





Agenda

- » Meraki overview
- » iPad growth in the enterprise
- » iPad security and access
- » Network considerations
- » Enabling a superior network experience



Meraki builds cloud-based
networks that are **easy to
manage.**

Complete Wireless LAN Product Line

	Indoor	Rugged/Outdoor
802.11a/b/g/n		
802.11b/g		



Access points for
any environment

+

Cloud-hosted
controllers

Cloud-Managed Routers



Branch router with integrated application firewall, site to site VPN, traffic shaper

17,000 sites and 35 Million Clients Connected



iPad:

Growth in Enterprise Networks

iPad Exploding Onto Enterprise Networks

Apple COO Tim Cook:

- » 80% of the Fortune 100 are deploying or testing the iPad.

Forrester Research Report:

- » Approximately 26% of enterprises with 1,000 employees or more are using or planning to use tablets for business use.
- » 80% are supporting multiple smartphones and laptop models.
- » In general, companies plan to support more configurations in 2012.



iPad Exploding Onto Enterprise Networks



iPad Exploding Onto Enterprise Networks

iPad 2

Thinner. Lighter. Faster.
FaceTime. Smart Covers. 10-hour battery.



meraki ENTERPRISE

Network: MIT CSAIL

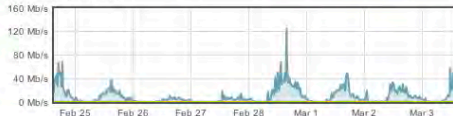
SSID: All

Monitor

Overview
 Maps
 Access points
 Clients
 Event log
 Rogue APs
 Summary report

Configure**Help****Clients**Feb 24 15:00 EST to Mar 03 15:00 EST [Live updates](#) *

2 hours
 day
 week
 month
 blocked list

Usage: 739.72 GB (577.56 GB received, 162.16 GB sent) [Matches](#): 4,06 GB
 (↓ 3.9 GB, ↑ 170 MB)

Applications



Non-web TCP 19.1%
 Miscellaneous web 12.4%
 Video 9.7%
[More](#)

Search:

Go

Clear

[Advanced search](#)
[Help](#)
85 matches in 1903 Select: [All](#) [None](#) [Actions](#) [Columns](#) [Download as XML](#)

	Description	Recent access point	Last seen	Usage
<input type="checkbox"/>	1 iPad-5	meraki-9-3	Mar 02 18:20	1.10 GB
<input type="checkbox"/>	2 iPad-9	meraki-2-7	Mar 02 16:19	624.7 MB
<input type="checkbox"/>	3 Marcias-iPad	meraki-4-10	Mar 02 17:59	445.3 MB
<input type="checkbox"/>	4 Lawrence-Chans-iPad	meraki-4-2	Mar 03 18:21	200.7 MB
<input type="checkbox"/>	5 Samans-iPad	meraki-9-5	Mar 02 12:50	178.9 MB
<input type="checkbox"/>	6 yrkPad	meraki-4-1	Mar 03 18:17	175.9 MB
<input type="checkbox"/>	7 iPad-8	meraki-8-2	Mar 03 18:18	168.8 MB
<input type="checkbox"/>	8 Raiphs-iPad	meraki-9-6	Mar 03 16:25	138.2 MB
<input type="checkbox"/>	9 Kollar-iPad	meraki-3-8	Mar 03 15:54	110.2 MB
<input type="checkbox"/>	10 rym	meraki-9-3	Mar 03 18:16	96.7 MB
<input type="checkbox"/>	11 Thomas-Andrewss-iPad	meraki-2-5	Mar 03 16:58	81.9 MB
<input type="checkbox"/>	12 Rushls-iPad	meraki-4-2	Mar 03 18:28	70.6 MB
<input type="checkbox"/>	13 Nates-iPad	meraki-3-1	Mar 03 18:26	67.2 MB
<input type="checkbox"/>	14 iPad-2	meraki-9-8	Mar 03 14:52	60.0 MB
<input type="checkbox"/>	15 iPad-von-Felix-Hofmann	meraki-2-6	Feb 25 13:27	55.1 MB

