
New Market Evaluation Strategy Guide

CEE Peering Days
Budapest 2016

Walt Wollny, Director Interconnection Strategy
Hurricane Electric AS6939

Who is Walt Wollny?

- ❑ Hurricane Electric AS6939 – 1 year
 - ❑ Director Interconnection Strategy – supporting the network to reach to over 22 countries and over 100 Internet Exchanges. Focus on Global connectivity.
- ❑ Amazon AS16509 – 4 years
 - ❑ Developed IP Transit and Peering on five continents.
 - ❑ Primary focus on Japan, Singapore, Hong Kong, India, Taiwan, Philippines, Australia.
 - ❑ Over 62 new CDN sites.
- ❑ Microsoft AS8075 – 13 years
 - ❑ Developed IP Transit and Peering on four continents.
 - ❑ Primary focus on US, UE and South America.

Why is Walt Wolny here?

After 18 years working for two content networks I want to share what I have learned.

These techniques can be adapted to any location

“By failing to prepare, you are preparing to fail.”
— Benjamin Franklin

The boss tells you....

“ I want a full report for this new network location!”



Why does the boss want a report?

- Ability to repeat tests over time if launch is delayed.
- Validation of decision after launch in market.
- Improvement of reporting and testing for next market.

- Accountability!

Phases of Evaluation

- Desktop Research
- In Country Research
- Other Considerations

Philippines



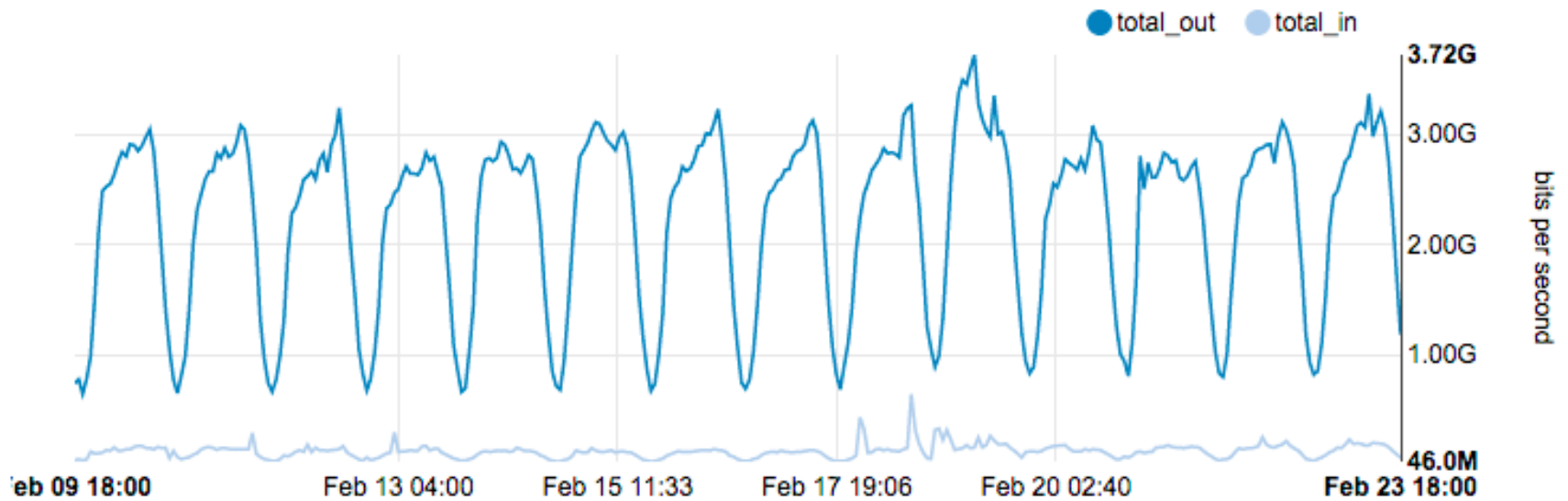
Desktop Research

- ❑ NetFlow
- ❑ <http://bgp.he.net/>
- ❑ <https://mi.renesys.com>
- ❑ <http://www.cedexis.com/>
- ❑ <https://www.peeringdb.com>

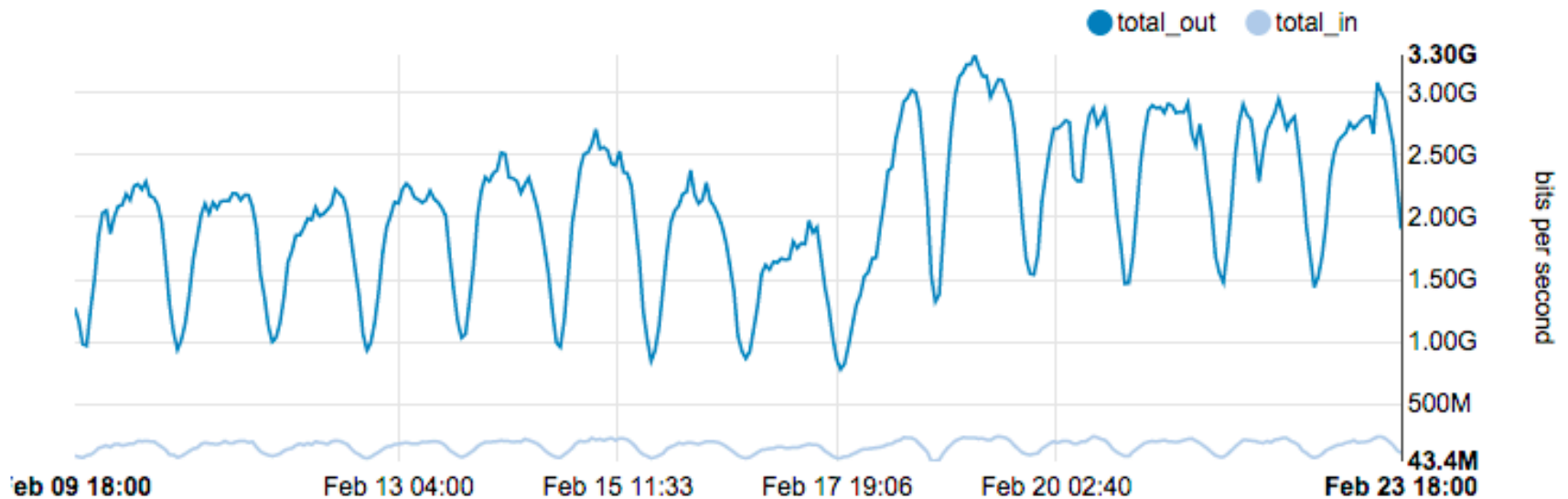
NetFlow Data

- The next few slides represent traffic from outside the Philippines.
- Once traffic is localized you can expect that CND traffic levels will increase ~20 to 50%.

