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Blazar

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What is Blazar?

BLAZAR
an OpenStack Community Project

- **Blazar provides Reservation as a Service**
- Created in 2013 under the name Climate
- Revived at the Barcelona Summit in 2016
- Official project since September 2017 (Queens release cycle)

- Guarantees resource availability for a future event
- Supported resources:
  - hosts, instances, floating-ips

- 19 commit authors and 30+ reviewers in the Train cycle

Example Use Cases

- Chameleon project (http://www.chameleoncloud.org)
  - Large-scale testbed for computer science research
  - Blazar guarantees resource availability for experiments

- Telecom NFV
  - Resource reservation and management project for quality of network services
  - Blazar guarantees resource availability for VNF deployments

- Common platform for:
  - Universities/Companies for large-scale calculations in research
    - AI / Blockchain / Meteorologic calculations
  - Large companies with multiple departments

OpenStack Train

- Floating IP reservation feature completed
  - User and admin documentation
  - CLI support
    - `blazar floatingip-{create,delete,list,show}`
    - `blazar lease-create --reservation resource_type=virtual:floatingip`
  - Support for updating floating IP reservations
- Added support for microversions to the v1 API
- Added support for a global request ID
  - Used to track requests across OpenStack services

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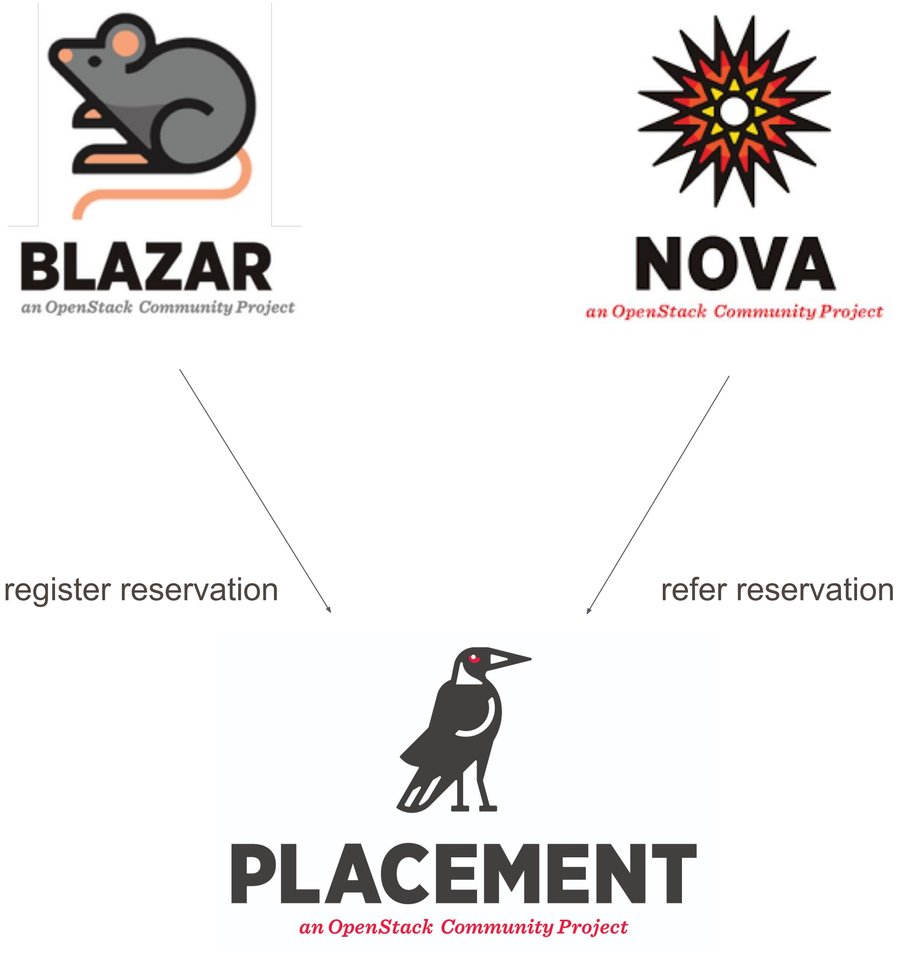
Beyond Train (Ussuri and further)