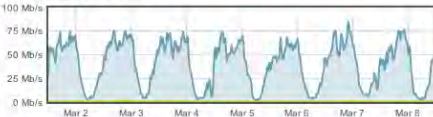
meraki ENTERPRISE

Network: **Westmont Santa Barbara Campus**SSID: **All****Monitor**

- Overview
- Maps
- Access points
- Clients**
- Logins
- Event log
- Rogue APs
- Summary report

Configure**Help****Clients**Mar 01 12:00 PST to Mar 08 12:00 PST [Live updates](#) *

- 2 hours
- day
- week
- month
- whitelist

Usage: 2.93 TB (2.6 TB received, 339.04 GB sent) | [Matches](#): 16.75 GB
(↓ 16.25 GB, ↑ 517.9 MB)

Applications



- Video 34.3%
- Miscellaneous web 16.7%
- RTMP 10.3%

Search: [Advanced search](#)
[Help](#)57 matches in 2718 Select: **All**, [None](#) [Columns...](#) | [Download as XML](#)[Hide](#)

Applications details

	Description	Group	Usage ↑	% Usage	Group usage	Group % usage
1	Netflix	Video	521.31 GB	17.5%	1023.95 GB	34.3%
2	Miscellaneous web	—	497.35 GB	16.7%	497.35 GB	16.7%
3	RTMP (Adobe Flash)	—	308.86 GB	10.3%	308.86 GB	10.3%
4	YouTube	Video	307.23 GB	10.3%	1023.95 GB	34.3%
5	Non-web TCP	—	205.62 GB	6.9%	205.62 GB	6.9%
6	Skype	VoiP & video conferencing	153.04 GB	5.1%	171.82 GB	5.8%
7	Facebook	Social web	121.05 GB	4.1%	125.58 GB	4.2%
8	Miscellaneous video	Video	95.86 GB	3.2%	1023.95 GB	34.3%
9	iTunes	Music	86.78 GB	2.9%	186.26 GB	6.2%
10	Software updates	Software & anti-virus updates	62.05 GB	2.1%	63.89 GB	2.1%
11	Gmail	Email	48.56 GB	1.6%	56.75 GB	1.9%
12	UDP	—	48.45 GB	1.6%	48.45 GB	1.6%
13	megavideo.com	Video	47.95 GB	1.6%	1023.95 GB	34.3%

iPad:

Security and Access



iPad Security and Access

Apple integrates security measures into the iPad

- » Device security
- » Data security
- » Network security
- » Application security

Prudent network administration considers all of the above when allowing new client device types on the network



iPad Security and Access

Device security includes fine-grained password policies

- » Enforcement of passcode requirement on device
- » Minimum length and complex characters
- » Passcode aging
- » Maximum failed attempts

Choose the right mix of password policies to ensure a high level of access security.



iPad Security and Access

Highly robust data security

- » Always-on 256-bit AES hardware encryption
- » Backup data on user computer can also be encrypted
- » Highly sensitive data, such as email and attachments, are further encrypted using a key based on the user passcode
- » Remote and local wipe methods are supported

Ensuring passcode strength increases data protection.



iPad Security and Access

Network security support is built-in

- » VPN supported through IPsec, SSL/TSL VPN
- » Safari, Mail, Calendar, and applications use SSL

Flexible access and authentication security

- » Supports digital certificates and token methods
- » Access via 128-bit AES WPA2 and many 802.1X protocols

Built-in security supports a wide variety of configurations and methods, making integration smooth.

iPad Security and Access

Application security is baked into iOS

- » Applications are isolated and shielded from system components
- » Encrypted keychain stores identities, usernames, and passwords
- » Custom applications are enabled through a provisioning profile

iOS platform ensures safe handling and encryption of application and user data.



iPad:

Network Considerations

iPad Network Considerations

Your wireless infrastructure must be ready

- » 802.11n for high-density deployment
- » Adequate coverage of areas likely to see the iPad
- » Automatic management of clients and access point radio settings:
 - assigning clients to the right 2.4 GHz or 5 GHz channel
 - power of access point and client power saving
 - channel selection
 - client roaming
 - and mesh routing

The iPad has no wired access – there is no other way!



iPad Network Considerations

Network traffic types must be considered

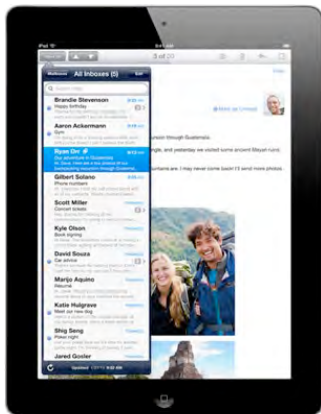
- » Can't degrade experience for existing, non-iPad clients
- » Critical traffic should be prioritized, such as VoIP, meeting applications, or video conferencing
- » On the other hand...



iPad Network Considerations

Consider iPad use cases

- » Email and calendar
 - Microsoft and open standards supported



iPad Network Considerations

Consider iPad use cases

» Business applications

- Document reading and editing
- Meeting and webcasts
- Business-specific apps



iPad Network Considerations

Consider iPad use cases

» VoIP



Skype



WebEx



GoToMeeting

» Recreational video

YouTube



Hulu

» Video conferencing

Skype



FaceTime



Two cameras.
One for them. One for you.

iPad:

Enabling the proper network experience



Enterprise 802.11n Access Points



Meraki MR12	Meraki MR16	Meraki MR58
Single-Radio 802.11ab/g/n	Dual-Radio 802.11a/b/g/n	3-Radio 802.11a/b/g/n
300 Mbit/s	600 Mbit/s	900 Mbit/s
Most economical	Most popular	Rugged, outdoor

All enterprise access points feature:

- 802.11n, 2x2 MIMO, Beamforming, 802.3af PoE
- NAC, Teleworker VPN, AutoRF, Client Fingerprinting
- Hardware accelerated encryption
- Self-configuration, self-optimization, mesh networking
- Seamless management with the Enterprise Cloud Controller

Meraki MR24 Cloud-Managed Access Point



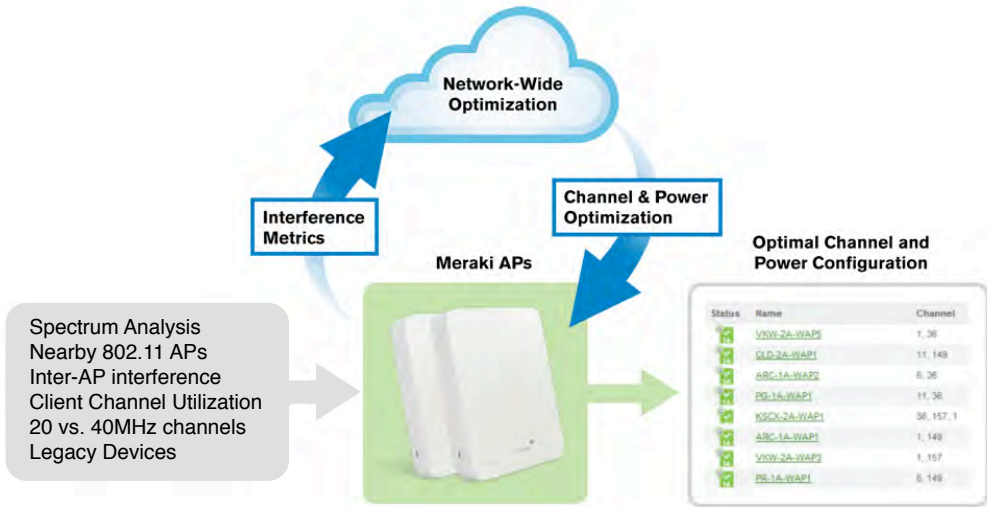
Built for highest-performance and density