NetFlow AS9299 PLDT



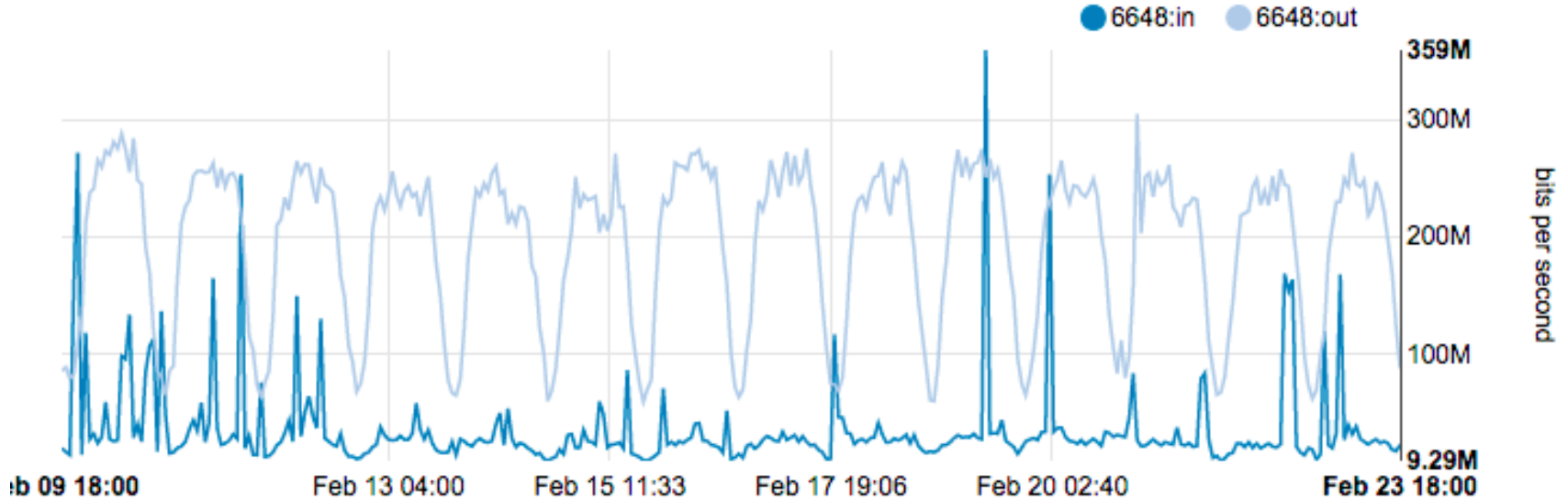
NetFlow AS4775 Globe Telecom



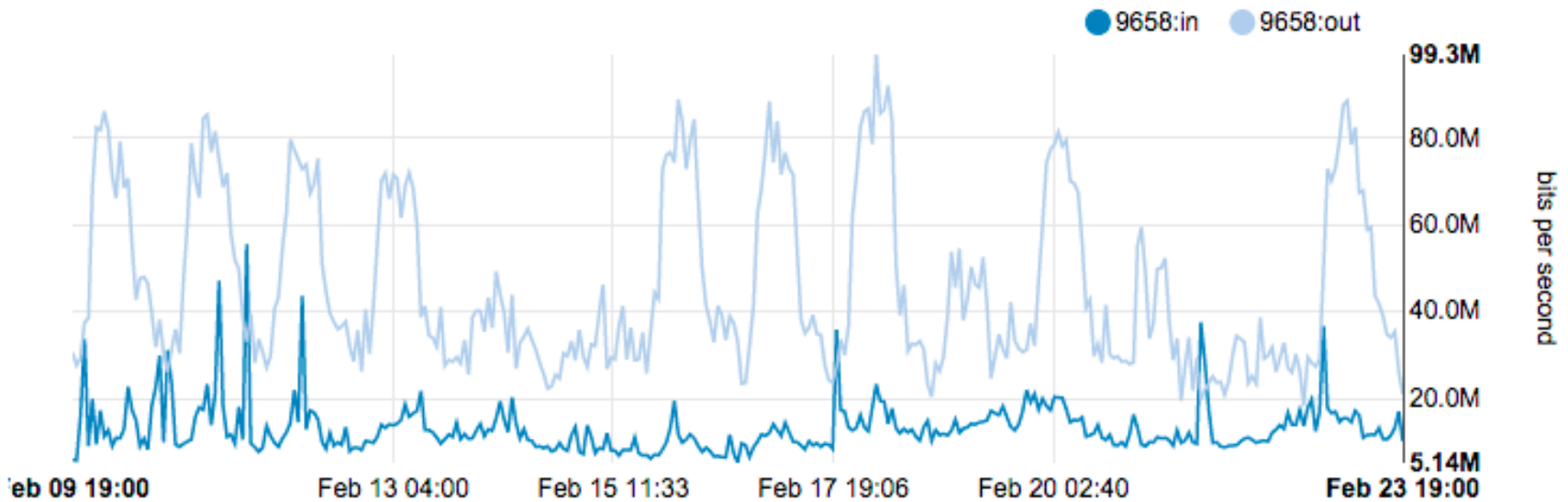
Hurricane Electric - Massive Peering!



NetFlow AS6648 Bayan Telecom



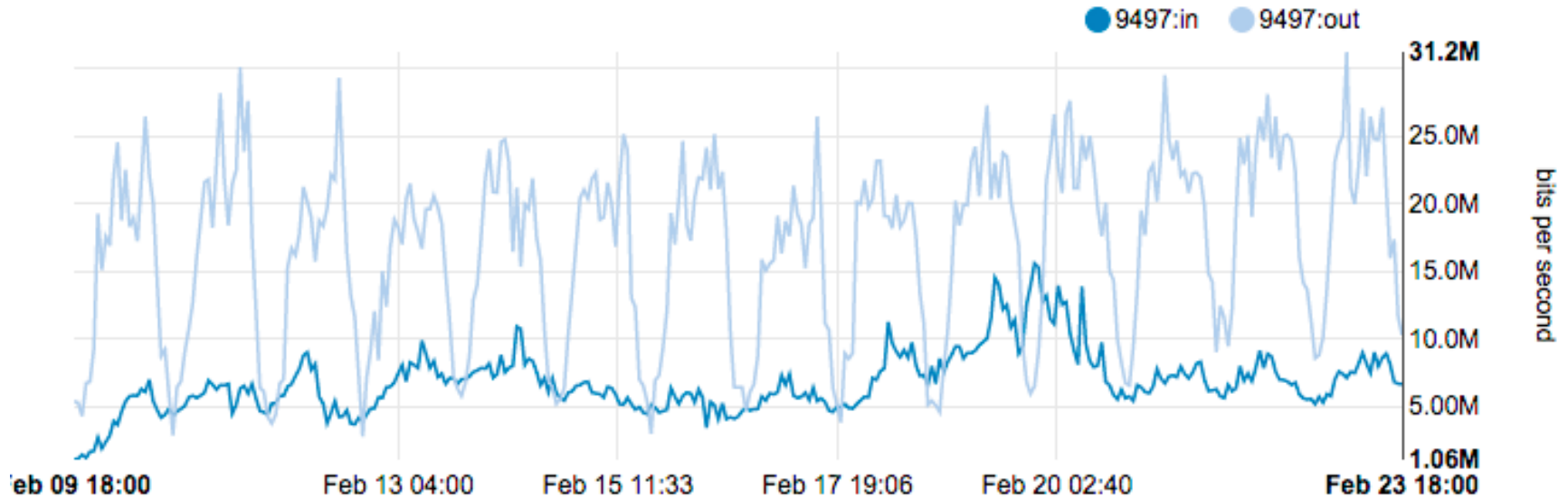
NetFlow AS9658 Eastern Telecoms



Hurricane Electric - Massive Peering!



NetFlow AS9497 Digital Telecom



Hurricane Electric - Massive Peering!



NetFlow Results

Company	ASN	V4 Routes	Cedexis	DYN Rank	Traffic	Total Traffic %
PLDT	9299				3200	48.63%
Globe	4775				3000	45.59%
Bayan	6648				275	4.18%
Eastern Telcom	9658				80	1.22%
Digital Telcom	9497				25	0.38%

With time limitations we will limit this presentation to the two top traffic destinations.



