DNS IN OPENSTACK
WHAT IS THE OPENSTACK DNS API?

DESIGNATE
an OpenStack Community Project
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» Principal Engineer @ Azure
» Ex Designate PTL
» OpenStack TC

https://gra.ham.ie
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CORE DESIGN

» Multi tenant

» Use the same authz/authn schemes as other projects

» Allow deployers to choose data planes they know

» API first design

» Highly Available
DESIGNATE

» Plugable architecture
  » API Endpoints
  » DNS Servers
  » Notifications
  » Database / State storage
  » Quota Management
  » Policy / Access Control
DNS SERVERS

» PowerDNS
» BIND
» Designate
» InfoBlox
» more... ¹

¹ https://docs.openstack.org/designate/latest/admin/support-matrix.html
INTEGRATIONS
OPENSTACK

» OpenStack Dashboard
» OpenStack CLI
» OpenStack Heat (Orchestration Service)
» OpenStack Neutron (Networking Service)
» Designate Sink (read notifications from AMQP queue)
heat_template_version: 2015-04-30

description: Simple template to deploy a single DNS Zone

resources:
  heat_example_com:
    type: OS::Designate::Zone
    properties:
      email: host@example.com
      name: heat.example.com.
      type: PRIMARY
INTEGRATIONS
EXTERNAL

» Ansible

» Terraform

» Kubernetes External DNS

» certbot - (certbot-dns-openstack) DNS-01 ACME

» SDKs
Integrations
External - Ansible

---

- name: Example Zone
  hosts: localhost

  tasks:
  - os_zone:
      cloud: devstack
      state: present
      name: ansible.example.com.
      zone_type: primary
      email: test@example.net
      description: Test zone
      ttl: 3600
provider "openstack" {
  cloud   = "devstack"
}

resource "openstack_dns_zone_v2" "workshop_example_com" {
  name        = "workshop.example.com."
  email       = "jdoe@example.com"
  description = "An example zone"
  ttl         = 3000
  type        = "PRIMARY"
}

resource "openstack_dns_recordset_v2" "www_workshop_example_com" {
  zone_id     = "${openstack_dns_zone_v2.workshop_example_com.id}"
  name        = "www.workshop.example.com."
  description = "An example record set"
  ttl         = 3000
  type        = "A"
  records     = ["10.0.0.1"]
}
### Usage

- openstack --os-cloud vexxhost zone list

<table>
<thead>
<tr>
<th>id</th>
<th>name</th>
<th>type</th>
<th>serial</th>
<th>status</th>
<th>action</th>
</tr>
</thead>
<tbody>
<tr>
<td>b0ba5b21-f734-42ba-8bfd-ae59f9034e76</td>
<td>ham.ie.</td>
<td>PRIMARY</td>
<td>1557767331</td>
<td>ACTIVE</td>
<td>NONE</td>
</tr>
</tbody>
</table>

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### USAGE

```bash
openstack --os-cloud vexxhost zone create --email gr@ham.ie example.ham.ie.
```

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>action</td>
<td>CREATE</td>
</tr>
<tr>
<td>attributes</td>
<td></td>
</tr>
<tr>
<td>created_at</td>
<td>2020-01-29T17:32:39.000000</td>
</tr>
<tr>
<td>description</td>
<td>None</td>
</tr>
<tr>
<td>email</td>
<td><a href="mailto:gr@ham.ie">gr@ham.ie</a></td>
</tr>
<tr>
<td>id</td>
<td>b0433c37-4ea6-48ff-b8c9-c012ab002787</td>
</tr>
<tr>
<td>masters</td>
<td></td>
</tr>
<tr>
<td>name</td>
<td>example.ham.ie</td>
</tr>
<tr>
<td>pool_id</td>
<td>794ccc2c-d751-44fe-b57f-8894c9f5c842</td>
</tr>
<tr>
<td>project_id</td>
<td>cd72fafe6de54029afc40f53370a277e</td>
</tr>
<tr>
<td>serial</td>
<td>1580319159</td>
</tr>
<tr>
<td>status</td>
<td>PENDING</td>
</tr>
<tr>
<td>transferred_at</td>
<td>None</td>
</tr>
<tr>
<td>ttl</td>
<td>3600</td>
</tr>
<tr>
<td>type</td>
<td>PRIMARY</td>
</tr>
<tr>
<td>updated_at</td>
<td>None</td>
</tr>
<tr>
<td>version</td>
<td>1</td>
</tr>
</tbody>
</table>

