Infoblox
NEXT LEVEL NETWORKING

Evolving IT Architectures and the Impact on Security

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Agenda

Digital Transformation Driving New Architectures

Threat Landscape

Using a Foundational Approach for Enterprise Security

Market Trends in DNS Privacy

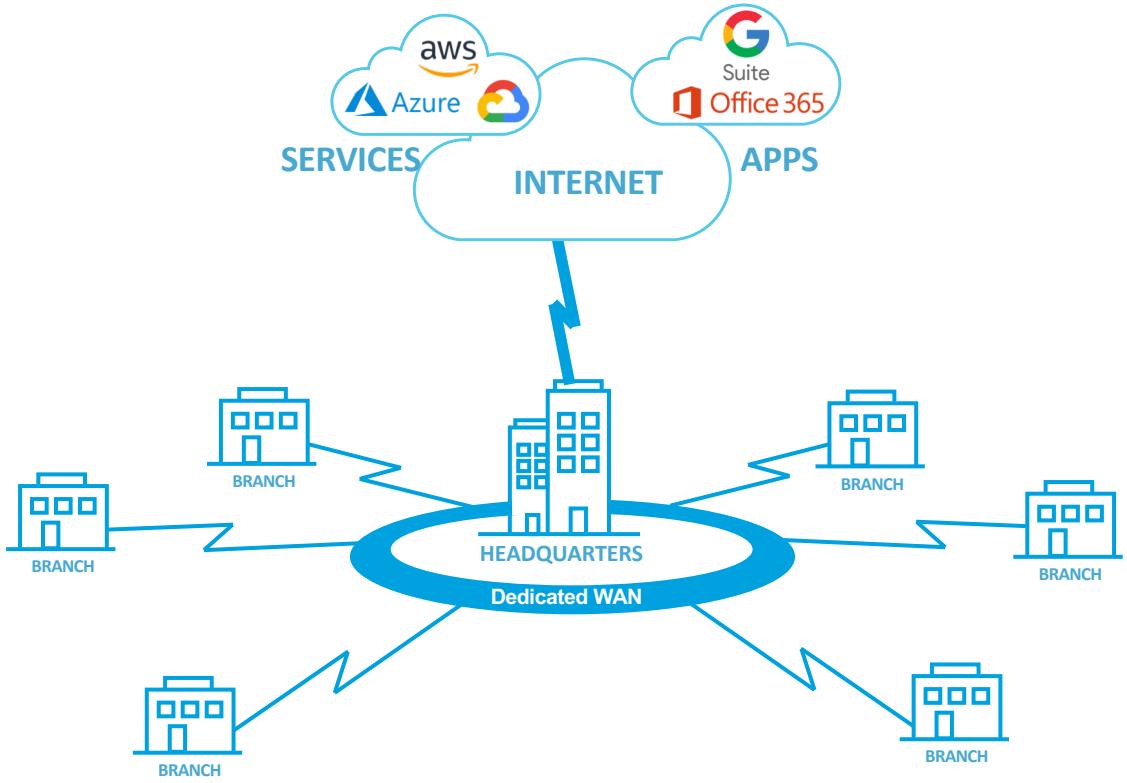
The Traditional Architecture

Dedicated WAN circuits

Static configurations

Lack of automation

Centralized, perimeter-based security



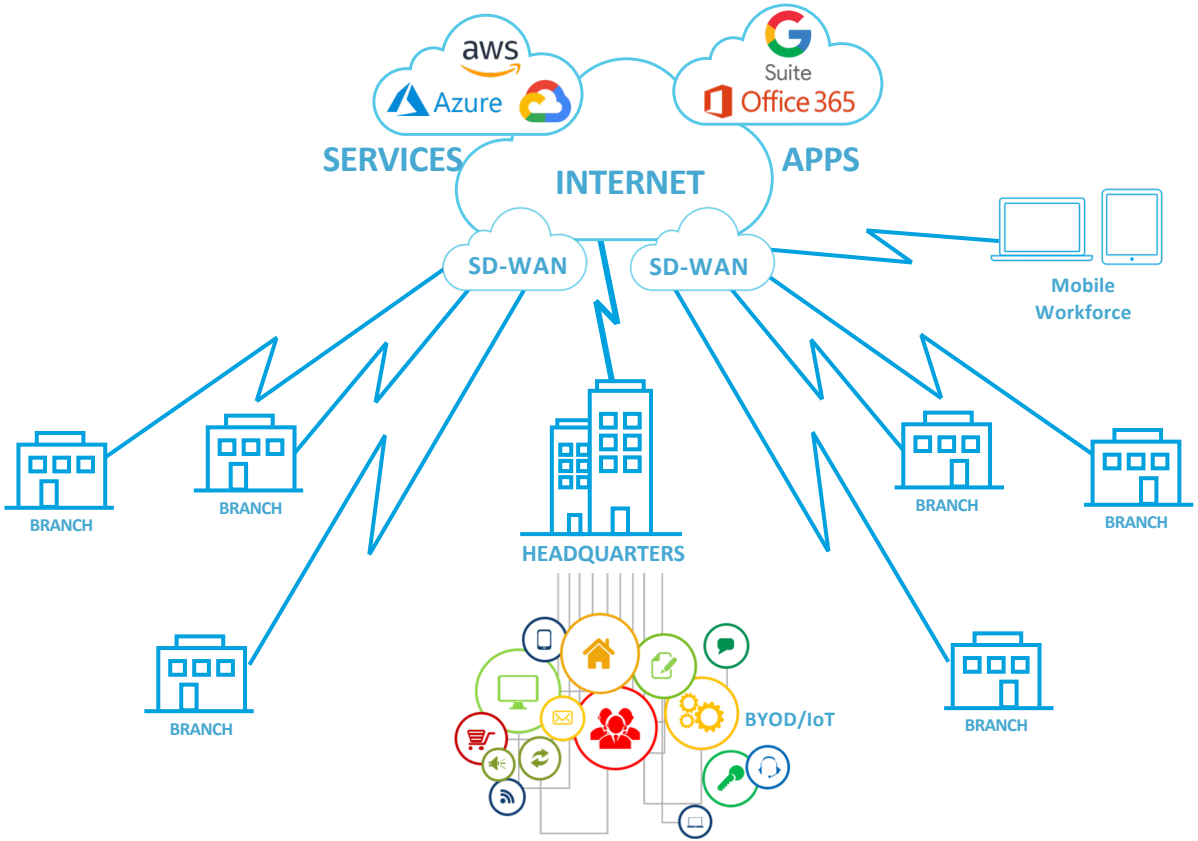
The New Architecture: Cloud, SaaS, SD-WAN