HURRICANE ELECTRIC
INTERNET SERVICES

Internet Exchange Report



<http://bgp.he.net/report/exchanges>



HURRICANE ELECTRIC
INTERNET SERVICES

Search

Internet Exchange Report

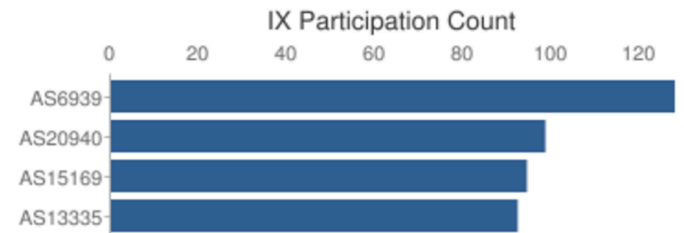
Quick Links

- [BGP Toolkit Home](#)
- [BGP Prefix Report](#)
- [BGP Peer Report](#)
- [Exchange Report](#) ●
- [Bogon Routes](#)
- [World Report](#)
- [Multi Origin Routes](#)
- [DNS Report](#)

Internet Exchanges


Exchange Participants

IX Participation Count		
ASN	Name	IXes
AS6939	Hurricane Electric, Inc.	128
AS20940	Akamai International B.V.	100
AS15169	Google Inc.	96
AS13335	CloudFlare, Inc.	93



PLDT

[AS Info](#) [Graph v4](#) [Graph v6](#) [Prefixes v4](#) [Prefixes v6](#) [Peers v4](#) [Peers v6](#) [Whois](#) [IRR](#) [IX](#)

Exchange	CC	City	IPv4	IPv6
<u>Any2 Los Angeles</u> 	US	Los Angeles	206.72.210.177	2001:504:13::210:177

Globe

AS Info Graph v4 Graph v6 Prefixes v4 Prefixes v6 Peers v4 Peers v6 Whois IRR IX

Exchange		CC	City	IPv4	IPv6
<u>Any2 Los Angeles</u>		US	Los Angeles	206.72.210.197	2001:504:13::197
<u>BBIX Tokyo</u>		JP	Tokyo	218.100.6.97	2001:de8:c::4775:1
<u>Equinix Hong Kong</u>		HK	Hong Kong	119.27.63.75	2001:de8:7::4775:1
<u>Equinix Tokyo</u>		JP	Tokyo	203.190.230.48	2001:de8:5::4775:1
<u>HKIX</u>		HK	Hong Kong	123.255.90.178	2001:7fa:0:1::ca28:a0b2
<u>JPIX Tokyo</u>		JP	Tokyo	210.171.224.75	2001:de8:8::4775:1
<u>LAIX</u>		US	Los Angeles	198.32.146.77	2001:504:a::a500:4775:1
<u>PHOpenIX</u>		PH	Metro Manila	198.32.172.4	2001:478:172::4
<u>SGIX</u>		SG	Singapore	103.16.102.40	2001:de8:12:100::40
<u>SIX</u>		US	Seattle	206.81.80.208	2001:504:16::12a7
<u>SOX Singapore</u>		SG	Singapore	198.32.141.159	2001:de8:d::4775:1





HURRICANE ELECTRIC
INTERNET SERVICES

World Report



<http://bgp.he.net/country/PH>

Country Info




Networks: Philippines

ASN	Name	Adjacencies v4	Routes v4 ↓	Adjacencies v6	Routes v6
AS9299	Philippine Long Distance Telephone Company	112	822	8	5
AS9658	Eastern Telecoms Phils., Inc.	53	542	0	0
AS6648	Bayan Telecommunications, Inc.	117	432	8	4
AS23930	IP-Converge Data Center, Inc.	42	261	7	2
AS4775	Globe Telecoms	109	243	16	3
AS55303	60 Market Square,P.O. Box 364	12	196	0	0
AS17639	ComClark Network & Technology Corp.	23	157	1	1
AS10139	Smart Broadband, Inc.	1	135	1	1
AS132199	Globe Telecom Inc.	1	124	0	0



<http://bgp.he.net/country/PH>

Country Info

 **Networks: Philippines**

ASN	Name	Adjacencies v4	Routes v4 ↓	Adjacencies v6	Routes v6
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AS55303	60 Market Square,P.O. Box 364	12	196	0	0
AS17639	ComClark Network & Technology Corp.	23	157	1	1
AS10139	Smart Broadband, Inc. ●	1	135	1	1
AS132199	Globe Telecom Inc. ●	1	124	0	0



HURRICANE ELECTRIC
INTERNET SERVICES

Route Propagation

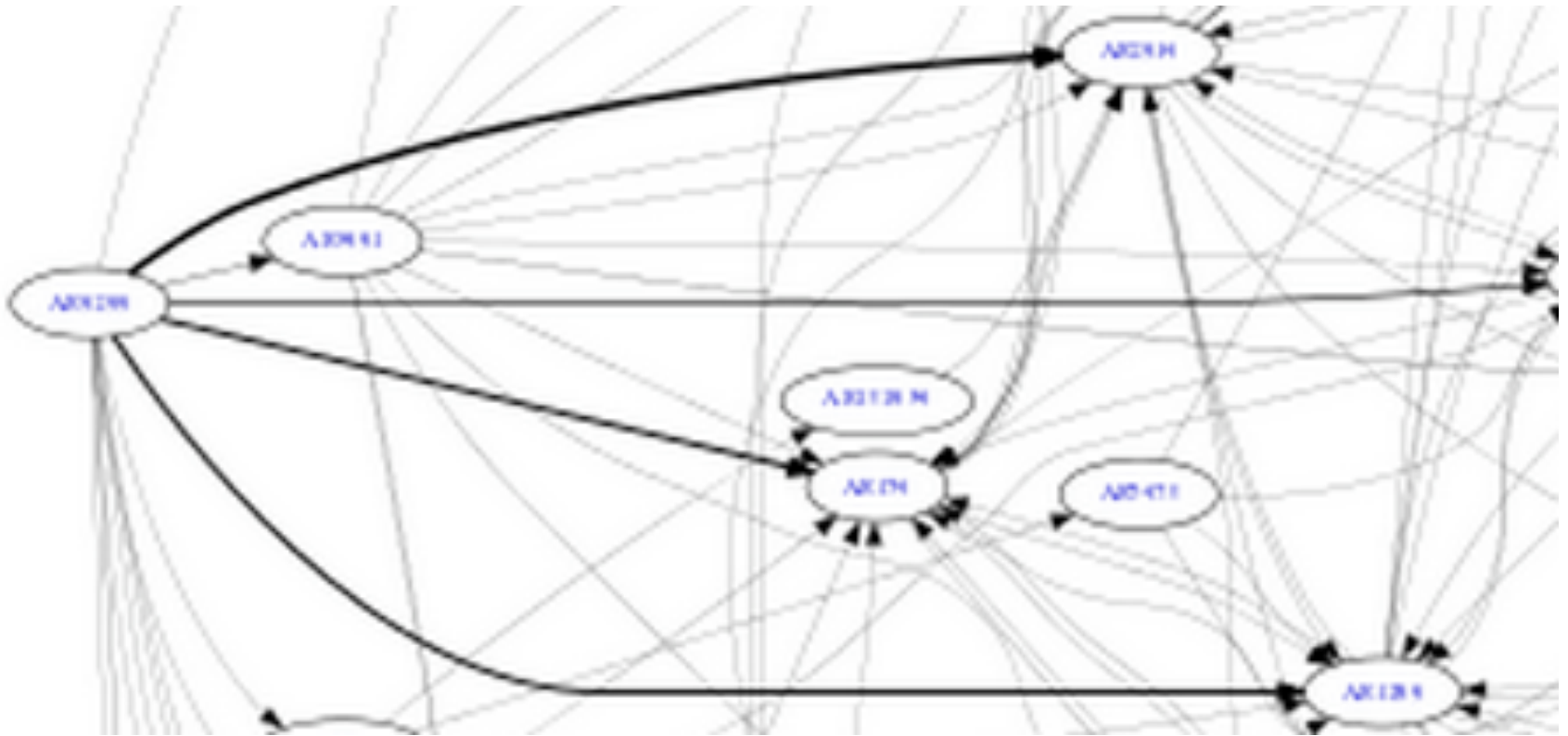


Route propagation is to the following networks:

Company	ASN	Company	ASN	Company	ASN
Hurricane	6939	TiNet	3257	Sparkle	6762
Qwest	209	Dtag	3320	Cogent	174
UUnet	701	Level3	3356	AT&T	7018
UUnet Europe	702	GBLX	3549	Comcast	7922
Cable and Wireless	1273	Savvis	3561	Telefonica	12956
Sprint	1239	Orange	5511	Abovenet	6461
Telia	1299	TATA	6453	IJJ	2497

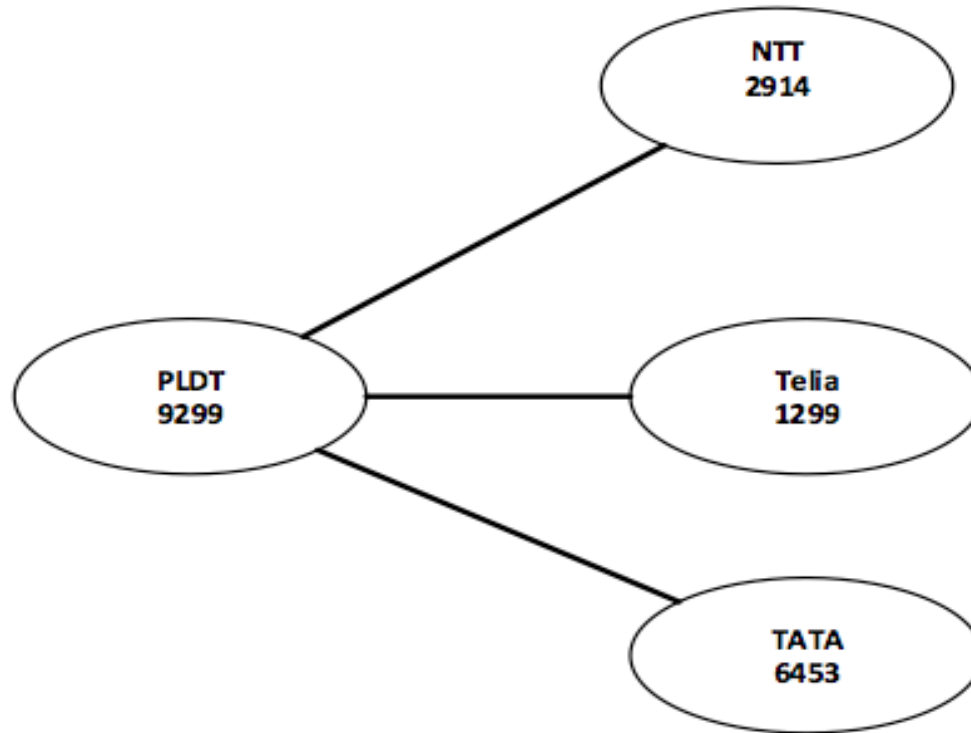
Data gathered from Oregon Route Views
<http://www.routeviews.org/>

