

BEST PRACTICES FOR PROTECTING YOUR ONLINE PRESENCE



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AGENDA

- CIRA – we're not just .CA
- Key domain and DNS security trends affecting BCNET members
- How can you secure your online presence



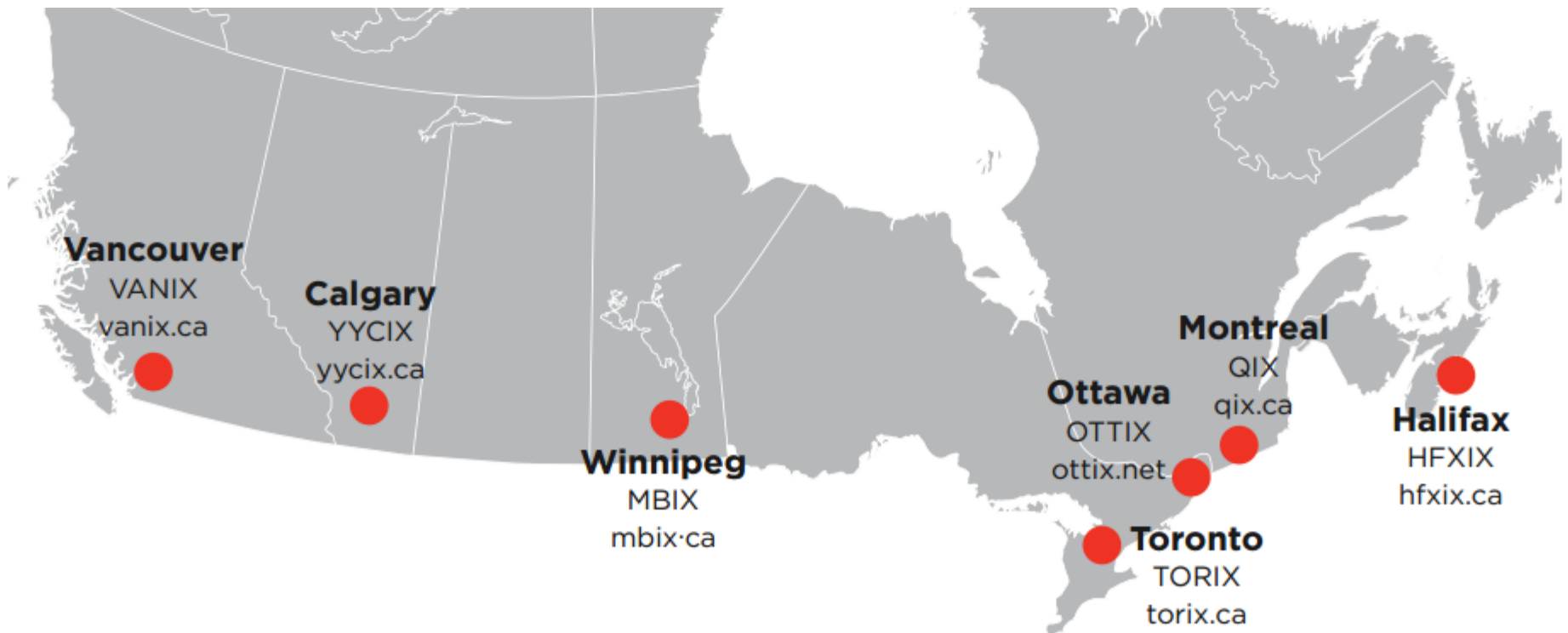
CIRA

COMMUNITY INVESTMENT PROGRAM

- \$315,000 over the past 2 years in BC alone
 - Indigenous Law Research Unit (ILRU), Faculty of Law at the University of Victoria (UVic)
 - International CyberCrime Research Center, Simon Fraser University
 - Simon Fraser University Library
 - Simon Fraser University Environmental Health Atlas
 - The Vancouver Community Network
 - Ashlu Creek Foundation (ACF)
 - British Columbia Technology for Learning Society

