

Strengthening Homeland Cyber Defense

Center for Strategic and International
Studies
and
Information Technology
Association of America

Steve Blumenthal

SVP, Chief Technology Officer

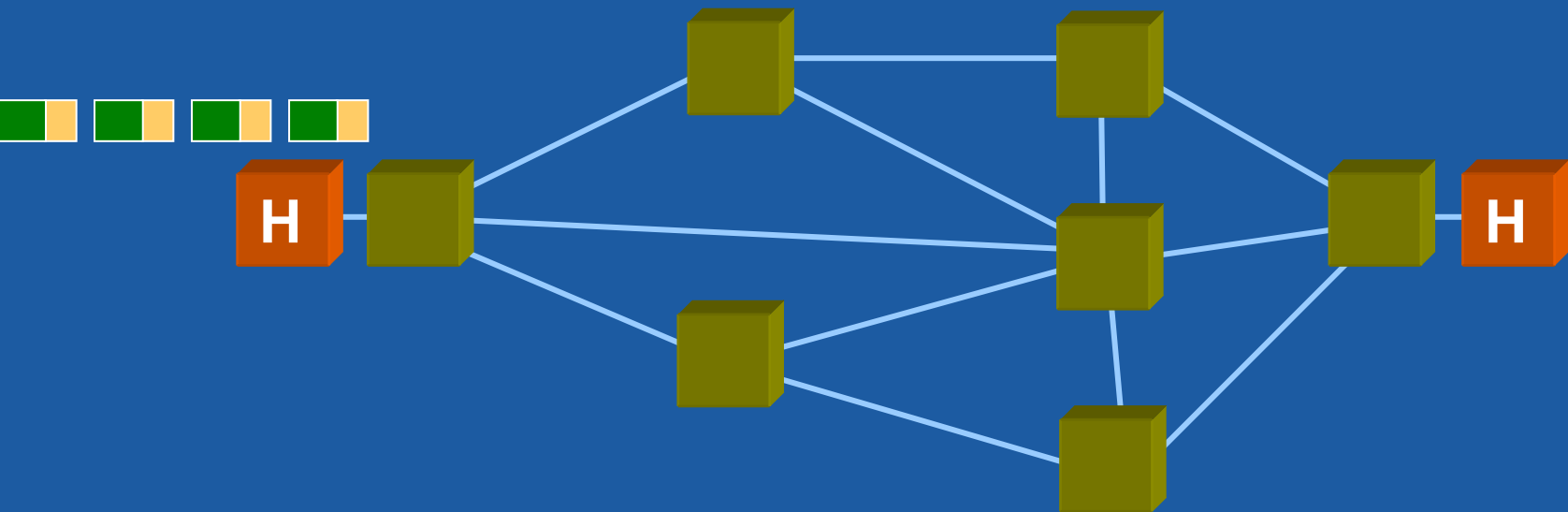
October 18, 2001

- **Survivable at Core**
 - Path and Node Diversity
 - Dynamic Highly Distributed Control Algorithms
- **Survivable at Edge**
 - TCP/IP Protocols
 - Multi Homing



