HP's Newly Refreshed 5400R zl2 Still Lacks Scalability, Converged Access, Investment Protection & Enterprise-Class Network Services

Competitive Messaging Guide v2.3 (Cisco Partners)

Executive Summary

In June 2014, HP introduced a new version of their modular campus access switch, HP 5400R zl2.

HP claims following in their announcement:

Redundant management modules for increased resiliency & approximately 25% more aggregate system bandwidth (1 Tbps)

Cisco's interpretation:

- The previous generation HP 5400 zl had many serious issues: lack of resiliency, scale and investment protection. HP's new 5400R zl2 partially fixes one issue by adding redundant management modules, but these enhancements are not enough because:
    - HP did not address issues such as: **scalability, converged access for wired & wireless networks, uplink redundancy, investment protection and enterprise-class network services**
- HP still maintains confusing positioning between its competing A-Series and former ProCurve switches.
  (See "HP 5400R zl2 still lacks many key capabilities" below for details)

Here are 3 things you need to do to compete with this switch:

- Remember to highlight that customers will not benefit from upgrading to HP 5400R zl2 because this product has no significant new innovations and still lacks many key features essential for enterprise deployments.
- Leverage the following points to highlight the shortcomings of the HP 5400R zl2:

HP 5400R zl2 Lacks	Cisco Catalyst 4500E Advantages
Still lacks scalability of critical network resources and power.	Superior density & scalability: 96 more 1G ports, 8 more 10G ports, 50% more PoE+ ports with full power supply redundancy and 42 times more ACL & QoS entries for addressing business growth efficiently.
Still lacks converged wired & wireless access.	Unmatched converged wired & wireless architecture with single operating system across wired & wireless for simplicity and agility.
Still lacks enterprise-class resiliency.	Non-stop business services through In-Service Software Upgrade (ISSU), uplink redundancy and Virtual Switching System (VSS).
Still lacks investment protection.	Unmatched investment protection going as far back as the year 2000.
Still confused about platform positioning.	Industry's most widely deployed modular access switch with 70%+ Modular PoE market share
Still limits SDN to just OpenFlow.	Only solution that delivers the benefits of SDN consistently across data center, WAN and campus networks through APIC controller and a growing ecosystem of partners running SDN applications and solutions.
Still lacks enterprise-class network services.	Unmatched network services for BYOD, advanced security, media services and Internet of Things.

- If still needed, refer to "Busting HP's False Claims" in the addendum to refute HP's false attacks on Cisco Catalyst 4500E.

HP 5400R zl2 still lacks many key capabilities:

Still Lacks Scalability of Critical Network Resources & Power

HP introduced the original 5400 zl in 2006. In 2014, they refreshed it with 5400R zl2. In spite of taking 8 years to come out with a new chassis, HP 5400R zl2 still failed to scale!

The Cisco Catalyst 4500E delivers:

- More ports:
    - **96 more 10/100/1000 ports** (384 ports Cisco Catalyst 4500E vs. 288 ports HP 5400R zl2).
    - **8 more 10G SFP+ ports** (104 ports Cisco Catalyst 4500 vs. 96 ports HP 5400R zl2).

- **50% more PoE+ ports with full power supply redundancy** (232 PoE+ ports Catalyst 4500E vs. 154 PoE+ ports HP 5400R zl2)

- **42 times more ACL & QoS entries** (128,000 Cisco Catalyst 4500 Vs. 3,000 HP 5400R zl2).
- **25 times larger routing table size** (IPv6: 128,000 Cisco Catalyst 4500 Vs. 5,000 HP 5400R zl2).
- **16 times more multicast streams** (32,000 Cisco Catalyst 4500 Vs. 2,000 HP 5400R zl2).
- **2 times more VLAN capacity** (4,000 Cisco Catalyst 4500 Vs. 2,000 HP 5400R zl2), & more.

So What: This means that as the demands on the network increase from growth in mobile devices, video and Internet of Everything, HP 5400R zl2 cannot keep up. Customers will need to buy and deploy new HP switches just to deal with their natural growth. The Cisco Catalyst 4500E enables customers to grow their network without buying new switches as the number of users and applications increase – it has headroom for growth through superior density and scalability.

