

Heat - Orchestration for OpenStack

Overview, Status, Roadmap



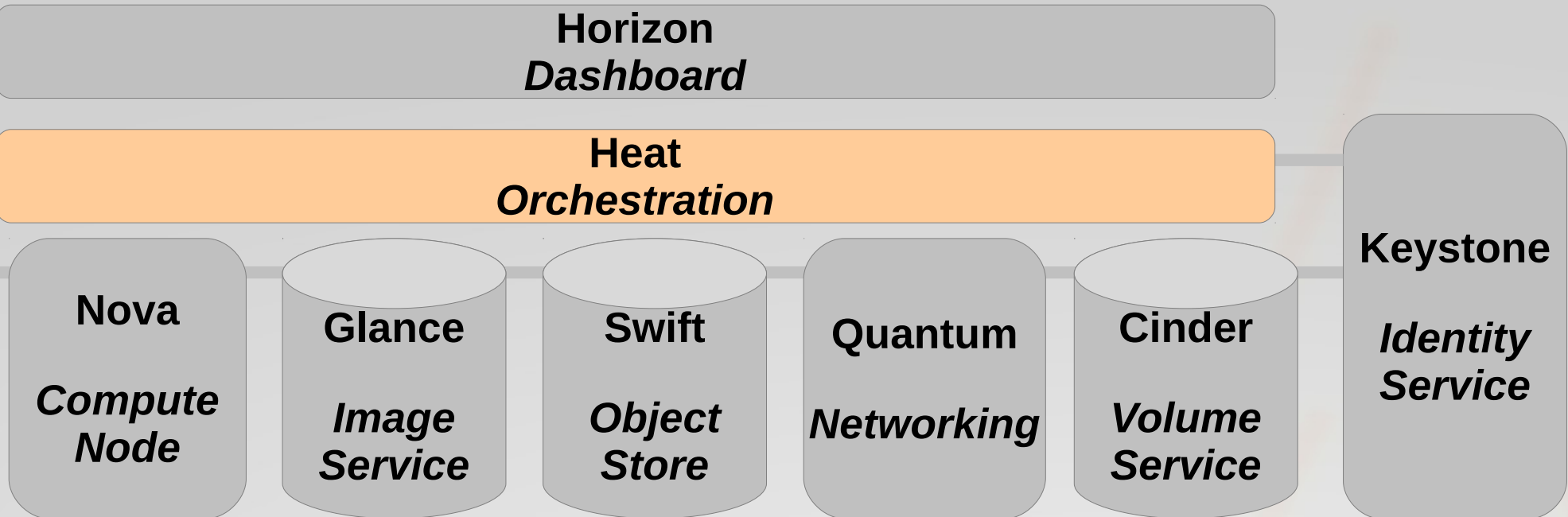
Steven Hardy (shardy@redhat.com)
Solutions Linux Expo, Paris – 28th May 2013



Heat Overview

- Started in March 2012
- Incubated for Grizzly, Integrated for Havana
- 25 contributors (9 core)
- ~1900 commits
- ~34,000 lines of code
- 37 different resource types (and counting!)
- We do much more than launch instances :)

Heat Overview



- Provides AWS Cloudformation and native ReST API
- Abstract configuration of services to single-template
- HA/Autoscaling/Monitoring features
- Openstack integrated project

