

Alice-LG at ECIX

(and Large BGP community IXP standards)

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NLNOG-day 2017

lg.ecix.net

github.com/ecix/alice-lg

IRC: `freenode/#birdseye`

Alice-LG dev

Matthias Hannig: github.com/mhannig

lg.ecix.net

Stichting NLNOG

Alice - The friendly bird looking glass

localhost:8001/alice/

AppsGetting StartedImported From FNew Tab

Alice

Your friendly bird looking glass

ROUTESERVERS

rs1.lab (IPv4)

Bird 1.6.3

rs1.lab (IPv6)

Bird 1.6.3

Welcome to Alice!

Your friendly bird looking glass

Q

10

ROUTES FILTERED

Network	AS Path	Gateway	Neighbour	ASN	RS
10.0.0.0/24 An IP Bogon was detected	1337	1.2.3.11	PEER AS1337 1.2.3.11 lab-isp-1	1337	rs1.lab (IPv4)
101.0.0.0/25 The prefix is longer than 24	1337	1.2.3.11	PEER AS1337 1.2.3.11 lab-isp-1	1337	rs1.lab (IPv4)
102.0.0.0/24 The advertised nexthop address is not the same as the peer	1337	1.2.3.12	PEER AS1337 1.2.3.11 lab-isp-1	1337	rs1.lab (IPv4)

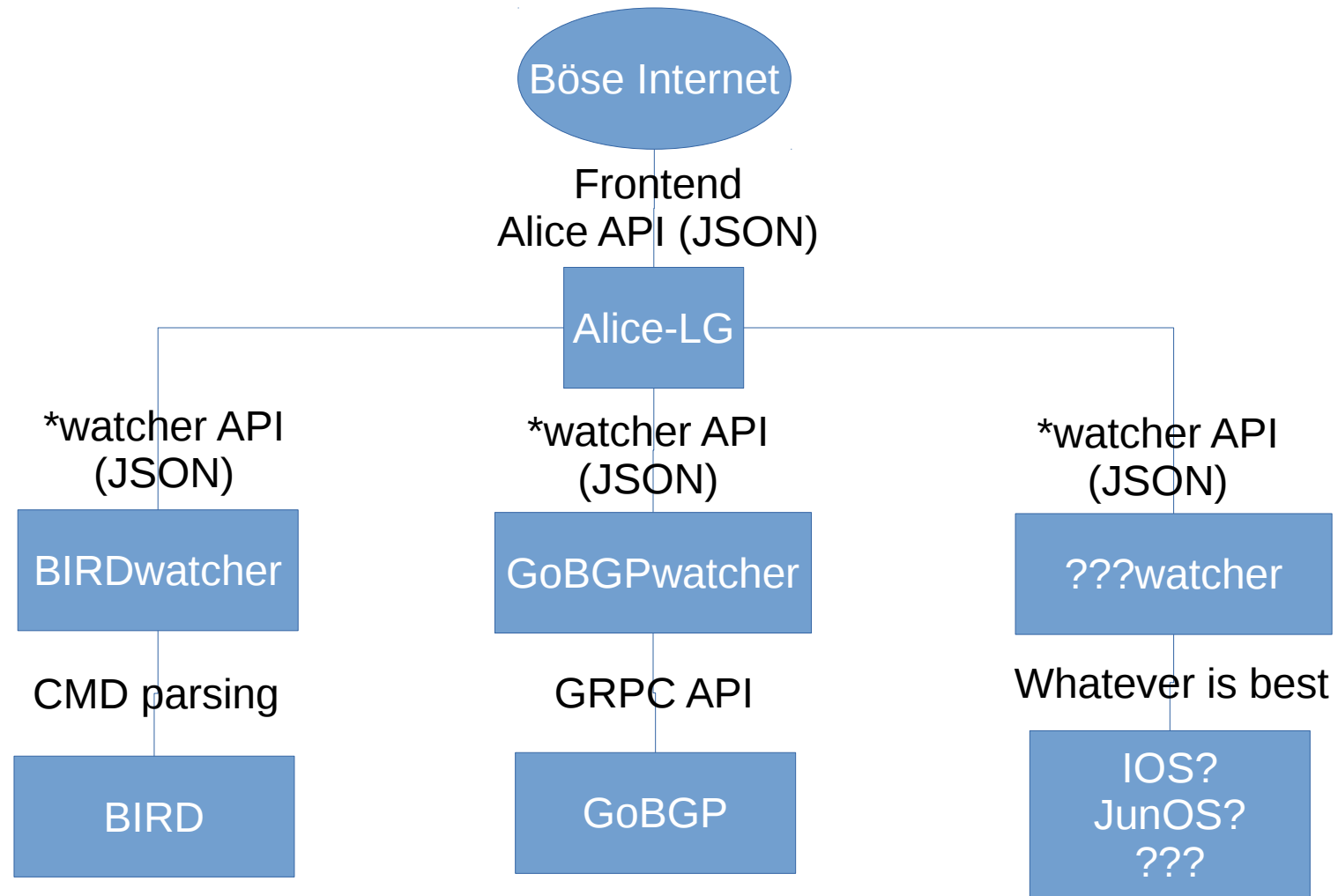
ROUTES ACCEPTED

Network	AS Path	Gateway	Neighbour	ASN	RS
100.0.0.0/24	1337	1.2.3.11	PEER AS1337 1.2.3.11 lab-isp-1	1337	rs1.lab (IPv4)

