

Prolog to Lecture 19
CS 236
On-Line MS Program
Networks and Systems Security
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Cyber Warfare and Critical Infrastructure

- There's lots of talk about cyber warfare
- And lots of talk about dangers to the nation's critical infrastructure
- Is this, well, critical?
- Or is it just a bunch of hype and fear mongering?

Cyber Warfare

- Is cyber space another realm for future warfare?
- Some recent limited cases
 - Estonia, Georgia, Israel
 - Some small contributions to hot wars
 - Stuxnet, maybe Duqu, Flame, Shamoon
- What is cyber space's real role in wars?

The Answer

- How the hell should I know?
- Less flipply, nobody is too sure
- Major questions unanswered
 - What is a war in cyber space like?
 - Only supportive of other domains?
 - Is the Internet subject to deterrence?
 - How does one defend in cyberspace?
- Nobody knows, but lots of people would like to know

Critical Infrastructure

- The modern economy is information-driven
- The Internet is the major “utility” that delivers information to us
- Everything from email to database access to unstructured web browsing
- How long can your business operate with no network connectivity?
 - And how well?

Threats to Internet Infrastructure

- Weaknesses in core Internet elements
 - DNS, routing, physical cables, security services
- Weaknesses in individual providers
 - Information infrastructure is composed of many independent sources
 - Many are not well protected/provisioned
- Weaknesses to natural/man-made disasters
 - Much of the infrastructure has “choke points”
 - E.g., One Wilshire Boulevard

The Internet as Supporting Infrastructure

- Many other infrastructure systems increasingly depend on the Internet
 - Even for basic control of their systems
 - Banking
 - Electric power
 - Telephony
 - Gas and oil
 - Water and sewage
- What happens to these if the Internet fails?

How Does the Internet Stack Up As an Infrastructure?

- Not too well
- Not highly secure
- Subject to unexpected large scale failures
- Not very well understood
- Not carefully regulated by governments
- We're not too sure what it will do today
- And if it will keep working tomorrow

What To Do About It?

- Too complex a question to answer quickly
- Generally,
 - Better awareness of risks and defenses
 - More secure Internet infrastructure
 - Better governmental understanding and support
 - Better international cooperation
- Consider how your company will be affected if the Internet stops working suddenly . . .