



“Turn It On”



Turn It On

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Solution Architect - Network



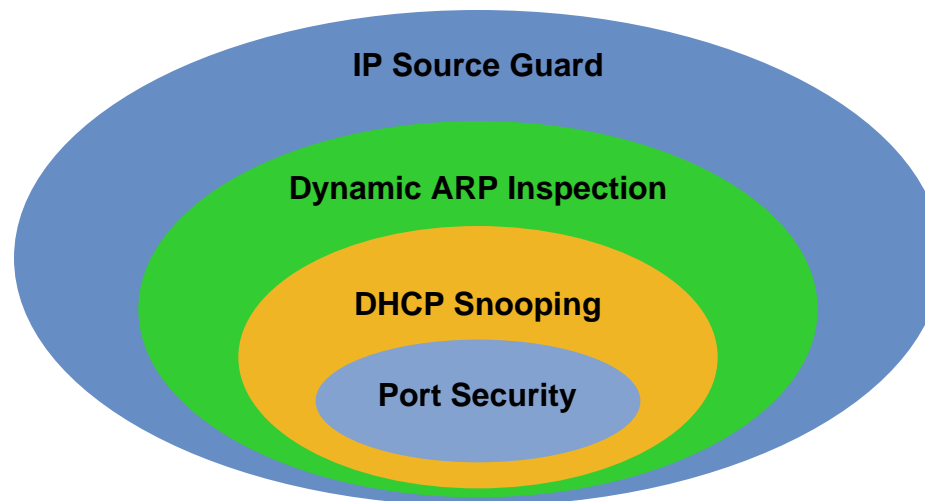
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Catalyst Integrated Security Features

Catalyst Integrated Security Features

- **Port Security** prevents MAC flooding attacks
- **DHCP snooping** prevents client attack on the switch and server
- **Dynamic ARP Inspection** adds security to ARP using DHCP snooping table
- **IP Source Guard** adds security to IP source address using DHCP snooping table





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Spanning Tree Toolkit

STP Toolkit

PortFast*: bypass for Access Port

UplinkFast: faster uplink convergence

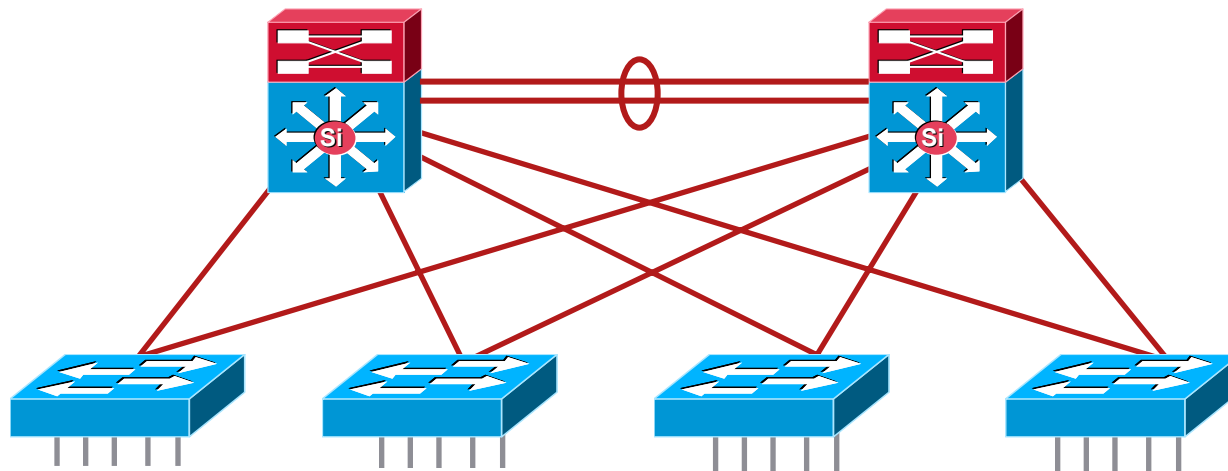
BackboneFast: Cuts convergence time by Max_Age for indirect failure