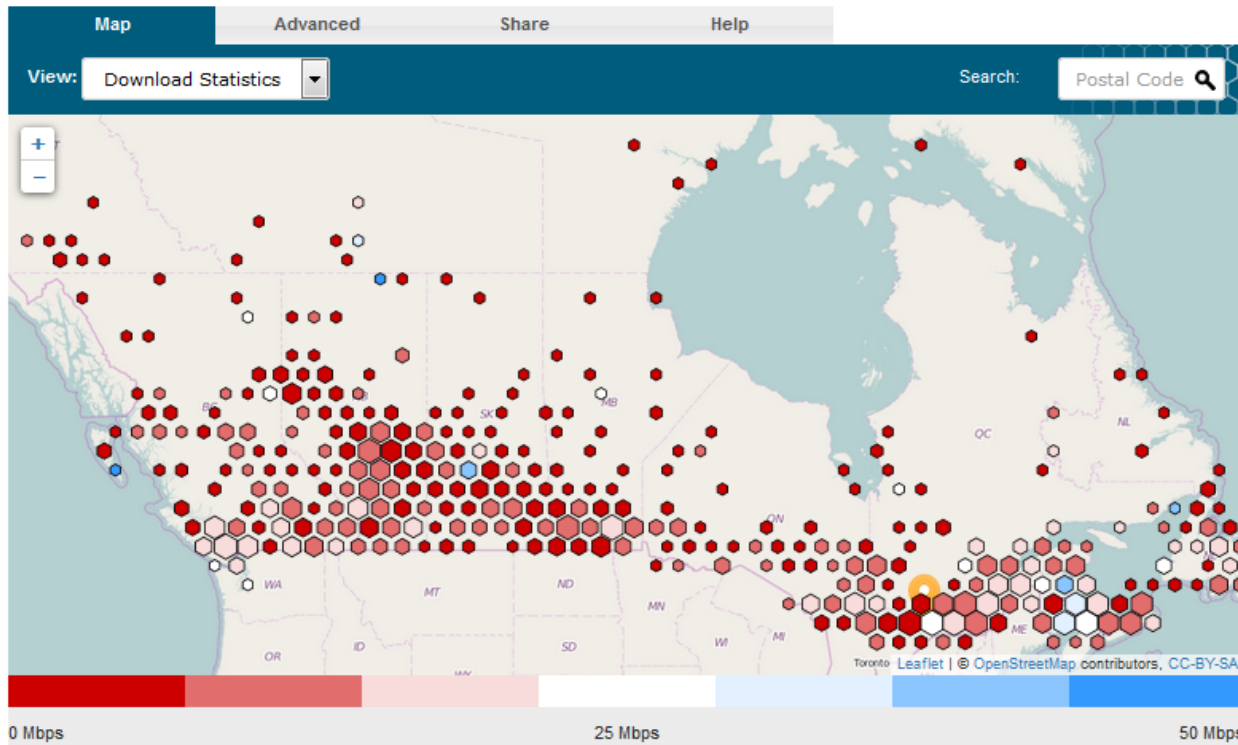
CA-IX : CANADIAN IXPS

- 7 established and operational IXPs
- Engaged Canadian IXP community



INTERNET PERFORMANCE TEST

| | | | | |
|--------------------------|------------------------|---|---|------------------------|
| My Postal Code K1L7J3 | My ISP Rogers Cable | How often? Once | For how long? N/A | Test Server Toronto |
| 0.6 Mbps | 14 ms |  |  | 8.2 Mbps |
| Upload Speed | Ping | IPv6 | DNSSEC | Download Speed |

