

# The Importance of Hybrid Cloud Platforms for Open Programmable Infrastructure

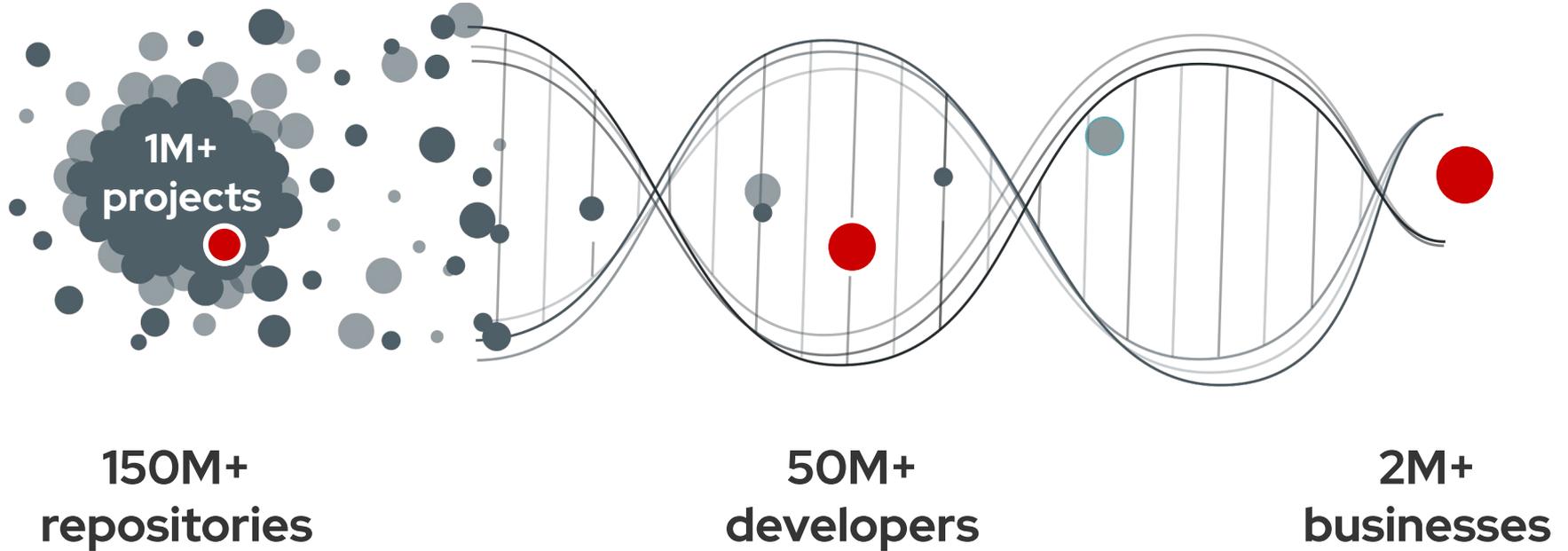
Kris Murphy

Senior Principal Software Engineer, Red Hat

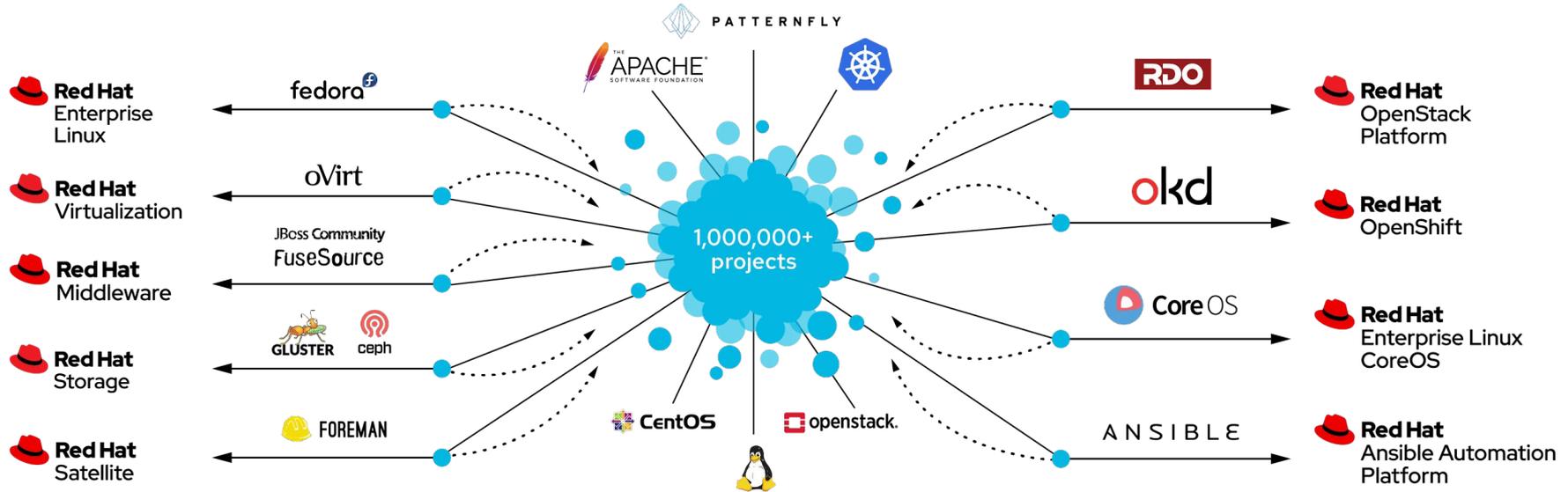
Billy McFall



# Open Source is the Innovation Engine for the Industry



# Red Hat is an Enterprise Software Company with an Open Source Development Model



communities-to-enterprise-full-202003c

# Pets vs Cattle



Homogeneous hardware that does not require special care

# Pets vs Cattle



Domain specific hardware is  
making compute less  
homogeneous

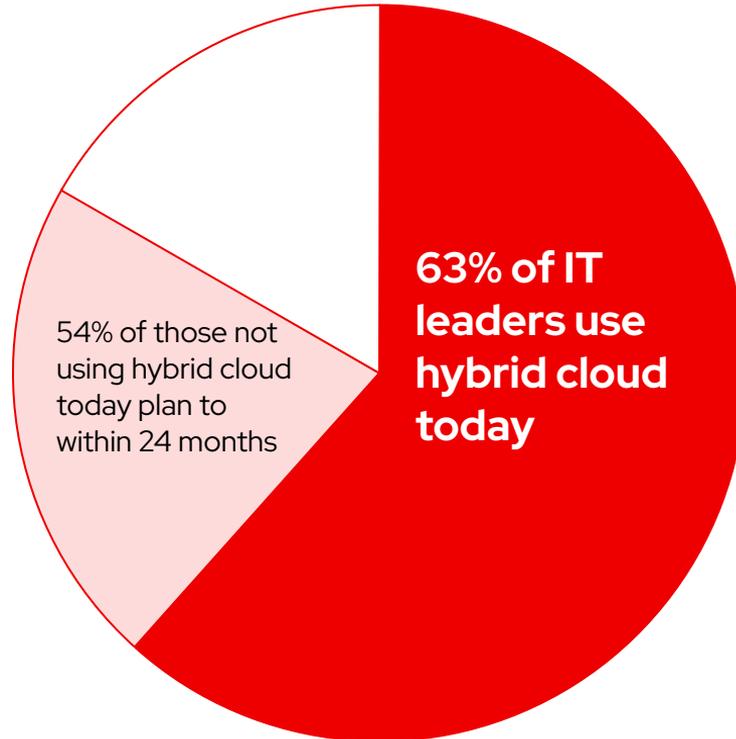
# Pets Masquerading as Cattle



Performance needs and increasing demands of workloads are leading to more and more specialized hardware

# Hybrid Cloud is the Predominant Operational Paradigm

## Infrastructure



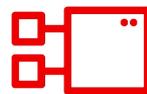
# The Hybrid Cloud Data Center



**Everything-as-a-Service**



**Modern apps**

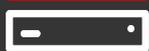


**Containers and microservices**



**ISVs**

**Red Hat OpenShift**



**Physical**



**Virtual**



**Private cloud**



**Public cloud**



**Edge**

**Red Hat Enterprise Linux**



Kubernetes made managing  
containers simple and robust.  
Red Hat is extending this to DPUs

