Stork Dashboard for Kea

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What is Stork?

- A graphical management **dashboard**
- Makes open source Kea easier to use
- Open source (MPL) + leverages open source
- Central server + agents
- Monthly feature releases - rapid development
- Ubuntu 19.10, CentOS 8, FreeBSD 12
- Docker optional
Target Uses

• Simple, yet comprehensive Kea monitoring and fault management
• Replacement for Anterius (a popular GSOC project, but not maintained)
• Eventually - troubleshooting tool for BIND + Kea
Requirements from Users

1. display pool utilization, alarm on thresholds
2. monitor disk space, cpu utilization
3. monitor, test HA pair status
4. monitor on-going lease activity (LPS), total active leases
5. monitor time to assign a lease, detect unusual slowdowns
Current Features

- Monitor multiple Kea and BIND services
- Configuration inspection
  - subnets, pool, shared networks (per server, aggregated list)
  - filtering/search mechanism
- Host Reservations
- Focus Stork on features Grafana can’t easily do
  - Display pool utilization (total, pool, reserved, in use)
  - Single mode/HA/LB status
- Health status:
  - CPU/mem utilization
  - Uptime, time since reconfig, version
  - # of queries
  - Response time?
- DHCP traffic exchange details in Grafana
Features TBD

- Log viewer
- Alarms (leverage Grafana for this)
- Current lease status information
- Complex admin roles and privileges
- Event Timings (latency)
- ‘Real user testing’ - automated service probing
- Modify configuration, configuration controls much later
Stork Architecture

Kea with Stork Agent

Kea with Stork Agent

Kea with Stork Agent

Stork API calls gRPC over http2

Prometheus http

Prometheus

Grafana

Stork Server

ReST API
Stork Deployment

- Stork server
  - May be dedicated node
  - May be colocated with Kea
  - Install from packages
  - Run natively on Ubuntu 18.04 or later
  - Stork server will not run on every OS that Kea runs on
- Prometheus and Grafana
  - on the stork server or remote

- Agent
  - Install on every Kea server you want to manage
  - Ubuntu, CentOS8, Fedora, Debian
About the Demo

• Traffic generation w/perfdhcp
  • open source, distributed with Kea
Summary

- https://gitlab.isc.org/isc-projects/stork - bookmark it!
  - We need feedback on requirements, priorities, User Interface, bugs, operational use cases
- Debian, RPM packages at https://cloudsmith.io/~isc/repos/stork/packages/
- stork-users mailing list at lists.isc.org - subscribe
- a recording of this webinar will be posted at https://www.isc.org/presentations/
Demo

slides in case of network/demo malfunction
Login screen

Ver: 0.6.0
Dashboard for ISC Kea and ISC BIND

Not terribly exciting, but it will get better
Empty dashboard

Welcome to Stork!

Stork is a monitoring solution for ISC Kea DHCP and ISC BIND 9.

There is a Stork documentation which describes how to configure and use Stork.

Currently, there are no machines with Kea or BIND 9 to monitor defined in Stork. To add new machine visit machines page.

Lone and empty place. Let’s get this place going.
Adding new agent

Adding is simple: address or FQDN and port
Detecting apps

System Information

<table>
<thead>
<tr>
<th>Hostname</th>
<th>agent-kea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>agent-kea:8080</td>
</tr>
<tr>
<td>Agent Version</td>
<td>0.6.0</td>
</tr>
<tr>
<td>CPUs</td>
<td>8</td>
</tr>
<tr>
<td>CPUs Load</td>
<td>1.18 0.94 0.62</td>
</tr>
<tr>
<td>Memory</td>
<td>15 GB</td>
</tr>
<tr>
<td>Used Memory</td>
<td>61 %</td>
</tr>
<tr>
<td>Uptime</td>
<td>7 days</td>
</tr>
<tr>
<td>OS</td>
<td>linux</td>
</tr>
<tr>
<td>Platform Family</td>
<td>debian</td>
</tr>
<tr>
<td>Platform</td>
<td>ubuntu</td>
</tr>
<tr>
<td>Platform Version</td>
<td>18.04</td>
</tr>
<tr>
<td>Kernel Version</td>
<td>5.3.0-46-generic</td>
</tr>
<tr>
<td>Kernel Arch</td>
<td>x86_64</td>
</tr>
<tr>
<td>Virtualization Role</td>
<td>guest</td>
</tr>
<tr>
<td>Virtualization System</td>
<td>docker</td>
</tr>
<tr>
<td>Host ID</td>
<td>1e0dd860-008c-4400-22c9-f46d04965554</td>
</tr>
<tr>
<td>Last Visited</td>
<td>2020-04-20 21:27:46</td>
</tr>
<tr>
<td>Error</td>
<td></td>
</tr>
</tbody>
</table>

