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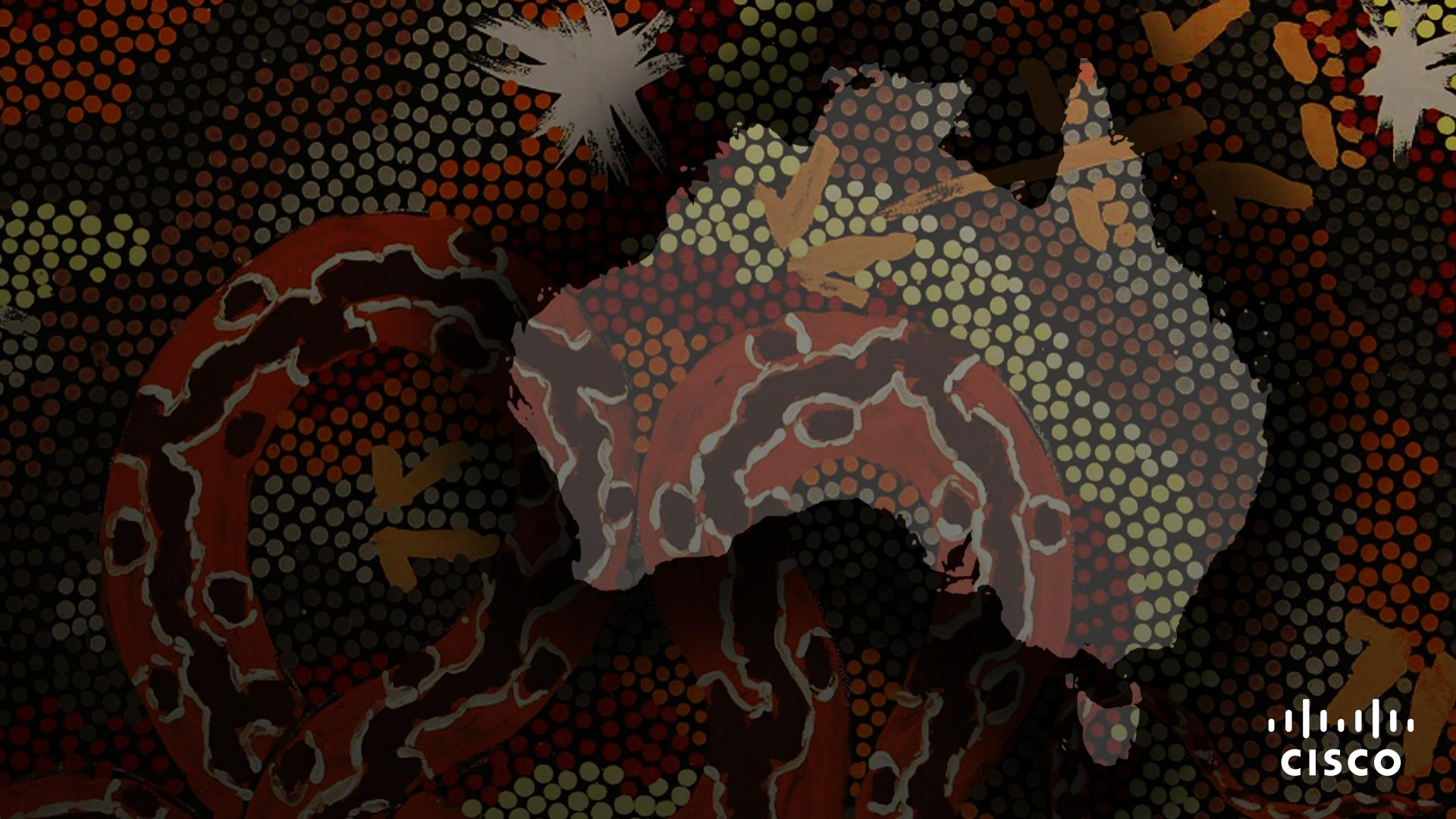
The bridge to possible

Cisco Secure Edge Protection

Protecting the (5G) Edge Against DDoS Attacks

Michael Geller – Distinguished Architect
@michaelge11er

BRKSPM-2363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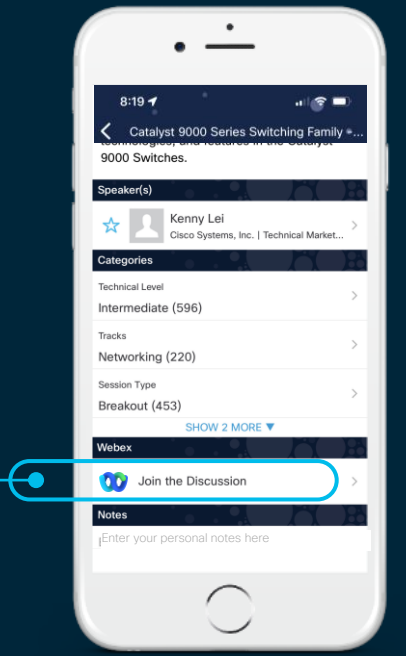

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Agenda

- Introduction
- DDoS Attacks in 5G Networks
- Cisco Secure DDoS Edge Protection
- Cisco Secure Edge Protection Demo
- What To Do Next
- Conclusion

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Introduction

My Personal & Professional Life

- Distinguished Architect @ Radware
- 25 Years in Cisco
- Distinguished Speaker
- Cloud and SP Security
  - “Securing critical apps and the networks that deliver them”
- Areas of focus: DDoS, 5G, AppSec, SecOPS
- 2 kids, 1 wife
- 4th Degree Black Belt, TKD

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DDoS Attack Protection at the 5G Network Edge
Setting the Stage

- 5G is about the user experience – outcome based
- To deliver the desired user experience →Ultra low latency focus
- To deliver ultra low latency outcomes, implement at “the edge”
- Agile security for 5G requires autonomy – Optimizes 5G Networks

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DDoS Attack Protection at the 5G Network Edge
What Does This Mean for Security?

