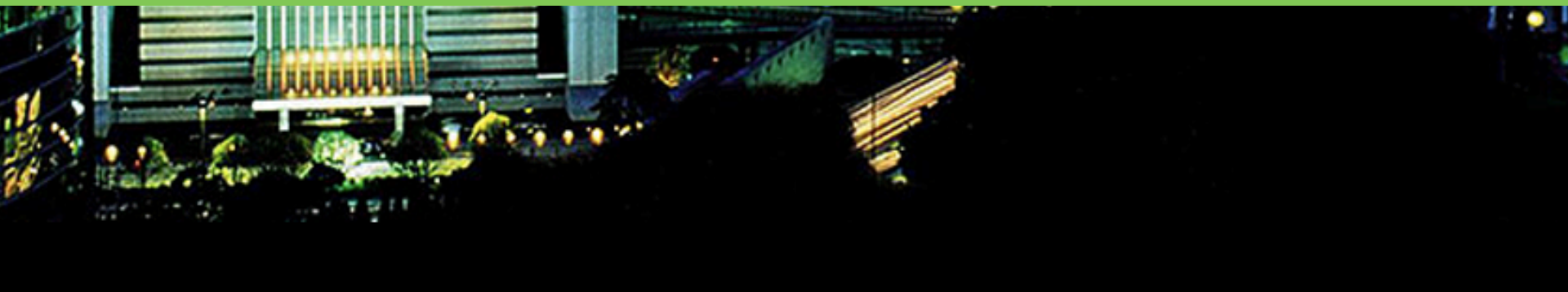
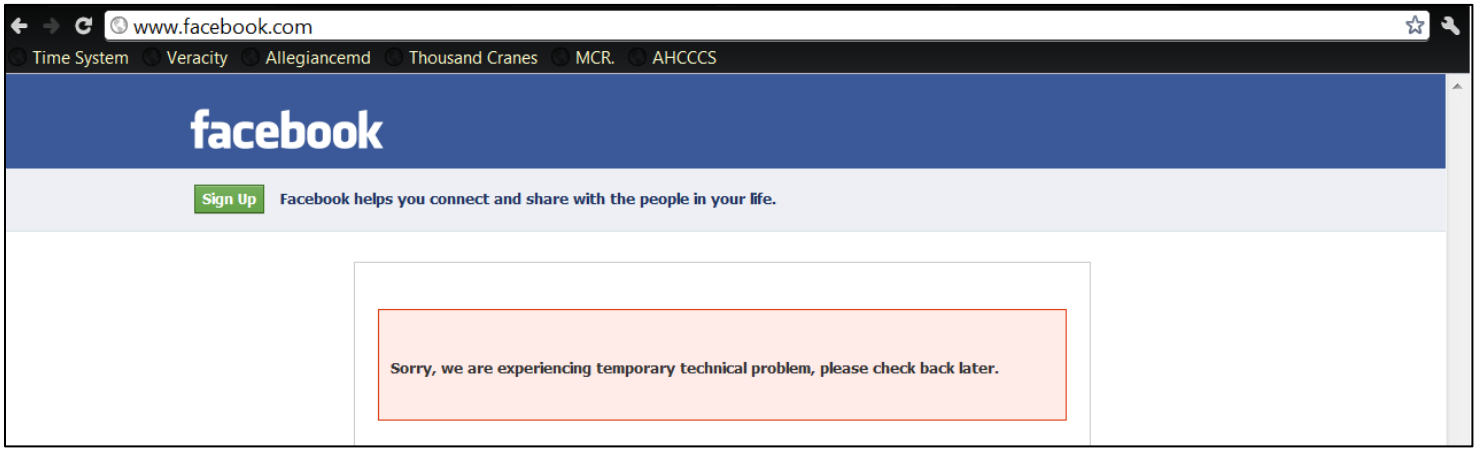
Distributed Denial-of-Service (DDoS) Attacks: An Economic Perspective



What Is DoS?

When you type a URL for a particular website into your browser, you are sending a request to that site's computer server to view the page. The server can only process a certain number of requests at once, so if an attacker overloads the server with requests, it can't process your request. This is a "denial of service", also known as DoS, because you can't access that site.