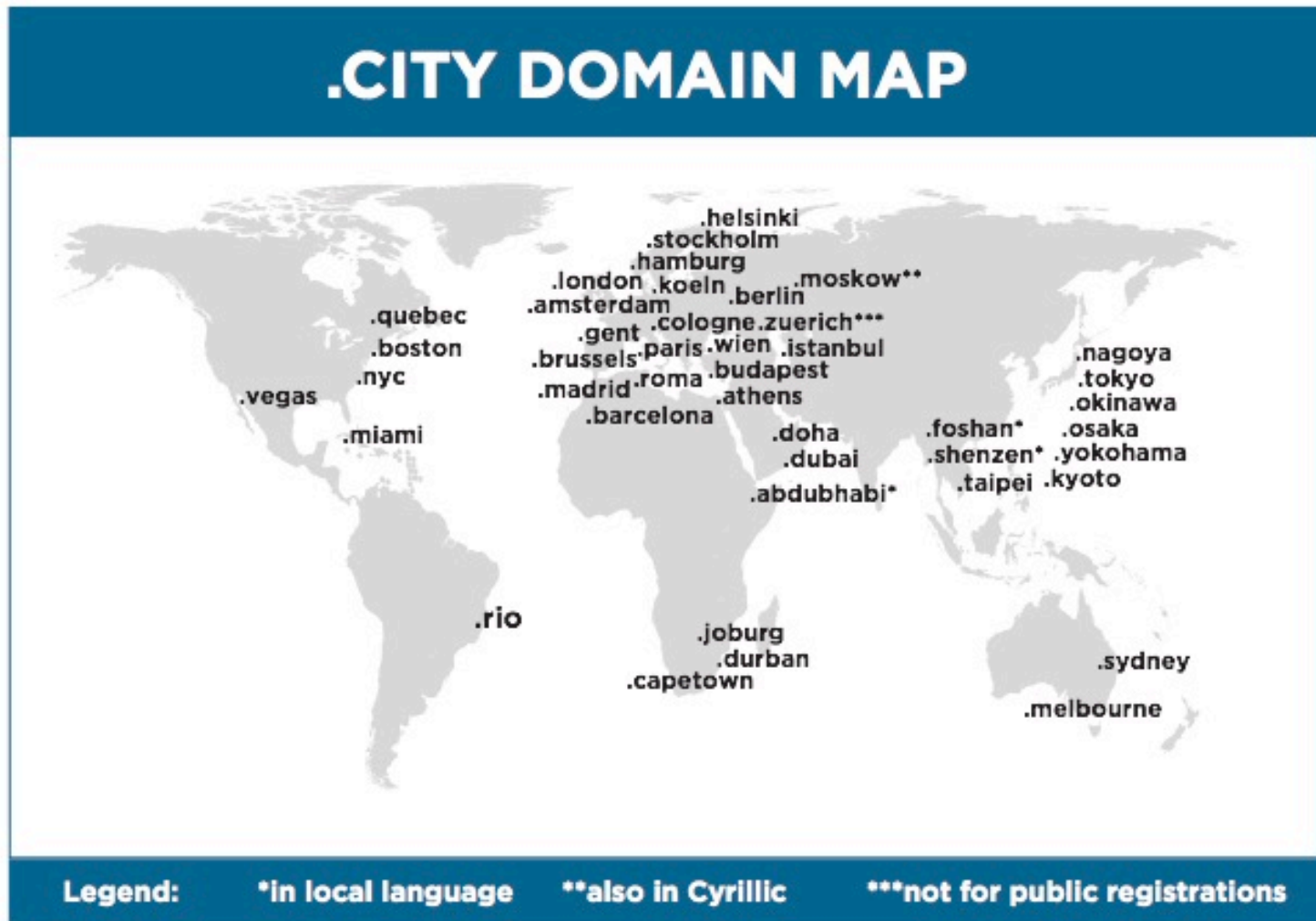


* This performance test collects information including Postal Codes and IP Addresses which will be made

144,104 Connection Tests

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REGISTRY SERVICES AND MUNICIPAL DOMAINS



NEW PRODUCTS

- Leverage our key core expertise and infrastructure
 - Registry Platform and Services
 - DNS
- Provide Canadian products and services with a focus on improving the internet in Canada
- Build relationships and partnerships with education and public sector organizations



KEY TRENDS

KEY INDUSTRY TRENDS

Common trends and issues college and university IT departments:

- Constant threat of DoS attacks
- Moving applications to the cloud
- Implementing disaster recovery solutions
- Online presence is increasingly important
- Global nearly 50% of traffic is international

BCNET DNS INFRASTRUCTURE

Summary of BCNET Name Servers:

- 70% operate their own DNS
- 63% have a single DNS provider
- 21% have 2 servers on the same subnet