http://bgp.he.net/AS9299#_graph4

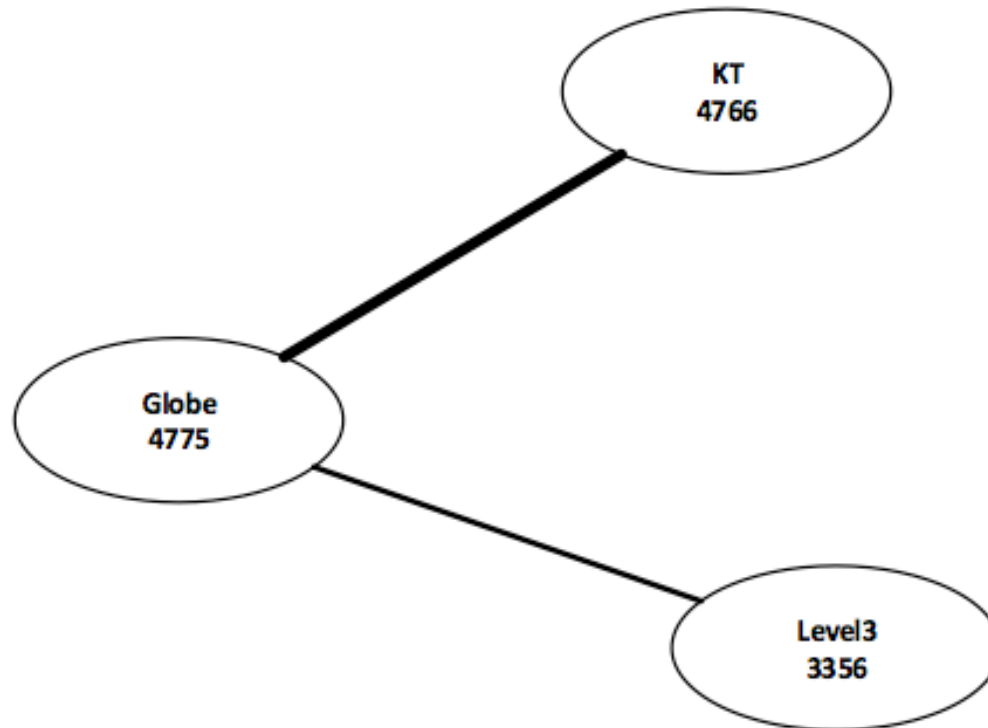



AS9299 PLDT

Route Propagation



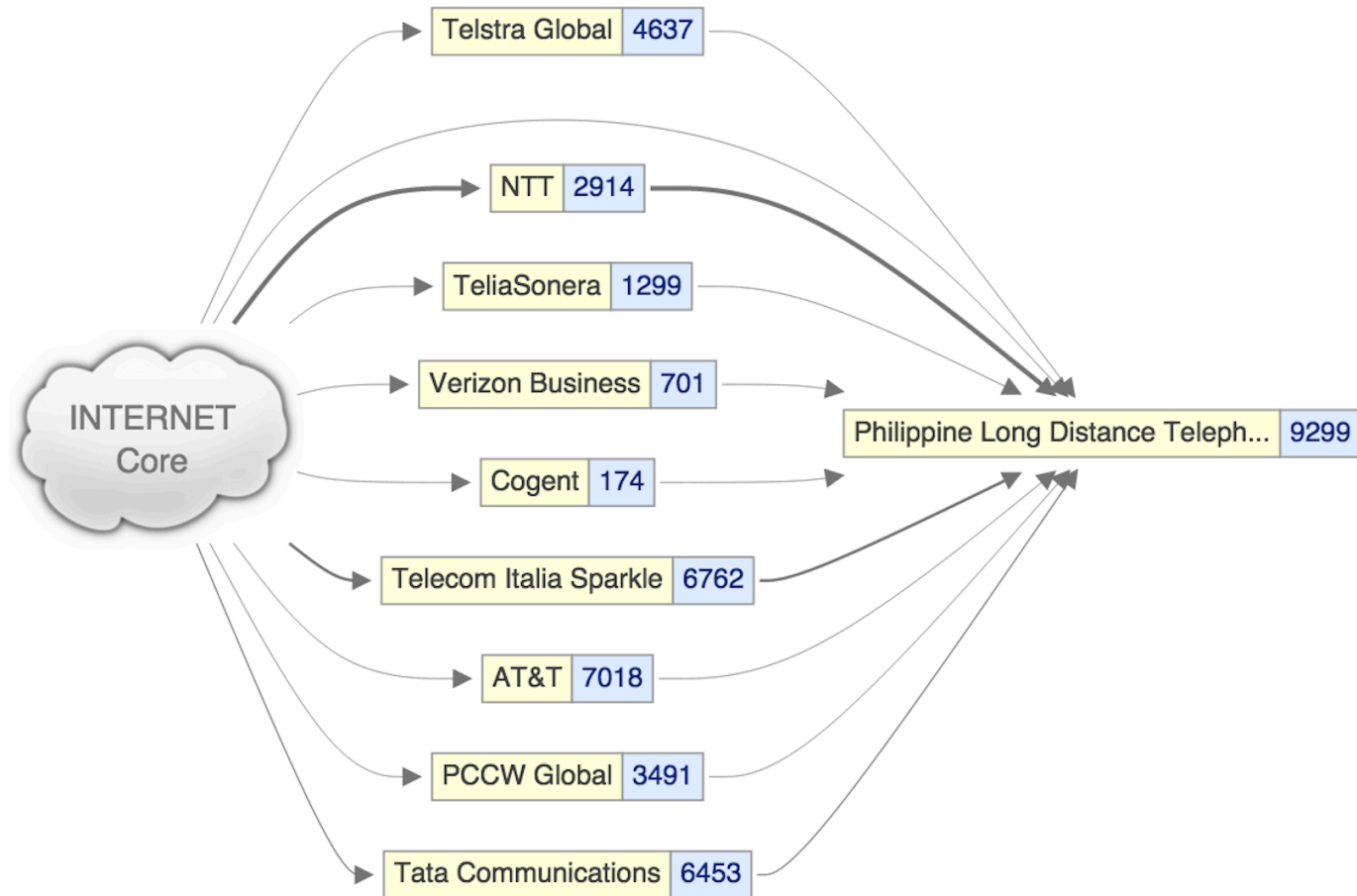
AS4775 Globe Telecoms Route Propagation



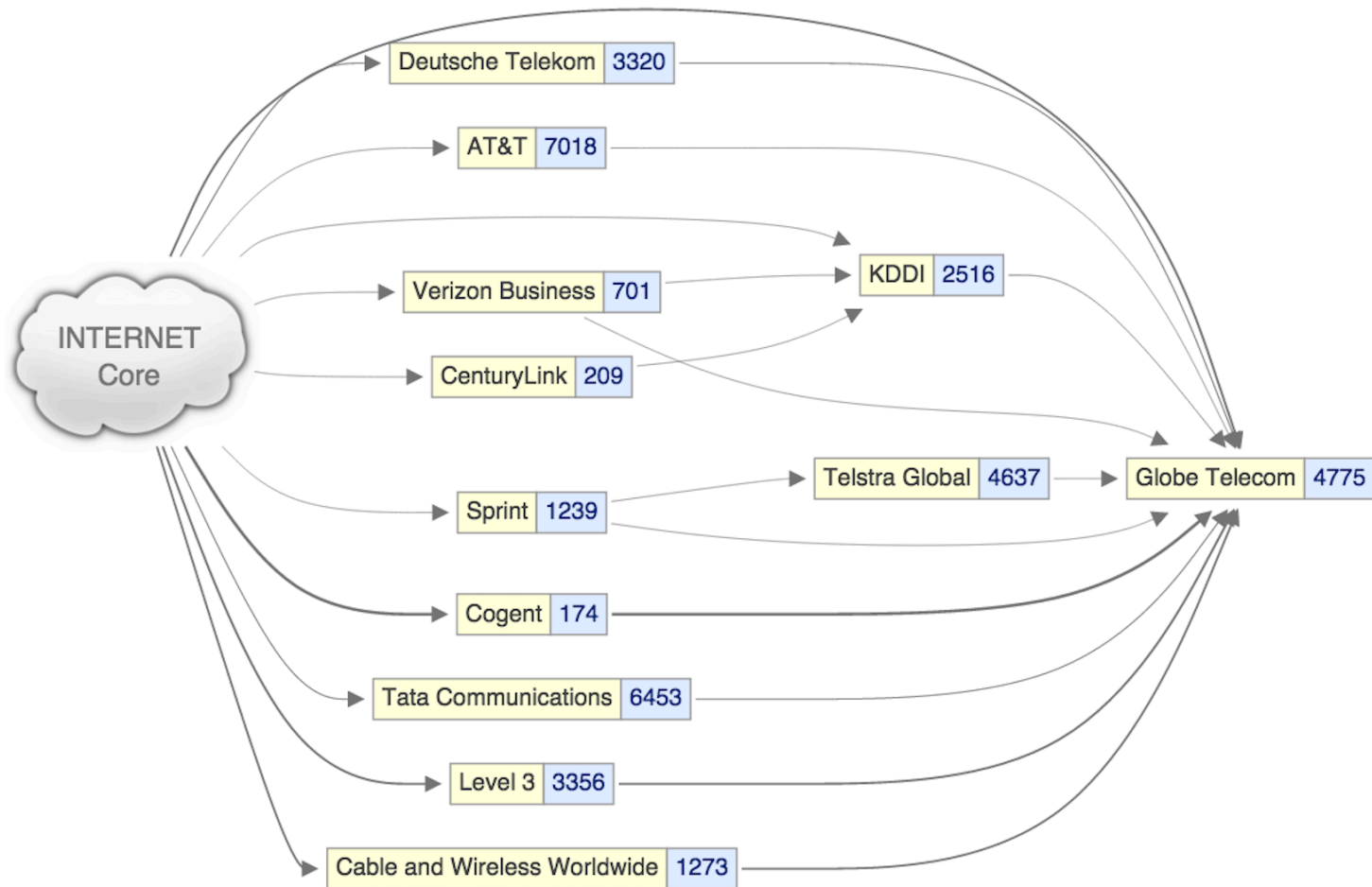


Dyn | IP Transit Intelligence

AS9299 PLDT



AS4775 Globe



Dyn Internet Intelligence Philippines

IPv4 Customer Base: Retail				
1	☆	Philippine Long Distance Telephone Company	9299	
2	☆	Bayan Telecommunications	6648	
3	☆	Globe Telecom	4775	
4	☆	Digital Telecommunications Philippines	9497	
5	↑ 1	Eastern Telecoms Phils.	9658	
6	↓ 1	Smart Broadband	10139	
7	↑ 1	Globe Telecom Inc.	2.1127	
8	↓ 1	INFOCOM Technologies	7629	
9		DMPI, Digitel Mobile Philippines Inc.,	24106	
10	↑ 1	IP-Converge Data Center, Inc.	23930	

[View Listing](#)

AS9299 PLDT

IPv4 Provider Profile (Global) ?

★ **Philippine Long Distance Telephone Company** AS 9299

Market: Multinational

Market Breakdown:

4	Continents
9	Countries
5	US States or Canadian Provinces

Customers:

98	AS Customers
12	Critically Dependent
963	IPv4 Originated Networks
694	Transited Networks

Providers: 11

Selected Peers: 34

AS9299 PLDT

IPv4 Critically Dependent AS Customers (Philippines) ?	
★ Philippine Long Distance Telephone Company AS 9299	
sort by Relative Contribution	
1	★ Smart Broadband AS 10139 since 1 Jan 2006
2	★ INFOCOM Technologies AS 7629 since 1 Jan 2006
3	★ PhilCom Corporation AS 18396 since 2 Jan 2006
4	★ ePLDT Inc. AS 2.1134
5	★ Amazon AS 16509 since 1 Oct 2013
6	★ Asian Development Bank AS 56128 since 17 Mar 2011

AS4775 Globe

IPv4 Provider Profile (Philippines) ?