- Security moves to the edge too
- Solves for new threat vectors in 5G → Higher power UE and IoT
- What are the “outcomes?”:
  - Fixed mobile broadband, Connected X (Cars, stadiums, …), Gaming, Virtual reality

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5G Operator's Greatest Security Challenges

INFRASTRUCTURE CHALLENGES

- Compromised Users, Partners and Platforms
- Distributed Operations for 5G use-cases – UPP/CPP
- Public Cloud Shared Responsibility Model

SERVICE AVAILBILITY CHALLENGES

- Software Model
- Low Latency SLAs
- Local Breakouts
- Critical Interface and API Exposure

SECURITY OPS CHALLENGES

- Explosion of Security Events
- Visibility and Control
- Time-to-Action
- Cost at Scale

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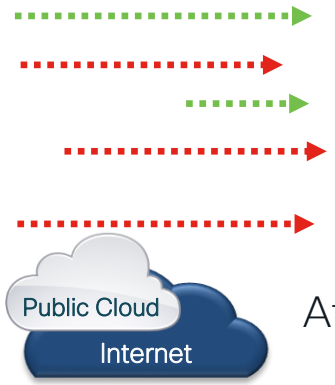
Typical DDoS Attack Source & Targets

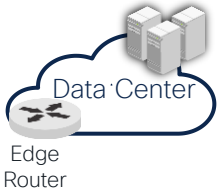
Typical Attack Source

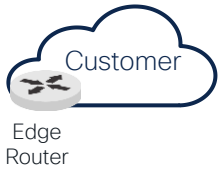


Inbound Attacks

Attacks originate from outside to inside

Typical Attack Targets





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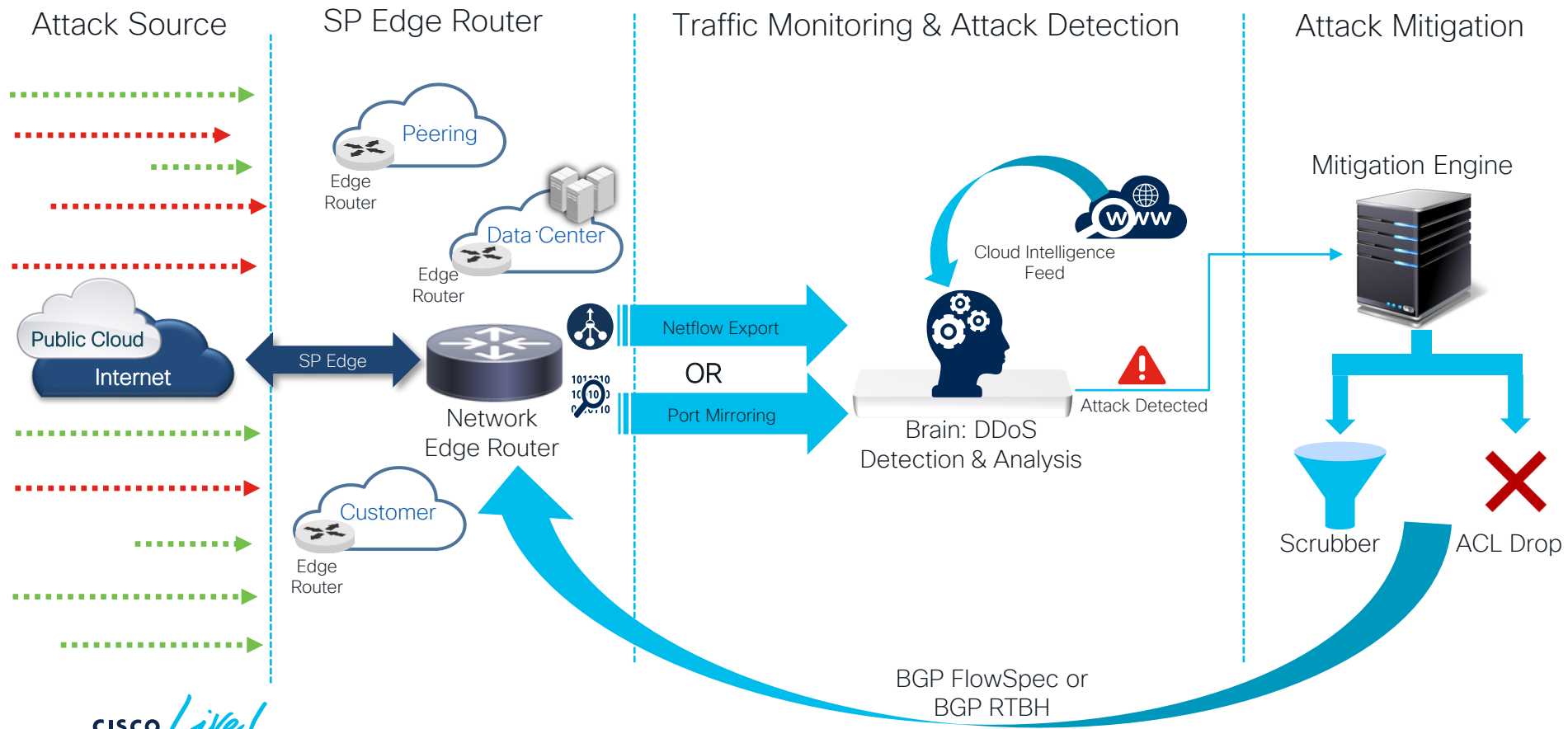
Typical DDoS Solution Deployment