LoopGuard*: Prevents alternate or root in absence of BPDUs

RootGuard*: Prevents external switches from becoming root

BPDUGuard*: Disable PortFast enabled port if a BPDU is received

BPDUFILTER*: Do not send or receive BPDUs on PortFast enabled Ports





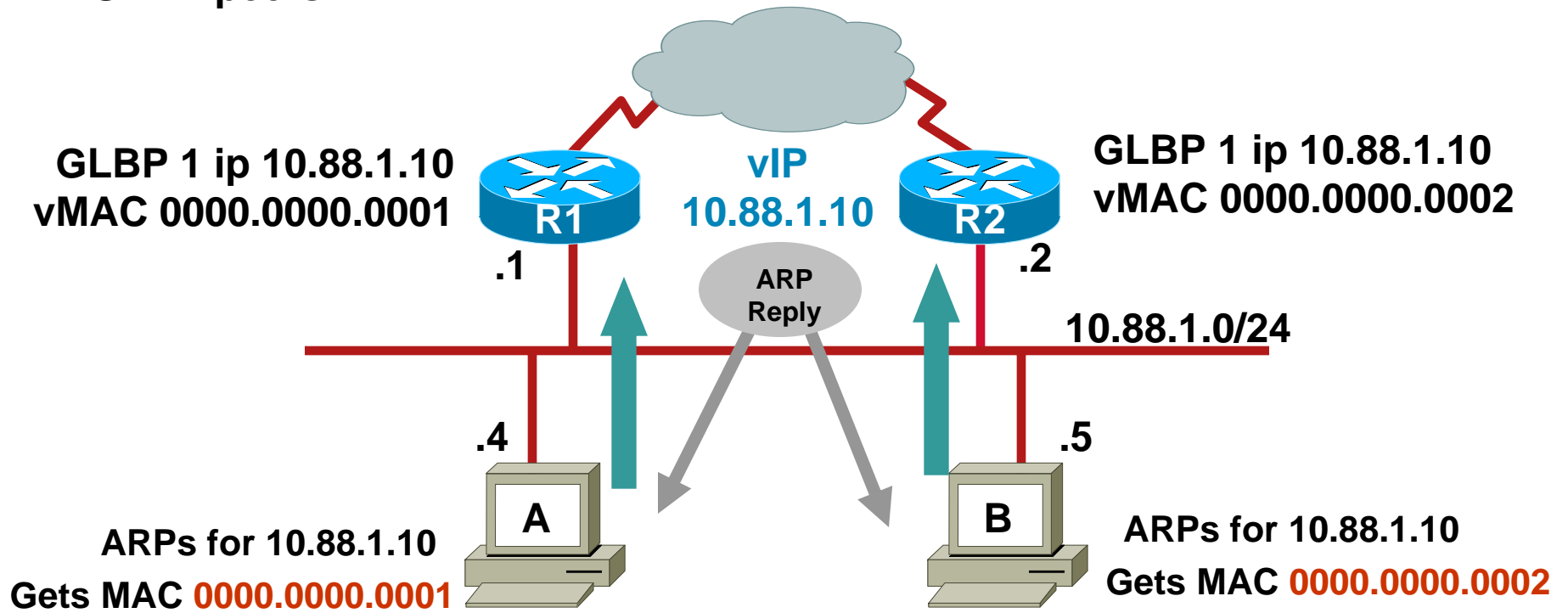
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Gateway Load Balancing Protocol

How GLBP Works

- Each member of a GLBP redundancy group owns a unique virtual MAC address for a common gateway
- When end stations ARP for the common gateway they are given a load balanced vMAC address by the active VG
- Host A and host B send traffic to same default gateway but different GLBP peers





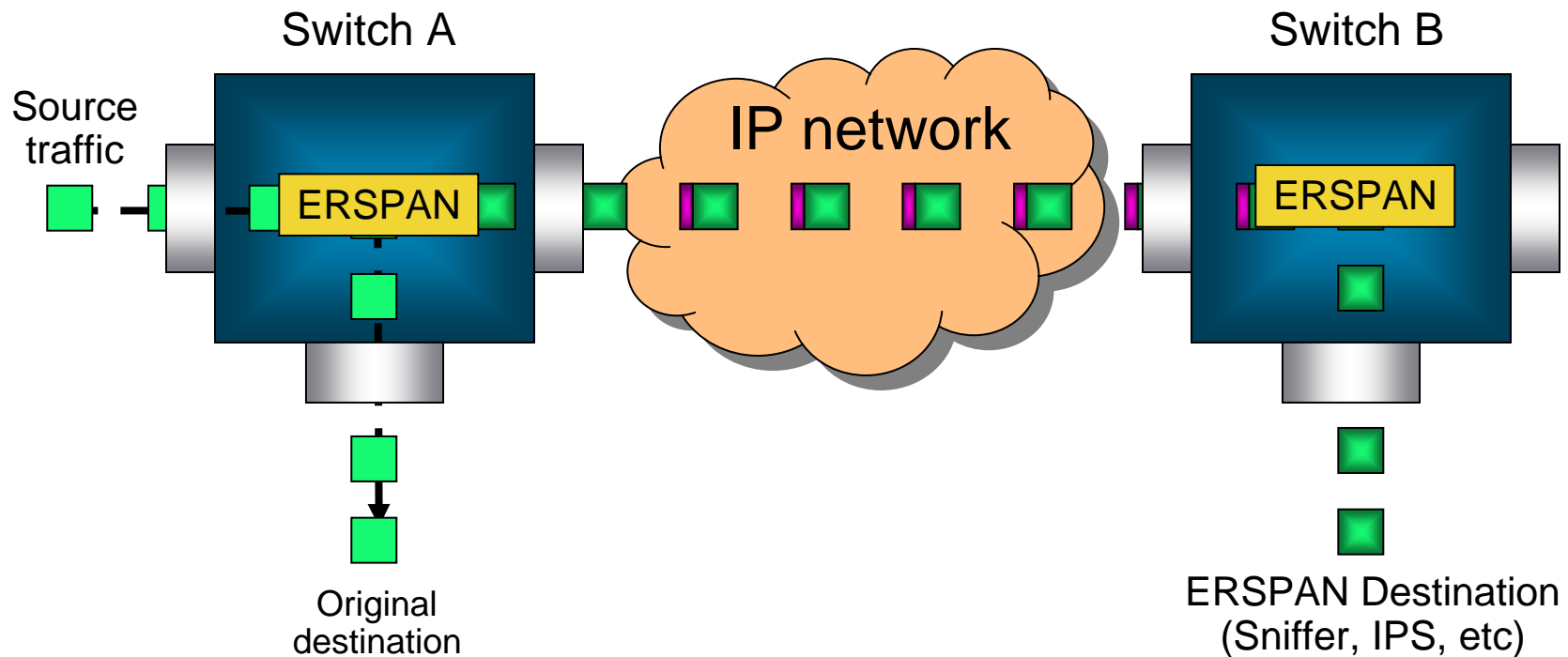
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Enhanced Remote SPAN

