

# EVALUATING OPENSTACK CONTAINERS AS A SERVICE MAGNUM FOR PRODUCTION

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# WHY CONTAINERS?

- Rapid application deployment
- Portability across machines
- Version control and component reuse
- Sharing
- Lightweight footprint and minimal overhead
- Simplified maintenance

# BARE METAL OR VMS?

"...many containers can run together on a single host but they don't have enough defenses to shield themselves from active malware lurking in a neighboring container on the same host."

" So multi-tenant hosts will most likely assign a virtual machine to each customer then run multiple Docker containers inside the VM."

-Craig McLuckie, product manager for Kubernetes and the Google Cloud Platform

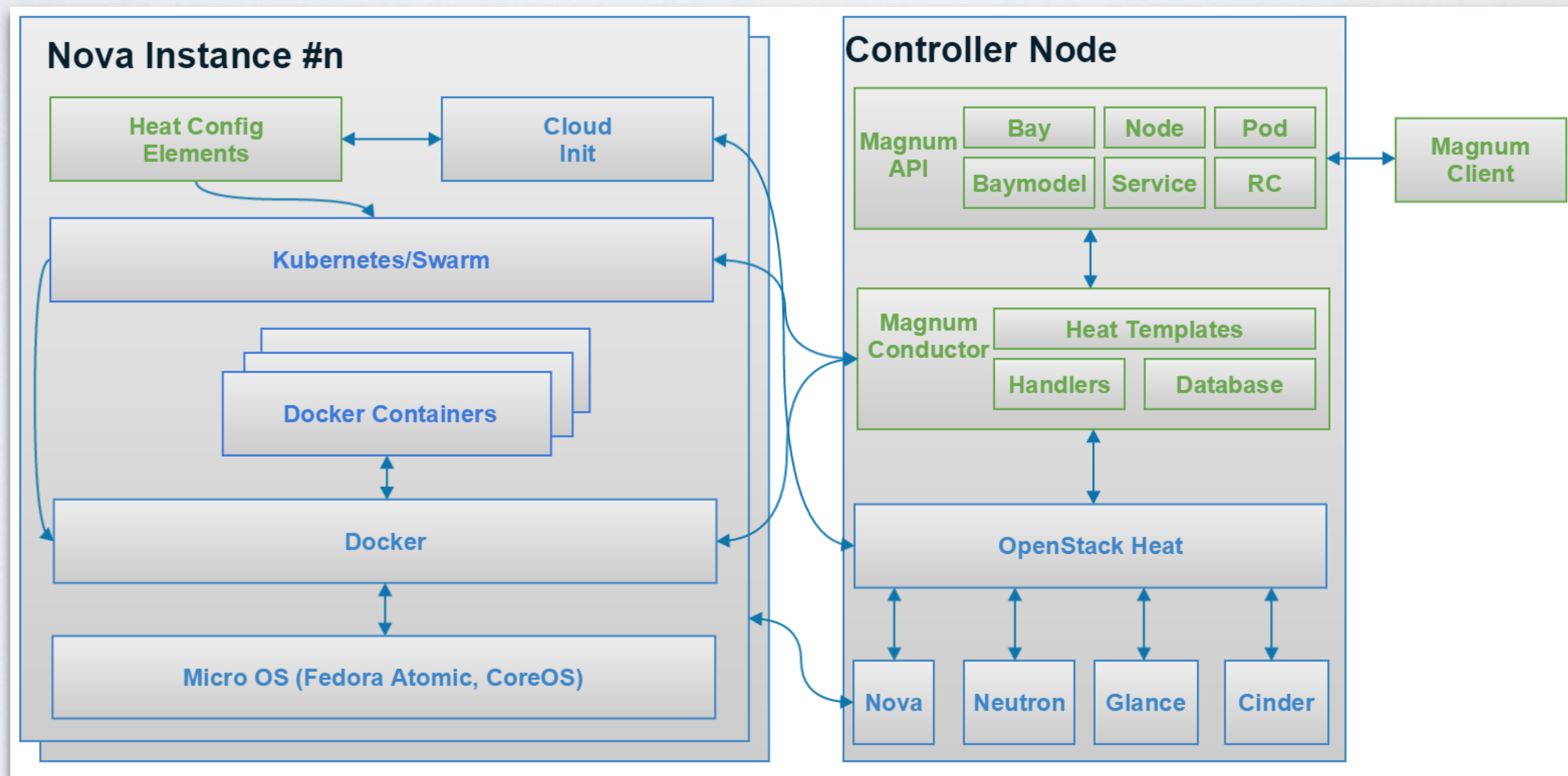
# MAGNUM

- The OpenStack container as a service(CaaS)
- Provides a very easy way to deploy a container cluster on top of OpenStack
- Resources started by Magnum can only be viewed and accessed by users of the tenant that created them
- Provides the same level of security isolation as Nova provides when running vms belonging to different tenants on the same compute nodes
- Pluggable container orchestration engine(COE), Kubernetes, Swarm and Mesos as of now
- Powered by Heat

# ARCHITECTURE

- Very simple architecture
- Two services (Server Api, Conductor)
- The Magnum client talks with the Server Api
- Server Api and Conductor communicate using the messaging bus(RabbitMQ)
- The conductor is in charge of:
  - managing the clusters life-cycle through Heat
  - communicate with the clusters using the appropriate COE API

