DNS Monitoring
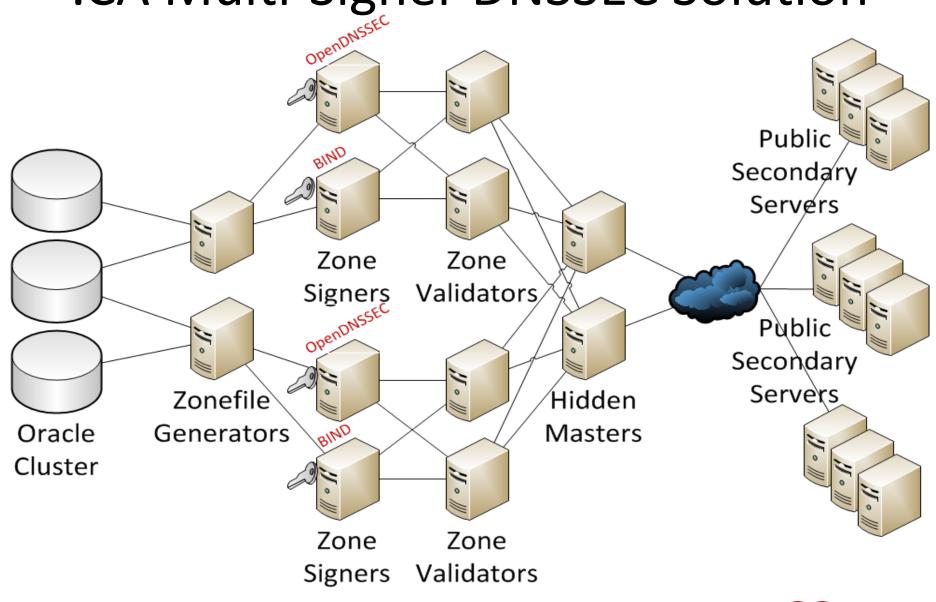# @ .CA

Canadian Internet Registration Authority (CIRA)
Jacob Zack
Sr. DNS Administrator
ICANN 51 October 2014
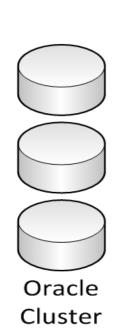
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.CA Multi-Signer DNSSEC Solution

OpenDNSSEC

BIND

OpenDNSSEC

BIND

Oracle Cluster

Zonefile Generators

Zone Signers

Zone Validators

Zone Signers

Zone Validators

Hidden Masters

Public Secondary Servers

Public Secondary Servers

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.CA Multi-Signer DNSSEC Solution

Oracle
Cluster

Basic Server Monitoring:

Network

CPU

RAM

Disk Space

Process: CROND

Process: NTPD

Process: SSHD

Process: Syslog

Role-Specific Monitoring:

Process: Oracle

Availability: Oracle

Authentication: Oracle

Role-Specific Monitoring:

Output: zone-publish
1) Could I connect to Oracle?

2) Did I get data from Oracle?

Zonefile
Generators

Output: check-level1
1) Compare this zone to last zone
    a) Too may lines of difference?
    b) Too much change in total zone file size?

2) Run 'named-checkzone' to validate zone syntax

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Role-Specific Monitoring:

1) HSM: Pingability
2) HSM: Connectability
3) HSM: KSK-Sync
4) HSM: ZSK-Sync
5) Redhat: RPM-Sync
6) Process: ods-enforcerd (All Signers)
7) Process: ods-signerd (signer01's)
9) Process: CROND (All, but role-specific due to signer02's)
10) Input: ZoneGenerator01 MD5 (File completeness)
11) Input: ZoneGenerator02 MD5 (File completeness)
12) Input: ZG01/ZG02 INCOMING_SERIAL Sync
13) Signing: ODS / BIND signing outcome
14) Output: SIGNER01/SIGNER02 OUTGOING_SERIAL Sync