Displaying 4 of 4 routes

Query took 0.07 ms to complete

Alice-LG



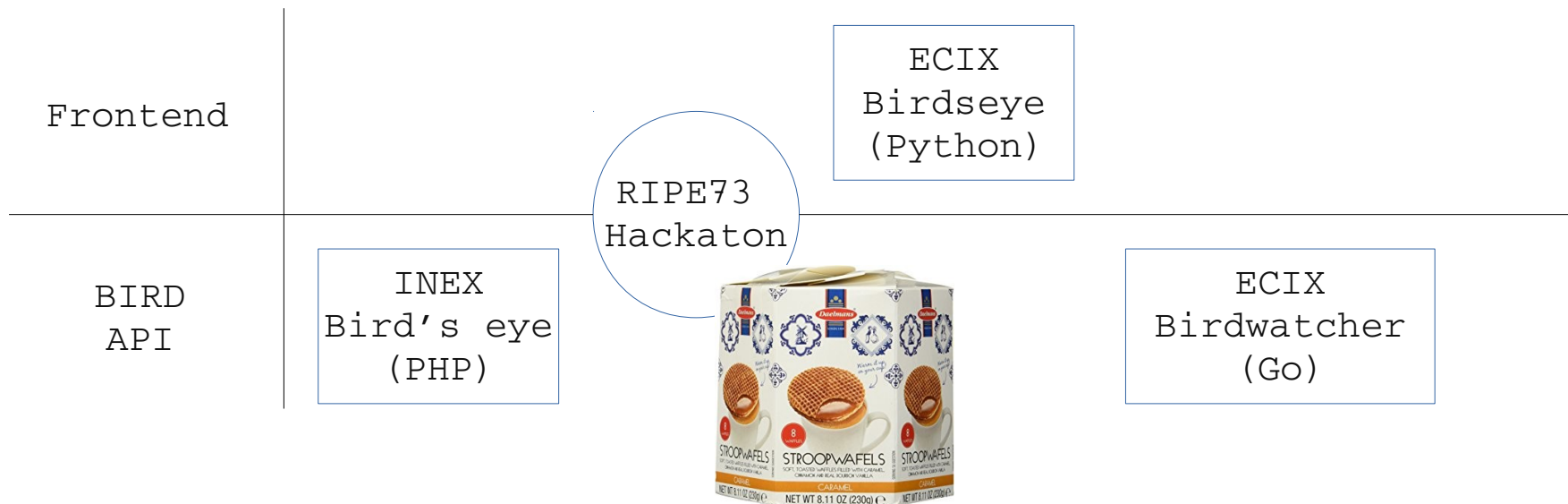
(short) History

- RIPE73 :

<https://ripe73.ripe.net/archives/video/1505/>

- Bird's eye by Barry O'Donovan, INEX

<https://github.com/inex/birdseye>



Alice-LG

Stichting NLNOG

Alice - The friendly

localhost:8001/alice/routerservers/0

AppsGetting StartedImported From FNew Tab

Alice
Your friendly bird looking glass

ROUTESERVERS

rs1.lab (IPv4)
Bird 1.6.3

rs1.lab (IPv6)
Bird 1.6.3

rs1.lab (IPv4)

QFilter by Neighbour, ASN or Description

Neighbour	ASN	State	Uptime	Description	Routes Recv.	Routes Filtered
1.2.3.11	1337	up	3 days	PEER AS1337 1.2.3.11 lab-isp-1	1	3
1.2.3.12	1338	up	4 days	PEER AS1338 1.2.3.12 lab-isp-2	1	1
1.2.3.15	1339	up	4 days	PEER AS1339 1.2.3.15 lab-isp-5	2	0
1.2.3.16	1340	up	4 days	PEER AS1340 1.2.3.16 lab-isp-6	2	0

Neighbour	ASN	State	Since	Description	Routes Recv.	Routes Filtered
1.2.3.109	1340	start	4 days	PEER AS1340 1.2.3.109 lab-isp-6	0	0
1.2.3.56	1340	start	4 days	PEER AS1340 1.2.3.56 lab-isp-6	0	0
1.2.3.89	1340	start	4 days	PEER AS1340 1.2.3.89 lab-isp-6	0	0
1.2.3.99	1340	start	4 days	PEER AS1340 1.2.3.99 lab-isp-6	0	0
1.2.3.78	1340	start	4 days	PEER AS1340 1.2.3.78 lab-isp-6	0	0
1.2.3.86	1340	start	4 days	PEER AS1340 1.2.3.86 lab-isp-6	0	0
1.2.3.50	1340	start	4 days	PEER AS1340 1.2.3.50 lab-isp-6	0	0
1.2.3.31	1340	start	4 days	PEER AS1340 1.2.3.31 lab-isp-6	0	0
1.2.3.112	1340	start	4 days	PEER AS1340 1.2.3.112 lab-isp-6	0	0
1.2.3.40	1340	start	4 days	PEER AS1340 1.2.3.40 lab-isp-6	0	0