Mismatch with industry trends and requirements

- Vulnerable to attack
- High risk of failure
- Local
- Doesn't support disaster recovery
- Not cloud friendly



WHAT IS THE SOLUTION

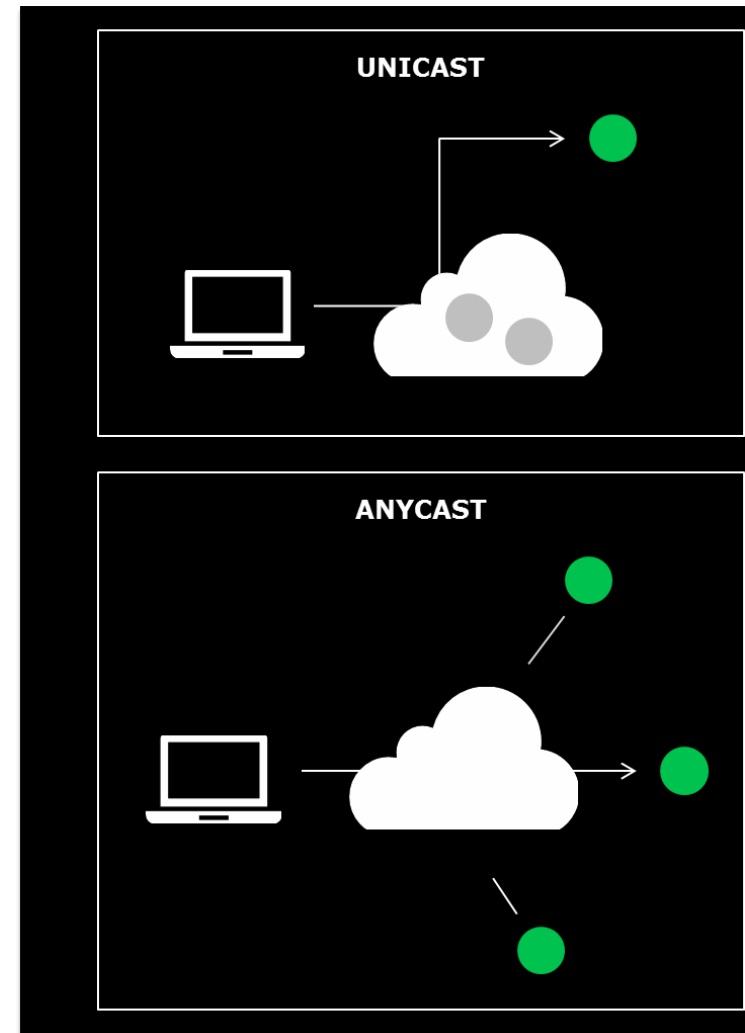
STRENGTHEN DNS WITH ANYCAST

Unicast – Traditional DNS deployments

- Nameservers are implemented on single nodes, each with a unique IP address

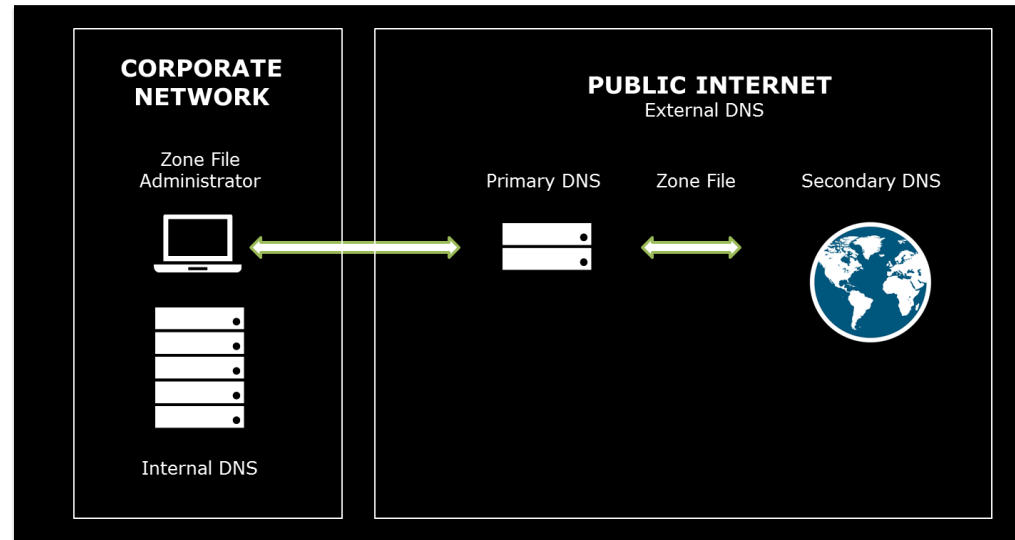
Anycast – Adding resiliency to your DNS

- Nameservers are implemented on a multiple geographically distributed nodes that share a single IP address
- Layer 3 routing sends packets to the geographically nearest nameserver
- Built in redundancy, failover and load distribution



BENEFITS OF ANYCAST DNS

- ✓ Lower latency
- ✓ DDoS resilience
- ✓ High availability
- ✓ Supports disaster recover
- ✓ Supports Cloud Services

