
Data Center Networking in the Era of Overlays

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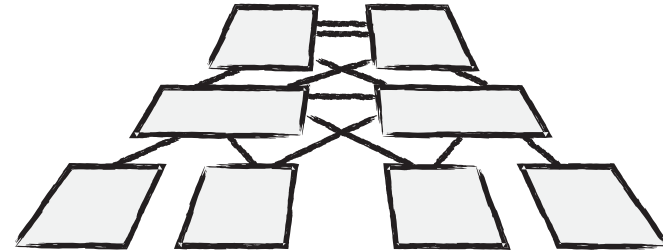
Trend: The Resource Pool



Compute



Storage

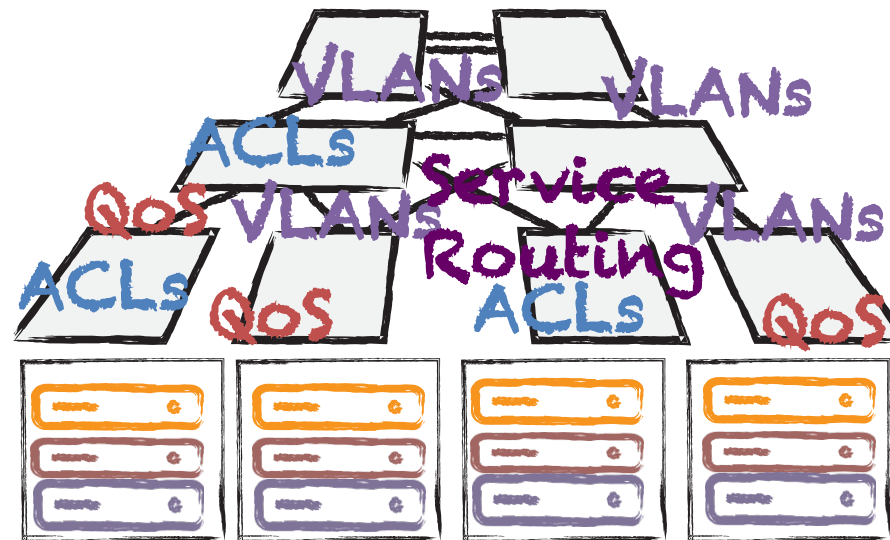


Network

- **Run any desired workload**
- **Anywhere**
- **Over any hardware**
- **(... and do it quickly and efficiently)**

The Problem: “Networking in the Way”

Isolation
Security
SLAs
Over subscription



~~Run any desired workload~~

~~• Anywhere~~

~~• Over any hardware~~

~~• (... and do it quickly and efficiently)~~

A (Popular) Solution: Overlay



- Consume a lot of functions from the network
 - Isolation, Mobility, Load distribution, Security
 - QoS, Accounting
- In wide use today
 - http, distributed compute harness, virtual network overlay