Last Reconfig: Monday, January 1, 0001 1:00 AM

Daemon is up and running

Alice-LG

Stichting NLNOG

Alice - The friendly bird looking glass

localhost:8001/alice/routeservers/0/protocols/ID7346_AS1338/routes

AppsGetting StartedImported From FNew Tab

Alice
Your friendly bird looking glass

ROUTESERVERS

rs1.lab (IPv4)
Bird 1.6.3

rs1.lab (IPv6)
Bird 1.6.3

rs1.lab (IPv4) » PEER AS1338 1.2.3.12 lab-isp-2

Filter by Network, Gateway or Interface

ROUTES FILTERED

Network	AS Path	Next Hop
110.0.0.0/25 The prefix is longer than 24	1338	1.2.3.12

ROUTES ACCEPTED

Network	AS Path	Next Hop
12.0.0.0/8	1338	1.2.3.12

ROUTES NOT EXPORTED

Network	AS Path	Next Hop
100.0.0.0/24 The sender has specifically refused export to the target peer, either through sending 65000:AS, or through the portal	1337	1.2.3.11

Last Reconfig: Monday, January 1, 0001 1:00 AM

Daemon is up and running

Alice-LG

Stichting NLNOG x Alice - The friendly bird looking glass

localhost:8001/alice/routerservers/0/protocols/ID7346_AS1338/routes

Apps Getting Started Imported From F New Tab

Alice
Your friendly bird looking glass

rs1.lab (IPv4) » PEER AS1338 1.2.3.12 lab-ign-2

Filter by Network, Gate

ROUTES FILTERED

Network

110.0.0.0/25
The prefix is longer than 24

ROUTES ACCEPTED

Network

12.0.0.0/8

1338

1.2.3.12

ROUTES NOT EXPORTED

Network	AS Path	Next Hop
100.0.0.0/24 The sender has specifically refused export to the target peer, either through sending 65000:AS, or through the portal	1337	1.2.3.11

BGP Attributes for Network:
100.0.0.0/24

Origin: IGP

Local Pref: 100

Next Hop: 1.2.3.11

MED: 0

AS Path: 1337

Communities: 65011:15 9033:3251

Large Communities: 9033:65000:1338 9033:65033:10 9033:65666:9 9033:65667:4

Close

Last Reconfig: Monday, January 1, 0001 1:00 AM

Daemon is up and running



Alice-LG API

- `api/config`
- `api/routerservers`
- `api/routerservers/0/status`
- `api/routerservers/0/neighbours`
- `api/routerservers/0/neighbours/ID109
_AS31078/routes`
- `api/lookup/prefix?q=217.115.0.0`

Alice-LG API



stoepzel 11:16 AM

!lg rs1.ham --name iphh



errbot APP 11:16 AM

[rs1.ham.ecix.net \(IPv4\)](#)

AS12731 193.42.155.30 IPHH Internet Port Hamburg GmbH

up since 2017-01-26 23:25:31

Imported: 36

Filtered: 0

Exported: 33460

[rs1.ham.ecix.net \(IPv6\)](#)

AS12731 2001:7f8:8:10:0:31bb:0:1 IPHH Internet Port Hamburg GmbH

up since 2017-01-26 23:25:32

Imported: 20

Filtered: 0

Exported: 8811

Should not work ;)



