

Peplink US Summit

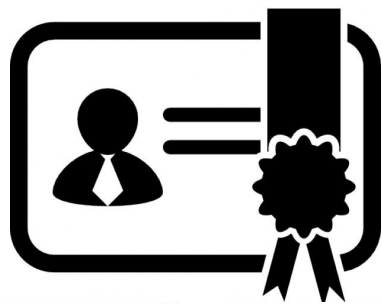
PCE Boot Camp 2018

US Summit **PCE Boot Camp**



Introduction

At the most basic level, Customer Satisfaction depends on the advice, installation, troubleshooting skills of **Peplink's Sales and Engineering Professionals**. The **Peplink Certification Exam** gives Partners and Resellers the tools needed to **address customer's questions and service issues** from pre-sales all the way to support calls for years to come.



US Summit PCE Boot Camp



Introduction - <https://training.peplink.com/>

The **PCE** is an “open-book” test that consists of a **pool of 130+ questions** that will test your knowledge of our **Products, Technologies**, and testing you on **how to deploy** the gear along with relevant **Troubleshooting information**.

Before taking the **PCE**, there’s a **host of training materials** available to review and ensure that you’ve got the knowledge necessary to pass. You’re free to use whatever resources available to you (*the site, the forum, etc*) during the exam.



US Summit **PCE** Boot Camp



Introduction

The PCE has two Certifications tracks available -



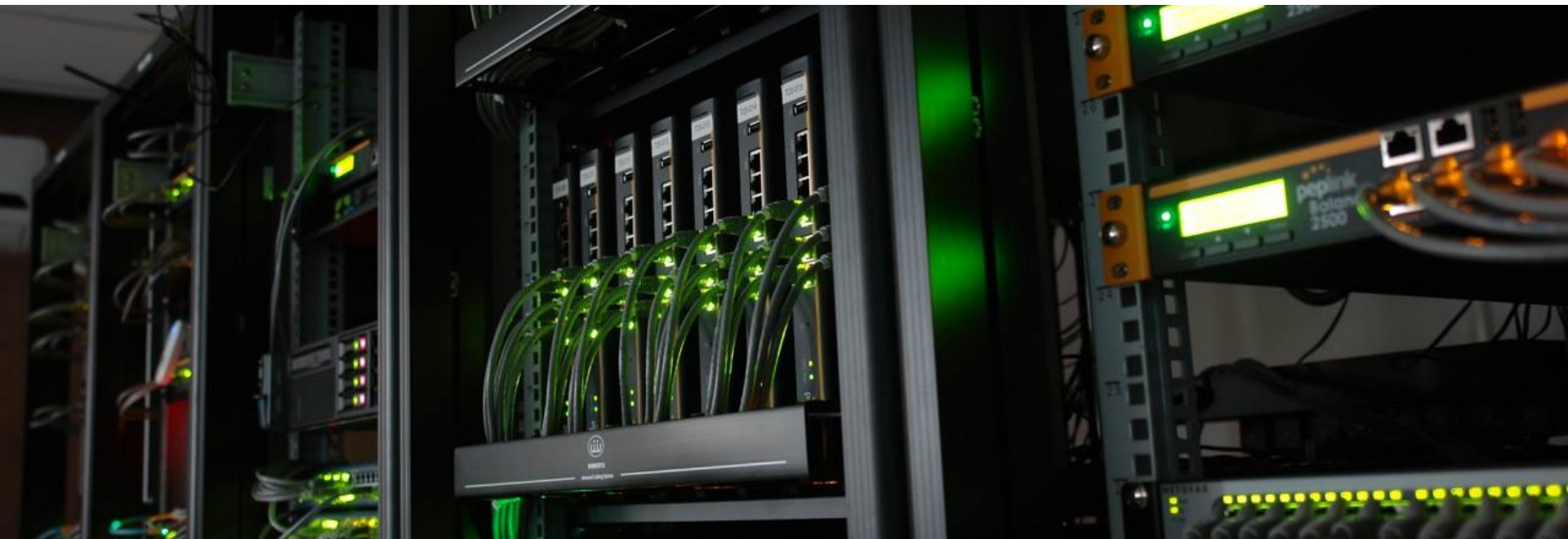
Technical Support Engineer
Solution Consultant

Focus: Technical know-how
Objectives: To become proficient in providing presales and post-sales technical support and installation service



Sales Personnel
Business Development

Focus: Product features and selling points
Objectives: To become proficient in devising solutions and recommending products to customers



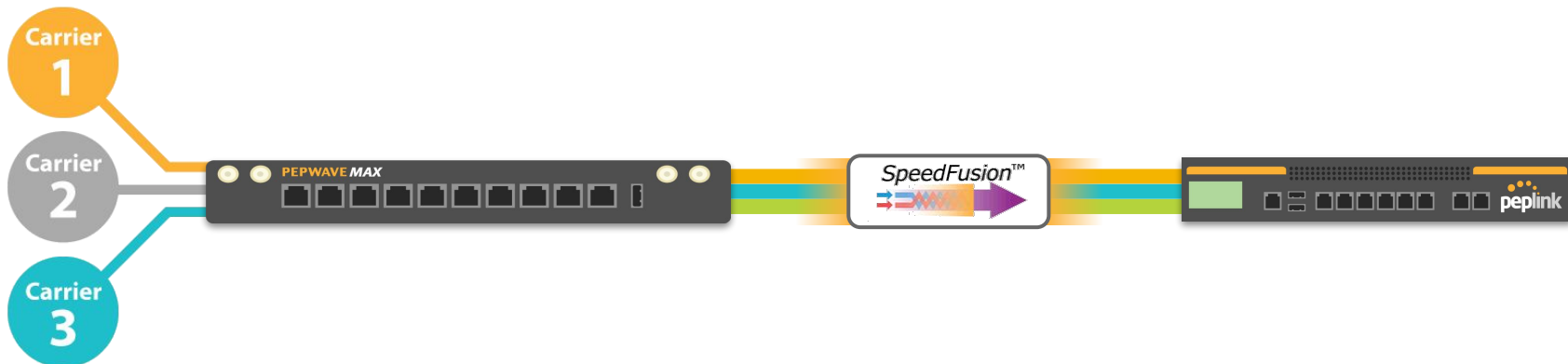
PCE Boot Camp 2018

Tech Concepts: SpeedFusion

Peplink's SD-WAN: SpeedFusion



Overview



- Patented technology, creating a **single VPN** across all WANs.
- Bandwidth from multiple WANs are bonded at the **packet level**.
 - **256-bit AES** encrypted traffic utilizes all healthy WANs.
 - Aggregated speed, even for a **single user or session**.
 - **Sessions persist**, even when individual WAN links lose connection.

Peplink's SD-WAN: SpeedFusion



Overview

- **Peplink to Peplink VPN**

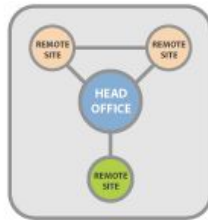


- **2x SpeedFusion capable units (min)**
 - Different models of Peplink/Pepwave devices can create different levels of PepVPN/SpeedFusion
- **Public IP on at least 1x WAN connection**
 - If the WAN is not a Static Public IP, register it with a supported **DDNS** service and we can create **SpeedFusion** to the WAN DDNS host name

- **Multiple Configuration Types**



Point to Point



Star
(Point to Multi-Point)



Full Mesh

- **Multiple Deployment/Setup Methods**



Peplink UI

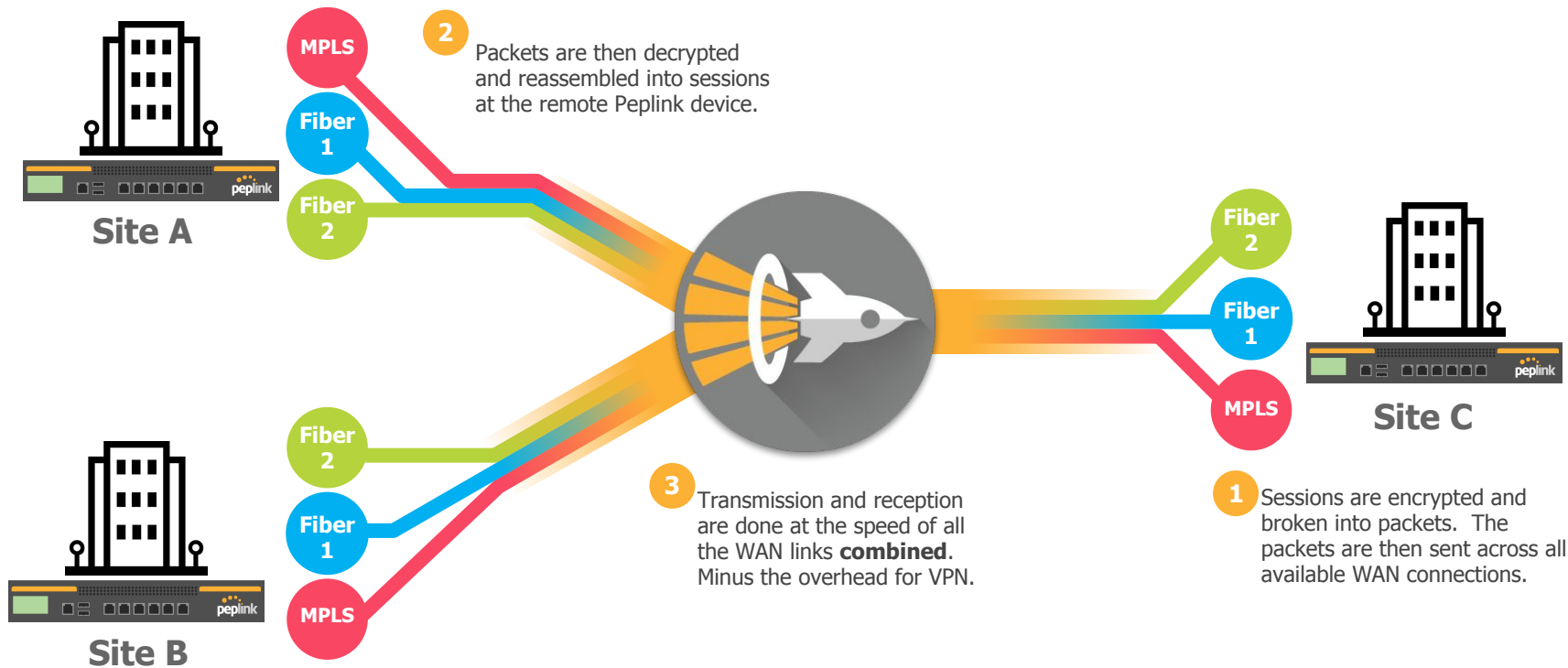
OR



Zero-Touch

SpeedFusion

How it works



Peplink's SD-WAN: SpeedFusion

Core Technologies



WAN Smoothing

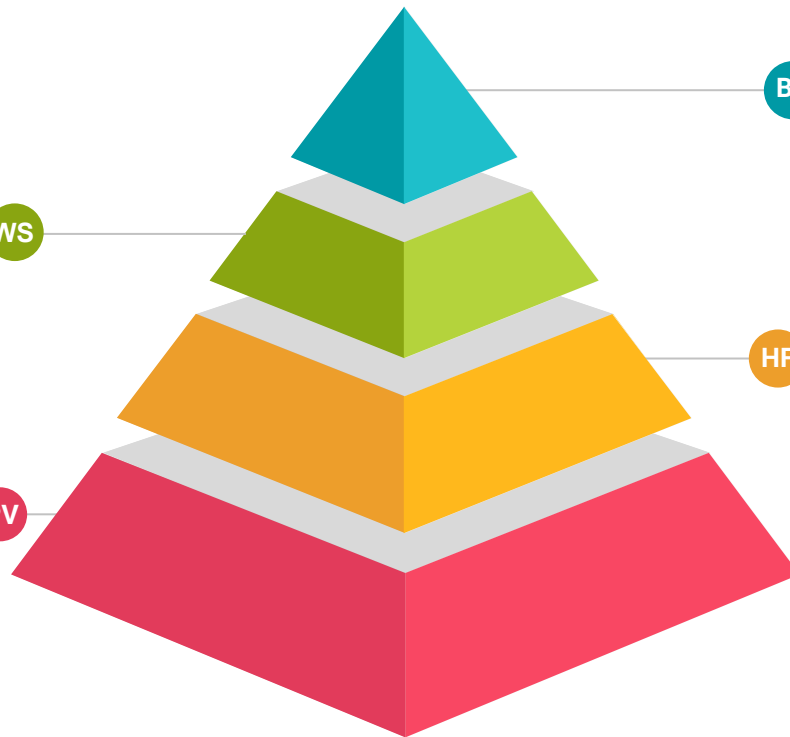
Use multiple WAN connections to create a single, jitter-free data stream.

WS

PepVPN

Offers the benefits of IPsec, plus a variety of performance and reliability features.

PV



Bandwidth Bonding

Combine the speed and bandwidth of multiple WAN connections.

BB

Hot Failover

Switch from one WAN connection to another while keeping your sessions intact.

HF

SpeedFusion: Hot Failover

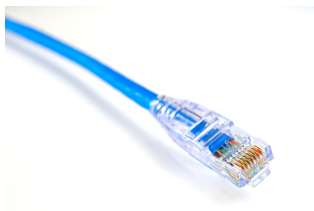


Enables you to change connections while keeping your session intact.

Verticals and applications that benefit from Hot Failover:



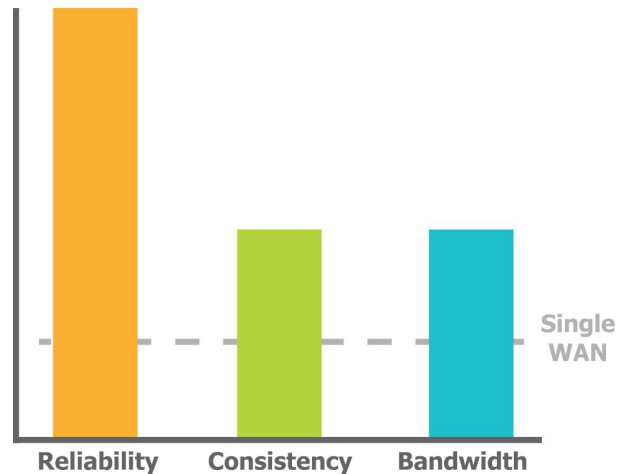
Small Offices



Long-Distance Ethernet



Retail Connectivity



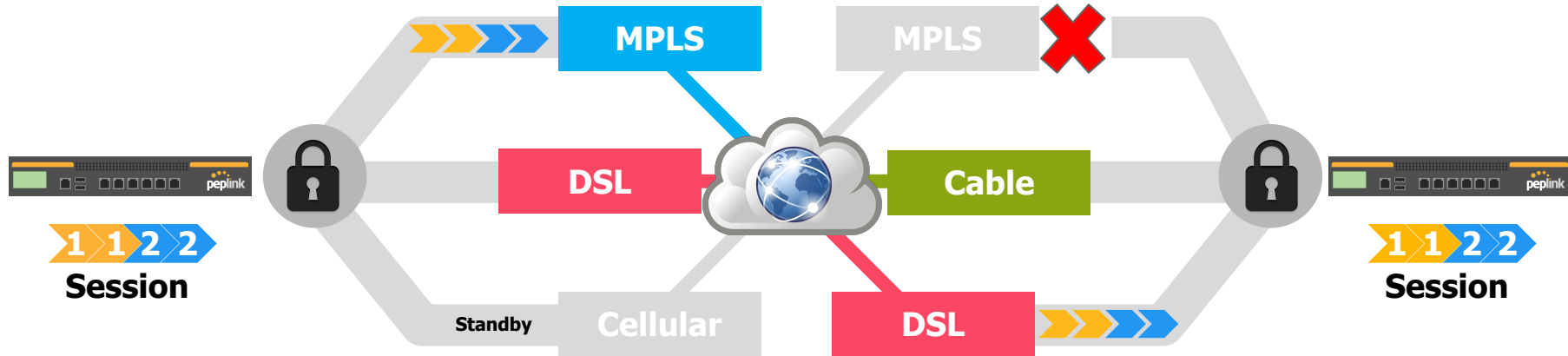
Useful for deployments where you need reliability while keeping costs down.

SpeedFusion: Hot Failover

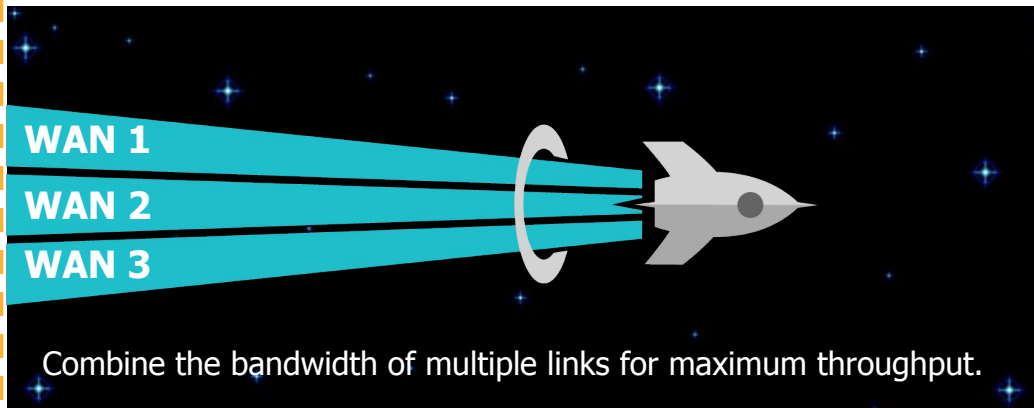


How it works

- Establishes a tunnel on **all active links**
- Only **sends user traffic on one active link at a time**
- If a link fails, the traffic is quickly routed through the second tunnel (*sub-second*)
- Applications can operate uninterrupted during handoff (*Hot Failover*)



SpeedFusion: **Bandwidth Bonding**



Verticals and applications that benefit from Bandwidth Bonding:



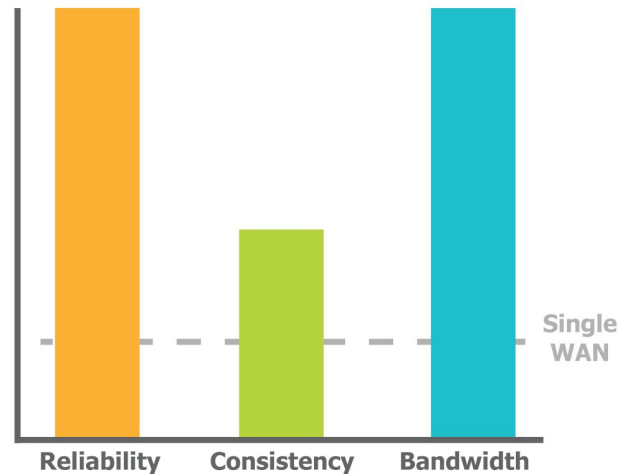
MPLS Alternative



Remote Surveillance



In-Vehicle Connectivity



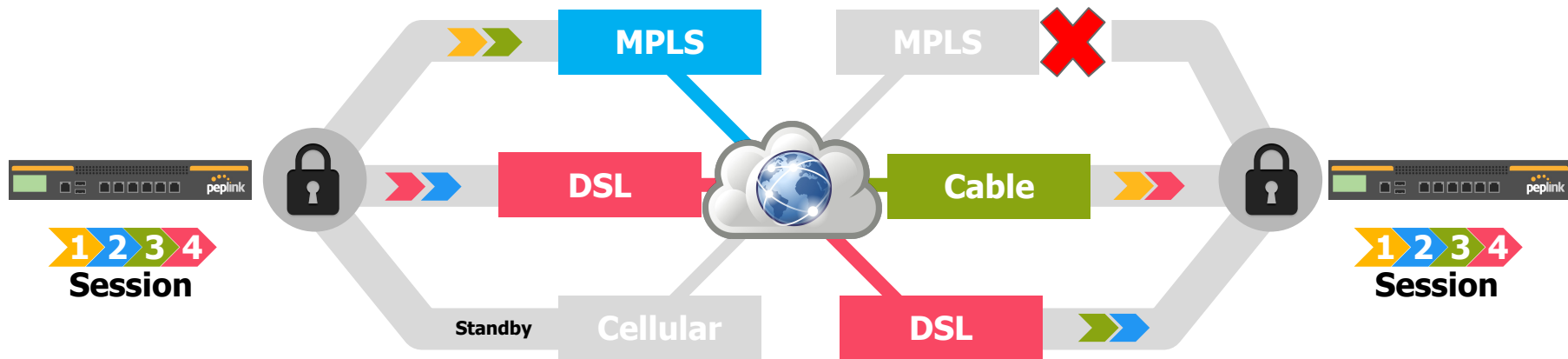
Useful for deployments where you need as much speed as you can get.

SpeedFusion: Bandwidth Bonding



How it works

- Establishes a tunnel on **all active links**
- **Splits application traffic** across all active connections
- **Increased throughput** is possible, certain link combinations are not realistic
- If a link fails, the traffic is quickly routed through the second tunnel (*sub-second*)
- Applications can operate uninterrupted during handoff (*Hot Failover*)

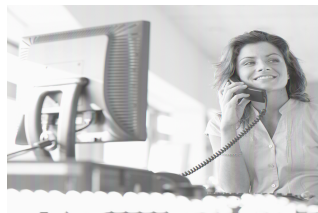


SpeedFusion: WAN Smoothing



WAN Smoothing uses bandwidth to cover rough spots in connectivity.

Verticals and applications that benefit from WAN Smoothing:



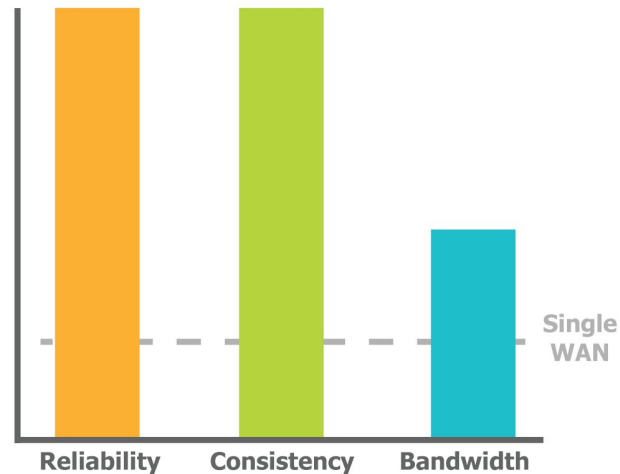
VoIP



Videoconferencing



TV and Radio Broadcasts



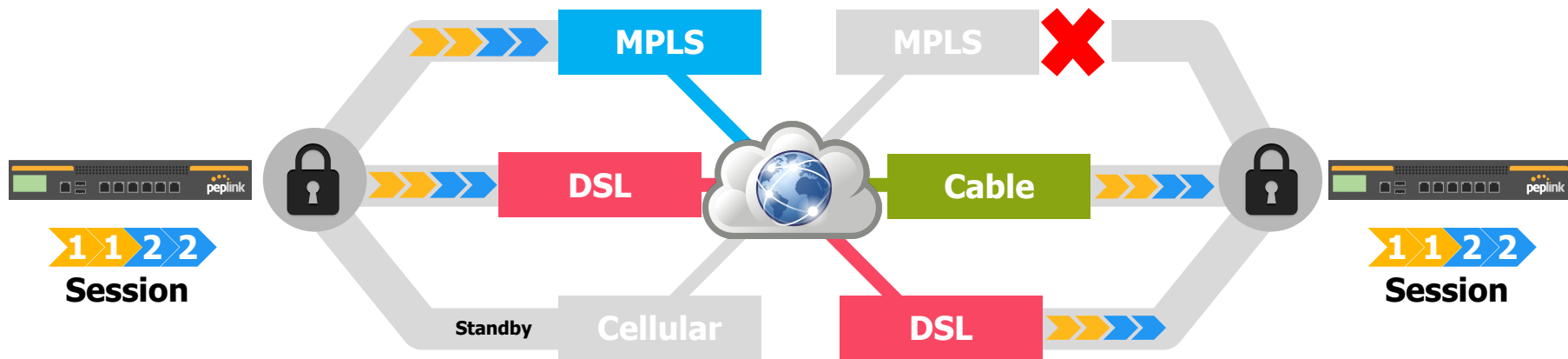
Useful for deployments where improving consistency is more important than improving bandwidth.

SpeedFusion: WAN Smoothing



How it works

- Establishes a tunnel on **all active links**
- Sends redundant copies of traffic to each active connection
- The copy that **arrives first is used**
- If a link fails, the redundant copy is automatically used – ZERO interruption or delay
- Smoothing optimizes traffic for more stable latency (jitter), less packet loss



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Tech Concepts - SpeedFusion Features

Q

When using PepVPN behind a firewall, one needs to open the incoming ports of:

A

TCP 32015

B

UDP 4500

C

TCP and UDP 4500

D

TCP port 4500 and UDP port 32015

E

TCP port 32015 and UDP port 4500 or according to either Data port "default" or "custom" settings.

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Tech Concepts - SpeedFusion Features

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When using PepVPN behind a firewall, one needs to open the incoming ports of:

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TCP 32015

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TCP port 4500 and UDP port 32015

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TCP port 32015 and UDP port 4500 or according to either Data port "default" or "custom" settings.

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Tech Concepts - SpeedFusion Features

Q

In a 3-site fully-meshed VPN deployment scenario, how many Internet lines at minimum are required in total to support SpeedFusion Hot Failover and Bonding at all locations?

A

3

B

4

C

5

D

6

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Tech Concepts - SpeedFusion Features

Q

In a 3-site fully-meshed VPN deployment scenario, how many Internet lines at minimum are required in total to support SpeedFusion Hot Failover and Bonding at all locations?