- » Triple stream 3x3 MIMO
- » Dual concurrent radios
- » 900 Mbit/s
- » Up to 50% more clients

More than just an access point:

- » Cloud management
- » Application (L7) traffic shaping
- » Multi-radio mesh routing
- » Spectrum analysis and RF planning
- » Priority voice and video
- » Layer 2/3 VPN

Auto RF: Cloud-based Optimization



Integrated Enterprise Security

Access Control Configuration – Meraki Dash

https://n7.meraki.com/Meraki-Corp/n/B4WUfb/manage/configure/access_control

Network access

Association requirements

- Open (no encryption)
Any user can associate
- MAC-based access control (no encryption)
RADIUS server is queried for client's group and/or VLAN at association time
- WPA2-PSK (shared network key) *
Users must enter this key to associate:
- WPA2-Enterprise with 802.1X authentication *
Clients must enter their username and password stored inside the database to connect to the network. Wireless communication is encrypted using WPA2, the strongest type of encryption.
- [Option partially obscured]

Authentication server: Use my RADIUS server

RADIUS for 802.1X

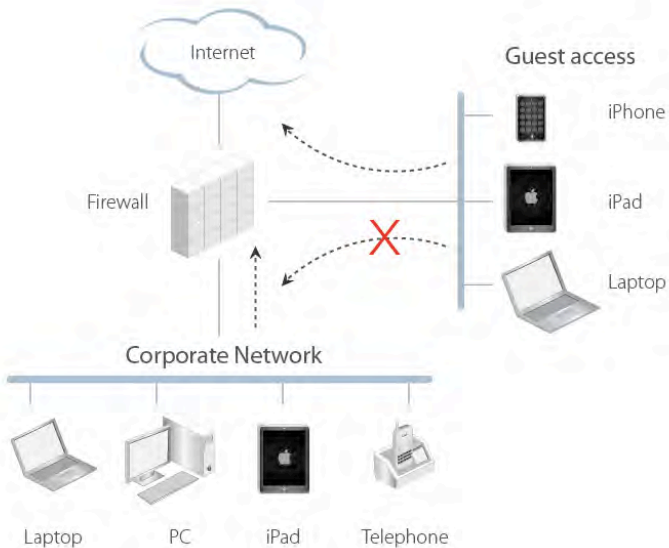
Host	Port	Secret
172.16.30.1	181	adF9f#BxPrGg0

[Add a server](#)

802.1X test

Run an 802.1X test on your RADIUS server from each AP.

Secure Guest Access



Secure Guest Access

Access Control Configuration - Meraki Dashboard - Meraki Corp

https://n7.meraki.com/Meraki-Corp/n/B4WUfb/manage/configure/access_control

Addressing and traffic

Client IP assignment

- NAT mode: Use Meraki DHCP
Clients receive IP addresses in an isolated 10.0.0.0/8 network. Clients cannot communicate with each other, but they may communicate with devices on the wired LAN if the SSID firewall settings permit (see "Firewall" below).
- Bridge mode: Make clients part of the LAN
Meraki devices operate transparently (no NAT or DHCP). Clients receive DHCP leases from the LAN or use static IPs. Use this for shared printers, file sharing, and wireless cameras.

Firewall

[What's this?](#)

Content filtering

NAT mode only

[What's this?](#)

VLAN setup

VLAN tagging

Bridges mode only

[What's this?](#)

Wireless options

AP selection

Band selection

- Dual band operation (2.4 GHz and 5 GHz)
- 5 GHz band only
5 GHz has more capacity and less interference than 2.4 GHz, but legacy clients are not capable of using it.
- Dual band operation with Band Steering
Band Steering detects clients capable of 5 GHz operation and steers them to that frequency, while leaving 2.4 GHz available for legacy clients.

Legacy 11b operation

[What's this?](#)

or

Please allow 1-2 minutes for changes to take effect.

Control

**Traffic
shaping**

Group policies

Splash page

Toolbar

SSID

availability

Network-wide

settings

Radio settings

Maps &

floorplans

Add access

points

Billing payout

License info

Help

Traffic shaping rules

Rule #1

Definition *

This rule will be enforced on traffic matching any of these expressions.