SD-WAN for remote locations

Decentralized infrastructure

BYOD/IoT

SaaS/Cloud



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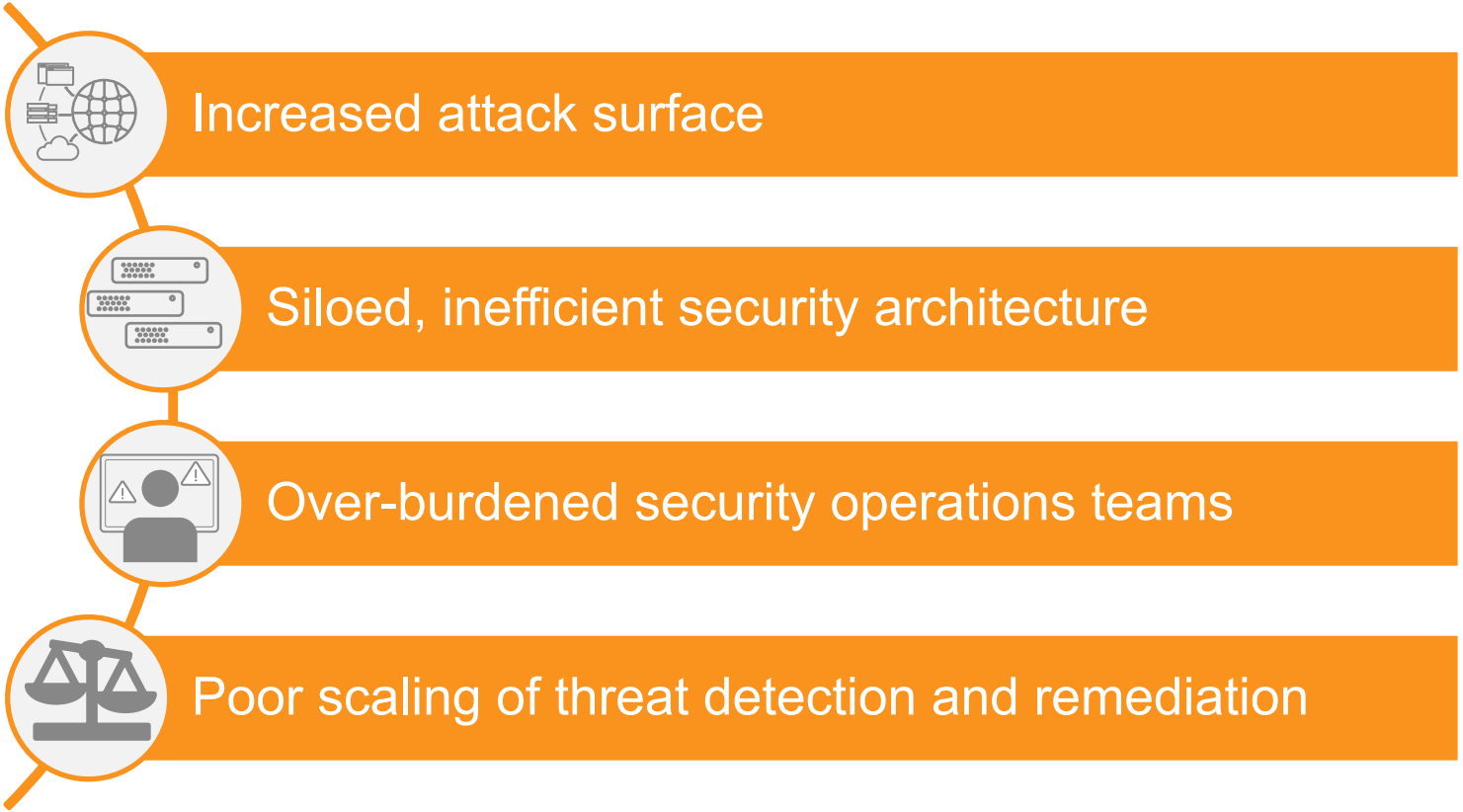
Security Implications



Threat Landscape in the Age of Digital Transformation

Edge — Attacks on edge services top the list of threats tracked in Q3 2019[1]

Cloud — 60% of web application attacks were to gain unauthorized access to cloud-based email servers[2]

IoT — Half of top 12 Global exploits targeted IoT devices in Q4 2018[3]

What to lookout for in 2020

- More mobile threats
- All online accounts are fair game
- Ransomware is rising to crisis level
- Continued increase in cybersecurity skills gap

Sources:
1. Fortinet threat landscape report Q3 2019
2. Verizon DBIR 2019
3. Fortinet threat landscape report Q4 2018

Other sources: Infoblox CIU, Forbes, CIO Dive, Trendmicro

Foundational Services

DNS

DHCP

IP Address Management (IPAM)

