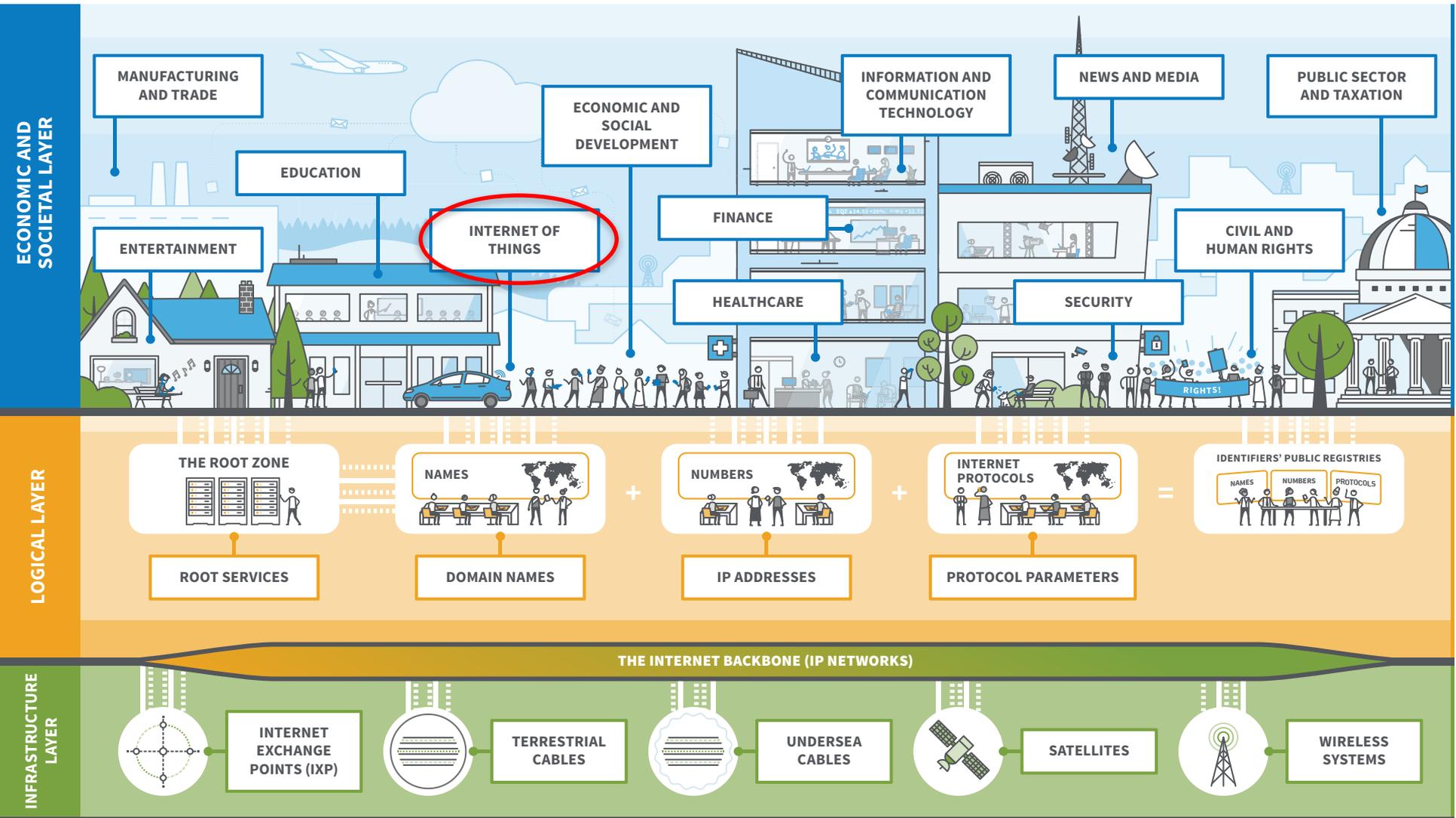


IoT and Internet Identifier Security

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Asia Pacific Digital Societies Policy Forum - Thailand | 28 April 2016