Cisco ERSPAN

Source and Destination ports can be on separate chassis across a **multi-hop L3 network**. Traffic is sent using **GRE**.





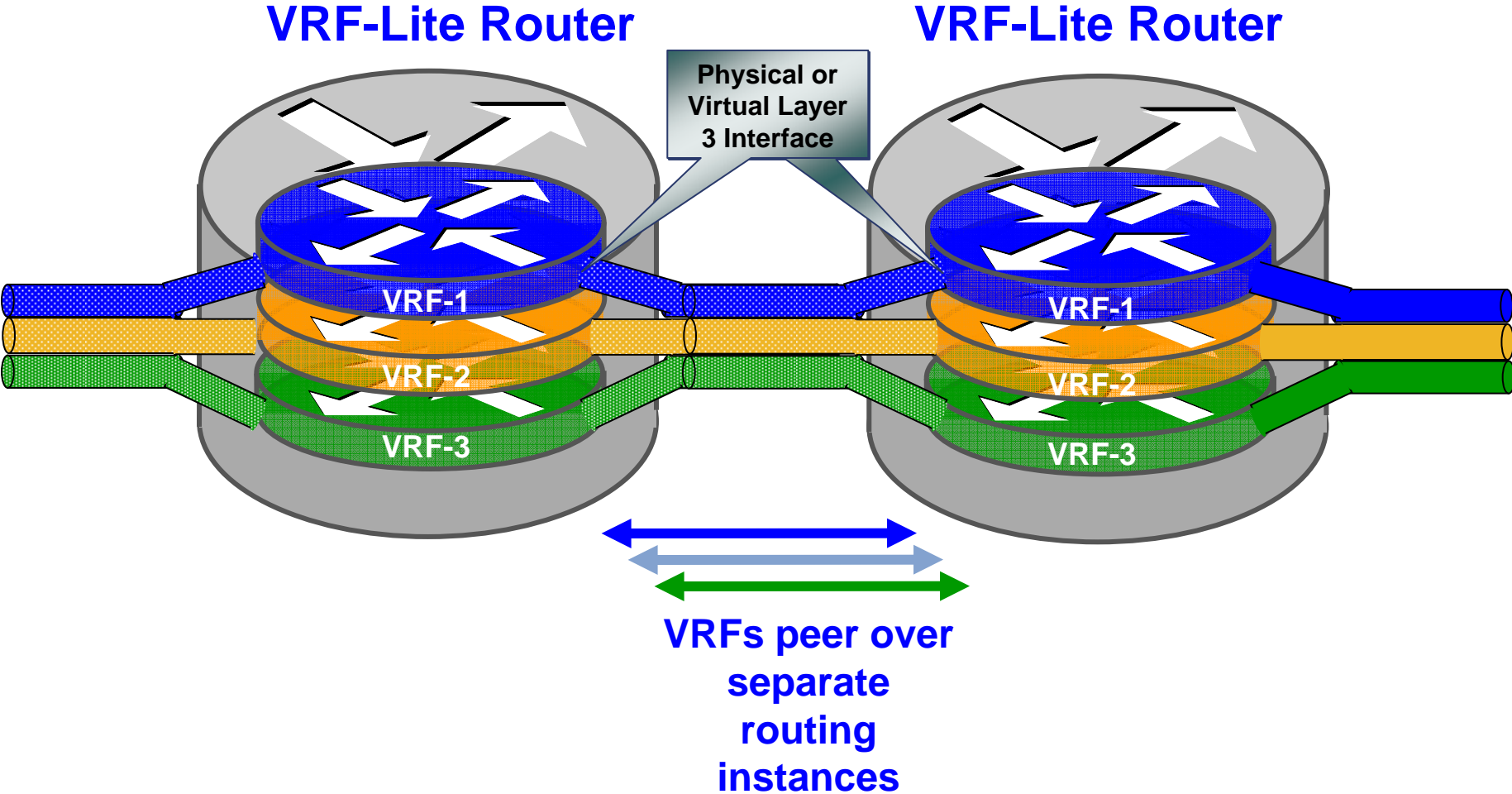
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VRF-Lite: Campus or Access