★ **Globe Telecom** AS 4775

Market: National

Market Breakdown:

3	Continents
6	Countries
3	US States or Canadian Provinces

Note: *The following information describes this provider's relationships within Philippines. (Switch to global view.)*

Customers:

63	AS Customers
12	Critically Dependent
69	IPv4 Originated Networks
309	Transited Networks

Providers: 16

Selected Peers: 23

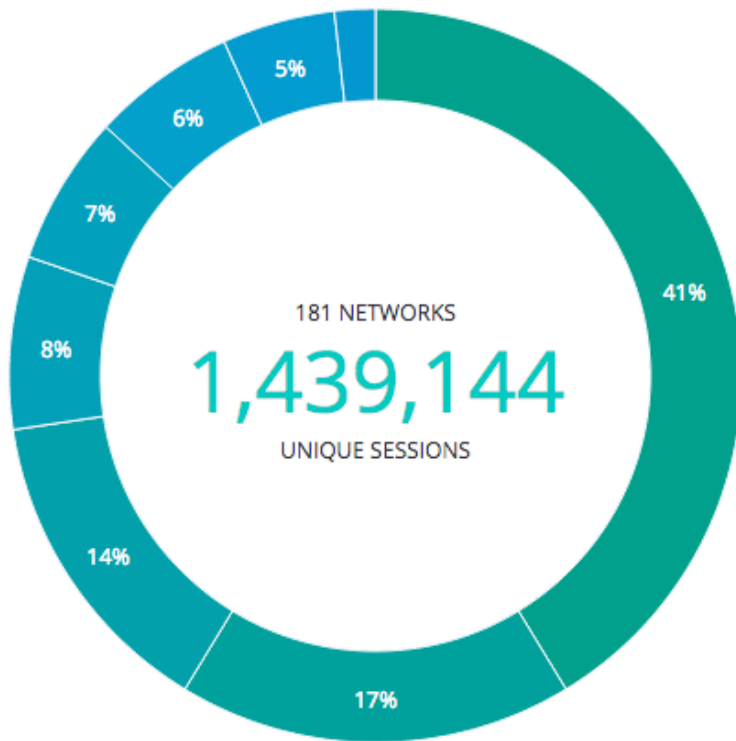
AS4775 Globe

IPv4 Critically Dependent AS Customers (Philippines) ?	
★ Globe Telecom AS 4775	
sort by Relative Contribution	
1	★ Globe Telecom Inc. AS 2.1127
2	★ AyalaPort Makati, Inc. / Data Center Operator AS 17894 since 1 Jan 2006
3	★ Webstream Bldg AS 55939 since 6 Sep 2013
4	★ 8F Tower 2 The Rockwell Business Center AS 2.1157
5	★ Aditya Birla Minacs Worldwide Ltd AS 23994 since 23 Aug 2013
6	★ OFFICETIGER DATABASE SYSTEMS INDIA PVT LTD AS 24222 since 18 Jun 2009



cedexis

<http://www.cedexix.com/>

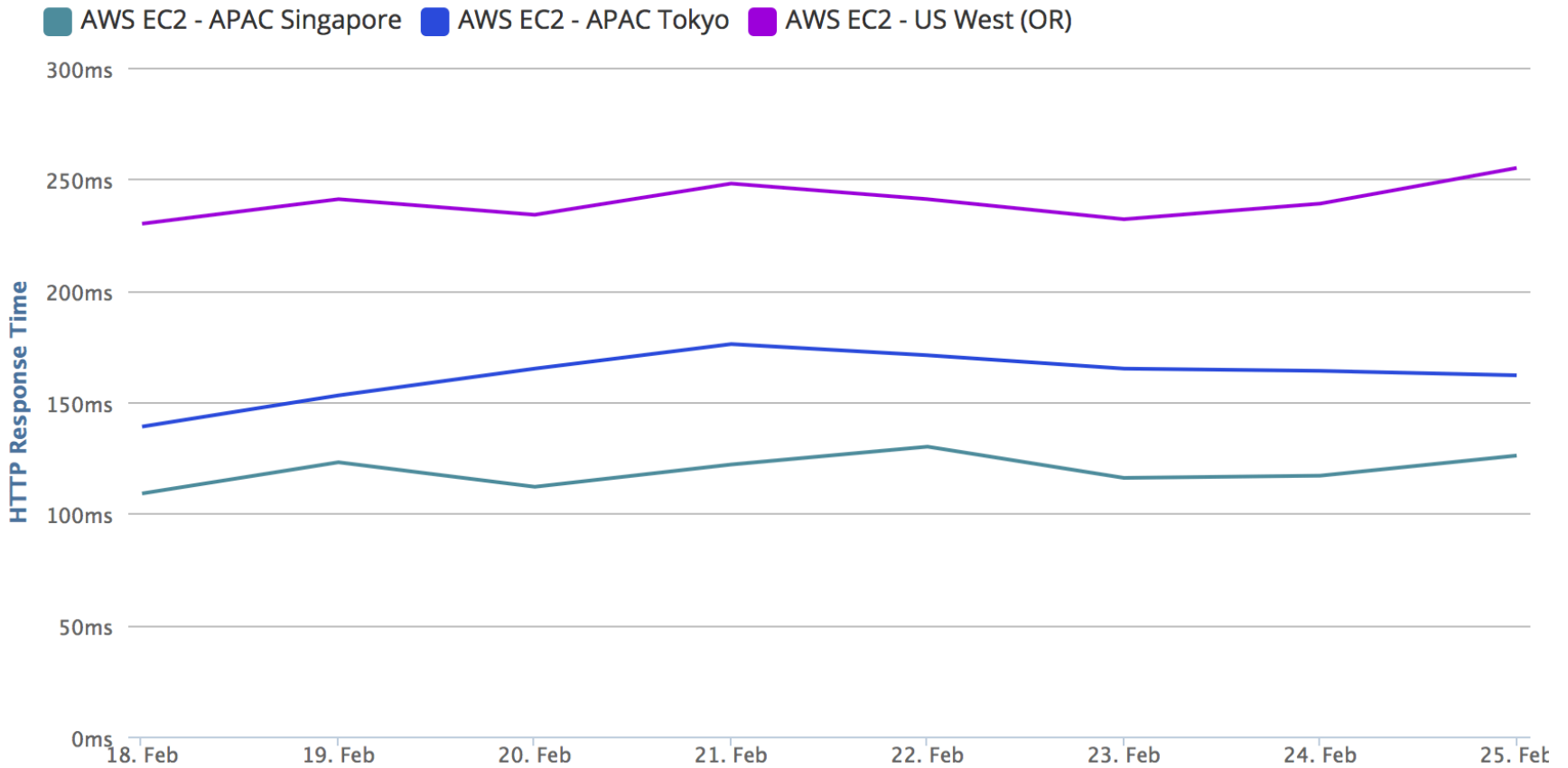


ISPs ranked by percentage of sessions

We identify each network as part of our Radar benchmarking method. This can tell you where your users are most likely to be coming from within a country.

- 41% Philippine Long Distance Teleph...
- 17% Globe Telecom Inc.
- 14% Smart Broadband Inc.
- 8% Others
- 7% Globe Telecoms
- 6% Bayan Telecommunications Inc.
- 5% Skycable Corporation
- 2% Comclark Network & Technolog...