OpenDNSSEC

BIND

Zone
Signers

OpenDNSSEC

BIND

Zone
Signers

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Role-Specific Monitoring:

1) Process: CROND (kicks off "cira-val" validation process.)
2) Redhat: RPM sync
3) Input: SIGNER01 MD5 (File completeness)
4) Input: SIGNER02 MD5 (File completeness)
5) Output: "validns" to check NSEC3 chain + syntax
6) Compare: Zero out signatures, re-compare zones
7) Compare: "dnskey.good" to published DNSKEY
8) Output: Level2 Validation Final Status
9) Output: Loaded-in BIND serial Sync
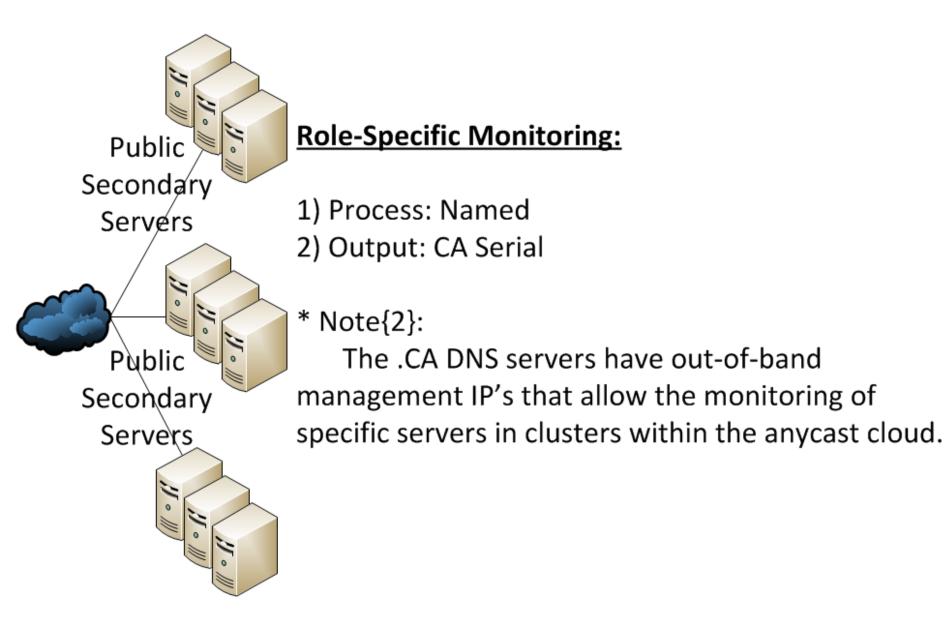10) Output: Loaded-in BIND serial (time-based)

Zone
Validators

Zone
Validators

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Role-Specific Monitoring:

1) Process: Named
2) Output: CA Serial

* Note{2}:
     The .CA zone is published hourly. CIRA expects a given zone to be published by the :40 minute mark of the hour. If it's not been published, Nagios starts alerting.