The Internet Architecture

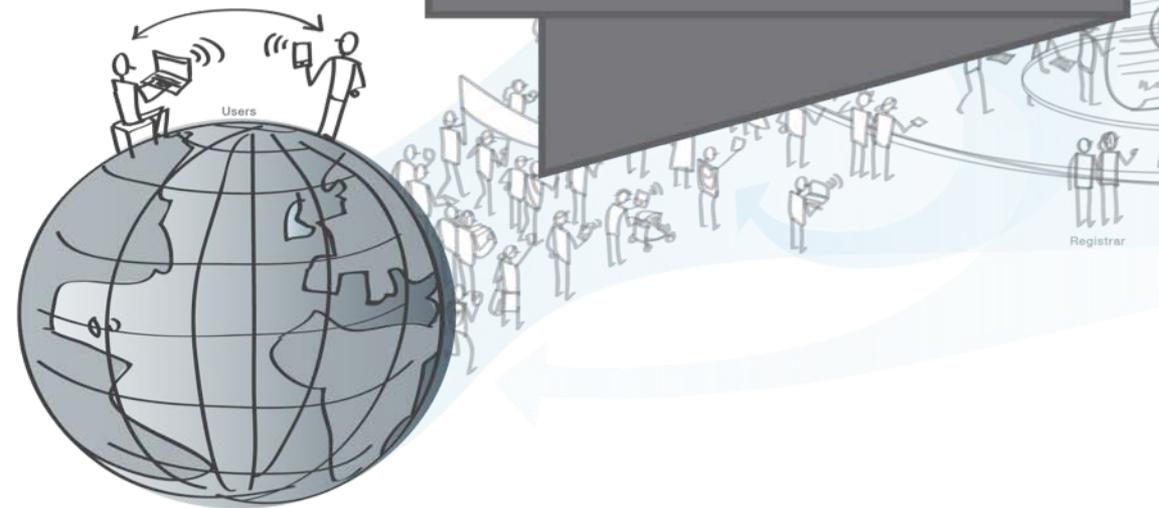


What does ICANN do?

WHAT DOES ICANN DO?

To reach another person on the Internet you have to type an address into your device—a name or a number. That address must be unique, so computers will know where to find each other. ICANN maintains and administers these unique identifiers across the world. Without ICANN's management of this system, known as the Domain Name System (DNS), we wouldn't have a global, scalable Internet where we can find each other.

- **Domain Name**
.com .org .net;
.my .sg .cn .in .bd;
.संगठन , .游戏, .شبكة
- **IP address**
(192.0.32.7)
(2607:f0d0:1002:51::4)



IoT and Unique Identifiers

- Unique Identifiers are needed to address IoT
 - Internet Protocol version 6 (IPv6) is one of the main unique identifiers
- Physical layer
 - 802.15.4, Bluetooth, Wi-Fi, WiMax, 3G/4G, LTE etc.
- Network layer
 - IPv6 can be applied
- IPv6 will further enable IoT
 - Interoperable
 - Scalable – Huge amount of IPv6 addresses
 - Stateless auto configuration

Multiple government websites down as servers under 'DDoS attack'

WHEN DDoS ATTACKS THREATEN BUSINESS OPPORTUNITIES

Cost per DDoS Attack

DDoS attacks cost small and mid-size businesses an average of \$52,000 per incident. For large enterprises, an average of \$440,000 is lost in business and IT spending.