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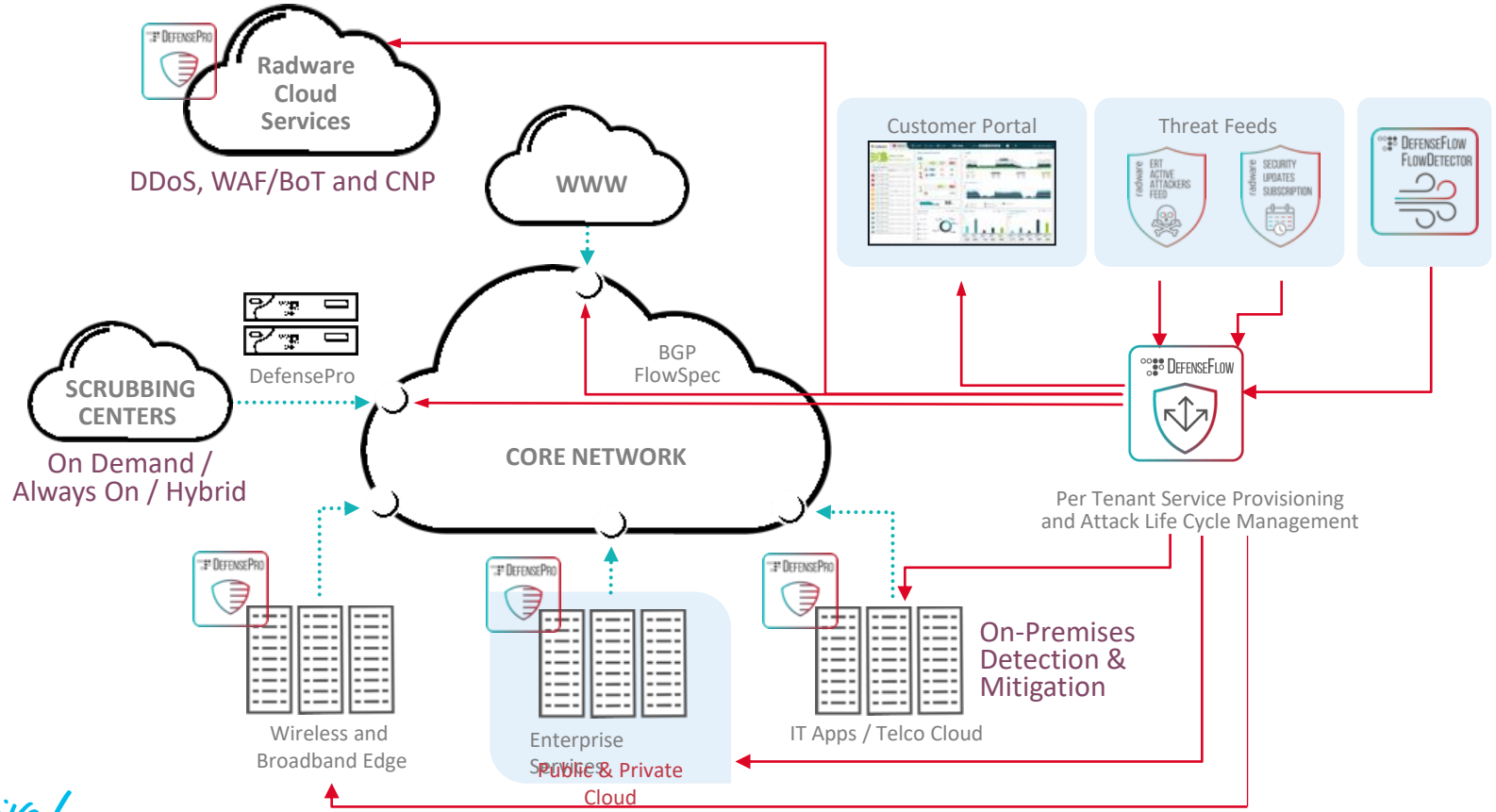
Protecting The Network End to End

Current Recipe and Ingredients



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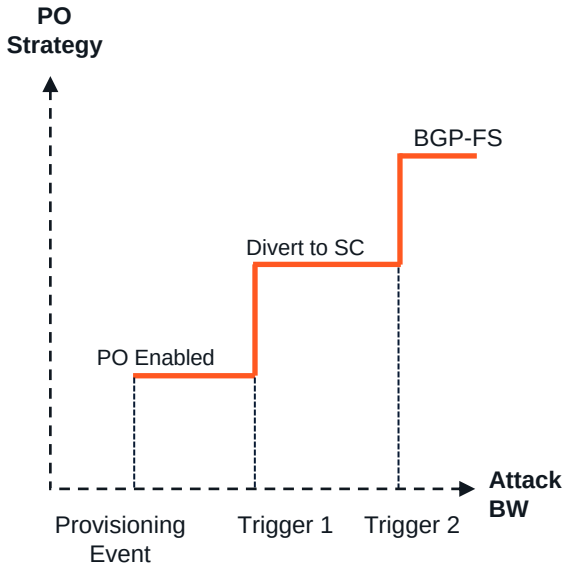
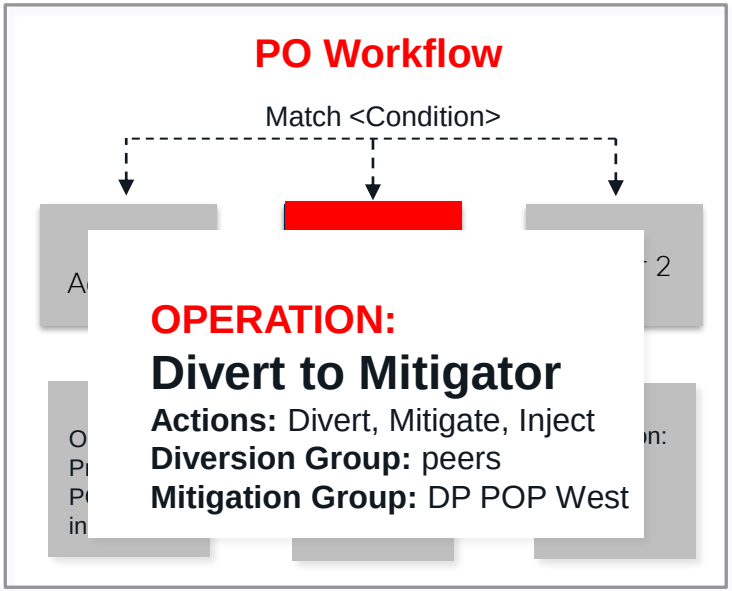
Protected Objects – SecOps