VRF-Lite Routing Protocol Peering






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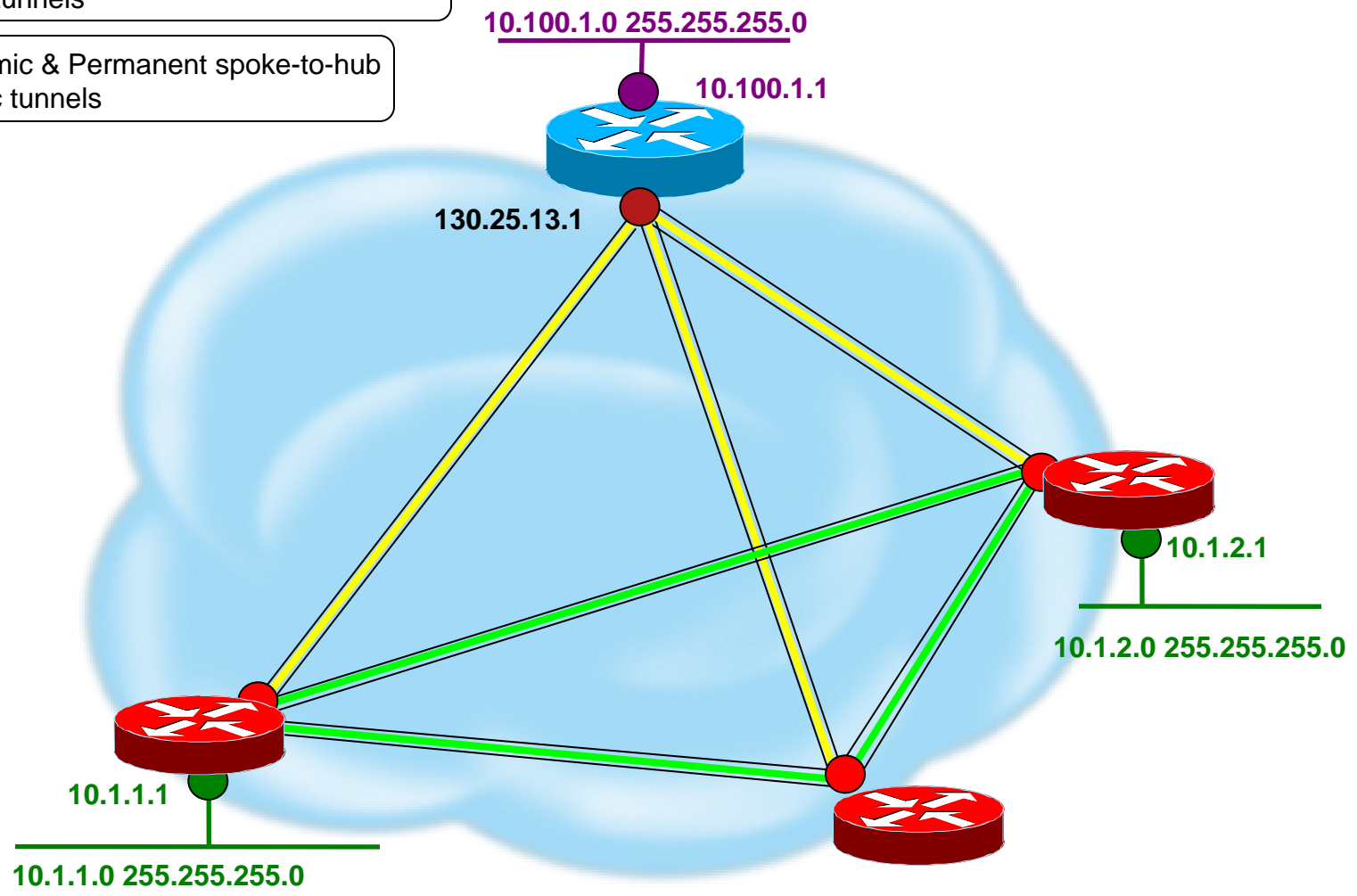
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Dynamic Multipoint VPN

