

DNS IN OPENSTACK

WHAT IS THE OPENSTACK DNS API?



DESIGNATE

an OpenStack Community Project



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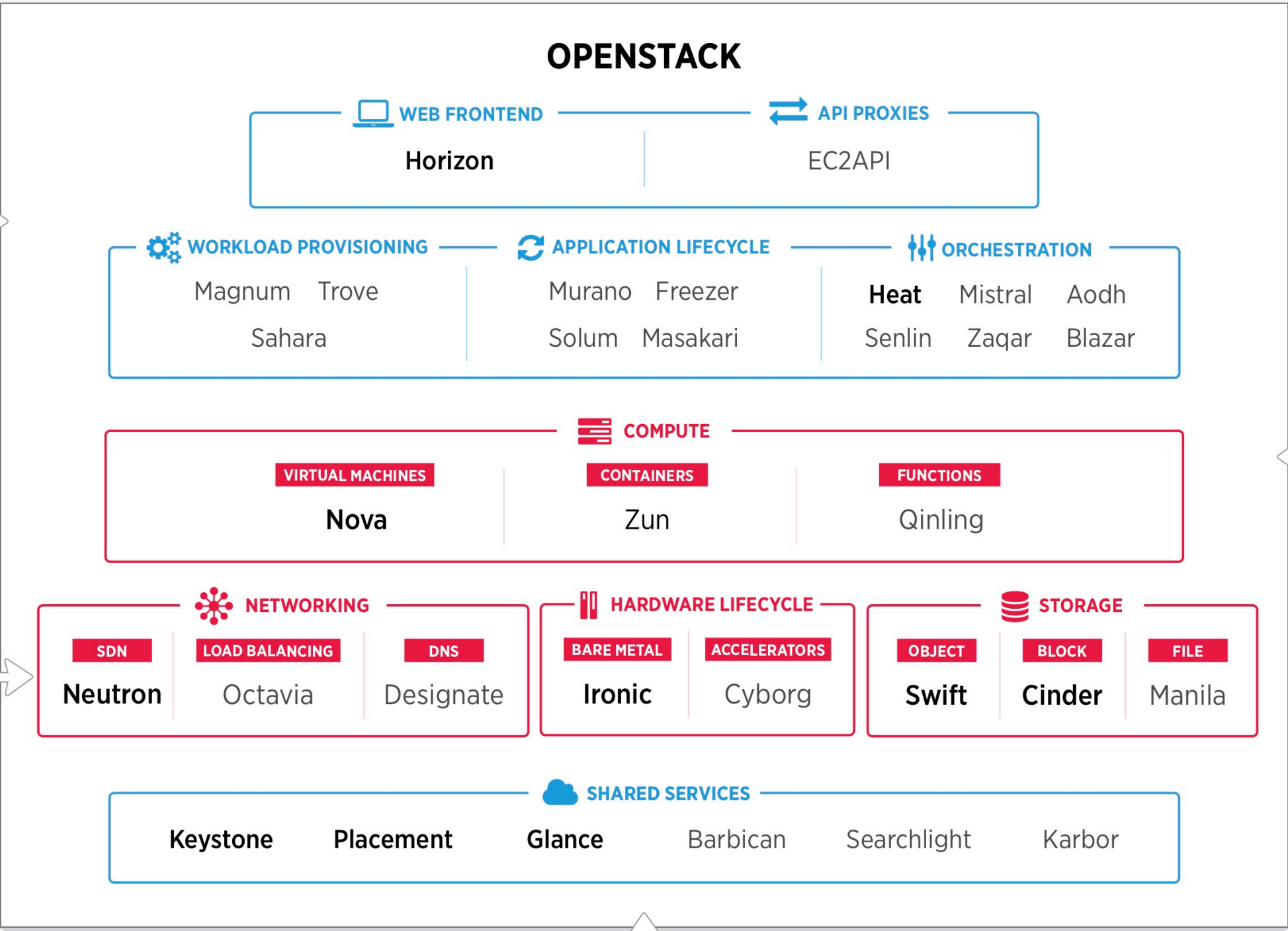
@grahamhayes

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OPENSTACK

OPENSTACK-USER

SDK
OpenStackClient
Python SDK



OPENSTACK-ADJACENTENABLERS

CONTAINER SERVICES
Kuryr

NFV
Tacker

OPENSTACK-OPERATIONS

MONITORING TOOLS
Ceilometer
Monasca | Panko

OPTIMIZATION / POLICY TOOLS
Watcher | Vitrage
Congress | Rally

BILLING / BUSINESS LOGIC
CloudKitty

MULTI-REGION TOOLS
Tricircle

OPENSTACK-LIFECYCLEMANAGEMENT

DEPLOYMENT / LIFECYCLE TOOLS
Kolla-Ansible | OpenStack-Charms | TripleO | Bifrost | Kayobe
OpenStack-Helm | OpenStack-Ansible | OpenStack-Chef

PACKAGING RECIPES FOR...
RPM | Puppet
Containers (LOCI, Kolla)