Automation Based on Workflows





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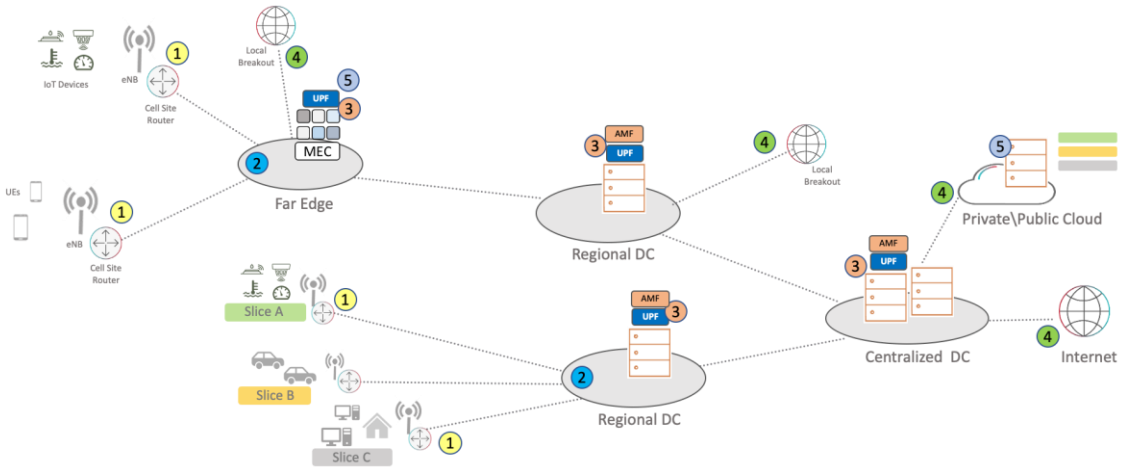
5G Security Use Cases

Today, We Focus on Use Case 1



1. Use Case: UE/IOT Anomalies Detection. Risk: Attacks Originating from User Equipment (N3)
2. Use Case: MEC Infrastructure & 5GC Availability. Risk: Infrastructure & Services availability (N1/N2/N3)
3. Use Case: Network Peering Protection. Risk: Distributed Internet Access (N6/N9)
4. Use Case: 5GC Control Plane API Protection. Risk: APIs & Applications (SBI)
5. Use Case: Security as a Service for 3rd Party Apps & SASE

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Where Else In The Network Does This Make Sense?

- Evolution of Peering – Avoid “tromboning of traffic” & reduction of network over build for DDoS mitigation services
- Broadband Aggregation Edge
- Protection of critical services at the MEC
- Private Enterprise or IoT based “edge” services (example – private 5G)

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DDoS Attacks in 5G Networks

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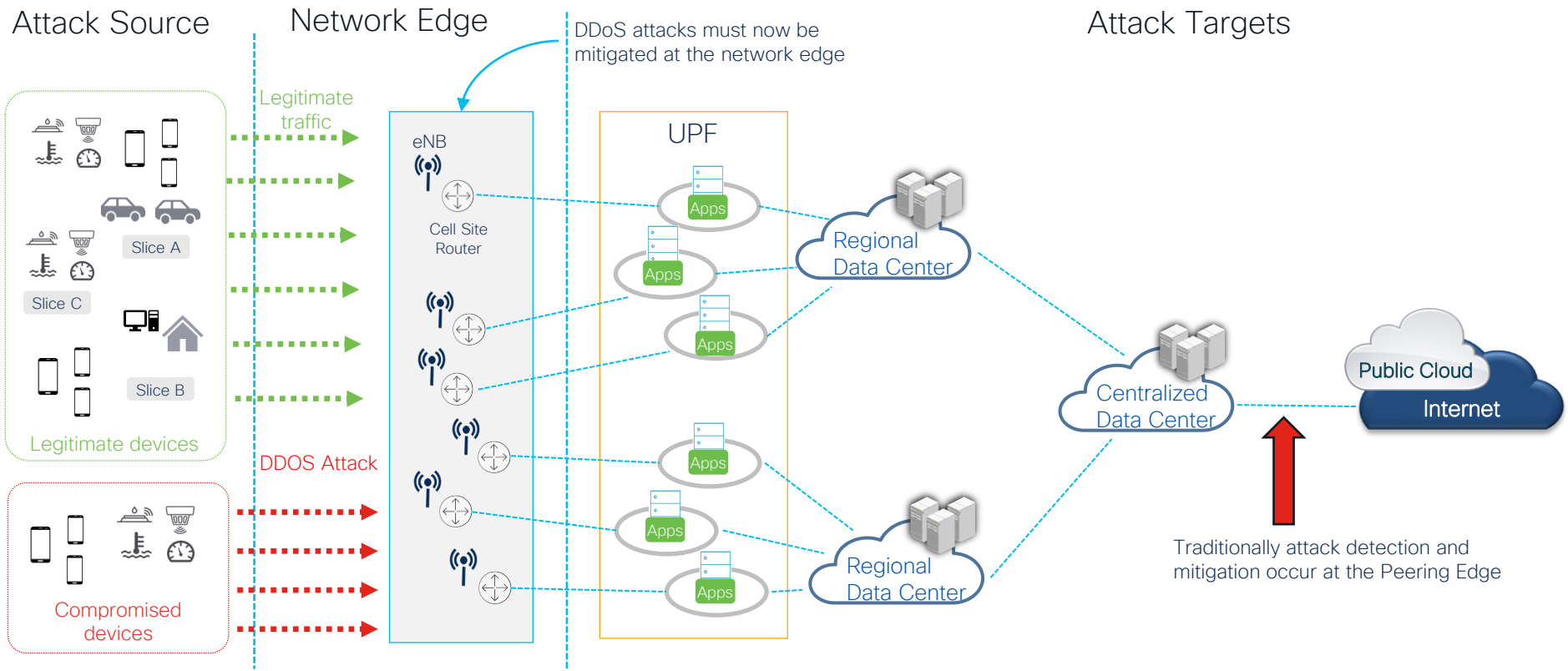
Mobility/5G Use case