A

3

B

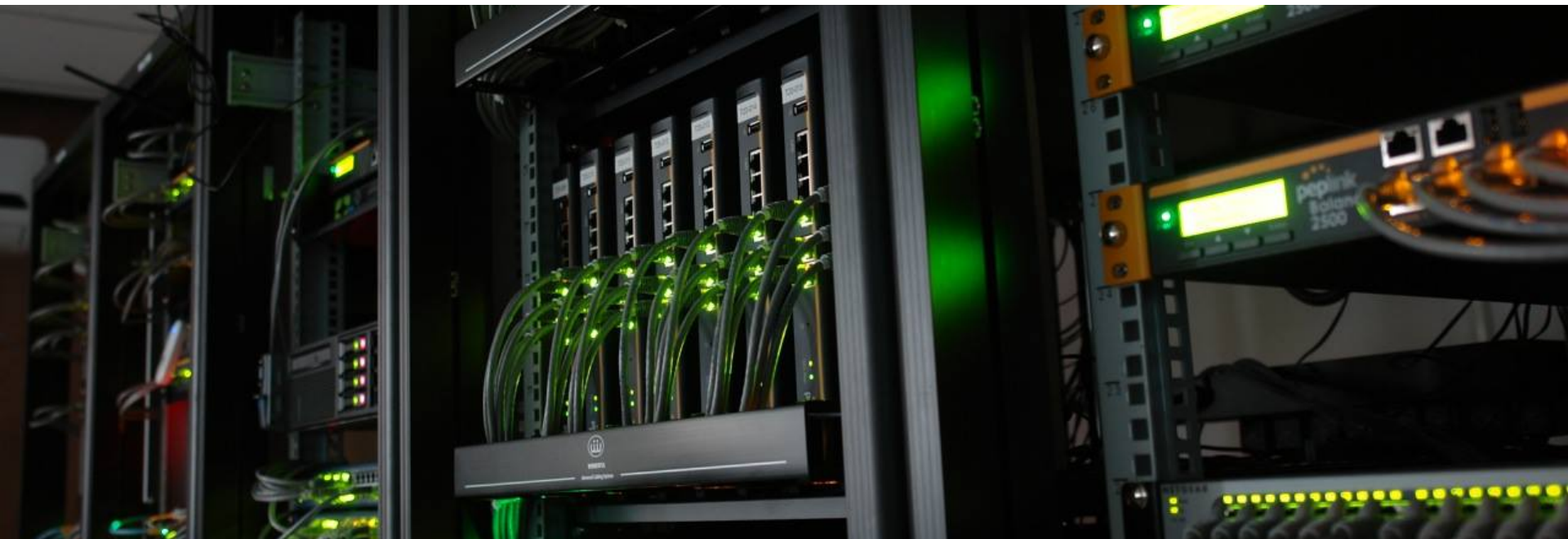
4

C

5

D

6



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Tech Concepts: SpeedFusion configuration options

SpeedFusion Configuration

InControl 2 - Zero Touch Configuration



Create and Monitor **SpeedFusion** VPNs

- Create **SpeedFusion** between **multiple Groups**, **multiple Orgs** or a *non IC2 managed Peplink!*
- Supports all **SpeedFusion** deployments
 - **Full Mesh**
 - **Hub-and-Spoke**
 - **Point-to-Point**
- Supports all Advanced **SpeedFusion** Features

SpeedFusion Configuration

InControl 2



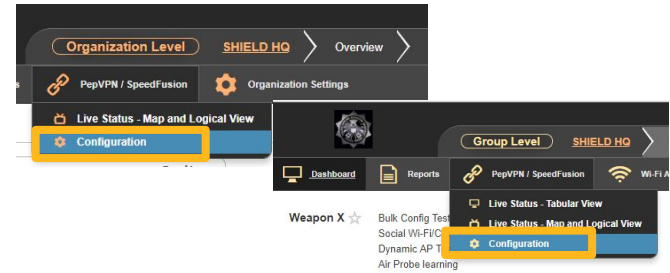
Organization or Group Level:

1. PepVPN/SpeedFusion

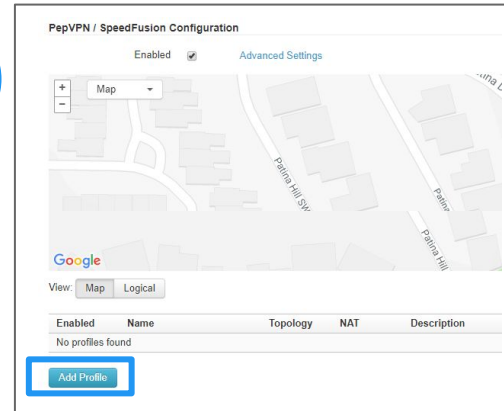
a. Configuration

2. Add Profile

1)



2)



SpeedFusion Configuration

InControl 2



Topology

Please choose the topology you want to create:

- ☒ Star
- ☐ Fully Meshed
- ☐ Point-To-Point

Cancel Next

Hub Devices

Group: Helicarrier

Device: Balance_862C: 30 connection(s) available

Product: Peplink Balance 380 (HW6)

Hub device IP Addresses / Host Names: 208.107.91.83

DNS Resolver 1: Optional

DNS Resolver 2: Optional

Use Them Primarily: ☐

Disaster Recovery: ☐

☒ Show advanced settings

End Point Devices

Selected 0 devices

Search:

Status	Device Name	Group	Tags	Product Name
<input checked="" type="checkbox"/>	Asgard_Embassy	Asgard Embassy		Peplink Balance 210 (HW4)
<input checked="" type="checkbox"/>	Balance_F431	Asgard Embassy		Peplink Balance 210 (HW4)
<input checked="" type="checkbox"/>	MAX_HD4_483F	Weapon X		Pepwave MAX HD4
<input checked="" type="checkbox"/>	MAX_HD4_D40C	Weapon X		Pepwave MAX HD4
<input checked="" type="checkbox"/>	SURF_SOHO_M4CE	Avengers Mansion		Pepwave Surf SOHO MK3
<input checked="" type="checkbox"/>	weapon x	Avengers Mansion		Pepwave MAX Transit (single cellular)

Showing 1 to 6 of 6 entries

☒ Show advanced settings

Add Device Cancel Previous Next

Choose Devices

Selected 3 devices: MAX_TSTDUDU_1D92_ERIC, Balance_DDCD_ERIC, MAX_HD4_37A4_ERIC

Search:

Status	Device Name	Group	Tags	Product Name
<input checked="" type="checkbox"/>	MAX_TSTDUDU_1D92_ERIC	Office		Pepwave MAX Transit
<input checked="" type="checkbox"/>	Balance_DDCD_ERIC	Office		Peplink Balance 210 (HW2.3)
<input checked="" type="checkbox"/>	MAX_HD4_37A4_ERIC	Office		Pepwave MAX HD4
<input type="checkbox"/>	Balance_B468_ERIC	Office		Peplink Balance One
<input type="checkbox"/>	MAX700_CCC3	Office		Pepwave MAX 700 (HW1.2)
<input type="checkbox"/>	SURF_SOHO_DC23	Office		Pepwave Surf SOHO MK3
<input type="checkbox"/>	MAX_HD2_8B29	Office		Pepwave MAX HD2 (HW1-4)
<input type="checkbox"/>	MAX_BR1_0352_ERIC	Car tracking		Pepwave MAX BR1 (HW2)

Cancel Previous Next

Peer Devices

Selected 2 devices: Helicarrier/B380, Heimdall/MFA200

Search:

Status	Device Name	Group	Tags	Product Name
<input checked="" type="checkbox"/>	Heimdall/MFA200	Asgard Embassy		Peplink MediaFast 200 (HW1)
<input checked="" type="checkbox"/>	Helicarrier/B380	Helicarrier		Peplink Balance 380 (HW6)
<input type="checkbox"/>	Jarvis/BOneC	Avengers Mansion		Peplink Balance One Core
<input type="checkbox"/>	MAX_HD4_151D	Avengers Mansion		Pepwave MAX HD4
<input type="checkbox"/>	weapon x	Weapon X	video	Pepwave MAX Transit (single cellular)

☐ Show advanced settings

Cancel Previous Next

SpeedFusion Configuration

New Feature: InControl 2 - Disaster Recovery



- Creates a *second, lower-priority* set of **PepVPN** tunnels between each **endpoint** and the **secondary hub**.
 - Each endpoint will be required to use two **PepVPN** licenses
 - Allows for routing around bad connections to ensure up-time

A screenshot of the SpeedFusion configuration interface, specifically the 'Hub Devices' section. The interface is divided into two main panels. The top panel is for the primary hub, and the bottom panel is for a secondary hub, which is highlighted with an orange border. Both panels have the same fields: 'Group' (Asgard Embassy), 'Device' (Balance_28C3: 2 connection(s) available), 'Product' (Peplink Balance 210 (HW4)), 'Hub device IP Addresses / Host Names' (208.107.91.83), 'DNS Resolver 1' (Optional), 'DNS Resolver 2' (Optional), and 'Use Them Primarily' (checkbox). The 'Disaster Recovery' checkbox is checked in the top panel. The bottom panel is identical but lacks the 'Disaster Recovery' checkbox. At the bottom of the interface, there is a checkbox for 'Show advanced settings' which is also checked.

InControl 2: SpeedFusion Configuration



Profile options

Profile Options

Profile Name

Encryption ☒ 256-bit AES ☐ Off

Data Port ☒ Default ☐ Custom

Link Failure Detection Time ☒ Recommended (Approx. 15 secs)
☐ Fast (Approx. 6 secs)
☐ Faster (Approx. 2 secs)
☐ Extreme (Approx. 1 sec)
☐ Shorter detection time incurs more health checks and higher bandwidth overhead

WAN Smoothing ☒ Off - Disable WAN Smoothing
☐ Normal - The total bandwidth consumption will be at most 2x of the original data traffic.
☐ Medium - The total bandwidth consumption will be at most 3x of the original data traffic.
☐ High - The total bandwidth consumption depends on the number of connected active tunnels.

Path Cost
☐ OSPF will determine the best route through the network using the assigned cost.

Link Settings

Advanced Link Settings

WAN Settings

Advanced WAN Settings

Note

☒ Show advanced settings

Advanced Link Settings

Search:

First Previous 1 Next Last

Device A (Hub)	Link A to B Name	A to B Port	A to B Cost		Device B (Endpoint)	Link B to A Name	B to A Port	B to A Cost
Balance_28C3	conn_to_MAX_HD4_D40C	default	10	↔	MAX_HD4_D40C	conn_to_Balance_28C3	default	10
Balance_28C3	conn_to_MAX_HD4_483F	default	10	↔	MAX_HD4_483F	conn_to_Balance_28C3	default	10
Balance_F431	conn_to_MAX_HD4_D40C	default	110	↔	MAX_HD4_D40C	conn_to_Balance_F431	default	110
Balance_F431	conn_to_MAX_HD4_483F	default	110	↔	MAX_HD4_483F	conn_to_Balance_F431	default	110

Showing 1 to 4 of 4 entries

☒ Generate new PSK's

Advanced WAN Settings

Search:

First Previous 1 Next Last

Device	SpeedFusion	Remote Device	WAN Connection Priority
<input type="checkbox"/> Heimdal/MFA200	No	Helicarrier/B380	WAN 1 1; WAN 2 2; Mobile Internet 3;
<input type="checkbox"/> Heimdal/MFA200	No	weapon x	WAN 1 1; WAN 2 2; Mobile Internet 3;
<input type="checkbox"/> Helicarrier/B380	Yes	Heimdal/MFA200	WAN 1 1; WAN 2 1; WAN 3 1; Mobile Internet 1;
<input type="checkbox"/> Helicarrier/B380	Yes	Heimdal/MFA200	WAN 1 1; WAN 2 1; WAN 3 1; Mobile Internet 1;
<input type="checkbox"/> Jarvis/BOneC	No		
<input type="checkbox"/> MAX_HD4_151D	Yes		
<input type="checkbox"/> MAX_HD4_151D	Yes		
<input type="checkbox"/> weapon x	No		
<input type="checkbox"/> weapon x	No		

Showing 1 to 10 of 10 entries

Advanced WAN Settings

Link from MAX_HD4_483F to Balance_28C3

WAN	Priority	Direction	Remote WAN	Cut-off Latency (ms)	Suspension Time after Packet Loss (ms)
WAN 1	1	Up/Down	All		
WAN 2	1	Up/Down	All		
Cellular 1	1	Up/Down	All		
Cellular 2	1	Up/Down	All		
Cellular 3	1	Up/Down	All		
Cellular 4	1	Up/Down	All		
USB	1	Up/Down	All		
Wi-Fi WAN	1	Up/Down	All		
LAN 1 as WAN	1	Up/Down	All		
LAN 2 as WAN	1	Up/Down	All		
LAN 3 as WAN	1	Up/Down	All		

☒ Show advanced settings

InControl 2: PepVPN/SpeedFusion



Complete Profile and Save

Save Changes to apply the **SpeedFusion** Profile to your **Peplink** devices.

The screenshot displays the InControl 2 web interface. At the top, a world map shows a green mesh topology connecting several locations: London, Paris, Frankfurt, Amsterdam, Zurich, Geneva, Rome, Athens, Istanbul, Cairo, Lagos, Accra, Addis Ababa, Nairobi, Johannesburg, Cape Town, Durban, Sydney, Melbourne, Auckland, and New Zealand. Below the map, there is a table with the following columns: Enabled, Profile, Topology, Description, NAT, and Actions.

Enabled	Profile	Topology	Description	NAT	Actions
<input checked="" type="checkbox"/>	New Profile	Fully Meshed	End Points: MAX_TSTDUO_1D92_ERIC , Balance_DDCD_ERIC , MAX_HD4_37A4_ERIC	No	Edit Delete

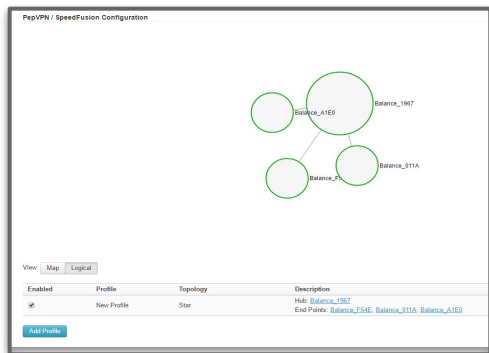
Below the table, there is an "Add Profile" button. At the bottom of the interface, there is a "Save Changes" button and a "Cancel" button.

InControl 2: PepVPN/SpeedFusion



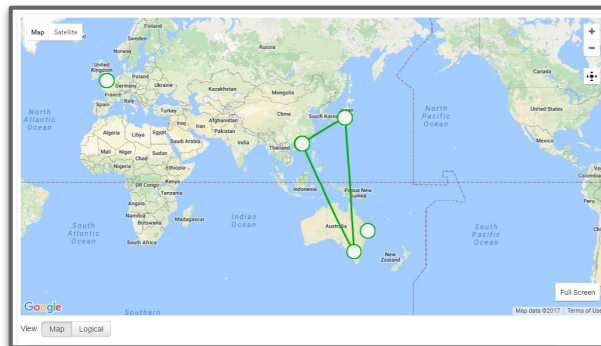
View Status

GPS

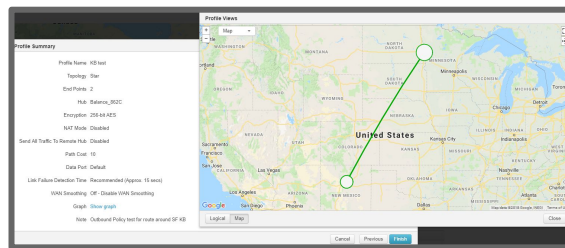
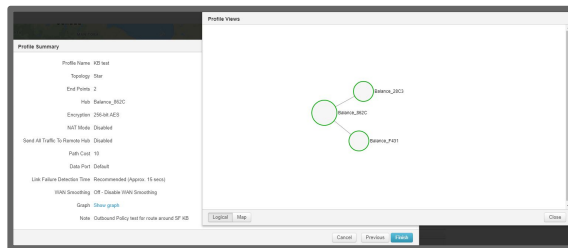


OR

Logical



- New:** viewable in the SpeedFusion Profile screen



SpeedFusion - UI Configuration

Local UI and initial settings



- 1) Assign **Local ID** for unit and **Save/Apply Changes** -

PepVPN with SpeedFusion



PepVPN

Local ID

Please define a local ID before using the PepVPN. Remote units can identify this unit by this "Local ID", in addition to the serial number.

Save

PepVPN with SpeedFusion

InControl management enabled. Settings can now be configured on [InControl](#).



Profile	Remote ID	Remote Address(es)
No VPN Connection Defined		
New Profile		

Send All Traffic To

No PepVPN profile selected

PepVPN Local ID

Local ID

PepVPN Settings

Link Failure Detection Time

- ☒ Recommended (Approx. 15 secs)
- ☐ Fast (Approx. 6 secs)
- ☐ Faster (Approx. 2 secs)
- ☐ Extreme (Under 1 sec)

Shorter detection time incurs more health checks and higher bandwidth overhead

Save

- 2) Choose **New Profile** -

SpeedFusion: UI Configuration



Local UI and initial settings

PepVPN with SpeedFusion



InControl management enabled. Settings can now be configured on [InControl](#).

Profile	Remote ID	Remote Address(es)	
test	test	1.1.1.2	
New Profile			

Send All Traffic To

No PepVPN profile selected

PepVPN Local ID

Local ID Balance_E26C

PepVPN Settings

Link Failure Detection Time

☒ Recommended (Approx. 15 secs)
☐ Fast (Approx. 6 secs)
☐ Faster (Approx. 2 secs)
☐ Extreme (Under 1 sec)
Shorter detection time incurs more health checks and higher bandwidth overhead

Save

Send All Traffic

Send All Traffic To ☐

Save Cancel

Send All Traffic

Send All Traffic To test

DNS Server
8.8.8.8
8.8.4.4

☒ Backup Site

Save Cancel

- This feature allows you to redirect all traffic to a specified **PepVPN** connection.
 - **Backup Site:** Designate a **backup SpeedFusion** profile that takes over should the main **PepVPN** connection fail.

SpeedFusion - UI Configuration



Local UI and initial settings

The screenshot shows the 'PepVPN Settings' window. It has three main sections: 'Handshake Port' with 'Default' and 'Custom' radio buttons; 'Backward Compatibility' with 'High (firmware 6.1+)' and 'Restricted (firmware 6.2+)' radio buttons; and 'Link Failure Detection Time' with four radio button options: 'Recommended (Approx. 15 secs)', 'Fast (Approx. 6 secs)', 'Faster (Approx. 2 secs)', and 'Extreme (Under 1 sec)'. A note below the last section states: 'Shorter detection time incurs more health checks and higher bandwidth overhead'. A 'Save' button is at the bottom. A 'Help' icon in the top right corner has a dropdown menu with two items: 'To customize handshake port (TCP), please click [here](#).' and 'To change backward compatibility option, please click [here](#).'.

Link Failure Detection Time PepVPN can detect routing failures on the path between two sites over each WAN connection. **Failed WAN connections aren't used.**

- Health check packets are sent to the remote unit to detect any failure. The more frequent checks it sends, the shorter detection time, but the higher bandwidth overhead will be consumed.

Handshake Port (hidden under right Help icon): Changes the initial Port that **SpeedFusion** begins on.

- **Default:** TCP 32015

Backward Compatibility (hidden under right Help icon): Restrict the firmware version for PepVPN connections to comply with the PCI DSS requirement.

SpeedFusion: UI Configuration



Local UI and initial settings

Configure each **SpeedFusion** peer -

- Name the **Profile** - This identifies the VPN
- Enter the **Remote ID** of the remote **Peplink Balance** unit.
 - The **Remote ID** is the **Local ID** of the other Peer unit
- Enter the **WAN IP/DDNS Host Name** of the Remote peer.
- **Save** and **Apply Changes**

Note - In **WAN Connection Priority**, if you select all **WAN** connections as the same priority, the **SpeedFusion** VPN traffic will be bonded across all connections equally.

The screenshot shows the SpeedFusion configuration interface. The top section is titled "PepVPN Profile" and contains the following fields:

- Name: [Text input field]
- Active: ☒
- Encryption: ☒ 256-bit AES ☐ OFF
- Authentication: ☒ Remote ID / Pre-shared Key
- Remote ID / Pre-shared Key: [Text input field] [Text input field]
- NAT Mode: ☐
- Remote IP Address / Host Names (Optional): [Text input field]
If this field is empty, this field on the remote unit must be filled
- Cost: [Text input field with value 10]
- Data Port: ☒ Auto ☐ Custom [Text input field]
- Bandwidth Limit: ☐
- WAN Smoothing: ☒ Off

The bottom section is titled "WAN Connection Priority" and contains a table with 6 rows:

	Priority:
1. WAN 1	1 (Highest)
2. WAN 2	1 (Highest)
3. LAN 1 as WAN	1 (Highest)
4. LAN 2 as WAN	1 (Highest)
5. LAN 3 as WAN	1 (Highest)
6. Mobile Internet	1 (Highest)

At the bottom right of the window are "Save" and "Cancel" buttons.

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Tech Concepts - SpeedFusion Features

Q

Which is a possible misstep/problem that prevents SpeedFusion from establishing?

A

Not having the same amount of WAN connections on either end of SpeedFusion.

B

Same WAN subnet on either end of SpeedFusion

C

Same LAN subnet on either end of SpeedFusion

D

Not having the same model of Peplink on either end of SpeedFusion.

E

None of the above

US Summit PCE Boot Camp



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US Summit PCE Boot Camp



Tech Concepts - SpeedFusion: SD-WAN

Q

Which parameter does not affect SpeedFusion bonding efficiency?

A

Link Latency

B

Link Packet Loss

C

Number of LAN Clients

D

Buffer Bloat from ISP

US Summit PCE Boot Camp



Tech Concepts - SpeedFusion: SD-WAN

Q

Which parameter does not affect SpeedFusion bonding efficiency?

A

Link Latency

B

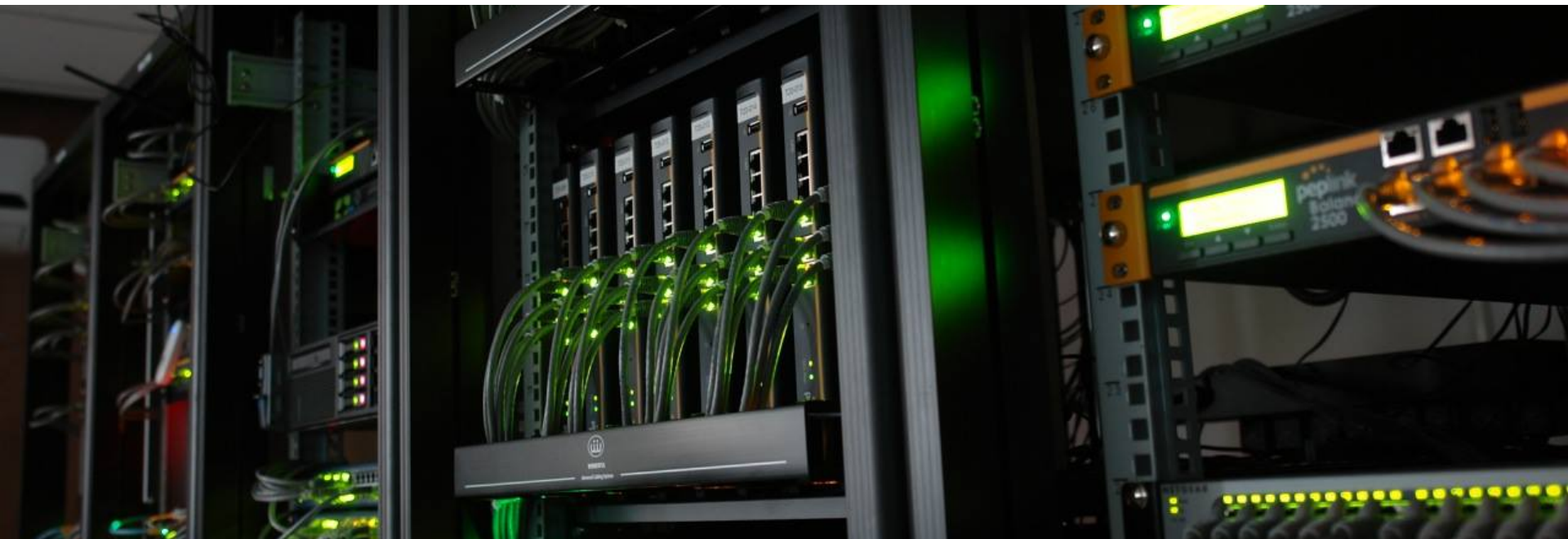
Link Packet Loss

C

Number of LAN Clients

D

Buffer Bloat from ISP



PCE Boot Camp 2018

Tech Concepts: SpeedFusion configuration options - Profile Advanced Settings 1

SpeedFusion: UI Configuration

Advanced Settings 1



PepVPN Profile

Name: [text field]

Active: ☒

Encryption: ☒ 256-bit AES ☐ OFF

Authentication: ☒ Remote ID / Pre-shared Key ☐ X.509

Remote ID / Pre-shared Key: Remote ID [text field] Pre-shared Key [text field] +

Allow shared Remote ID ☒ (highlighted)

NAT Mode: ☐

Remote IP Address / Host Names (Optional): [text field]
If this field is empty, this field on the remote unit must be filled

Cost: [text field] 10

Data Port: ☒ Auto ☐ Custom [text field]

Bandwidth Limit: ☐

WAN Smoothing: ☐ Off

Receive Buffer: [text field] 0 ms

WAN Connection Priority

1. BT	Priority: 1 (Highest)
2. Virgin Media	Priority: 1 (Highest)
3. WAN 3	Priority: 1 (Highest)
4. WAN 4	Priority: 1 (Highest)
5. Peplink HK Network	Priority: 1 (Highest)
6. Mobile Internet	Priority: 1 (Highest)

Save Cancel

Allow Shared Remote ID

- NAT mode
- Cost
- Data Port
- Bandwidth Limit
- WAN Smoothing
- Receive Buffer

This option allows you to add several **Remote Id's** to the same **Speedfusion** profile. Instead of setting up a new **PepVPN** profile every time a new location is added you just add a **Remote ID** of the **Peplink** router in the new location.

SpeedFusion: UI Configuration

Advanced Settings 1



PepVPN Profile					
Name					
Active	<input checked="" type="checkbox"/>				
Encryption	<input checked="" type="radio"/> 256-bit AES <input type="radio"/> OFF				
Authentication	<input checked="" type="radio"/> Remote ID / Pre-shared Key <input type="radio"/> X.509				
Remote ID / Pre-shared Key	<table border="1"><tr><td>Remote ID</td><td>Pre-shared Key</td></tr><tr><td></td><td></td></tr></table>	Remote ID	Pre-shared Key		
Remote ID	Pre-shared Key				
Allow shared Remote ID	<input type="checkbox"/>				
NAT Mode	<input checked="" type="checkbox"/>				
Remote IP Address / Host Names (Optional)	<div></div> <p>If this field is empty, this field on the remote unit must be filled</p>				
Cost	10				
Data Port	<input checked="" type="radio"/> Auto <input type="radio"/> Custom <div></div>				
Bandwidth Limit	<input type="checkbox"/>				
WAN Smoothing	Off				
Receive Buffer	0 ms				

WAN Connection Priority	
1. BT	Priority: 1 (Highest)
2. Virgin Media	Priority: 1 (Highest)
3. WAN 3	Priority: 1 (Highest)
4. WAN 4	Priority: 1 (Highest)
5. Peplink HK Network	Priority: 1 (Highest)
6. Mobile Internet	Priority: 1 (Highest)

Save Cancel

- Allow Shared Remote ID
- **NAT mode**
- Cost
- Data Port
- Bandwidth Limit
- WAN Smoothing
- Receive Buffer

Used when the subnets in several sites are identical in normal circumstances, this causes a IP route conflict.

With NAT Mode, the remote VPN peer gets assigned an IP address from the local DHCP server. All the remote side traffic via this VPN gets NATed using the assigned IP address.

When NAT mode is enabled the individual clients on the remote site will stay invisible to the main site.

SpeedFusion: UI Configuration



Advanced Settings 1

PepVPN Profile

Name: [text field]

Active: ☒

Encryption: ☒ 256-bit AES ☐ OFF

Authentication: ☒ Remote ID / Pre-shared Key ☐ X.509

Remote ID / Pre-shared Key: Remote ID [text field] Pre-shared Key [text field] +

Allow shared Remote ID: ☐

NAT Mode: ☐

Remote IP Address / Host Names (Optional): [text field]
If this field is empty, this field on the remote unit must be filled

Cost: 10

Data Port: ☒ Auto ☐ Custom [text field]

Bandwidth Limit: ☐

WAN Smoothing: ☐ Off

Receive Buffer: 0 ms

WAN Connection Priority

1. BT	Priority: 1 (Highest)
2. Virgin Media	Priority: 1 (Highest)
3. WAN 3	Priority: 1 (Highest)
4. WAN 4	Priority: 1 (Highest)
5. Peplink HK Network	Priority: 1 (Highest)
6. Mobile Internet	Priority: 1 (Highest)

Save Cancel

- Allow Shared Remote ID
- NAT mode

Cost

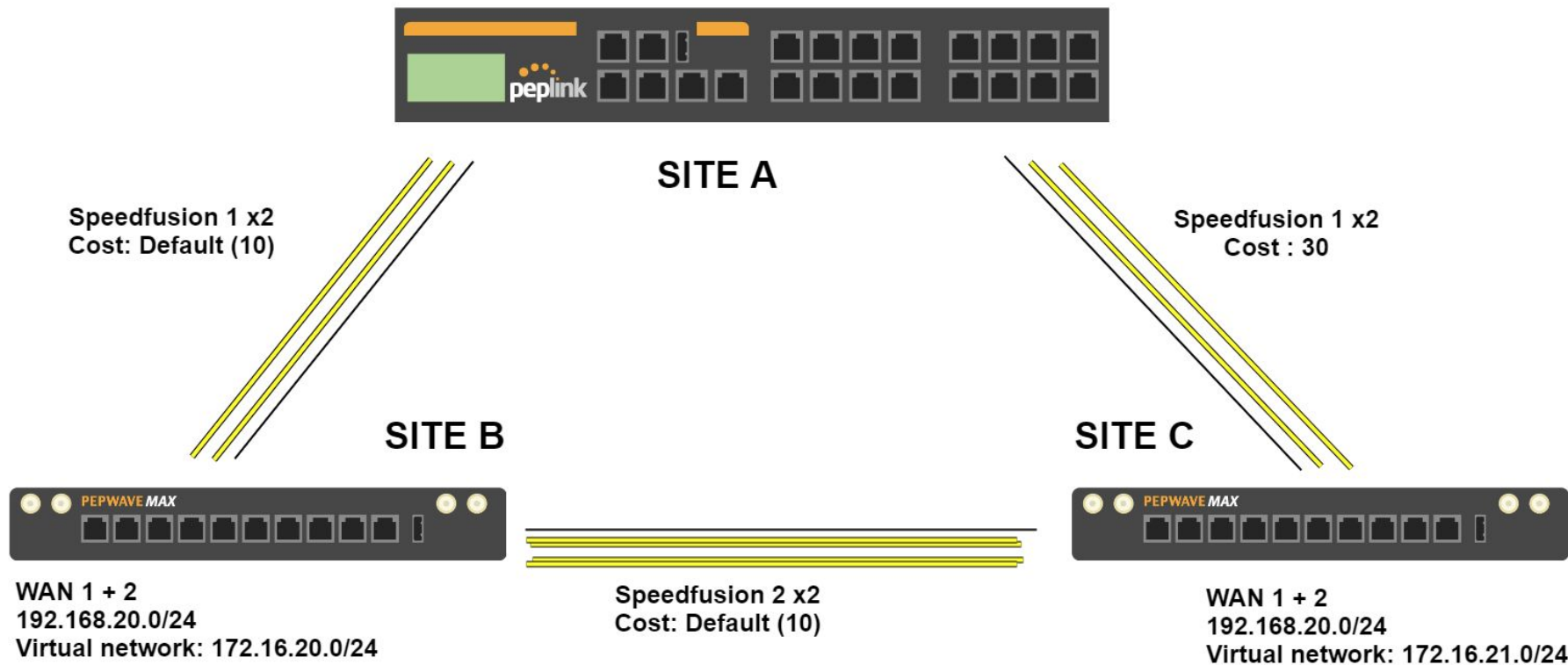
- Data Port
- Bandwidth Limit
- WAN Smoothing
- Receive Buffer

Useful if you want to send certain traffic over a different route.

The **higher** the cost, the **less preferable** the route (ie traffic will choose the path with the **lowest cost**.)