## Extending operational simplicity to DPUs



**Offload Infrastructure Software** to enhance CPU efficiency and increase security



**Common Kubernetes** tooling and experience



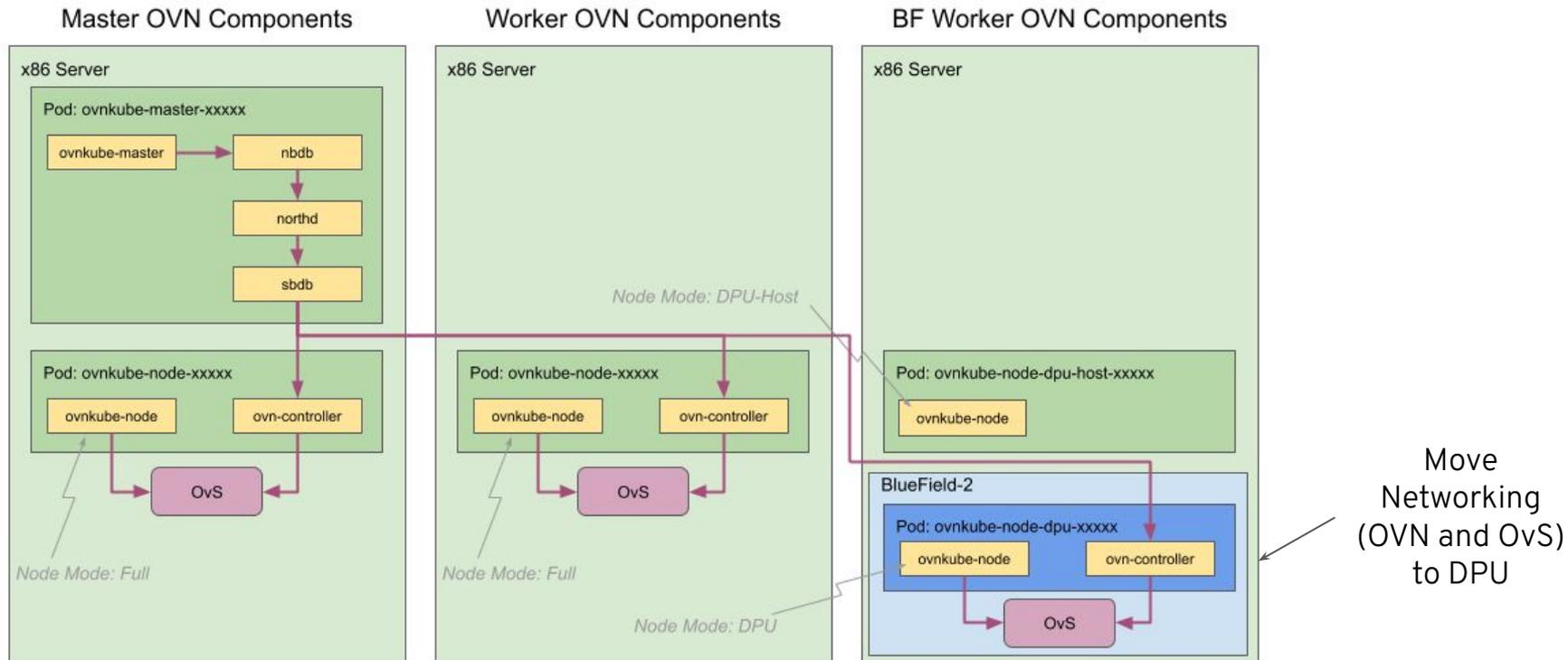
**Common management** system and methodology

# Integrating DPU's into OpenShift



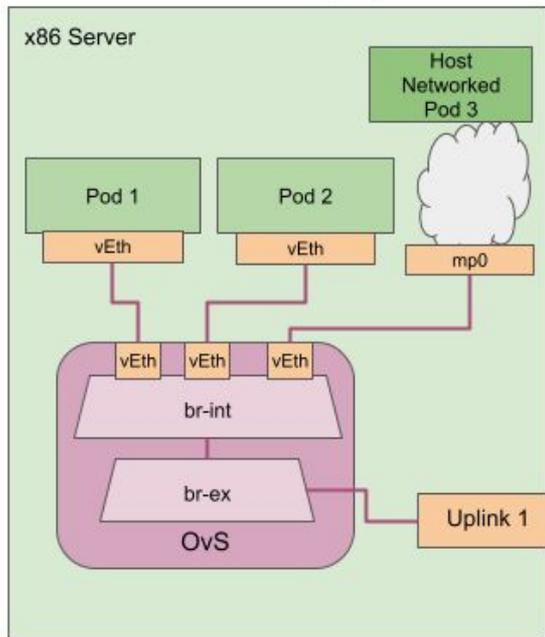
- Brief (very brief) introduction to what we did
- Challenges Encounter
- Need for OPI and Common APIs