Internet Based on Packet Switching

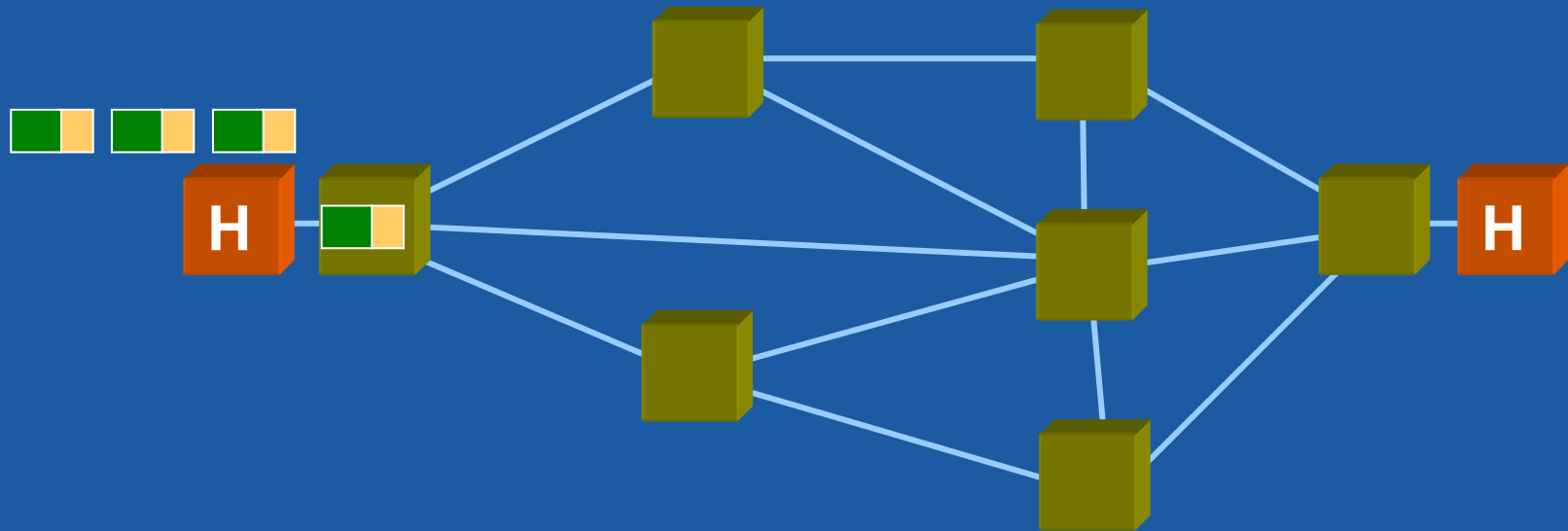
GENUITY™



October 18, 2001

Internet Based on Packet Switching

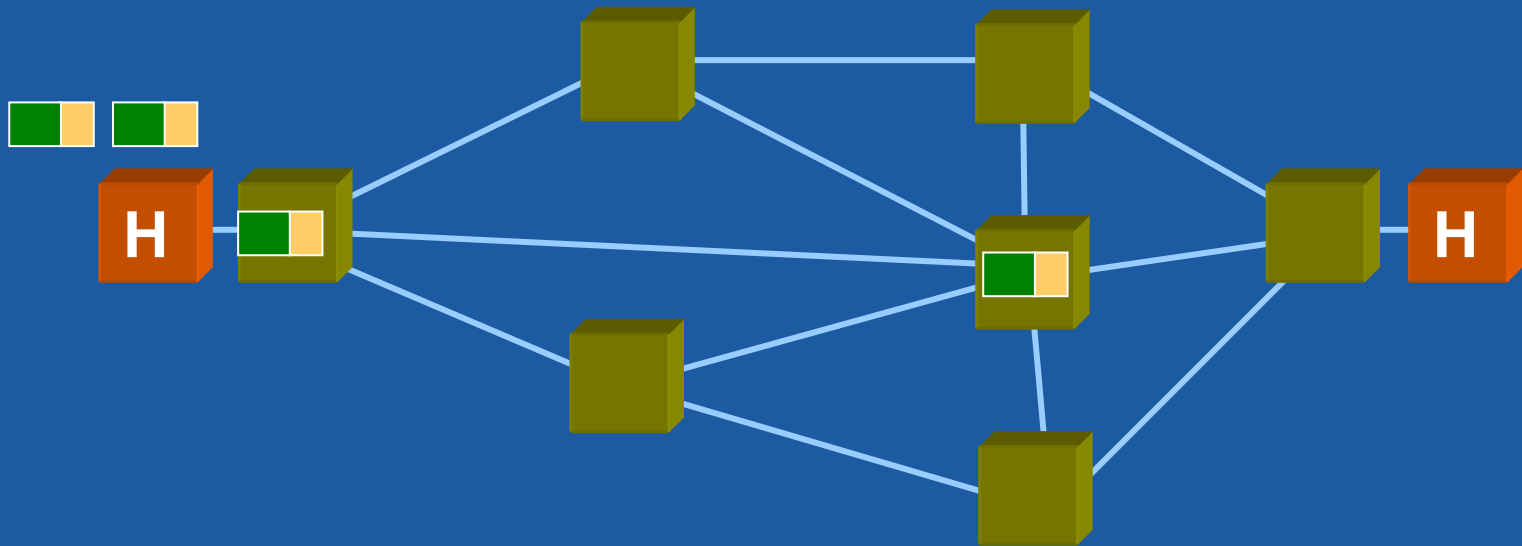
GENUITY™



October 18, 2001

Internet Based on Packet Switching

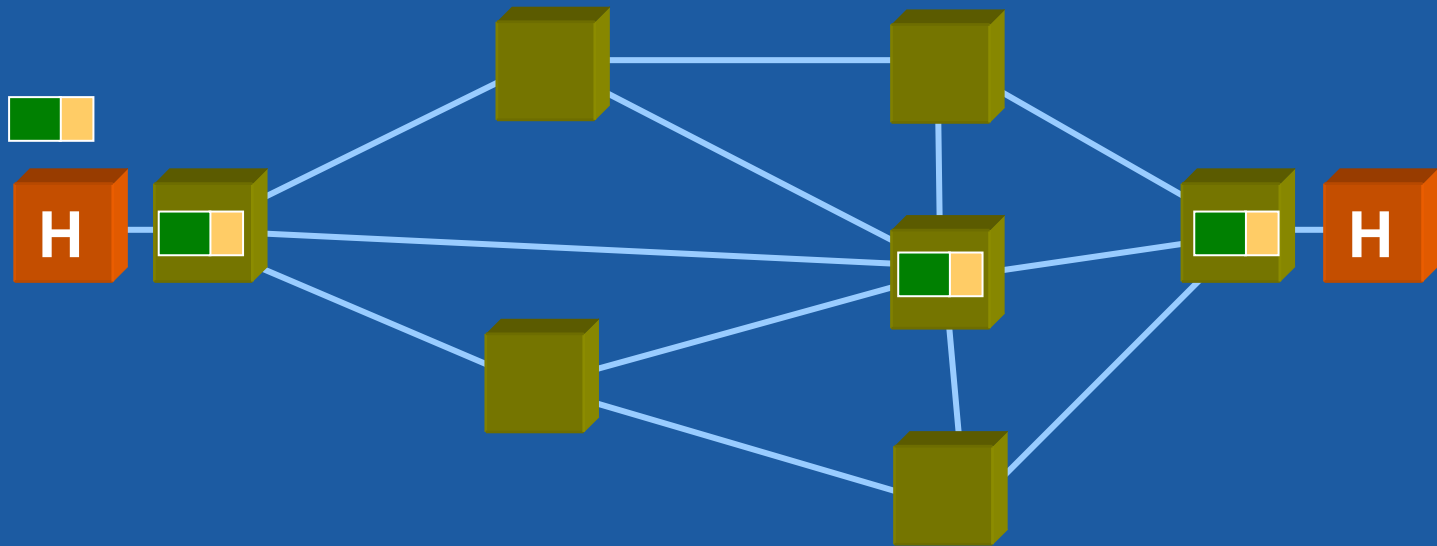
GENUITY™



October 18, 2001

Internet Based on Packet Switching