- Preemptible instances on unreserved resources
- Handling of quotas
- Compatibility with Ironic
- Handle more resource types:
  - Add network segment reservation (**spec and code in review**)
  - Support reservation of volumes (Cinder)
- Calendar view in Horizon (blazar-dashboard)
- Support for High Availability deployments

Cross-Project Work (Placement)

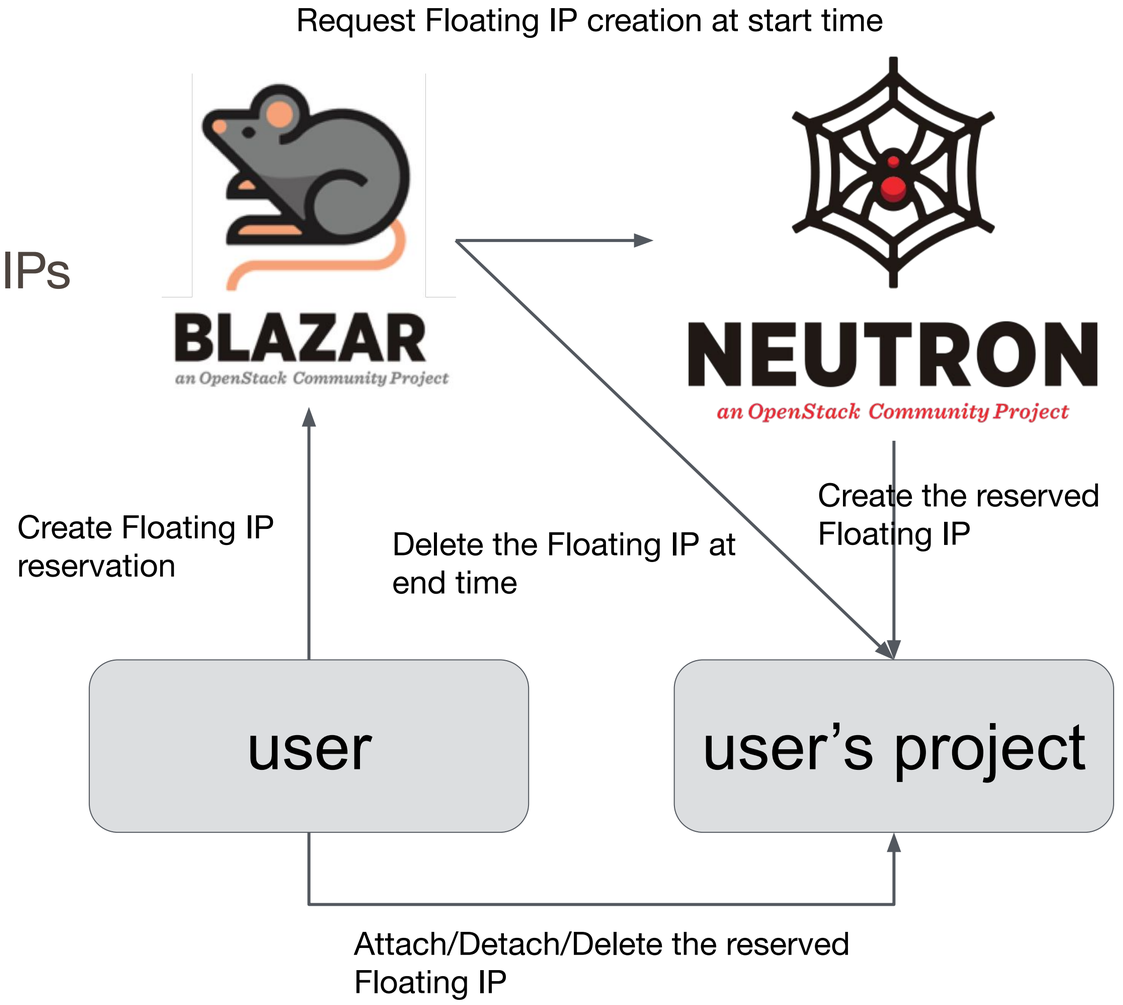
- Instance reservation
  - No Dependency on specific Nova filters
    - ServerGroupAntiAffinityFilter
    - AggregateInstanceExtraSpecsFilter
    - AggregateMultiTenancyIsolationFilter
  - Affinity-policy improvements
    - Reserving multiple instances on the same host now supported
- Baremetal reservation
  - Nova with Ironic Driver (code ready, but needs tests)
  - Ironic Stand alone
  - Targeted in Ussuri+ release