Note that the HP 5400R zl2 requires 2 to 3 times more space (depth) for deployment in wiring closets. The Cisco Catalyst 4500E is only 12.5" deep for easy deployment in tight spaces. It also has easy access to power supplies through the front for easy serviceability. The HP 5400R zl2 has 42% more depth at 17.75." On top of that, HP 5400R zl2 requires 12" to 18" in the rear to pull out power supplies for servicing, not including the space for a human.

Still No Converged Wired & Wireless Access

Cisco is leading the industry with unmatched converged wired and wireless architecture. The Cisco Catalyst 4500E Supervisor Engine 8E converges wired and wireless into a single architecture with a single operating system. This enables customers to:

- Make better business decisions while delivering superior user experience as they get complete visibility into applications across wired and wireless networks.
- Better align wireless bandwidth to business policies by allocating bandwidth based on Access Point, Radio, SSID and Client.
- Obtain peace of mind by deploying the best wired/wireless solution for today & tomorrow – Cisco continues to be # 1 in Gartner's Magic Quadrant for Wired & Wireless LAN Access Infrastructure published on 26 June 2014, while HP has fallen even further behind to #3![1]

Still Lacks Enterprise-Class Resiliency

The resiliency capability of HP 5400R zl2 is inferior to the Cisco Catalyst 4500E. In fact, one could argue that resiliency is almost non-existent on the HP switch. The only new capability they offer is redundant management modules, which is not sufficient for creating a resilient architecture. HP's switch does not have technologies to match those of the Cisco Catalyst 4500E, such as: In-Service Software Upgrade (ISSU), uplink redundancy and Virtual Switching System (VSS).

Cisco Catalyst 4500E enables non-stop business services through several unique resiliency capabilities:

- Delivering user services during software upgrades with ISSU.
- Protecting against uplink failure – Even if a supervisor fails on Catalyst 4500E, the uplinks on the failed supervisor continue to operate because the new active supervisor starts controlling them. HP 5400R zl2 cannot match this. Each line card on HP switch has a forwarding ASIC which means that when a line card fails, the uplinks on that line card also fail and are no longer accessible.
- Protecting against switch failure with VSS. HP 5400R zl2 has no technology that is comparable to Cisco VSS. HP's Intelligent Resilient Framework (IRF) is still **NOT** supported on their ProVision switches such as the HP 5400R zl2.

Still No Investment Protection

HP 5400R zl2 requires a "rip and replace". The new HP 5400R zl2 only works with v2 line cards. It will not work with customers' existing investments in:

- v1 line cards.
- Existing power supplies.
- Existing management module.
- The new management module in 5400R zl2 does not work with existing 5400 zl chassis!

Cisco Catalyst 4500E Supervisor Engine 8E interoperates with line cards shipped 14 years ago – as far back as 2000. And, Supervisor Engine 8E also interoperates with previous generation Catalyst 4500 chassis! This is unmatched investment protection through forward- and backward-compatibility.

[1] http://blogs.cisco.com/wireless/third-times-a-charm-cisco-is-a-leader-in-the-gartner-magic-quadrant-for-wired-and-wireless-lan-access-infrastructure-again/

And, HP still can't deliver 60W PoE! Cisco has been shipping 60W PoE (Cisco UPOE) for 3 years with investment protection through backwards compatibility with existing chassis, line cards and supervisors. And, IEEE is now exploring 60W PoE standard through IEEE 802.3bt working group. This means that when this becomes a standard, Cisco will have a 4 million+ port head start on HP, because to date we have already shipped over 4 million Cisco UPOE ports! Customers are leveraging Cisco UPOE to power VDI terminals, nurse call stations, LED lights and more as IOT evolves.