stoepzel 5:15 PM

`!lg rs --reboot 5`



errbot APP 5:15 PM

rs1.ber

Errbot requested a reboot in 5 minutes

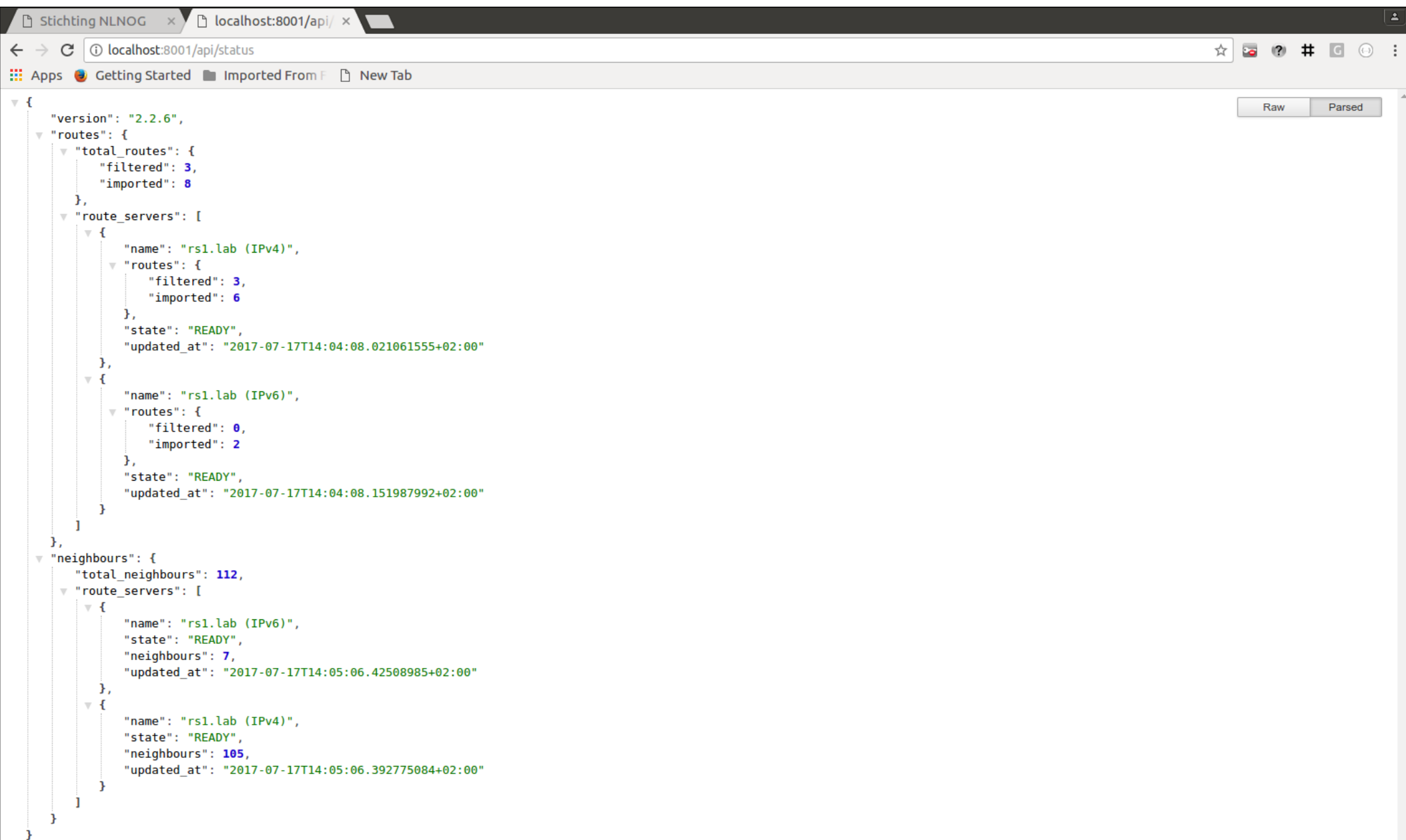
The system is going down for reboot at 2017-04-09 15:20:20.261644

rs2.ber

Errbot requested a reboot in 5 minutes

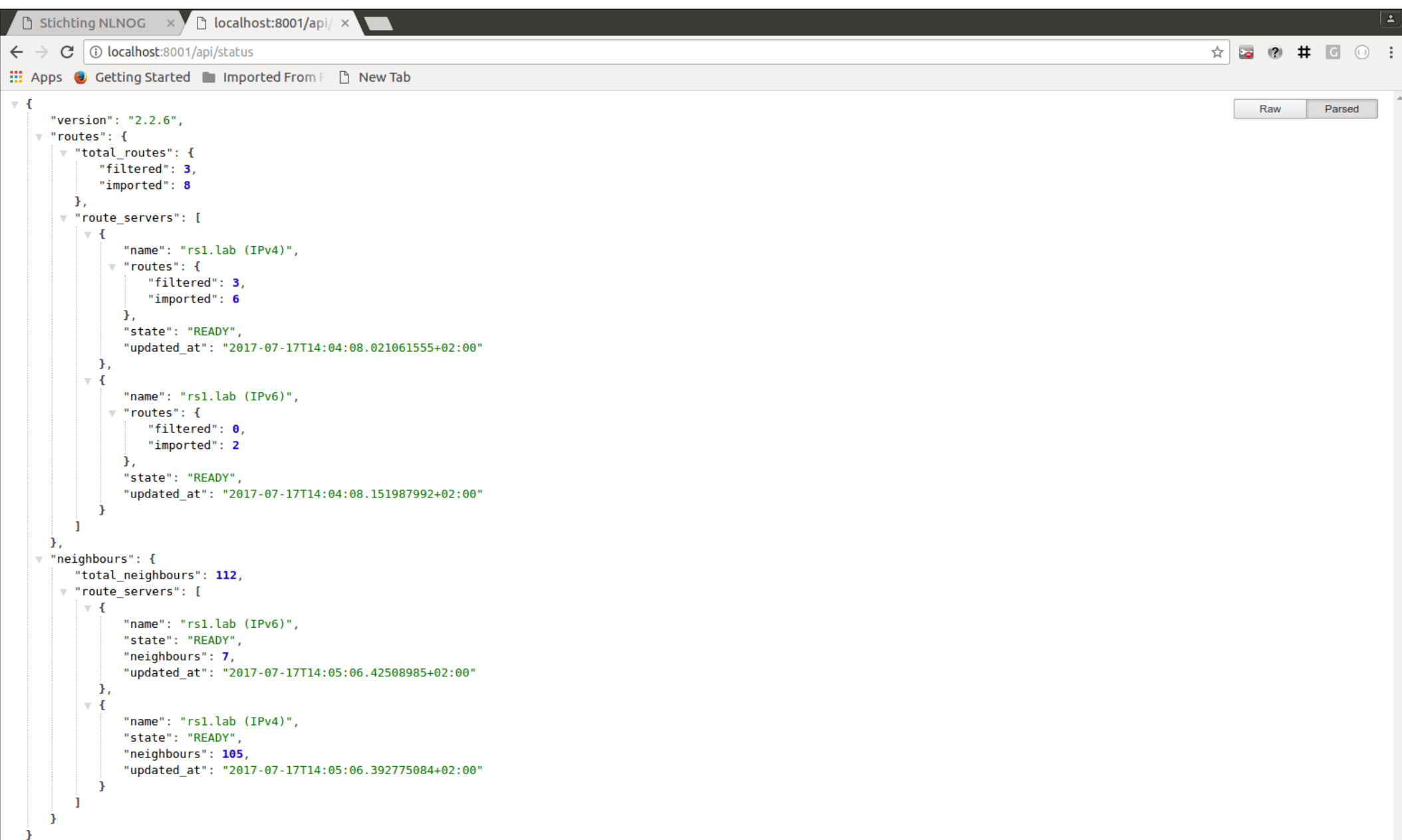
The system is going down for reboot at 2017-04-09 15:20:20.660305