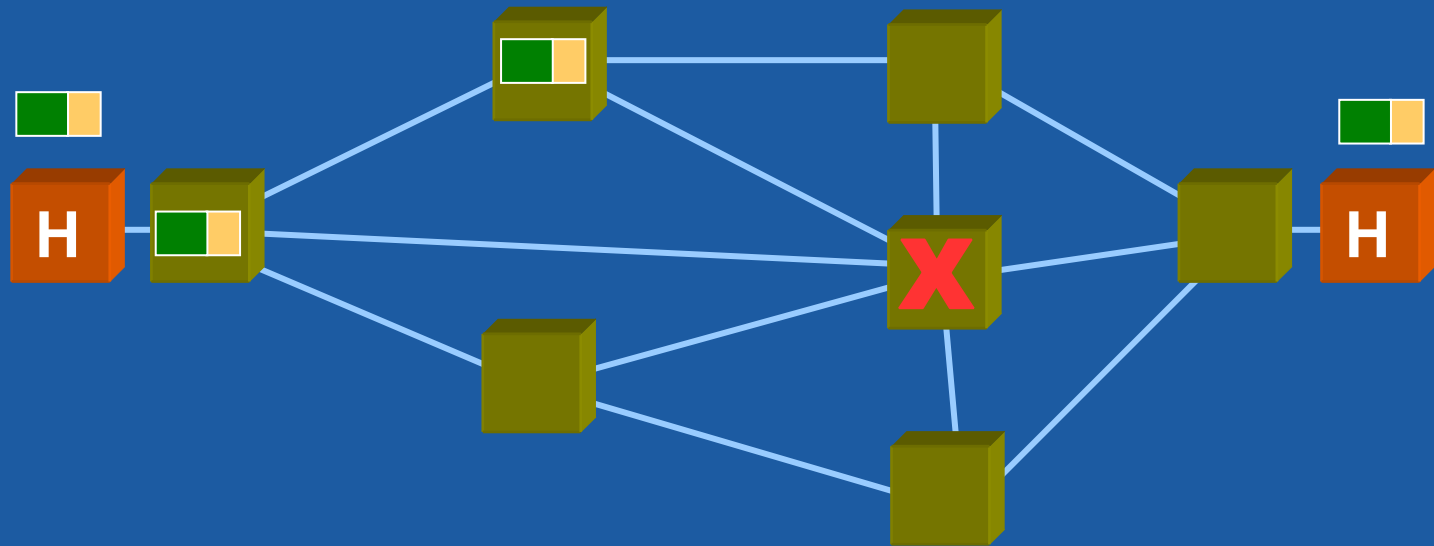
GENUITY™



October 18, 2001

Internet Based on Packet Switching

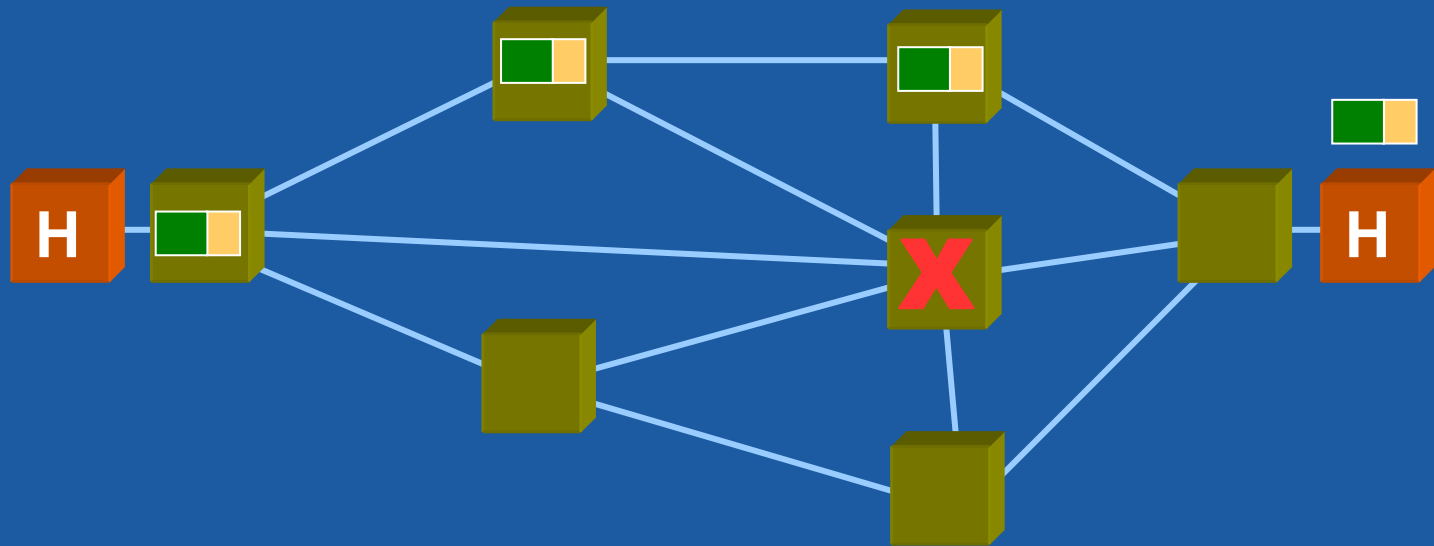
GENUITY™



October 18, 2001

Internet Based on Packet Switching

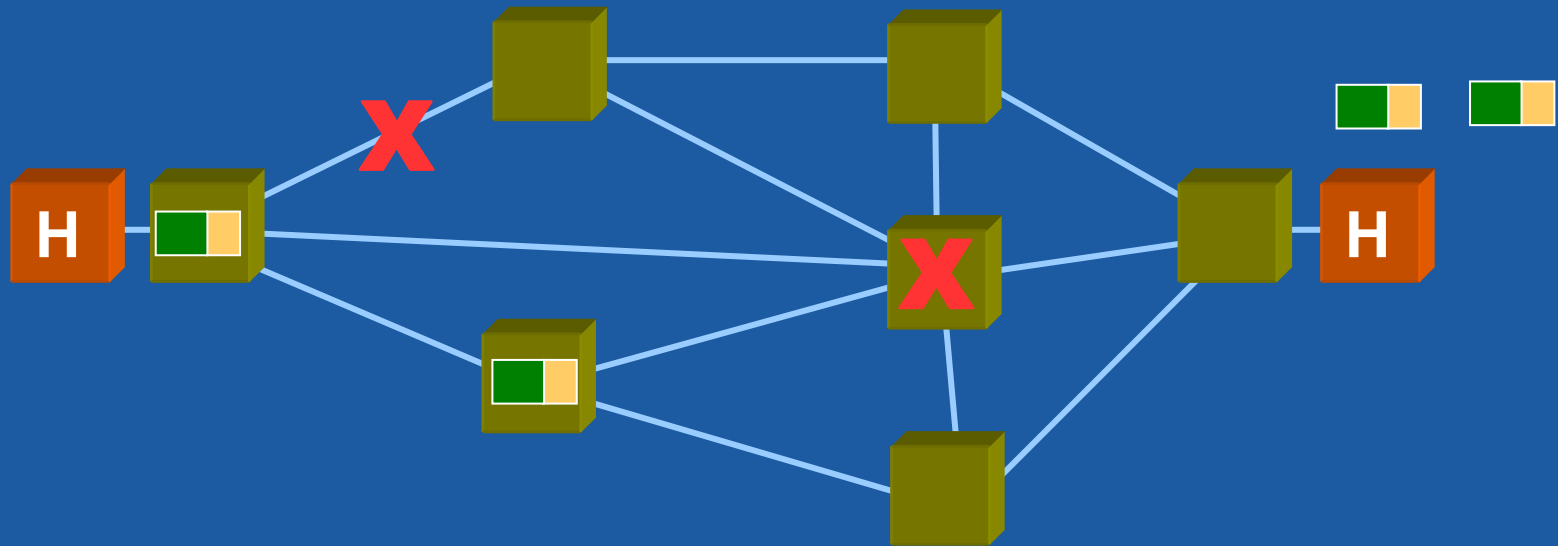
GENUITY™



October 18, 2001

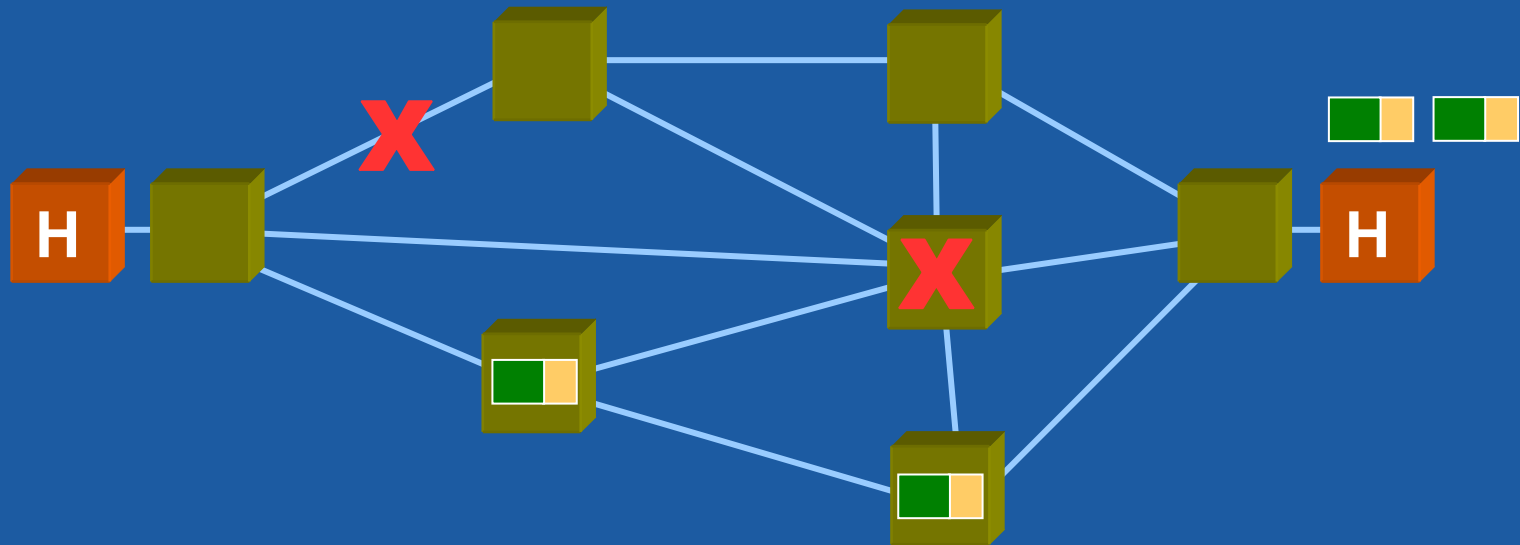
Internet Based on Packet Switching

GENUITY™