HP is Still Confused About their Platform Positioning

HP has two competing product lines: ProVision based (former ProCurve) switches, and 3rd party merchant silicon based A-Series (H3C/3Com) switches. And, they seem to be indecisive and confused on which product line to invest in:

- For a while, they were investing in switches that have their in-house ProVision ASICs.
- In 2010 they acquired 3Com and started investing more in H3C/3Com switches that have merchant silicon. This is evidenced by the fact that HP has approx. 2 times more switches that use merchant silicon than their in-house ProVision ASICs.[2] Four years later in 2014, HP has introduced a new 5th Generation of ProVision ASIC for 5400R zl2 switch.
- HP seems to be indecisive between merchant silicon switches and in-house ProVision based switches like 5400R zl2. And, they are completely ignoring customer's needs for investment protection by continuously changing their silicon development strategy.

Questions customers should be asking:

- Are they confused about platform positioning? Which platforms are going to be strategic – ProVision switches like 5400R zl2, or the H3C/3Com switches like 5810 & 7500 that are targeted at the same deployment scenarios like 5400R zl2?
- Also, now that 5400R zl2 has a new 5th Generation ProVision ASIC, should customers stop buying remaining 9 ProCurve switches that have older ProVision ASIC? Is HP going to introduce the 5th Generation ProVision ASIC in those 9 older switches?

Still Limiting SDN to Just OpenFlow

HP equates software-defined networking (SDN) to just OpenFlow. Cisco's approach is holistic. It includes support for OpenFlow, but is much more than that. Cisco's Application Centric Infrastructure (ACI) is the only solution in the industry that is bringing the benefits of SDN consistently across data center, WAN and campus networks through APIC controller. Cisco also has a rich and fast growing eco-system of partners who are developing applications and solutions that take advantage of Cisco's ACI architecture.

Still Lacks Enterprise-class Network Services

HP 5400R zl2 does not have key enterprise-class network services: BYOD, converged access, advanced security and media services. This means customers will need to buy additional IT equipment and software to enable these essential services. For example, HP 5400R zl2 needs a separate wireless appliance or module for wireless networks, which adds integration risk, time and cost. On top of that, HP has competing wireless offerings, such as their in-house solution and the wireless module they OEM'ed from Aruba. This creates additional complications for HP's solution.

On the other hand, Cisco Catalyst 4500E offers unmatched network services for: BYOD, advanced security and media services. Here are just a few examples of these network services[3]:

- **BYOD & Wireless:**
  - Deliver stronger user experience with application visibility through Flexible NetFlow.
  - Align bandwidth usage to business policies with hierarchical wireless QoS based on AP, Radio, SSID, & Client
  - Easily segment corporate and personal device traffic for secure BYOD with Easy Virtual Networking (EVN).
- **Advanced Security:**
  - Provide role-based access to corporate resources for any user, from any device, with Security Group Tags (SGT).
  - IT can now better protect corporate resources from theft by trusted users like employees inside the firewall by restricting access based on user profile.
- **Media Services:** Cisco Catalyst 4500E offers a complete lifecycle rich media solution – from assessment, to troubleshooting and on-going monitoring through technologies included in Cisco IOS:
  - **Assessment:** Assess network readiness for video by simulating video traffic before deploying video.
  - **Troubleshooting:** Help ensure a consistent, high-quality video experience with automated hop-by-hop troubleshooting. And Cisco IOS also includes more options for troubleshooting remotely through Wireshark.

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[2] 17 HP switches use merchant silicon; 10 HP switches use in-house ProVision ASICs.
HP Switches with merchant silicon: 12900, 12500, 11900, 10500, 9500, 7500, 5810, 5500 (SI, EI, HI), 5120 (SI, EI), 5900, 5800, 5820, 5830, and 3600
HP Switches with ProVision ASICs: 8200zl, 5400zl, 4200, 3800, 3500, 2920, 2910, 2620, 2520, 2510

[3] Check this 1-page document for additional network services: http://www.cisco.com/c/dam/en/us/products/collateral/switches/catalyst-4500-series-switches/feature-comparison-c83-731050.pdf

- **Monitoring:** Adapt the network to changing traffic patterns by monitoring per-flow and per-hop flow metrics such as packet loss and network jitter.