DDI

Core Foundation Elements for Any Architecture

IP Address Management

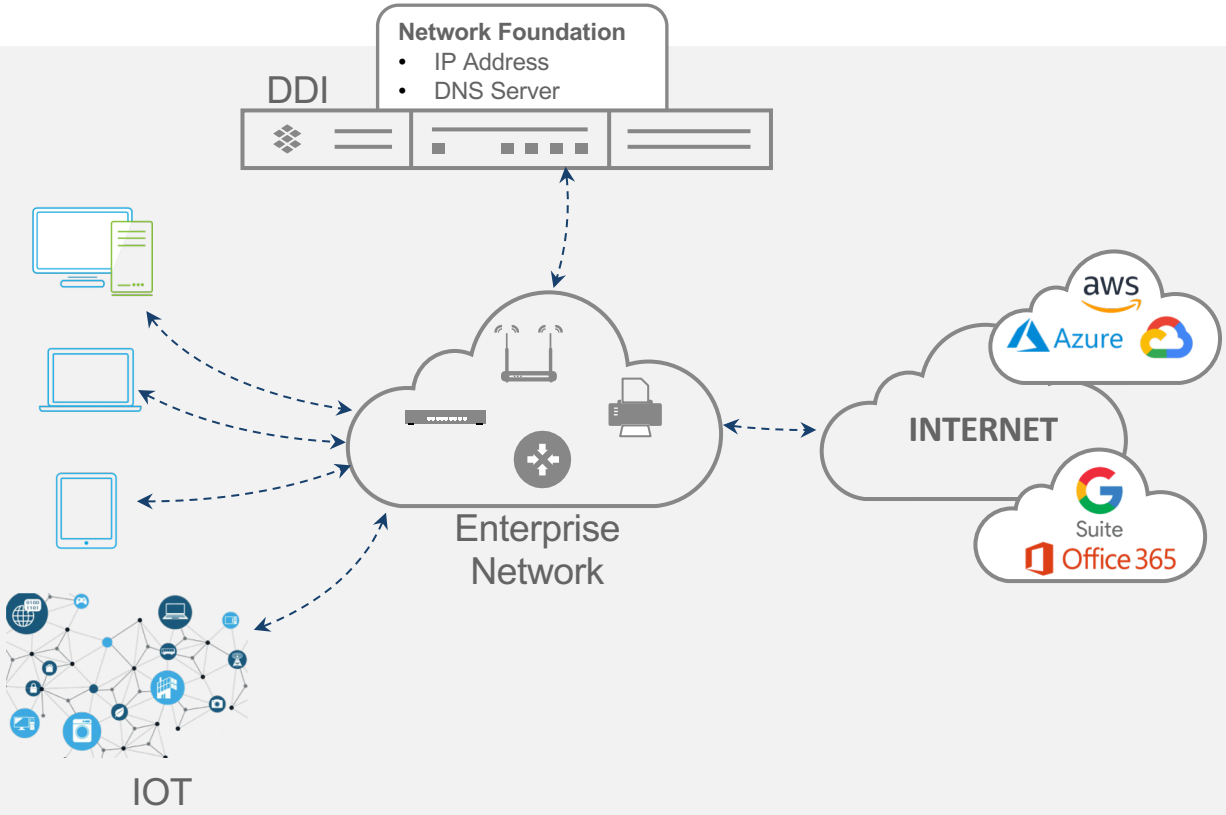
- Device IP Address
- Centrally managed
- Resolve network conflicts

Provides Internet Connectivity

- DNS used to locate services/destinations
- DNS server location

Asset Management and Discovery

- Automated device discovery
- Authoritative inventory of physical and virtual network assets



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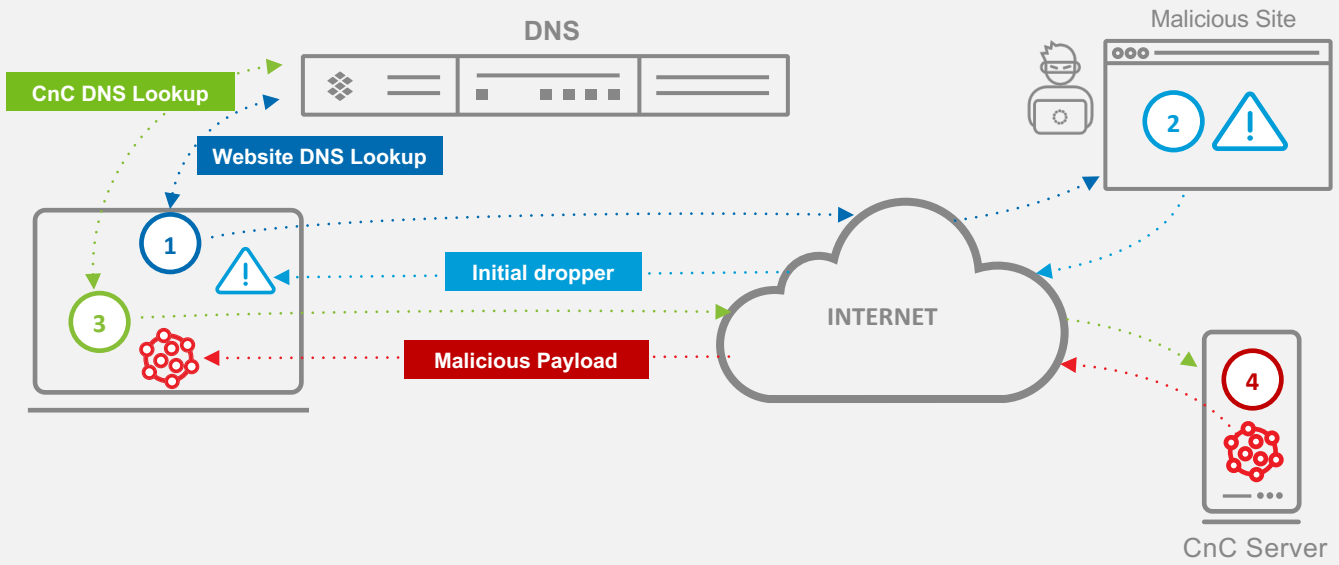
Common Attack Steps Review