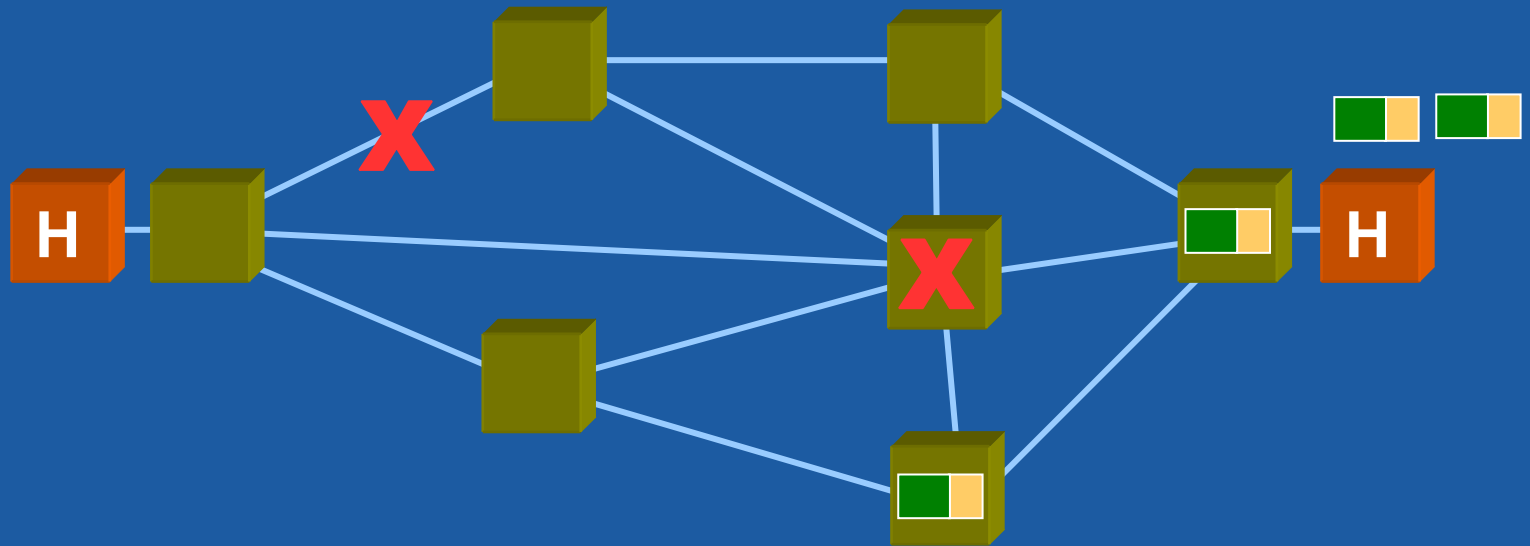
Internet Based on Packet Switching

GENUITY™



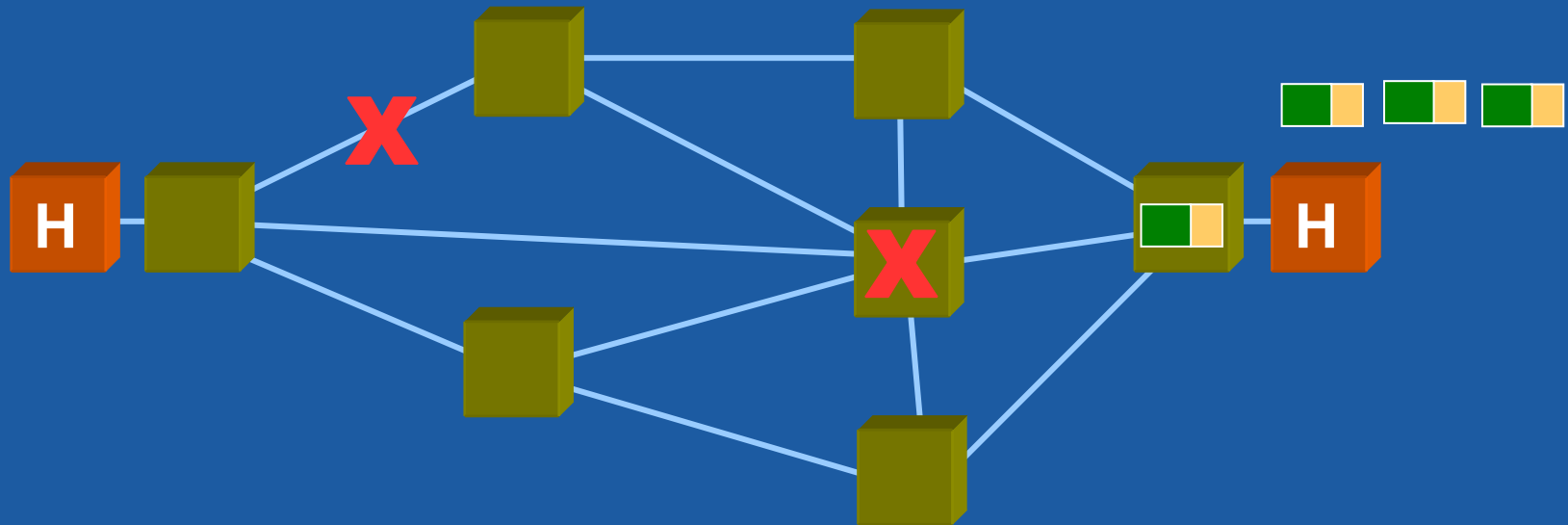
October 18, 2001

Internet Based on Packet Switching



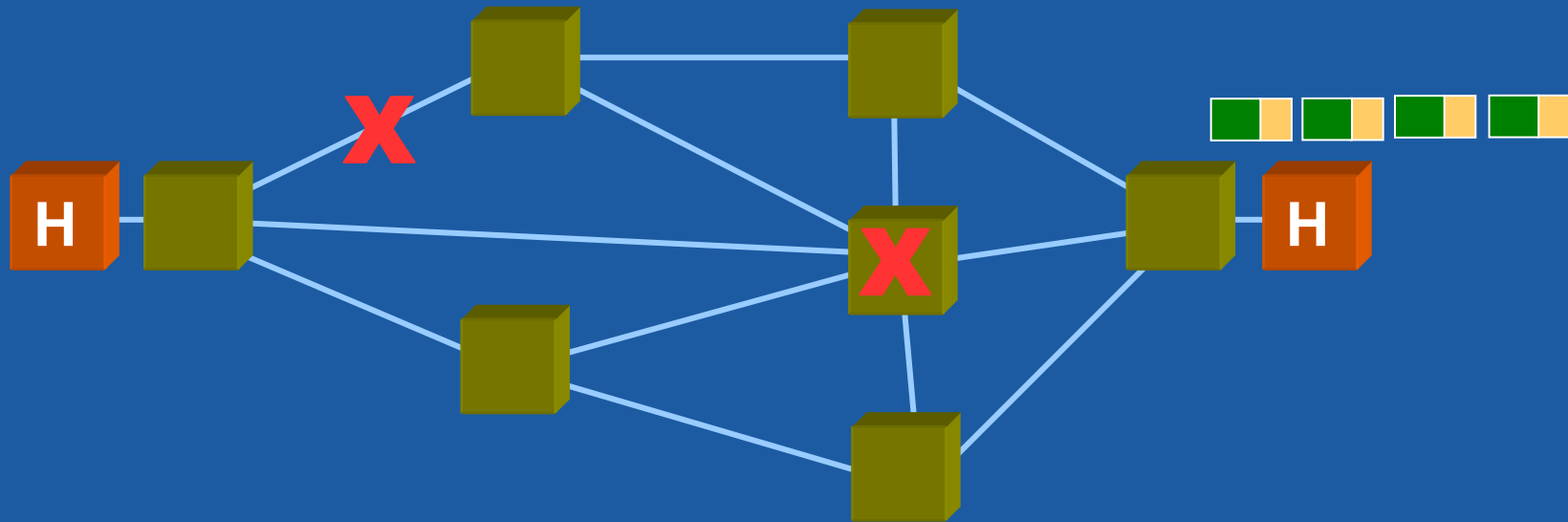
Internet Based on Packet Switching

GENUITY™

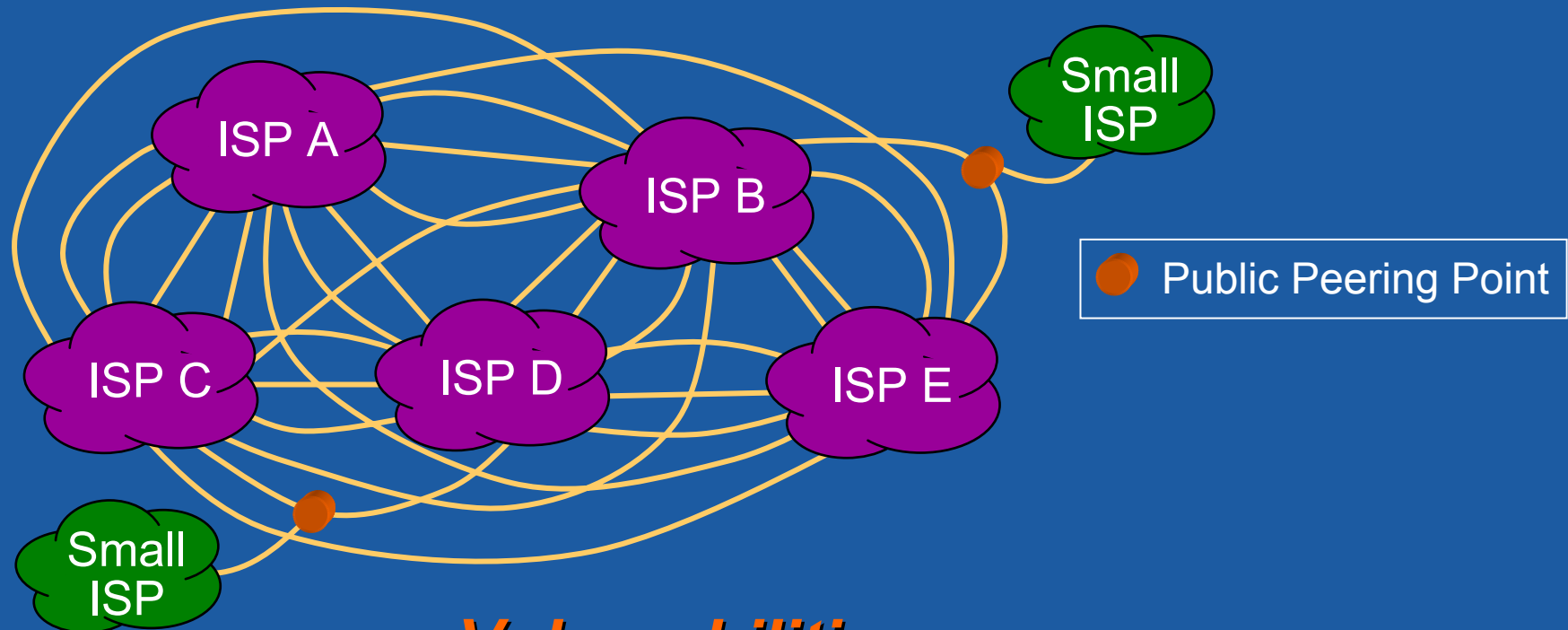


October 18, 2001

Internet Based on Packet Switching