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Cisco Secure DDoS Edge Protection

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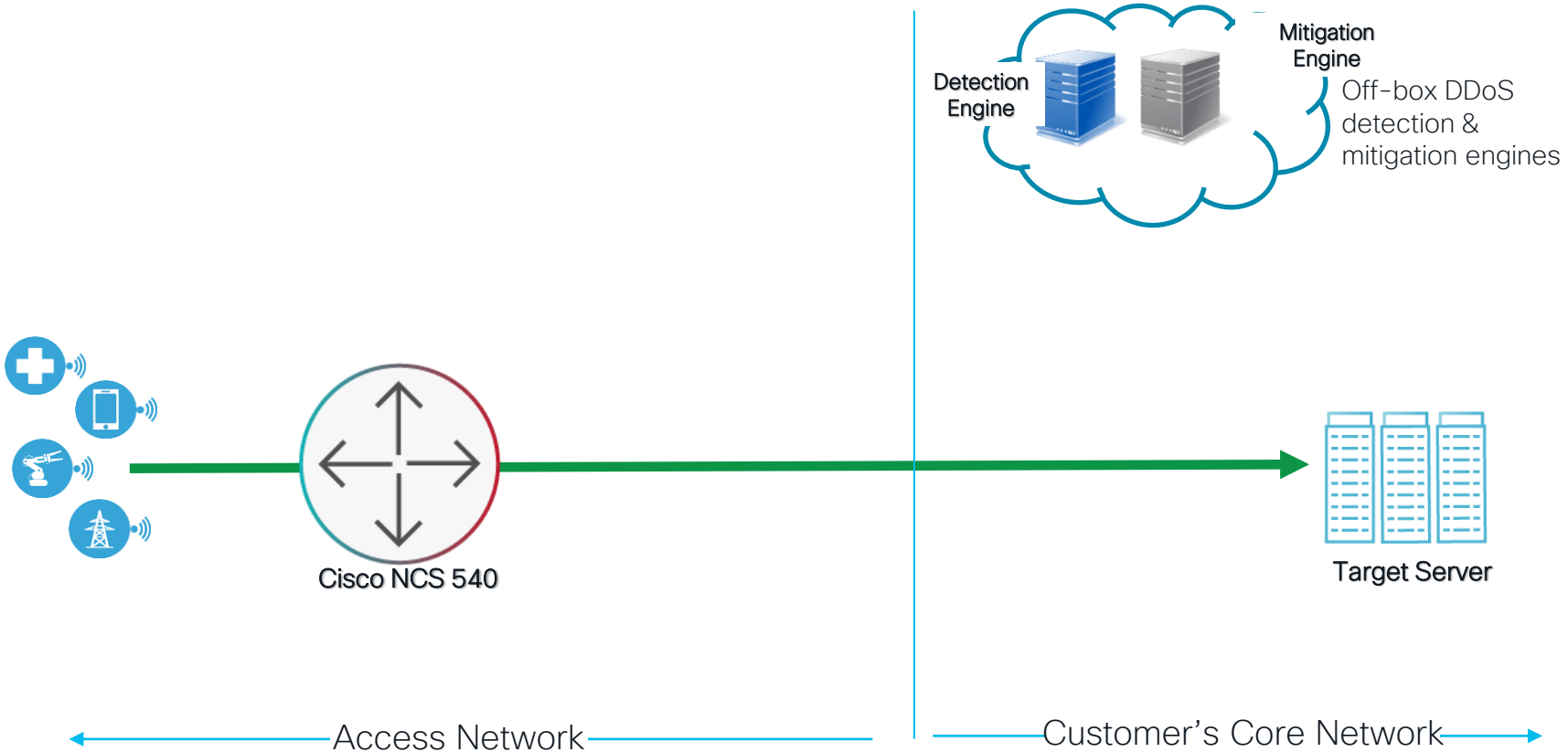
Traditional DDoS Solution on NCS540



