Power Your Branch with Intelligent WAN

Introducing the ISR4400 series
Updating the ASR1000 series

Enterprise Networking

David Roten - Technical Marketing Engineer
What’s Happening in Your World?

MOBILITY, CLOUD, DATA CENTER VIRTUALIZATION

Greater Network Loads
New Traffic Patterns
New Application Types

PRESSURE ON THE BRANCH

80% of employees & customers are served by branches.
They need a LAN-like experience

NEXT-GEN BRANCH NEEDS

Reduced Cost
Faster Time to Market
Instant App Experiences
Robust Security
Simplified Operations
New Requirements for the Branch/WAN

- Rising User Expectation
- Growing Security Attack
- Faster Time to Market
- Cost Optimization

- App Performance
- Advanced Threat Defense
- Agility/Simplicity
- Operational Simplicity
Empower IT to Conquer the WAN

What if an Intelligent WAN Can…

- Deliver More Bandwidth for Lower Cost
  - Increase WAN Utilization
  - 1X

- Improve Your App SLA
  - Pinpoint App Issues Instantly
  - 2X+
  - Hours

- Ensure Security Over Any Connection
  - Security at Scale
  - Backhaul
  - Minutes

- Off-load
Cisco Intelligent WAN: The Vision

UNCOMPROMISED EXPERIENCE OVER ANY CONNECTION

Align Infrastructure to Better Business Outcomes

Application Experience
Secure Access
Lower Costs
IT Simplicity

Any User
Private Cloud
Hybrid Cloud
Public Cloud
Any Application
Cisco Intelligent WAN: Leveraging the Internet

- Secure **WAN transport** across MPLS and/or Internet for private cloud / DC access
- Leverage **local Internet** path for public cloud and Internet access

**Increase WAN Capacity**

**Improve App Performance**

**Scale Security at the Branch**

- Hybrid WAN Transport
- Direct Internet Access
- Cisco Cloud Web Security
- MPLS
- Internet backhaul
- Private Cloud
- Virtual Private Cloud
- Public Cloud
- Internet
- Secure WAN transport across MPLS and/or Internet for private cloud / DC access
- Leverage local Internet path for public cloud and Internet access
- Increase WAN Capacity
- Improve App Performance
- Scale Security at the Branch
Cisco Intelligent WAN: Solution Components

Secure, Reliable and High Performance Application Experience
Make the WAN More Like the LAN

Application Optimization Services

**NETWORK VISIBILITY**

Application Visibility and Control
- Probe-less deployment
- Wired/Wireless view of 1000+ apps
- Rapid root cause analysis

**WAN PATH CONTROL**

Performance Routing V3
- 2X WAN bandwidth
- Maintain App Continuity
- Lower bandwidth costs

**APP ACCELERATION**

Wide Area Application Service (WAAS)
- 50–70% bandwidth reduction
- 2x VDI Sessions
- Faster document processing

**OPTIMIZED CACHING**

Akamai Connect
- High quality Digital Experience
- Address Last Mile BW Congestion
- WAN Offload
Enable Advanced Threat Protection Across Branches

**Security Services**

<table>
<thead>
<tr>
<th>HIGH PERFORMANCE VPN</th>
<th>ADVANCED THREAT DEFENSE</th>
<th>CLOUD WEB SECURITY</th>
<th>CONSISTENT POLICY ENFORCEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMVPN, GET VPN, Flex VPN</td>
<td>ZB Firewall, Sourcefire IDS</td>
<td>CWS with Advanced Malware Protection</td>
<td>TrustSec with Identify Service Engine</td>
</tr>
<tr>
<td>• Up to 1.3 Gbps encryption</td>
<td>• Industry leading network intrusion detection</td>
<td>• Real-time web filtering with AVC</td>
<td>• Single Source for Policy Rules</td>
</tr>
<tr>
<td>• Advanced encryption (Suite B)</td>
<td>• Sourcefire IDS Integrated on UCS E-Series</td>
<td>• Threat analytics for full continuum: Before, During, After</td>
<td>• Context Aware</td>
</tr>
<tr>
<td>• Integrated crypto without additional hardware</td>
<td></td>
<td></td>
<td>• 80% reduction in rules and policy</td>
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</tbody>
</table>
Optimized Experience Over Any Connection
Enabling High Performance Hybrid WAN

**Intelligent Path Selection (PfRv3)**
- Internet
- 3G/4G
- MPLS

**Akamai Connect**
- ISR-AX

**Optimized Over Any Connection**
- Controller-based architecture
- Simple application-based policies
- One-touch, centralized configuration

**New Collaborative Experiences**
- Intelligent web caching
- Content prepositioning
- Dramatically offloads WAN

Supported on Cisco ISR 4000 and ISR G2
What Can Cisco Intelligent WAN Enable?