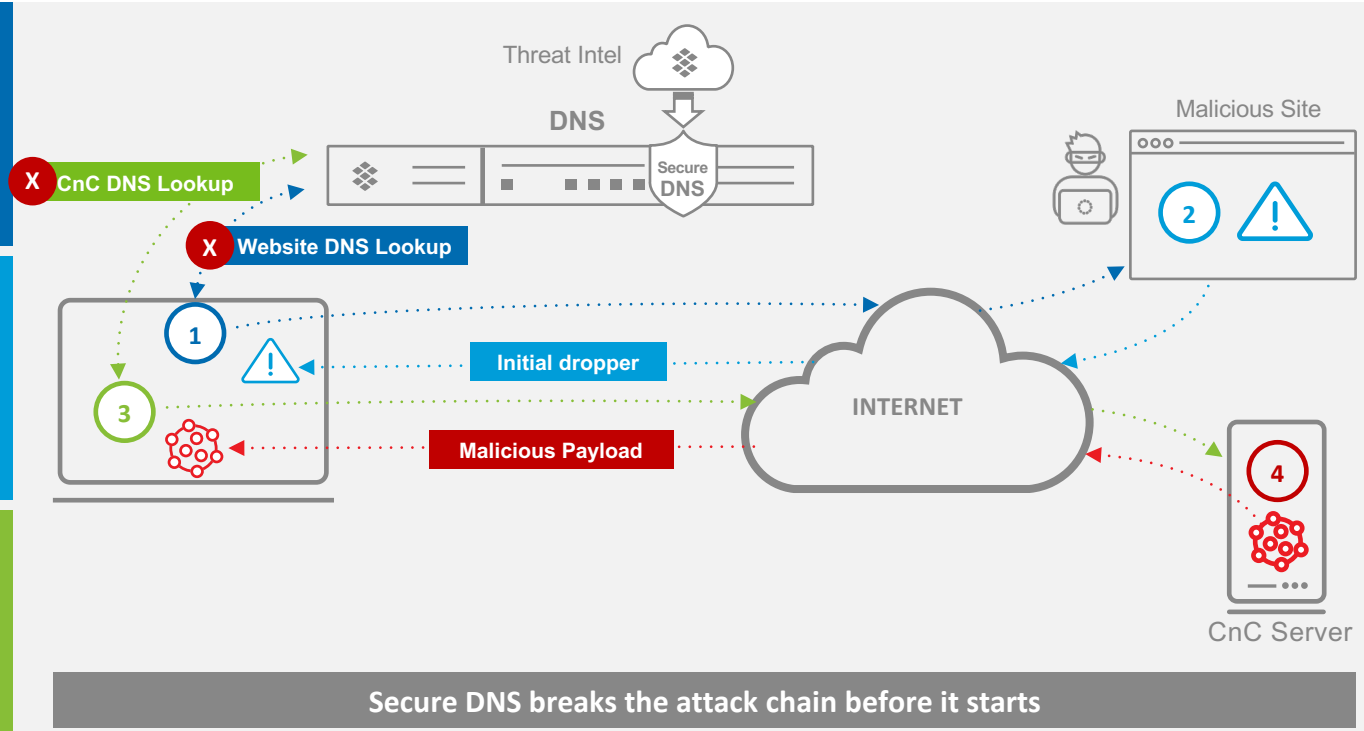
1. User directed to malicious site
2. Website delivers initial exploit
3. Exploit contacts CnC server
4. Malicious payload downloaded



DNS is used for all external destination lookups

Leveraging DNS Intelligence for Security

1. Curated threat intelligence for DNS
2. Connection to malicious website blocked at DNS
3. If already infected, CnC connection request blocked at DNS