Alice-LG API



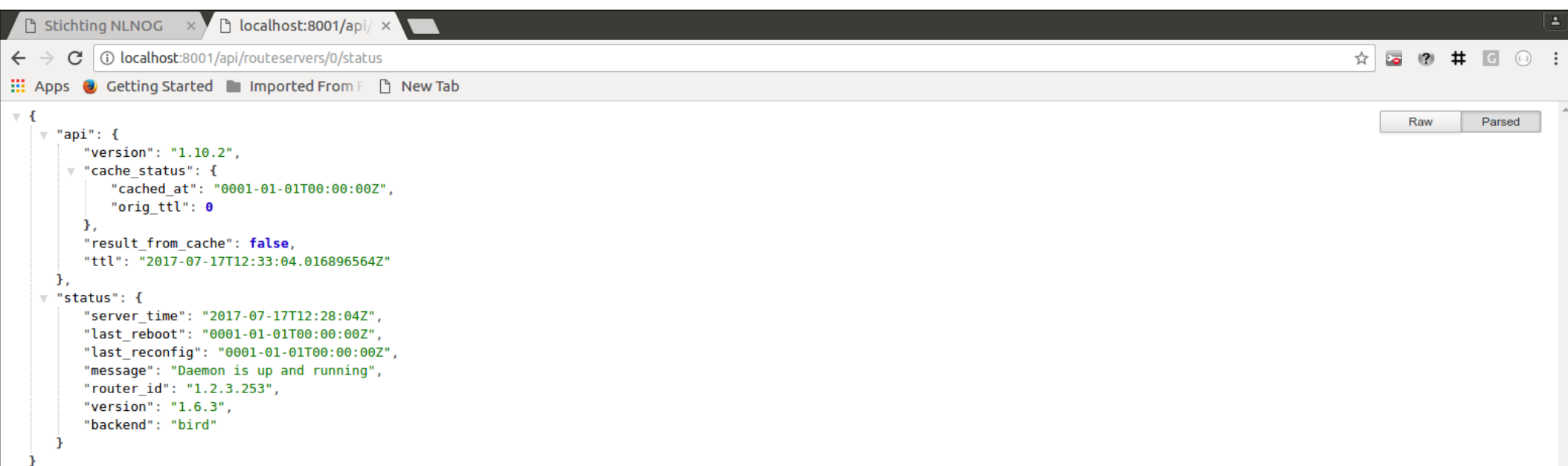
```
{
  "version": "2.2.6",
  "routes": {
    "total_routes": {
      "filtered": 3,
      "imported": 8
    },
    "route_servers": [
      {
        "name": "rs1.lab (IPv4)",
        "routes": {
          "filtered": 3,
          "imported": 6
        },
        "state": "READY",
        "updated_at": "2017-07-17T14:04:08.021061555+02:00"
      },
      {
        "name": "rs1.lab (IPv6)",
        "routes": {
          "filtered": 0,
          "imported": 2
        },
        "state": "READY",
        "updated_at": "2017-07-17T14:04:08.151987992+02:00"
      }
    ]
  },
  "neighbours": {
    "total_neighbours": 112,
    "route_servers": [
      {
        "name": "rs1.lab (IPv6)",
        "state": "READY",
        "neighbours": 7,
        "updated_at": "2017-07-17T14:05:06.42508985+02:00"
      },
      {
        "name": "rs1.lab (IPv4)",
        "state": "READY",
        "neighbours": 105,
        "updated_at": "2017-07-17T14:05:06.392775084+02:00"
      }
    ]
  }
}
```