SpeedFusion: UI Configuration

Advanced Settings 1



SpeedFusion: UI Configuration



Advanced Settings 1

PepVPN Profile

Name			
Active	<input checked="" type="checkbox"/>		
Encryption	<input checked="" type="radio"/> 256-bit AES <input type="radio"/> OFF		
Authentication	<input checked="" type="radio"/> Remote ID / Pre-shared Key <input type="radio"/> X.509		
Remote ID / Pre-shared Key	Remote ID	Pre-shared Key	
Allow shared Remote ID	<input type="checkbox"/>		
NAT Mode	<input type="checkbox"/>		
Remote IP Address / Host Names (Optional)	<div>If this field is empty, this field on the remote unit must be filled</div>		
Cost	10		
Data Port	<input checked="" type="radio"/> Auto <input type="radio"/> Custom		
Bandwidth Limit	<input type="checkbox"/>		
WAN Smoothing	Off		
Receive Buffer	0 ms		

WAN Connection Priority

1. BT	Priority: 1 (Highest)
2. Virgin Media	Priority: 1 (Highest)
3. WAN 3	Priority: 1 (Highest)
4. WAN 4	Priority: 1 (Highest)
5. Peplink HK Network	Priority: 1 (Highest)
6. Mobile Internet	Priority: 1 (Highest)

Save Cancel

- Allow Shared Remote ID
- NAT mode
- Cost
- **Data Port**
- Bandwidth Limit
- WAN Smoothing
- Receive Buffer

By default, **UDP port 4500** will be used. **Port 32015** will be used if **port 4500** is unavailable.

You can use custom port number if the **Custom** option is selected, an outgoing port number range from 1 to 65535.

SpeedFusion: UI Configuration



Advanced Settings 1

PepVPN Profile

Name: [text field]

Active: ☒

Encryption: ☒ 256-bit AES ☐ OFF

Authentication: ☒ Remote ID / Pre-shared Key ☐ X.509

Remote ID / Pre-shared Key: Remote ID [text field] Pre-shared Key [text field] +

Allow shared Remote ID: ☐

NAT Mode: ☐

Remote IP Address / Host Names (Optional): [text field]
If this field is empty, this field on the remote unit must be filled

Cost: [text field] 10

Data Port: ☒ Auto ☐ Custom [text field]

Bandwidth Limit ☐

WAN Smoothing: ☐ Off ☐ On

Receive Buffer: [text field] 0 ms

WAN Connection Priority

Connection	Priority
1. BT	Priority: 1 (Highest)
2. Virgin Media	Priority: 1 (Highest)
3. WAN 3	Priority: 1 (Highest)
4. WAN 4	Priority: 1 (Highest)
5. Peplink HK Network	Priority: 1 (Highest)
6. Mobile Internet	Priority: 1 (Highest)

Save Cancel

- Allow Shared Remote ID
- NAT mode
- Cost
- Data Port
- **Bandwidth Limit**
- WAN Smoothing
- Receive Buffer

Define maximum **download** and **upload** speed to each individual peer.

SpeedFusion: UI Configuration

Advanced Settings 1



PepVPN Profile

Name			
Active	<input checked="" type="checkbox"/>		
Encryption	<input checked="" type="radio"/> 256-bit AES <input type="radio"/> OFF		
Authentication	<input checked="" type="radio"/> Remote ID / Pre-shared Key <input type="radio"/> X.509		
Remote ID / Pre-shared Key	Remote ID	Pre-shared Key	
Allow shared Remote ID	<input type="checkbox"/>		
NAT Mode	<input type="checkbox"/>		
Remote IP Address / Host Names (Optional)	<div>If this field is empty, this field on the remote unit must be filled</div>		
Cost	10		
Data Port	<input checked="" type="radio"/> Auto <input type="radio"/> Custom		
Bandwidth Limit	<input type="checkbox"/>		
WAN Smoothing	Off		
Receive Buffer	0 ms		

WAN Connection Priority

1. BT	Priority: 1 (Highest)
2. Virgin Media	Priority: 1 (Highest)
3. WAN 3	Priority: 1 (Highest)
4. WAN 4	Priority: 1 (Highest)
5. Peplink HK Network	Priority: 1 (Highest)
6. Mobile Internet	Priority: 1 (Highest)

Save Cancel

- Allow Shared Remote ID
- NAT mode
- Cost
- Data Port
- Bandwidth Limit
- **WAN Smoothing**
- Receive Buffer

WAN Smoothing will attempt to assign traffic to the **WAN** with the lowest latency. Instead of using 1 packet it will send packets over 2 or more WAN connections and only the packets that arrive first will be used (other packets get discarded)

SpeedFusion: UI Configuration



Advanced Settings 1

PepVPN Profile

Name			
Active	<input checked="" type="checkbox"/>		
Encryption	<input checked="" type="radio"/> 256-bit AES <input type="radio"/> OFF		
Authentication	<input checked="" type="radio"/> Remote ID / Pre-shared Key <input type="radio"/> X.509		
Remote ID / Pre-shared Key	Remote ID	Pre-shared Key	
Allow shared Remote ID	<input type="checkbox"/>		
NAT Mode	<input type="checkbox"/>		
Remote IP Address / Host Names (Optional)	<div>If this field is empty, this field on the remote unit must be filled</div>		
Cost	10		
Data Port	<input checked="" type="radio"/> Auto <input type="radio"/> Custom		
Bandwidth Limit	<input type="checkbox"/>		
WAN Smoothing	Off		
Receive Buffer	0 ms		

WAN Connection Priority

1. BT	Priority: 1 (Highest)
2. Virgin Media	Priority: 1 (Highest)
3. WAN 3	Priority: 1 (Highest)
4. WAN 4	Priority: 1 (Highest)
5. Peplink HK Network	Priority: 1 (Highest)
6. Mobile Internet	Priority: 1 (Highest)

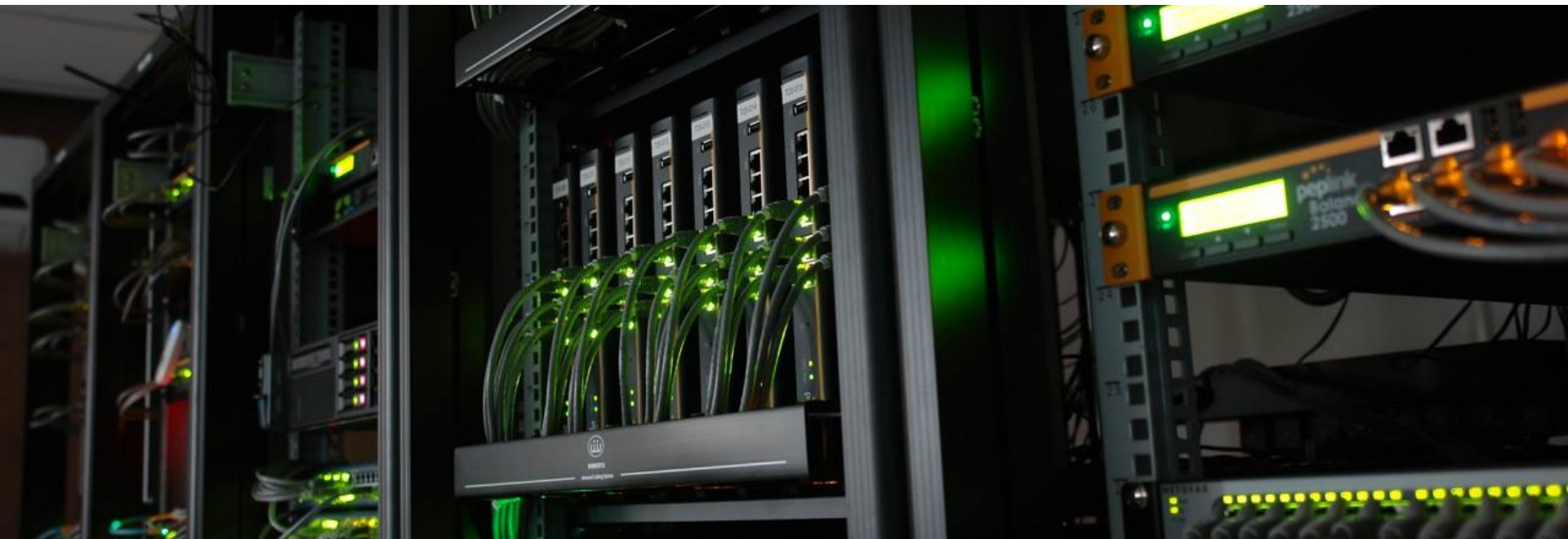
Save Cancel

- Allow Shared Remote ID
- NAT mode
- Cost
- Data Port
- Bandwidth Limit
- WAN Smoothing

• Receive Buffer

Developed for video streaming, the **Receive Buffer** can help reduce **out-of-order** packets and minimize **jitter**, but will introduce **extra latency** to the tunnel. Default is **0 ms**, which disables the buffer, and maximum buffer size is **2000 ms**.

Note - Do not enable on **VOIP** or **TCP traffic** because it is sensitive to latency.



PCE Boot Camp 2018

Tech Concepts: SpeedFusion configuration options - WAN Connections Advanced Settings 1

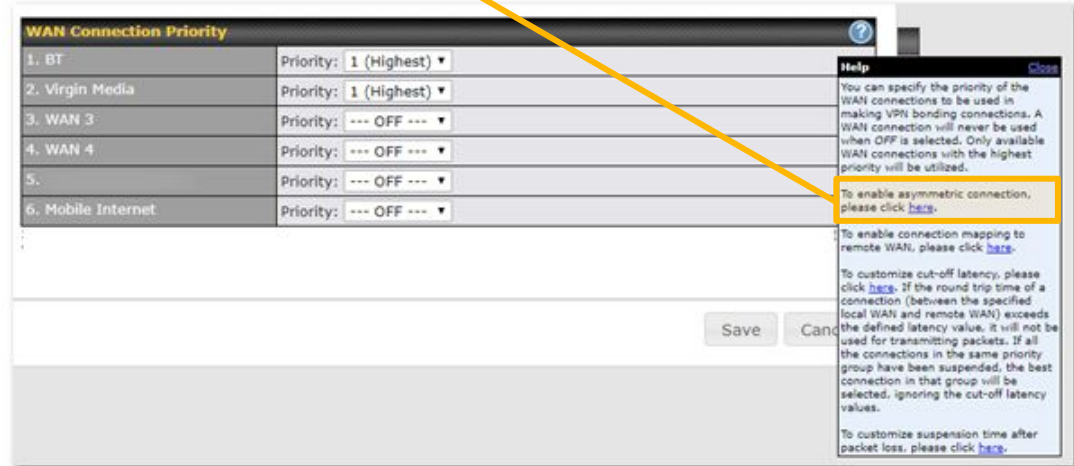
SpeedFusion: UI Configuration



Choose SpeedFusion profile > WAN Connection Priority > Help Icon

- **Asymmetric Connections**

- Connection Mapping
- Cut-off Latency
- Customize suspension time




- The **Asymmetric Connections** feature gives you the ability to designate a specific **WAN** for **upload** or **download** use only. It's especially useful for WAN connections (ex. - ADSL) that don't perform well on the upload.

SpeedFusion: UI Configuration

Choose SpeedFusion profile > WAN Connection Priority > Help Icon



WAN Connection Priority 

	Priority	Direction	Connect to Remote	Cut-off Latency (ms)	Suspension Time after Packet Loss (ms)
1. BT	1 (Highest) ▼	Up/Down ▼	All ▼	<input type="text"/>	<input type="text"/>
2. Virgin Media	1 (Highest) ▼	Up/Down ▼	All ▼	<input type="text"/>	<input type="text"/>
3. WAN 3	--- OFF --- ▼				
4. WAN 4	--- OFF --- ▼				
5. Peplink HK Network	--- OFF --- ▼				
6. Mobile Internet	--- OFF --- ▼				

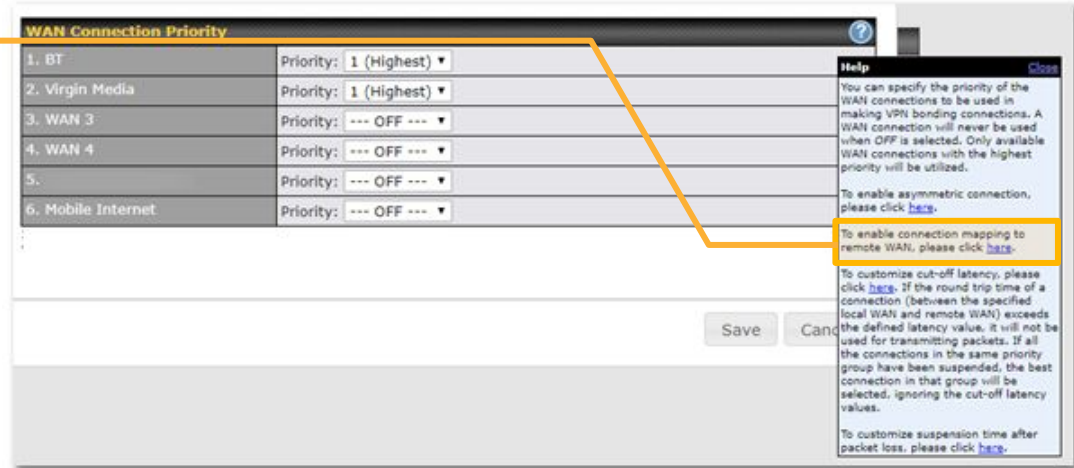
Some incompatible options are disabled. To enable them, please make sure this profile is not being used by "Outbound Policy Rules", "DNS Proxy Settings", "Send All Traffic To" and "Bonjour Forwarding".

SpeedFusion: UI Configuration



Choose SpeedFusion profile > WAN Connection Priority > Help Icon

- Asymmetric Connections
- **Connection Mapping**
- Cut-off Latency
- Customize suspension time



- Connection Mapping allows you to force a specific WAN connection to one of the remote WANs, ie - Only connect to the WAN you selected. This can be a single WAN but you can also select MULTIPLE wan connections.
 - Useful when the Point-to-Point performance of the local WAN aren't doing well to all of the remote WANs, but works well when connecting to a specific remote WAN.

SpeedFusion: UI Configuration

Choose SpeedFusion profile > WAN Connection Priority > Help Icon



WAN Connection Priority ?

	Priority	Direction	Connect to Remote	Cut-off Latency (ms)	Suspension Time after Packet Loss (ms)
1. BT	1 (Highest) ▼	Up/Down ▼	All ▼		
2. Virgin Media	1 (Highest) ▼	Up/Down ▼	All ▼		
3. WAN 3	--- OFF --- ▼				
4. WAN 4	--- OFF --- ▼				
5. Peplink HK Network	--- OFF --- ▼				
6. Mobile Internet	--- OFF --- ▼				

Some incompatible options are disabled. To enable them, please make sure this profile is not being used by "Outbound Policy Rules", "DNS Proxy Settings", "Send All Traffic To" and "Bonjour Forwarding".

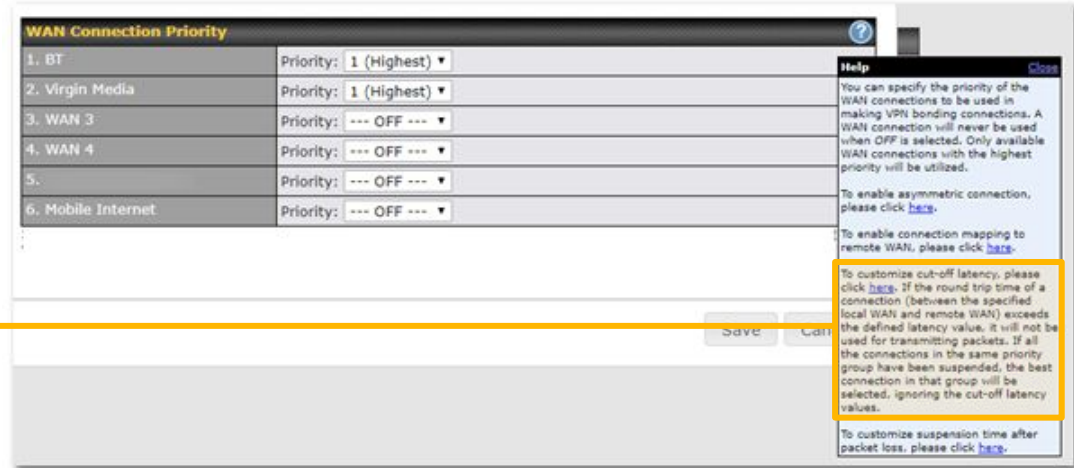
NEW: Connection Mapping to Remote WANs supports multiple WANs selection for more flexibility since firmware 7.1.

SpeedFusion: UI Configuration



Choose SpeedFusion profile > WAN Connection Priority > Help Icon

- Asymmetric Connections
- Connection Mapping
- **Cut-off Latency**
- Customize suspension time




Assign a **Latency threshold** (ex. - 1000ms) to a **WAN** and if it gets exceeded, any **PepVPN/SpeedFusion** tunnels using that WAN are suspended until Latency drops below that threshold.

When a tunnel is suspended, **Health Checks** still run and latency gets tested again when a **Health Check** packet is replied from the remote side. Once the latency drops below the defined threshold, the tunnel will become active again and start to transmit.

SpeedFusion: UI Configuration



Choose SpeedFusion profile > WAN Connection Priority > Help Icon

WAN Connection Priority 

	Priority	Direction	Connect to Remote	Cut-off Latency (ms)	Suspension Time after Packet Loss (ms)
1. BT	1 (Highest) ▼	Up/Down ▼	All ▼	<input type="text"/>	<input type="text"/>
2. Virgin Media	1 (Highest) ▼	Up/Down ▼	All ▼	<input type="text"/>	<input type="text"/>
3. WAN 3	--- OFF --- ▼				
4. WAN 4	--- OFF --- ▼				
5. Peplink HK Network	--- OFF --- ▼				
6. Mobile Internet	--- OFF --- ▼				

Some incompatible options are disabled. To enable them, please make sure this profile is not being used by "Outbound Policy Rules", "DNS Proxy Settings", "Send All Traffic To" and "Bonjour Forwarding".

SpeedFusion: UI Configuration

Choose SpeedFusion profile > WAN Connection Priority > Help Icon



- Asymmetric Connections
- Connection Mapping
- Cut-off Latency
- **Customize suspension time**




If the tunnel using this WAN has packet loss, the tunnel will be suspended for the additional defined timeframe (in ms) to avoid link flapping. Do not set this too high, keep it as small as you can, usually the minimum should be the Round Trip Time(RTT).

Cut-off latency and Packet loss pull back time only affect transmit direction, if you want them to have effect on both directions configure these advanced settings on both sites of the tunnel.

SpeedFusion: UI Configuration

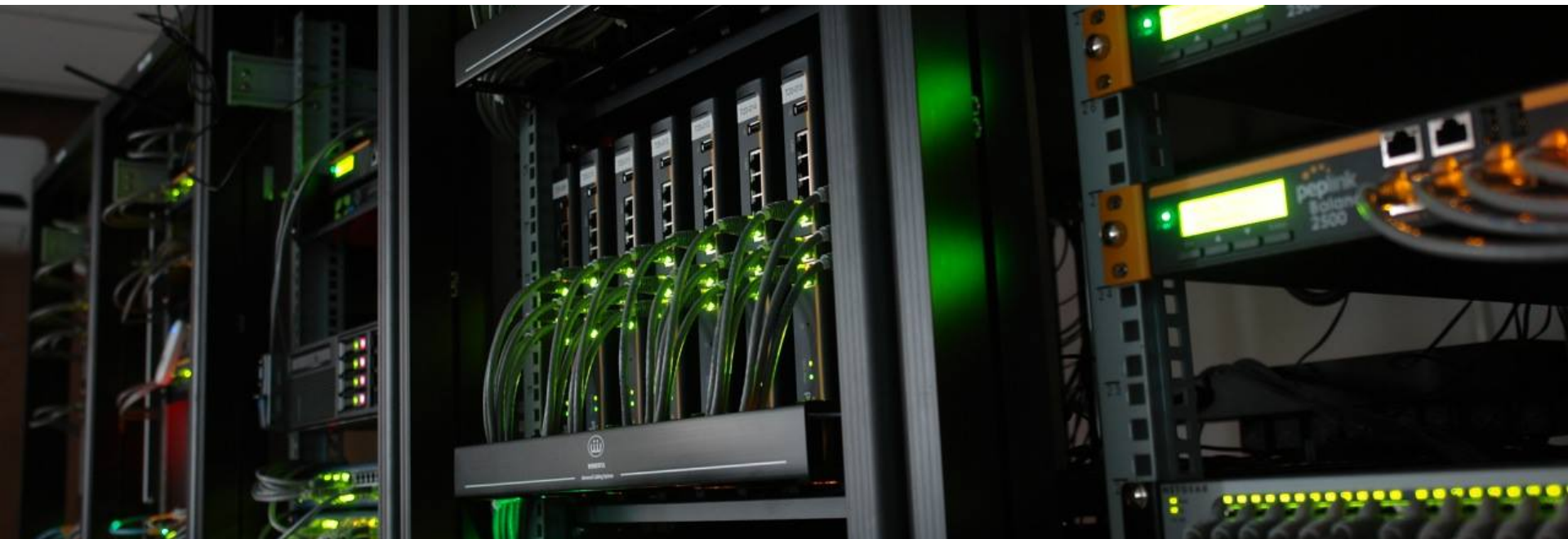
Choose SpeedFusion profile > WAN Connection Priority > Help Icon



WAN Connection Priority 

	Priority	Direction	Connect to Remote	Cut-off Latency (ms)	Suspension Time after Packet Loss (ms)
1. BT	1 (Highest) ▼	Up/Down ▼	All ▼	<input type="text"/>	<input type="text"/>
2. Virgin Media	1 (Highest) ▼	Up/Down ▼	All ▼	<input type="text"/>	<input type="text"/>
3. WAN 3	--- OFF --- ▼				
4. WAN 4	--- OFF --- ▼				
5. Peplink HK Network	--- OFF --- ▼				
6. Mobile Internet	--- OFF --- ▼				

Some incompatible options are disabled. To enable them, please make sure this profile is not being used by "Outbound Policy Rules", "DNS Proxy Settings", "Send All Traffic To" and "Bonjour Forwarding".



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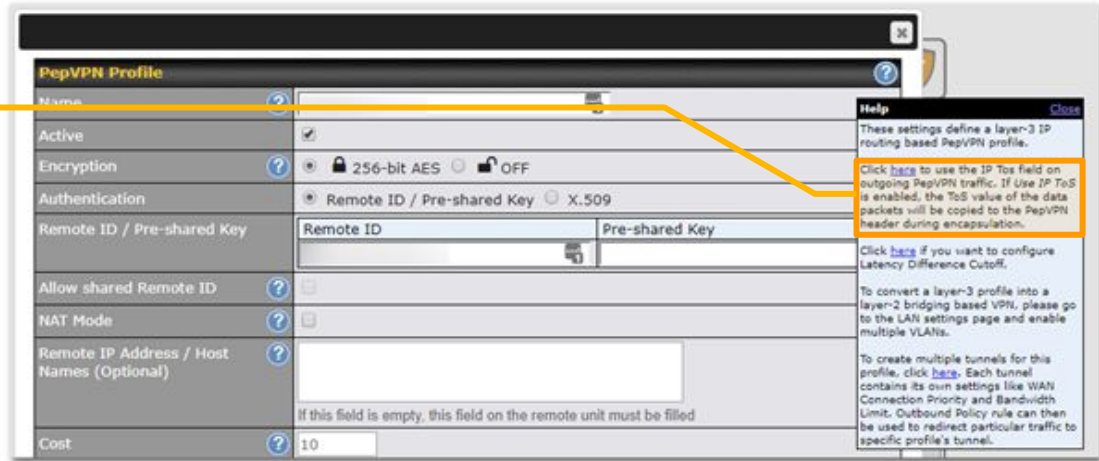
Tech Concepts: SpeedFusion configuration options - WAN Connections Advanced Settings 2

SpeedFusion: IP ToS Field



HELP section(question mark icon) next to **PepVPN Profile** in **SpeedFusion** profile

- **IP ToS field**
- Latency Difference Cutoff
- Multiple tunnels between 2 sites



When enabled, the **ToS** (type of service) value of the data packets gets copied to the **PepVPN** header during encapsulation.

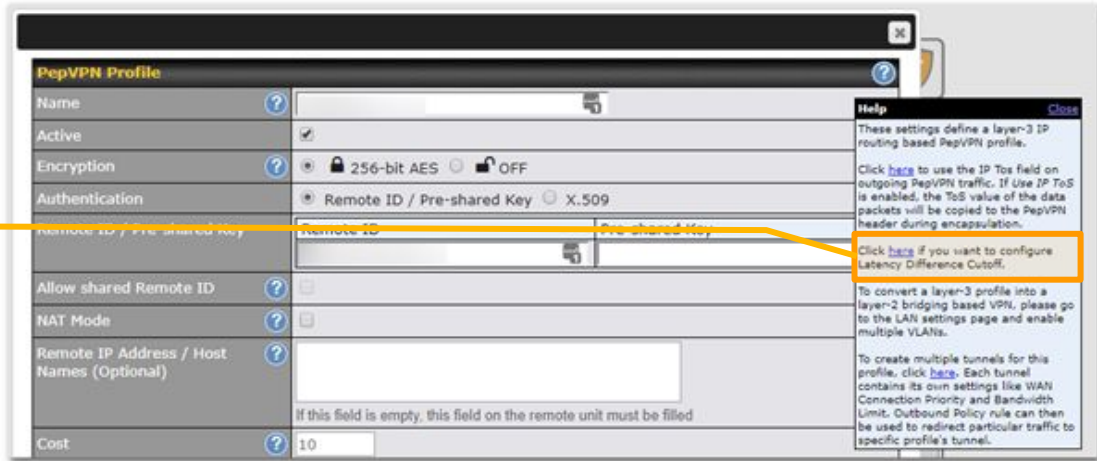
- A rarely used feature and not needed in most deployments. This can be used (for example) when using VOIP and PC is in a network and still have VOIP traffic prioritized over Speedfusion.
- If using non-Peplink gateways that are configured with QoS, the setting won't be stripped of when re-packaged into the SpeedFusion tunnel.

SpeedFusion: Latency Difference Cutoff

HELP section(question mark icon) next to **PepVPN Profile** in **SpeedFusion** profile



- IP ToS field
- **Latency Difference Cutoff**
- Multiple tunnels between 2 sites



- Traffic will be stopped for links that exceed the specified millisecond value with respect to the lowest latency link.
Ex: If the Lowest latency is 100ms, a value of 500ms means links with latency 600ms or more will not be used)

SpeedFusion: Multiple tunnels

HELP section(question mark icon) next to **PepVPN Profile** in **SpeedFusion** profile



- IP ToS field
- Latency Difference Cutoff
- **Multiple tunnels between 2 sites**

PepVPN Profile

Name		
Active	<input checked="" type="checkbox"/>	
Encryption	256-bit AES OFF	
Authentication	Remote ID / Pre-shared Key X.509	
Remote ID / Pre-shared Key	Remote ID	Pre-shared Key
Allow shared Remote ID	<input type="checkbox"/>	
NAT Mode	<input type="checkbox"/>	
Remote IP Address / Host Names (Optional)		
Cost	10	

If this field is empty, this field on the remote unit must be used

Help

These settings define a layer-3 IP routing based PepVPN profile.

Click [here](#) to use the IP ToS field on outgoing PepVPN traffic. If Use IP ToS is enabled, the ToS value of the data packets will be copied to the PepVPN header during encapsulation.

Click [here](#) if you want to configure Latency Difference Cutoff.

To convert a layer-3 profile into a layer-2 bridging based VPN, please go to the LAN settings page and enable multiple VLANs.

To create multiple tunnels for this profile, click [here](#). Each tunnel contains its own settings like WAN Connection Priority and Bandwidth Limit. Outbound Policy rule can then be used to redirect particular traffic to specific profile's tunnel.

- This feature is new since Firmware 7.x, also referred to as Outbound Policies within Speedfusion which allows you to create multiple VPN tunnels between 2 sites, each with its own Profile.

SpeedFusion: Multiple Tunnels

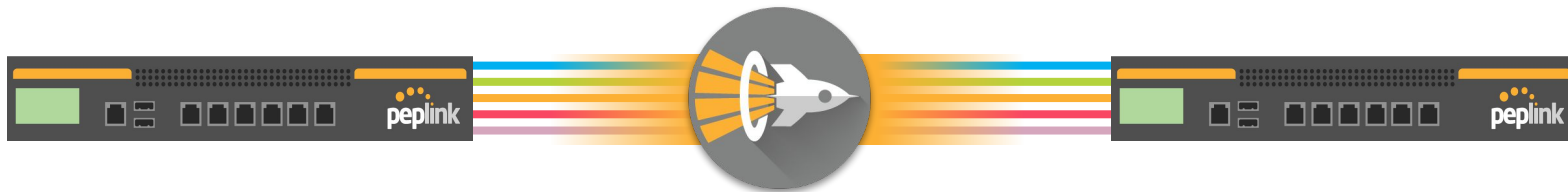


HELP section(question mark icon) next to **PepVPN Profile** in **SpeedFusion** profile

Create up to **5** SpeedFusion sub-tunnels from your Peplink router to the same remote location, each with different profiles.

1. assign different WAN connections
2. select different priorities
3. enable or disable WAN Smoothing
4. set a Bandwidth limit for each tunnel

Use Outbound Policy to create different rules for traffic to select the most appropriate destination.