https://gra.ham.ie | @grahamhayes
GET /v2/zones HTTP/1.1
Host: dns.vexxhost.net

HTTP/1.1 200 OK

{
  "links": {
    "self": "http://dns.vexxhost.net/v2/zones"
  },
  "metadata": {
    "total_count": 1
  },
  "zones": [
    {
      "action": "NONE",
      "attributes": {},
      "created_at": "2019-05-13T17:08:51.000000",
      "description": null,
      "email": "graham.ie",
      "id": "b0ba5b21-f734-42ba-8bfd-ae59f9034e76",
      "links": {
        "self": "http://dns.vexxhost.net/v2/zones/b0ba5b21-f734-42ba-8bfd-ae59f9034e76"
      },
      "masters": [],
      "name": "ham.ie.",
      "pool_id": "794ccc2c-d751-44fe-b57f-8894c9f5c842",
      "project_id": "cd72fafe6de54029afc40f53370a277e",
      "serial": 1557767331,
      "status": "ACTIVE",
      "transferred_at": null,
      "ttl": 3600,
      "type": "PRIMARY",
      "version": 2
    }
  ]
}
GET /v2/zones/b0ba5b21-f734-42ba-8bfd-ae59f9034e76/recordsets/1d19c3ca-1f2a-4bd7-8dd3-b3faeeb1d994 HTTP/1.1
Host: dns.vexxhost.net

HTTP/1.1 200 OK

{
    "action": "NONE",
    "created_at": "2019-05-13T17:08:52.000000",
    "description": null,
    "id": "1d19c3ca-1f2a-4bd7-8dd3-b3faeeb1d994",
    "links": {
        "self": "http://dns.vexxhost.net/v2/zones/b0ba5b21-f734-42ba-8bfd-ae59f9034e76/recordsets/1d19c3ca-1f2a-4bd7-8dd3-b3faeeb1d994"
    },
    "name": "ham.ie.",
    "project_id": "cd72fafe6de54029afc40f53370a277e",
    "records": [
        "ns1.vexxhost.net.",
        "ns2.vexxhost.net."
    ],
    "status": "ACTIVE",
    "ttl": null,
    "type": "NS",
    "updated_at": null,
    "version": 1,
    "zone_id": "b0ba5b21-f734-42ba-8bfd-ae59f9034e76",
    "zone_name": "ham.ie."}

https://gra.ham.ie | @grahamhayes
# DNS Zones

Displaying 2 items

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>example.ham.ie</td>
<td>Primary</td>
<td>Active</td>
</tr>
<tr>
<td>ham.ie</td>
<td>Primary</td>
<td>Active</td>
</tr>
</tbody>
</table>

Displaying 2 items
Set Domain Name PTR for 38.74.51.239

Domain Name *
shell.vexxhost.ham.ie.

Domain name ending in '.'

Description

Details about the PTR record.

TTL
3600
Time To Live in seconds.

Submit
Cancel
Allocate Floating IP

Pool
- public

Description
- Email Server IP

DNS Domain
- vexxhost.ham.ie.

DNS Name
- mail

Description:
Allocate a floating IP from a given floating IP pool.

Project Quotas
Floating IP
1 of 50 Used

Allocate IP
WHY USE DESIGNATE?

» Running a cloud
» Multi tenant DNS API
» Can re-use existing DNS infrastructure
LINKS

» https://docs.openstack.org/designate/latest/
» https://opendev.org/openstack/designate
» IRC: #openstack-dns on Freenode
» openstack-discuss@lists.openstack.org
» https://gra.ham.ie/FOSDEM-2020/slides.pdf