Alice-LG API



```
{
  "version": "2.2.6",
  "routes": {
    "total_routes": {
      "filtered": 3,
      "imported": 8
    },
    "route_servers": [
      {
        "name": "rs1.lab (IPv4)",
        "routes": {
          "filtered": 3,
          "imported": 6
        },
        "state": "READY",
        "updated_at": "2017-07-17T14:04:08.021061555+02:00"
      },
      {
        "name": "rs1.lab (IPv6)",
        "routes": {
          "filtered": 0,
          "imported": 2
        },
        "state": "READY",
        "updated_at": "2017-07-17T14:04:08.151987992+02:00"
      }
    ]
  },
  "neighbours": {
    "total_neighbours": 112,
    "route_servers": [
      {
        "name": "rs1.lab (IPv6)",
        "state": "READY",
        "neighbours": 7,
        "updated_at": "2017-07-17T14:05:06.42508985+02:00"
      },
      {
        "name": "rs1.lab (IPv4)",
        "state": "READY",
        "neighbours": 105,
        "updated_at": "2017-07-17T14:05:06.392775084+02:00"
      }
    ]
  }
}
```

Alice-LG API



The screenshot shows a web browser window with the address bar displaying `localhost:8001/api/routeservers/0/status`. The browser's tab bar shows two tabs: "Stichting NLNOG" and "localhost:8001/api/". The browser's address bar also shows the URL `localhost:8001/api/routeservers/0/status`. The browser's toolbar includes a star icon for bookmarks, a red and white icon, a question mark icon, a hash icon, a 'G' icon, and a circular icon with a question mark. The browser's page bar shows four tabs: "Apps", "Getting Started", "Imported From F", and "New Tab". The main content area displays a JSON response from the API, which is expanded to show the following structure:

```
{
  "api": {
    "version": "1.10.2",
    "cache_status": {
      "cached_at": "0001-01-01T00:00:00Z",
      "orig_ttl": 0
    },
    "result_from_cache": false,
    "ttl": "2017-07-17T12:33:04.016896564Z"
  },
  "status": {
    "server_time": "2017-07-17T12:28:04Z",
    "last_reboot": "0001-01-01T00:00:00Z",
    "last_reconfig": "0001-01-01T00:00:00Z",
    "message": "Daemon is up and running",
    "router_id": "1.2.3.253",
    "version": "1.6.3",
    "backend": "bird"
  }
}
```

On the right side of the JSON viewer, there are two buttons: "Raw" and "Parsed".

Alice-LG API

Stichting NLNOG x localhost:8001/api/ x

localhost:8001/api/routeservers/0/neighbours

Apps Getting Started Imported From F New Tab

Raw Parsed

```
{
  "api": {
    "version": "1.10.2",
    "cache_status": {
      "cached_at": "0001-01-01T00:00:00Z",
      "orig_ttl": 0
    },
    "result_from_cache": true,
    "ttl": "2017-07-17T12:30:07.253743618Z"
  },
  "neighbours": [
    {
      "id": "ID7623_AS1337",
      "address": "1.2.3.11",
      "asn": 1337,
      "state": "up",
      "description": "PEER AS1337 1.2.3.11 lab-isp-1",
      "routes_received": 1,
      "routes_filtered": 3,
      "routes_exported": 4,
      "routes_preferred": 105,
      "uptime": 254258295501462,
      "last_error": "",
      "details": {
        "action": "restart",
        "bgp_state": "Established",
        "bird_protocol": "BGP",
        "connection": "Established",
        "description": "PEER AS1337 1.2.3.11 lab-isp-1",
        "export_withdraws": "0",
        "hold_timer": "164/240",
        "import_limit": 160000000,
        "input_filter": "(unnamed)",
        "keepalive_timer": "54/80",
        "neighbor_address": "1.2.3.11",
        "neighbor_as": 1337,
        "neighbor_caps": "refresh enhanced-refresh restart-aware AS4 add-path-rx",
        "neighbor_id": "1.2.3.11",
        "output_filter": "ACCEPT",
        "preference": 100,
        "protocol": "ID7623_AS1337",
        "route_change_stats": "received rejected filtered ignored accepted",
        "route_changes": {
          "export_updates": {
            "accepted": 4,
            "ignored": 0
          }
        }
      }
    }
  ]
}
```