- From a Few Public Peering Points to Diverse Private Peering Interconnects



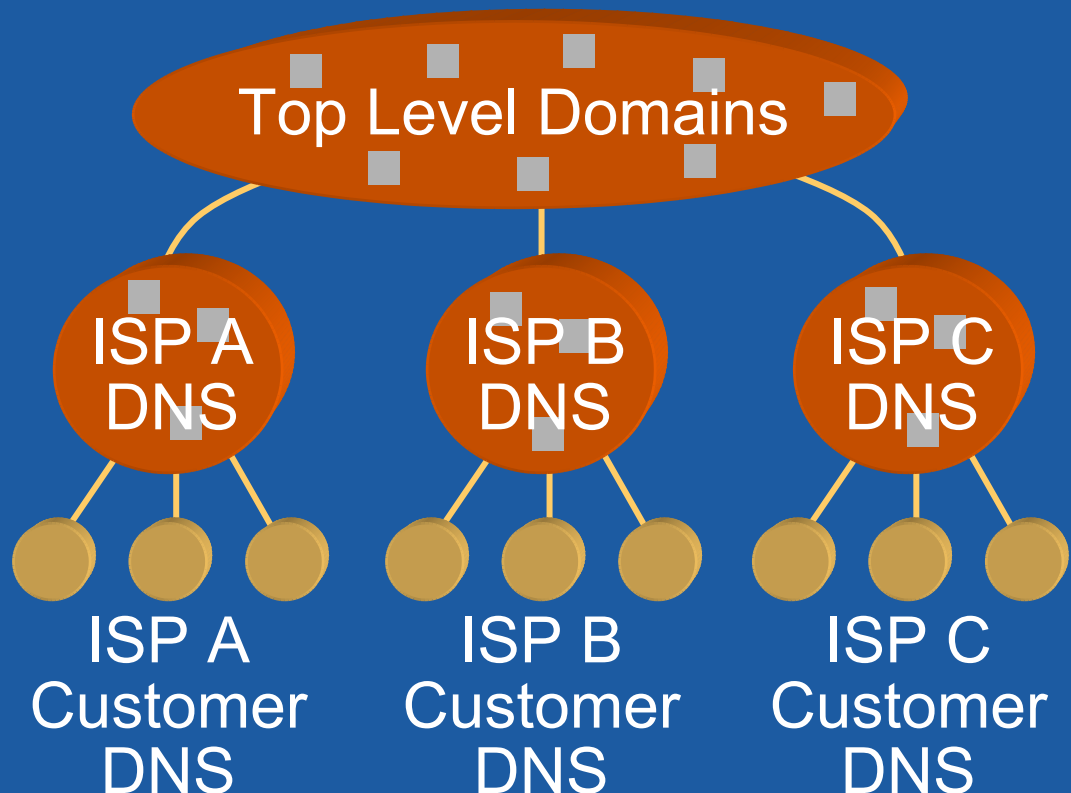
- ***Vulnerabilities***
 - *Routing Data Corruption and Forgery*
- ***SBGP Digital Certs to Authenticate***



- **Associate Name With IP Address**
 - e.g. whitehouse.gov = 198.137.240.92
- **Hierarchical Tree Structure**
- **Redundancies**

- ***Vulnerabilities***