Dynamic Multipoint VPN - DMVPN

 = Dynamic & Temporary Spoke-to-spoke IPsec tunnels

 = Dynamic & Permanent spoke-to-hub IPsec tunnels



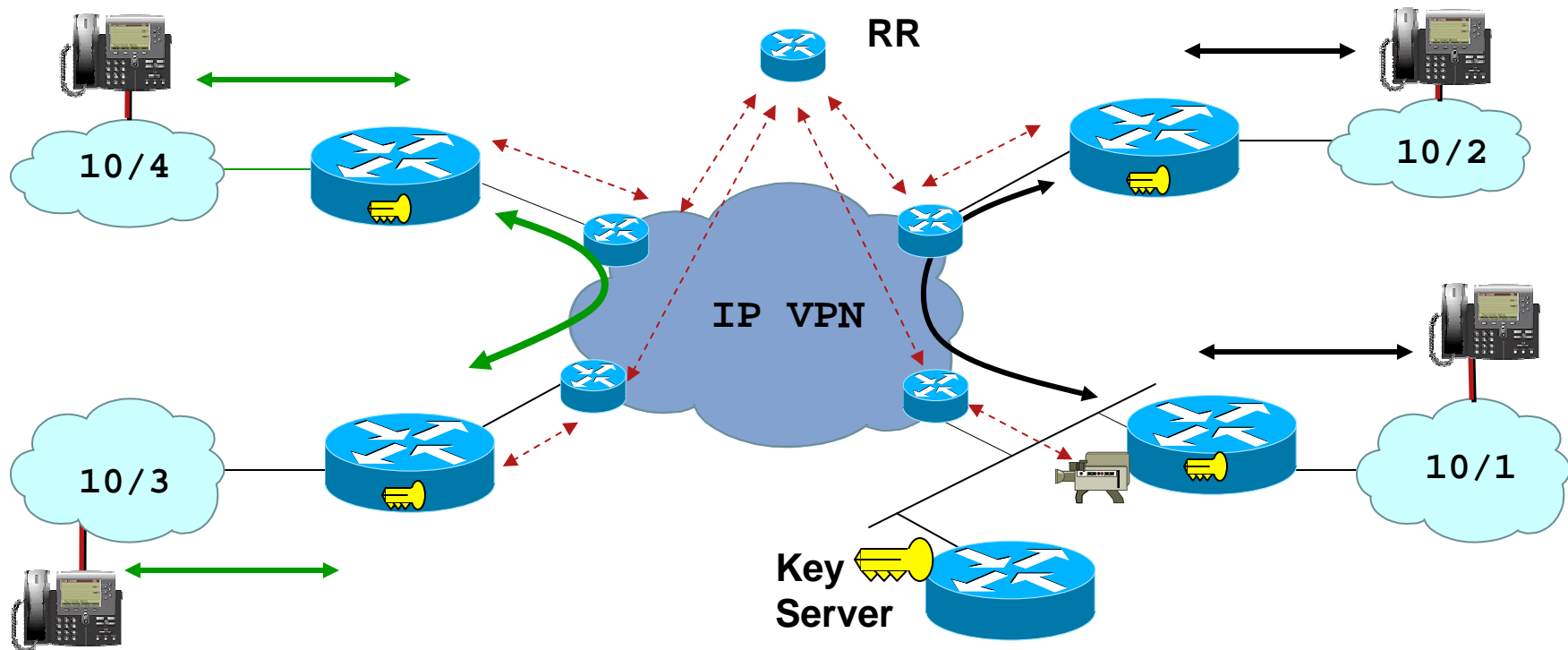


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Group Encrypted Transport VPN

Group Encrypted Transport



- Large-scale any-to-any encrypted communications
- Native routing without tunnel overlay
- Optimal for QoS and Multicast support
- Private LAN/WAN, FR/AATM, IP, MPLS



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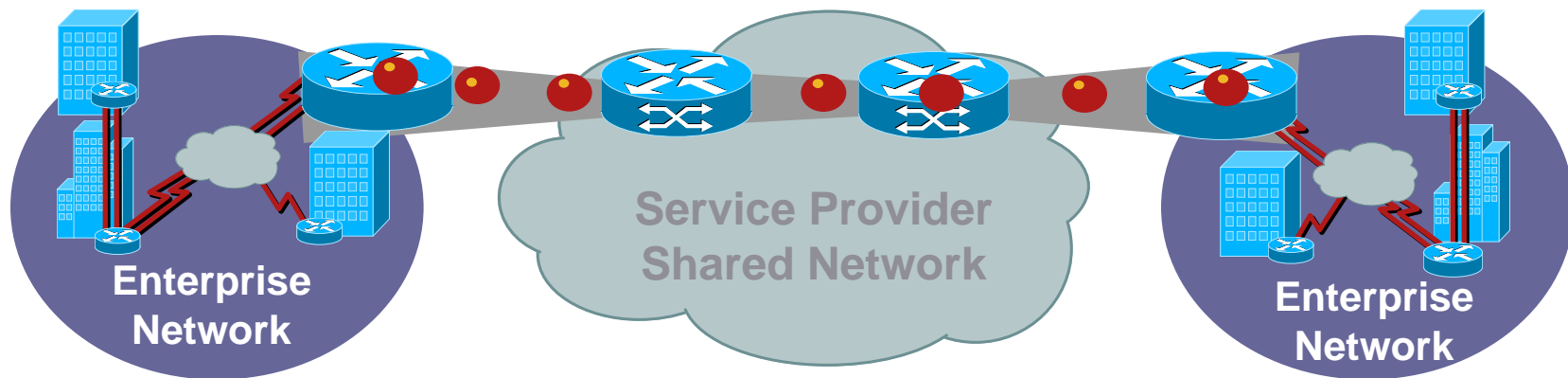
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IP Service Level Agreement

SA Agent (IPSLA) and Service Delivery

SLAs Are Becoming an Integral Part of Service Delivery

- Businesses are relying on SLA's for mission critical applications
- SLA is the cornerstone of carriers' differentiated service offerings