VoIP & video conferencing

[Add an expression](#)**Bandwidth limit ***

Ignore SSID limit (unlimited)

PCP / DSCP tagging *

Do not set PCP tag

/ S (WMM Video)

Overview - Meraki Dashboard - Meraki Corp

n7.meraki.com/Meraki-Corp/n/B4WUlb

meraki ENTERPRISE Network: Meraki Corp

pablo.estrada@meraki.net | my profile | sign out

[show admin](#)

[Meraki Network Ops network](#)

Meraki Corp

84 clients transferred 14.22 GB in the last day.

Usage over the last week

Map of clients per access point

Mouse over or click for more information

660 alaba

Options

POWERED BY Google

Online
 Alerting
 Offline
 Gateway
 Repeater

© 2011 Meraki, inc.

I wish this page would...

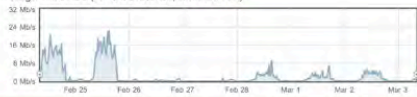
make a wish

- Monitor
- Overview
- Maps
- Access points
- Clients
- Logins
- Login attempts
- Account activity
- Event log
- Rogue APs
- Summary report
- Coverage maps
- Configure
- Help

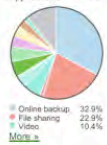
Clients

Feb 24 08:00 PST to Mar 03 08:00 PST [Live updates](#)

Usage: 173.61 GB (75.13 GB received, 98.48 GB sent)



Applications



Search: [Go](#) [Advanced search](#) [Help](#)

115 client devices Select: [All](#) [None](#) [Actions](#) [Columns](#) [Download as XML](#)

	Description	Recent access point	Last seen	Usage	Access
<input type="checkbox"/>	1 amika	Sales2-SDR-MR16	Mar 03 09:20	58.71 GB	normal
<input type="checkbox"/>	2 G-Dub-2	Sales2-SDR-MR16	Feb 25 17:30	36.56 GB	normal
<input type="checkbox"/>	3 Macintosh-7	Sales2-SDR-MR16	Mar 03 09:18	13.33 GB	normal
<input type="checkbox"/>	4 madsbc201asn7	1st FLR near Ling JooF	Mar 03 08:23	3.34 GB	normal
<input type="checkbox"/>	5 X201XP-IMAGE	Sales1 - MR16	Mar 03 09:24	3.15 GB	normal
<input type="checkbox"/>	6 pablo-estrada-MacBook-Pro	Sales1 - MR16	Feb 27 23:02	2.86 GB	normal
<input type="checkbox"/>	7 wpcach	Sales1 - MR16	Mar 03 09:24	2.54 GB	normal
<input type="checkbox"/>	8 The-Opz-Box	Sales2-SDR-MR16	Mar 03 09:20	2.42 GB	normal
<input type="checkbox"/>	9 daniel-desktop	1st FLR near fox/harry	Mar 03 09:23	2.30 GB	normal
<input type="checkbox"/>	10 JEFF-DELLXP	1st FLR near Ling JooF	Mar 03 09:22	2.11 GB	normal
<input type="checkbox"/>	11 Ben-Chambers-Mac	Top Six To Fall Conference Room	Mar 03 09:22	1.99 GB	normal
<input type="checkbox"/>	12 Pablos-MacBook-Pro	Sales2-SDR-MR16	Mar 03 09:20	1.60 GB	normal
<input type="checkbox"/>	13 chrisg13	Sales1 - MR16	Mar 03 09:24	1.57 GB	normal

IPad 9:27 AM 56%

Clients - Meraki Dashboard - Meraki Corp

n7.meraki.com/Meraki-Corp/n/B4WUfB/manage/usage/list?c=kdd8... Google

pablo.estrada@meraki.net [my profile](#) | [sign out](#) | [show admin](#) | [search](#)

meraki ENTERPRISE Network: Meraki Corp SSID: All

Monitor

- Overview
- Maps
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- Clients**
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- Login attempts
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- Rogue APs
- Summary report
- Coverage maps