**Innovate and Transform Your Business**

**Grow Revenues**
- Enable next generation apps
- Improve customer engagement
- Increase productivity
- Higher sales transactions

**Improve Customer Experiences**
- Meet growing user expectations
- Faster app performance
- Instant access to content
- Seamless experience

**Reduce Costs and Improve Efficiency**
- Lower WAN costs
- Fully utilize network
- Offload traffic
- Lower downtime
Introducing Cisco ISR 4000
Architected for the Optimal Application Experience

Pay-as-You-Grow Performance and Services

Converged Branch with UCS E-Series*
Integrated compute – 8 cores

Service Aware Data Plane for Efficient Traffic Handling

Native L2-7 Services Security, Optimization

Virtualized Services Framework Appliance-level performance

Cisco ISR 4000

4-10X Faster than ISR G2 at similar price

* Compute options vary by model numbers. ISR 4321 is not supported.
Network and Compute Performance for All Office Sizes
Cisco ISR 4400/4300 Series

- ISR 4321: 50-100 Mbps
- ISR 4331: 100-300 Mbps
- ISR 4351: 200-400 Mbps
- ISR 4431: 500-1000 Mbps
- ISR 4451-X: 1-2 Gbps

Available September 2014

Purpose Built Branch Application Centric Infrastructure
The 4451-X is poised to address the gap between networking functions that are fully virtualized and those that are still embedded in dedicated networking devices... As organizations transition to greater virtualization of applications and network services, the 4451-X will serve as a model for future converged hardware designs.”

Includes Cisco 4451-X with UCS-E and SM-X ES3 Switch Module

Kurt Marko, Best of Interop Judge, May 2014
ASIC-like Experience with New Services
Appliance Level Performance

Miercom 4451-X

Enabling Technologies
- Multi-core architecture
- Service aware data plane
- Multi-gigabit fabric

Benefits
- Up to 10x faster performance
- Services Aware Data Plane scales L7 Services
- Steady performance curve maintained with new additive services

Additive features and services
- 4451-X no-perf license
- 4451-X perf license
- Software-Only Router
Service Virtualization for Networking

Service Containers
- Dedicated virtualized compute resources
- Easily repurpose resources
- Industry Standards Hypervisor

Benefits
- Better Performing Network Services
- Ease of Deployment with Zero Footprint, No Truck Roll
- Greater Security via Fault Isolation
- High Reliability based on Industry Stands Hypervisor Technology
- Flexibility to Upgrade Network Services Independent of Router IOS
World’s Broadest Service Offerings in One Box
Simplified Services Integration

The Ultimate Converged Branch – No More Appliances

- WAN opt
- Compute Storage
- UC
- Path Control
- App Visibility
- Security

Native, Full Featured Security, AVC, WAN Opt, UC
Ease of Service Deployment – No Truck Rolls
Network, Compute and Storage
IT Automation with ACI for the WAN

Cisco Intelligent WAN App for APIC-EM

Available Mar/ Apr 2015

Simple Workflows

Zero Touch Provisioning

Business Level Policies

Open Architecture

SDN

Network and App Monitoring

APPLICATION PROFILE
USER ACCESS

NETWORK CONFIGURATION

Business Policy Dictates Network Action
Open Management Ecosystem
Management Enhancements with Plug and Play deployment

On Prem Lifecycle Management

- Cisco Prime
  - Cloud-based, automated configuration
  - Compatible with onePK for app aware WANs

  **Prime 2.2 (Nov 2014)**
  - Day 1 support for ISR 4000
  - IWAN Work flows
  - Topology Visualization

Cloud-based Orchestration

- Cloud-based, automated configuration
- Compatible with onePK for app aware WANs

  **glueware**
  - Day 1 support for ISR 4000
  - AVC support (Sep 2014)
  - On-premise option (Nov 2014)

Management & Visibility

- Monitors and visualizes your traffic flows
- Troubleshoots hop-by-hop to pinpoint issues

  **Live Action**
  - Day 1 support for ISR 4000
ASR1000 Series Routers

Compact, Powerful Router
- Line-rate performance 2.5G to 200G+ with services enabled
- Hardware QoS engine with up 128K queues per ASIC
- Investment protection with modular engines, IOS CLI and SPAs for I/O

Business-Critical Resiliency
- Fully separated control and forwarding planes
- Hardware and software redundancy
- In-service software upgrades

Instant On Service Delivery
- Integrated firewall, VPN, encryption, NBAR, CUBE
- Scalable on-chip service provisioning through software licensing

