
# DNS OOPS

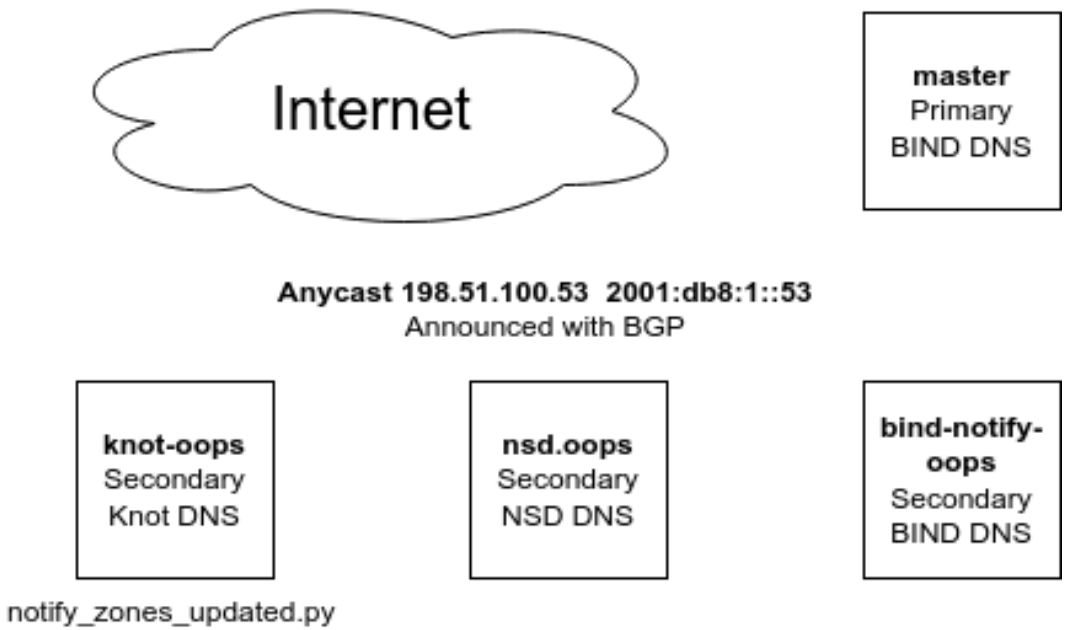
## Notify the BGP daemons

# Goals for the project


> This document seeks to specify **a method for name servers** to **signal programs outside** of the **name server software**, and which are not necessarily involved with the DNS protocol, **about conditions** that can arise **within the name server**. These **signals** can be used to **invoke actions** in areas that **help provide the DNS service**, such as **routing**.

Main URL:
https://datatracker.ietf.org/doc/draft-grubto-dnsop-dns-out-of-protocol-signalling/

# The goal




Automated signalling when things happen in the DNS server ...

# Small configuration file


```
{
    "_comment": "Some information should be templated",
    "zones": {
        "oops.example.com.": {
            "last-octet": 4,
            "generate-dsc": true,
            "generate-pcap": false
        }
    }
}
```

# Technologies used


- DNS server software: Knot DNS, BIND, NSD
- BGP software: Bird, ExaBGP
- Programming languages: Python 3, Shell scripting
- Notification: shell scripting, D-bus to Knot DNS

# Example: Use the Libraries


First Python script uses various features:

```
#!/usr/bin/env python3

import sys
import dbus   // D-bus is implemented in Knot DNS
import dbus.mainloop.glib
import signal
import requests
import json
import libknot.control
from gi.repository import GLib

api_url = None
node_data_file = '/root/node_data.json'
zones = {}
```

# Example: Event loop and D-bus


When zone is updated, do something:

```
def updated(*args, **kwargs):
    """
    Event handler for Glib.MainLoop
    Also explicitly called at script startup to determine if any event handling needs to be done
    """
    (zone, serial) = args
    print("Zone %s updated, SOA serial %d" % (zone, serial))
    zones[zone] = serial
    if None not in zones.values():
        # Build a list of all zones with serials
        all_zone_info = ""
        for key in zones:
            all_zone_info += f'{key}:{zones[key]};'
...
```

This is an example, can be run inside/outside of the server, in cloud systems etc.

# Improvements and next steps


- Create dockerfiles for packing this in an easy way
- Add some bridging between Notify and D-bus
- Add D-bus features to NSD