Heat Overview



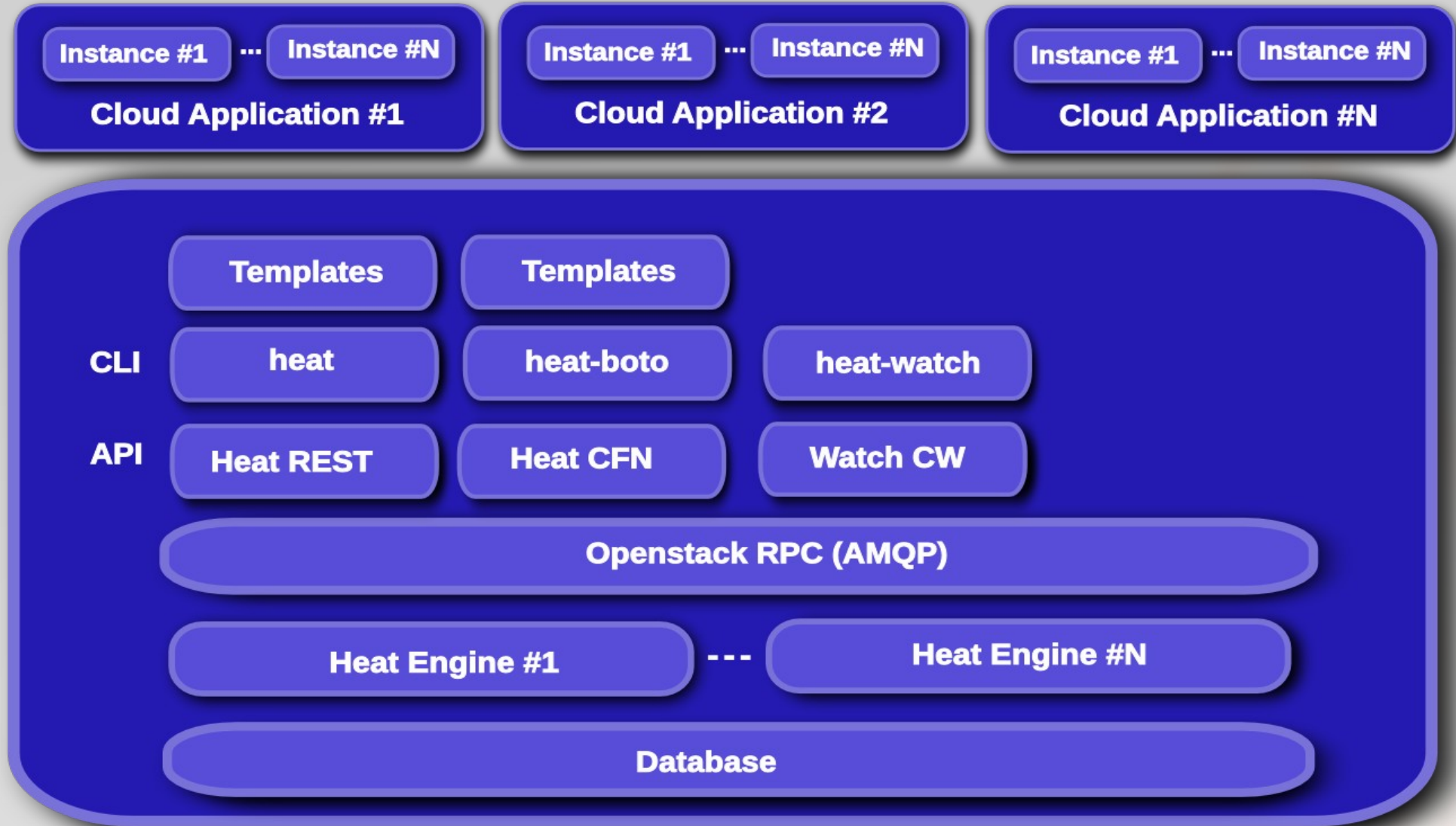
- Orchestration of Openstack deployments
- Integrates with all Openstack core projects
 - Ceilometer integration for Havana release
- Converts a JSON template into a cloud application
 - Templates can be nested for better modularity
- Implements well known template and API (AWS Cloudformation, also YAML, openstack ReST)
 - Native template syntax discussions ongoing
- Version your cloud applications like your software
- Repeatable deployments, fully automated

