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Nova

Project Update, OpenStack Summit Vancouver

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What is Nova?

- Compute service
- Nova provides the compute controller fabric for the base OpenStack IaaS deployment

Project background

- Founded during the Austin release of OpenStack
- 183 contributors for latest release (Queens)

Latest user survey adoption numbers:

- Deployed: 98% of clouds in production indicate they are using this project

NOVA

an OpenStack Community Project

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OpenStack Queens Features

https://docs.openstack.org/releasenotes/nova/queens.html

➡ **Cells v2 highlights**

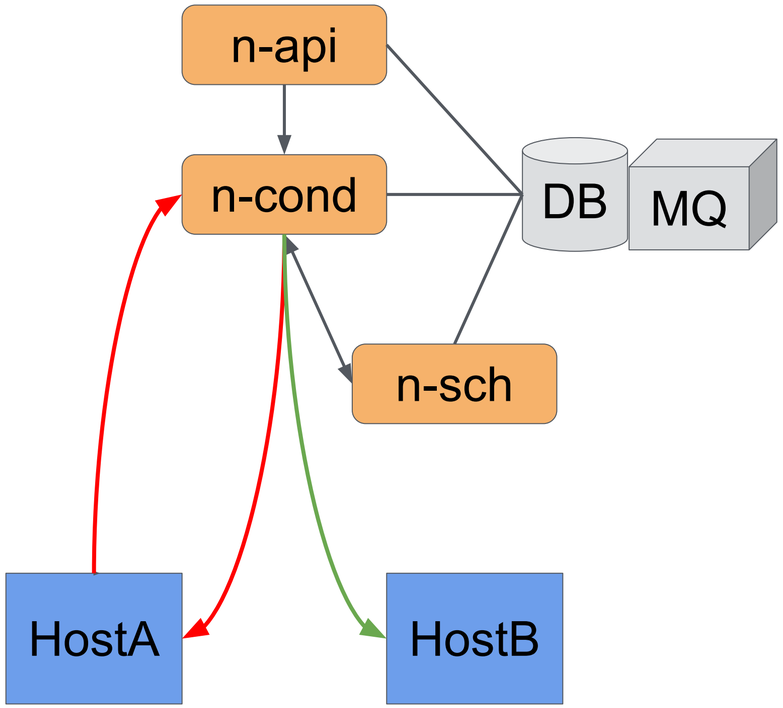
- Improved performance and merge sort when listing servers across multiple cells
- Rescheduling “up call” during a server create or resize operation is now supported in a split-MQ multi-cell deployment
- nova-manage tooling for managing cells (list and delete host mappings)

