HP Innovations Update
Accelerating campus networks for enterprise mobility

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It’s about application agility…
To realize potential of data center investment
# Campus networks cannot sustain growing mobility demands

Meeting mobility demands lends to complexity

<table>
<thead>
<tr>
<th>Limited for growth</th>
<th>Change needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>“My access layer may not support future application usage models and an upsurge in mobile devices”</td>
<td>“Do I understand all the implications of mobility on my campus network?”</td>
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</tbody>
</table>

Improving last mile delivery is ineffective

“I need more efficient ways for supporting network continuity, improving application experience and securing the network without adding to OPEX or CAPEX.”
HP Smart Rate Multi-gigabit Ethernet – from edge to core

Wireless-first for a mobile-centric enterprise

- 1 Gbps, 2.5Gbps, 5Gbps & 10Gbps
- Auto-negotiated to simplify deployment

- Leadership & commitment to standards
- MACsec ready

- Leverages existing cabling
- PoE+ for 802.11ac wave 2 APs
HP Networking High Performance ASIC

Game changing performance and flexibility

Exceptional performance

7X better price per performance\(^1\)
10 parallel Advanced Packet Processor (APP) engines

Unprecedented scalability for SDN

13-24X scalability of OpenFlow entries (72K) for SDN applications\(^2\)
10X faster packet inspection\(^2\)

Flexible programmability for the future

Exceptional performance for programmable network services with **32 Virtual Tables**

Scalable, distributed performance across network services

Handle any performance and scale

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\(^1\) Internal calculations against Cisco Catalyst 4507RE Dual Management,
\(^2\) Internal calculations against HP 5412Rv3, Brocade ICX 6610 and Cisco Nexus 3100/6k
HP SDN Apps – Orchestrating network services efficiently

Continuing SDN momentum

SDN Ecosystem

Ecosystem Partners: 30+
App store downloads: 1300 +
SDN Controller downloads: 5000
SDN Applications: 17 Partner and 3 HP

HP Network Visualizer SDN App
Improves mean time to innocence

HP Network Protector SDN App
Dynamic, zero-touch threat protection

HP Network Optimizer SDN App
Optimizes business application experience
Business application integration ready
Instant network troubleshooting

HP Network Visualizer SDN application

- Solve help desk issues in a matter of seconds vs minutes
- Real-time visibility and diagnosis, by user or user group
- Simple & automated troubleshooting requiring low level network detail, without worrying about physical topology
- Proactively monitor the network to reduce the number of help desk issues and reduce “mean time to innocence”

40X Cost saving for network diagnostics

1. Internal calculations

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Optimizing applications in an education environment

HP Network Protector and HP Network Optimizer

- Online testing assurance
- Supports remote distance learning and collaboration
- Simple policy creation to block access to internet during exam
- Simple security for BYOD
- Optimize user session connectivity quality by 270%
- 80% reduction in provisioning complexity

40% Reduction in technical issues

1. HP case study – Deltion college
Cupid – Indoor WiFi Positioning

- WiFi based indoor positioning is cheap but has suffered from accuracy due to multipath and environmental variations.

- CUPID utilizes low level information to filter out the effect of multipath and considers only the direct path for estimating the client's distance from the AP.

- CUPID further learns any environmental variations on the direct path automatically to compute its propagation time accurately. Thereafter it computes the client’s distance based on the corrected propagation time.

\[
\text{Distance} = \text{Propagation delay} \times \text{speed of light}
\]

\[
\text{Propagation Delay} = \frac{\text{Idle time} - \text{fixed ACK time}}{2}
\]
Establish the Macro GeoFence
Micro-Geofence Boundaries

Each cell = \( \frac{1}{3} \) m\(^2\)
Time and task to Implement

- Review Floor plan and identify AP Requirement
- Ship, Install AP and networking; Build logical layout
- Configure Promotions
- Test and Rollout

2-3 weeks*

* Based on size of the site. avg given for < 20,000 sq. ft. single level
Thank you