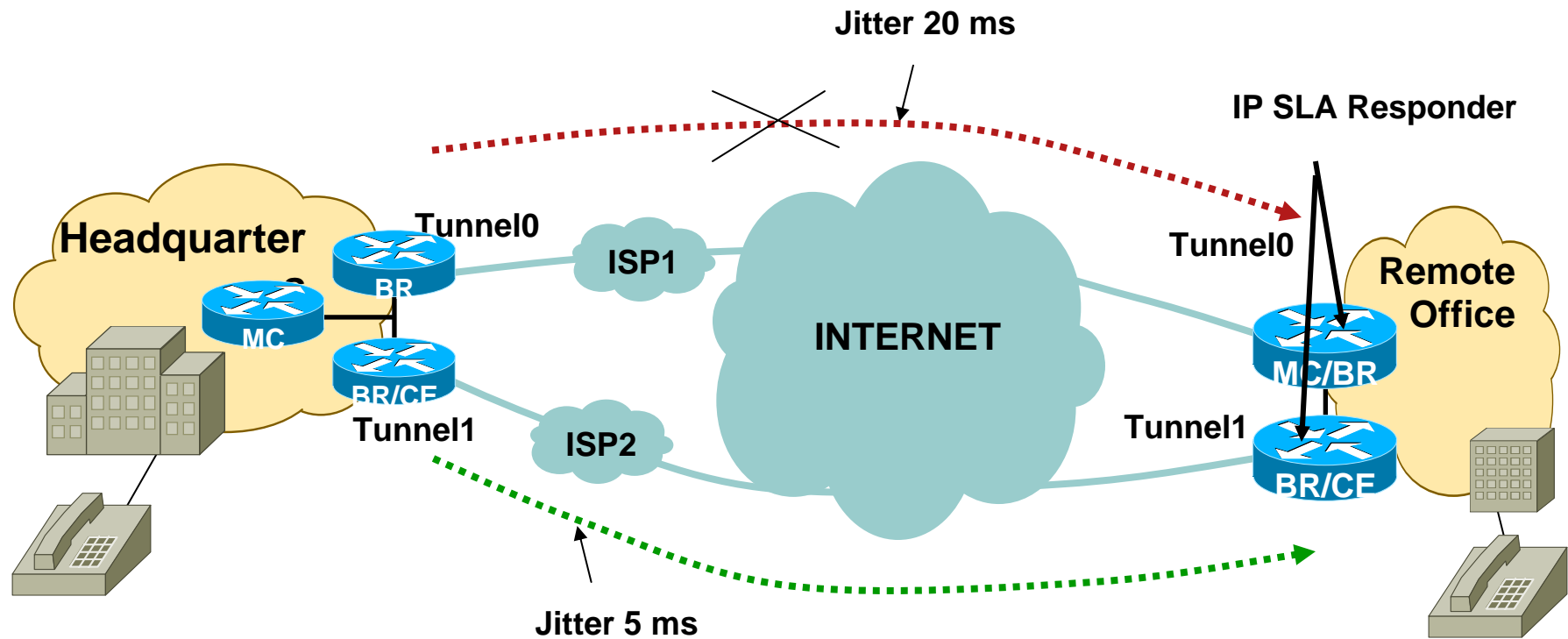


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Performance Based Routing PfR/Optimized Edge Routing

OER VPN Deployment Example



- Select Exit with least jitter, delay and loss
 - Tunnel1 – 5 out of 100 sample had MOS < 4.00 ← Better
 - Tunnel0 – 20 out of 100 sample had MOS > 4.00



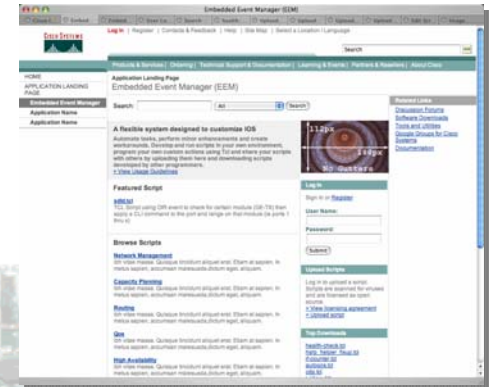
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Embedded Event Manager

Embedded Event Manager

These are a few of the many uses that EEM can be applied to...



Bring a backup link up when a packet drop threshold has been exceeded...

Send an email alert when a configuration change is made in production hours...

Send a page message to operations if any unauthorized hardware is installed/removed

Run specific commands at specific time of day

EEM

Generate custom SYSLOG on scheduled GOLD diagnostic run highlighting H/W issue..