Alice-LG API

Stichting NLNOG x localhost:8001/api/ x

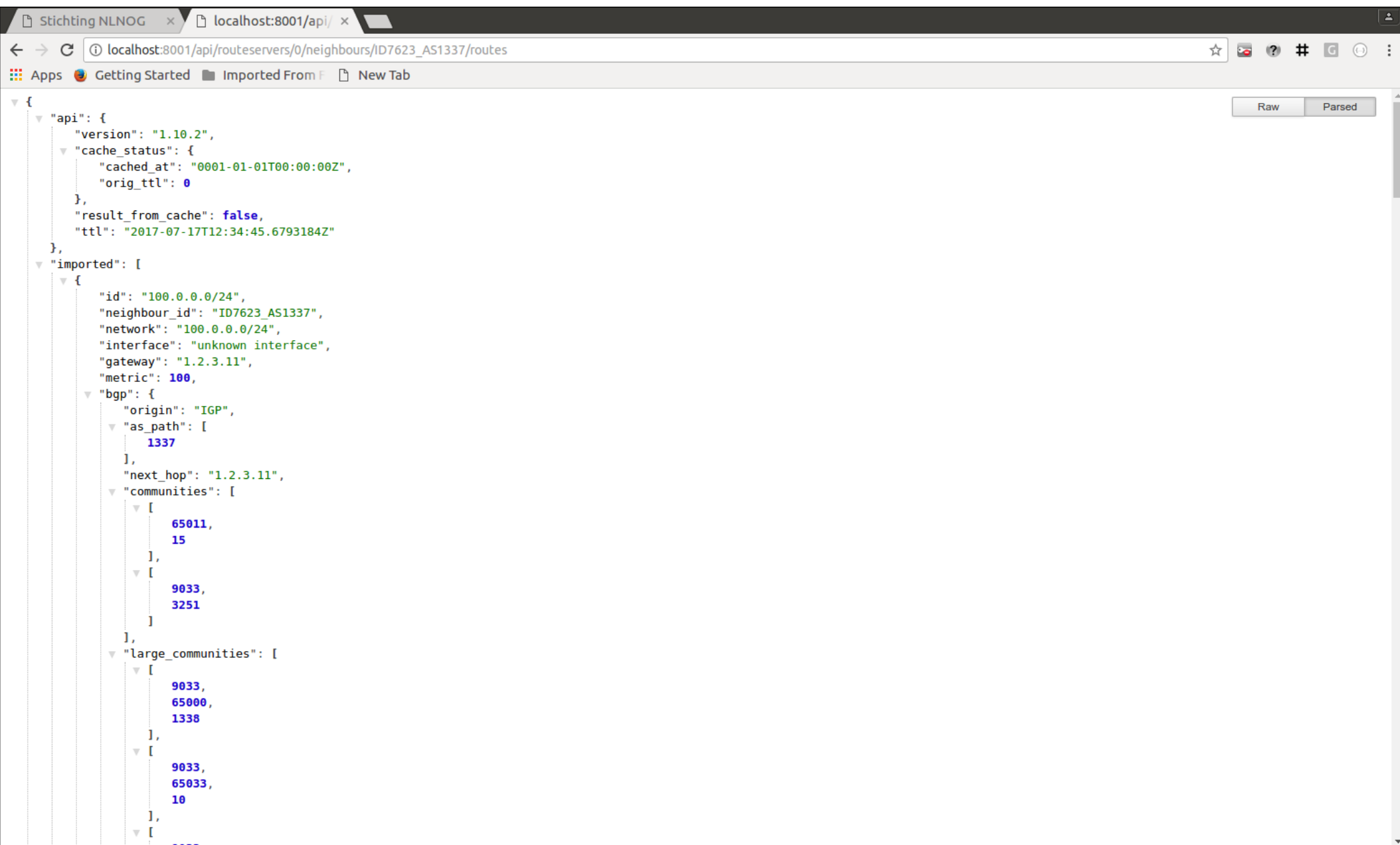
localhost:8001/api/routeservers/0/neighbours

Apps Getting Started Imported From F New Tab

Raw Parsed

```
{
  "api": {
    "version": "1.10.2",
    "cache_status": {
      "cached_at": "0001-01-01T00:00:00Z",
      "orig_ttl": 0
    },
    "result_from_cache": true,
    "ttl": "2017-07-17T12:30:07.253743618Z"
  },
  "neighbours": [
    {
      "id": "ID7623_AS1337",
      "address": "1.2.3.11",
      "asn": 1337,
      "state": "up",
      "description": "PEER AS1337 1.2.3.11 lab-isp-1",
      "routes_received": 1,
      "routes_filtered": 3,
      "routes_exported": 4,
      "routes_preferred": 105,
      "uptime": 254258295501462,
      "last_error": "",
      "details": {
        "action": "restart",
        "bgp_state": "Established",
        "bird_protocol": "BGP",
        "connection": "Established",
        "description": "PEER AS1337 1.2.3.11 lab-isp-1",
        "export_withdraws": "0",
        "hold_timer": "164/240",
        "import_limit": 160000000,
        "input_filter": "(unnamed)",
        "keepalive_timer": "54/80",
        "neighbor_address": "1.2.3.11",
        "neighbor_as": 1337,
        "neighbor_caps": "refresh enhanced-refresh restart-aware AS4 add-path-rx",
        "neighbor_id": "1.2.3.11",
        "output_filter": "ACCEPT",
        "preference": 100,
        "protocol": "ID7623_AS1337",
        "route_change_stats": "received rejected filtered ignored accepted",
        "route_changes": {
          "export_updates": {
            "accepted": 4,
            "ignored": 0
          }
        }
      }
    }
  ]
}
```