Heat API : Key features

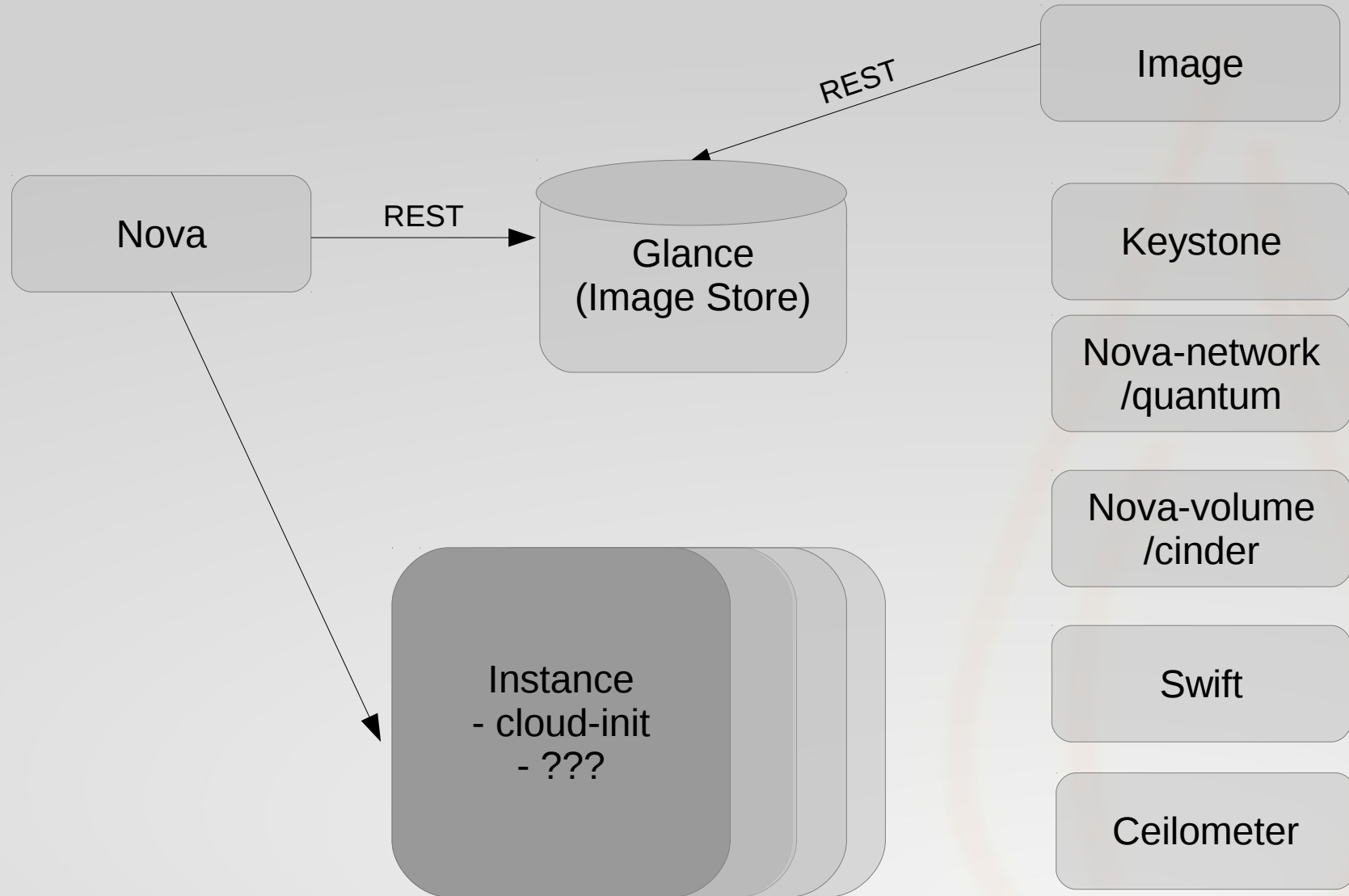


- Compatibility with AWS Cloudformation (template/API)
- Also superset of OS native resources & ReST API
- Fully open community project
- Distro-agnostic, integrated openstack project
- Implements HA (service/instance/stack)
- Implements Instance AutoScaling/InstanceGroups
- Cloudwatch/Monitoring API (will move to Ceilometer)
- Pluggable resource implementations
- Watch this space!