CIO INSIGHT

WHEN DDoS ATTACKS THREATEN BUSINESS OPPORTUNITIES

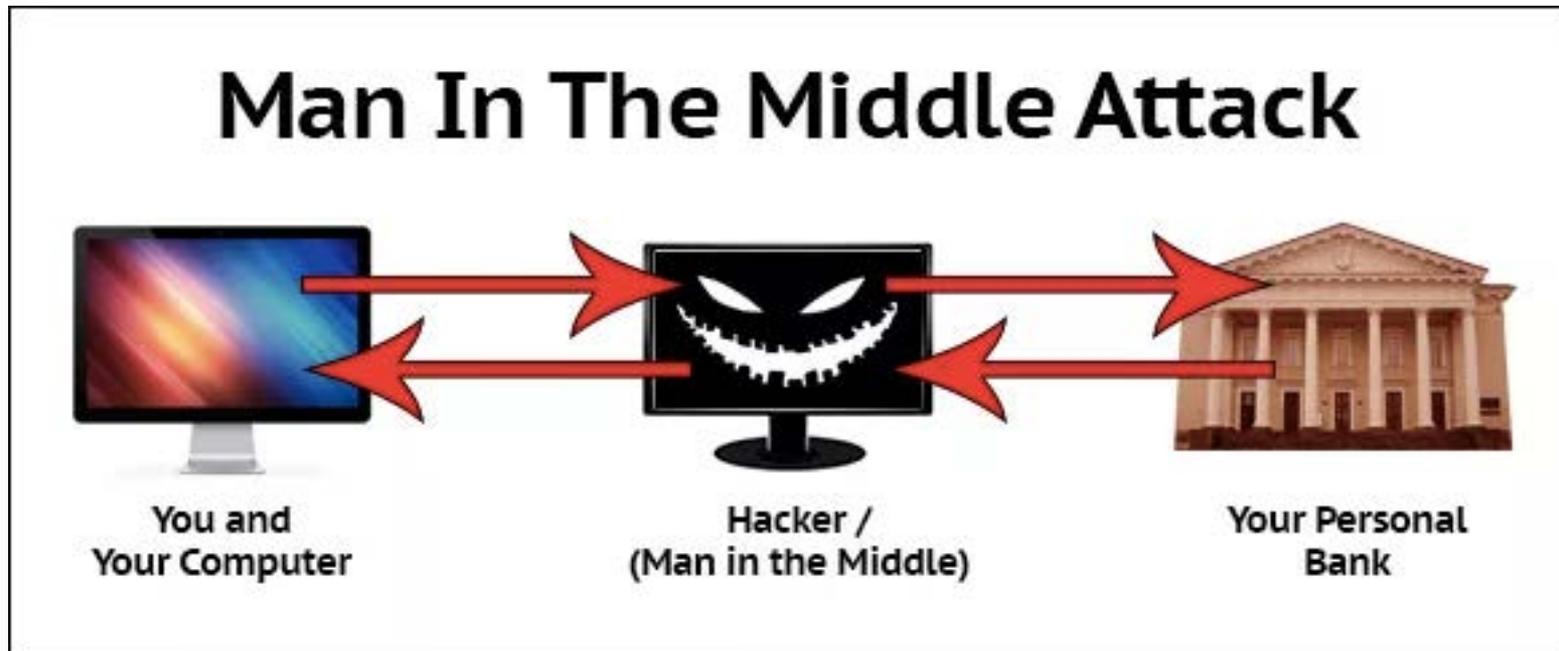
Top Four Long-Term Cost of DDoS Attacks



CIO INSIGHT

DNS Security Threats

DNS spoofing diverts Internet traffic away from legitimate servers and towards fake ones.



Cybersecurity – People and Technology

People

- Awareness
- Security requirements
- Capacity building - Knowledge and skills
- Sharing Security Incident Information

Challenges

Lack of security awareness, knowledge and skills

Lack of understanding, R&D requirements

Security Requirements not easily derived

Technology

- Server Protection
- Data Protection

Reluctance to share Security Incident Information

Risk Management and Security Audit not emphasised

Cross-Border Crimes occur

People – Information sharing

- **Exchange of threat/incident intelligence**
 - Attacks against ccTLDs, registrars
 - Coordinated response to threats
 - Vulnerability disclosure

- **Collaborate to look at specific issues**
 - **Phishing**
 - Research, target bad domains (Anti-Phishing Working Group)
 - **Spam**
 - Work with Governments; Regional Internet Registries; ISOC
 - **Crime**
 - DNS abuse/misuse; DDoS attack
 - Work with Law Enforcement Agencies
 - **Global Cybersecurity Cybercrime Initiative**
 - OECD, other academic institutions

Technology - IoT and Internet Identifier Security



- Secure IP networks and DNS infrastructures
 - IP address management, DHCP, DNS
 - DNS Response Rate Limiting
 - Protecting DNS transactions and data
 - **DNSSEC (DNS Security Extensions)**