Alice-LG API



The screenshot shows a web browser window with the URL `localhost:8001/api/routeservers/0/neighbours/ID7623_AS1337/routes`. The browser's address bar and tabs are visible at the top. The main content area displays a JSON response from the API, which is partially expanded to show the details of a route. The JSON structure includes an `api` object with version, cache status, and TTL information, and an `imported` array containing route details such as ID, neighbour ID, network, interface, gateway, metric, BGP origin, AS path, next hop, and communities.

```
{
  "api": {
    "version": "1.10.2",
    "cache_status": {
      "cached_at": "0001-01-01T00:00:00Z",
      "orig_ttl": 0
    },
    "result_from_cache": false,
    "ttl": "2017-07-17T12:34:45.6793184Z"
  },
  "imported": [
    {
      "id": "100.0.0.0/24",
      "neighbour_id": "ID7623_AS1337",
      "network": "100.0.0.0/24",
      "interface": "unknown interface",
      "gateway": "1.2.3.11",
      "metric": 100,
      "bgp": {
        "origin": "IGP",
        "as_path": [
          1337
        ],
        "next_hop": "1.2.3.11",
        "communities": [
          [
            65011,
            15
          ],
          [
            9033,
            3251
          ]
        ],
        "large_communities": [
          [
            9033,
            65000,
            1338
          ],
          [
            9033,
            65033,
            10
          ]
        ]
      }
    }
  ]
}
```

Alice-LG API

The screenshot shows a web browser window with two tabs: 'Stichting NLNOG' and 'localhost:8001/api/'. The address bar displays 'localhost:8001/api/lookup/prefix?q=100.0'. The browser's developer tools are open, showing a JSON response from the API. The response is a tree view of a JSON object. The 'routes' array contains one object for the prefix '100.0.0.0/24'. This object includes details about the neighbor 'ID7623_AS1337', such as its address '1.2.3.11', state 'up', and various BGP statistics. The 'details' object provides a comprehensive view of the BGP session, including timers, filters, and route change statistics.

```
{
  "routes": [
    {
      "id": "100.0.0.0/24",
      "neighbour_id": "ID7623_AS1337",
      "neighbour": {
        "id": "ID7623_AS1337",
        "address": "1.2.3.11",
        "asn": 1337,
        "state": "up",
        "description": "PEER AS1337 1.2.3.11 lab-isp-1",
        "routes_received": 1,
        "routes_filtered": 3,
        "routes_exported": 4,
        "routes_preferred": 105,
        "uptime": 254457739815191,
        "last_error": "",
        "details": {
          "action": "restart",
          "bgp_state": "Established",
          "bird_protocol": "BGP",
          "connection": "Established",
          "description": "PEER AS1337 1.2.3.11 lab-isp-1",
          "export_withdraws": "0",
          "hold_timer": "130/240",
          "import_limit": 160000000,
          "input_filter": "(unnamed)",
          "keepalive_timer": "47/80",
          "neighbor_address": "1.2.3.11",
          "neighbor_as": 1337,
          "neighbor_caps": "refresh enhanced-refresh restart-aware AS4 add-path-rx",
          "neighbor_id": "1.2.3.11",
          "output_filter": "ACCEPT",
          "preference": 100,
          "protocol": "ID7623_AS1337",
          "route_change_stats": "received rejected filtered ignored accepted",
          "route_changes": {
            "export_updates": {
              "accepted": 4,
              "ignored": 0,
              "received": 5,
              "rejected": 1
            },
            "import_updates": {
              "accepted": 1,
              "filtered": 3,
              "ignored": 0
            }
          }
        }
      }
    }
  ]
}
```

Birdwatcher API

Ornithologist was too hard to write

- Golang
- On the BIRD host
- ACL (IP) restriction
- Only show commands
- Rate limiting

In progress

- Show exported routes
- Show peer to peer exports
- Better memory management
- What do YOU need in a LG?

Known Alices

- `lg.ecix.net`
- `lg.coloclue.net`
- `you?`

(Real short)

IXP Large BGP communities

- [goo.gl/yBbDxD](https://github.com/goo.gl/yBbDxD) (github)
- Trying to standardize LBGP communities at IXPs
- Example:
 - (rsAS:0:asn) do not send to asn
 - (rsAS:1:asn) do send to asn
 - (rsAS:101:asn) prepend to asn once
 - (rsAS:1000:1) RPKI VALID

IXP Large BGP communities

- Multiple IXPs have shown interest
 - ECIX (already implements LBGP communities, will support the standard)
 - DECIX
 - LINX
 - LONAP
 - MSK-IX
 - JPNAP
- Join in! Leave comments, create github issues!
- Ask your IXP to support LBGP! (and to use the standard)