/mobicom/
Forum

Discussion Forum for students on the ISIS website.
(for student internal discussion)
Separate Announcement Forum for announcements on our behalf.
Contact

Gregor Schaffrath
grsch@net.t-labs.tu-berlin.de

Doris Schiöberg
doris@net.t-labs.tu-berlin.de

All supervisors
seminar@lists.net.t-labs.tu-berlin.de