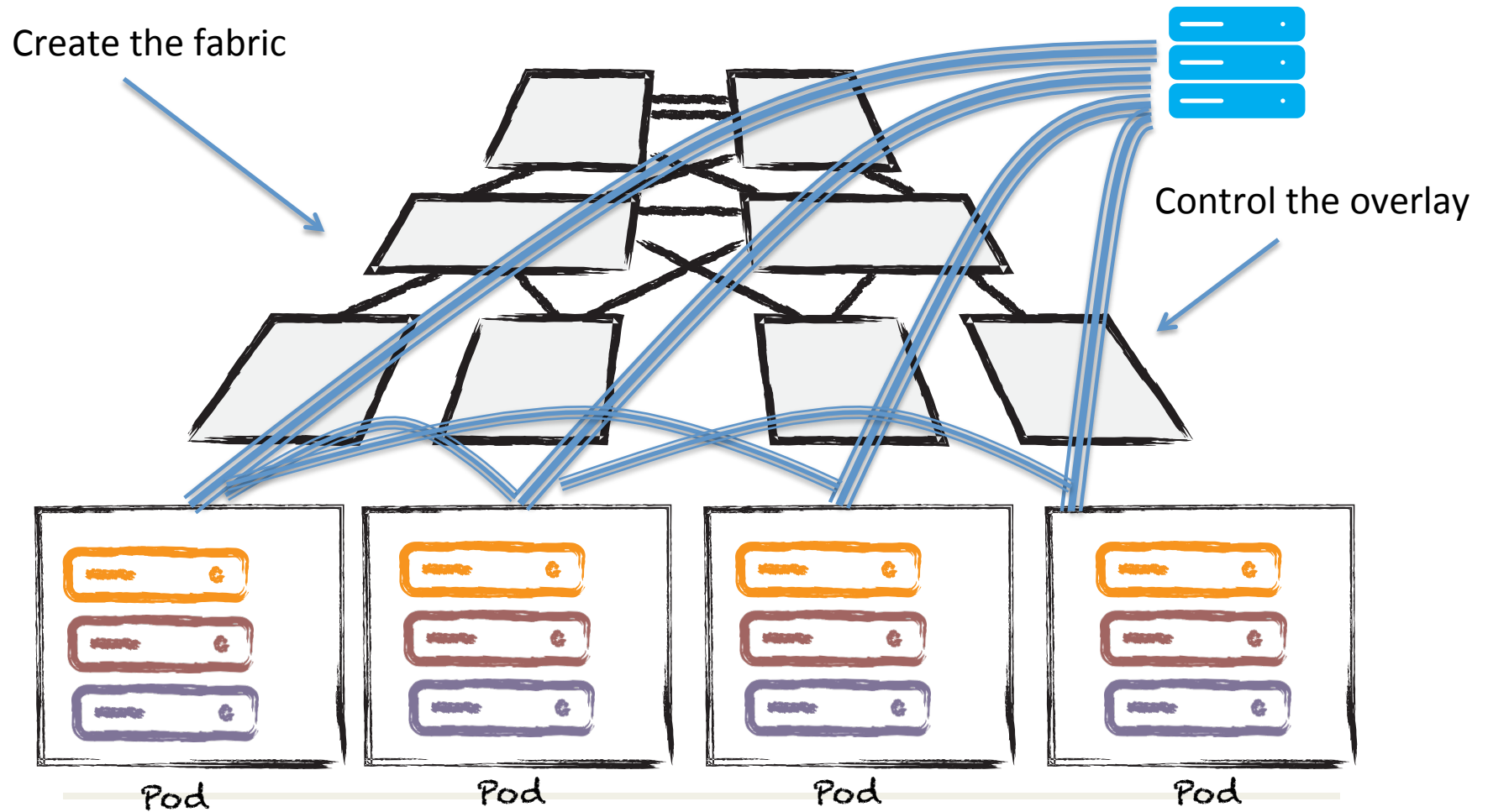
Arguments for the Overlay (a lot like SDN)

- Functionality is implemented in software
- Allows the use of simple/cheap network fabric
- Decoupled operations from proprietary interfaces
- Natural way of integrating L4-L7 control
- Often can avoid high-levels of aggregation
(reduce pressure on hardware tables)
- Take advantage of edge semantics

So .. Where Does SDN Fit?

My view: compatible, not necessarily competitive
(SDN won't replace overlay, overlay won't replace SDN)

So .. Where Does SDN Fit?