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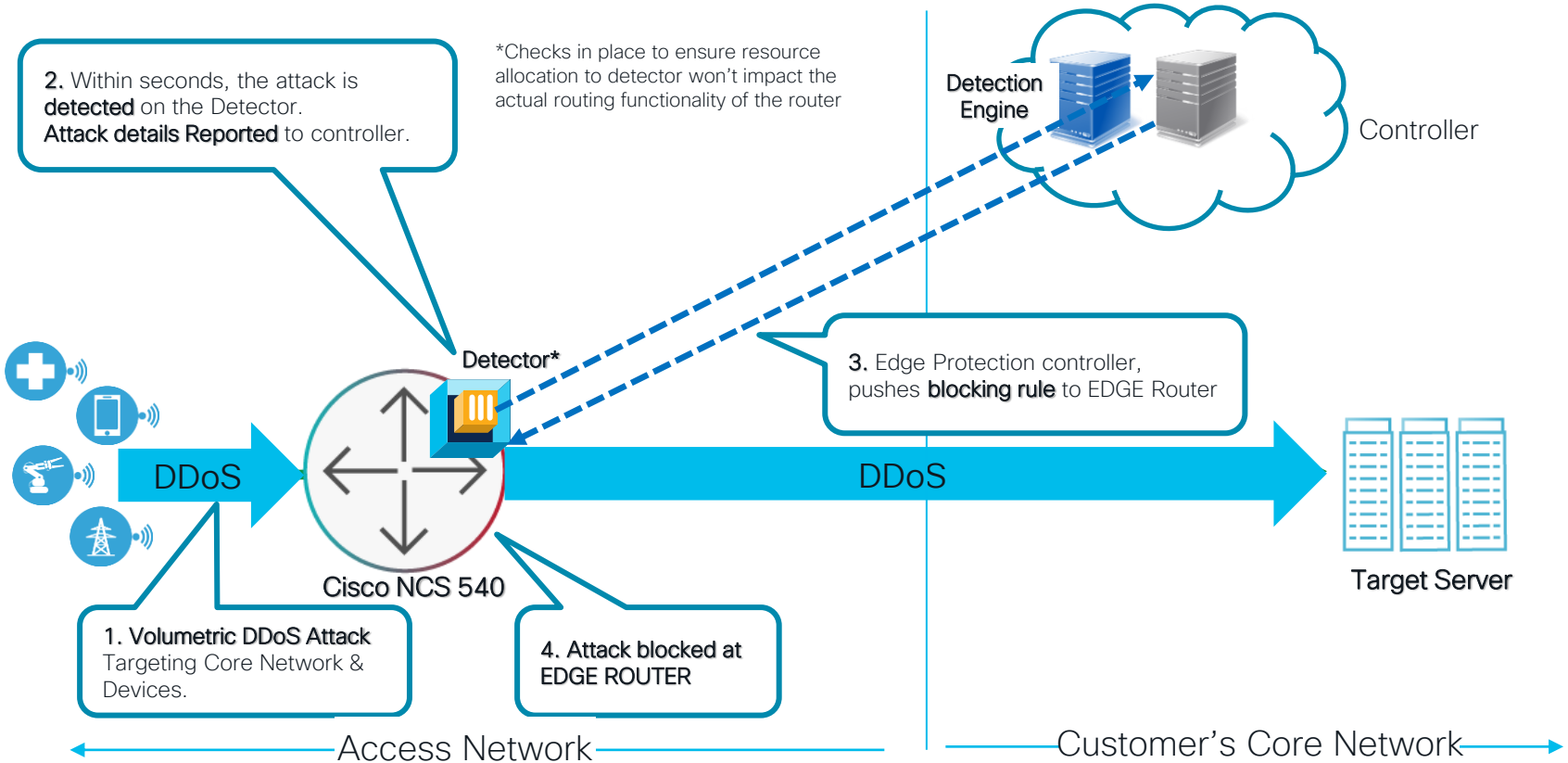
Edge Protection Solution on NCS540



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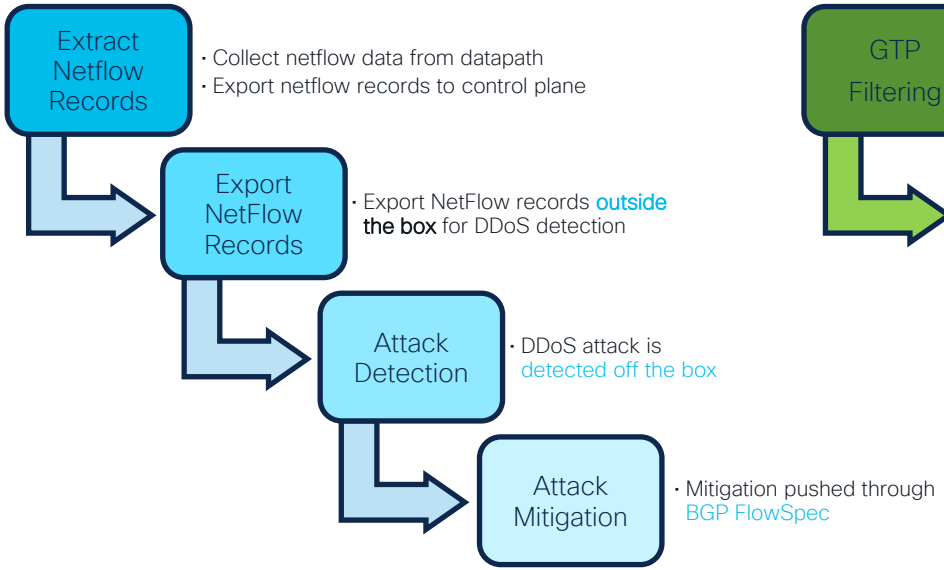
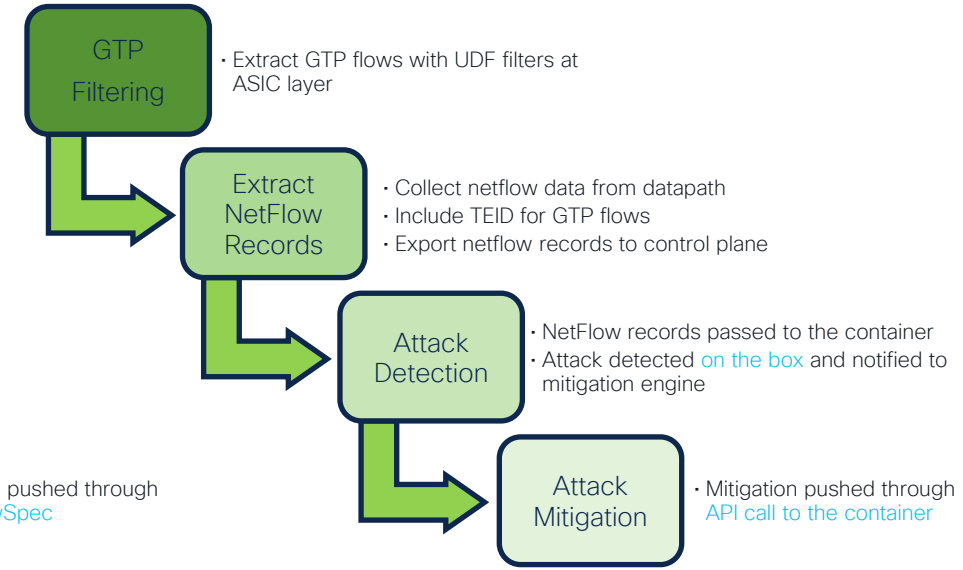
DDoS Workflow Comparison