SpeedFusion: Multiple Tunnels



HELP section(question mark icon) next to **PepVPN Profile** in **SpeedFusion** profile

1 - UDP

2 - TCP

3 - VIDEO ✕

+

Tunnel Options	
Local / Remote Tunnel ID	? 3
Tunnel Name	VIDEO
Data Port	? <input checked="" type="radio"/> Auto <input type="radio"/> Custom <input type="text"/>
Bandwidth Limit	? <input type="checkbox"/>
WAN Smoothing	? Normal ▼
Receive Buffer	? 0 ms
Latency Difference Cutoff	? 500 ms

WAN Connection Priority ?	
1. BT	Priority: 1 (Highest) ▼
2. Virgin Media	Priority: 1 (Highest) ▼
3. WAN 3	Priority: 1 (Highest) ▼
4. WAN 4	Priority: 1 (Highest) ▼
5. Peplink HK Network	Priority: 1 (Highest) ▼
6. Mobile Internet	Priority: 1 (Highest) ▼

When this option is enabled a tab is created for each “*sub-profile*”.

These **sub-profiles** can then be selected when creating **Outbound policies**.

SpeedFusion: Multiple Tunnels

Advanced Settings



The screenshot shows a dialog box titled "Add a New Custom Rule" with a close button (X) in the top right corner. The dialog contains several fields for configuring a custom rule:

- Service Name:** An empty text input field.
- Enable:** A checkbox that is currently checked.
- Source:** A dropdown menu with "Any" selected.
- Destination:** A dropdown menu with "PepVPN Network" selected, and a sub-menu with "subs" selected.
- Protocol:** A dropdown menu with "Any" selected, and a button labeled "Protocol Selection Tool".
- Algorithm:** A dropdown menu with "Enforced" selected.
- Enforced Connection:** A dropdown menu with "WAN: BT" selected, and a sub-menu open showing various options.

The sub-menu for "Enforced Connection" lists the following options:

- WAN: BT
- WAN: Virgin Media
- WAN: WAN 3
- WAN: WAN 4
- WAN:
- WAN:
- VPN: D
- VPN: C
- VPN: S
- VPN: S
- VPN: U
- VPN: V
- VPN: subs (2 - TCP)** (highlighted in blue)
- VPN: subs (4 - VOIP_)
- VPN: subs (1 - UDP)
- VPN: subs (3 - VIDEO)
- VPN:

At the bottom right of the dialog, there are "Save" and "Cancel" buttons.

This is a screenshot from Outbound Policy; when adding a new policy the **sub-profile** can be selected as a destination.

This allows you for example to send print traffic over your slowest links, VIDEO and VOIP over the links with least latency, or enable some settings specific for that traffic on 1 of the profiles. This is **Quality of Service** over **Speedfusion**

SpeedFusion: NAT versions

Virtual Network Mapping (NAT Mode v2)

A screenshot of the "Virtual Network Mapping" configuration window. The window has a dark header with the title "Virtual Network Mapping" and a help icon. Below the header, there are two main sections: "One-to-One NAT" and "Many-to-One NAT". Each section has a question mark icon and a table. The "One-to-One NAT" table has two columns: "Local Network" and "Virtual Network". The "Many-to-One NAT" table has two columns: "Local Network" and "Virtual IP Address". Both tables have a dropdown arrow in the "Local Network" column and a plus sign in the "Virtual Network" or "Virtual IP Address" column.

Virtual Network Mapping					
One-to-One NAT	<table border="1"><thead><tr><th>Local Network</th><th>Virtual Network</th></tr></thead><tbody><tr><td></td><td></td></tr></tbody></table>	Local Network	Virtual Network		
Local Network	Virtual Network				
Many-to-One NAT	<table border="1"><thead><tr><th>Local Network</th><th>Virtual IP Address</th></tr></thead><tbody><tr><td></td><td></td></tr></tbody></table>	Local Network	Virtual IP Address		
Local Network	Virtual IP Address				

This is a new feature that is available in Firmware 7.1.0. You can find this in **Network > LAN** when selecting the question mark next to Static Route Settings and will eventually replace the Nat Mode discussed earlier

Many-to-One NAT

Similar to the existing NAT mode

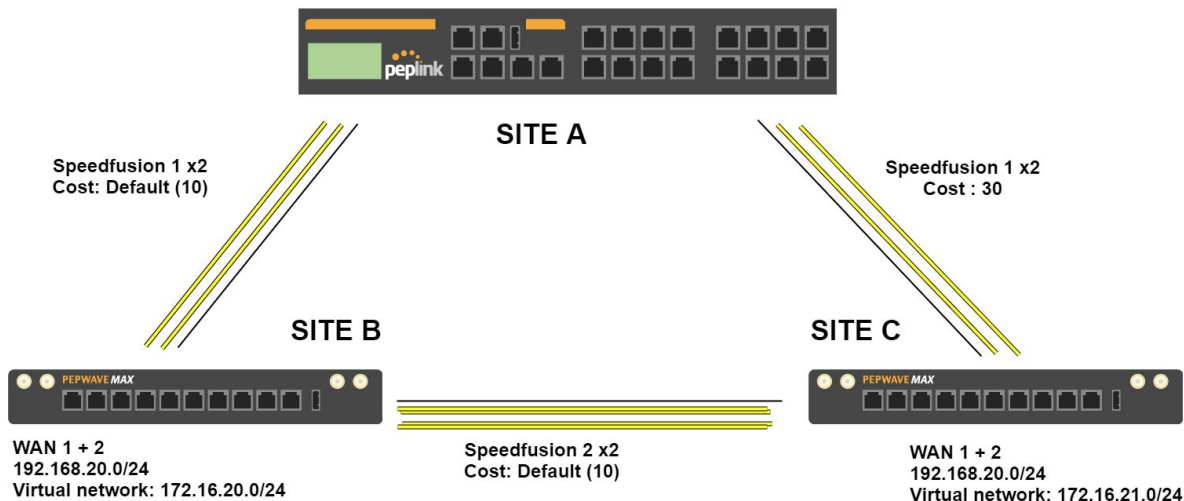
The remote unit VPN will be assigned with an IP address from the local DHCP server. All the remote side traffic via this VPN will go through Network Address Translation (NAT) using the assigned IP address.

One-to-One NAT

The subnet is replaced by a virtual network

SpeedFusion: NAT versions

Virtual Network Mapping



The subnet is replaced by a virtual network, when that is set it will replace the OSPF routing for all remote connections! Site A will only see Site B and C virtual network address.

The router address has been changed as well and clients can be reached by their virtual network address; the peplink in each site will do the translation.

Regular NAT creates a client server situation (clients on 1 site can NOT be reached unless, unless you assign a specific port for each device), whereas with One-to-One NAT this does not seem to affect the behaviour. Each clients ip address will keep the host id, while its network id is replaced.

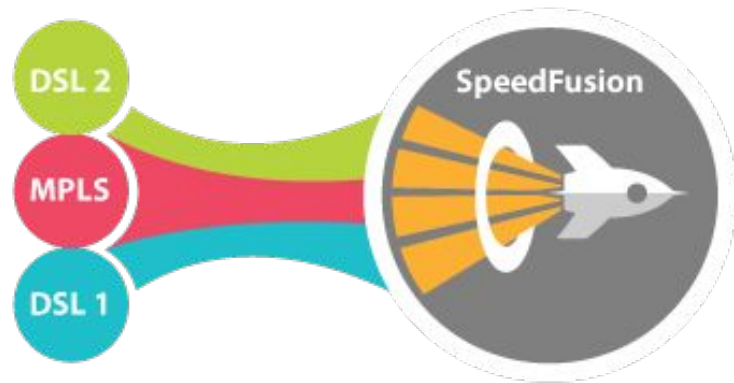
SpeedFusion: UI Configuration

View status from Dashboard



PepVPN with SpeedFusion		Status
Balance-011A-192C-2866-011A	<input checked="" type="checkbox"/>	Established
Balance-A1E0-1824-6710-A1E0	<input checked="" type="checkbox"/>	Established
Balance-F54E-1824-664A-F54E	<input checked="" type="checkbox"/>	Established

SpeedFusion: Recommendations



- **Use WAN connections from different ISPs**
 - Mixing carriers eliminates possible bottlenecks, failures and helps ensure uptime
- **Use WAN with similar bandwidth profiles**
 - Latency Difference <150 ms
 - Latency <800ms for each WAN link
 - Using connections of similar speed and latencies helps ensure optimal performance.

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Tech Concepts - SpeedFusion Features

Q

For branches having the same LAN network, we should allow them to configure a ""virtual"" network range, which then map this virtual network to the local network that is having conflict. So HQ site will only see the virtual network, and the conflict network will be hidden from HQ. Which of the features best described above statement? (Choose One)

A

Virtual Network Mapping

B

SpeedFusion NAT Mode

C

NAT Mapping

D

Port Forwarding

E

Recommend to change the branches LAN subnet to avoid overlapping

US Summit PCE Boot Camp



Tech Concepts - SpeedFusion Features

Q

For branches having the same LAN network, we should allow them to configure a ""virtual"" network range, which then map this virtual network to the local network that is having conflict. So HQ site will only see the virtual network, and the conflict network will be hidden from HQ. Which of the features best described above statement? (Choose One)

A

Virtual Network Mapping

B

SpeedFusion NAT Mode

C

NAT Mapping

D

Port Forwarding

E

Recommend to change the branches LAN subnet to avoid overlapping

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

When would you need to enable WAN Smoothing? (Choose two)

A

WAN Smoothing should be enabled when you establish SpeedFusion tunnel.

B

Users complain the speed is slow

C

Jitter when you do video streaming

D

One way audio for VOIP but no packet loss found

E

Jitter on your VOIP call

F

Intermittently when access the e-mail server in HQ.

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Tech Concepts - InControl 2

Q

When would you need to enable WAN Smoothing? (Choose two)

A

WAN Smoothing should be enabled when you establish SpeedFusion tunnel.

B

Users complain the speed is slow

C

Jitter when you do video streaming

D

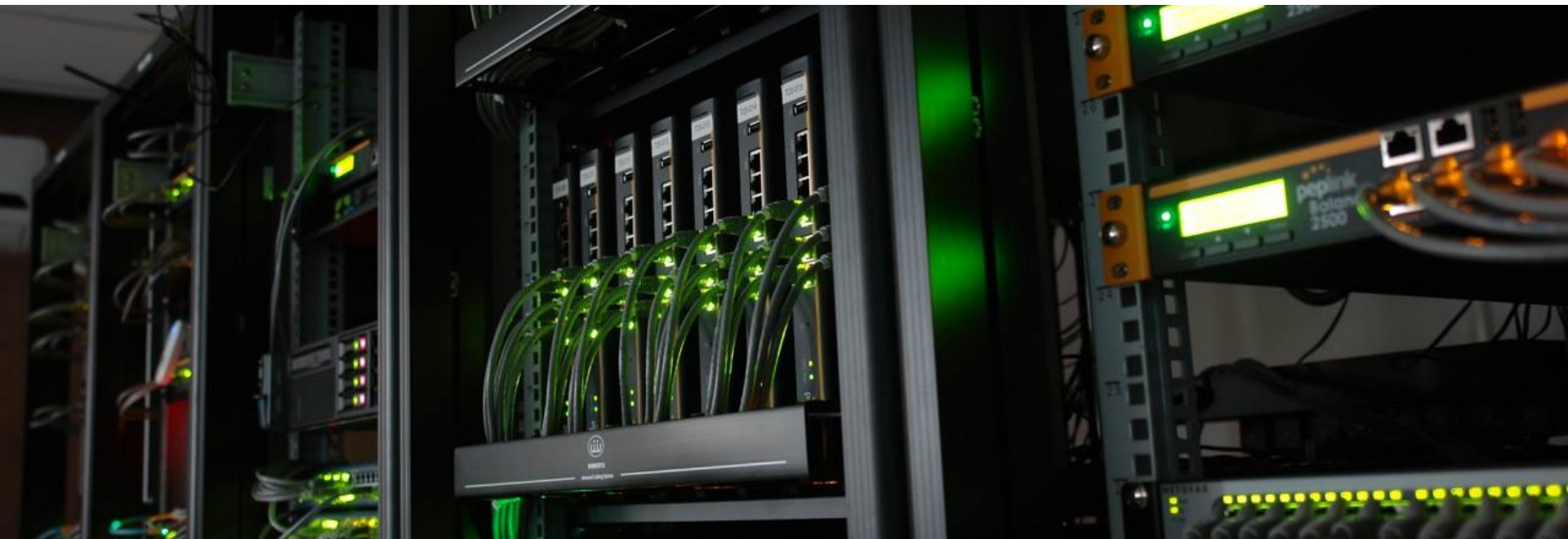
One way audio for VOIP but no packet loss found

E

Jitter on your VOIP call

F

Intermittently when access the e-mail server in HQ.



PCE Boot Camp 2018

Tech Concepts: SpeedFusion - SD-WAN

What is **Software-Defined WAN**?

SD-WAN Overview

- A revolutionary way to simplify branch office networking and assure optimal application performance by using centrally controlled and managed WAN virtualization.
- Unlike traditional WANs, SD-WAN delivers increased network agility and cost reduction, abstracting the network hardware from the applications that use the network.

SD-WAN Operating Requirements (Gartner, 2015)

1) SD-WAN solutions provide a lightweight replacement for traditional WAN routers, and are agnostic to WAN transport technologies (that is, they support MPLS, Internet, Long Term Evolution [LTE], etc.).

2) Based on business and/or application policies, SD-WAN solutions allow for load sharing of traffic across multiple WAN connections in an efficient and dynamic fashion.

3) SD-WAN solutions dramatically simplify the complexity associated with management, configuration and orchestration of WANs.

4) SD-WAN solutions must provide secure VPNs, and have the ability to integrate additional network services and offload Internet-destined traffic closer to the edge of the network.

-Munch, Slaymaker, Lerner, Rickard. "Market Guide for Software-Defined WAN", Gartner, Dec 2015

Why adopt SD-WAN Terminology?

SD-WAN overview



- By Gartner's definition, Peplink has been providing SD-WAN solutions for almost a decade!
- SD-WAN is the first standard industry-wide term that neatly describes our technology and product capabilities.
- Using this term can simplify product descriptions to end users.
- This term is useful for avoiding confusion with traditional (server) load balancing products.

Note: SD-WAN does not replace any existing Peplink terms.

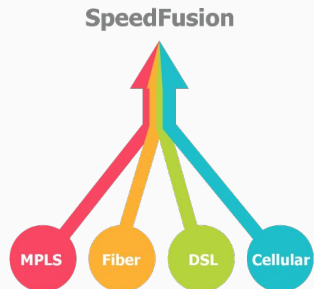


How **SD-WAN** Fits With Peplink?



WAN Virtualization

Peplink routers enable you to build one logical WAN connection using multiple technologies (e.g. xDSL, MPLS, cellular, fiber)



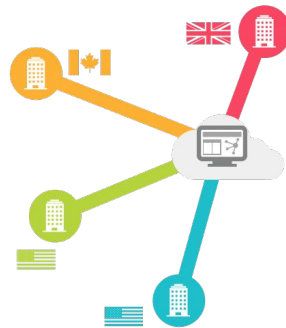
Secure VPN

Using SpeedFusion VPN technology, branch offices gain secure, local network access to cloud resources



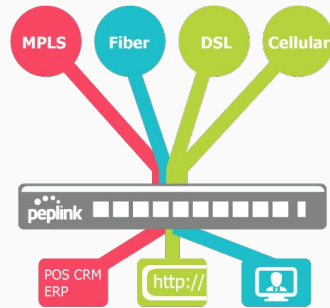
Centrally Managed

Using InControl 2, network administrators gain full control over their networks using a single interface.



Intelligently Managed

Peplink routers actively monitor WAN quality and makes intelligent decisions to direct application traffic flow.



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Tech Concepts - SpeedFusion: SD-WAN

Q

Please select the correct statement that explain the SD-WAN feature:
Secure VPN.

A

Peplink routers enable you to build one logical WAN connection using multiple technologies (e.g. xDSL, MPLS, cellular, fiber)

B

Using InControl 2, network administrators gain full control over their networks using a single interface

C

Using SpeedFusion VPN technology, branch offices gain secure, local network access to cloud resources

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Tech Concepts - SpeedFusion: SD-WAN

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Tech Concepts - SpeedFusion: SD-WAN

Q

Please select the correct statement that explain the SD-WAN feature:
WAN Virtualization.

A

Peplink routers enable you to build one logical WAN connection using multiple technologies (e.g. xDSL, MPLS, cellular, fiber)

B

Using InControl 2, network administrators gain full control over their networks using a single interface

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Tech Concepts - SpeedFusion: SD-WAN

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Please select the correct statement that explain the SD-WAN feature:
WAN Virtualization.

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Peplink routers enable you to build one logical WAN connection using multiple technologies (e.g. xDSL, MPLS, cellular, fiber)

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Tech Concepts - SpeedFusion: SD-WAN

Q

Please select the correct statement that explain the SD-WAN feature:
Intelligently Managed.

A

Peplink routers enable you to build one logical WAN connection using multiple technologies (e.g. xDSL, MPLS, cellular, fiber)

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Tech Concepts - SpeedFusion: SD-WAN

Q

Please select the correct statement that explain the SD-WAN feature:
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A

Peplink routers enable you to build one logical WAN connection using multiple technologies (e.g. xDSL, MPLS, cellular, fiber)

B

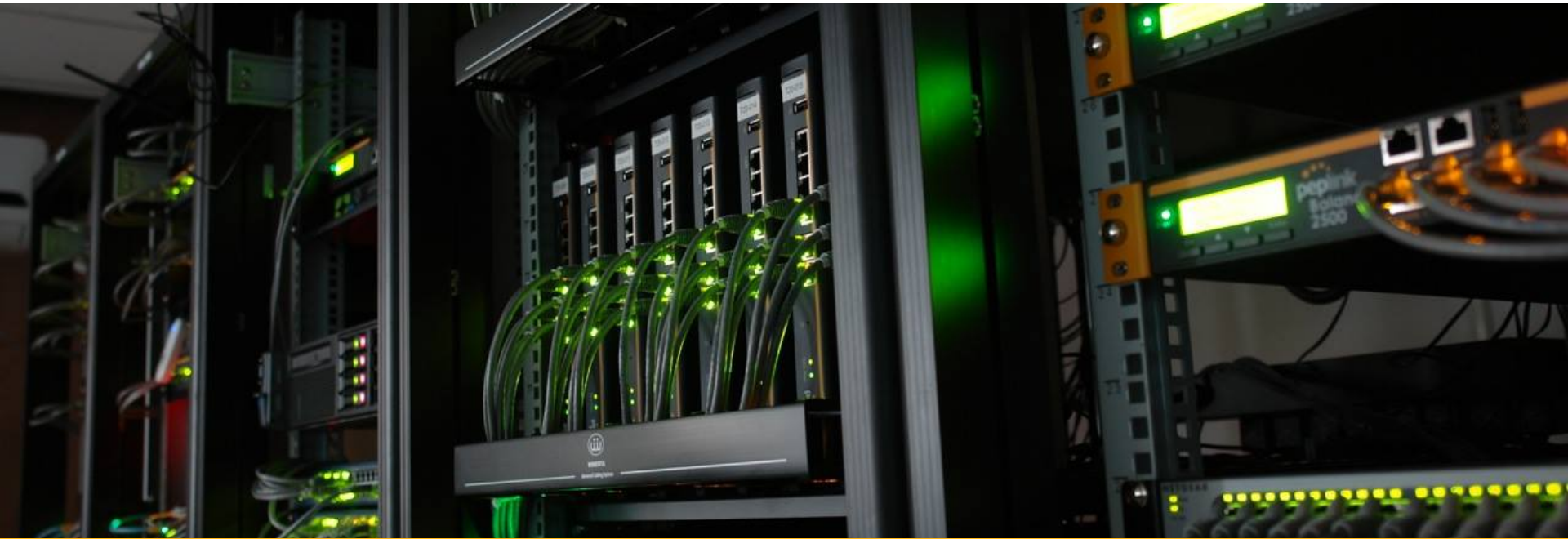
Using InControl 2, network administrators gain full control over their networks using a single interface

C

Using SpeedFusion VPN technology, branch offices gain secure, local network access to cloud resources

D

Peplink routers actively monitor WAN quality and makes intelligent decisions to direct application traffic flow



PCE Boot Camp 2018

Tech Concepts: InControl 2

InControl 2

Introduction and Overview

InControl 2 is our **Cloud-based** device management, monitoring, and reporting tool used with **Peplink/Pepwave** devices.

With **InControl 2**, you'll get advanced **administration** tools, unprecedented device **visibility**, and comprehensive **reporting** in an easy to manage package.

With both **Public and Private** versions available, as well as a **Smart Device Companion App**, **IC2** is flexible and robust enough to keep eyes on your deployment.



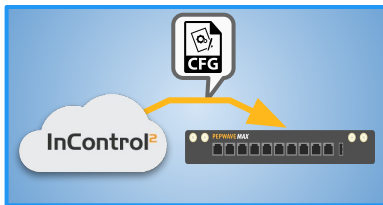
InControl 2: Features



GPS Fleet Tracking

PepLink's MAX Mobile units can report back fleet information to InControl 2 in an easy to review package

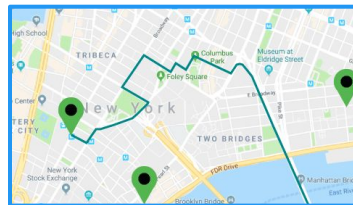
- Embedded Cellular MAX Mobile units compatible
- Customizable to save Data Usage
- Downloadable for use in 3rd party apps
- NMEA or GPX format



Zero Touch Configuration

InControl 2 has a number of cloud based configuration options to make your network setup quick and easy.

- Bulk Configurator
- Template option
- Firewall/Outbound Policy
- Captive Portal
- SpeedFusion



Comprehensive Reporting

InControl 2's suite of Reporting options give you the tools you need to know what's going on in your network.

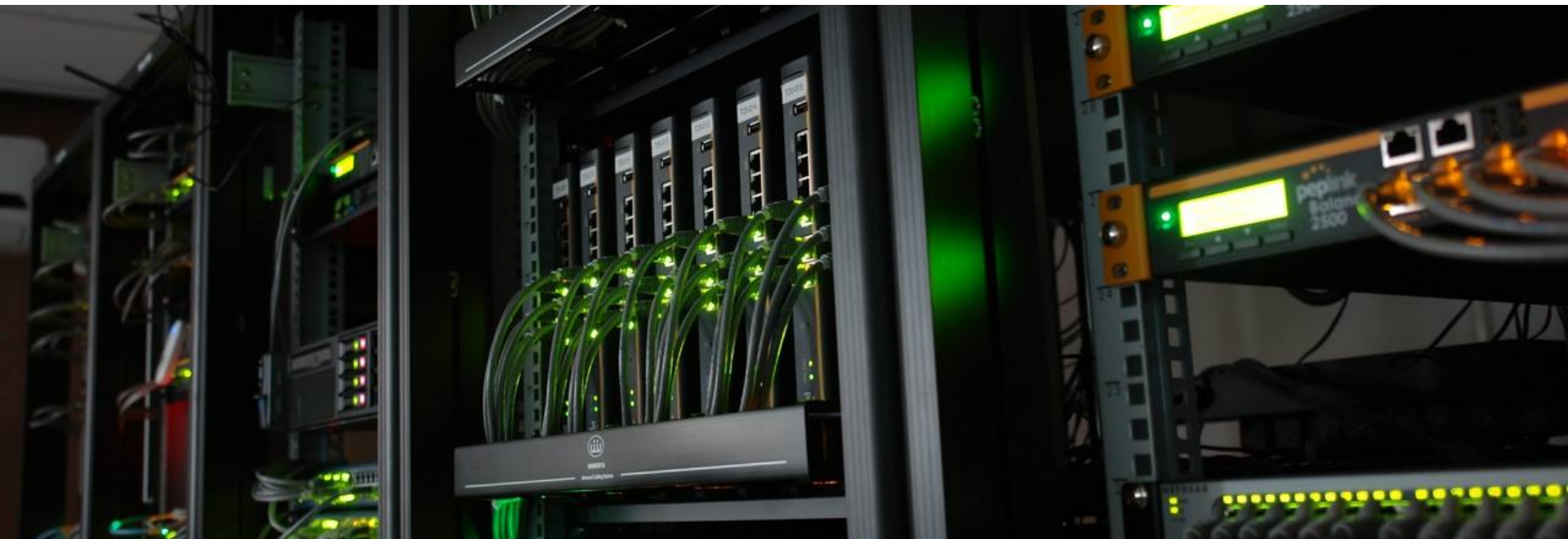
- Bandwidth usage
- Client Usage
- Real-Time and Historical
- See all Devices in easy to read dashboard

Plus a lot more!

- Firmware **Management**
- Warranty **Monitoring** and renewal
- Configurable and Granular **email alert/notifications**
- Ad Delivery Server
- Get information from Smart Device **Companion App**

Monitor and manage your Peplink/Pepwave network from anywhere with the **InControl mobile app**. Anywhere you go, you can now check the health of your entire network on your mobile device.

-



PCE Boot Camp 2018

Tech Concepts: InControl 2 - Zero Touch Configuration

InControl 2 - Zero Touch Config



Overview

Peplink Balance / Pepwave MAX Settings | Pepwave AP Settings

For Peplink Balance/Pepwave MAX devices, settings will be applied to LAN interface
Download template for [Peplink Balance/Pepwave MAX](#)

Device Settings

Field Name	Description	Values
SN	Device serial number	1234-5678-90AB
LAN_NETWORK_LIST	Network in CIDR	192.168.0.1/24
LAN_MEDIA	Physical media setting	auto, 100baseTx-FD, 100baseTx-FD,

LAN_STROUTER ⓘ	Static routing entry. Format is (orig (routing IP address)
DHCP_SERVER ⓘ	DHCP server setting
DHCP_SERVER_LEASE	DHCP lease time in seconds
DHCP_SERVER_NETMASK	DHCP server netmask
DHCP_SERVER_POOL_START	First address in the DHCP address
DHCP_SERVER_POOL_END	Last address in the DHCP address

InControl 2 allows for a number of ways to configure your **Peplink** units en masse, allowing you options to get your network deployed quickly.

The Bulk Configurator will push the configuration file(s) onto the corresponding applicable devices. In addition, it will also individualize the following settings if applicable:

- Wi-Fi AP SSID and Radio *
- PepVPN / SpeedFusion
- VLAN Networks
- Outbound Policy *
- Firewall Rules *
- Web Admin Settings *
- Device name
- Time zone *

PepVPN / SpeedFusion profiles, Wi-Fi AP on/off state, Remote Assistance state, WANs' Dynamic DNS settings and PPPoE credentials in the configuration file(s) are discarded and not applied.

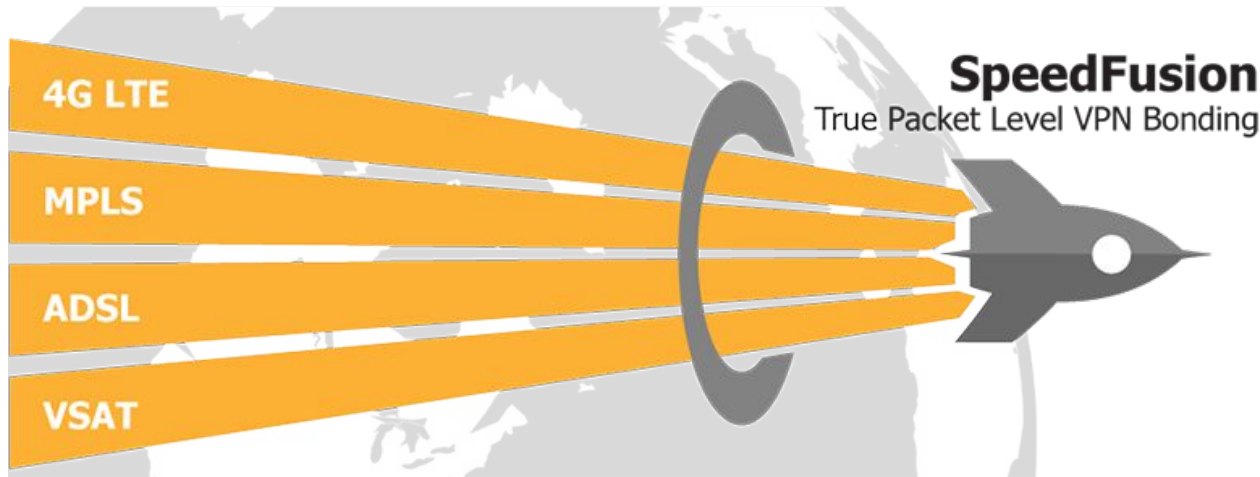
* When its management option on InControl is disabled, its setting in the configuration file(s) will be applied.

Upload New Config File

File name	Product	Schedule	Devices	Preserve IP
No data available				

SpeedFusion Configuration

InControl 2 - Zero Touch Configuration



- Create **SpeedFusion** between **multiple Groups**, **multiple Orgs** or a *non IC2 managed Peplink!*
- Supports all **SpeedFusion** deployments
 - **Full Mesh**
 - **Hub-and-Spoke**
 - **Point-to-Point**
- Supports all Advanced **SpeedFusion** Features

InControl 2 - Zero Touch



Configurable options:



Bulk Configurator

Master config pushed to units

Device IP Settings

Template based config pushed to units

Firewall & Outbound Policy Config

Take Firewall and/or Outbound Policy from Master config and apply to units.

