



# WELCOME to NANOG47

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# Acknowledgements

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**Special thanks to our NANOG47 co-host...**



# Exciting new era of innovation

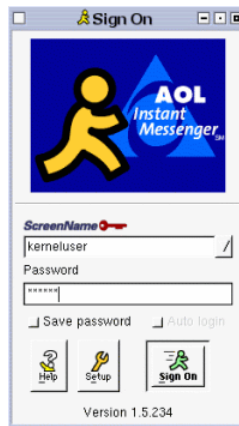
1988



Remarkable  
Pace of innovation



2009



IM



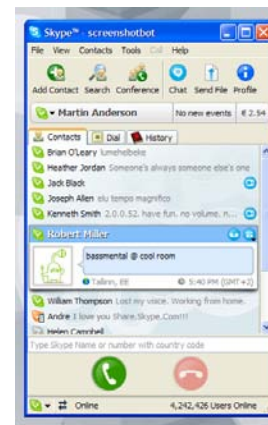
BLOGS



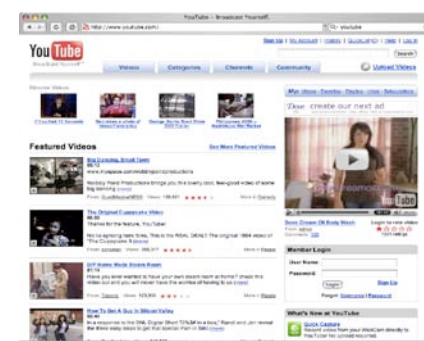
MOBILE



EMAIL



VOIP



VIDEO

# Brings significant challenges

## Traffic Growing Rapidly on Fixed and Mobile Networks

- IP traffic will double every 2 years through 2011
- “Video Internet” will drive much of this growth
- High quality of experience is essential for video, cloud computing and SaaS

## Security Threats Clog Bandwidth and Increase Costs

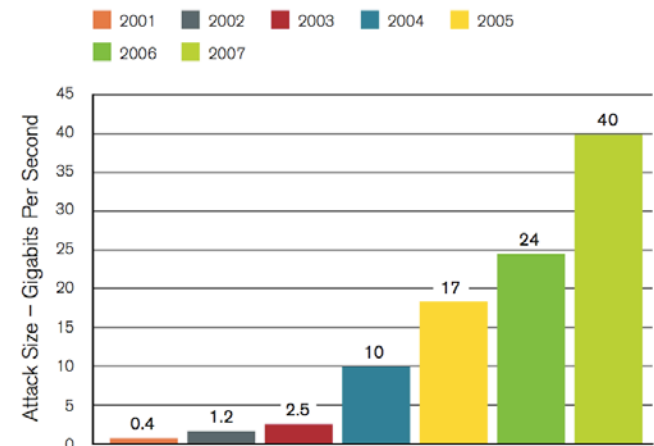
- 5% of internet traffic is malicious
- Attacks have grown rapidly over the last decade
- Botnets drive growth in size and complexity

## Pricing for data is fixed or dropping

- Competition
- Regulation



**Largest Attack Size – 40 Gigabits Per Second**



**Figure 1: Largest Attack Size – 40 Gigabits Per Second**

Source: Arbor Networks, Inc.

# Yesterday: The era of 'look at me attacks'

- Primary motivation of hackers was bragging rights
- Worms and viruses intended to simply wreak havoc on the infrastructure
- These were availability attacks: impacting network access and services, and often, reputations



**Technology** The New York Times  
ON THE WEB

Home Site Index Site Search Forums Archives Marketplace

February 8, 2000

## Yahoo Attributes a Lengthy Service Failure to an Attack

By MATT RICHTEL [BIO](#)

**S**AN FRANCISCO, Feb. 7 -- **Yahoo** Inc. blamed a "planned attack" by computer hackers for a service failure that lasted nearly three hours today, in a rare interruption of one of the most popular and best performing sites on the World Wide Web.

# Today: Botnets, Mobility, Clouds and Social Media

## Profit motives and new opportunities

### "Better Marketing by the Botherders"

- Excellent ping & uptime
- Rotating IP addresses
- Different ISPs
- Intuitive User Interface
- SLAs - 100 percent uptime guarantee!



- Malware that propagate, take control of hosts, and enable C&C infrastructure and delivery platforms for malicious activity
- Coordinated attacks launched from botnets that harvest the resources of compromised hosts, fueling a rapid increase in spam, phishing, and identity theft.
- Distributed attacks increasing in size and sophistication, targeting specific applications including layer 7
- Proliferation of attacks spurred by financial gains or political motives

# Tomorrow: 2009 and beyond

## Future security challenges will follow Internet adoption patterns



- Profit motives here to stay
- Politically motivated DDoS becoming 21<sup>st</sup> century form of street protest
- Cyber-networks are the new frontier of counterintelligence
- Botnets will continue to dominate how attacks are launched; attribution will be increasingly difficult
- Proliferation of wireless devices and social media platforms open new avenues for hackers and bring evolving security challenges
- Protecting cloud infrastructure key to long-term adoption



# Collaboration more important than ever

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- **NANOG itself is example of collaborative nature of our work**
- **Cooperation and information sharing between private and public sector, among Internet Service Providers, and between governments will be critical**
- **Cyber world will be increasingly important to economic prosperity and national security**
- **Never been a more exciting time to be in our business**





**Thank You**