Hidden
Masters

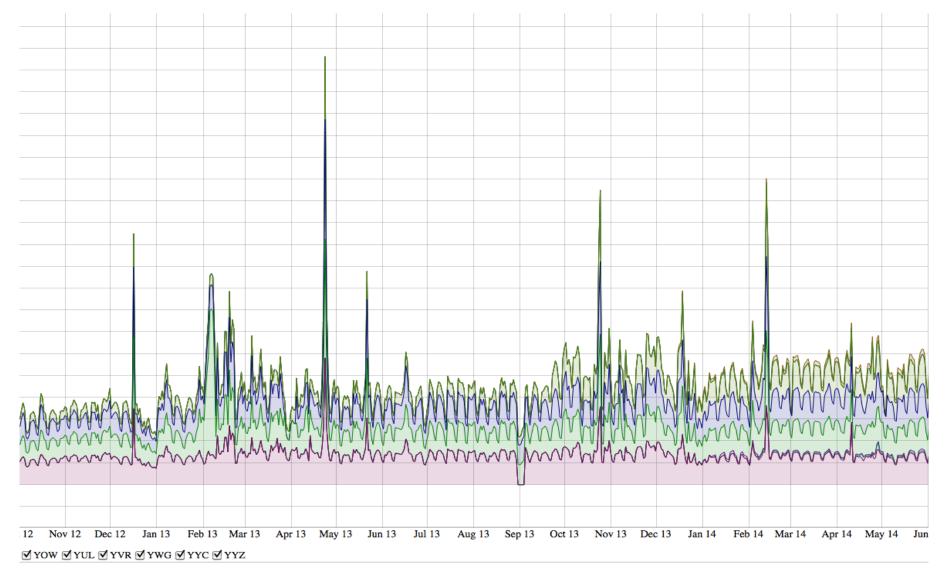.ca | Canadians Connected

Role-Specific Monitoring:

1) Process: Named
2) Output: CA Serial

* Note{2}:
    The .CA DNS servers have out-of-band management IP's that allow the monitoring of specific servers in clusters within the anycast cloud.