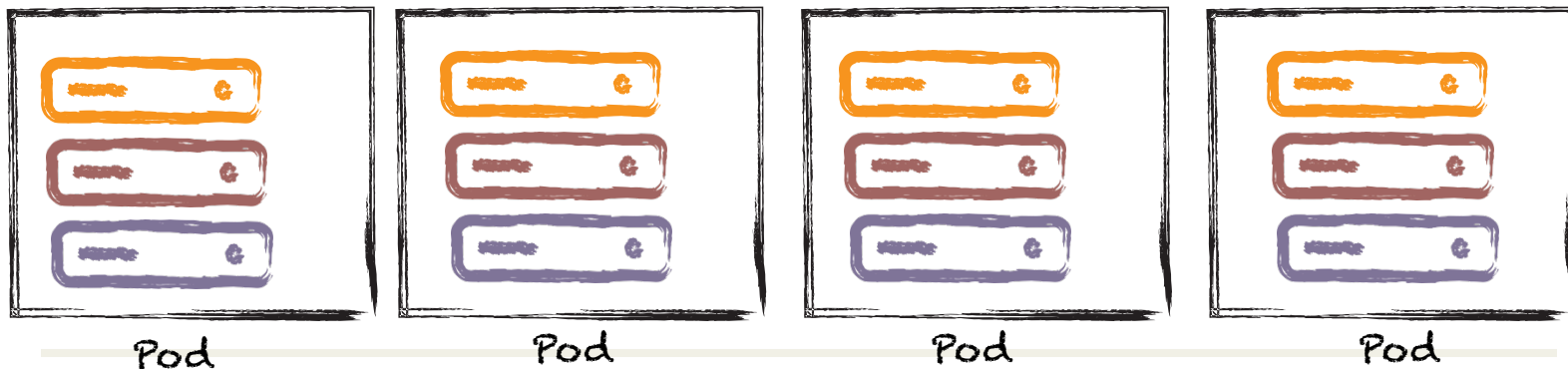


SDN and the Fabric



Control Plane

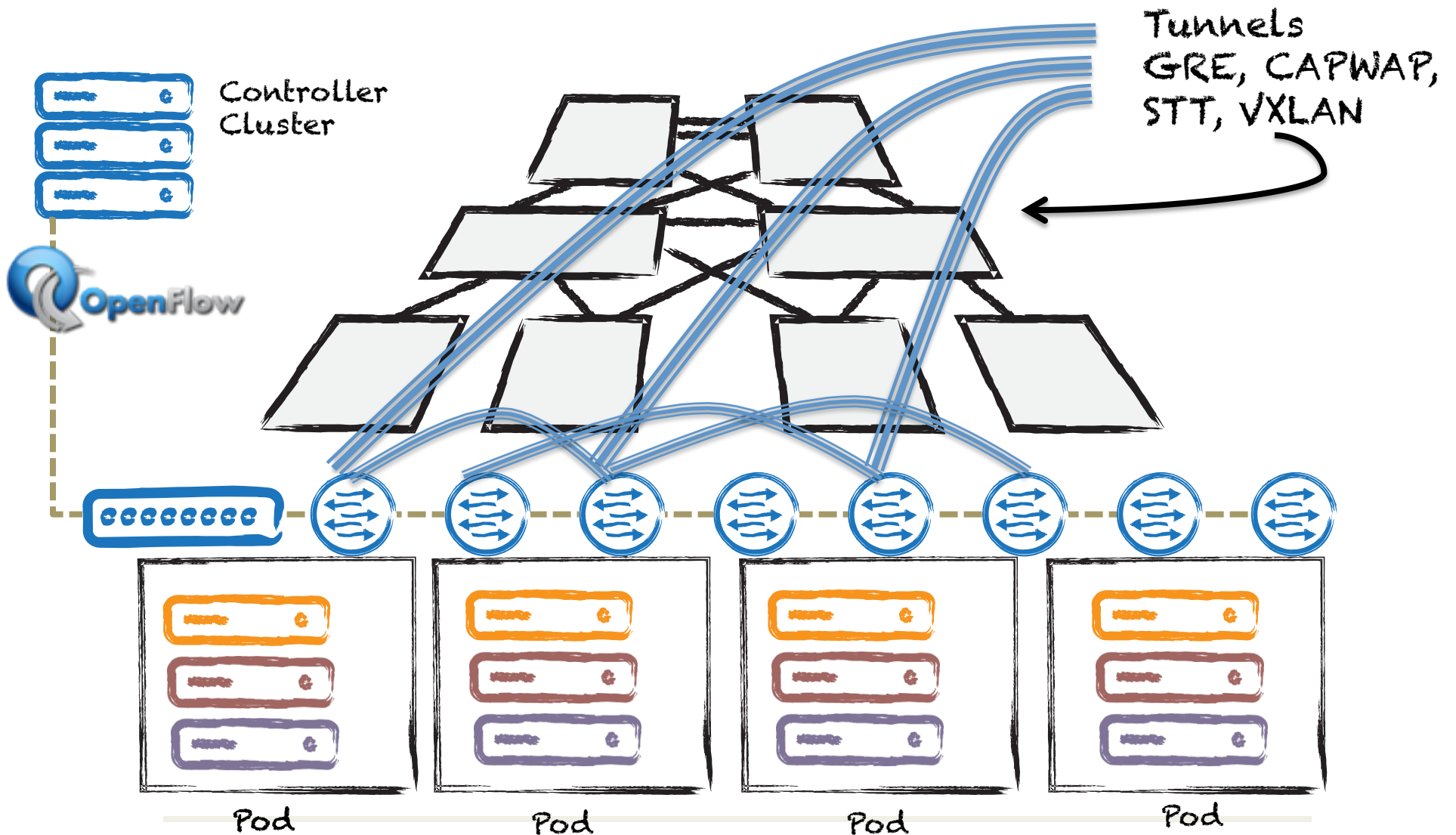
- Probably have to push all state proactively
- Multipathing requires state replication
- Likely destination-only w/ aggregation
- End up implementing L3 w/ extra control channel