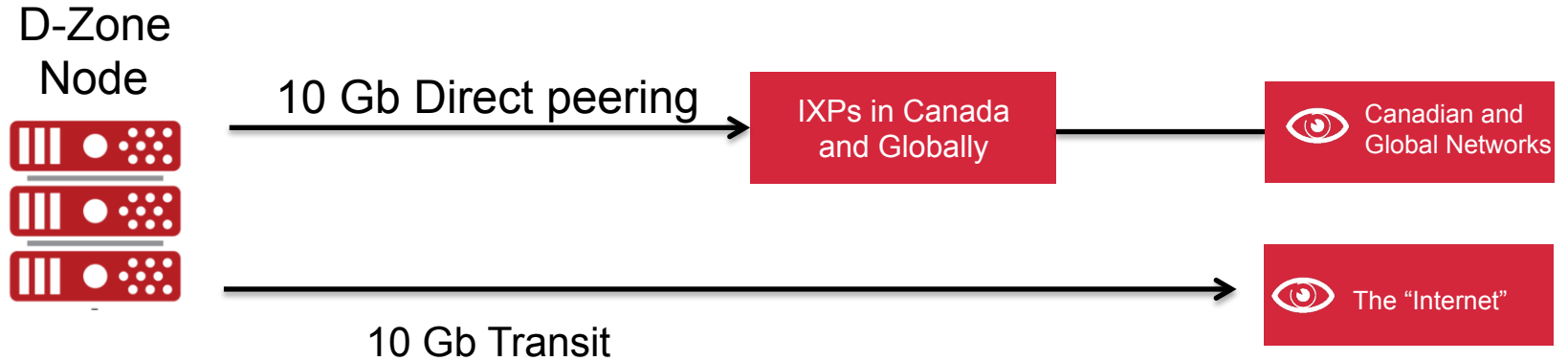


D-ZONE ANYCAST DNS

- Globally distributed DNS with an unmatched presence close to Canadian visitors



D-ZONE GLOBAL NODE CONFIGURATION



D-ZONE LOCAL NODE CONFIGURATION

D-Zone
Node



1-10 Gb Direct peering

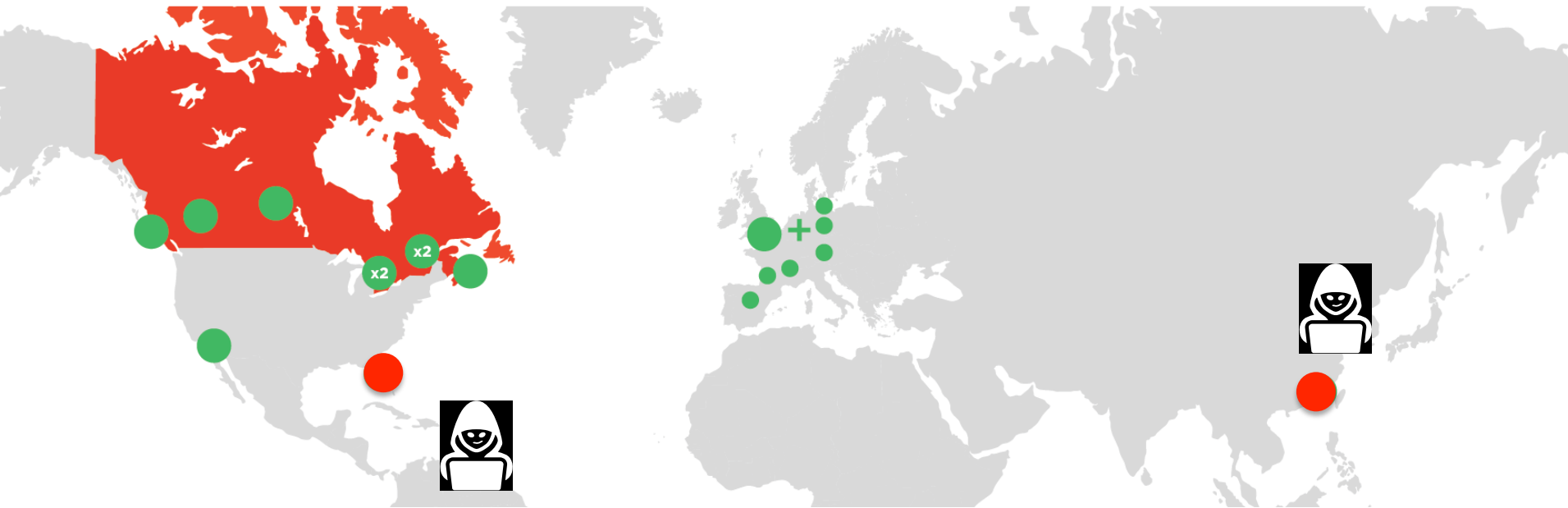
IXPs in Canada
and Globally



Canadian and
Global Eyeballs

Local nodes allow D-Zone to continue to respond to queries within Canada in the event of off-shore DDoS attacks