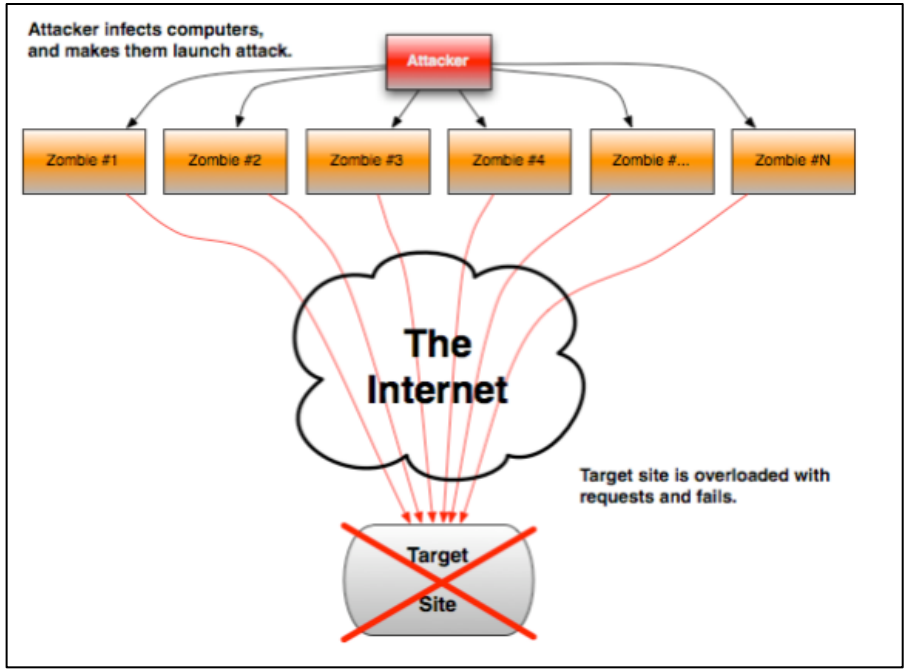


It attempts to

- Make a computer resource unavailable to its intended users
- Prevents an Internet site or service from functioning efficiently or at all, temporarily or indefinitely

What Is DDoS?

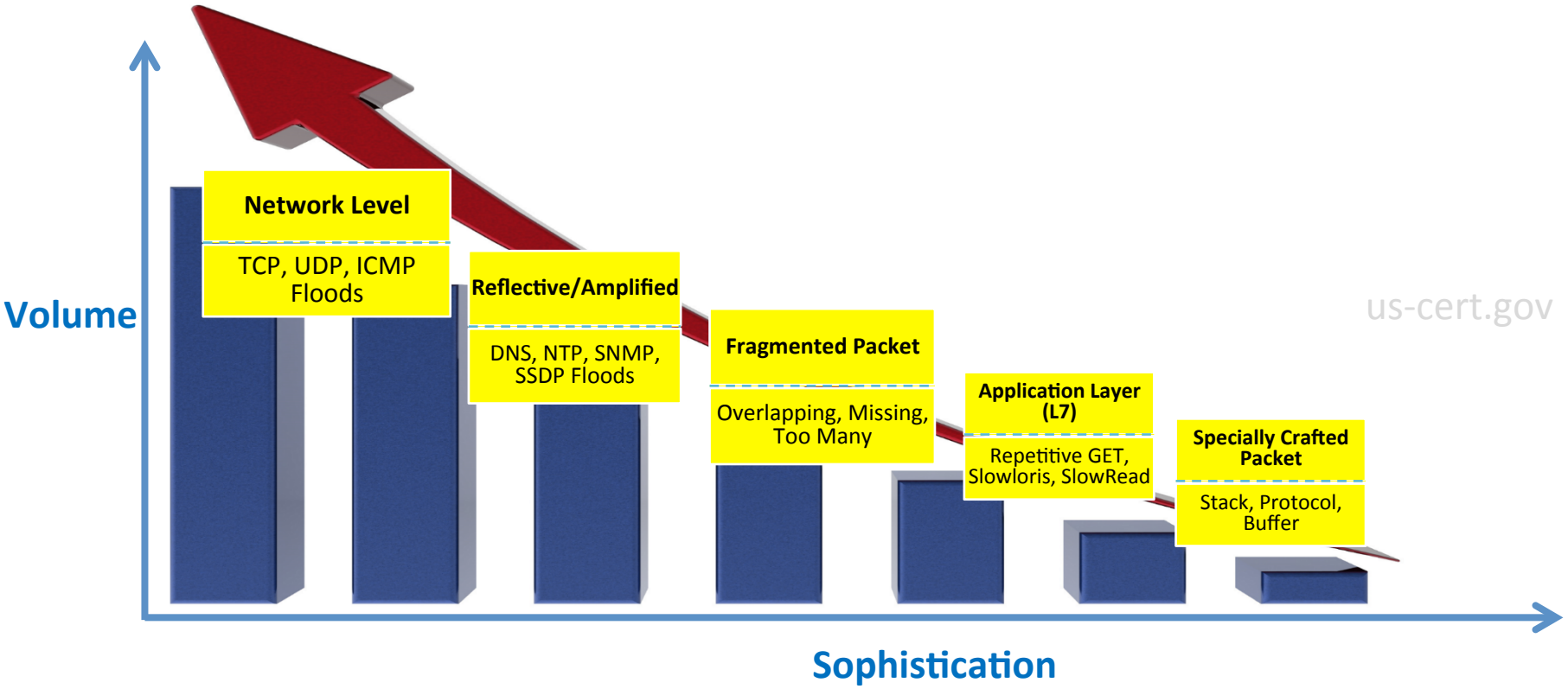
DDoS → Distributed Denial-of-Service (DoS) Attack
By taking advantage of security vulnerabilities or weaknesses, an attacker could take control of your computer. He or she could then force your computer to send huge amounts of data to a website. The attack is "distributed" because the attacker is using multiple computers, including yours, to launch the denial-of-service attack.