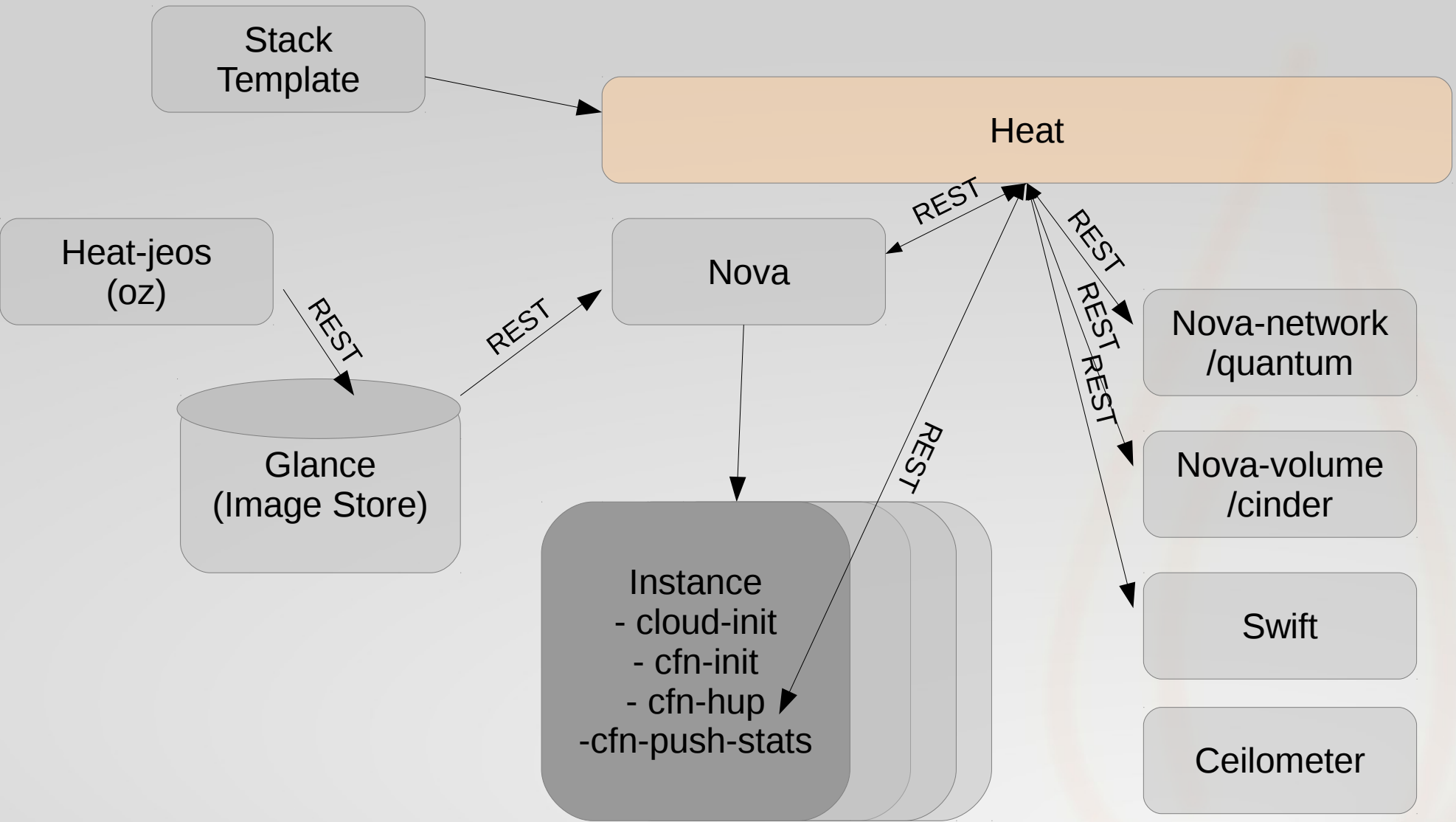
Heat Overview



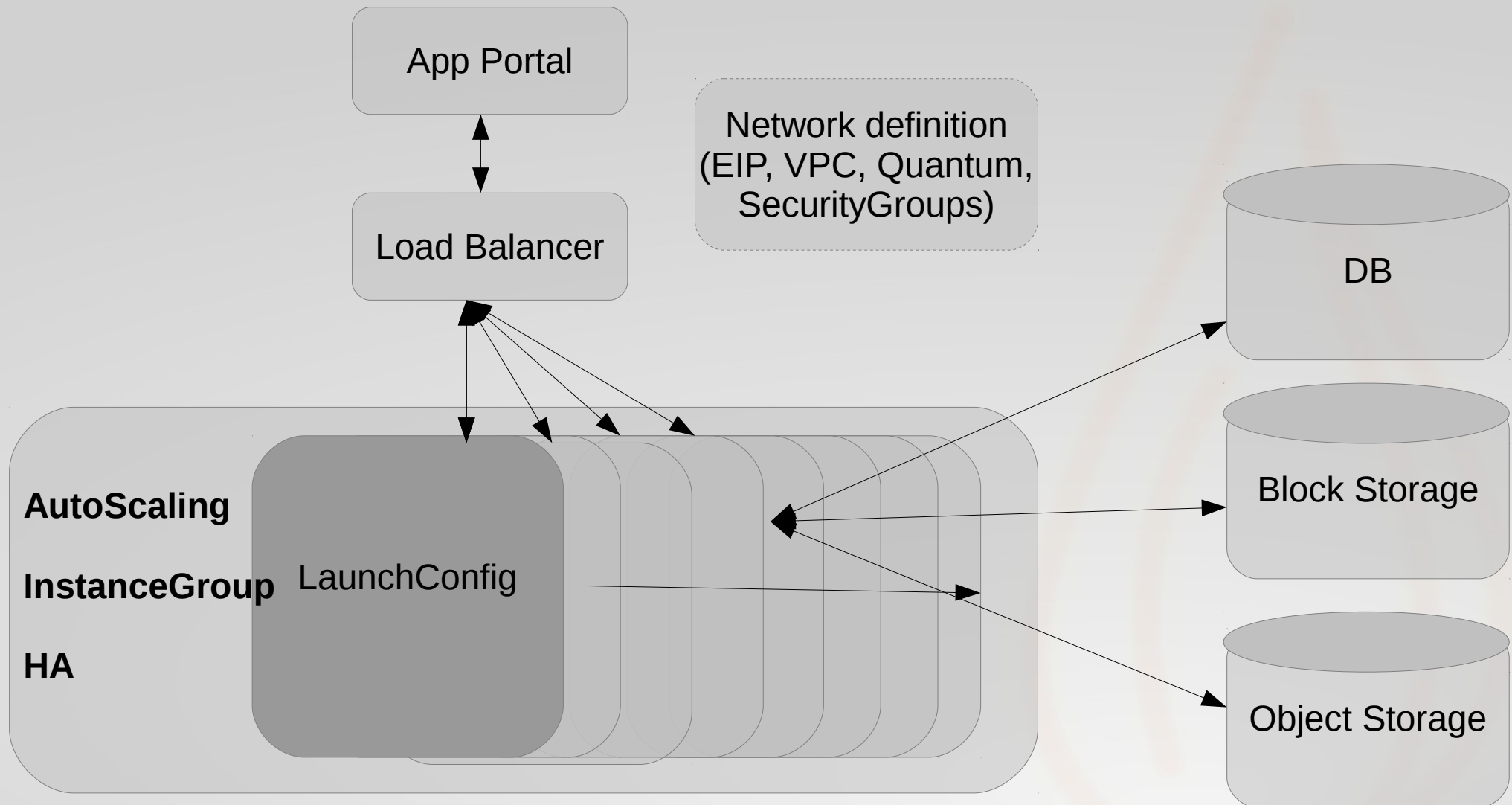
Nova Instance Lifecycle



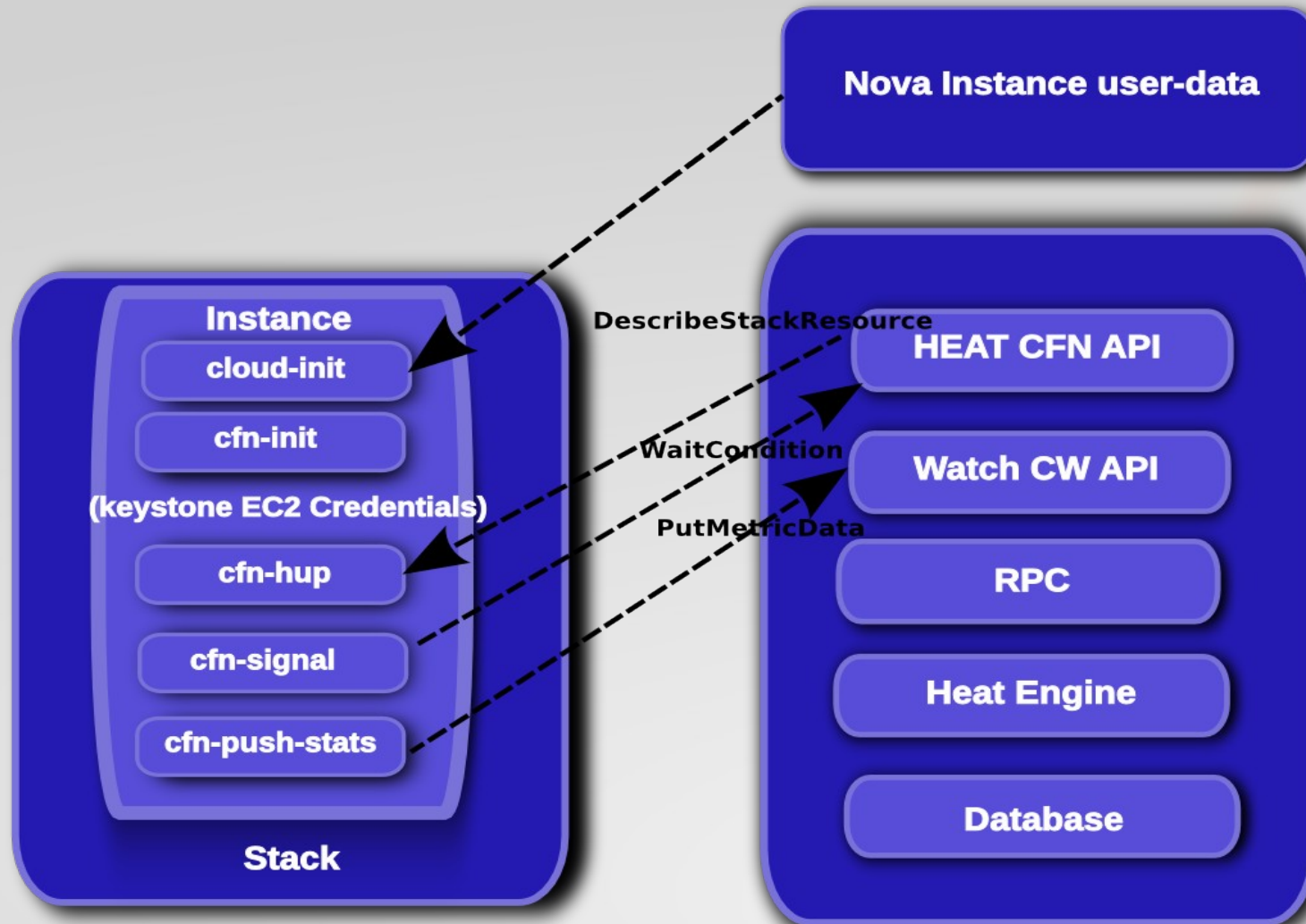
Heat Stack Lifecycle



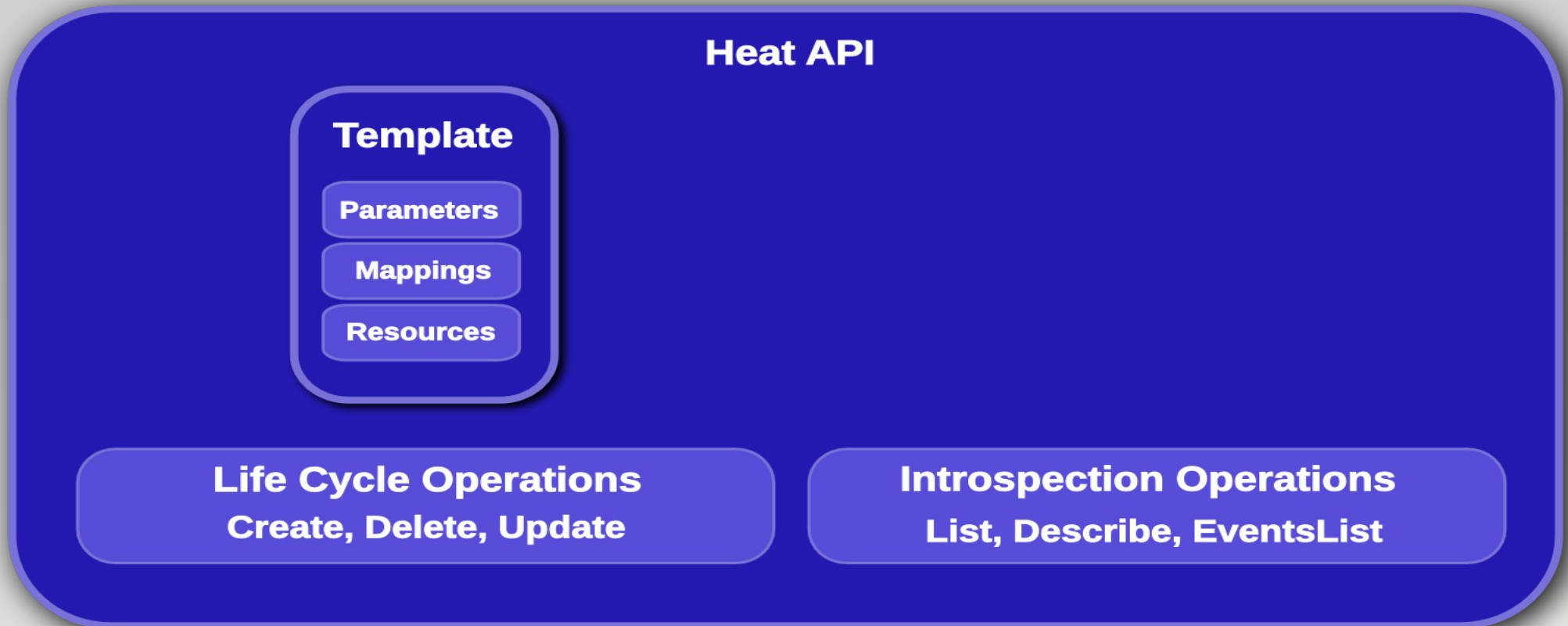
Heat Stack Lifecycle



Heat Stack lifecycle



Heat API



- “Providers” abstraction coming
- Other new abstractions being discussed
- Transient stack “actions” being discussed/implemented



Heat Resource Types

AWS::AutoScaling::AutoScalingGroup	AWS::RDS::DBInstance
AWS::AutoScaling::LaunchConfiguration	AWS::S3::Bucket
AWS::AutoScaling::ScalingPolicy	
AWS::CloudFormation::Stack	
AWS::CloudFormation::WaitCondition	
AWS::CloudFormation::WaitConditionHandle	OS::Heat::AccessPolicy
