Cisco Network Foundation Protection Overview

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Security is about the ability to control the risk incurred from an interconnected global network. Cisco NFP provides the tools, technologies, and services that enable users to secure their foundation.

What has Changed in the World of Security?

- **Security represents the future of internetworking - a secure infrastructure forms the foundation for service delivery**
- **Internet has changed from an environment of implicit trust to one of pervasive distrust**

  No packet can be trusted

  All packets must earn trust through a network device's ability to inspect and enforce policy

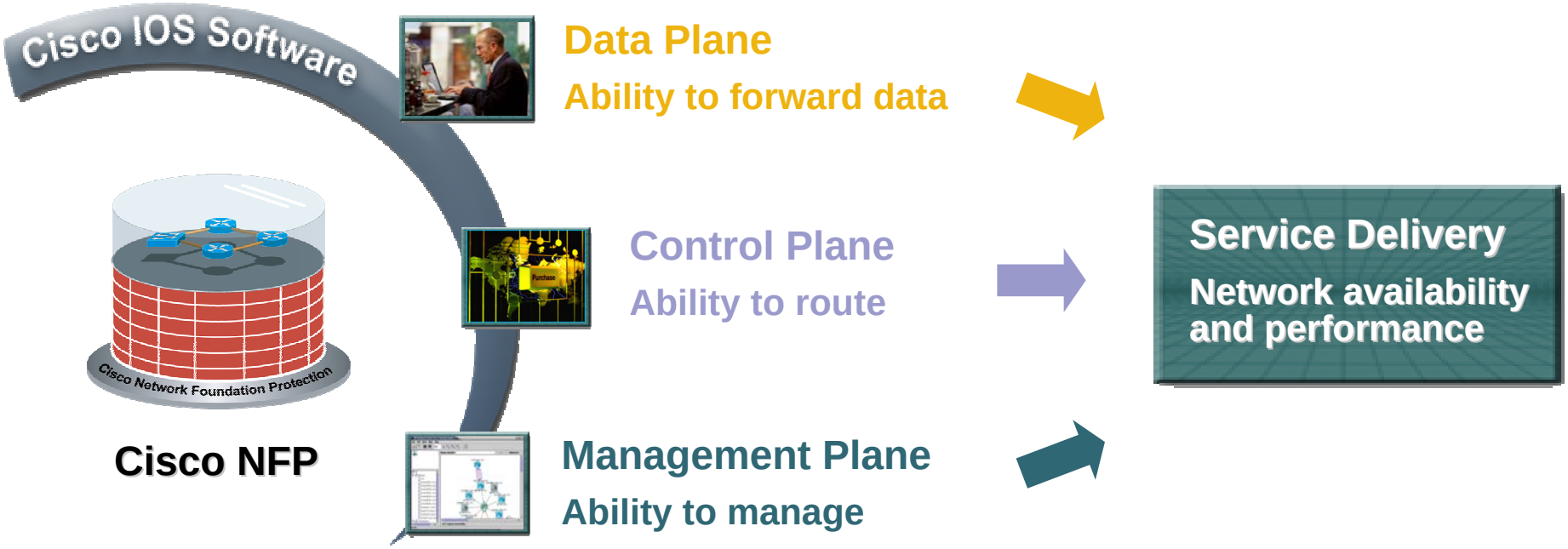
  Not enough to forward packets; packets must be classified properly and forwarded after applying the policy
- **New unprecedented control of the network is required**

  Technology opportunity – enable customers to take control of their business
- **Driven by business deliverables:**

  Network availability, Quality of Service (QoS), and edge policy

Securing the Router: Plane-by-Plane

Continuous service delivery requires methodical approach to protecting router planes



Security Toolkit: A Proactive Approach

Security Toolkit:

One or more techniques used to respond to a security related threat

Data Plane Protection

Control Plane Protection

Management Plane Protection

Select the right tool for the right job

Step 1: **Identify:**

- **Threat type**
- **Type of security plane protection**
- **Role in the network**

Step 2: **Use the service segment perspective to determine toolkit placement**

Cisco Network Foundation Protection: Enabling DDoS Protection (Clean Pipes)