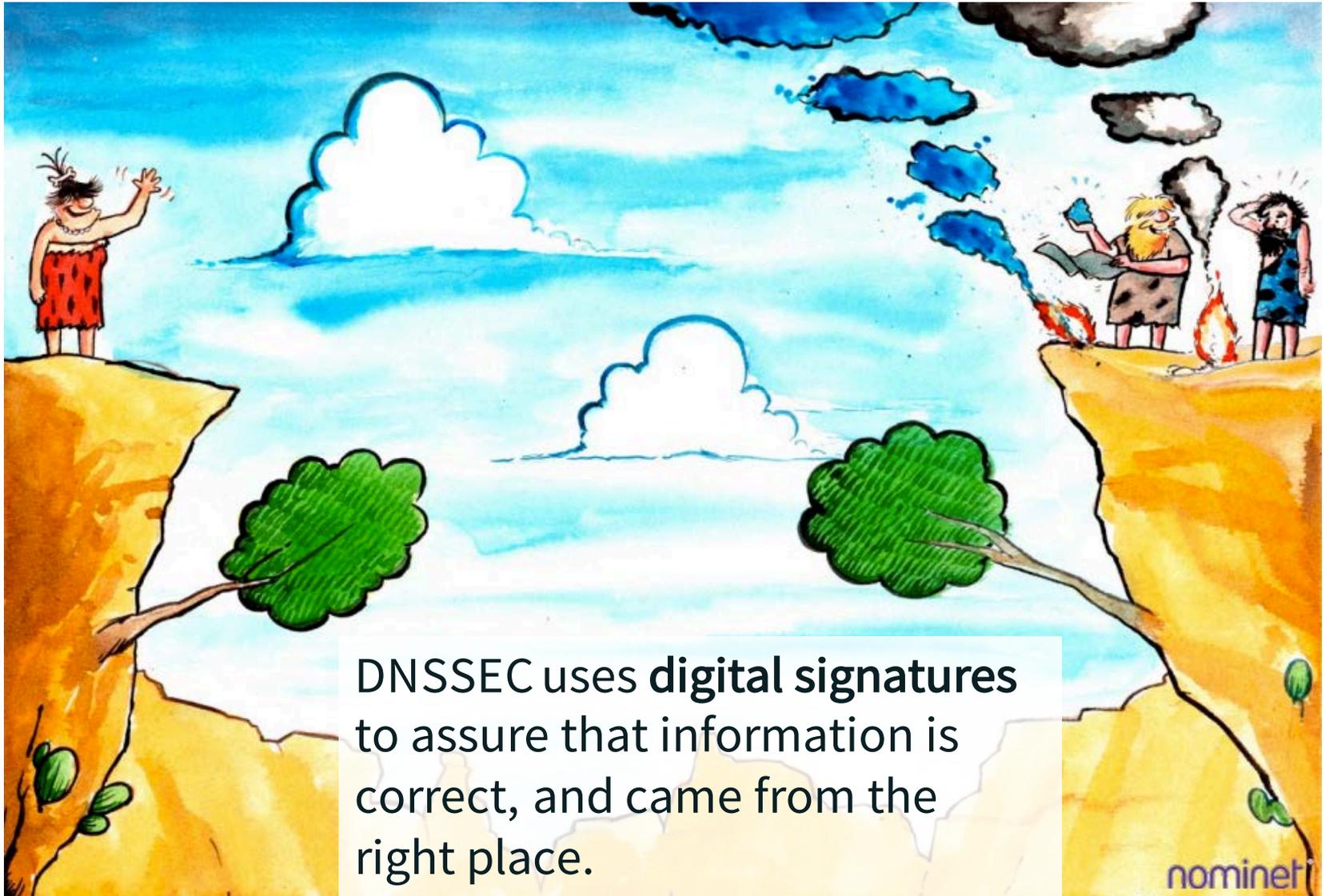
DNSSEC – simplified



DNSSEC – simplified



DNSSEC – simplified



DNSSEC uses **digital signatures** to assure that information is correct, and came from the right place.

DNSSEC: What you can do

- ***For Companies:***
 - Sign your corporate domain names
 - Turn on validation on corporate DNS resolvers
- ***For Users:***
 - Ask ISP to turn on validation on their DNS resolvers
- ***For All:***
 - Take advantage of DNSSEC education and training

Preparing for Future!

- Overall planning
 - Develop technology and Identifier Systems security plan(s)
 - Strategy, scope of the deployment, schedule, auditing of execution of the plan
 - Budget readiness
 - Technical management
 - Human capacity development
 - Stay abreast with IoT Technologies
 - IoT and Mobile

Thank you and Questions



Thank You and Questions

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