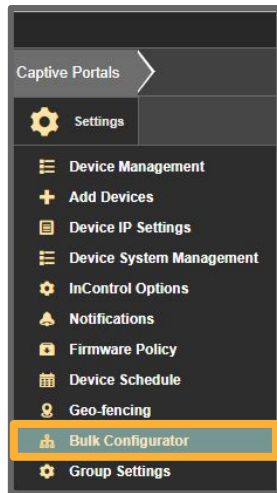
SpeedFusion / SD-WAN

Build a Profile in IC2 and apply to units in the field

InControl 2 - Bulk Configurator



Group Level > Settings > Bulk Configurator



The Bulk Configurator will push the configuration file(s) onto the corresponding applicable devices. In addition, it will also individualize the following settings if applicable:

- Wi-Fi AP SSID and Radio *
- PepVPN / SpeedFusion
- VLAN Networks
- Outbound Policy *
- Firewall Rules *
- Web Admin Settings *
- Device name
- Time zone *

PepVPN / SpeedFusion profiles, Wi-Fi AP on/off state, Remote Assistance state, WANs' Dynamic DNS settings and PPPoE credentials in the configuration file(s) are discarded and not applied.

* When its management option on InControl is disabled, its setting in the configuration file(s) will be applied.

Upload New Config File

Apply a "Master" config to multiple applicable **Peplink** devices in a **Group**.

- Can selectively apply config via **Tags**

Configuration File 20180330_hd4hw1_29323078D40C.conf ✓ Remove file

Product Pepwave MAX HD4

Configuration Time ☒ Immediately ☐ Scheduled

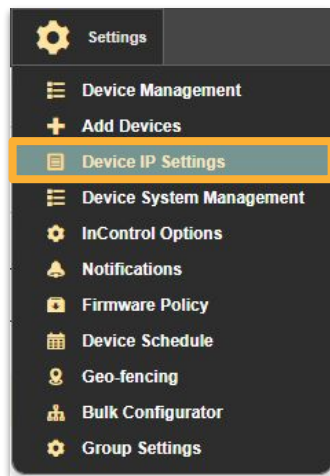
Device Selection All devices of the product in this group

Save Cancel

InControl 2 - Device IP Settings



Group Level > Settings > Device IP Settings



Peplink Balance / Pepwave MAX Settings			Pepwave AP Settings
For Peplink Balance/Pepwave MAX devices, settings will be applied to LAN interface Download template for Peplink Balance/Pepwave MAX			
Device Settings			
Field Name	Description	Values	
SN	Device serial number	1234-5678-90AB	
LAN_NETWORK_LIST	Network in CIDR	192.168.0.1/24	
LAN_MEDIA	Physical media setting	auto, 1000baseTx-FD, 100baseTx-FD, 100baseTx-HD, 10baseT-FD, 10baseT-HD	
LAN_STRROUTEN ⓘ	Static routing entry. Format is (original destination CIDR): (routing IP address)	172.16.0.0/12:192.168.0.1	
DHCP_SERVER ⓘ	DHCP server setting	enable, disable, relay	
DHCP_SERVER_LEASE	DHCP lease time in seconds	86400	
DHCP_SERVER_NETMASK	DHCP server netmask	255.255.255.0	

Apply a “Master” config to multiple applicable **Peplink** devices in a **Group**.

- Can selectively apply config via **Tags**

InControl 2 - Group Configuration



Group Level > Network Settings > **Firewall** or **Outbound Policy** Rules

Group Level

- Dashboard
- Reports
- PepVPN / SpeedFusion
- Wi-Fi AP
- Network Settings**
 - Outbound Policy**
 - Firewall Rules**
 - VLAN Networks
 - Captive Portals
- Clients
- Settings

Search

Firmware

1	7.0.2 build 1496
0	7.0.2 build 3155

Asgard Embassy

Avengers Mansion

Helicarrier

the Raft/test bench

Weapon X

InControl² Group Level Michaelsofts Dev Inc Billy Test Group 2

Dashboard Reports PepVPN / SpeedFusion Wi-Fi AP Network Settings Clients Settings

Firewall Rules

☒ Manage Firewall Rules on Balance and MAX devices

Import Rule Set from Configuration File

Rule Set Name	Applied on
Firewall Test	All devices
Test 1	Devices with all of the following tags: balance, group_2, FA-N10XG, FA-N904G
33456	Devices with any of the following tags: group_1, group_2
Master B310 Config (bad)	All devices
Master Config from B310	All devices

Outbound Policy ⓘ

☒ Manage Outbound Policy on Balance and MAX devices

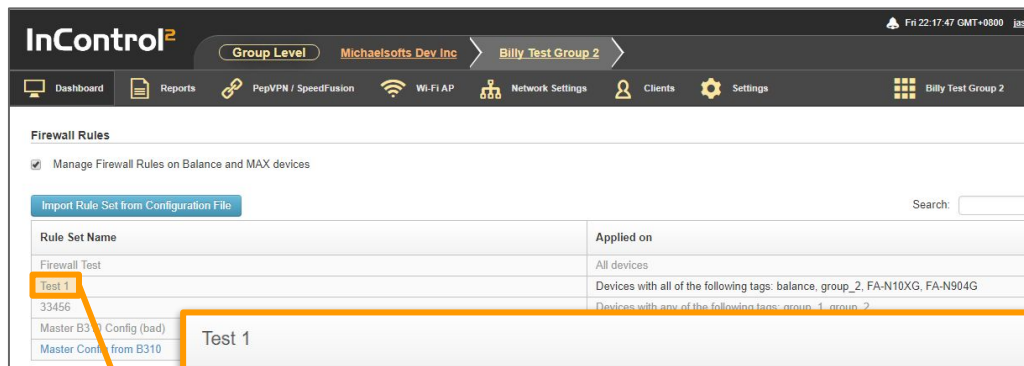
Save

Import Rule Set from Configuration File

Rule Set Name	Applied on
20180817_hd4hw1_29323078D40C (1)	All devices

Preserve outbound policy on devices that receive no rules (Default) Edit

InControl 2 - Firewall



Test 1

Firewall Rule Set

Enable ☒

Device Selection

Balance and MAX devices with all of the following tags

☒ FA-N10XG ☒ FA-N904G ☒ balance ☒ group_2

Outbound Firewall Rules

Enable	Name	Protocol	Source	Destination	Action
Enabled (Always on)	outbound test 1	TCP	1.2.3.4 50000 - 57000	www.mydomain.com 80	✓
	Default	Any	Any	Any	✗

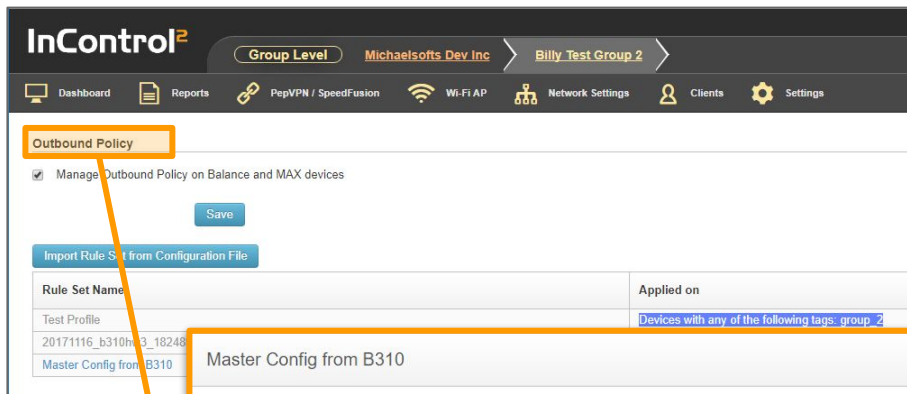
Inbound Firewall Rules

Enable	Name	Protocol	WAN	Source	Destination	Action
Enabled (Always on)	inbound rule test 2	ICMP: 10	WAN 3	1.2.3.4	Any	✗
	Default	Any	Any	Any	Any	✗

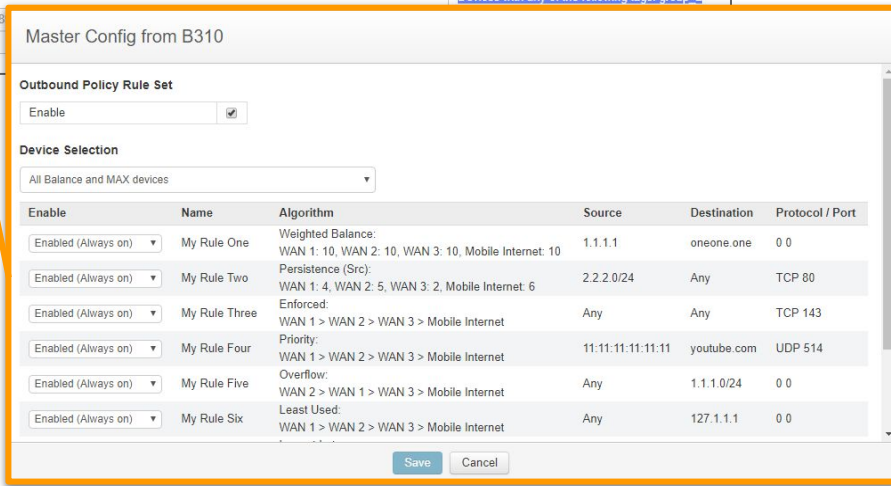
Save Cancel

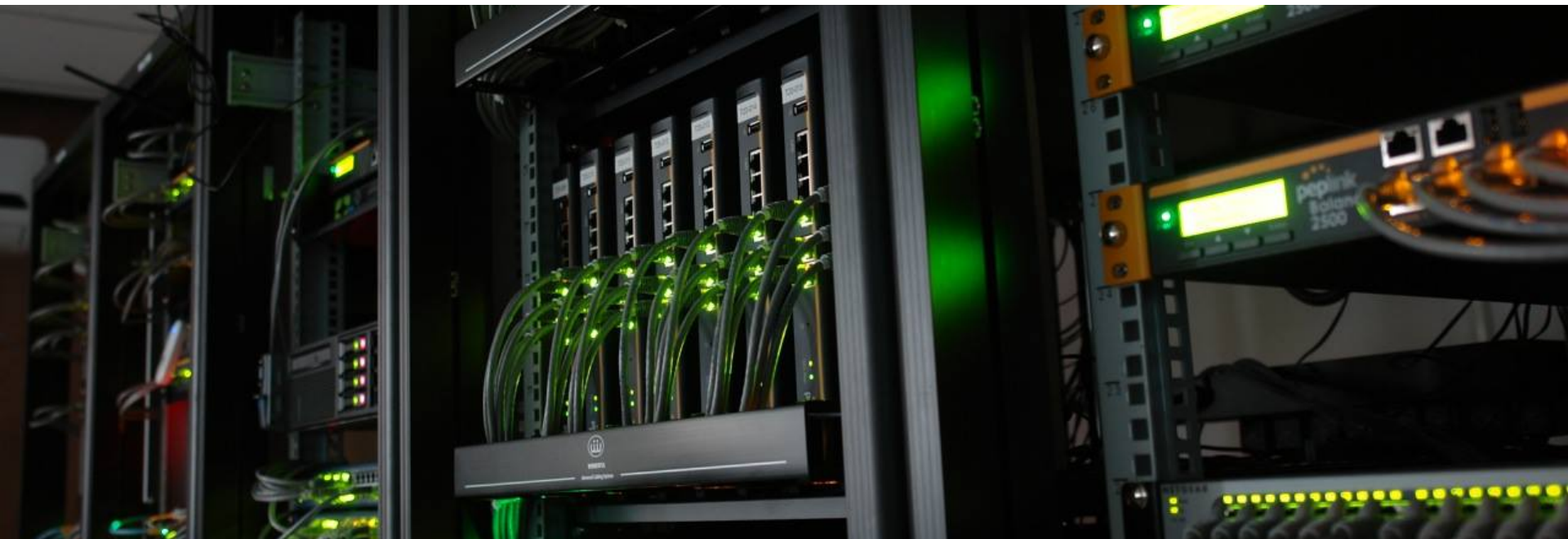
1. Get your config from the **Peplink UI** and upload to **InControl 2**
2. **InControl 2** extracts the **Firewall config** and lets you apply it to other devices in the **Group!**

InControl 2 - Outbound Policy



1. Get your config from the **Peplink UI** and upload to **InControl 2**
2. **InControl 2** extracts the **Outbound Policy config** and lets you apply it to other devices in the **Group**!





PCE Boot Camp 2018

Tech Concepts: InControl 2 - Low Data Usage Mode

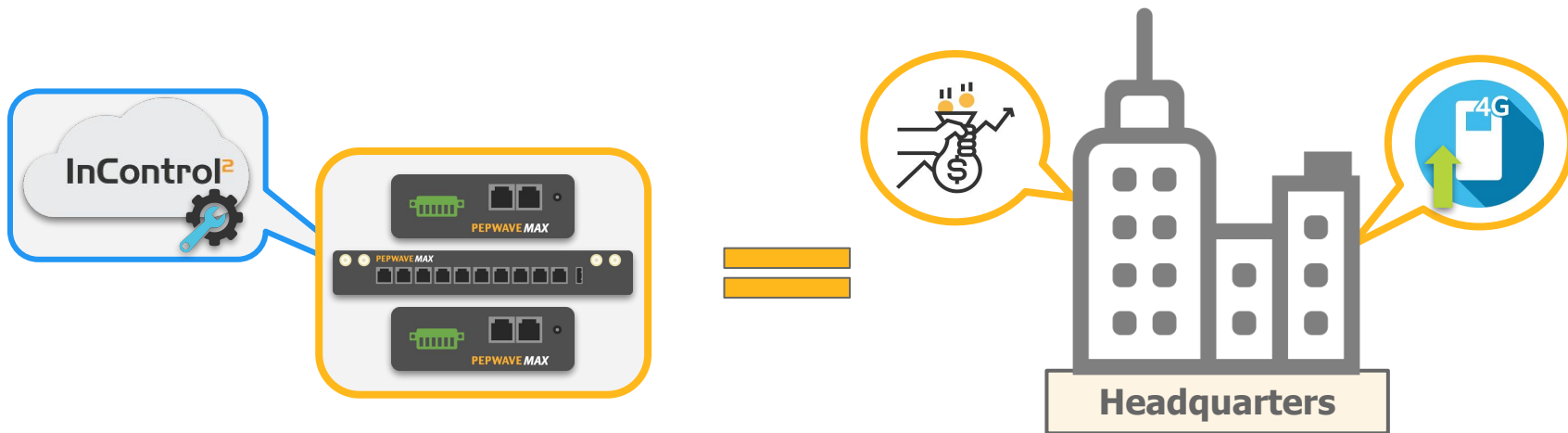
InControl2 -Low Data Usage Mode



Overview

InControl 2 allows you to adjust how much data it uses for various tracking and reporting functions, the end result is both **money and data saved** on your network.

Since these updates are done from the Cloud, they're pushed to multiple **Peplink/Pepwave** devices **quickly and easily**.



InControl 2 - Low Data Usage Mode

Configuration



InControl²

Group Level SHIELD HQ > Weapon X > Settings > InControl Options >

Dashboard Reports PepVPN / SpeedFusion Wi-Fi AP Network Settings Clients Settings

InControl Options

Disable Device Configuration ☐

Disable Firmware Management ☐

Low Data Usage Mode ☒
Requires Balance and MAX with firmware 7.1.1 or above

Disable Device Reporting ☒ (Reporting incurs data usage)

Disable Live Status Queries ☒ (Live status queries incurs data usage)

GPS Location Collection 60 location points every hour

Minimum Communication Interval 15 minutes (Default: 28 seconds)

Note: Real-time communication with devices may be delayed for any interval longer than 30 seconds if a NAT router is present in the communication path.

Save Changes Cancel

- Device Management
- Add Devices
- Device IP Settings
- Device System Management
- InControl Options**
- Notifications
- Firmware Policy
- Device Schedule
- Geo-fencing
- Bulk Configurator
- Ad Delivery Service
- Group Settings

Group Level:

- **Settings**
- **InControl Options**
- Checkmark **Low Data Usage Mode**

InControl 2 - Low Data Usage Mode



Overview

InControl Options

Disable Device Configuration ☐

Disable Firmware Management ☐

Low Data Usage Mode ☒

Requires Balance and MAX with firmware 7.1.1 or above

Disable Device Reporting ☒ (Reporting incurs data usage)

Disable Live Status Queries ☒ (Live status queries incurs data usage)

GPS Location Collection 60 location points every hour ▼

Minimum Communication Interval 15 minutes ▼ (Default: 28 seconds)

Note: Real-time communication with devices may be delayed for any interval longer than 30 seconds if a NAT router is present in the communication path.

Adjusts in real-time as settings are changed to show **Bandwidth usage**

Estimated Base Data Usage



130.9 MB with GPS data

125.3 MB without GPS data

(Click me for more options)

Enabled when **Low Data Usage Mode** is enabled.

InControl 2 - Low Data Usage Mode

InControl Options

Disable Device Configuration

Disable Firmware Management

Low Data Usage Mode

Disable Device Reporting

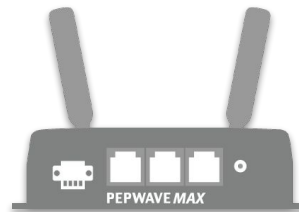
Disable Live Status Queries

GPS Location Collection

Minimum Communication Interval

Disable Device Reporting -

- Stops devices from posting reporting data to **InControl 2**.
 - Enabled by default when you turn on **Low Data Usage Mode**
 - Reports, such as device, Wi-Fi, bandwidth, cellular reports, etc., will be unavailable.



InControl 2 - Low Data Usage Mode

InControl Options

Disable Device Configuration

Disable Firmware Management

Low Data Usage Mode

Disable Device Reporting

Disable Live Status Queries

GPS Location Collection

Minimum Communication Interval

Disable Live Status Queries -

- Stops devices from reporting Live status updates (e.g. throughput, WAN state, etc.), making them unavailable. However device online status is unaffected
 - Enabled by default when you turn on **Low Data Usage Mode**



InControl 2 - Low Data Usage Mode

InControl Options

Disable Device Configuration

Disable Firmware Management

Low Data Usage Mode

Disable Device Reporting

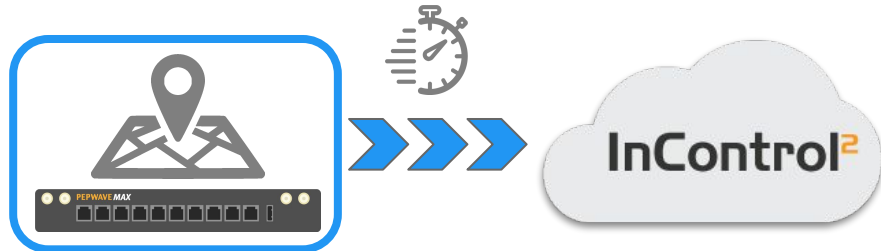
Disable Live Status Queries

GPS Location Collection

Minimum Communication Interval

GPS Location Collection -

- Determine the number of times that InControl 2 will query a unit for GPS information
 - 30 location points per minute (default setting)
 - 60 location points per every hour
 - *Default setting when **Low Data Usage Mode** is enabled*
 - 1 location point every hour
 - Disabled



InControl 2 - Low Data Usage Mode

InControl Options

Disable Device Configuration

Disable Firmware Management

Low Data Usage Mode

Disable Device Reporting

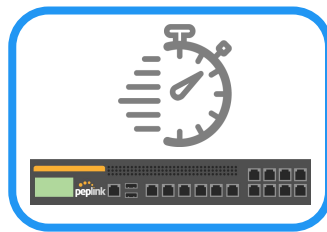
Disable Live Status Queries

GPS Location Collection

Minimum Communication Interval

Minimum Communication Interval -

- Determine the number of times that a device will "call home" to InControl 2 (Default: 28 seconds)
 - **Note:** Real-time communication with devices may be delayed for any interval longer than 30 seconds if a NAT router is present in the communication path.
 - Customizable/manual entry

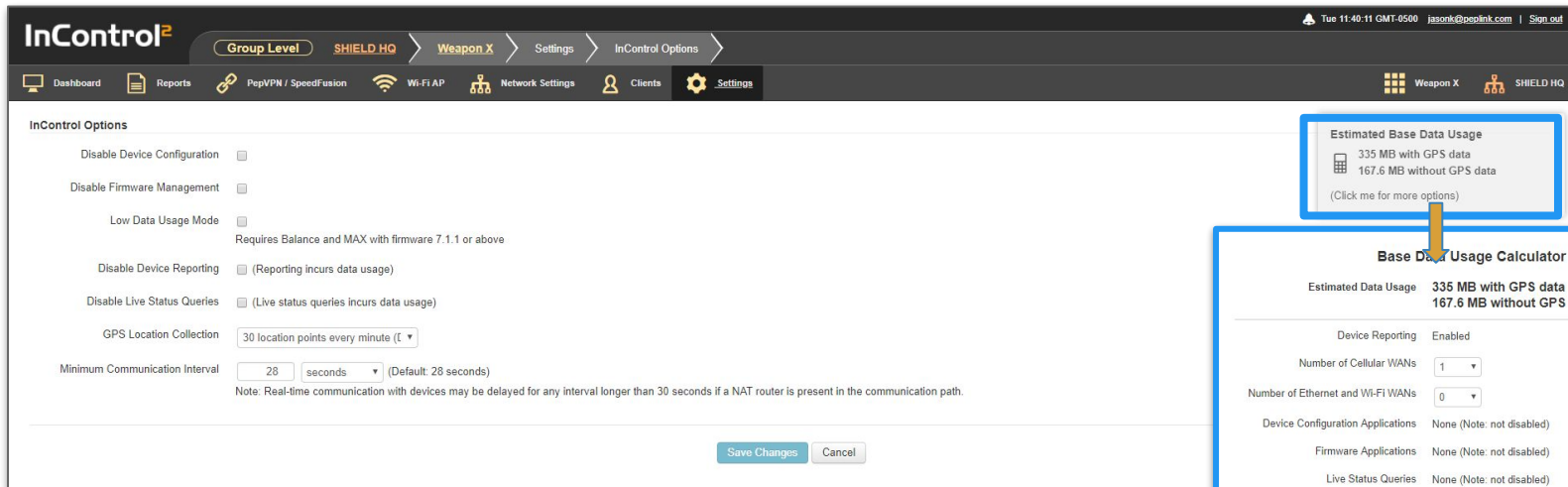


28 seconds (Default: 28 seconds)

seconds
minutes

InControl 2 - Low Data Usage Mode

Help Calculator tool



InControl 2 Group Level SHIELD HQ Weapon X Settings InControl Options

Dashboard Reports PepVPN / SpeedFusion Wi-Fi AP Network Settings Clients Settings

InControl Options

- ☐ Disable Device Configuration
- ☐ Disable Firmware Management
- ☒ Low Data Usage Mode
Requires Balance and MAX with firmware 7.1.1 or above
- ☐ Disable Device Reporting (Reporting incurs data usage)
- ☐ Disable Live Status Queries (Live status queries incurs data usage)
- GPS Location Collection: 30 location points every minute (L)
- Minimum Communication Interval: 28 seconds (Default: 28 seconds)
Note: Real-time communication with devices may be delayed for any interval longer than 30 seconds if a NAT router is present in the communication path.

Save Changes Cancel

Estimated Base Data Usage

335 MB with GPS data
167.6 MB without GPS data
(Click me for more options)

- **Group Level > Settings > Internet Options > Estimated Base Data Usage**

Base Data Usage Calculator

Estimated Data Usage: 335 MB with GPS data
167.6 MB without GPS data

Device Reporting: Enabled

Number of Cellular WANs: 1

Number of Ethernet and Wi-Fi WANs: 0

Device Configuration Applications: None (Note: not disabled)

Firmware Applications: None (Note: not disabled)

Live Status Queries: None (Note: not disabled)

GPS Location Collection: 30 location points every minute (Default)

Minimum Communication Interval: 28 seconds

Health Checks on all WANs: ☒ Enabled ☐ Disabled

Period: 31 Days

Other assumptions:

- No clients, events, remote web admin, remote assistance, or feature add-on activation
- 3 SSIDs defined on Wi-Fi AP
- Device goes offline and online no more than once per day
- Network time synchronizations always succeed

Close

InControl 2 - Help Calculator Tool



Overview

Help Tool to determine data usage

- **Doesn't change settings**
 - Used to plan out things before configuration
- **Very Customizable**

Base Data Usage Calculator

Estimated Data Usage **335 MB with GPS data**
167.6 MB without GPS data

Device Reporting Enabled

Number of Cellular WANs 1

Number of Ethernet and Wi-Fi WANs 0

Device Configuration Applications None (Note: not disabled)

Firmware Applications None (Note: not disabled)

Live Status Queries None (Note: not disabled)

GPS Location Collection 30 location points every minute (Default)

Minimum Communication Interval 28 seconds

Health Checks on all WANs ☒ Enabled ☐ Disabled

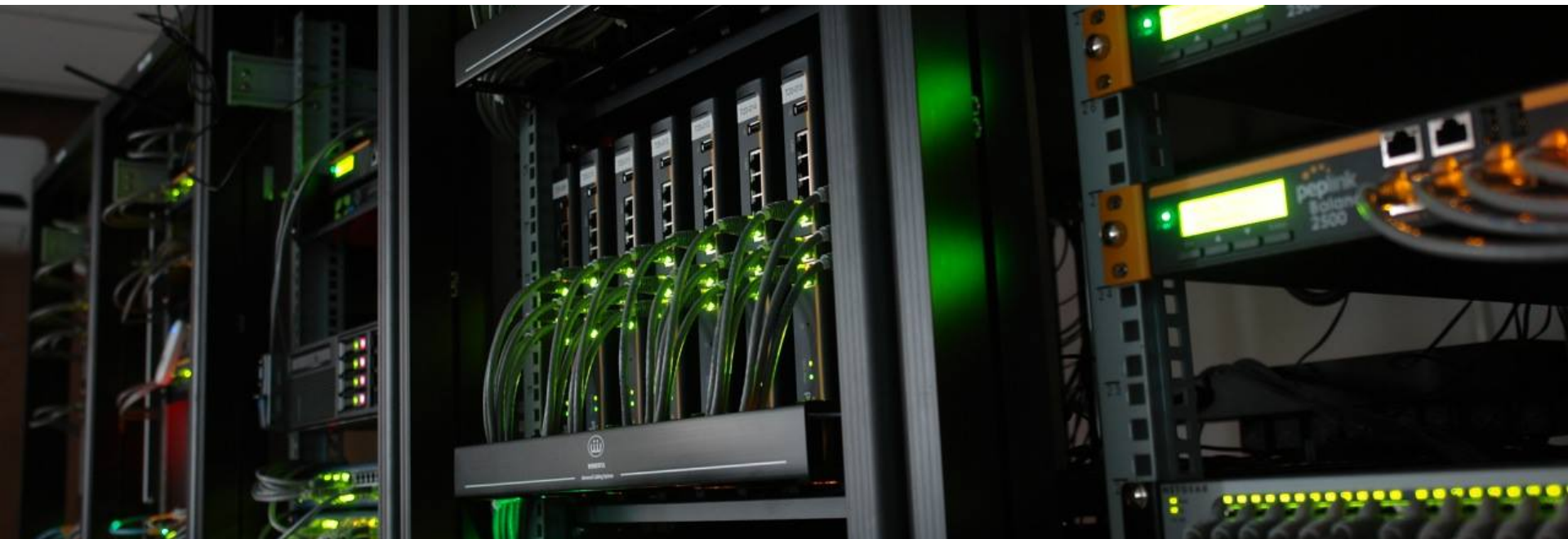
Period 31 Days

Other assumptions:

- No clients, events, remote web admin, remote assistance, or feature add-on activation
- 3 SSIDs defined on Wi-Fi AP
- Device goes offline and online no more than once per day
- Network time synchronizations always succeed

Close





PCE Boot Camp 2018

Tech Concepts: InControl 2 - SIM Pooling

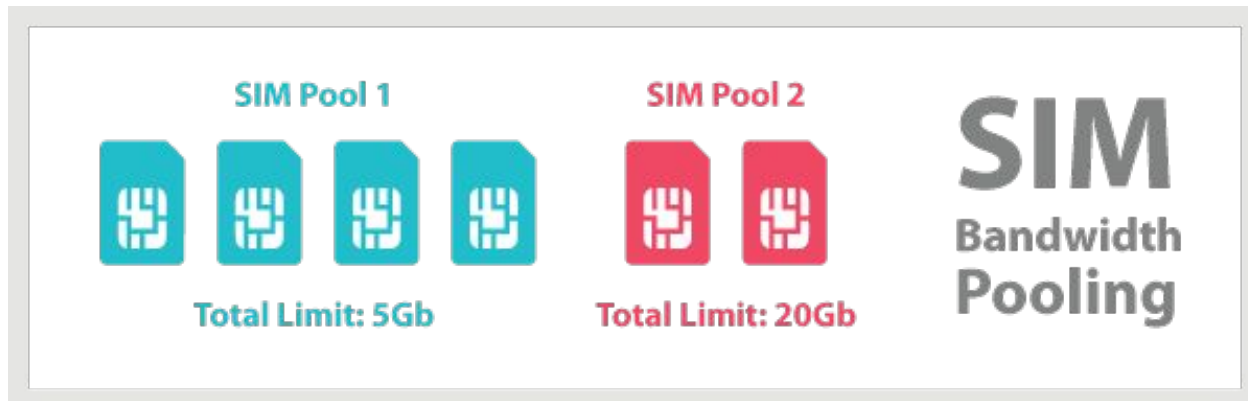
InControl 2 - SIM Pooling

Overview

SIM Pooling allows you to define multiple **SIMs** into a pool and apply a bandwidth quota to that grouping. SIM Pooling can be setup on both the Organization or Group level.

