SysSec: A European Network of Excellence in Managing Threats and Vulnerabilities in the Future Internet

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RoadMap of the talk

- Security Challenges: What is the problem?
  - Hackers are getting more sophisticated
  - The impact of cyberattacks is getting larger

- What will we do?
  - SysSec: 4-year NoE to consolidate Research in managing threats for the Future Internet
Security Challenges: What is the problem?

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What is the impact of attacks?

“… potential (cyber)attacks against network infrastructures may have widespread and devastating consequences on our daily life: no more electricity or water at home, rail and plane accidents, hospitals out of service”

Viviane Reding
Houses of Parliament computers infected with Conficker virus

The Houses of Parliament IT system has become infected with the Conficker computer virus. It has emerged, raising questions about possible security flaws at the Palace of Westminster.

By Matthew Moore
Published: 7:00AM GMT 27 Mar 2009

Conficker virus has infected computers in the Houses of Parliament. Photo: GETTY
Transportation: No train signals

Computer Virus Brings Down Train Signals

The virus infected the computer system at CSX's headquarters, shutting down signaling, dispatching, and other systems for trains throughout the East.

By Marty Niland, Associated Press Writer
InformationWeek
August 20, 2003 06:00 PM

NEW YORK (AP) -- A computer virus was blamed for bringing down train signaling systems throughout the East on Wednesday.

The virus infected the computer system at CSX Corp.'s Jacksonville, Fla., headquarters, shutting down signaling, dispatching, and other systems at about 1:15 a.m. EDT, CSX spokesman Adam Hollingsworth said.

"The cause was believed to be a worm virus similar to those that have
Transportation: No cars

Hacker Disables More Than 100 Cars Remotely

More than 100 drivers in Austin, Texas found their cars disabled or the horns honking out of control, after an intruder ran amok in a web-based vehicle-immobilization system normally used to get the attention of consumers delinquent in their auto payments.

Police with Austin’s High Tech Crime Unit on Wednesday arrested 20-year-old Omar Ramos-Lopez, a former Texas Auto Center employee who was laid off last month, and allegedly sought revenge by bricking the cars sold from the dealership’s four Austin area lots.
Energy: No electricity

Computer virus in Australian power grid

SYDNEY, Oct. 2 (UPI) -- A "Stuxnet" computer virus has infected computers controlling Australia's integral Energy power grid.
French fighter planes grounded by computer virus

French fighter planes were unable to take off after military computers were infected by a computer virus, an intelligence magazine claims.
What about our lives? Are they next?

Hacking the Human Heart: Medical Devices Found Subject to Technical Attack

Since the dawn of the 1970’s television action show the Six Million Dollar Man, the public has been fascinated by bionics and the integration of technology into the human body. What once seemed to be a far-off science fiction fantasy, is increasingly, however, becoming real. For years, surgeons have been replacing human
RoadMap

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What’s next?

- **SysSec:** managing threats and vulnerabilities for the future Internet
  - a Network of Excellence (2010-2014)
  - Why?
    - We need to work towards solutions
    - We need to collaborate
      - At a European level
      - With our international colleagues
        » Around the world

- Poli. di Milano (IT)
- Vrije Universiteit (NL)
- Institute Eurecom (FR)
- IPP (Bulgaria)
- TU Vienna (Austria)
- Chalmers U (Sweden)
- UEKAE (Turkey)
- FORTH – ICS (Greece)

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What is SysSec?

- SysSec proposes a *game-changing* approach to cybersecurity:
  - Currently Researchers are mostly reactive:
    - they usually track cyberattackers *after* an attack has been launched
    - thus, researchers are always one step behind attackers
  - SysSec aims to break this vicious cycle
  - Researchers should become more *proactive*:
    - Anticipate attacks and vulnerabilities
    - Predict and prepare for future threats
    - Work on defenses *before* attacks materialize.
SysSec Aim and Objectives (I)

- Create an active, vibrant, and collaborating community of Researchers with
  - the expertise, capacity, and determination to anticipate and mitigate the emerging threats and vulnerabilities on the Future Internet.

- SysSec aims
  - to create a sense of "community" among those researchers,
  - to mobilize this community,
  - to consolidate its efforts,
  - to expand their collaboration internationally, and
  - become the single point of reference for Systems Security research in Europe.
SysSec Aim and Objectives (II)

- Advance European Security Research well beyond the state of the art
  - research efforts are fragmented
  - SysSec aims to provide a research agenda and
  - align their research activities with the agenda
  - make SysSec a leading player in the international arena.
SysSec Aim and Objectives (III)

- Create a **virtual distributed Center of Excellence** in the area of emerging threats and vulnerabilities.
  - By forming a **critical mass** of European Researchers and by aligning their activities,
  - Have the gravitas needed to play a **leading role internationally**, empowered to undertake large-scale, ambitious and high-impact research efforts.

- Create a **Center of Academic Excellence** in the area
  - create an education and training program targeting young researchers and the industry.
  - lay the foundations for a common graduate degree in the area with emphasis on Systems Security.
SysSec Aim and Objectives (IV)

- Maximize the impact of the project by proactive **dissemination** to the appropriate stakeholders.
  - disseminate its results to international stakeholders so as to form the needed **strategic partnerships** (with similar projects and organizations overseas) to play a major role in the area.
  - dissemination within the Member States will
    - reinforce SysSec's role as a **center of excellence** and
    - make SysSec a **beacon for a new generation of European Researchers**.

- Create Partnerships and **transfer technology to the European Security Industry**.
  - create a close partnership with Security Industry
  - facilitate technology transfer wherever possible to further strengthen the European Market.
SysSec: How can you collaborate

- Contribute to the research roadmap/agenda
  - Provide feedback on emerging threats
  - Share your ideas on future security issues
- Contribute to our “systems security” University curriculum
  - Contribute homeworks/exams
  - Contribute/use lab exercises
  - Teach some of the courses at your University
  - Share some of your course material
- Become an “Associated Partner” of the project

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Conclusions

- Hackers are getting more sophisticated
- The impact of cyberattacks is getting higher
- We need to collaborate in order to manage emerging threats on the future Internet
  - SysSec started on Sept 1st.
  - Help us define future security threats
  - Help us teach our students “systems” security
  - Join us to break the vicious cycle of cyberattacks.
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