Optimizing Entire Security Stack

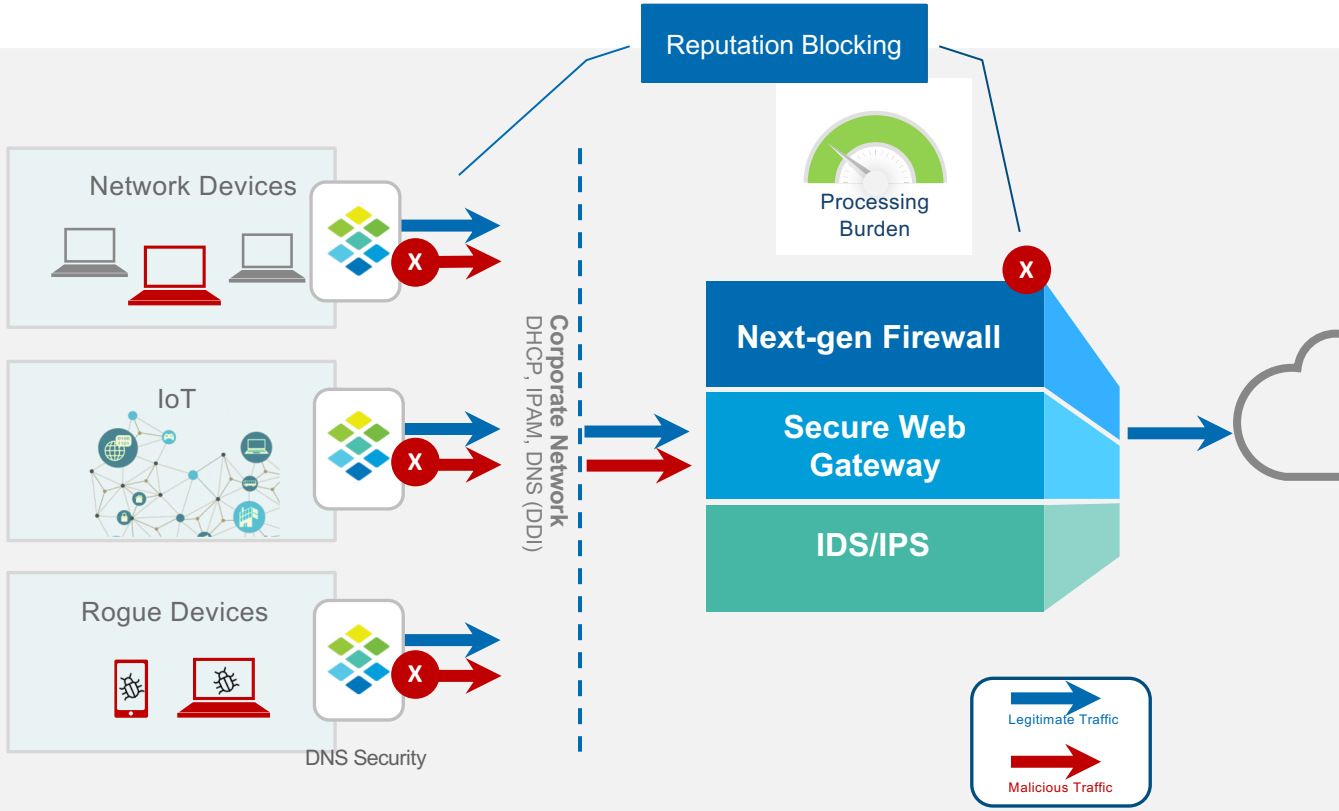
Preserving Perimeter Security

Giving Back Scalability

- Offloading blocking of known threats
- Reducing “junk” traffic to NGFWs, SWGs and IDS/TPS
- Preserving processing power of perimeter security

Protect All Devices

- Foundation of **DHCP, IPAM, DNS**
- Widespread protection for
  - All enterprise devices
  - All IoT devices
  - Rogue devices



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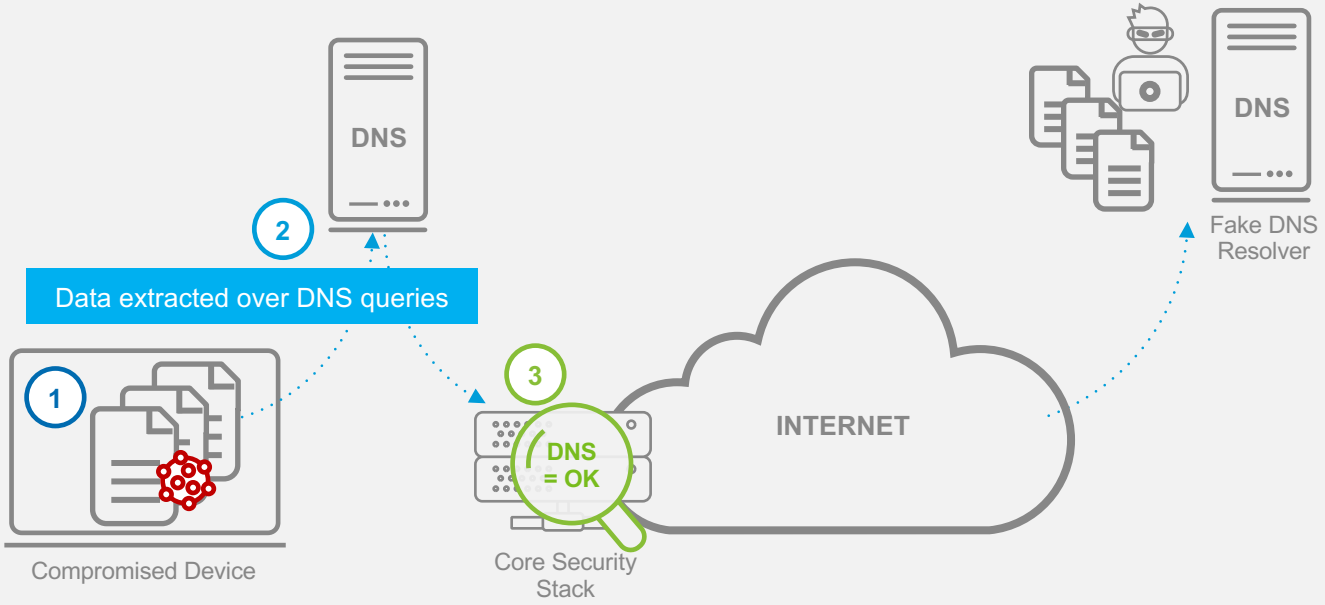
Closing Gaps in Protection: Data Exfiltration over DNS