Conclusion:

HP5400 zl has 10,000 customers with total 20 Million ports deployed[4]. But these customers do not benefit from upgrading to HP 5400R zl2 because this product has no significant new innovations and still lacks so many key features. These customers should migrate to Cisco Catalyst 4500E and enjoy the benefits of: **superior scalability of critical network resources & power, converged wired/wireless network access, BYOD services and advanced security**. And, Cisco Catalyst 4500E has a track record for unmatched investment protection. It also has a strong roadmap going forward which will permit customer investments to be protected. Customers can also get attractive discounts through Cisco Technology Migration Program[5] when they trade-in their old HP switches for new Cisco switches.

Addendum – Busting HP's False Claims

Please be aware HP is making 7 false claims against Cisco Catalyst 4500E. Ensure that customers understand the points described in the above sections. Then, if needed, you can leverage the following points to counter.

1. **HP claim: "Slow, Old architecture."**

   Cisco Counter:

   - Cisco has introduced a steady stream of innovations on Cisco Catalyst 4500E with many industry-first's such as Inline power, PoE, PoE+ and Cisco UPOE. We also introduced 9,000W power supplies in 2013 for unmatched PoE+ port density with full power supply redundancy.
   - In 2013, we introduced Supervisor Engine 8E that integrates Cisco Unified Access Data Plane ASIC. Cisco UADP is the culmination of $200 million investment from Cisco. It is the first and Only ASIC in the industry that delivers full-featured wired and wireless convergence with application intelligence and investment protection.
   - In 2014, we introduced new 12, 24 and 48 port fiber line cards on this platform. And, we have a rich roadmap on this platform going forward.
   - While HP is focused on taking 8 years to deliver a partial fix to the lack of resiliency on their switch, Cisco is leading the industry with converged wired & wireless architecture powered by Cisco UADP. It seems like HP "just doesn't get networking."

2. **HP claim: "Unprepared for rich media."**

   Cisco Counter:
   Unlike HP 5400R zl2, Cisco Catalyst 4500E delivers several unmatched media architectural capabilities that are accelerated natively in hardware for better performance, such as:

   - Hardware replication of 32,000 multicast streams in Catalyst 4500E offloads the video head end for efficient and cost effective delivery of rich media. An efficient multicast replication and superior buffering architecture means better resource utilization and improved user experience.
   - Granular, hierarchical QoS based on Access Point, Radio, SSID and Client aligns wireless bandwidth more closely to business priorities and creates better user experience.
   - Flexible NetFlow provides per flow metrics for deep and granular application visibility and control.

   When combined with Cisco IOS, these architectural capabilities create a rich media solution across the entire lifecycle – from assessment, to troubleshooting and on-going monitoring:

   - Assessment: Assess network readiness for video by simulating video traffic even before deploying video.
   - Troubleshooting: Help ensure a consistent, high-quality video experience with automated hop-by-hop troubleshooting.
   - Monitoring: Adapt the network to changing traffic patterns by monitoring per-flow and per-hop flow metrics such as packet loss and network jitter.

[4] Based on quotes attributed to HP officials, published in press reports in June 2014
[5] Cisco TMP: http://www.cisco.com/go/tmp (requires login)

3. **HP claim: "Catalyst 4500E has data center form factor."**
   Cisco Counter:

   - Cisco Catalyst 4500E is optimized for campus networks. It is industry's most widely deployed modular access switch with almost 900,000 chassis shipped, and 70%+ Modular PoE market share.
   - Cisco has industry's best portfolio for data center deployments – the Nexus family of switches.
   - Cisco Catalyst 4500E is only 12.5" deep for easy deployment in tight spaces like wiring closets. It also has easy access to power supplies through the front for easy serviceability. HP 5400R zl2 has 42% more depth at 17.75." On top of that, HP 5400R zl2 requires 12" to 18" in the rear to pull out power supplies for servicing, not including the space for a human.
   - Altogether, HP requires 2 to 3 times more space (depth) for deployment in wiring closets!