Bold represents **Core Functionality**

Version 2019.10.01



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

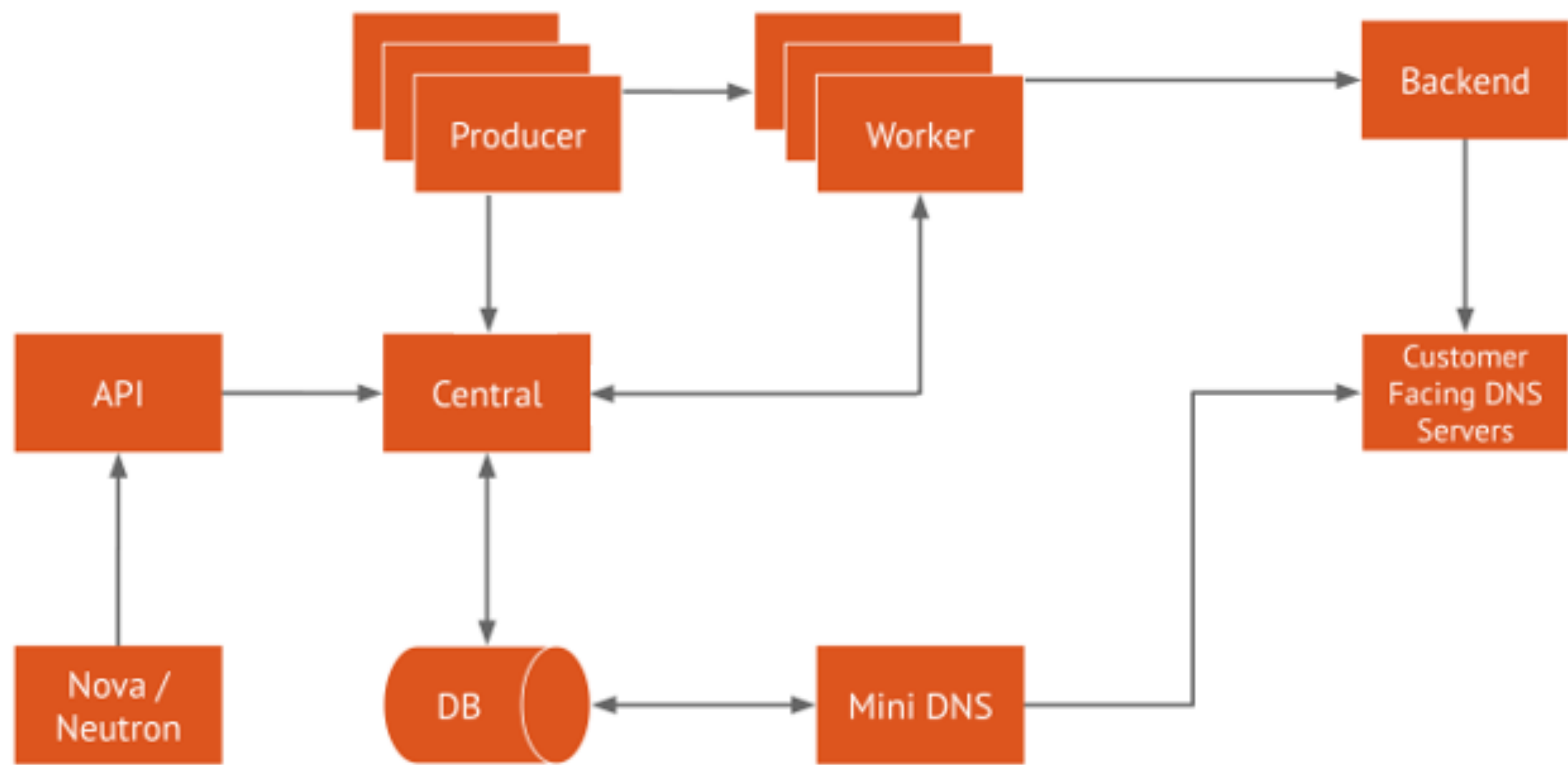
- » Plugable architecture
 - » API Endpoints
 - » DNS Servers
 - » Notifications
 - » Database / State storage
 - » Quota Management
 - » Policy / Access Control



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)

INTEGRATIONS

OPENSTACK - HEAT

```
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
```

INTEGRATIONS

EXTERNAL - TERRAFORM

```
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`

id	name	type	serial	status	action
b0ba5b21-f734-42ba-8bfd-ae59f9034e76	ham.ie.	PRIMARY	1557767331	ACTIVE	NONE

USAGE

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

Field	Value
action	CREATE
attributes	
created_at	2020-01-29T17:32:39.000000
description	None
email	gr@ham.ie
id	b0433c37-4ea6-48ff-b8c9-c012ab002787
masters	
name	example.ham.ie.
pool_id	794ccc2c-d751-44fe-b57f-8894c9f5c842
project_id	cd72fafa6de54029afc40f53370a277e
serial	1580319159
status	PENDING
transferred_at	None
ttl	3600
type	PRIMARY
updated_at	None
version	1

```
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": "gr@ham.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",
      "updated_at": "2019-05-13T17:09:28.000000",
      "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."
}
```


DNS Zones

 Click here for filters or full text search.

Displaying 2 items

Name [▲]	Type	Status
> example.ham.ie.	Primary	Active
> ham.ie.	Primary	Active

Displaying 2 items

Set Domain Name PTR for 38.74.51.239



Domain Name *



Domain name ending in '.'

Description

Details about the PTR record.

TTL

Time To Live in seconds.

✕ Cancel

✓ Submit

Allocate Floating IP



Pool *

Description

DNS Domain

DNS Name

Description:

Allocate a floating IP from a given floating IP pool.

Project Quotas

Floating IP

1 of 50 Used



Cancel

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>