➡ **Scheduling and placement highlights**

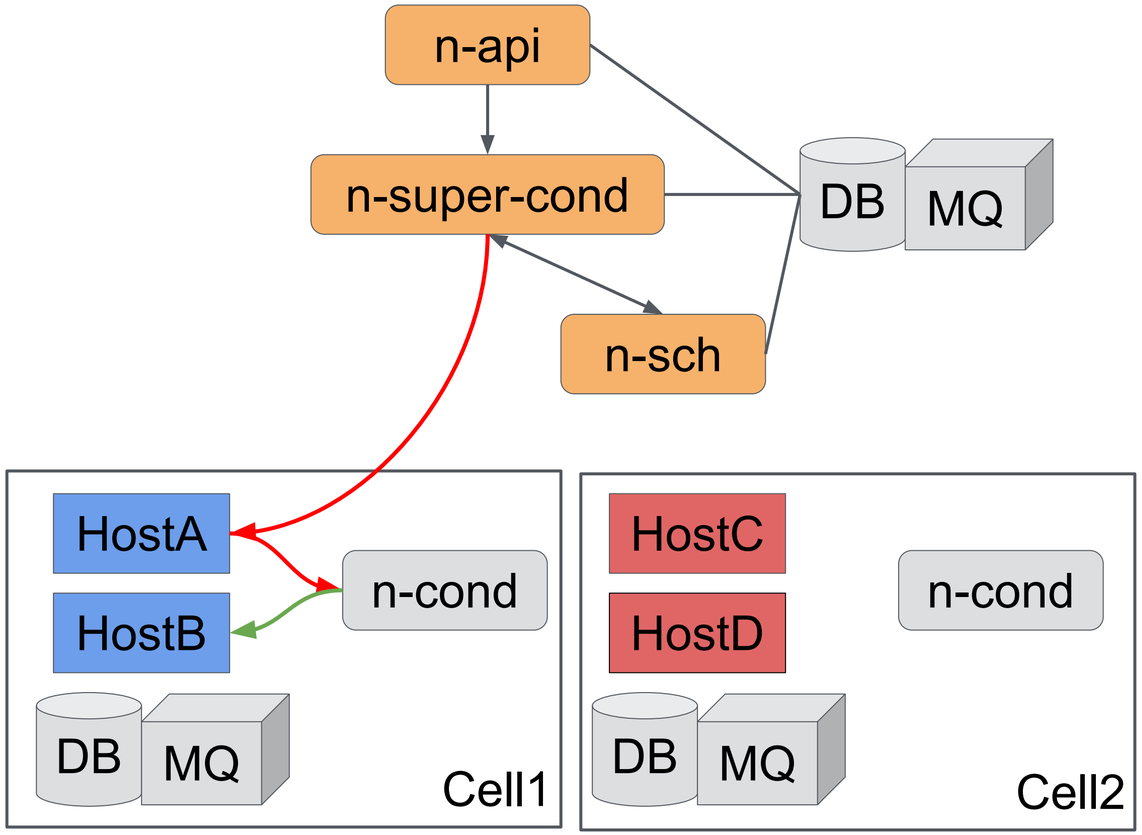
- Traits-based scheduling via flavor extra specs
- v1.0.0 of osc-placement released

OpenStack Queens Features

Before alternate hosts

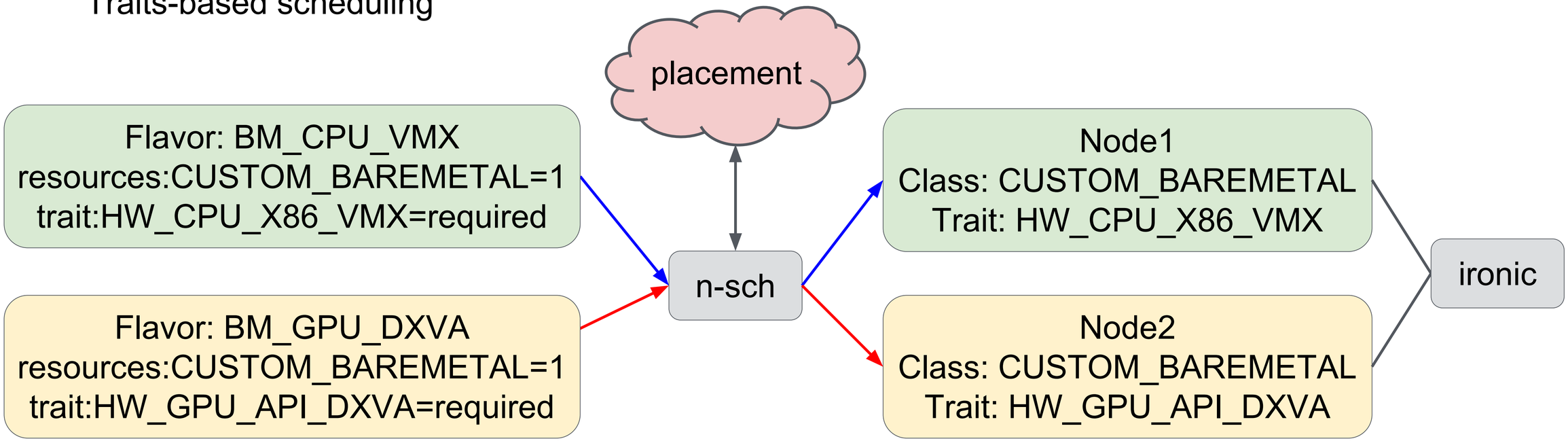


After alternate hosts



OpenStack Queens Features

Traits-based scheduling



OpenStack Queens Features

➡ **Other improvements (microversion highlights)**

Microversion	Description
2.54	Change server keypair during rebuild
2.55	Adds a description field to the flavor resource
2.56	Target a specific host during cold migrate (admin-only)
2.57	Change server user_data during rebuild
2.58	Pagination and changes-since filtering for server action records
2.59	Pagination and changes-since filtering for migration records