Once the defined limit is exceeded, an email alert is sent.

Requirement: Current Firmware



InControl 2 - SIM Pooling

Configuration



To create a new **SIM** Pool, note the **IMSI number** from each **SIM** in the Pool. This is found under **Device Details** in **InControl 2**.

The screenshot shows the InControl 2 web interface. The top navigation bar includes 'Device Level', 'Reports', 'PepVPN / SpeedFusion', 'Clients', and 'Settings'. The main content area displays 'Device Details' for 'MAX_BR1_ENT'. The 'Information' tab is active, showing details like Device Name, Serial Number, Model, Uptime, Online status, First Appeared, History, Firmware, and Warranty Expiry Date. The 'Status' tab is also visible, showing network status (Connected), WAN Type (Cellular), IP Address, IP Subnet, DNS Servers, Routing Mode, MTU, and SIM Card A IMSI (highlighted with an orange box). The SIM Card A ICCID, SIM Card A MTN, and SIM Card B IMSI are also listed.

Information	Status
Device Name	Untagged LAN
Serial Number	WAN
Model	Cellular
Uptime	WAN Type
Online	IP Address
First Appeared	IP Subnet
History	DNS Servers
Firmware	Routing Mode
Warranty Expiry Date	MTU
	SIM Card A IMSI
	SIM Card A ICCID
	SIM Card A MTN
	SIM Card B IMSI

InControl 2 - SIM Pooling



Configuration

From the **Organization** or **Group** Level:

Go to **Reports** > **SIM Pool Bandwidth Usage**

Organization

Organization Level SHIELD HQ Overview

Overview Reports PepVPN / SpeedFusion Organization Settings

SIM Pool Data Usage

Organization Summary

Online 1 device(s)

Or

Group

Group Level SHIELD HQ Raft Dashboard

Dashboard Reports PepVPN / SpeedFusion Clients Settings

Device Reports Usage Reports SIM Pool Data Usage Captive Portal Reports Event Log

Offline 0 device(s)

InControl 2 - SIM Pooling



Configuration

Default **SIM** carrier pools for **All Carriers** and **Individual Carriers** are here -

- To add a custom **SIM** pool, click **New SIM Pool**

SIM Pool Bandwidth Usage

Carrier Pools

Report	Carrier Name	No. of SIMs	Current Usage	Start
	All Carriers	2		Conf
	T-Mobile UK (GB)	2		Conf

Custom Pools

New SIM Pool

Report	Pool Name	No. of SIMs	Current Usage	Start Day
No data available				

InControl 2 - SIM Pooling



Configuration

2) Fill in the applicable information for the new **Pool**

A screenshot of the InControl 2 web interface showing the "SIM Pool Bandwidth Usage" configuration page. A modal window titled "Pool Name" is open, allowing for the creation of a new SIM pool. The modal contains several input fields: "Pool Name" (text), "IMSI" (text area with a note "One IMSI per line"), "Monthly Bandwidth Quota" (text input with "GB" unit), "Initial SIM Pool Usage" (text input with "0" and "GB" unit), "Start Day" (dropdown menu set to "1st" with a note "of each month at 00:00 midnight"), and "Remarks" (text area). At the bottom of the modal are "Save" and "Cancel" buttons. In the background, the main interface shows a sidebar with "Carrier Pools" and "Custom Pools" sections. The "New SIM Pool" button in the "Custom Pools" section is highlighted with an orange rectangle. A table with columns "Report" and "Carrier" is partially visible behind the modal.

SIM Pool Bandwidth Usage

Carrier Pools

Report	Carrier
	All Carriers
	3 (GB)
	T-Mobile
	Vodafone

Custom Pools

New SIM Pool

Pool Name

IMSI

One IMSI per line

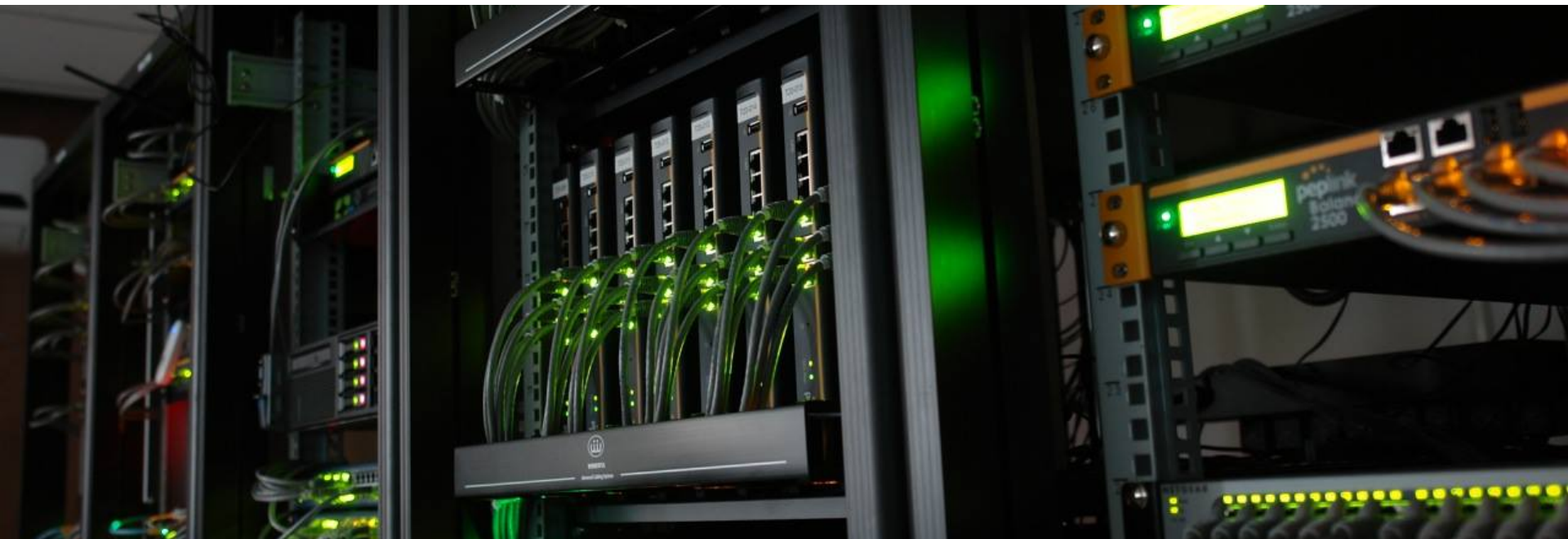
Monthly Bandwidth Quota GB

Initial SIM Pool Usage 0 GB

Start Day On of each month at 00:00 midnight

Remarks

Save **Cancel**



PCE Boot Camp 2018

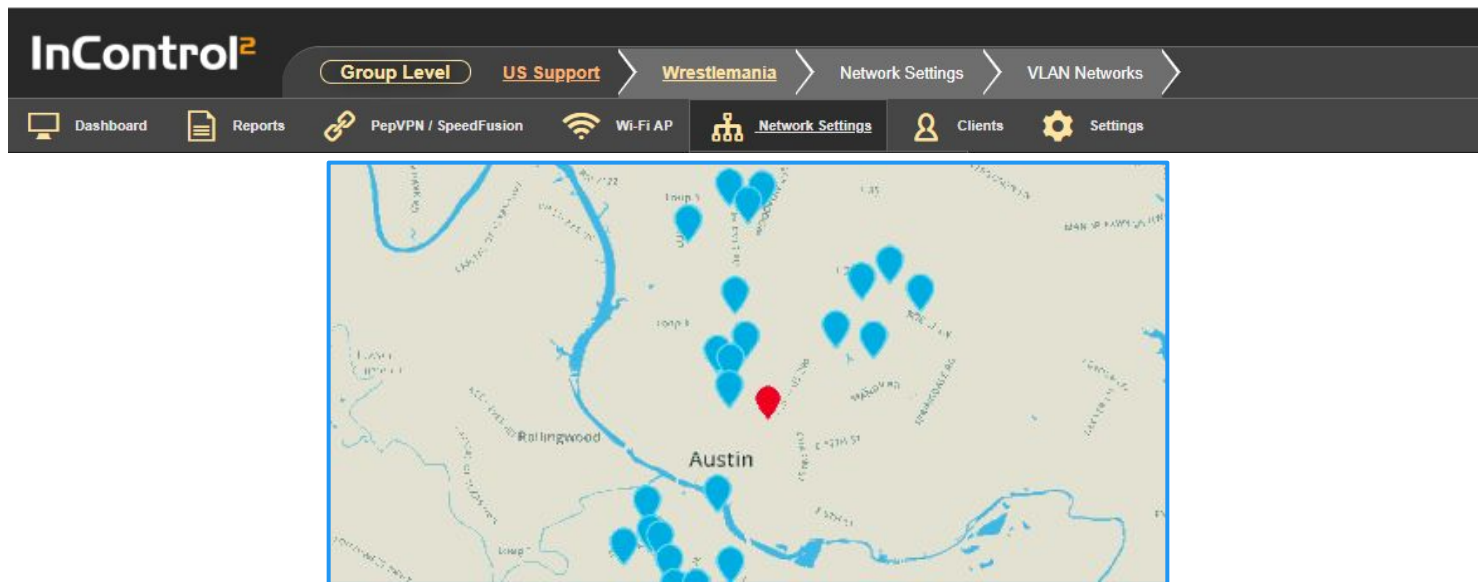
Tech Concepts: InControl 2 - GPS Functionality

InControl 2 - GPS



Cloud based Monitoring and Management

InControl 2 provides full-fleet device management when used in combination with our vehicle-mounted, **GPS-enabled devices**, such as the **MAX HD2** and **BR1**. Track unit location using our **interactive maps** and **monitor vehicle speed, cellular coverage, and traffic conditions**.

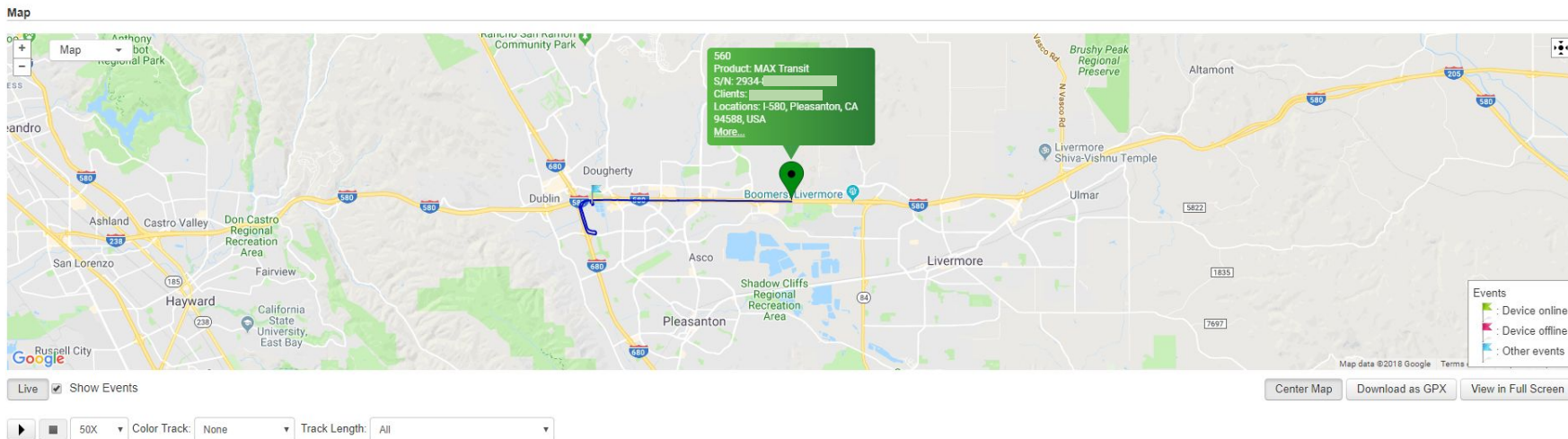


InControl 2 - GPS



Cloud based Monitoring and Management

- Group Level Dashboard > Click on applicable unit icon
 - **"More" option** will link to **Device Level Dashboard**
- Playback historical route information or review in real-time
- Download as .GPX file for 3rd party app usage

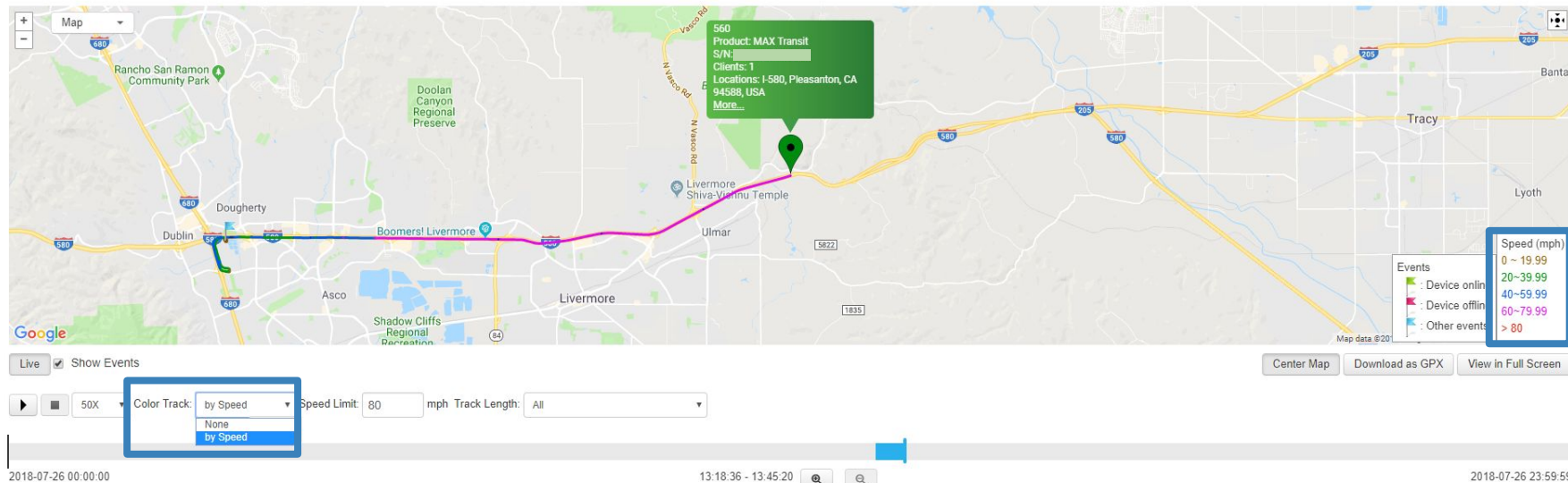


InControl 2 - GPS



Cloud based Monitoring and Management

Map

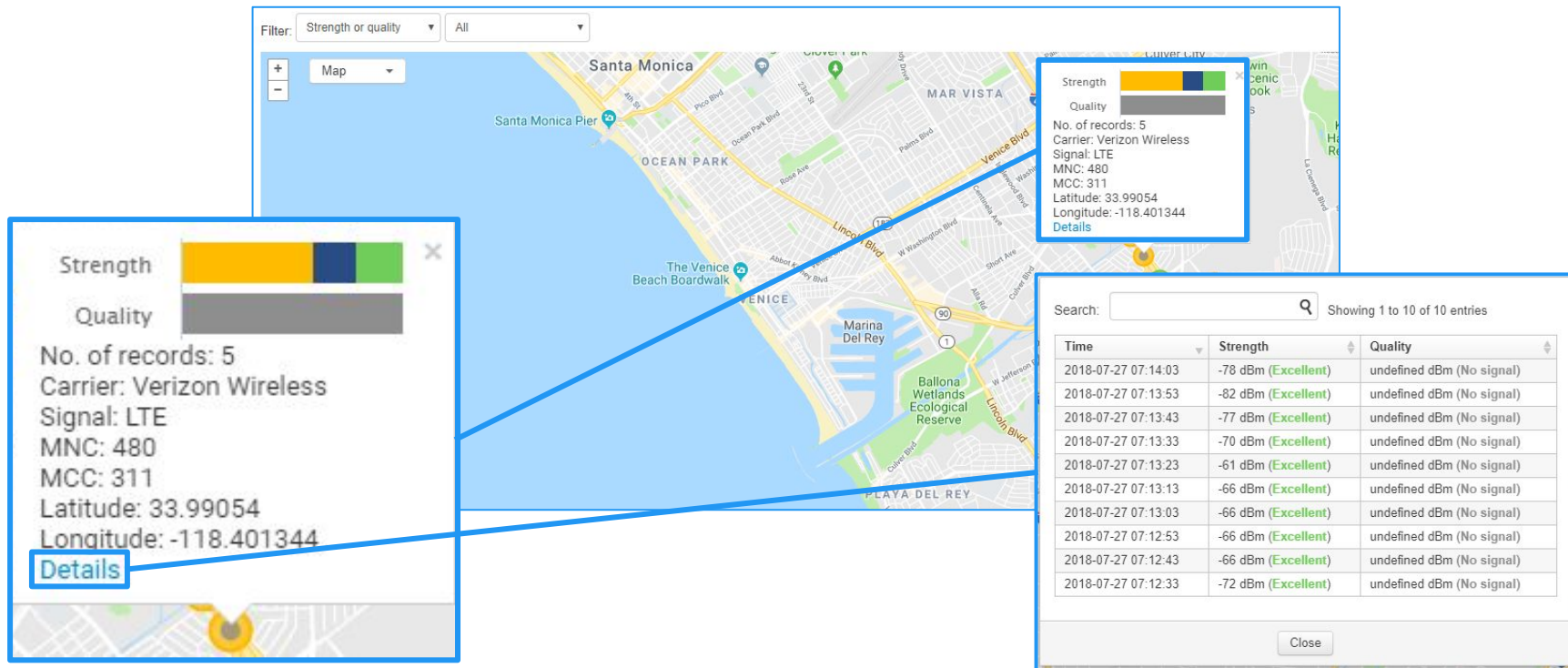


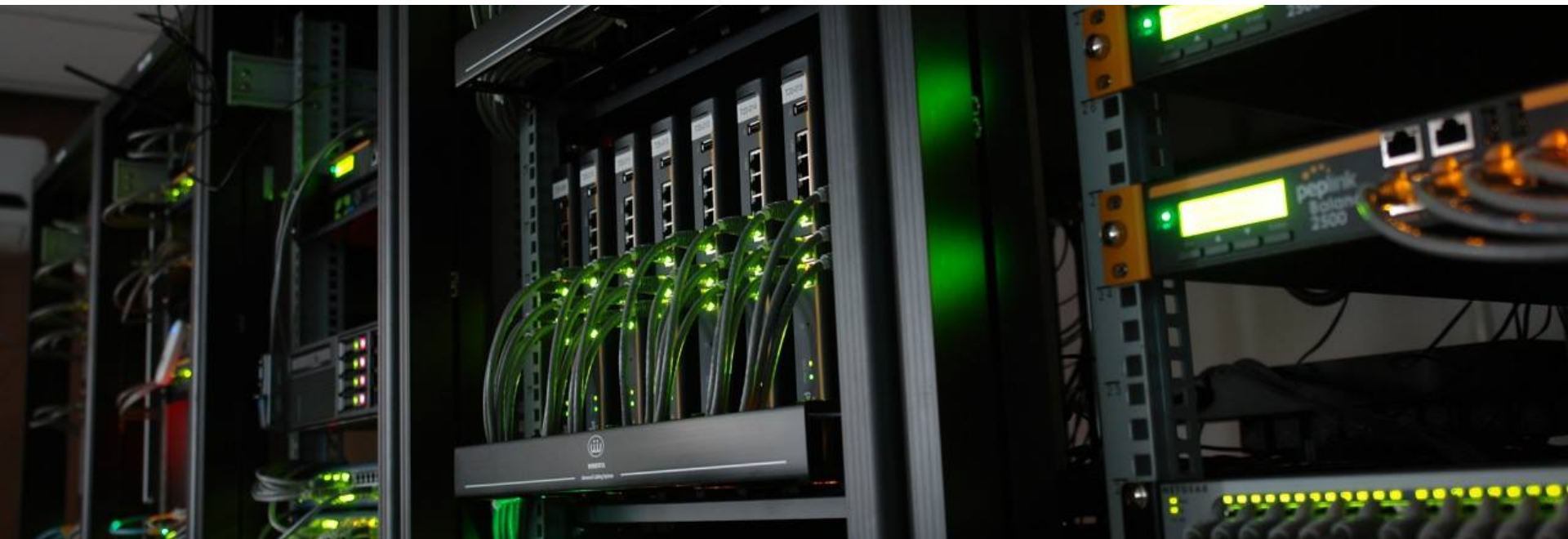
Track vehicle speed along GPS route

- Change "Color Track" to "by Speed"
- Mph is color coded for easy reference

InControl 2 GPS - Cellular coverage

Route Based cell signal strength information





PCE Boot Camp 2018

Tech Concepts: InControl 2 - GPS Functionality: Geo-Fencing

InControl 2 - Geo-fencing



Location based event triggers

Geo-fencing: **InControl 2** allows you to define an area by circle or outline a path on a map; when a device crosses that area, **InControl 2** can trigger an action item

Requirements:

- GPS enabled **Peplink**
 - **HD or BR series**
- Current firmware installed
- Active **InControl 2** account

NOTE: A Geo-Fence can be applied to all units in a Group or selectively via Tags assigned at the Device Level



InControl 2 - Geo-fencing

Configuration



From the **Group Level**:

- **Settings**
 - **Geo-Fencing**

The screenshot shows the InControl 2 web interface. The top navigation bar includes 'Wi-Fi AP', 'Network Settings', 'Clients', and 'Settings'. The 'Settings' menu is open, displaying a list of options: 'Device Management', 'Add Devices', 'Device IP Settings', 'Device System Management', 'InControl Options', 'Notifications', 'Firmware Policy', 'Device Schedule', 'Geo-fencing' (highlighted with an orange box), 'Bulk Configurator', 'Ad Delivery Service', and 'Group Settings'. Below the menu, a table is visible with columns for 'Wi-Fi Config', 'Product', and others. The table contains three rows of data.

Wi-Fi Config	Product			
Device managed	Surf SO (HW1)			
Device managed	MAX Transit (HW2)	4 months		15 days
-	FusionHub	-		-

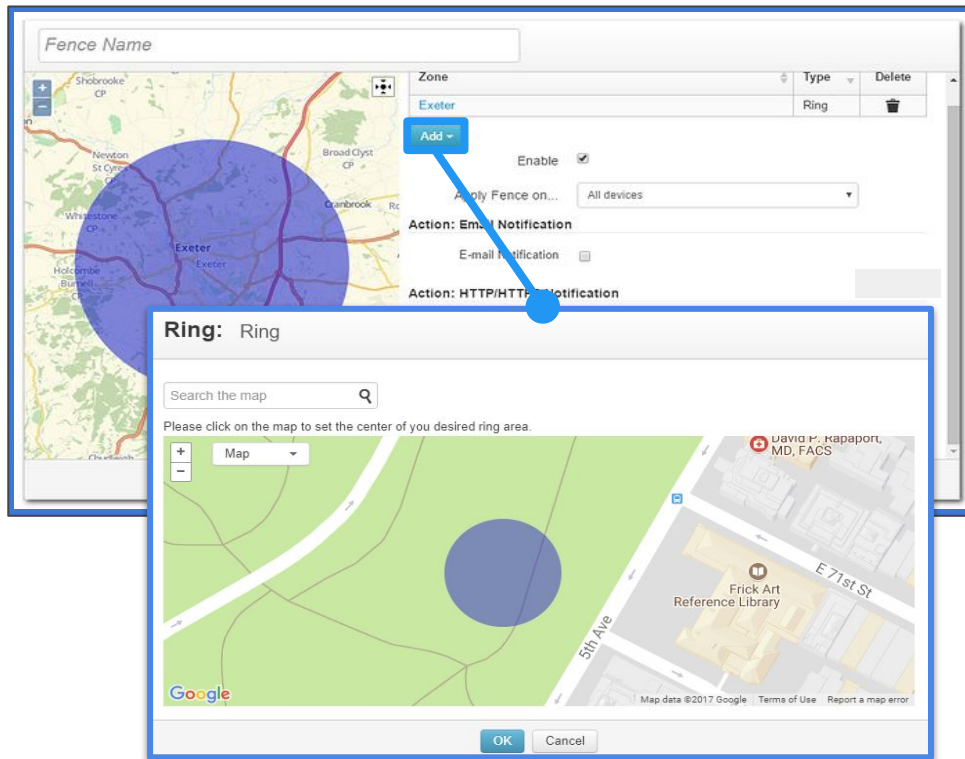
InControl 2: Geo-Fencing

Option: Ring

RING: Manually define an area on the map to fence

Options:

1. Drawing Tool in InControl 2
2. **NEW!** - Upload a .CSV file with fence information
 - **Fence info needed**: name, latitude, longitude and radius (in meters)



InControl 2: Geo-fencing



Option: Path

Fence 1

Map

David P. Knapport, MD, FACS

Frick Art Reference Library

E 71st St

E 70th St

Madison Ave

Google

Map data ©2017 Google Terms of Use Report a map error

Zone	Type	Delete
Test1	Path	

Add

Enable ☒

Apply Fence on... All devices

Action: Email Notification

E-mail Notification ☐

Action: HTTP/HTTPS Notification

HTTP/HTTPS Notification ☐

Action: Enable/Disable Wi-Fi AP

Wi-Fi AP No action

Save **Cancel**

PATH: Upload **.GPX** file to define the route/path

Path: Test1

Path width 30 feet

Upload GPX file **Choose File** No file chosen

Please drag and drop a GPX file to the map.

Map

East Dr

East 72nd Street Playground

5th Ave

72nd St

3rd St

Madison Ave

E 72nd St

E 71st St

Park Ave

E 72nd St

Simon Capstick-Dale Fine Arts

Historic Landmark Preservation

E 69th St

Google

Map data ©2017 Google Terms of Use Report a map error

OK **Cancel**

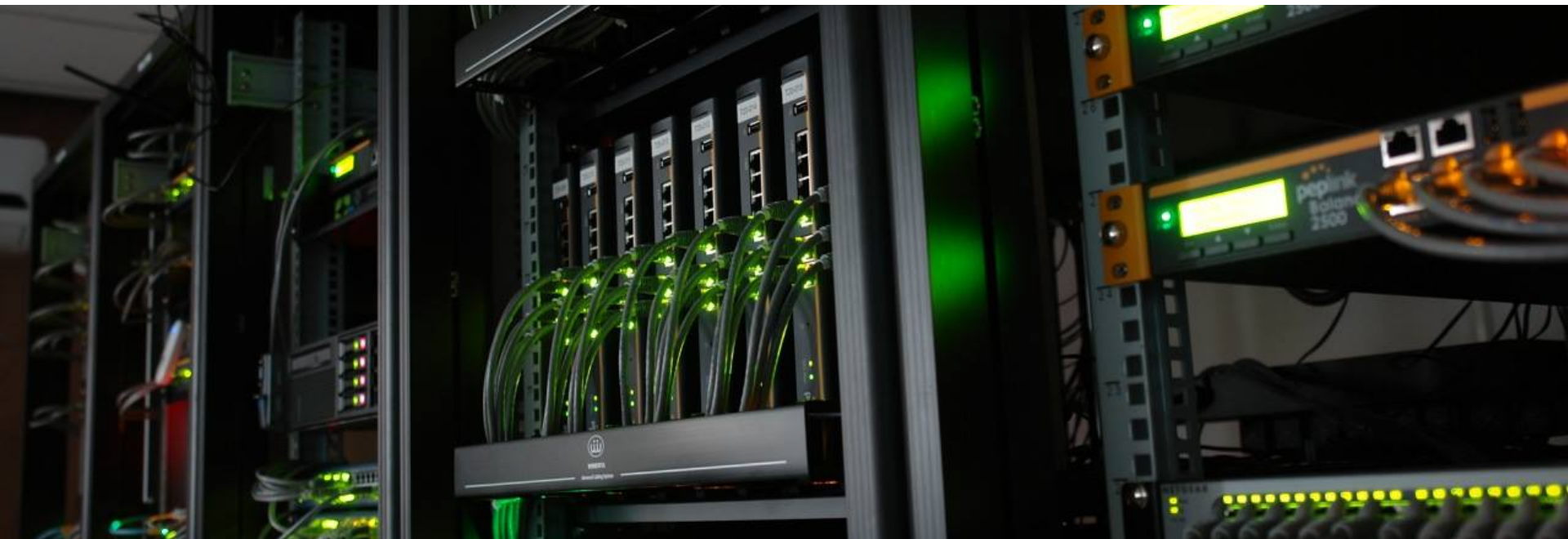
InControl 2: Geo-fencing

Triggered Events

When a GPS-enabled Peplink leaves a Geo-fenced area, these actions can trigger:

- **Email** notification
- **HTTP/HTTPS** notification
- **Enable/Disable** the built in Wi-Fi AP
- **GeoSplitting** adding a temporary Tag when crossing into a GeoFence and have it removed upon leaving. This makes Tag enabled actions keyed to a physical location





PCE Boot Camp 2018

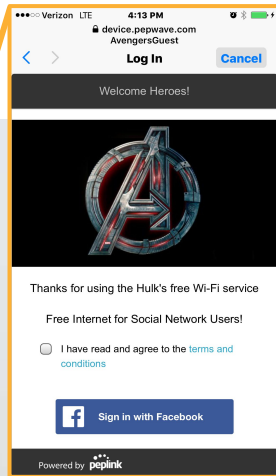
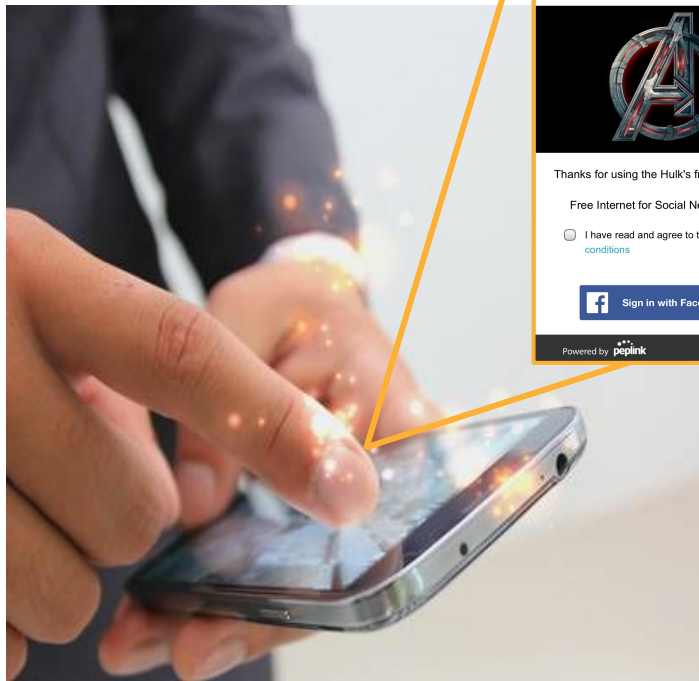
Tech Concepts: InControl 2 - Wi-Fi Solutions

InControl 2: Group Level

Wi-Fi Configuration: Captive Portal

Customize and set up your network's **Wi-Fi Captive Portal** however you like!