Existing Workflow



Improved Workflow with Edge Protection



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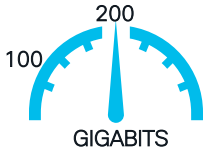
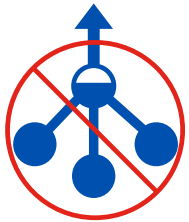
Highlights of Cisco Secure DDoS Edge Protection

Unique Solution for Mobility

Faster Detection



Higher Throughput Protection



No NetFlow Export For DDoS

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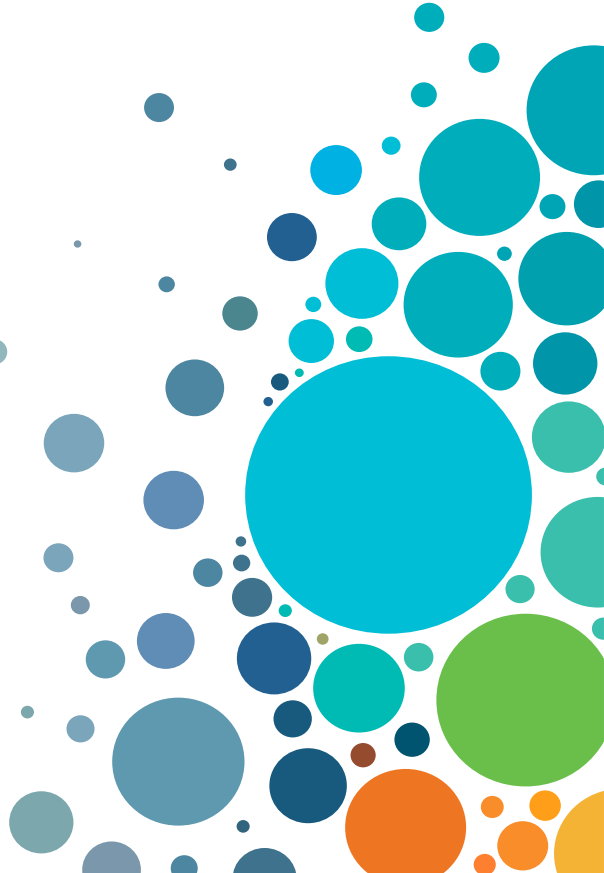
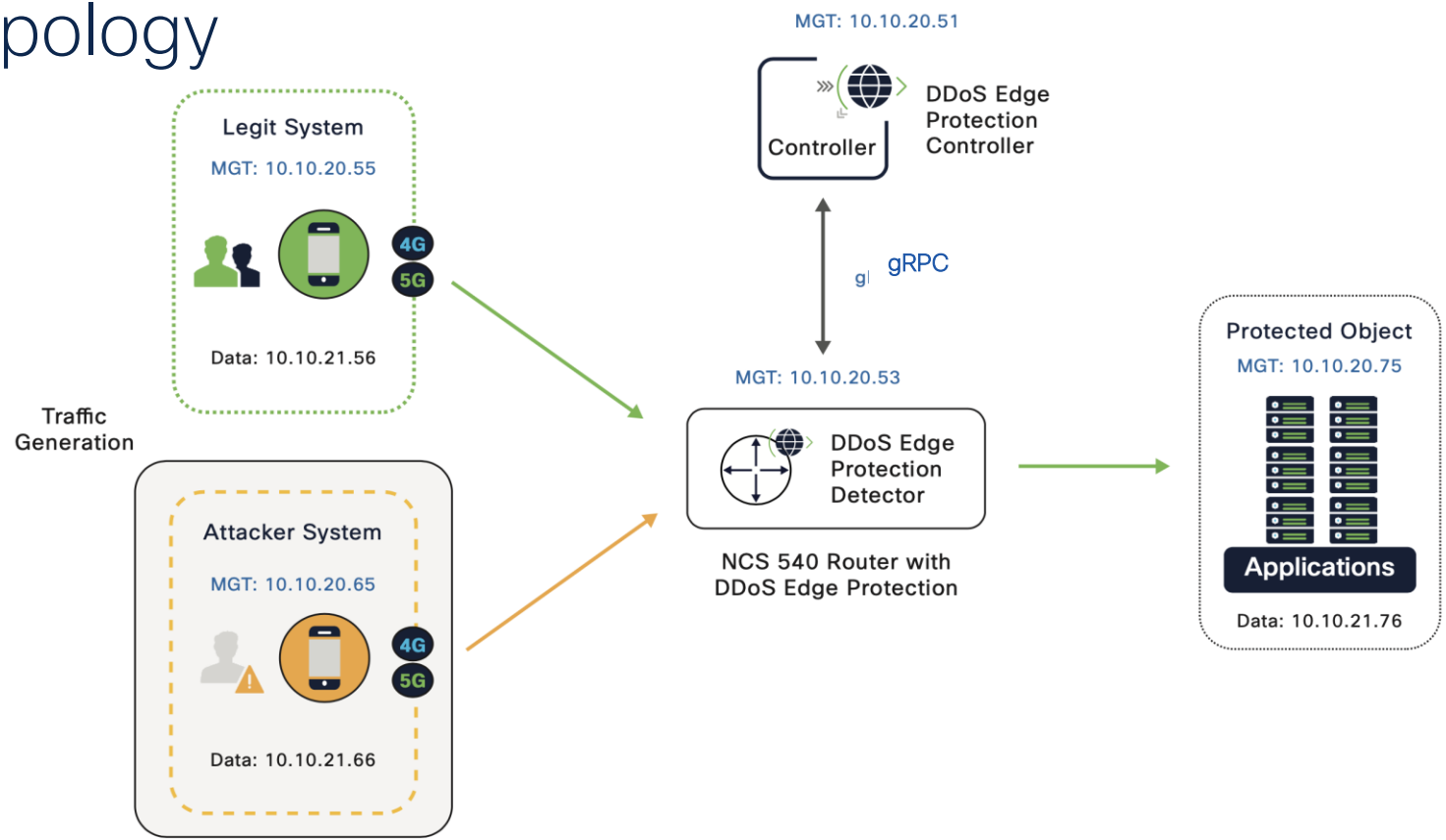
Edge Protection Demo