OpenStack Queens Features

➡ **Other improvements**

- Volume multi-attach is supported with the libvirt compute driver (microversion 2.60)
- vGPUs are supported* with the libvirt and xenapi compute drivers
- Native QEMU volume encryption (live migration, rbd encrypted volumes)
- Improved performance when filtering a list of servers by fixed IP using Neutron
- Continued versioned notification transformation
- Standardized inter-service configuration using keystoneauth adapter
- TLS encryption support for VNC consoles with the libvirt driver

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OpenStack Rocky

https://specs.openstack.org/openstack/nova-specs/specs/rocky/index.html

➡ **Cells**

- Support disabling a cell
- Console proxy per cell and nova-consoleauth deprecation
- nova-manage tooling for managing cells

➡ **Scheduling and placement**

- Placement request filters for improved scheduling performance
- Granular RBAC policy rules for placement API operations
- NUMA-aware live migration
- Nested resource providers

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OpenStack Rocky

https://specs.openstack.org/openstack/nova-specs/specs/rocky/index.html

➡ **Other improvements**

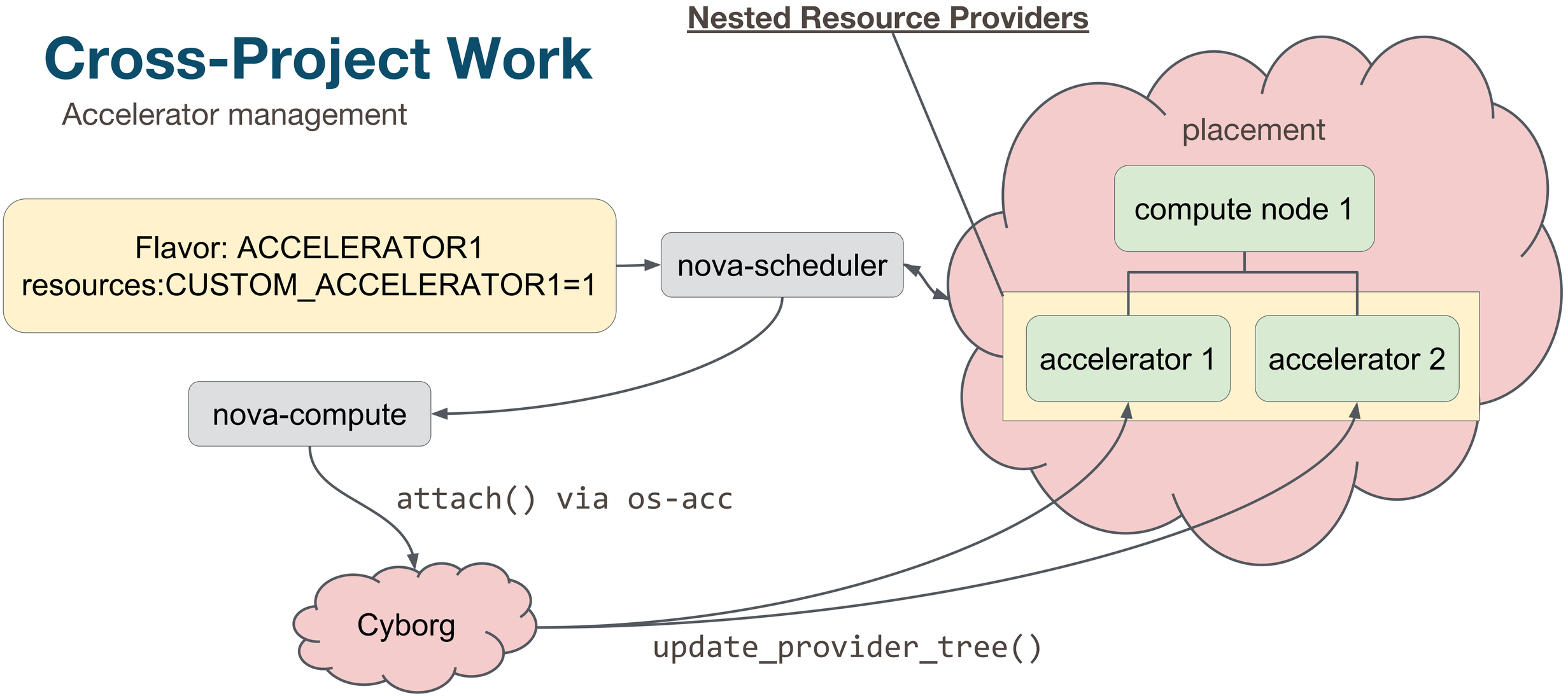
- Review runways
- Continued vGPU support
- nova-manage db purge
- Abort queued live migrations
- Libvirt CPU model extra flags