Kea App

Active: no
Version: 1.7.3

Agent detects running/crashed/offline apps automatically.
Inspecting Kea
Pool utilization

Pool utilization, warning(80%), critical (90%) thresholds, Grafana links
Shared networks view

DHCP Shared Networks

<table>
<thead>
<tr>
<th>Name</th>
<th>Addresses</th>
<th>Subnets</th>
<th>ApplD @ Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>frog</td>
<td>310</td>
<td>192.0.8.0/24, 192.0.6.0/24, 192.0.9.0/24, 192.0.7.0/24, 192.0.5.0/24</td>
<td>5 @ 127.0.0.1:8000</td>
</tr>
<tr>
<td>mouse</td>
<td>445</td>
<td>192.1.16.0/24, 192.1.17.0/24, 192.1.15.0/24</td>
<td>5 @ 127.0.0.1:8000</td>
</tr>
</tbody>
</table>

Total: 2 shared networks
### DHCP

#### DHCPv4

**Subnets:** 9  
- [32] 192.0.9.0/24 100% used  
- [36] 192.0.2.0/24 97% used  
- [30] 192.0.7.0/24 84% used  
- [33] 192.1.5.0/24 70% used  
- [28] 192.0.5.0/24 44% used  

**Shared Networks:** 2  
- frog (5 subnets) 51.2% used  
- mouse (3 subnets) 7.8% used  

#### DHCPv6

**Subnets:** 0  
- more  

**Shared Networks:** 0  
- more  

### Services Status

<table>
<thead>
<tr>
<th>Host</th>
<th>[ID] App Version</th>
<th>Daemon</th>
<th>Active</th>
<th>Uptime</th>
</tr>
</thead>
<tbody>
<tr>
<td>agent-kea</td>
<td>[5] Kea 1.7.3</td>
<td>dhcp4</td>
<td>✔️</td>
<td>3 hours 4 minutes 46 seconds</td>
</tr>
<tr>
<td>agent-kea</td>
<td>[5] Kea 1.7.3</td>
<td>dhcp6</td>
<td>✗</td>
<td></td>
</tr>
<tr>
<td>agent-kea-hosts</td>
<td>[6] Kea 1.7.3</td>
<td>dhcp4</td>
<td>✔️</td>
<td>3 hours 7 minutes 32 seconds</td>
</tr>
</tbody>
</table>
Host Reservations

<table>
<thead>
<tr>
<th>DHCP Identifiers</th>
<th>IP Addresses</th>
<th>IPv6 Prefixes</th>
<th>Subnet</th>
<th>AppID @ Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>duid=01:02:05:00:06</td>
<td>192.0.2.103</td>
<td>192.0.2.0/24</td>
<td>5 @ 127.0.0.1:8000</td>
<td>2020-02-01 12:34:56</td>
</tr>
<tr>
<td>client-id=01:02:03:04:05</td>
<td>192.0.2.104</td>
<td>192.0.2.0/24</td>
<td>5 @ 127.0.0.1:8000</td>
<td>2020-02-01 12:34:56</td>
</tr>
<tr>
<td>client-id=01:02:03:04:05</td>
<td>192.0.2.105</td>
<td>192.0.2.0/24</td>
<td>5 @ 127.0.0.1:8000</td>
<td>2020-02-01 12:34:56</td>
</tr>
<tr>
<td>client-id=01:02:03:04:05</td>
<td>192.0.2.106</td>
<td>192.0.2.0/24</td>
<td>5 @ 127.0.0.1:8000</td>
<td>2020-02-01 12:34:56</td>
</tr>
<tr>
<td>hw-address=01:02:03:04:05</td>
<td>192.0.2.230</td>
<td>192.0.2.0/24</td>
<td>6 @ 127.0.0.1:8000</td>
<td>2020-02-01 12:34:56</td>
</tr>
<tr>
<td>flex-id=01:02:03:04:05</td>
<td>192.0.2.231</td>
<td>192.0.2.0/24</td>
<td>6 @ 127.0.0.1:8000</td>
<td>2020-02-01 12:34:56</td>
</tr>
<tr>
<td>hw-address=01:02:03:04:05</td>
<td>192.0.2.232</td>
<td>192.0.2.0/24</td>
<td>6 @ 127.0.0.1:8000</td>
<td>2020-02-01 12:34:56</td>
</tr>
<tr>
<td>hw-address=01:02:03:04:05</td>
<td>192.0.2.233</td>
<td>192.0.2.0/24</td>
<td>6 @ 127.0.0.1:8000</td>
<td>2020-02-01 12:34:56</td>
</tr>
</tbody>
</table>

1 of 2 pages
HA status (all good)
HA status (problems detected)

(Need a better slide)
BIND9 status: Cache hit ratio

![BIND9 Status](image-url)
Grafana: All DHCP subnets
Grafana: Single subnet