Change a Routing Protocol parameter



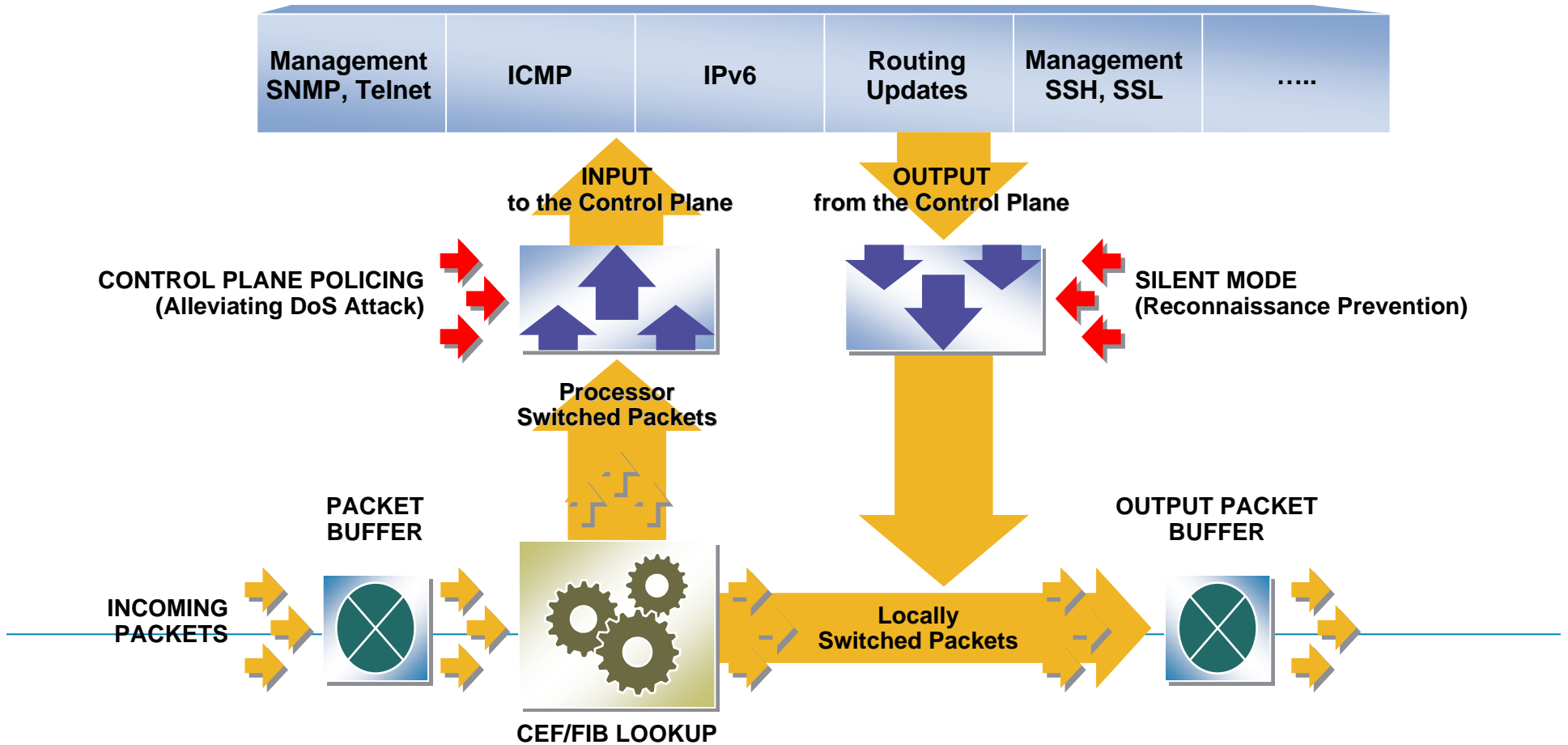
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Control Plane Policing

Control Plane Policing

CONTROL PLANE



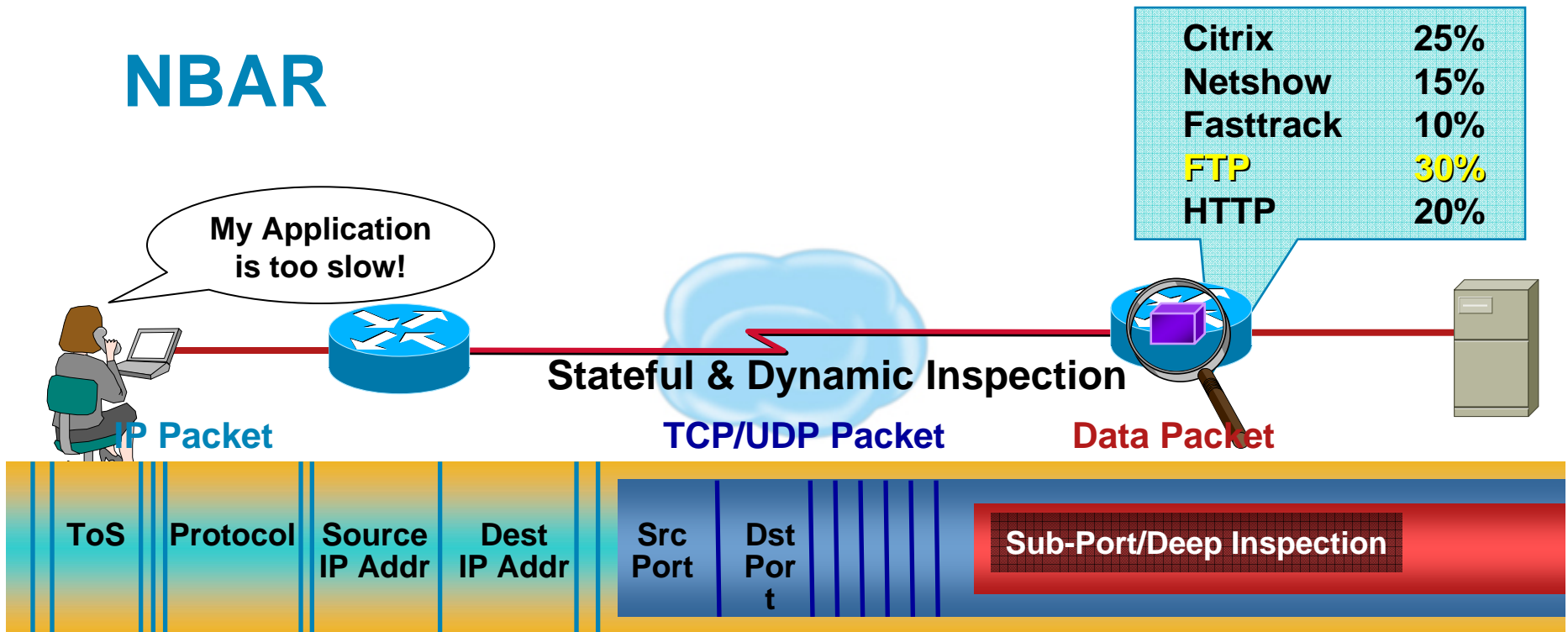


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Network Based Application Recognition