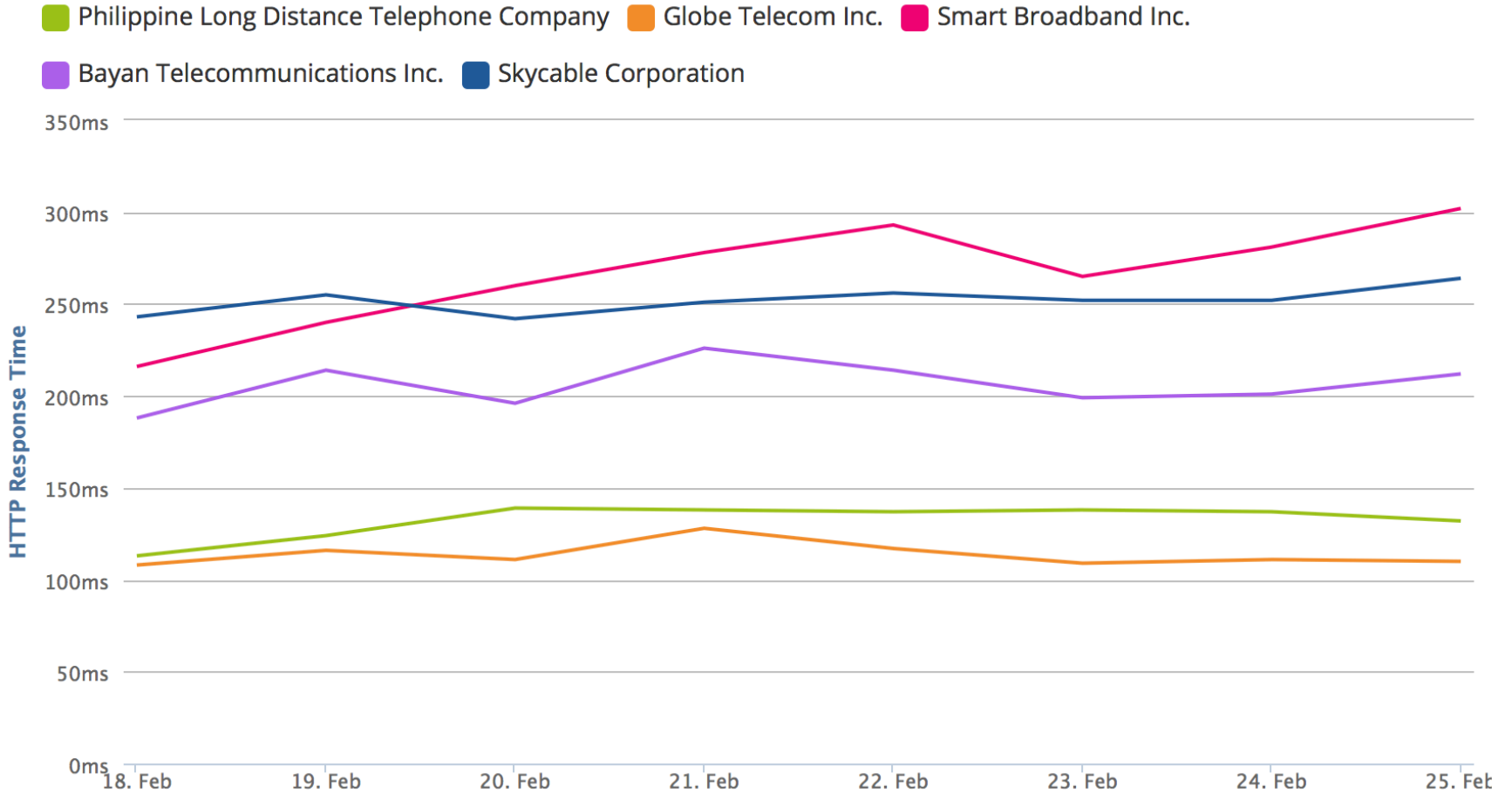
<http://www.cedexix.com/>



Hurricane Electric - Massive Peering!



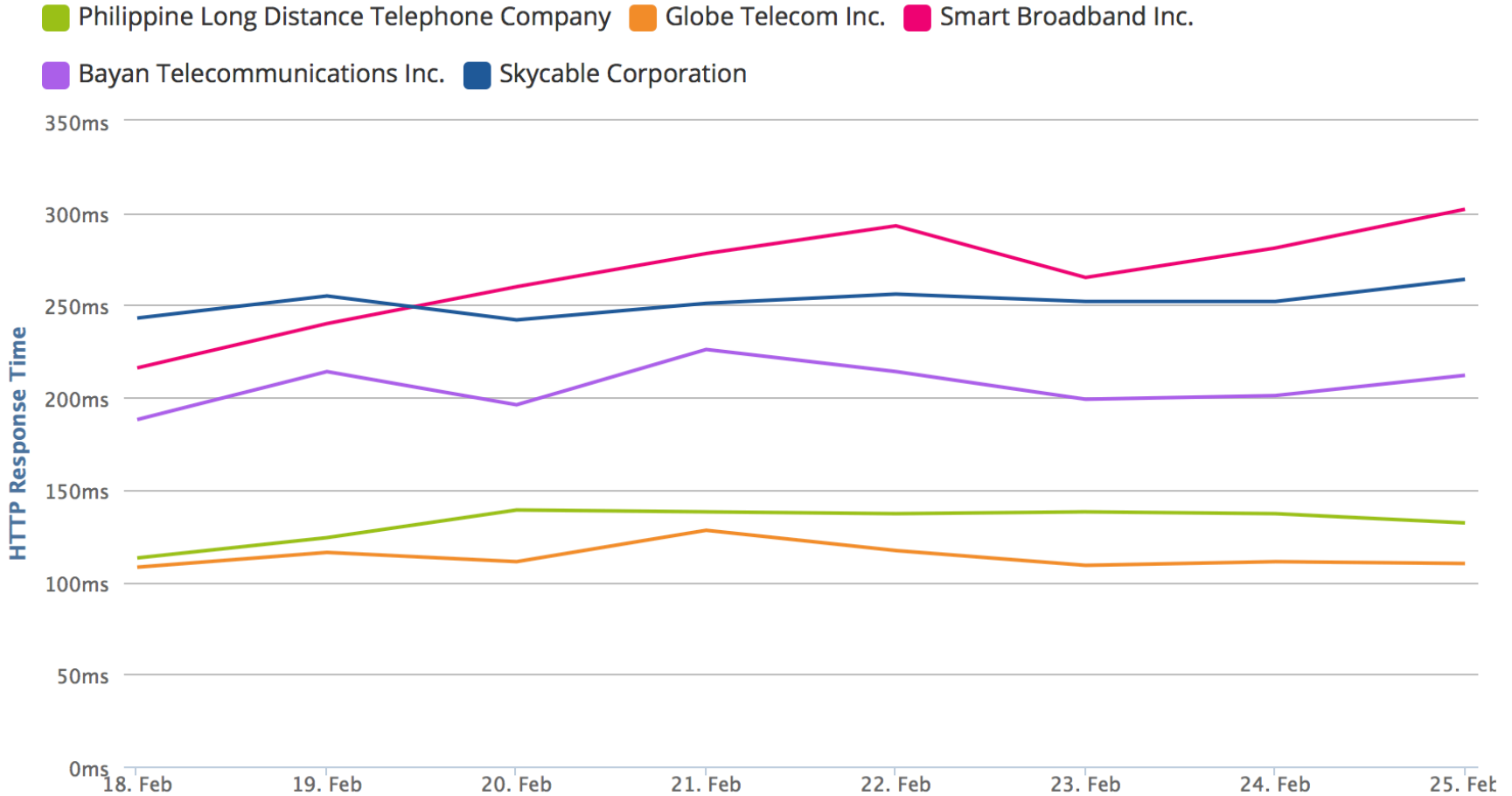
AWS Tokyo



Hurricane Electric - Massive Peering!