One IOS-XE Feature Set

ASR 1001-X
- ASR 1001
  - 2.5-20 Gbps

ASR 1002-X
- ASR 1002-X
  - 2.5-36 Gbps

ASR 1004
- ASR 1004
  - 10-40 Gbps

ASR 1006
- ASR 1006
  - 10-100+ Gbps

ASR 1013
- ASR 1013
  - 10-200+ Gbps
Best-in-Class Edge Routing

- **Performance:** Up to a 100-fold performance improvement over Cisco® 7200 Series Routers
- **High Availability:** Multi-level redundancy & In-Service Software Upgrades for 99.999% uptime
- **Security:** Support for next-generation encryption technologies
- **Lower total cost of ownership:** Enables Cisco Intelligent WAN
Cisco Designed QuantumFlow Processor

Multiple Concurrent Services without Performance Degradation

Massive Parallel Processing

Advanced Memory Management

Sophisticated QoS

Integrated Service Delivery and Programmability
ASR1000 Solution Services
Unprecedented Visibility, Control, Security and Programmability

Branch
QoS
VPN
AVC
SBC/CUBE
AppNav

WAN
Datacenter Interconnect

DC / Cloud
Private Cloud
Hybrid Cloud
Public Cloud

NAT
PfR
OnePK / SDN
ZBFW
Crypto

This slide has automation.
ASR1001-X
Newest addition to ASR1000 portfolio

System Management
- RJ45 GE Ethernet
- RJ45 Console
- Auxiliary Port
- Mini-USB Console
- 2x USB Ports

Pay As You Grow
- 2.5 Gbps Default
- Upgradeable to 5, 10, or 20 Gbps
- 8 Gbps crypto throughput

Control Plane
- Quad cores clocked at 2.0G Hz
- 8G DDR3 default shared memory
- Secure Boot
- FIPS-140-3 certification

Built-in I/O
- 2x10GE
- 6x1GE
- Multipoint MACsec support (ETA Nov 14)

Network Interface Modules (NIM)
- 2xSSD Drives
- ISR 4000 modules

Multi-Core Network Processor
- 31 cores
- 4 threads per Core
- 124 simultaneous threads

Memory
- 8 GB default
- 16 GB optional

Shared Port Adapter
- 1x SPA slot

Hardware redundancy
- Dual power supplies
ASR1002-X
Powerhouse routing in just 2RU

System Management
- RJ45 GE Ethernet
- RJ45 Console
- Auxiliary Port
- 2x USB Ports

BITS clocking
- GPS input
- Stratum 3 built-in

Built-in I/O
- 6x1GE with syncE

Multi-Core Network Processor
- 62 cores
- 4 threads per core
- 248 simultaneous threads

Memory
- 4 GB default
- 8/16 GB optional

Shared Port Adapter
- 3x SPA slot

Control Plane
- Quad cores clocked at 2.13G Hz
- 4G default shared memory
- Secure Boot
- FIPS-140-3 certification

Hardware redundancy
- Dual power supplies

Cryptography
- 4 Gbps crypto throughput
- SuiteB crypto support

Pay As You Grow
- 5 Gbps Default
- Upgradeable to 10, 20, or 36 Gbps
- 4 Gbps crypto throughput

Optional
- 160 GB hard disk
ASR1000 High Availability

Hardware redundancy

• Redundant control and data plane hardware in 1006 and 1013
• Software redundancy on ASR 1001, 1001-X, 1002-X & 1004
• Max 50ms loss for dataplane hardware fail-over
• Zero packet loss on control plane fail-over
• Intra-chassis Stateful Switchover (SSO)
  Stateful features: PPPoX, AAA, DHCP, IPSec, NAT, Firewall
• IOS XE also provides full support for Network Resiliency
  NSF/GR for BGP, OSPFv2/v3, IS-IS, EIGRP, LDP
  IP Event Dampening; BFD (BGP, IS-IS, OSPF)
  first hop redundancy protocols: GLBP, HSRP, VRRP
• Modular chassis support for ISSU super and sub-package upgrades
• Stateful inter-chassis redundancy available for NAT, SBC, Firewall
Cisco Intelligent WAN: Enabled by ISR4000 and ASR1000

- Secure, Reliable and High Performance Application Experience

- Transport Independent
  - Provider Flexibility
  - Modular Design
  - Common Operational Model

- Intelligent Path Control
  - Load Balancing
  - Policy-Based Path Selection
  - Network Availability

- Application Optimization
  - Application Visibility
  - Intelligent use of WAN acceleration resources

- Secure Connectivity
  - Scalable, Strong Encryption
  - App-Aware Threat Defense
  - Cloud Web Security