TRAFFIC ROUTED TO THE GEOGRAPHICALLY CLOSEST SERVER TO PROTECT YOU FROM DDOS ATTACKS

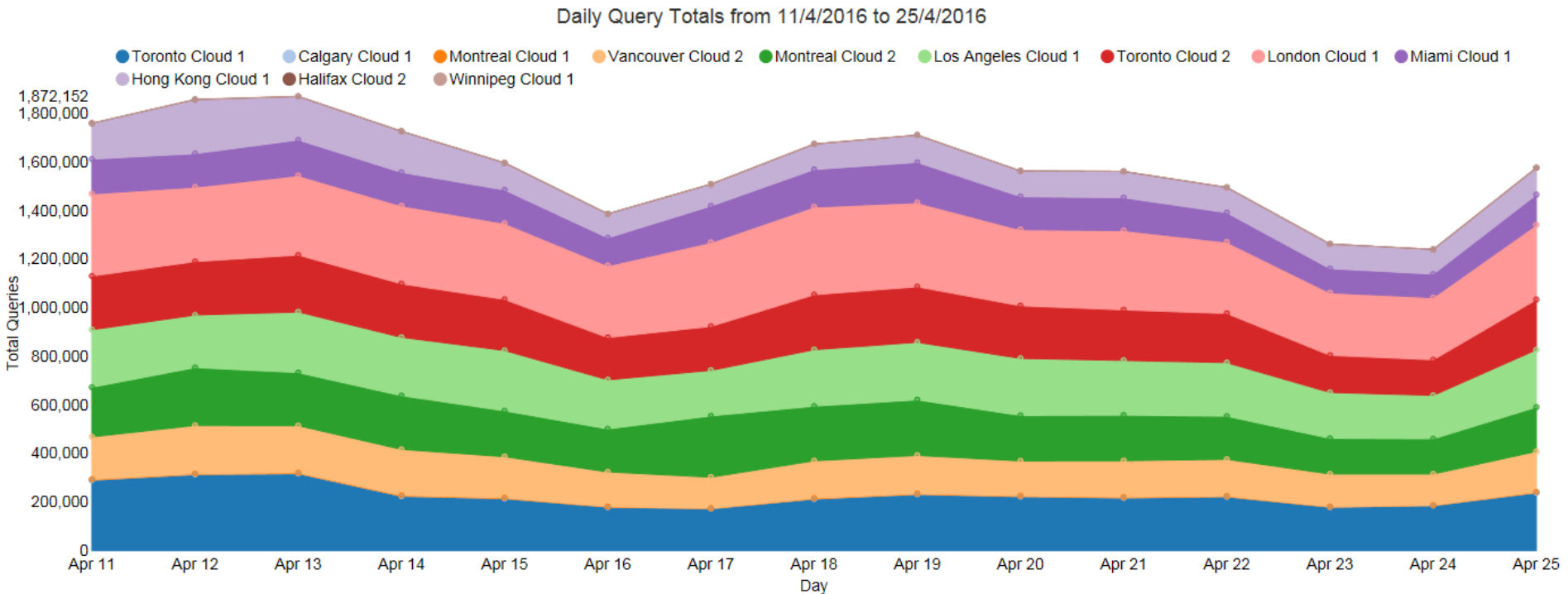


LOCAL NODES KEEP LOCAL QUERY TRAFFIC FLOWING IF NECESSARY



- ✓ With the locally peered nodes attacks must originate from a peers network - making it very easy to mitigate

DNS QUERY REPORTING – UNIVERSITY OF TORONTO



WHO IS USING D-ZONE

University
of Regina

University of
Lethbridge

 Carleton
UNIVERSITY



uOttawa



University
of Windsor

McMaster
University



Inspiring Innovation and Discovery



ACADIA
UNIVERSITY

 SAINT MARY'S
UNIVERSITY SINCE 1802



UNIVERSITY OF
TORONTO



DALHOUSIE
UNIVERSITY
Inspiring Minds

LAURIER
Inspiring Lives!



Queen's University

 CONCORDIA
UNIVERSITY
OF EDMONTON



MOUNT ROYAL
UNIVERSITY
1910

GEORGE
BROWN
COLLEGE

TRENT
UNIVERSITY



UNIVERSITY OF
SASKATCHEWAN

ALBERTA COLLEGE OF ART + DESIGN

ACAD



Fleming College

 St. Lawrence
College

Northern
COLLEGE

 CAMBRIAN
COLLEGE
Sudbury • Ontario

CENTENNIAL
COLLEGE



ST. CLAIR
COLLEGE

ALGONQUIN
COLLEGE

nc Niagara
College
Canada
APPLIED DREAMS.

 Georgian

 orion
Ontario's backbone of innovation



ACORN
NOVA SCOTIA

cybera

ATLANTIC SCHOOL
of THEOLOGY

cira

D-ZONE ANYCAST DNS BY THE NUMBERS

- 8153 zones
- 1 billion queries per month
- 62 Educational Institutions Using D-Zone
 - 40 ORION members
 - 10 ACORN members
 - 7 Cybera members
- 19 Universities
- 12 Colleges
- 14 School Boards