History


thehackernews.com/2016/09/ddos-attack-iot.html
World's largest 1 Tbps DDoS Attack launched from 152,000 hacked Smart Devices
Tuesday, September 27, 2016
Swati Khandelwal
G+1 124
Like 10K
Share 9020
Tweet 878
Share 476
share 10.6K
1 Tbps DDoS Attack
Powered By 150,000 Hacked IoT Devices
Do you know — Your Smart Devices may have inadvertently participated in a record-breaking largest cyber attack that Internet has just witnessed.

DDoS Category



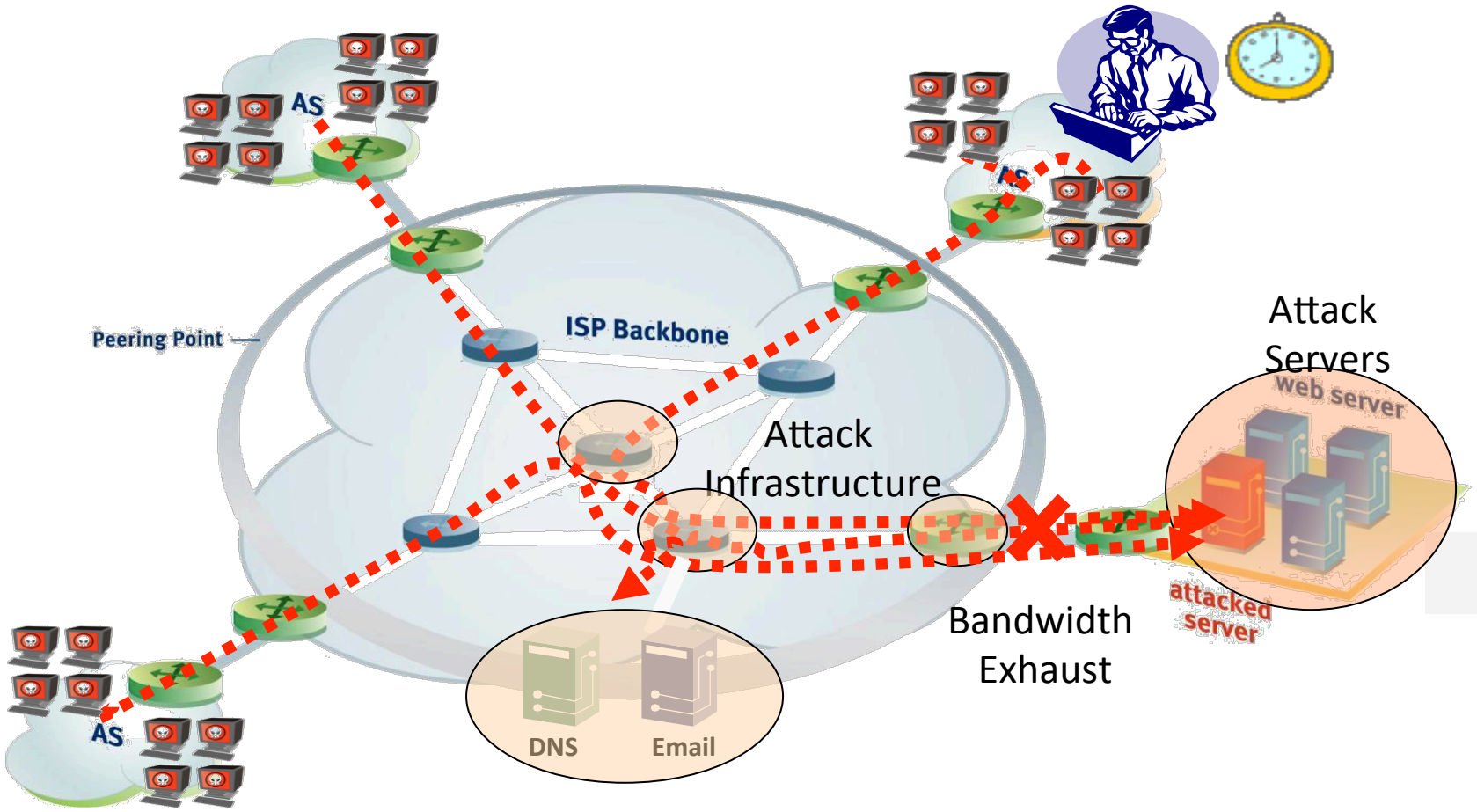
Motives

Protest

Extortion

Flaunt

Who Is the Target?



The Financial Impact

Direct Costs

- Loss of revenue
- Loss of productivity
- Personnel costs – IT operations/security teams
- Personnel costs – Help desk
- Specialized Consultants
- Customer credits/Service level agreement enforcement
- Legal/Compliance
- Public relations

The Financial Impact

Indirect Costs

- Damage to brand
- Customer loss
- Theft of vital data
- Opportunity cost

The Cost of DDoS Attack

- Frost & Sullivan, "Global DDoS Mitigation Market Research Report", July 2014

  "For some financial and web-based business, DDoS attacks can result in **millions of dollars of damages per hour**."

- Ponemon Institute, "Cyber security on the offense: A study of IT security experts", November 2012

  "The average amount of downtime following a DDoS attack is **54 minutes and the average cost for each minute of downtime is $22,000**."

The Cost of DDoS Attack

- IDC Research, “Breach Is a Foregone Conclusion: DDoS”, October 2015

  “DDoS is no longer an annoyance threat. In fact, it hasn’t been for several years. There is **real loss and real cost**, and **companies of all industries and sizes are vulnerable**.”

DDoS Attack Cost Model