Topology



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Edge Protection Demo

What To Do Next

Try It Out!! Edge Protection Demo on DevNet

To learn more, visit us on Cisco DEVNET

- Cisco Secure DDoS Edge Protection on Devnet: https://developer.cisco.com/docs/secure-ddos-edge-protection
- Need a development lab to learn what's possible? Visit the DevNet Sandbox and search for "DDoS Edge Protection" https://developer.cisco.com/site/sandbox/

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Resources & Next Steps

Learn more

- Download the Cisco Edge Protection AAG (At-A-Glance) - https://www.cisco.com/c/en/us/products/collateral/security/secure-ddos-edge-protection-aag.pdf
- Download the Edge Protection White Paper - https://www.cisco.com/c/en/us/products/collateral/security/secure-ddos-protction/secure-edge-protection-tech-wp.pdf
- Download the Edge Protection DevNet Demo Guide - https://www.cisco.com/c/en/us/products/collateral/security/secure-ddos-protection/secure-protection-devnet-demo-guide.pdf
- NCS 540 Product web page - https://www.cisco.com/c/en/us/products/routers/network-convergence-system-540-series-routers/index.html

To schedule a Demo or request a Proof of Value (POV)

Contact Cisco sales representative today or reach us at secure-ddos-edge-protection@external.cisco.com

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Want To Learn More About 5G Security?

More on 5G Security:
Edge Protection @ World of Solutions
Rakesh Kandula & Nitin Singla

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Security Reference Architecture

CISCO SECURE

TALOS — Threat Intelligence | Malware Analytics | Actionable Intelligence | Unmatched Visibility | Collective Responses

Security Operations

SECURE X (XDR)

- Managed Detection and Response Services
- Security, Orchestration, Automation and Response
- Incident Response and Remediation Services
- Threat Visibility & Hunting
- Device Insights
- Kenna Vuln Mgmt
- Secure Cloud Insights
- 3rd Party Integrations

User/Device Security

ZERO TRUST

Adaptive MFA | Passwordless | Trust

Duo Secure Access

Secure E-mail

SASE/REMOTE WORKER

Unified Client | EDR | Cloud Managed

Cisco Secure Client

- VPN
- Posture
- Telemetry
- Threat
- Query

ThousandEyes (Visibility)

Device Mgmt: Meraki SM OS, App Control

Network Security

Cloud Edge

SECURE ACCESS SERVICE EDGE (SASE) | ZERO TRUST

Threat Protection | Secure Access Control | Managed Remote Access

PRIVATE CLOUD EDGE (MSP or CUSTOMER)

Reliable | Scalable | Flexible

Umbrella/Duo

- ZTNA
- DNS-layer security
- Secure web gateway
- L7 firewall + IPS
- Cloud access security broker/ shadow IT
- RAaaS
- SSL decryption
- Remote browser Isolation
- Data loss prevention
- Cloud malware detection

SDWAN

- Meraki SDWAN
- SDWAN by Viptela
- Secure Firewall
- ThousandEyes
- Cloud DDoS,WAF

On-Premises

SASE/SDWAN

Scalable | Flexible | Visibility | Comprehensive Security

Network Edge

- Meraki SDWAN
- SDWAN by Viptela
- Secure Firewall
- ThousandEyes

IoT/OT SECURITY

Secure Critical Infrastructure | Unified IT and OT

- Industrial Router
- Industrial Firewall
- Industrial Switch/AP
- Cyber Vision
- ISE TrustSec

ZERO TRUST

Segmentation | Identity and Context | Profiling | Containment | Encrypted Visibility

- Security Analytics and Logging
- Secure Firewall
- DuoCloud SSO+IDP
- Network Gateway
- Secure DDoS
- Meraki Full Stack
- Secure Network Analytics
- ISE TrustSec
- Cisco DNA Center
- Secure Web Appliance

Application Security

ZERO TRUST

Policy | API Security
Application Segmentation
Run-time Application Security

Application Security Stack

- Cloud Native Security
- APIC
- Secure Workload
- Secure Application by AppDynamics

App Observability | Detection | Response

- Hybrid Private
- Public Cloud
- Secure Cloud Analytics
- Secure Firewall
- ThousandEyes
- Secure DDoS, WAF/Bot

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Cisco Modeling Labs
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Cisco Learning Network
Resource community portal for certifications and learning

Train

Cisco Training Bootcamps
Intensive team & individual automation and technology training programs

Cisco Learning Partner Program
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Accelerated curriculum of product, technology, and certification courses

Certify

Cisco Certifications and Specialist Certifications
Award-winning certification program empowers students and IT Professionals to advance their technical careers

Cisco Guided Study Groups
180-day certification prep program with learning and support

Cisco Continuing Education Program
Recertification training options for Cisco certified individuals

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