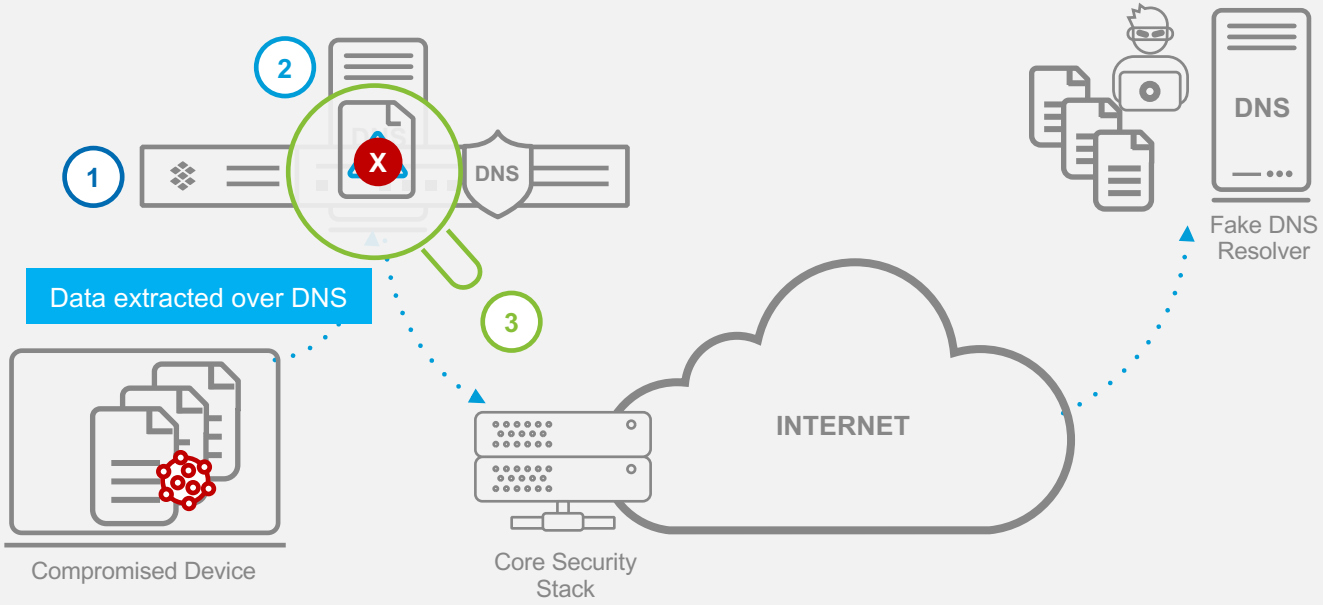
1. Malware seeks sensitive data on compromised device
2. Malware uses DNS channel to exfiltrate data
3. Defenses do not inspect DNS traffic



Sensitive data tunneled over DNS protocols avoid detection

Protecting from Data Exfiltration over DNS

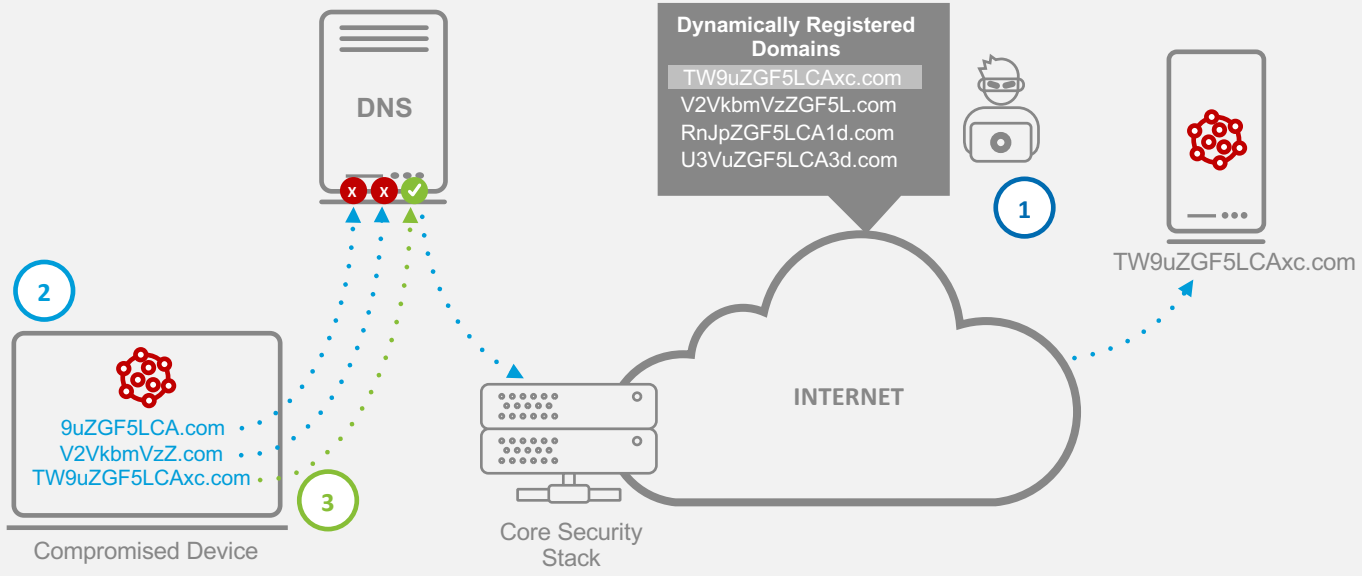
1. DNS with threat intelligence and analytics
2. Machine learning analytics inspect DNS traffic for data exfiltration
3. Data secured by blocking DNS request