Protects infrastructure, enables continuous service delivery

Data Plane

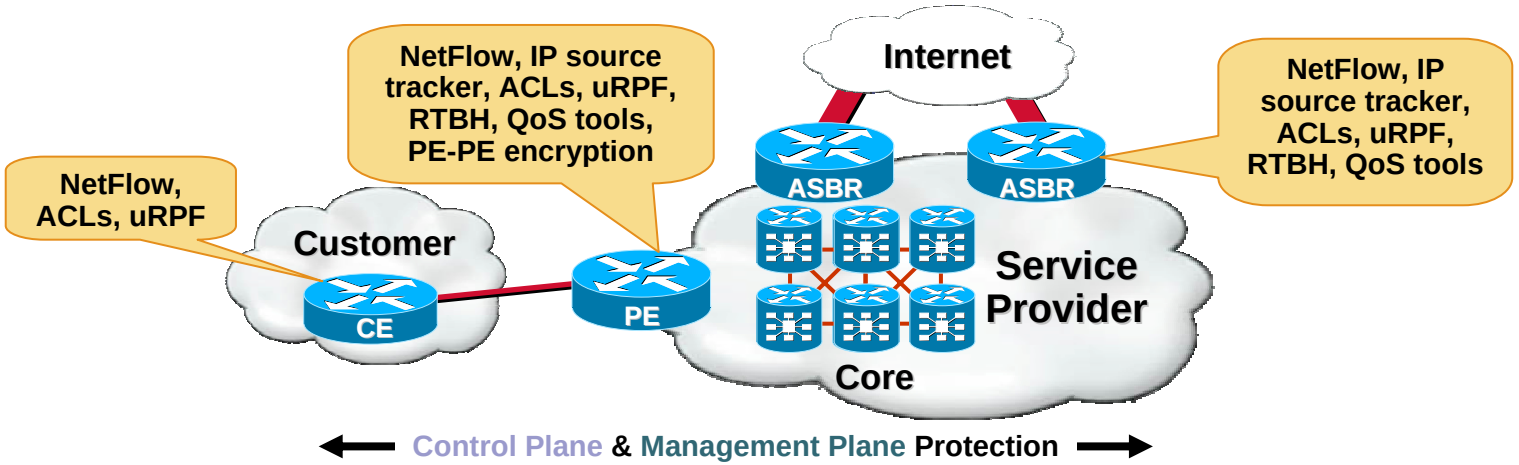
- Detects traffic anomalies & respond to attacks in real-time
- Technologies: NetFlow, IP source tracker, ACLs, uRPF, RTBH, QoS tools

Control Plane

- Defense-in-depth protection for routing control plane
- Technologies: Receive ACLs, control plane policing, routing protection

Management Plane

- Secure and continuous management of Cisco IOS network infrastructure
- Technologies: CPU & memory thresholding, dual export syslog



Cisco NFP: Key Messages

- **Security – a proactive measure**

  Reactive components help with tactical scenarios

- **Toolkit approach for security**

  “The right tool for the right job”

- **Protect network elements on the Data, Control, and Management Planes**

- **Ensure service delivery**

  Services such as VoIP and Clean Pipes require network availability and consistent performance

Cisco NFP: Features and Benefits

Plane	Cisco IOS Services	Benefits
Data Plane	NetFlow	• Macro-level anomaly-based DDoS detection through counting the number of flows (instead of contents); provides rapid confirmation and isolation of attack
	IP source tracker	• Quickly and efficiently pinpoints the source interface an attack is coming from
	Access control lists (ACLs)	• Protect edge routers from malicious traffic; explicitly permit the legitimate traffic that can be sent to the edge router's destination address
	Unicast reverse path forwarding (uRPF)	• Mitigates problems caused by the introduction of malformed or spoofed IP source addresses into either the service provider or customer network
	Remotely triggered black holing (RTBH)	• Drops packets based on source IP address; filtering is at line rate on most capable platforms. Hundreds of lines of filters can be deployed to multiple routers even while the attack is in progress
	QoS tools	• Protects against flooding attacks by defining QoS policies to limit bandwidth or drop offending traffic (identify, classify & rate limit)
Control Plane	Receive ACLs	• Control the type of traffic that can be forwarded to the processor
	Control plane policing	• Provides QoS control for packets destined to the control plane of the routers; ensures adequate bandwidth for high-priority traffic such as routing protocols
	Routing protection	• MD5 neighbor authentication protects routing domain from spoofing attacks • Redistribution protection safe-guards network from excessive conditions • Overload protection (e.g. prefix limits) enhances routing stability
Management Plane	CPU & memory thresholding	• Protects CPU & memory resources of IOS device against DoS attacks
	Dual export syslog	• Syslog exported to dual collectors for increased availability

Resources

- **Cisco NFP**

  www.cisco.com/go/nfp

- **Cisco IOS Software Release 12.3T: New Security Features and Hardware, Product Bulletin No. 2358**

  www.cisco.com/en/US/products/sw/iosswrel/ps5207/prod_bulletin09186a00801d7229.html

- **Control Plane Protection Documentation**

  www.cisco.com/en/US/products/sw/iosswrel/ps1838/products_feature_guide09186a00801afad4.html