Configure

Help

Clients

Pablos-MacBook-Pro

Status

MAC address: 0:b4:79:1d:e2:38
 IP: 172.16.30.195
 Hostname: Pablos-MacBook-Pro (Bonjour)
 Network access: normal
 Connection: wireless
 Capabilities: 802.11n, 2.4 and 5 GHz
 Manufacturer: Apple
 Operating system: Mac OS X
 History: [Event log](#)

Recent contact

Time: Mar 03 09:20 (5 minutes ago)
 User: pablo.estrada
 Access point: [Sales2-SDR-MR10](#)
 SSID: Meraki-Corp

Approximate location BETA

Based on data from 4 APs between Mar 02 13:09 and Mar 03 09:20

PRODUCED BY Google

Live tools: [Locate client](#) [Ping client](#) [Packet counters](#)

Usage: 1.66 GB (1.10 GB received, 572.7 MB sent)

2 hours
 24h
 7 days
 30 days

- Login attempts
- Account activity
- Event log
- Rogue APs
- Summary report
- Coverage maps
- Configure
- Help

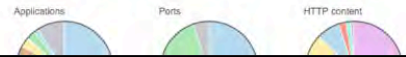
Network access: normal
Connection: wireless
Capabilities: 802.11n, 2.4 and 5 GHz
Manufacturer: Apple
Operating system: Mac OS X
History: [Event log](#)

Recent contact
Time: Mar 03 09:20 (5 minutes ago)
User: pablo.estrada
Access point: [Sales2-SDR-MR16](#)
SSID: Meraki-Corp



Live tools: [Locate client](#) [Ping client](#) Running [Packet counter](#)

Associated on Meraki-Corp at [Sales2-SDR-MR16](#) for 1.9 hours.
Channel: 157 | Signal: 34 dB (range 34-35 dB) | Identity: pablo.estrada
Sent 12 ping packets to client.
Round-trip loss rate 0%, average latency 62.94 ms.

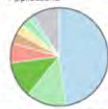


Live tools: [Locate client](#) | Done: 1 ✕ [Ping client](#) [Packet counters](#)
Associated on Meraki-Corp at [Sales2-SDR-MR16](#) for 2 hours.
Channel: 157 | Signal: 34 dB | Identity: pablo.estrata

Usage: 1.66 GB (1.10 GB received, 572.7 MB sent)



Applications



File sharing	47.7%
Miscellaneous web	13.2%
Miscellaneous secure web	12.0%

Ports



Windows file sharing	47.7%
HTTPS	23.8%
HTTP	23.4%

HTTP content



Images	44.5%
Application	18.5%
HTML	15.6%

Custom Pie Chart



iPad 9:32 AM 50%

Meraki Dashboard - Meraki Corp
n7.meraki.com/Meraki-Corp/n/B4WUfb/manage/usage/list?c=kdd8... Google

pablo.estrada@meraki.net my profile sign out help admin search

meraki ENTERPRISE Network: Meraki Corp SSID: All

Monitor
Overview
Maps
Access points
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Logins
Login attempts
Account activity
Event log
Rogue APs
Summary report
Coverage maps
ISPs
Persistent logins

Configure
Help
Admin

Clients +
Pablos-MacBook-Pro

Status

Name: Pablos-MacBook-Pro
MAC address: 80:b4:79:1d:e2:38
IP: 172.16.30.195
Hostname: Pablos-MacBook-Pro (Bonjour)

Network access:
 Normal
 Whitelisted
The device can access the network without bandwidth limits or splash pages.
 Blocked
The device is prevented from accessing the network.
This message appears on its splash page.
Pablo, please bring your laptop to the IT department.

Notes:

Approximate location: **WiFi**
Based on data from 4 APs between Mar 02 13:09 and Mar 03 09:25

660 ataba

POWERED BY Google

Connection: wireless
Capabilities: 802.11n, 2.4 and 5 GHz
Manufacturer: Apple
Operating system: Mac OS X

Save Cancel

Recent contact

Time: Mar 03 09:25 (4 minutes ago)
User: pablo.estrada
Access point: [Sales2-SDR-MR18](#)
SSID: Meraki-Corp

You have unsaved changes.