# ARCHITECTURE



# KUBERNETES-MAGNUM MATCHING

- First supported COE
- 1 to 1 match between K8s and Magnum resources(Pod, Service and Replication Controller)
- Introduces the concept of Bay
- Adds multi-tenancy

# WHAT WE LIKE

- Managed vs Unmanaged
- SSL
- One truth of the state for K8s
- Heat powered
- Integration with Keystone for multi-tenant security
- Integration with Neutron for Kubernetes multi-tenancy network security
- Configurable etcd discovery service(default to [discovery.etcd.io](https://discovery.etcd.io))



# WHAT'S MISSING(WIP)

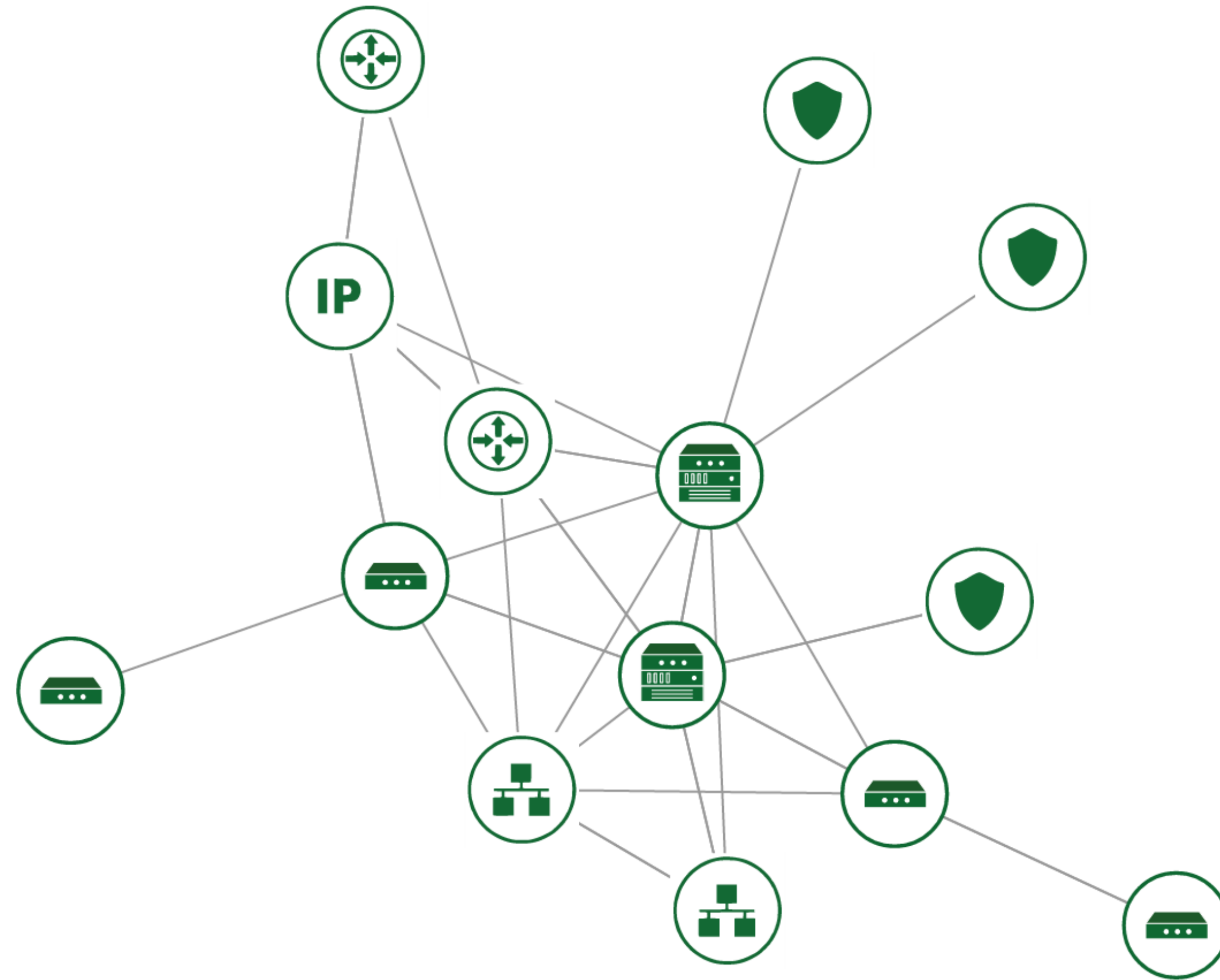
- Quota for magnum resources
- auto scaling
- Volume containers
- Horizon integration

```
magnum baymodel-create --name k8sbaymodel \  
                        --image-id fedora-21-atomic-5 \  
                        --keypair-id testkey \  
                        --external-network-id public \  
                        --flavor-id ml.small \  
                        --docker-volume-size 5 \  
                        --network-driver flannel \  
                        --coe kubernetes
```

```
magnum bay-create --name k8sbay \  
                 --baymodel k8sbaymodel \  
                 --node-count 1
```

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# CONCLUSIONS

- Is Magnum ready for production?