- Multiple **Authentication methods**
 - Multiple methods can be active at once
- **Custom Graphics**
- **Custom Text**
 - Custom **Terms and Conditions**.



InControl 2: Group Level

Wi-Fi Configuration: Captive Portal



The screenshot shows the InControl 2 Group Level interface. The top navigation bar includes 'Group Level', 'US Support', 'Wrestlemania', and 'Dashboard'. A dropdown menu is open under 'Network Settings', highlighting 'Captive Portals'. The main dashboard displays four summary cards: 'Online' (2 device(s)), 'Offline' (1 device(s)), 'Total' (3 device(s)), and 'Clients' (1 online). Below these is a 'Device List' table with 3 devices.

Status	Device Name	Tags	Wi-Fi Config	Product Name	Uptime	Online	WAN	Usage	Clients	Firmware	Last Config Applied
Online	☆ AP_One_AC_Mini_B677		Group level	AP One AC Mini	4 hours	4 hours		1.0 kbps	0	3.5.4 build 1681	4 hours ago
Online	☆ MAX_HD4_D40C		Group level	MAX HD4 (HW1)	4 hours	4 hours	1	0 bps	1	7.1.0 build 3433	4 hours ago
Offline	☆ MAX_BR1_561A		Group level	MAX BR1 (HW2)	-	8 hours ago	-	-	-	-	-

Buttons: Edit, Download as CSV, Manage...

- **Group Level > Network Settings > Captive Portals**

InControl 2: Group Level

Wi-Fi Configuration: Captive Portal



InControl² Thu 12:12:33 GMT-0600 [jasonk@peplink.com](#) | [Sign out](#)

Group Level **US Support** > **Wrestlemania** > Network Settings > Captive Portals >

Dashboard Reports PepVPN / SpeedFusion Wi-Fi AP **Network Settings** Clients Settings Wrestlemania US Support

Captive Portals

[New Captive Portal](#) ? Search:

Name	Access Modes	SSIDs applied on	VLANs applied on	Actions
No data available				

Note: Peplink Balance and Pepwave MAX firmware prior to 7.0.1 supports one captive portal only.

- Click **New Captive Portal**

InControl 2: Group Level

Wi-Fi Configuration: Captive Portal



Captive Portal Settings

Enable ☒ Note: The captive portal feature only works with Peplink Balance, Pepwave MAX and Pepwave AP devices. They must be under warranty and online on InControl.

Name

Company Name

Access Mode Social Open Access Guest Account Token E-mail SMS

Enable ☒ Facebook Facebook Page ID

☐ Google ID ☐ WeChat ☐ Twitter ☐ Instagram

Note: Optional. For customizing background image and logo. This mode is unavailable on some models.

Please complete the WeChat Settings in the [Group Settings](#) page first.

Twitter ID

Preview and Customization Save Changes Cancel

Landing Page (Not available on Android devices)

Display a signed-in page with a Start Browsing button. Clicking the button will redirect to the URL the guest user had originally requested. In the auto-login popup browser on iOS, clicking the button will redirect to:

Display a signed-in page with a Start Browsing button. Clicking the button will unconditionally redirect to:

Redirect to:

Preview and Customization Save Changes Cancel

Basic Settings

Language English

Default Language Auto detect

Logo

Drop image here to upload (or Click)

Note: Maximum size: 512 KB. Supported formats: PNG, JPEG and GIF. Maximum width: 460px.

Background Color

Background Image

Drop image here to upload (or Click)

Note: Maximum size: 1 MB. Supported formats: JPEG, PNG and GIF.

Splash Screen

Title Text

Title Text Color

Header Color

Background Color (behind)

Done

Splash Screen Signed-in Screen Signed-out Screen

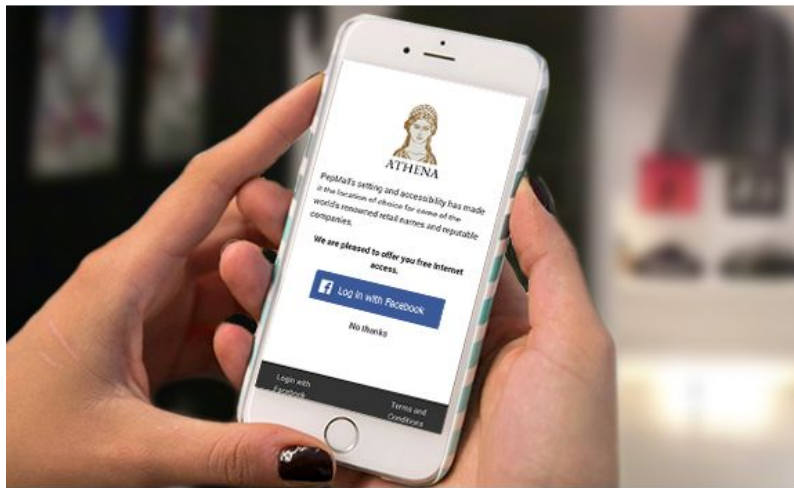
InControl 2: Group Level

Wi-Fi Configuration: **Captive Portal (Social Wi-Fi)**



InControl 2 gives you the freedom to decide whether you want to give Facebook Login as a choice and how your visitors stay connected.

Whether it's time-based, usage based- you'll find it here. It's as simple as a few clicks and it's all web-based so you can manage everything no matter where you are.



Log In With:



InControl 2: Group Level

Wi-Fi Configuration - VLAN setup



InControl²

Group Level > US Support > Wrestlemania > Network Settings > VLAN Networks

Dashboard Reports PepVPN / SpeedFusion Wi-Fi AP Network Settings Clients Settings

Outbound Policy Firewall Rules **VLAN Networks** Captive Portals

Add VLAN Network

LAN Name	VLAN	Apply to	Captive Portal
Untagged LAN	None	All devices	None
SocialTest6	66	All devices	SocialTest6

- **Group Level > Network Settings > VLAN Networks > Add VLAN Network**
 - Setup the VLAN Name/Tag and subnet info

InControl 2: Group Level

Wi-Fi Configuration - VLAN setup



VLAN Network Settings

Note: Devices include Pepwave MAX, Peplink Balance and SD Switch

Settings for Peplink SD Switch

IP Settings: DHCP (Default) ▼

Host Name: bob

DNS Servers: ☒ Obtain DNS server addresses automatically
☐ Use the following DNS server address(es)

Settings for Peplink Balance and Pepwave MAX

Default IP Address ⓘ: 192.168.58.1

Subnet Mask: 255.255.255.0 (/24) ▼

Inter-VLAN Routing: ☐

Captive Portal: Test ▼

Note: For Pepwave AP, please apply the captive portal to an SSID

Apply to: All devices ▼

Save **Cancel**

- If you're configuring a **MAX (built in AP)** or **MAX/Balance with an associated AP**, associate the **Captive Portal** to the **VLAN** and **NOT the SSID**

VLAN Network Settings

DHCP Server Settings for Peplink Balance and Pepwave MAX

DHCP Server ☒

DHCP Server Logging: ☐

Exclude IP Addresses: The first and last IP addresses in the subnet of the VLAN on a device will not be offered.

E.g.: If the IP subnet of the VLAN on a device is 192.168.0.0/16, and both of the fields are set to 10, then IP addresses from 192.168.0.1 to 192.168.0.10, and from 192.168.255.245 to 192.168.255.254 will not be offered.

Note: In case the total number of excluded IP addresses is more than the IP addresses in a subnet, no IP addresses will be excluded.

Lease Time: Days Hours Mins

DNS Servers: ☒ Assign DNS server automatically

WINS Servers: ☐ Assign WINS server

BOOTP: ☐

Save **Cancel**

- **Enable DHCP** for your created **VLAN**

InControl 2: Group Level

Wi-Fi Configuration - SSID setup



InControl²

Group Level > US Support > Wrestlemania > Wi-Fi AP > Group-wide SSID Settings

Dashboard Reports PepVPN / SpeedFusion Wi-Fi AP Network Settings Clients Settings

Group-wide SSID Settings

Wi-Fi Management ☒

Add new SSID

SSID	Security	SSID Visibility	Radio Selection
Social Test 6	Open - No Encryption	Show this SSID	Dual band operation (2.4 GHz and 5 GHz)

- **Group Level > Wi-Fi AP > Group-wide SSID Settings**
 - Enable Wi-Fi Management > Add new SSID

InControl 2: Group Level

Wi-Fi Configuration - SSID setup



SSID Settings

SSID: Social Test 6

Enable: ☒

SSID Availability

Device Selection: This SSID is enabled on all devices

Security Settings

Security Policy: Open - No Encryption

Layer 2 Isolation: ☐ Enable

SSID Discovery

SSID Visibility: Show this SSID

Security Settings

Security Policy: WPA2 - Personal

Encryption: AES:CCMP

Shared Key [fewer options]: ☒ Static ☐ Last 8 octets of LAN MAC address ☐ Random

Layer 2 Isolation: ☐ Enable

New PSK options!

SSID Settings

Per Client Downstream Limit: 0 kbps (0: Unlimited)

Network Priority (QoS): Gold

Note: The settings will not be applied.

VLAN Settings

VLAN Tagging: ☒

VLAN ID: 66 (1 - 4094)

VLAN Name: 66 (SocialTest6)

Restriction Mode: None

Multicast Settings

Multicast Filter: Disabled

Multicast Rate: 0

IGMP Snooping: Disabled

Radio Selection

Radio Selection: 2.4GHz

Schedule

Schedule: Always on

Captive Portal Settings

Captive Portal: None

Note: The captive portal will be applied to the SSID on Pepwave AP only. To have the captive portal be effective on Peplink Balance and Pepwave MAX, please apply it to this SSID's VLAN on VLAN Networks page.

If you're deploying just an AP (no Balance/MAX), apply Captive Portal direct to SSID. Otherwise leave at None.

Save Changes

Cancel

InControl 2: Group Level

Wi-Fi Configuration - SSID setup



Dashboard Reports PepVPN / SpeedFusion Wi-Fi AP Network Settings

Wrestlemania ☆ Jason's Test group on Mars

Online 2 device(s)

Offline 1 device(s)

Device List

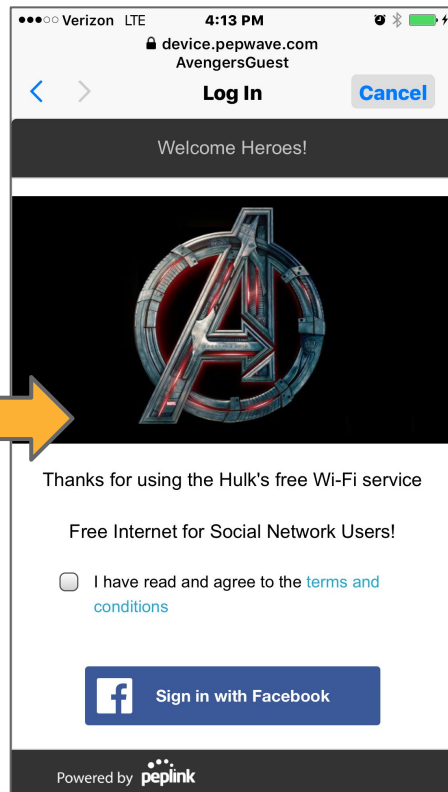
Search devices... 3 device(s)

Status	Device Name	Tags	Wi-Fi Config	Product Name
☆	AP_One_AC_Mini_B677		Group level	AP One AC Mini
☆	MAX_HD4_D40C		Group level	MAX HD4 (HW1)
☆	MAX_BR1_561A		Group level	MAX BR1 (HW2)

Edit

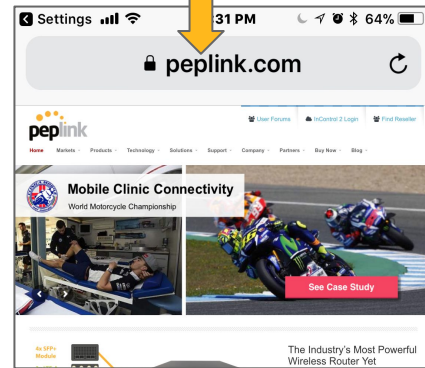
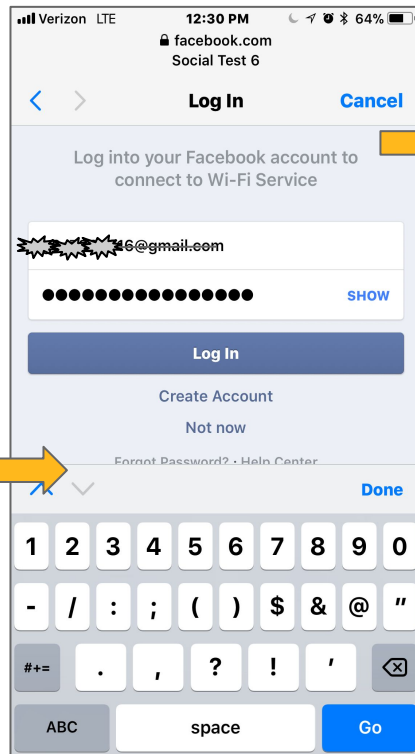
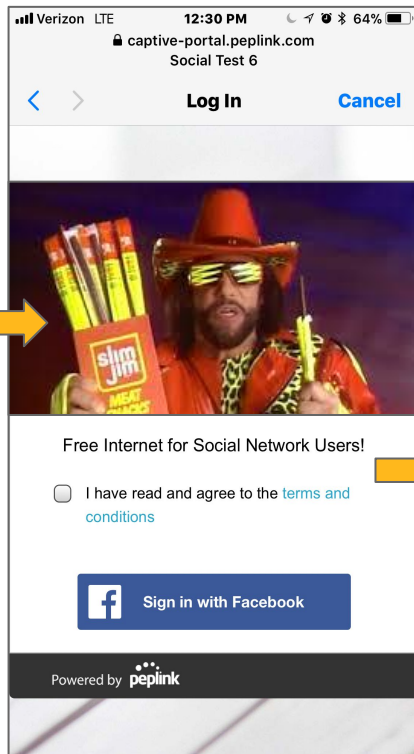
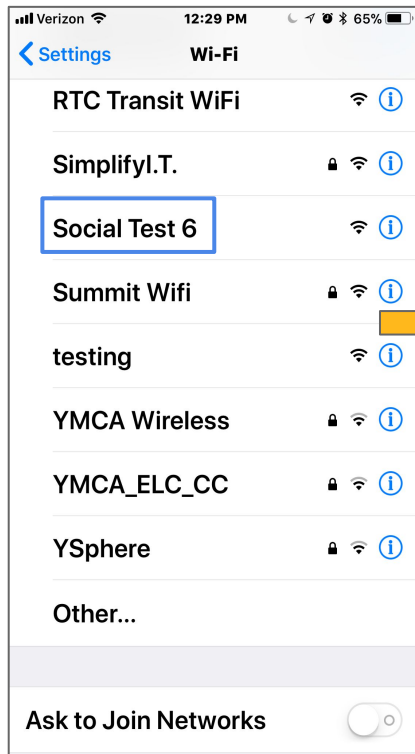
Download as CSV

Manage...

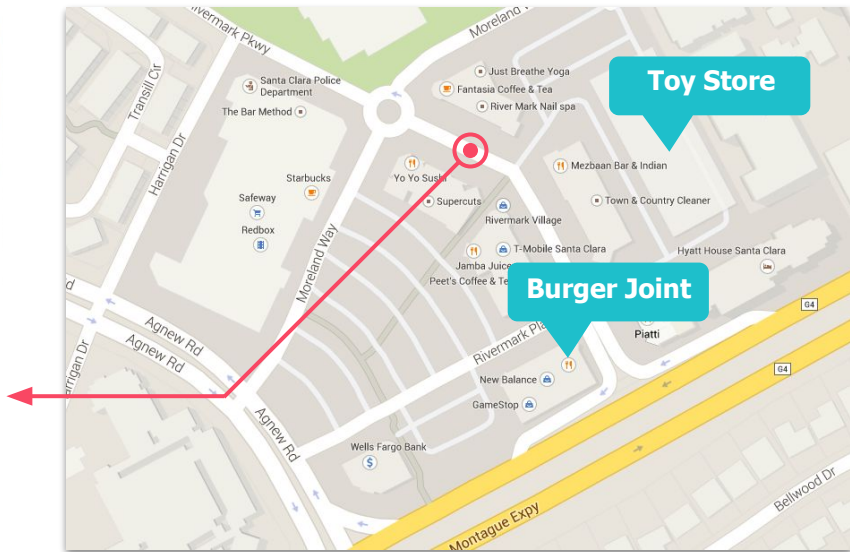


InControl 2: Group Level

Wi-Fi Configuration - Login Path



Wi-Fi Configuration - Ad Delivery Service



- **Wi-Fi providers can serve targeted ads** during the login process.
- Available as an **add-on/purchase** for **InControl 2**
- **Variety of Ad Campaigns available**
 - *Banner Ads*
 - *Survey*
 - *Video*

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

A device which is not managed under the same organization or not even managed by InControl can now be added to a star and point-to-point topology profile by its site ID?

A

TRUE

B

FALSE

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

A device which is not managed under the same organization or not even managed by InControl can now be added to a star and point-to-point topology profile by its site ID?

A

TRUE

B

FALSE

*As of InControl 2 Firmware 2.6.0

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

What is the effective way to configure the Firewall Rules for a group of devices (eg. 100 units), that let you review the rules before applying the settings to the devices?

A

IC2 > Firewall Rules Management

B

IC2 > Device IP Settings

C

IC2 > Bulk Configurator

D

Configure individual devices via IC2 > Remote Web Admin

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

What is the effective way to configure the Firewall Rules for a group of devices (eg. 100 units), that let you review the rules before applying the settings to the devices?

A

IC2 > Firewall Rules Management

B

IC2 > Device IP Settings

C

IC2 > Bulk Configurator

D

Configure individual device via IC2 > Remote Web Admin

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q What firmware version is required to be installed on the Peplink router to be able to enable "low data usage mode" in InControl?

A

Firmware 7.0.1 or higher

B

Firmware 5.4.9 or higher

C

Firmware 6.2.0 or higher

D

Firmware 7.1.1 or higher

E

Firmware 6.3.0 or higher

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q What firmware version is required to be installed on the Peplink router to be able to enable Low Data Usage Mode in InControl?

A Firmware 7.0.1 or higher

B Firmware 5.4.9 or higher

C Firmware 6.2.0 or higher

D Firmware 7.1.1 or higher

E Firmware 6.3.0 or higher

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

In which situation is a Captive Portal applied to a SSID instead of a VLAN?

A

Always

B

Never

C

When deploying a Captive Portal to Pepwave MAX cellular routers

D

When deploying a Captive Portal to Pepwave Access Points only

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

In which situation is a Captive Portal applied to a SSID instead of a VLAN?

A

Always

B

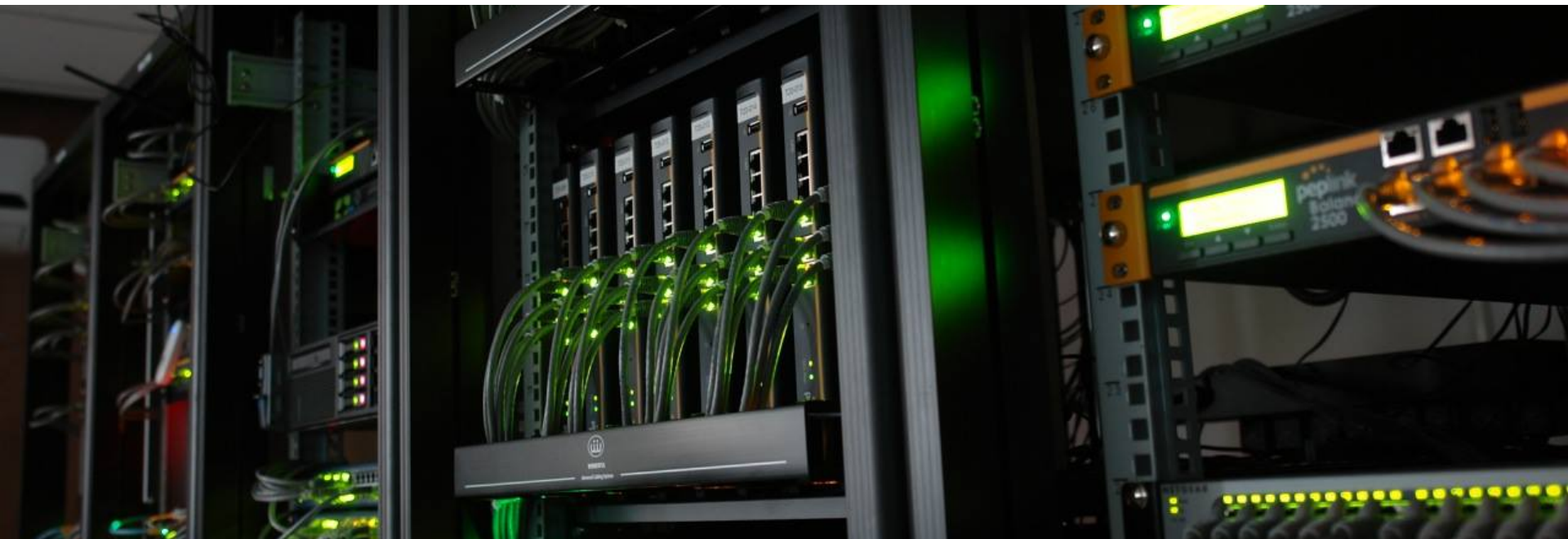
Never

C

When deploying a Captive Portal to Pepwave MAX cellular routers

D

When deploying a Captive Portal to Pepwave Access Points only



PCE Boot Camp 2018

Products - Peplink Balance

Balance Family Features



Ethernet focused / Multi-WAN

- 2-13 **Ethernet** WAN
- **USB** cnx for Cellular



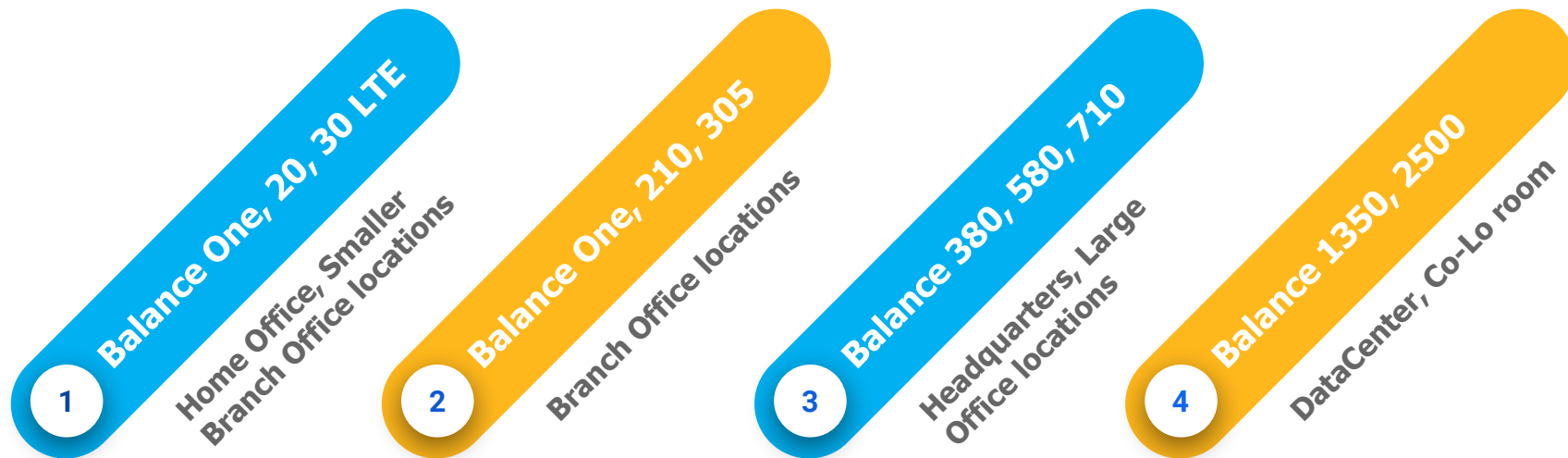
Set it and Forget it

- **Simple Web UI** for easy configuration
- **Setup** *Traffic Steering rules, Speedfusion, Firewall policies* and more, **quickly and easily**.
- **Enterprise** grade and **rugged**

InControl 2

- **Zero-Touch Configuration, Monitoring, and Management from the Cloud**
- **Companion Smart Device app** keeps you connected

Balance Family Groups



Common features: 8x Traffic Steering/Outbound Policy algorithms, PepVPN/SpeedFusion, SPI Firewall, Basic Content Filter and more

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

What are the default user ID, password and IP address of a Peplink Balance?

A

User ID: root Password: pwd IP address: 192.168.1.1

B

User ID: admin Password: pwd IP address: 192.168.1.100

C

User ID: admin Password: pwd IP address: 10.10.1.1

D

User ID: admin Password: pwd IP address: 192.168.1.100

E

User ID: admin Password: admin IP address: 192.168.1.1

F

User ID: admin Password: admin IP address: 10.10.1.1

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

What are the default user ID, password and IP address of a Peplink Balance?

A

User ID: root Password: pwd IP address: 192.168.1.1

B

User ID: admin Password: pwd IP address: 192.168.1.100

C

User ID: admin Password: pwd IP address: 10.10.1.1

D

User ID: admin Password: pwd IP address: 192.168.1.100

E

User ID: admin Password: admin IP address: 192.168.1.1

F

User ID: admin Password: admin IP address: 10.10.1.1

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

Which of the following is a benefit of LAN Bypass?

A

Save bandwidth.

B

Fault tolerance.

C

Maximize throughput.

D

Improve security.

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

Which of the following is a benefit of LAN Bypass?

A

Save bandwidth.

B

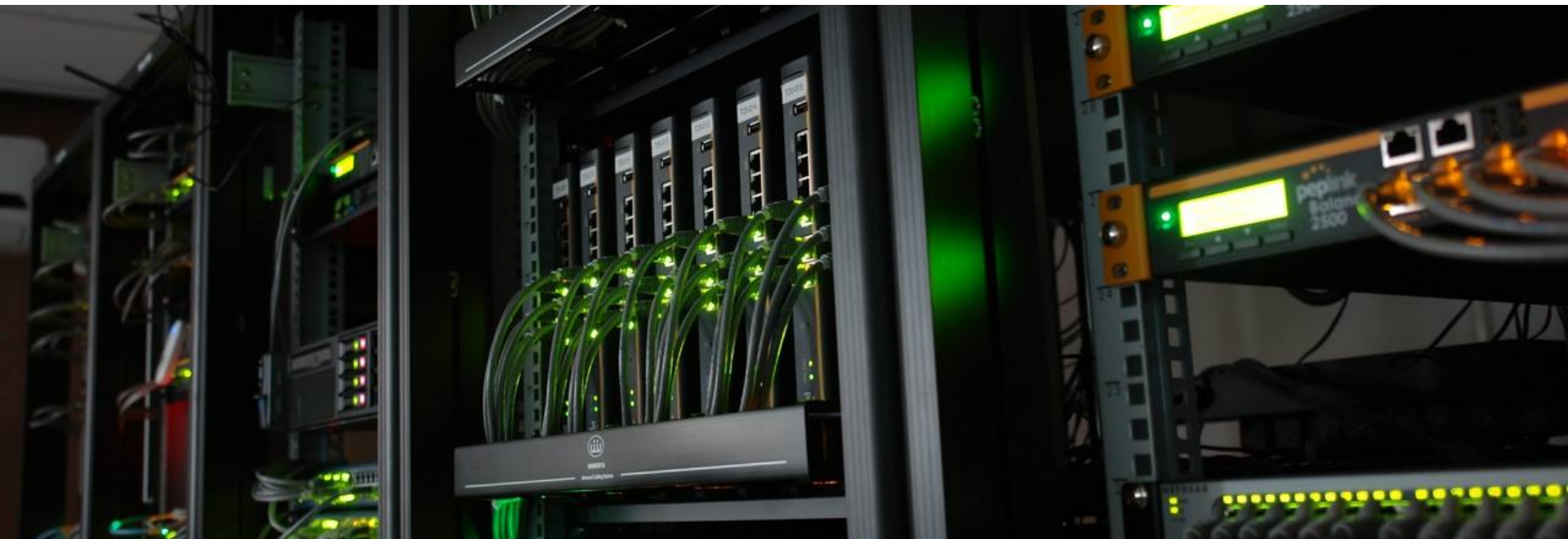
Fault tolerance.