4. **HP claim: "No OpenFlow."**
   Cisco Counter:

   - Cisco Catalyst 4500E will soon support OpenFlow 1.0 and 1.3 through a software upgrade. In fact, we already have customers in early field trials (EFT) with OpenFlow.
   - HP equates software-defined networking to just OpenFlow. Cisco's approach is holistic. It includes support for OpenFlow, but is much more than that. Cisco's Application Centric Infrastructure (ACI) is the only solution in the industry that is bringing the benefits of SDN consistently across data center, WAN and campus networks through APIC controller. Cisco also has a rich and fast growing eco-system of partners who are developing applications and solutions that take advantage of Cisco's ACI architecture.
   - Cisco's UADP ASIC is the only ASIC of its kind that supports OpenFlow in silicon through innovative "flex parser engine" technology.

5. **HP claim: "Limited Warranty."**
   Cisco Counter:
   Note that HP has nothing new in their warranty offer with this version of the switch.
   Also note that just like HP 5400R zl2, Catalyst 4500E warranty covers:

   - Replacement of failed hardware components including fans and power supplies for life of switch. HP still claims that Cisco does not replace failed fans and power supplies for the life of the switch – this is not true!
   - Unlimited free software updates (LAN Base and IP Base) for life of switch.

   HP also claims free 3-year phone support. However, this free phone support does not include essential services[6] like configuration recommendations, performance tuning, optimization and consultation. What good is supposedly "free" service if it does not include essential services? On top of that, HP Services are not known for good customer service – they have not won JD Power Award for customer service in last 8 years!

   Cisco's for-fee Technical Services cover a much broader range of issues that are more relevant for today's business-critical networks. For example, Cisco's Smart Network Analytics Service helps customers turn their network into a sensor for making better business decisions. And, unlike HP, Cisco Services have won JD Power certification for "outstanding customer experience" for six years straight!

6. **HP claim: "HP has Lower TCO."**
   Cisco Counter:
   Why does HP lead the competitive discussion with purchase price? Could it be that they can't compete with Cisco on innovation, platform longevity and feature sets?

   Cisco Catalyst 4500E provides significant overall value-add that helps lower TCO, while enabling innovative new services:

   - Cisco is reducing TCO by converging wired and wireless into a single platform running on a single operating system. This simplifies set-up and on-going change management while providing better user experience.

[6] See Q17 of HP Networking Warranty FAQ: http://tinyurl.com/lndlekq

- The Cisco Application Policy Infrastructure Controller (Cisco APIC) enables radical simplification through centralized application level policy engine and detailed visibility across data center, WAN and access networks, and across physical and virtual networks.
- Cisco Catalyst 4500E lowers operational expenditure (OpEx) through several unique features[7]. Customers can:
    - Simplify provisioning with Plug N Play
    - Simplify configuration of switches & interfaces with AutoConfiguration and Interface Templates
    - Automatically download and configure software with Smart Install
    - Run diagnostics and health checks without causing downtime with Smart Call Home
    - Automatically detect devices and configure QoS with AutoQoS
- Cisco Catalyst 4500E provides unmatched investment protection, see Investment Protection section above.

7. HP claim: "No 10G BaseT Support."

Cisco Counter:

We offer 10G BaseT technology[8] on our data center Nexus switches because 10G BaseT customer use cases are in data centers. Cisco Catalyst 4500E is optimized for campus access networks, and there are no use cases for 10G BaseT in campus deployments.

However, as new campus use cases around higher bandwidth wireless with more than 1G speeds (802.11ac Wave 2) become mainstream, Cisco will be bringing leadership solutions to market. Stay tuned for more details.

[7] For more technologies that lower OpEx (e.g. GOLD), check here: http://www.cisco.com/c/en/us/products/switches/Catalyst_SmartOperations.html
[8] See Datasheet for 10G BaseT line cards on Nexus Switches: http://www.cisco.com/c/en/us/products/collateral/switches/nexus-7000-series-switches/data_sheet_c78-719524.html