 - *Data Corruption*
 - *Forgery*

- ***DNSSEC Digital Certificates***



- **Distributed Denial of Service**
 - Firewall Filtering
 - Router-Based Filtering
- **Viruses and Worms**
 - Virus Scanning in Hosts and Firewalls
 - Intrusion Detection in Hosts and in the Network
- **Infrastructure Software Security Holes**
 - Black Hat and White Hat Activities
 - Keep Software Patches up to Date
 - Encourage Diversity



- **FCC NRIC V Focus Group 4 on Internet**
- **NSTAC**
- **IOPS and ISP-ISAC**
- **SEI/CERT @ CMU**
- **IETF - More Robust Standards**
- **Law Enforcement Agencies - FBI Infragard**
 - CALEA / CARNIVORE
- **Federal Cybersecurity Office**



- **Build GOVNET to Secure Intra-Government Traffic**
- **Sponsor R&D to Continue to Strengthen Public Internet**
 - Delivery of Government Services, IRS Tax Forms and Filing, SEC EDGAR, e-mail, eCommerce, Etc.
 - U.S. Economy Increasingly Dependent on Internet
- **Better Law Enforcement Coordination, Especially Internationally**
- **Better Security for Key Infrastructure Sites**
- **Encourage Increased Diversity**
 - Network, Interconnect, and Software