Cross-Project Work

- Cinder
  - Volume multi-attach improvements (related Forum session Tuesday at 11:50am)
- Neutron
  - Reduce network downtime during live migration
  - Bandwidth-aware scheduling (related Forum session Tuesday at 3:30pm)
- Keystone
  - RBAC support for scope types
- Barbican
  - Trusted certificates
- Cyborg
  - Accelerator management

Cross-Project Work

Accelerator management



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Beyond Rocky

- Extracting Placement from Nova
  - Related Forum session: Building the path to extracting Placement from Nova (Mon 21, 3:10pm - 3:50pm)
- Accelerator management
  - Related Forum session: Cyborg/FPGA Support for Cloud/NFV (Mon 21, 5:10pm - 5:50pm)
- Pre-emptible instances
  - Related Forum session: Pre-emptible instances - the way forward (Tue 22, 1:50pm - 2:30pm)
- More placement request filters (filter in SQL rather than Python)
- Continued removal of “up calls”, i.e. modeling affinity in Placement
- Handling a “down” cell in a multi-cell deployment

How to give feedback

- Report bugs
- Start a conversation in the openstack-dev@ and/or openstack-operators@ mailing lists
  - Tell us how you or your users are using the compute service
  - What is missing?
  - What are your barriers to entry?
  - What deployment tooling do you need, i.e. nova-manage?

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How to give feedback

- Attend Forum sessions
  - Building the path to extracting Placement from Nova (Mon 21, 3:10pm - 3:50pm)
  - Multi-attach introduction and future direction (Tue 22, 11:50am - 12:30pm)
  - Pre-emptible instances - the way forward (Tue 22, 1:50pm - 2:30pm)
  - nova/neutron + ops cross-project session (Tue 22, 3:30pm - 4:10pm)
  - CellsV2 migration process sync with operators (Tue 22, 4:40pm - 5:20pm)
  - Making NFV features easier to use (Wed 23, 11:00am - 11:40am)
- Forum session etherpads
  - https://wiki.openstack.org/wiki/Forum/Vancouver2018

How to contribute

https://docs.openstack.org/nova/latest/contributor/index.html

- Subscribe to the openstack-dev mailing list and filter on *[nova]*
- Chat with us at #openstack-nova in freenode IRC
- Attend some weekly meetings: https://wiki.openstack.org/wiki/Meetings/Nova
- Help with bug triage
  - How-to docs: https://wiki.openstack.org/wiki/Nova/BugTriage
  - Presentation: Upstream bug triage: the hidden gem?
- Attend the Nova project on-boarding session

How to contribute

- Help with code reviews
- Help cleanup the docs; if something does not make sense or is missing, tell us - or better yet push a patch to fix it
- Try to break things and report bugs
- Perform scale testing and identify bottlenecks - and report them
- Propose bug fix backports to the stable branches

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Q&A

Thank you!

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