# Integrating DPU's into OpenShift

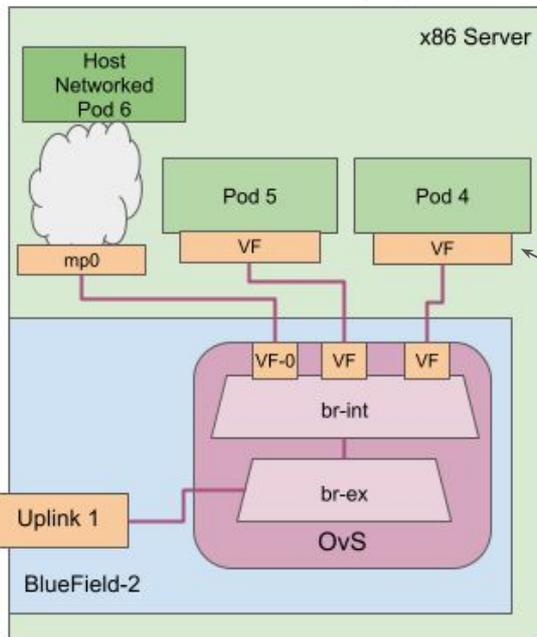


# Integrating DPU's into OpenShift

## Normal OvS Deployment

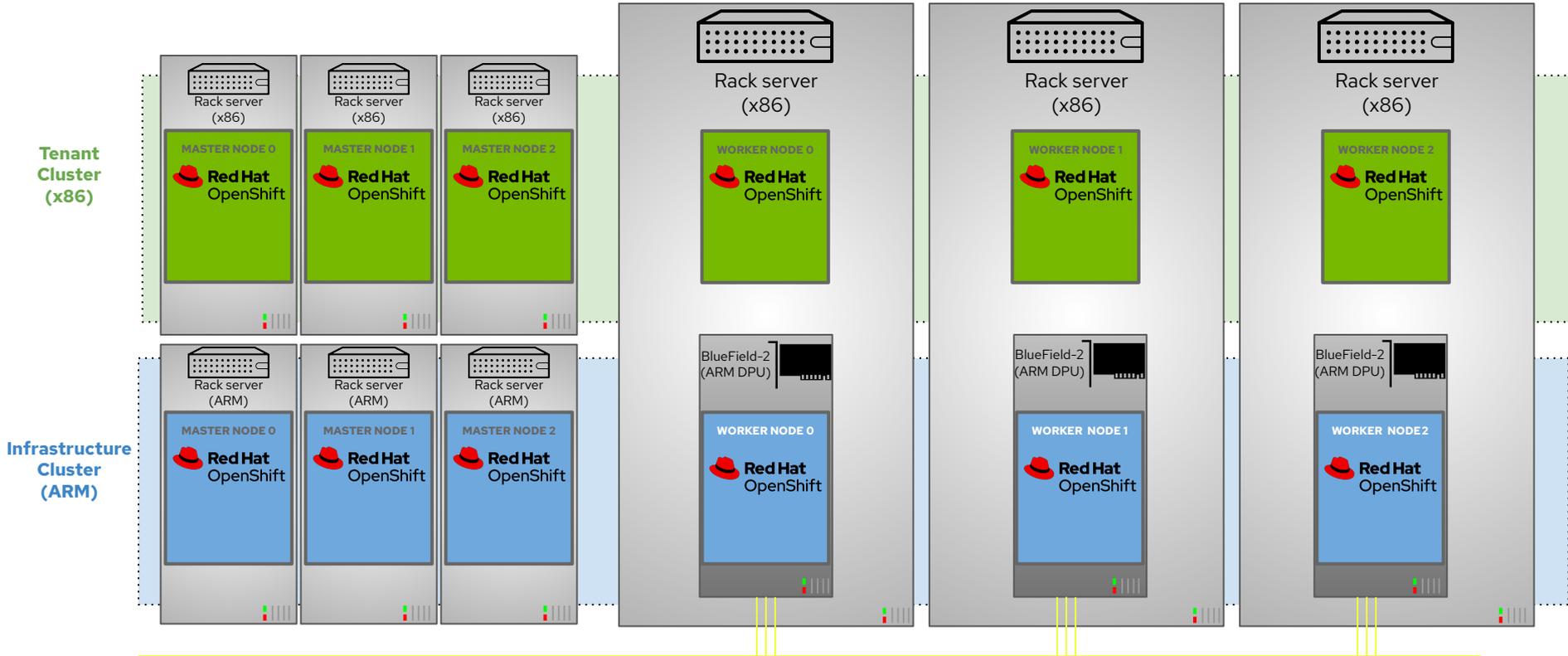


## BlueField-2 OvS Deployment



Use SR-IOV to plumb interfaces into host

# Integrating DPU's into OpenShift



OpenShift 4.10 Tenant and Infrastructure clusters

# Challenges Encounter

- Initial Deployment - RHEL running on DPU
- SR-IOV has its Challenges
- HW Offload of OvS Flows
- Managing OVN/OvS/Kernel patches/version
- Lifecycle Management

All demonstrate the increased complexity of deploying with DPUs/IPUs.

# Need for Common APIs/Tools/Ecosystem

- Can't duplicate complexity for every vendor
- Upstream and Open Solutions
- Debuggability is Key
- Keep Complexity out of Applications

This project needs to move fast and not get bogged down.

Integration is already happening!



THANK YOU!

STAY ENGAGED

**Next.redhat.com**

Stay in touch with the Office of the CTO  
<https://next.redhat.com/>