Monitor

- Overview
- Maps
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- Account activity
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- Rogue APs
- Summary report
- Coverage maps

Configure

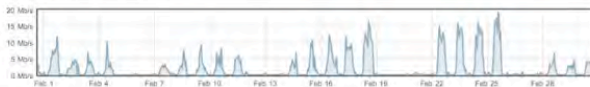
Help

Network summary

Feb 1 2011 through Mar 2 2011

[Email this report](#)

- 189 distinct clients transferred data over your Meraki network.
- 72 clients used your network on an average day.
- 866.12 GB of data was transferred.



Top applications by usage

Application	Usage *	% Usage
1 BackOffice	169.74 GB	26.3%
2 Apple file sharing	130.38 GB	18.5%
3 Miscellaneous secure web	42.31 GB	6.3%
4 Miscellaneous web	37.85 GB	5.7%
5 Non-web TCP	33.56 GB	5.0%
6 Host-based email (POP3/IMAP/SMTP)	20.40 GB	3.1%
7 Google	17.81 GB	2.7%
8 Software updates	17.21 GB	2.6%
9 YouTube	16.96 GB	2.5%
10 Netflix	14.92 GB	2.2%

Top APs by usage

Name	Model	Usage *	Clients
1 Sales2-SDP-MR16	MR16	291.87 GB	135
2 Int-FR-new-Servers	MR14	154.01 GB	121
3 Sales1-MR16	MR16	70.09 GB	132

Top clients by usage

Description	Manufacturer	Operating system	Usage *	% Usage
1 Irons	Apple	Mac OS X	212.25 GB	31.8%
2 G-Dub-2	Apple	Other	126.25 GB	20.8%
3 MasonLoth_7	Apple	Mac OS X	22.56 GB	3.4%
4 KOPXP-IMAGE	Intel	Windows xp	15.24 GB	2.3%
5 johua-victoria-MacBook-Pro	Apple	Mac OS X	10.17 GB	1.5%
6 NewarkSoftware-MacBook-Pro	Apple	Mac OS X	9.34 GB	1.4%
7 jessent	Intel	Windows xp	7.73 GB	1.2%
8 JEFF-DELL-XP	Intel	Windows XP	7.51 GB	1.1%
9 Ben-Chambers-Mac	Apple	Mac OS X	7.36 GB	1.1%
10 PHOENIXXP	Intel	Windows XP	6.08 GB	0.9%

Clients per day



10:26 AM 83%

Reports - Meraki Dashboard - Meraki Corp

n7.meraki.com/Meraki-Corp/n7B4WUfb/manage/reports

lients used your network on an average day.
12 GB of data was transferred.

Feb 1 Feb 4 Feb 19 Feb 22 Feb 25

applications by usage

application

Application	Usage (GB)	Percentage	Rank	Link	Manufacturer	Operating system
Facebook	33.56	5.0%	4	X201XP-IMAGE	Intel	Windows XP
Apple file sharing	20.40	3.1%	5	joshua-olstotts-MacBook-Pro	Apple	Mac OS X
miscellaneous secure web	17.81	2.7%	6	merakiadmin-MacBook-Pro	Apple	Mac OS X
miscellaneous web	17.21	2.6%	7	vonech	Intel	Windows XP
on-web TCP	16.98	2.5%	8	JEFF-DELL-XP	Intel	Windows XP
ost-based email (POP3/IMAP/SMTP)	14.92	2.2%	9	Ben-Chambers-iMac	Apple	Mac OS X

Ps by usage

Email this report ✕

Graphical (HTML) | [Set logo](#)