Attempted data exfiltration over DNS protocols detected and blocked

Closing Gaps in Protection: Domain Generation Algorithms

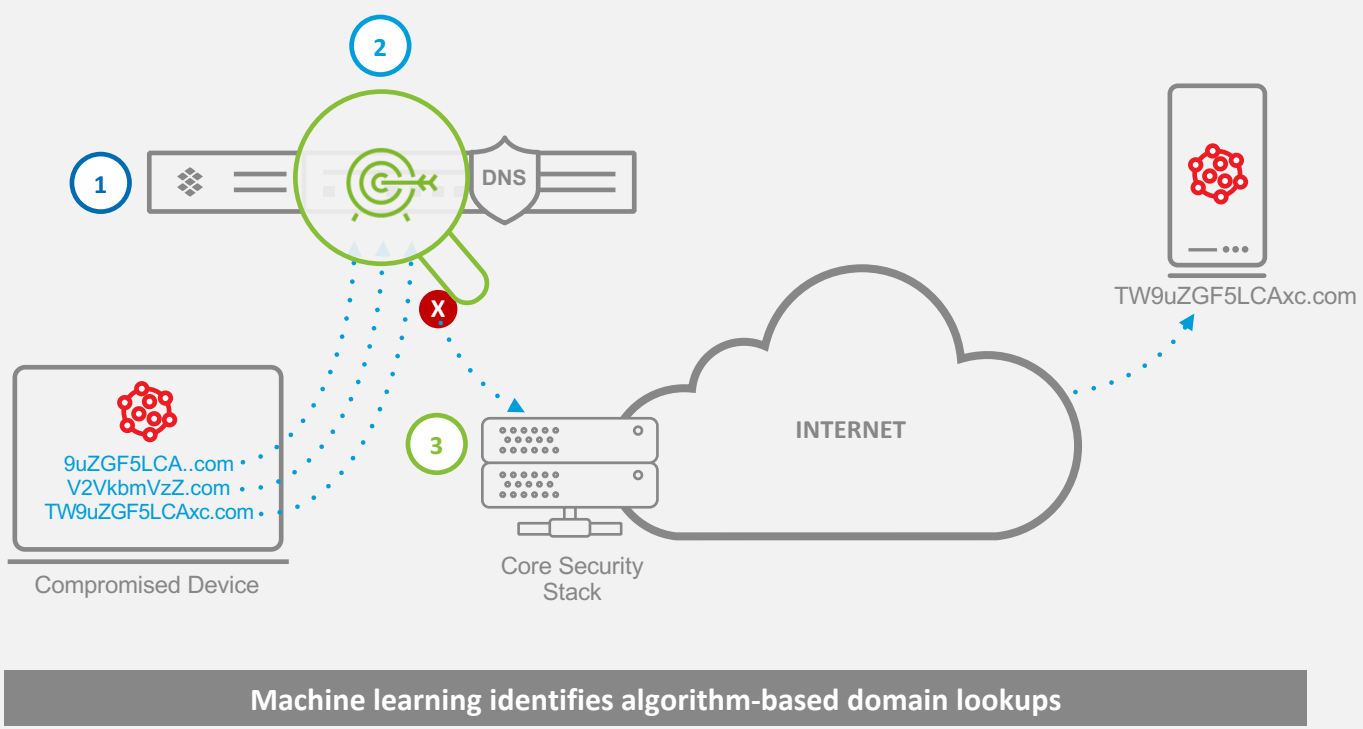
1. Attacker uses algorithm for dynamic domain creation
2. Malware uses same algorithm to “look” for CnC
3. Successful domain allows malware to connect to CnC



Threat Intel/reputation is ineffective against this attack method

Protecting Against Dynamically Generated Domains

1. Machine learning analytics inspect DNS queries
2. Identifies patterns that follow DGA methods
3. Block ongoing connections with the same pattern



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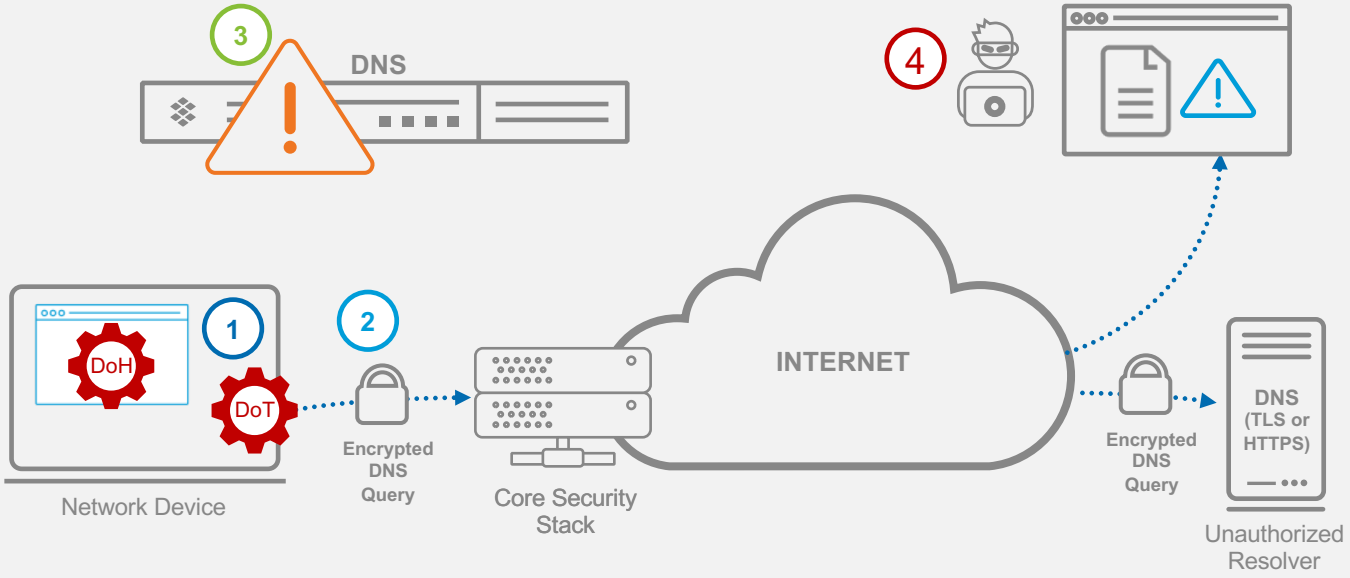
Market Trends in DNS Privacy

Market Trends in DNS Privacy

- Two evolving improvements to DNS privacy have recently made the news:
  - DNS over TLS (Transport Layer Security) or "DoT”
  - DNS over HTTPS or "DoH”
- Mechanisms promote consumer privacy but allow users to circumvent established enterprise DNS controls.
  - Exposure to data exfiltration and malware proliferation