Cross-Project Work (Neutron)

- Floating IP reservation: https://asciinema.org/a/277972
  - Resource type in reservations: virtual:floatingip
  - Same operations for users to handle reserved floating IPs
  - Parameters for floating IP reservation
    - public network ID
    - amount of IPs to reserve
    - required floating IPs (optional)

- Future plan for Ussuri:
  - Support for Network segment reservation
    - Useful to allocate VLAN IDs in limited supply



How to give feedback

- Talk to us in IRC #openstack-blazar or via the openstack-discuss list
  - Tell us about your users' or your own requirements/needs
  - Tell us about issues you are facing

- Report bugs or feature requests
  - https://bugs.launchpad.net/blazar

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How to contribute

- Read the contributors guide
  - https://docs.openstack.org/blazar/latest/contributor/contribution.html

- Help with
  - Code review
  - Bug triage
  - Improving documentation and test coverage

- Attend Blazar IRC meetings or talk to us in freenode #openstack-blazar
  - Every week on Tuesday 9:00 am (UTC) in #openstack-meeting-alt
  - Odd weeks on Thursday 16:00 (UTC) in #openstack-meeting-alt

- PTG on-boarding on this Friday from 9:00-

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Q&A

Thank you!

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How does Blazar work?

Floating IP reservation

- Register floating IP(s) to be reserved by Blazar (outside of allocation pool(s)) e.g.:

```
$ blazar floatingip-create 9cd27704-30b9-468a-8e0e-5a2e401a36dd 172.24.4.203
  +-----------------------------+--------------------------------------+
  | Field                       | Value                                |
  +-----------------------------+--------------------------------------+
  | created_at                  | 2019-11-02T11:32:45.000000           |
  | floating_ip_address         | 172.24.4.203                         |
  | floating_network_id         | 9cd27704-30b9-468a-8e0e-5a2e401a36dd |
  | id                          | a7d65b44-a588-488f-bc79-231307a7e1d1 |
  | reservable                  | True                                 |
  | subnet_id                   | 1b1fb472-5f94-4980-827c-70309998da1f |
  | updated_at                  |                                      |
  +-----------------------------+--------------------------------------+
  $ openstack subnet show 1b1fb472-5f94-4980-827c-70309998da1f -c allocation_pools -c cidr
  +-----------------------------+-------------------------+
  | Field                       | Value                   |
  +-----------------------------+-------------------------+
  | allocation_pools            | 172.24.4.2-172.24.4.200 |
  | cidr                        | 172.24.4.0/24           |
  +-----------------------------+-------------------------+
```

How does Blazar work?