DOMAIN SECURITY



DOMAIN HIJACKING

- Domain hijacking could be the act of a hacker using social engineering to trick the technical support workers at a registrar (like GoDaddy, Webnames, Rebel.ca, etc.) into making critical changes to the DNS.
- OR...It can be done by the malicious act of someone within your organization

It looks like this...

You have been hacked by [@AerithXOR](#)



You laugh at us, you are scared of us, does this help your laughing?

We can destroy everything, this is a flex of our power. Please, test us.

You know what we want.

DOMAIN LOCK – DON'T GET HIJACKED

- When Domain Lock is applied to a domain name, no attributes of the domain can be changed
- If you wish to make changes then an authorized user must unlock the domain
- CIRA responds to any lock and unlock request on a 24x7 basis so there is no time or administrative burden.
- Locks can be applied through registrars (i.e. Webnames) or directly through the D-Zone interface



IN CONCLUSION

BEST PRACTICES FOR PROTECTING YOUR ONLINE PRESENCE

- Get an anycast DNS secondary service to handle all public queries
- Lock your important domains and practice good domain security

QUESTIONS

- For more detail on any of the topics discussed here, please visit www.cira.ca/d-zone
- To test your DNS visit dnstests.cira.ca
- To receive a trial D-Zone account contact me:
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