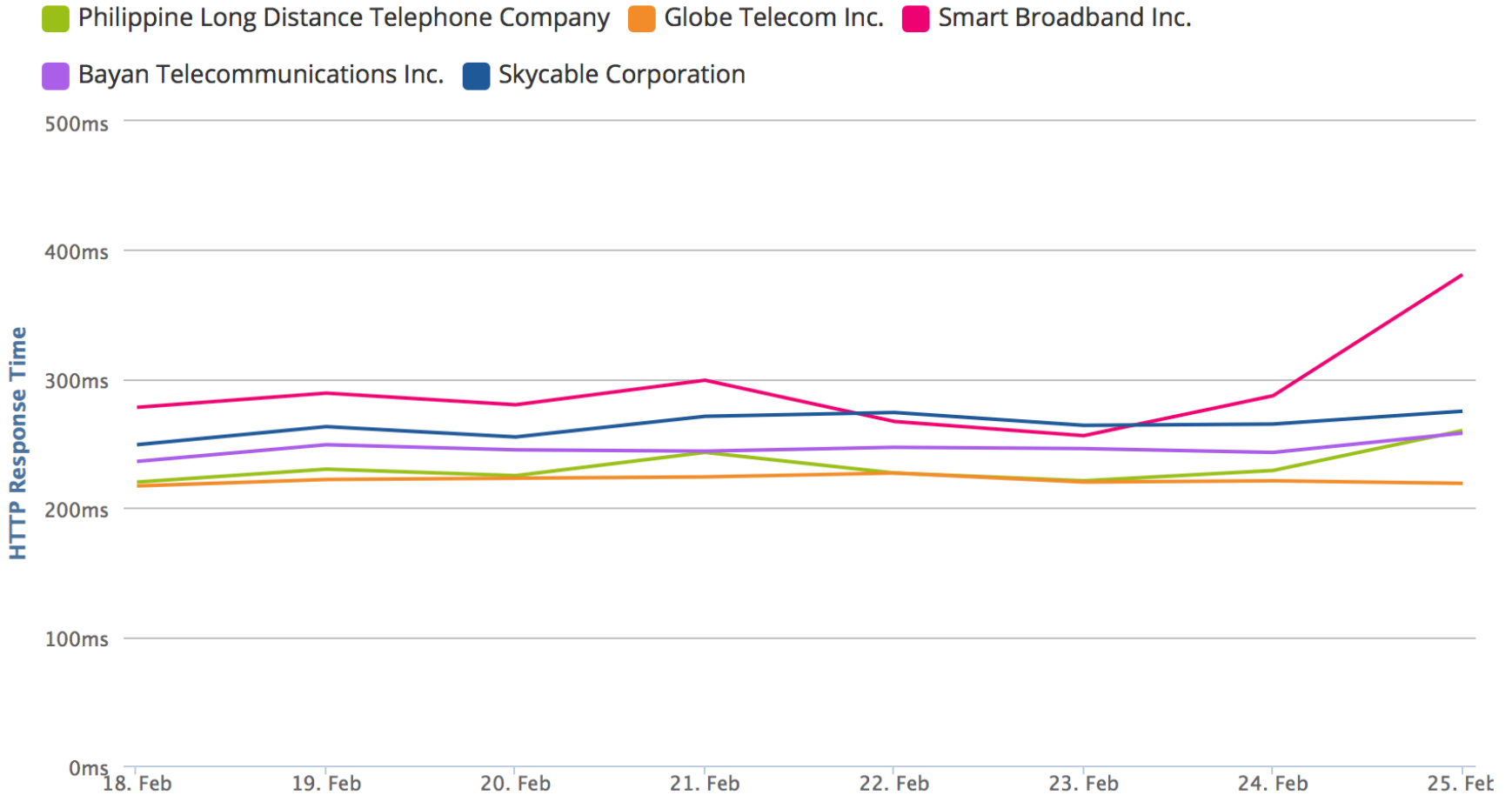
AWS Singapore



Hurricane Electric - Massive Peering!



AWS Oregon



Hurricane Electric - Massive Peering!



Network Data Results

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PLDT	9299	957	55%	1	3200	48.63%
Globe	4775	367	24%	3	3000	45.59%
Bayan	6648	432	6%	2	275	4.18%
Eastern Telcom	9658	542	n/a	5	80	1.22%
Digital Telcom	9497	84	n/a	4	25	0.38%



Exchange Points & Facilities

List of Public Exchange Points

<u>Exchange Name</u>	<u>Long Name</u>	<u>City/Region</u>	<u>Country</u>	<u>Continental Region</u>	<u>Media Type</u>	<u>Participants</u>
BAYANTEL	Bayan Telecommunications Internet and Gaming Exchange	Quezon City	PH	Asia Pacific	Ethernet	3
GIX	GLOBE INTERNET EXCHANGE	Makati City	PH	Asia Pacific	Multiple	3
Manila IX	Manila Internet Exchange	Manila	PH	Asia Pacific	Ethernet	6
PHIX	Philippine Internet Exchange	Metro Manila	PH	Asia Pacific	Ethernet	1
PHIX-AP	Philippine Internet Exchange	Metro Manila	PH	Asia Pacific	Ethernet	0
PHOpenIX	Philippine Open Internet Exchange	Metro Manila	PH	Asia Pacific	Ethernet	9

List of Interconnection Facilities

<u>Common Name</u>	<u>Management</u>	<u>CLLI</u>	<u>NPA-NXX</u>	<u>City</u>	<u>State/Prov</u>	<u>Postal Code</u>	<u>Country</u>	<u>Participants</u>
No records								

Exchange Points Results

IX Name	9299	9658	6648	4775	9497
Bayantel	6648				
GIX					
Manila IX	6648	9658			
PHIX	9299				
PHIX-AP					
PHOpenIX	4775				



Time to Fly to Manila



Total travel time from Seattle ~23 hours

In Country Research

- ❑ Local Datacenters
- ❑ Exchange Points
- ❑ Local Networking



Datacenter Checklist

- ❑ Visit the top providers datacenters.
- ❑ Is the DC in a floodplain
- ❑ Inspect networking hardware.
- ❑ Telco and meet-me room evaluation.
- ❑ Cross connects can you get to everyone on every floor?
- ❑ Are you 100% sure?
- ❑ Get it in the contract.

Local Exchange Points

- ❑ Visit all the local exchange operators.
- ❑ Understand the hardware and physical layout.
- ❑ Who is actually on the exchange?

Local Networking

- ❑ Connect to the main providers on Wi-Fi and test local and international destinations.
- ❑ Do the top providers peer locally?
- ❑ Does your traffic stay local?
- ❑ Does your traffic hit the US before coming back to the local country?

Other Considerations

- ❑ Culture
- ❑ Manners
- ❑ Holidays

Cold vs. Warm cultures

- ❑ Task based vs. Relationship based
- ❑ Direct vs. Indirect Communication
- ❑ Individualism vs. Group Identity
- ❑ Time and Planning

Manners

- ❑ Initial greetings are formal and follow a set protocol of greeting the most important person first.
- ❑ Appointments are required and should be made 3 to 4 weeks in advance.
- ❑ Face-to-face meetings are preferred.
- ❑ Wait to be told where to sit.
- ❑ Dress well. Appearances matter and you will be judged on how you dress.
- ❑ Once a relationship has been developed it is with you personally.
- ❑ Give your business card first always with two hands.

- ❑ “Yes” may mean “no”. Avoid yes or no questions!

Holidays

- ❑ Understand the local holidays and how it may impact your timelines and expectations.
- ❑ The United States has 6 paid holidays.
- ❑ The Philippines has 36 paid/unpaid holidays.

Resources

- ❑ <http://bgp.he.net>
 - ❑ <https://mi.renesys.com>
 - ❑ <http://www.cedexis.com>
 - ❑ <https://www.peeringdb.com>
 - ❑ <http://www.timeanddate.com/holidays/philippines/>
 - ❑ <http://www.thegreatcourses.com>
 - ❑ https://en.wikipedia.org/wiki/Public_holidays_in_Sweden
-
- ❑ Foreign to Familiar: A Guide to Understanding Hot - And Cold - Climate Cultures, by *Sarah A. Lanier*
 - ❑ Customs of the World: Using Cultural Intelligence to Adapt, Wherever You Are, by *Professor David Livermore Ph.D*, *The Great Courses*
 - ❑ *Boss clipart*

Thanks!

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walt@he.net