Floating IP reservation

- Reserve a list and/or amount of floating IPs e.g. for immediate use:
  - $ blazar lease-create --reservation 'resource_type=virtual:floatingip,network_id=9cd27704-30b9-468a-8e0e-5a2e401a36dd, amount=3,required_floatingips=["172.24.4.202","172.24.203”]' fip-lease

  - $ blazar lease-show fip-lease -c reservations

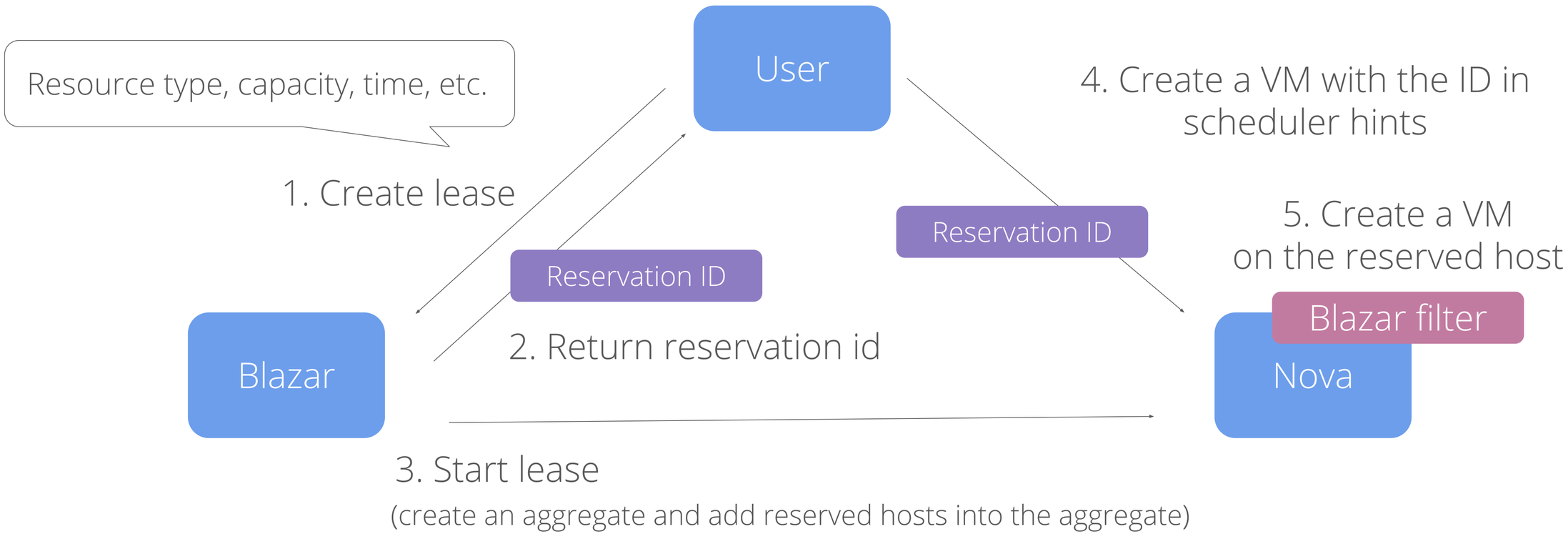
```
+-----------------------------+-----------------------------------------------------------------------+
| Field                       | Value                                                                 |
+-----------------------------+-----------------------------------------------------------------------+
| reservations                | {                                                                     |
|                             |  "status": "active",                                                  |
|                             |  "lease_id": "5d528d8d-c023-4792-ae77-cb6d4dc2c162",                  |
|                             |  "network_id": "9cd27704-30b9-468a-8e0e-5a2e401a36dd"                 |
|                             |  "created_at": "2019-11-02T11:09:51",                                 |
|                             |  "updated_at": "2019-11-02T11:10:10",                                 |
|                             |  "required_floatingips": ["172.24.4.202","172.24.4.203"],             |
|                             |  "missing_resources": false,                                          |
|                             |  "amount": 3,                                                         |
|                             |  "id": "d3a2293d-7eaf-4df2-92aa-ceba7def36cc"                         |
|                             |  "resource_type": "virtual:floatingip",                               |
|                             |  "resources_changed": false                                           |
+-----------------------------+-----------------------------------------------------------------------+
```

-> Reserved floating IPs are tagged with the unique reservation id assigned by Blazar when the lease starts