AWS::CloudWatch::Alarm	OS::Heat::HARestarter
AWS::EC2::EIP	OS::Heat::InstanceGroup
AWS::EC2::EIPAssociation	OS::Quantum::FloatingIP
AWS::EC2::Instance	OS::Quantum::FloatingIPAssociation
AWS::EC2::InternetGateway	OS::Quantum::Net
AWS::EC2::NetworkInterface	OS::Quantum::Port
AWS::EC2::RouteTable	OS::Quantum::Router
AWS::EC2::SecurityGroup	OS::Quantum::RouterGateway
AWS::EC2::Subnet	OS::Quantum::RouterInterface
AWS::EC2::SubnetRouteTableAssociation	OS::Quantum::Subnet
AWS::EC2::Volume	OS::Swift::Container
AWS::EC2::VolumeAttachment	
AWS::EC2::VPC	
AWS::EC2::VPCGatewayAttachment	
AWS::ElasticLoadBalancing::LoadBalancer	
AWS::IAM::AccessKey	
AWS::IAM::User	

Grizzly Features



- 144 bugs fixed
- 19 blueprints implemented
 - New ReST API
 - Quantum Resources
 - YAML templates
 - Python-heatclient
 - Better networking & VPC resource support
 - Improved UpdateStack support
 - Stack Rollback
 - Swift Resource type
 - Improved security (metadata/WaitCondition events)



Havana Roadmap

- Parallel resource creation (nearly done)
- Further improve networking/Quantum support
- Rolling Updates (Metadata/UpdatePolicy)
- Support for extended template language (HOT)
- “Provider/Environments” abstractions (template-defined resources)
- Add AutoScaling API (maybe)
- Move to Ceilometer for metrics/monitoring/alarms
- More UpdateStack Improvements
- Further improved security (PKI/trusts/in-instance credentials)
- Native resource types
- Horizon (UI) integration
- Stack “actions” (suspend/resume)
- Configurable LoadBalancer (LBAAS)



Future Roadmap

- Will be driven by users & downstream projects
 - Triple-O
 - Openstack CI Infra
 - ...
- User-base and community participation is increasing
- We need more users and use-case data to shape direction/priority of feature development
- We welcome new contributors (and reviewers! :)

In Closing



- Users, testers and developers wanted!
 - Connect via IRC on #heat@freenode
 - Check out the repositories:
 - <https://github.com/openstack/heat>
 - <https://github.com/openstack/heat-templates>
 - Read the Documentation:
 - <http://docs.openstack.org/developer/heat>
 - <http://wiki.openstack.org/Heat/>
 - Packages Available (RDO, Debian)
 - <http://openstack.redhat.com>

Questions?