Company Profile: The company is an online retailer offering discounted name brand office furniture including chairs, desks, cabinets and artwork. They also offer bulk consumable office supplies and their current trailing 12-month revenue is $35,000,000. Their IT operations team consists of 4 engineers and they have a separate help desk staffed to receive calls from both internal employees and online customers. There are 2 full time employees staffing the help desk at any given time.

DDoS Attack Cost Model

Scenario: The company was the victim of a DDoS attack that resulted in a complete outage of their online store. Customers were not able to browse the store or complete purchases for the duration of the outage.

DDoS Attack Cost Model

	Outage Duration						
	30 Minutes	2 Hours	5 Hours	8 Hours	1 Day	3 Days	Notes
Direct Costs							
Loss of revenue	3,600	14,400	36,000	57,600	172,800	518,400	1
Loss of productivity							
IT operations	108	430	1,076	1,721	5,163	15,490	2
Help desk	10	40	100	160	480	1,440	3
Consultants	1,600	2,000	2,400	3,000	4,000	8,000	4
Customer credits/SLA	3	11	27	43	128	383	5
Legal/compliance							
Public relations			1,200	1,200	2,400	3,000	6
Indirect Costs							
Damage to brand							
Theft of data							
Customer loss				35,000	87,500	175,000	7
Opportunity cost							
Total cost ($ USD)	5,320	16,881	40,802	98,724	272,471	721,713	

RoI: A Three Year Cost Analysis

A comprehensive security survey of over **370 networking** and security managers from more than 14 industries reported that respondents experienced a **weighted average of 4.5 DDoS attacks per year** and an **average attack duration of 8.7 hours**.

SANS Institute

"DDoS Attacks Advancing and Enduring", February 2014

RoI: A Three Year Cost Analysis

Online Retailer DDoS Attack Cost Analysis	
Single incident cost (8 hour)	$98,724
Estimated Three year cost	Single incident cost x 13.5 = $1,332,770
Estimated Monthly cost	**$36,743**

THANK YOU