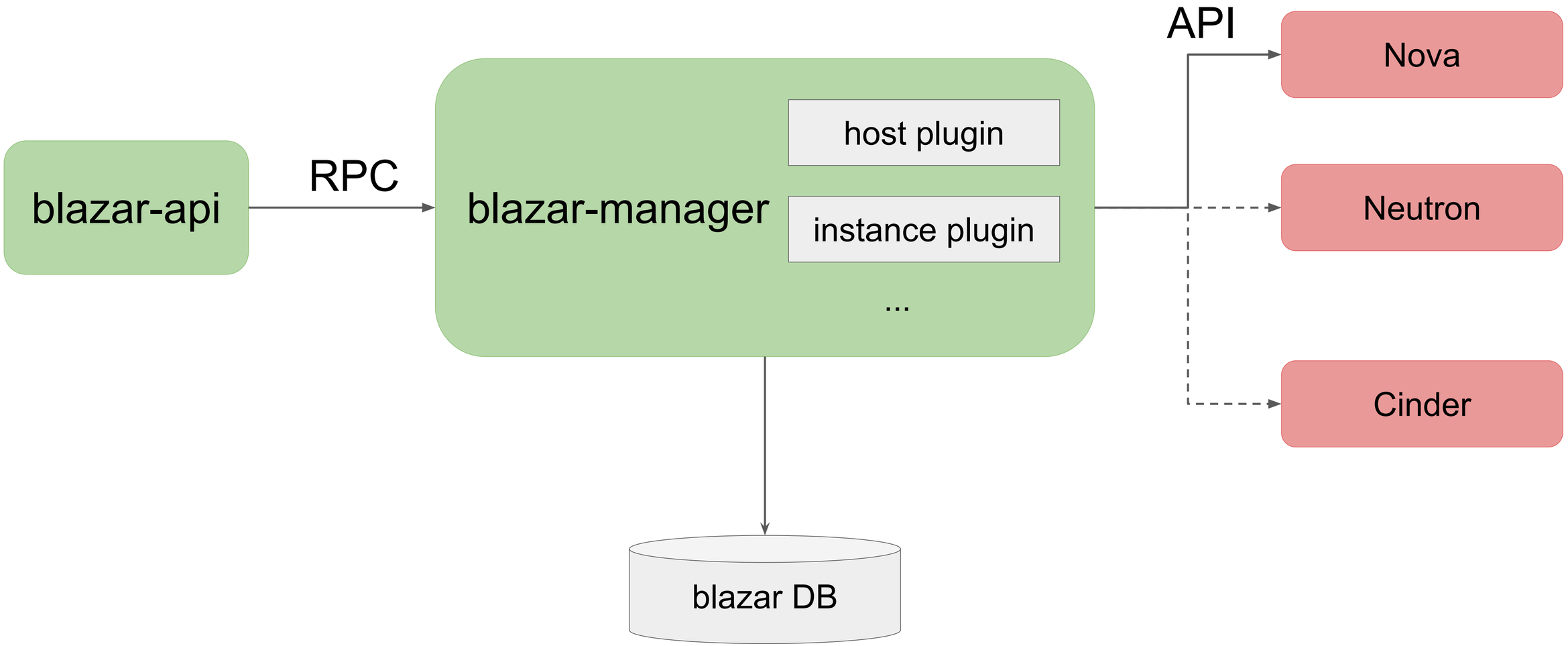
  - $ openstack floating ip list --tags reservation:d3a2293d-7eaf-4df2-92aa-ceba7def36cc -c 'Floating IP Address'

```
+-----------------------------+
| Floating IP Address         |
+-----------------------------+
|  172.24.4.203               |
|  172.24.4.202               |
|  172.24.4.205               |
+-----------------------------+
```

Flow of reservation and lease



Architecture



Use cases

- Chameleon project (http://www.chameleoncloud.org)
  - Large-scale testbed for computer science research
  - Blazar guarantees resource availability for experiments

- OPNFV Promise project (https://wiki.opnfv.org/display/promise/Promise)
  - Resource reservation and management project for quality of network services
  - Blazar guarantees resource availability for VNF deployments