NBAR



Citrix	25%
Netshow	15%
Fasttrack	10%
FTP	30%
HTTP	20%

egp	exchange	kerberos	secure-nntp	smtp
gre	finger	l2tp	notes	snmp
icmp	ftp	ldap	novadigm	socks
ipinip	secure-ftp	secure-ldap	ntp	sqlnet
ipsec	gopher	netshow	pcanywhere	ssh
eigrp	http	pptp	pop3	streamwork
bgp	secure-http	sqlserver	secure-pop3	syslog
cuseeme	imap	netbios	printer	telnet
dhcp	irc	nfs	realaudio	secure-telnet
dns	secure-irc	nntp	rcmd	tftp
		citrix	napster	vdolive
				xwindows



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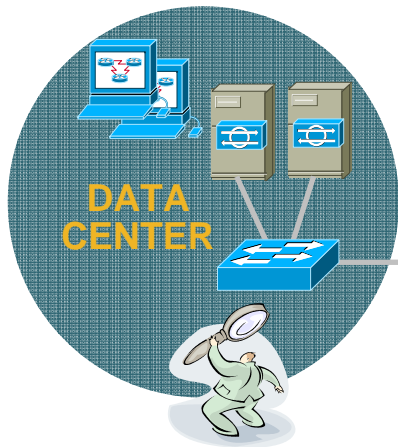


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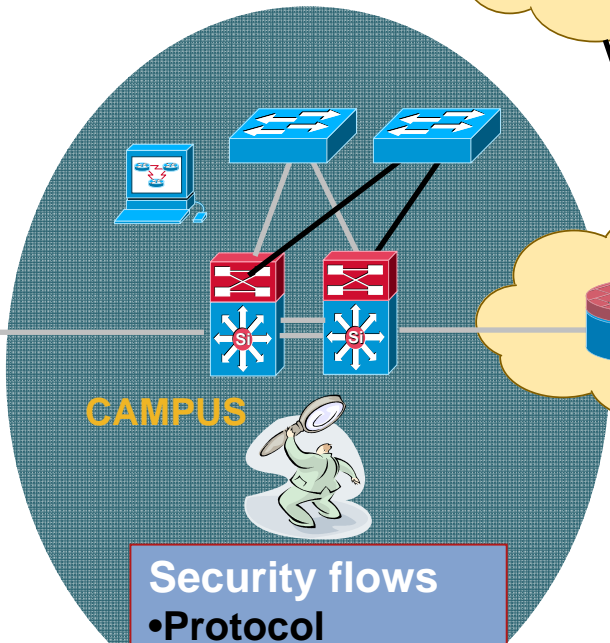
Flexible NetFlow

Flexible NetFlow Tracking Data with Flow Monitors

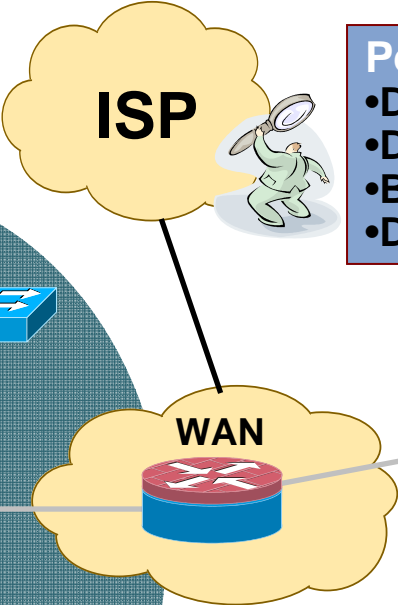
Different Flow Monitors for detecting different information



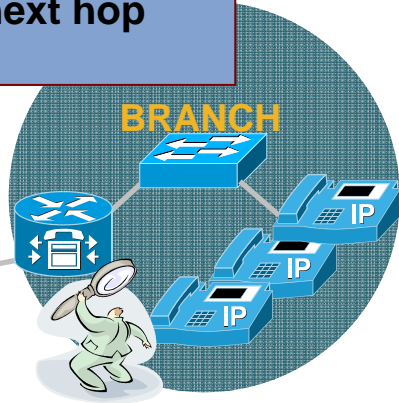
- Multicast flows**
- Protocol
- Ports
- IP subnets
- Packet replication



- Security flows**
- Protocol
- Ports
- IP addresses
- TCP flags
- Packet section



- Peering flows**
- Dest. AS
- Dest. traffic index
- BGP next hop
- DSCP



- IP Flows**
- IP subnets
- Ports
- Protocol
- Interfaces
- Egress/ingress