DoT/DoH: Bypass of Enterprise DNS is a Challenge

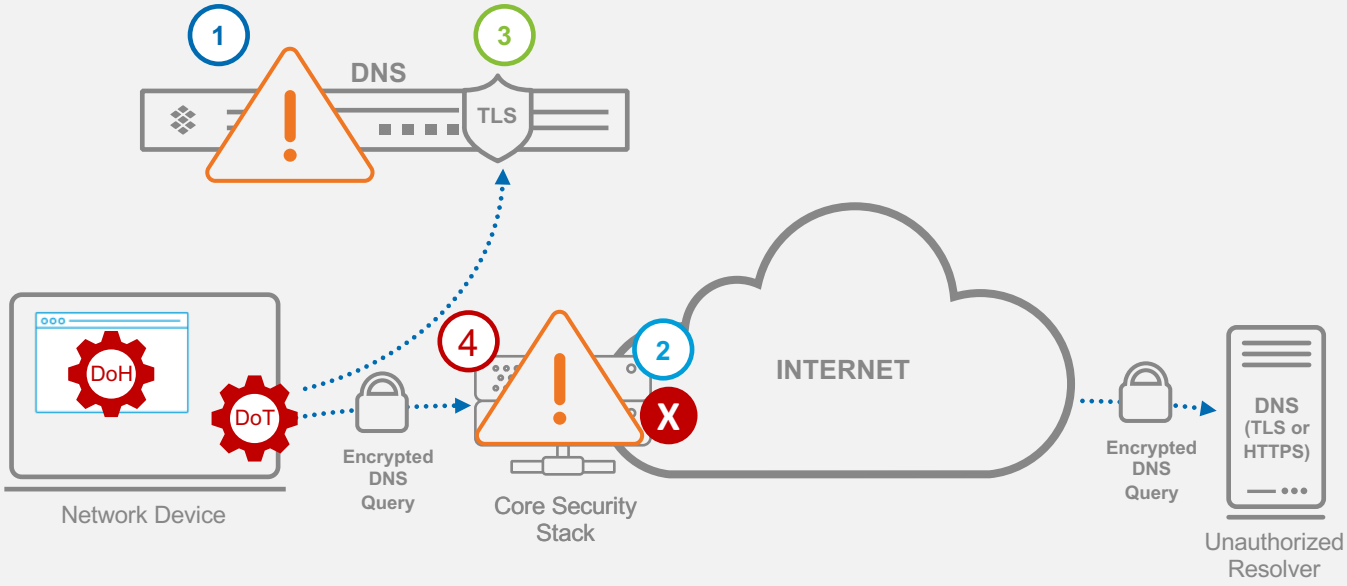
1. Device (TLS) or browser (HTTPS) is configured with unauthorized DNS Resolver
2. Encrypted DNS queries sent to external resolver
3. Internal DNS Resolver bypassed, and DNS traffic not inspected
4. Attackers can exploit DoT for their own purpose



DoT/DoH "HIDES" DNS traffic from your security tools

DoT/DoH Best Practices

1. Circumventing internal DNS is a bad idea
2. Block Access to unauthorized DNS servers
3. Use internal DNS vendor that supports DoT to retain control and security
4. Block DoH using Threat Intel List of Canary and unauthorized resolvers



DoT/DoH Best Practices protects your users and devices

Customer Story: A National Cyber Security Center

DNS Security Use Case:

- Protect government departments from cyberattacks

Solution: BloxOne™ Threat Defense for foundational security using DNS control plane

Outcomes:

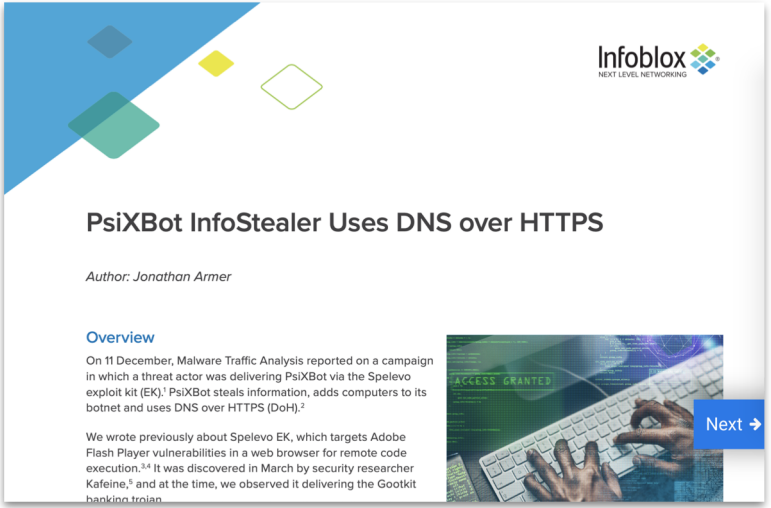
- 273,329 requests blocked, of which 5,768 were unique in a single week
- 3 terabytes of DNS data analyzed for security threats
- 134,825 unique DNS queries blocked in 1 year
- Nearly all organizations benefited from blocking of (malicious) DNS queries
- Identified previously unknown methods that avoid threat detection (DGAs)

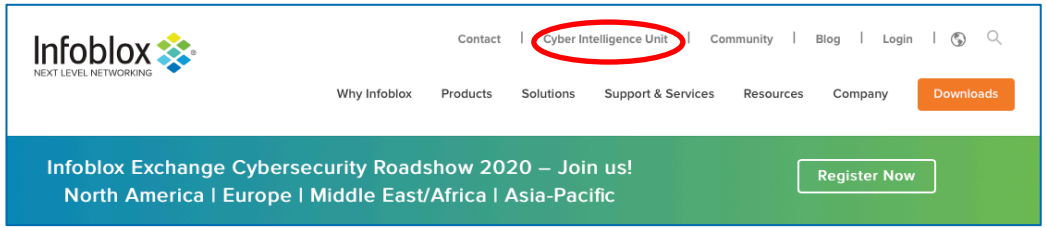
Summary

- Digital transformations put new demands on IT, security
- DDI can be leveraged to provide foundational security for any architecture
- Keeping control of your DNS is critical for security

Next Steps: Subscribe to our Complimentary Threat Reports

- **Cyber Intel Unit has 10+ years** of experience
- Publishes **hundreds of thousands** of valuable indicators daily
- Provides actionable intelligence that is **high quality, timely** and **reliable**
- Publishes valuable cyber threat reports





https://insights.infoblox.com/threat-intelligence-reports

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