SDN and the Fabric

- SDN not obvious fit for fabric control plane (for large deployments)
- SDN great for fabric config (OAM)
 - And one I know the config group is keen to tackle

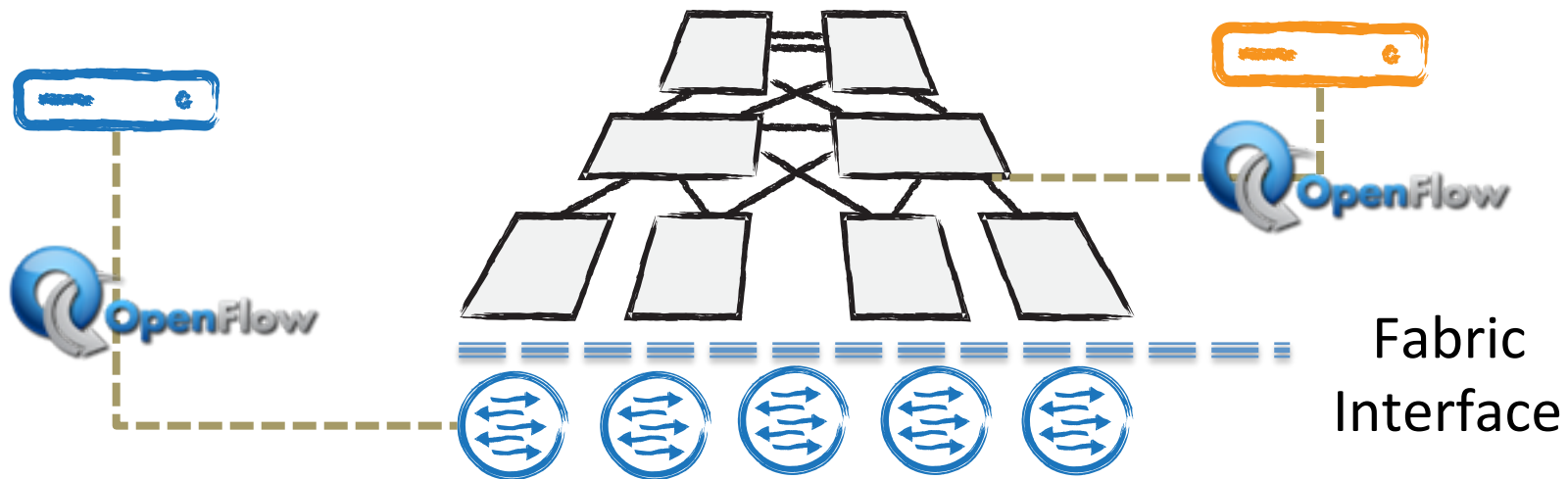
SDN to Control the Overlay



SDN and the Overlay

- Standardize OpenFlow as control interface to overlays (VXLAN, NVGRE, STT, etc.)
 - Manage tunnels
 - Map packets to tunnels
 - Manage forwarding state within the overlay (QoS, filtering, accounting, etc.)
- Consider creating “soft switch” friendly extensions to OpenFlow

Extending SDN for Fabric



- Acknowledge decoupled control problems
- Simplify fabric forwarding model
- Standardize fabric service model

Linux 3.3 Released, Integrates Android Code



Android can now boot from the Linux kernel

By Mikael Ricknäs
Mon, March 19, 2012



What's this?

InfoWorld Home / Open Source Software / News / Linux 3.3 released with integrated Android code

MARCH 19, 2012

Linux 3.3 released with integrated Android code

Android can once again boot from the Linux kernel, which also integrates Open vSwitch

By Mikael Ricknäs | IDG News Service

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Version 3.3 of the Linux kernel, now available after a short delay, includes kernel code from Android as well as an upgrade of networking features and support for an additional processing architecture.