Monitoring Tool: Nagios

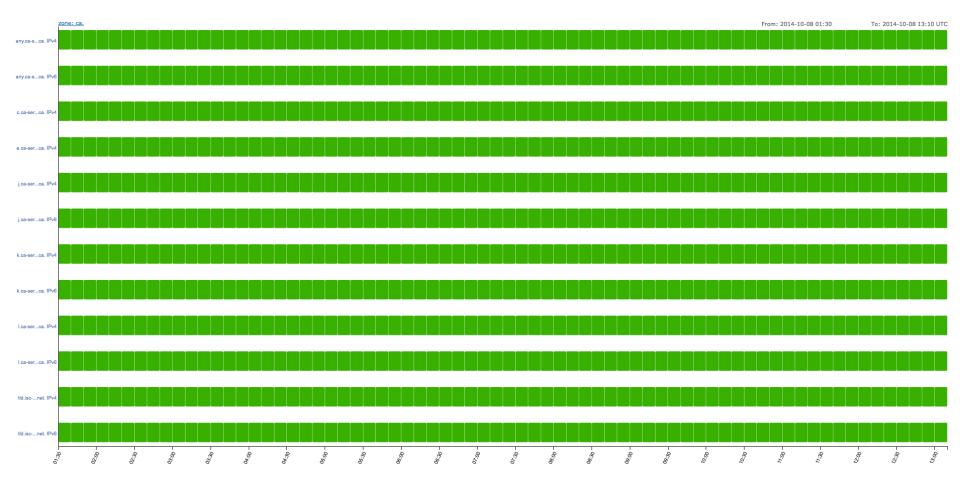| Service ▲▼	Status ▲▼	Last Check ▲▼	Duration ▲▼	Attempt ▲▼	Status Information
Any Read-Only Mounts: 📁	OK	10-08-2014 09:04:31	12d 16h 15m 38s	1/5	RO_MOUNTS OK: No ro mounts found
Current Load 📁	OK	10-08-2014 09:04:45	32d 20h 2m 12s	1/5	OK - load average: 0.10, 0.12, 0.09
DNSSEC HSMconnect 📁	OK	10-08-2014 09:05:07	32d 20h 2m 2s	1/5	NET-SNMP-EXTEND-MIB::nsExtendOutputFull."get.HSMconnect.status" = STRING: PASSED
DNSSEC HSMping 📁	OK	10-08-2014 09:05:25	32d 20h 1m 56s	1/5	dnssec_HSMping PASSED
DNSSEC INCOMING Serial 📁	OK	10-08-2014 09:06:46	0d 1h 39m 36s	1/5	signer-02.bak-sig:2014100808 - signer-01.prd-sig:2014100808 - signer-01.bak-sig:2014100808 - signer-02.prd-sig:2014100808 - dnssec_incomingserial PASSED - 2014100808
DNSSEC KSK Sync 📁	OK	10-08-2014 09:05:59	8d 16h 45m 32s	1/5	dnssec_ksk_sync PASSED - ca active KSK 10207 02116a0b4198742bba95cc8b69d46c5c
DNSSEC ODS Sign 📁	OK	10-08-2014 09:06:21	11d 7h 39m 32s	1/5	dnssec_odssign PASSED
DNSSEC SIGNED Serial 📁	OK	10-08-2014 09:06:38	0d 13h 39m 9s	1/5	signer-02.bak-sig:2014100808 - signer-01.prd-sig:2014100808 - signer-01.bak-sig:2014100808 - signer-02.prd-sig:2014100808 - dnssec_signedserial PASSED - 2014100808
DNSSEC Signer RPM Sync Status 📁	OK	10-08-2014 09:06:56	8d 16h 44m 56s	1/5	1 cira-dnssec-0.41-1.el6.noarch
DNSSEC ZG1 MD5 Status 📁	OK	10-08-2014 09:04:16	32d 20h 2m 2s	1/5	dnssec_zg1_md5 PASSED
DNSSEC ZG2 MD5 Status 📁	OK	10-08-2014 09:04:29	32d 20h 1m 52s	1/5	dnssec_zg2_md5 PASSED
DNSSEC ZSK Sync 📁	OK	10-08-2014 09:04:49	8d 16h 45m 51s	1/5	dnssec_zsk_sync PASSED - ca active ZSK 43908 f248a951c29cb3756ae745c77b2517ff
MegaRAID Disk Status: 📁	OK	10-08-2014 09:05:07	32d 20h 0m 1s	1/4	OK - 99 problems, but a disk ain't one. (good to go)
Process: Rsyslogd 📁	OK	10-08-2014 09:06:00	32d 20h 2m 32s	1/5	PROCS OK: 1 process with command name 'rsyslogd'
Process: Total 📁	OK	10-08-2014 09:05:45	9d 11h 25m 54s	1/5	PROCS OK: 437 processes
Process: nrpe 📁	OK	10-08-2014 09:05:56	32d 20h 2m 2s	1/5	NRPE v2.15
SNMP 📁	OK	10-08-2014 09:06:21	32d 20h 0m 3s	1/4	SNMP OK - PRD
SSH 📁	OK	10-08-2014 09:06:37	32d 20h 2m 50s	1/4	SSH OK - OpenSSH_5.3 (protocol 2.0)
SWAP 📁	OK	10-08-2014 09:06:55	32d 20h 2m 22s	1/5	SWAP OK - 100% free (4095 MB out of 4095 MB)
Time 📁	OK	10-08-2014 09:04:15	13d 16h 23m 6s	1/4	NTP OK: Offset -0.000732 secs
Volume: / 📁	OK	10-08-2014 09:04:29	32d 20h 2m 32s	1/5	DISK OK - free space: / 780762 MB (98% inode=99%):
crond Processes total 📁	OK	10-08-2014 09:04:47	12d 16h 17m 42s	1/5	PROCS OK: 1 process with command name 'crond'
ods-enforcerd Processes total 📁	OK	10-08-2014 09:05:05	12d 16h 17m 24s	1/5	PROCS OK: 1 process with command name 'ods-enforcerd'
ods-signerd Processes total 📁	OK	10-08-2014 09:05:25	12d 16h 17m 7s	1/5	PROCS OK: 1 process with command name 'ods-signerd'

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Trending Tool: DSC / DSCng

☑ YOW ☑ YUL ☑ YVR ☑ YWG ☑ YYC ☑ YYZ

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Third Party Anycast Visibility: RIPE DNSMON

zone: ca.　　　　　　　　　　　　　　　　　　　　　From: 2014-10-08 01:30　　To: 2014-10-08 13:10 UTC

Since the text look so small here… Green == Good. ☺

　　　　　　DNS Monitoring @ .CA – ICANN 51

Questions?

DNS Monitoring @ .CA – ICANN 51