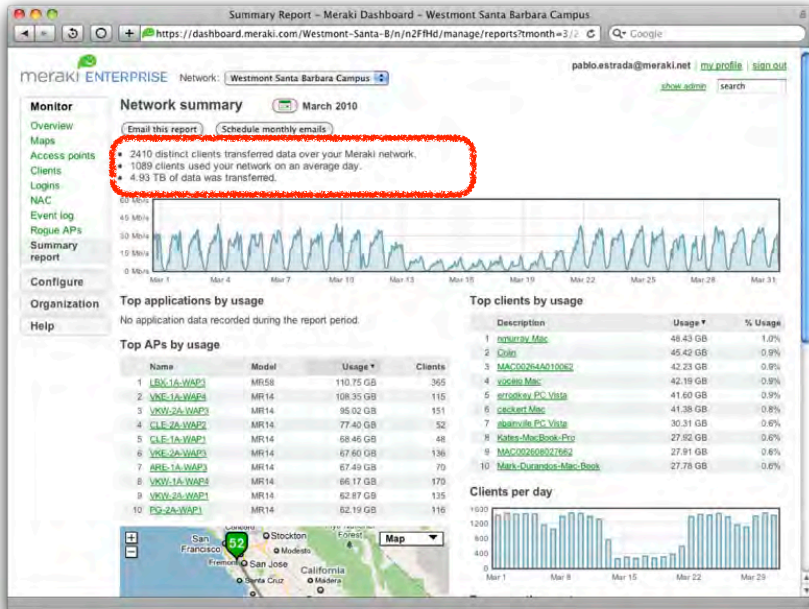
Plain text only

To:

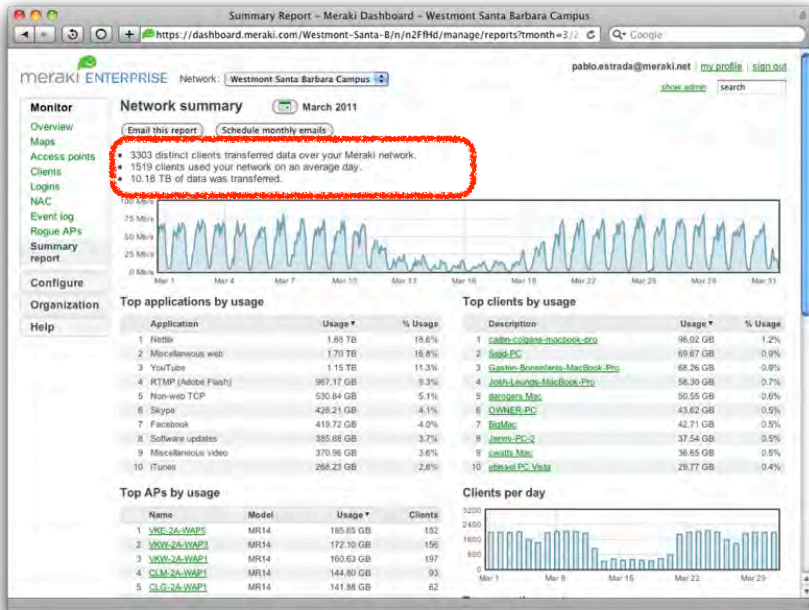
Enter email addresses separated by commas.

Cancel Send

iPad: Are You Ready?



iPad: Are You Ready?



iPad: Five Recommended Best Practices

1. Ensure device security with integrated methods provided by Apple
2. Use standards-based authentication such as 802.1X if providing access to the corporate LAN
3. Block LAN access if providing internet-only guest access
4. Use automatic RF optimization to ensure performance and reduce management overhead
5. Monitor and shape application usage with integrated user/device fingerprinting and application traffic shaping



iPad: Are You Ready?

- » iPads and tablets are here and they're coming to the enterprise.
- » Network administrators need to protect critical assets while providing the right network experience for all end users.
- » Meraki's cloud-based networks provide the infrastructure needed to:
 - Make integration of iPads and tablets painless
 - Allow your network to survive the crush of iPads
 - Deliver the proper network experience for all your users.



iPad

Enabling the proper network
experience

<http://meraki.com/ipad>