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Version 3.3 of the Linux kernel, now available after a short delay, includes kernel code from Android as well as an upgrade of networking features and support for an additional processing architecture.

Linux 3.3 Released, Merges With Android

Numerous other changes detailed

By Zach Walton · March 19, 2012 · 1



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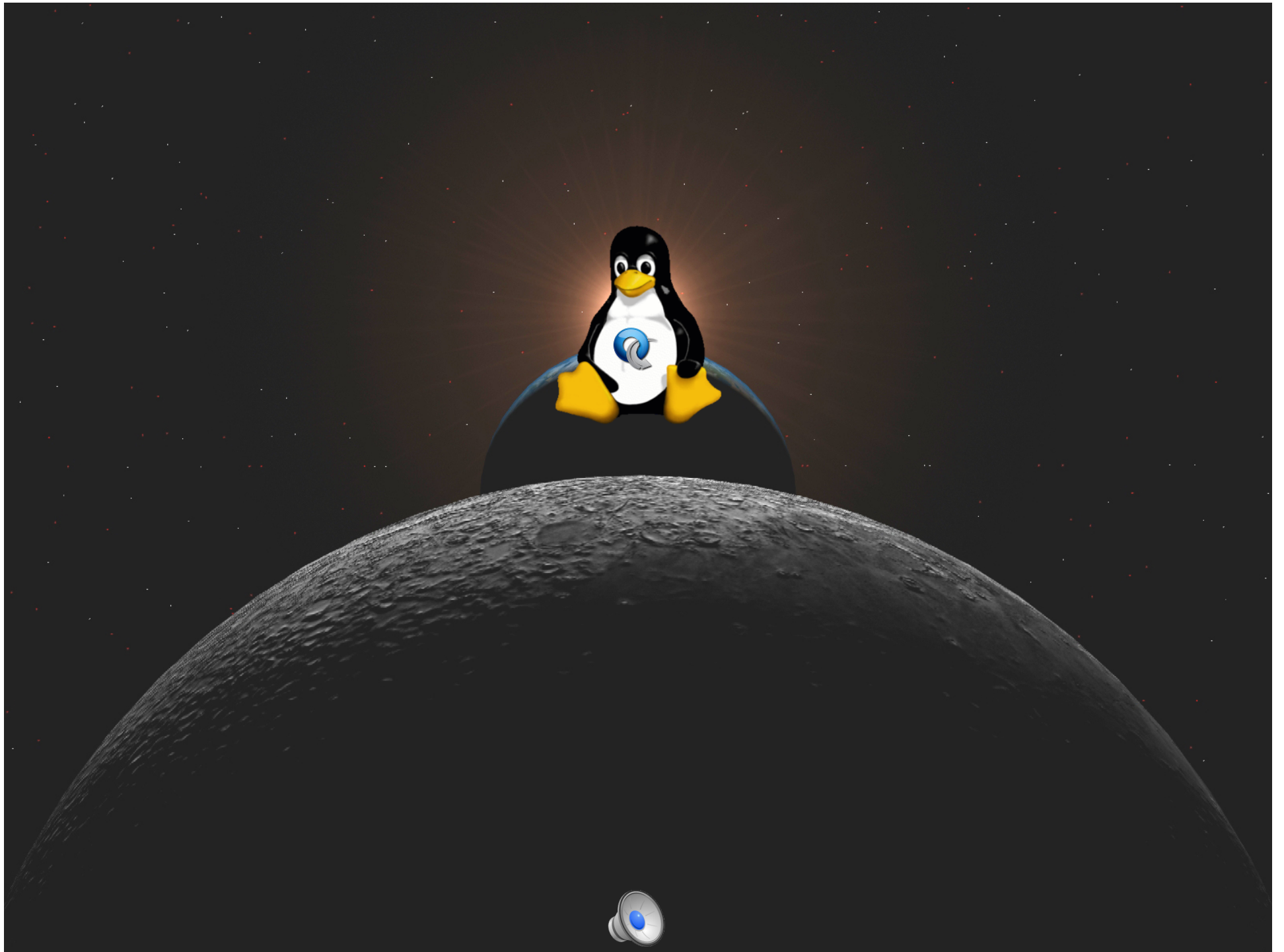
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