C

Maximize throughput.

D

Improve security.



PCE Boot Camp 2018

Products - MAX Mobile product line

MAX Mobile Family: Overview



Easy to Integrate

- **Cellular Focused** either by USB or embedded Cellular Modem with redundant SIM
- Variety of **Form Factors** (both indoor and out)
- Variety of **Power inputs** based on model
- **Multiple additional WAN** options available for Load Balancing or aggregation w/SpeedFusion

InControl 2

- **Zero-Touch Configuration, Monitoring, and Management from the Cloud**
- **Companion Smart Device app** keeps you connected

Fully Featured Router

- **SPI Firewall**
- **Content Filter**
- Traffic Steering/**Outbound Policy**
- **SpeedFusion Capable/SD-WAN**



MAX Mobile Family: Groups



USB Focused:

USB WAN for compatibility, Wi-Fi AP built in

- Up to 4x USB WAN possible
- Over 250+ USB modems supported

[MAX On-the-Go and MAX 700](#)

Transportation Hotspot:

Makes fast, reliable internet for passengers

- Up to 2x LTE-A cell modems available
- Simultaneous Dual Band Wi-Fi AP

[MAX Transit and MAX Transit Duo](#)

Business Ready/BR Series:

Small form factor and wide power range for easy integration

- 1x Cell module with redundant SIM
- LTE-A versions available

[BR1, BR1 ENT, BR1 Slim, BR1 Mini, BR1 M2M, BR1 Pro, BR1 IP55, BR1 IP67](#)

Heavy Duty/HD Series:

Multi cell modem means horsepower for your network

- 2x Cell module with redundant SIM
- LTE-A versions available

[HD2 Mini, HD2, HD4, HD2 IP67, HD4 IP67](#)

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

What is the new feature introduced in the MAX BR1 product line (requires software activation/unlock to access)?

A

BGP Support

B

LAN Interface - support multiple subnets

C

WAN Smoothing allows sending redundant packets to the same WAN-to-WAN

D

Drop-In Mode Support

E

QoS Settings to include SpeedFusion traffic

US Summit PCE Boot Camp



Tech Concepts - InControl 2

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US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

Is a WAN connection needed for the MAX device to receive the GPS info?

A

YES

B

NO

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q Is a WAN connection needed for the Pepwave device to receive the GPS info?

A YES

B NO

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Tech Concepts - InControl 2

Q

Normally the MAX HD4 has 2 Ethernet WAN & 4 LTE connections; however, for emergency planning, the customer needs to add 2x wired WANs for Satellite connections. What is the best way to increase WAN ports?

A

Purchase USB-to-Ethernet Adapter and connect to the USB port.

B

Add 2x Balance 20 in front of MAX HD4, cascade to WAN1 & 2, to provide 4 WAN scenario

C

Purchase the WAN Port Activation License for MAX HD4 to convert LAN 1-3 to WAN 3-5.

D

Purchase the BPL-ONE-LC-5WAN license to enable LAN 1-3 as WAN 3-5.

E

Nothing can be done, need 2 units of MAX HD4 to achieve 4 WAN ports requirement.

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Tech Concepts - InControl 2

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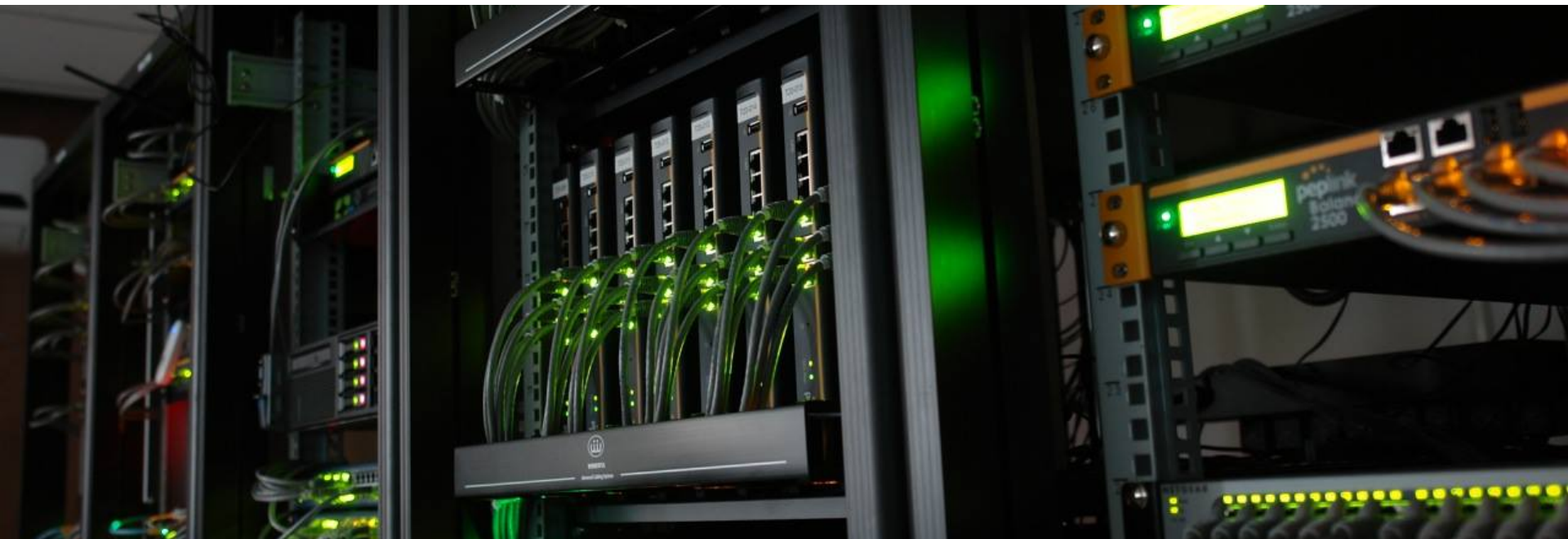
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PCE Boot Camp 2018

Products - FusionHub

FusionHub: Features

Peplink's Virtual SD-WAN appliance

- Deploy Globally in Minutes
- Control your infrastructure
- Eliminate reliance on physical sites

Fully Featured UI

- Split Tunneling/Outbound Policy capable
- Use Public IP to build Tunnel and Port Forwarding

Easy to Integrate

- Variety of FusionHub Instances/sizes available
- Demo version available on site
- Can install on VMware and Cloud Platforms



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Tech Concepts - InControl 2

Q Which free Fusionhub license(s) can be acquired through InControl 2?
(Choose 2 answers)

A

Solo license (1 peer, 100 Mbps throughput)

B

Fusionhub Essential (5 peers, 100 Mbps throughput)

C

Evaluation license (10 peers, 100 Mbps throughput)

D

Fusionhub 1000 (1000 peers, 500Mbps throughput)

E

FusionHub Pro (20 peers, 200 Mbps throughput)

US Summit PCE Boot Camp



Tech Concepts - InControl 2

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Which free Fusionhub license can be acquired through InControl?
(Choose 2 answers)

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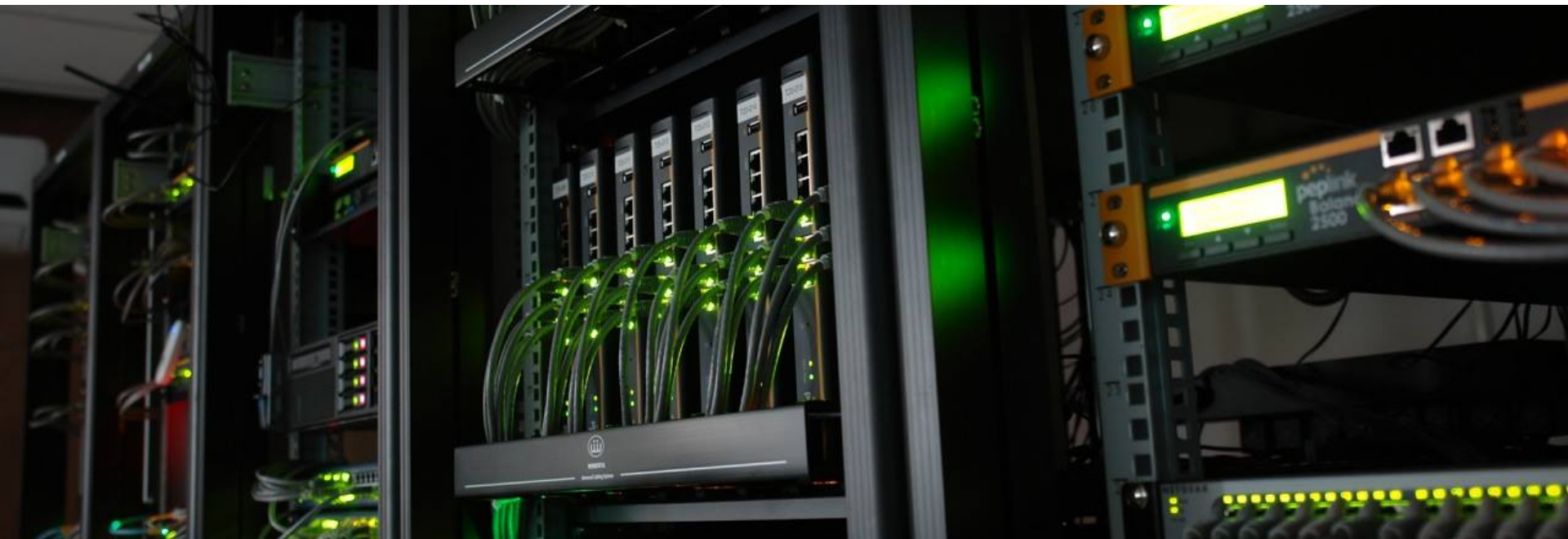
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D

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E

FusionHub Pro (20 peers, 200 Mbps throughput)



PCE Boot Camp 2018

Pepwave Wi-Fi Solution

Pepwave **AP** Characteristics



Powerful APs

All Pepwave APs are upgraded to powerful 11ac simultaneous dual band radios.

Multiple Enclosures

A variety of form factors makes it easy to integrate into deployments



InControl 2

Central Monitoring, Management and Configuration options

Device Connector Characteristics



Universal L2 Transparent Wi-Fi Bridge

- Transparently extend a network SSID without adding a IP
- Compatible with any AP with no re-config necessary

Flexible and Tough

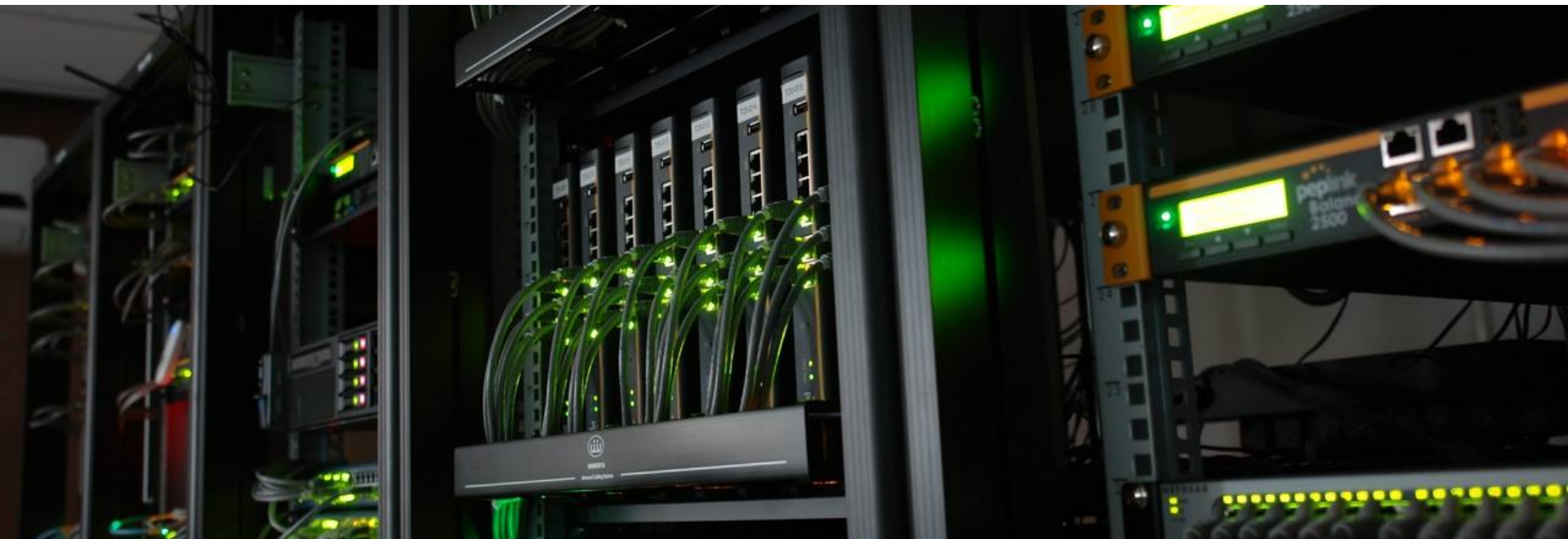
Variety of Form Factors

- Both indoor and outdoor versions available



SpeedFusion

Combine both 2.5 and 5 GHz signal with **SpeedFusion** to strengthen network Wi-Fi



PCE Boot Camp 2018

Pepwave Wi-Fi value add-ons

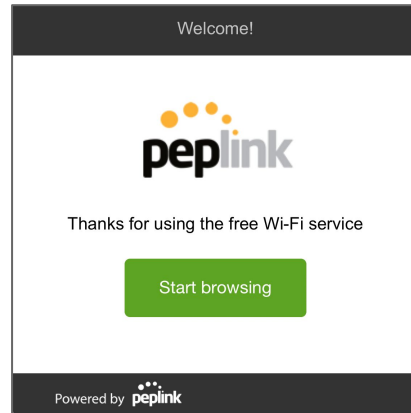
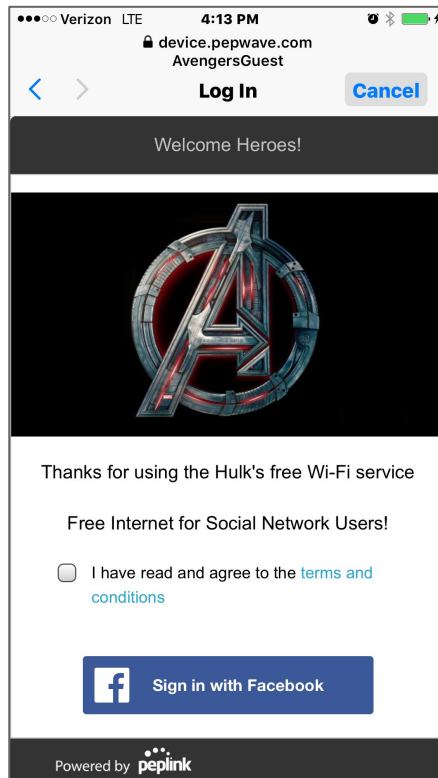
InControl 2 - Captive Portal

Peplink's hosted Portal page for your guest's Wi-Fi experience



Customize and set up your network's **Wi-Fi Captive Portal** however you like!

- Multiple **Authentication methods**
 - Multiple methods can be active
- **Custom Graphics**
- **Custom Text**
 - Custom **T&C**.



Ad Delivery Service

Monetize Wi-Fi Access



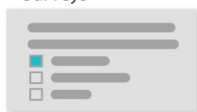
Sliding Carousel



Video Ads



Surveys



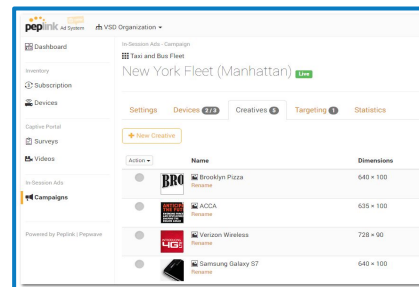
Place ads before Wi-Fi access

- **Carousel** - watch 10 seconds before connecting
- **Video** - watch before connecting
- **Survey** - answer questions before connecting
 - Multiple versions



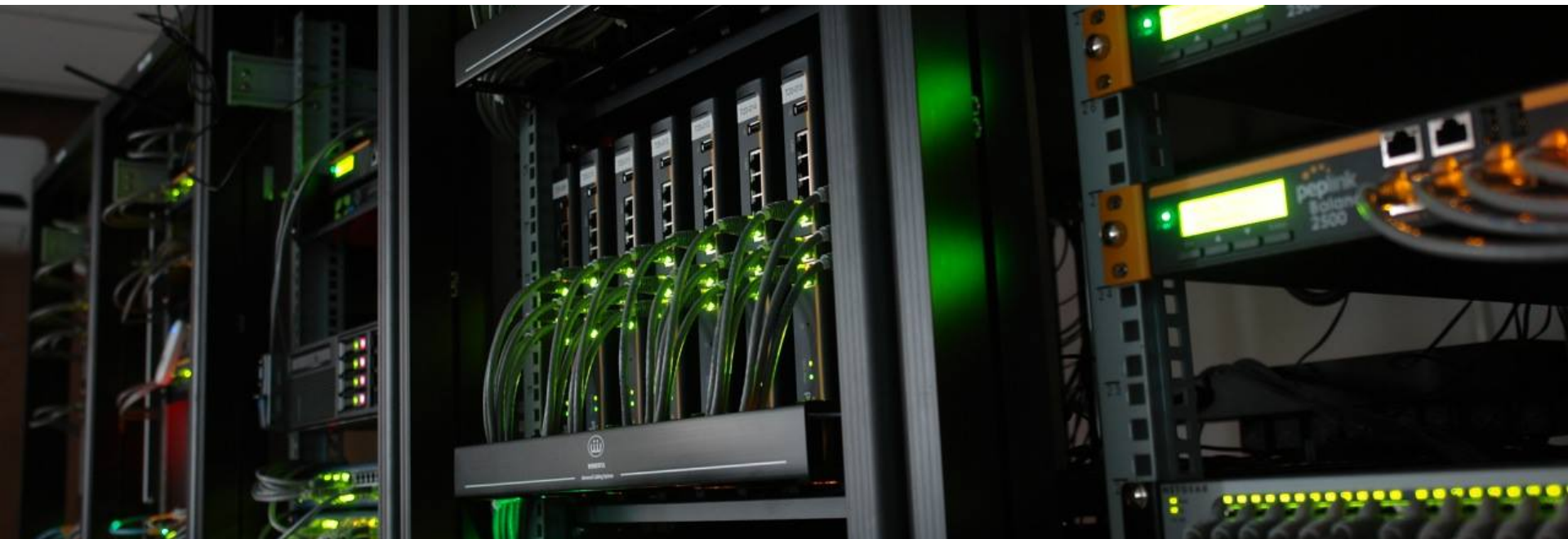
Functionality

- **Insights** - gathers customer metric information for further review
- **Location Based Ads** - Choose ads to play at specific locations
- **Campaigns** - Easily control ad's importance, set start and end dates, and target impressions and/or clicks.



Easy to Manage

Manage **all your campaigns**, across multiple devices, from a **single browser window**. ADS' simple user interface makes creating new campaigns a snap. Plus, you can view all your aggregated reports in one place.



PCE Boot Camp 2018

Pepwave Wi-Fi Solution diagnostics

Pepwave AirProbe Characteristics



Network Testing

Perform automated and scheduled tests for bandwidth, ping, upload speed, download speed, and application level



Diagnostics

Easily see Wifi utilization, channel utilization, packet distribution, and signal strength for each Wi-Fi device.

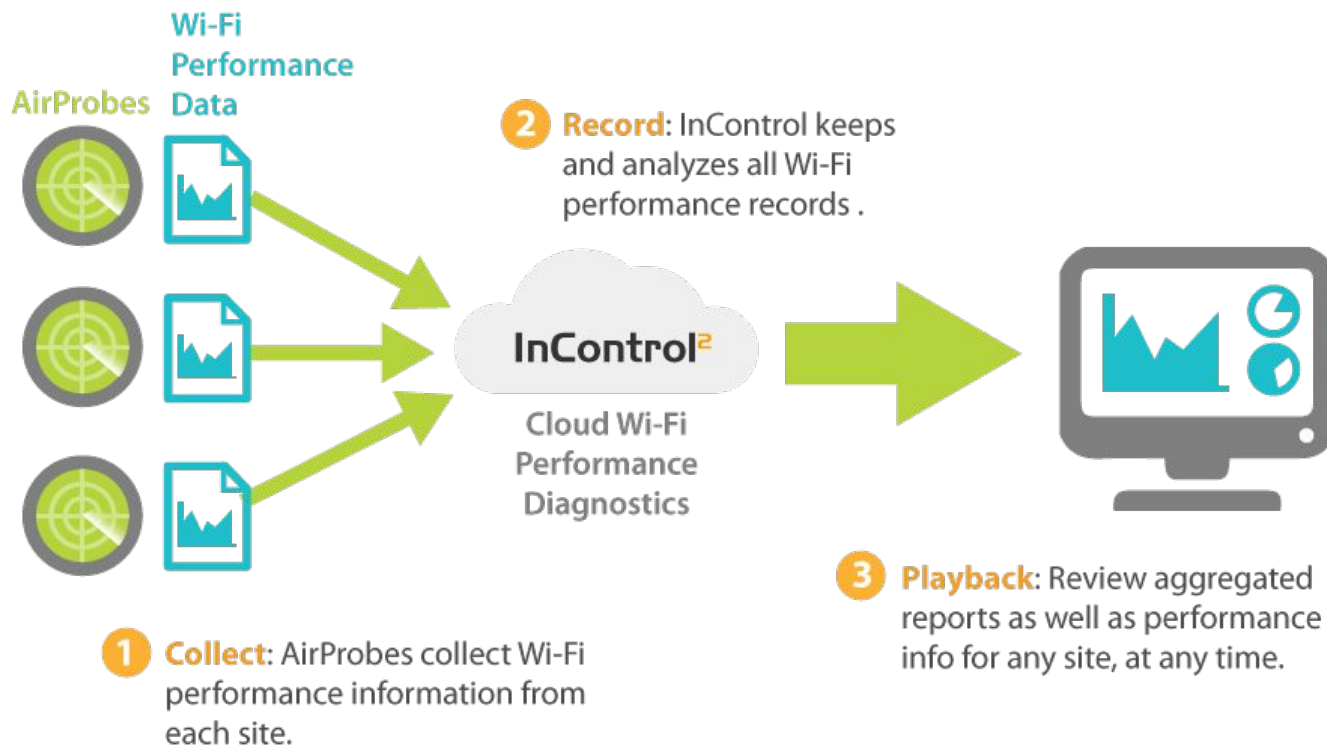


Notifications

Receive alerts by email if the signal strength is too weak or if a Wifi channel is over-utilized.



Pepwave AirProbe WorkFlow



US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

What is a directional Wi-Fi antenna?

A

An antenna typically used to extend the range of a Wi-Fi network into hard-to-reach corners of buildings or in other specific situations where 360-degree coverage is not needed.

B

An antenna which supports connections from multiple directions and is commonly used on Wi-Fi routers.

C

All of the above

US Summit PCE Boot Camp



Tech Concepts - InControl 2

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B

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C

All of the above

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

How many SSIDs does the AP One Rugged support

A

1

B

2

C

4

D

8

E

16

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

How many SSIDs does the AP One Rugged support

A

1

B

2

C

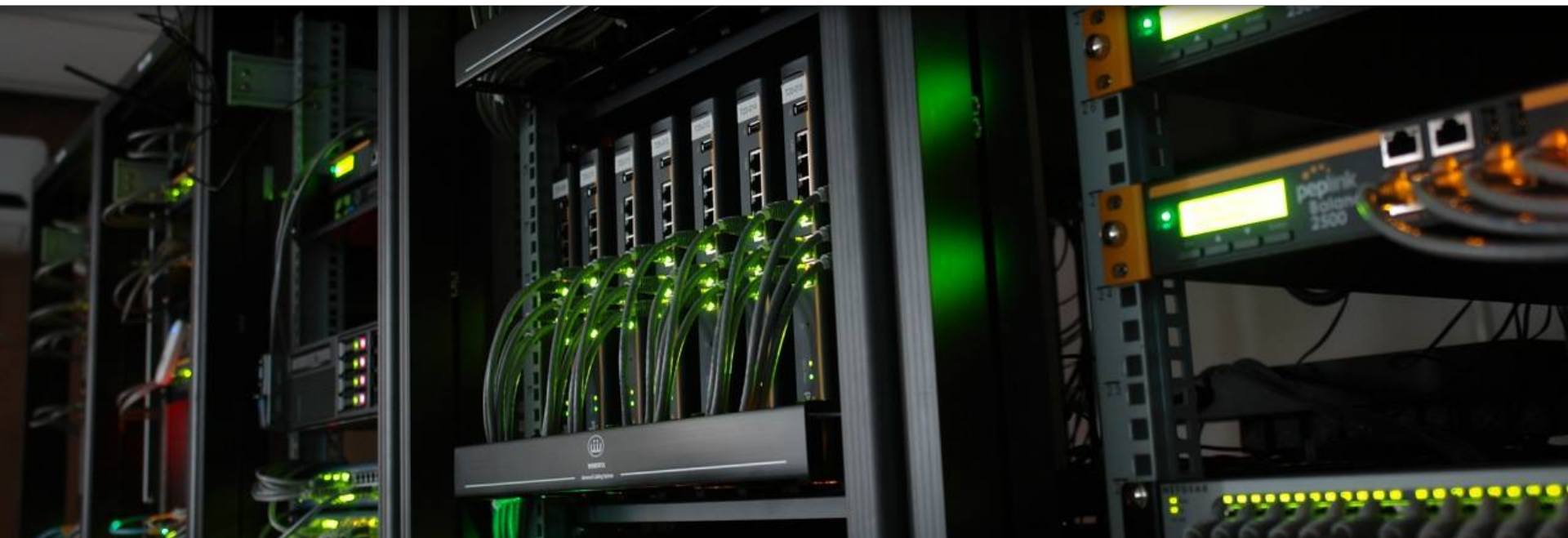
4

D

8

E

16



PEPXIM Peplink's IoT Solution

PEPXIM - Overview



PEPXIM - **Pep**link **Ex**tended to **I**nternet **M**achines

By 2020, Gartner predicts there will be 20 BILLION connected **Internet-of-Things** devices. Sensing the opportunity, **Peplink** is overwhelmingly proud to introduce our new IoT-focused product brand, **PEPXIM**.




The **PEPXIM Mission Statement** is to simplify management and installation of IoT products and/or solve business problems using IoT technology.



PEPXIM - Overview

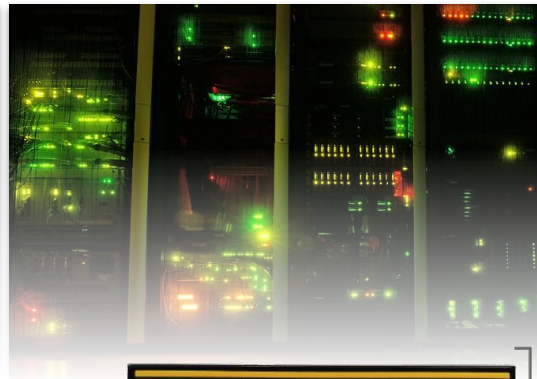


PEPXIM products

	Smart Reader with Time and Attendance App	HR made simple, for both Management and Staff
	Pepxim GPS Tracker and Cloud Based App	Comprehensive, Cloud-Based GPS Tracking
	Pepsign: Digital Signage Solution	Cloud-Based, Easy-to-use Digital Signage Solution
	Software Defined Power Distribution Unit	Easy Remote Reboots using the IoT Cloud
	Software Defined Power Management Unit	Consistent power for your vehicular network

Peplink: SD-Switch

SD (Software Defined) **Peplink** PoE Switch



- 850W Power Budget
 - Up to 3x PSU!
- Unify VLAN config across network
- Multiple sizes available
 - 8/24/48 port versions



8-Ports



24-Ports



48-Ports

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

What is the output power for the SD-PMU?

A

12V

B

24V

C

48V

D

52V

US Summit PCE Boot Camp



Tech Concepts - InControl 2

Q

What is the output power for the SD-PMU?

A

12V

B

24V

C

48V

D

52V

