Learning from Hyperscale to Help You Get Started in Open Source

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Not a Tech Talk
Organizational Behavior
Adopting Open Technology
Q&A Panel Session After
How We’re Going to Do This

• Setting the stage
  • My journey from enterprise to hyperscale, from closed to open
  • Behavior profile: Veteran IT organizations
  • The Closed to Open Cycle: why, how, when

• How this applies to you
  • Why you’re here
  • Hyperscale infrastructure talks and you: a predictable process

• Moving beyond talks
  • Self analysis
  • Goals and value

• Tips for getting started
  • Sourcing & supply
  • Getting help from the OCP community
Setting the Stage
My Journey: Started Closed. Moved to Open.

Enterprise
- Backoffice & Sys Admin
- IT Support
- Token Ring – Gigabit Ethernet
- Ethernet Core vs. ATM Core
- Security

Service Provider
- Managed Security
  - Vulnerability Research
- Managed Network Service
  - Routing, Switching, VPN
  - Telco (Carrier VoIP)
  - IPTV Services (U-Verse TV)

Hyperscale / Cloud
- IaaS, PaaS, SaaS
- Hardware Development
- Infrastructure Strategy
- Cloud Everything
  - Compute
  - Storage (Block/File/Object)
  - Network

10 More Years, Last 6 on OCP
Both Ends of the Universe

Product Developer → End User Operations → IT Shop

Hyperscale → Enterprise → New & Unknown → Tried & True
Each Major Infrastructure Vertical

- Compute
- Storage
- Network
Most Work Done in Pursuit of These (One or More)

- Performance (Speed)
- Scale (Size)
- Service (Features)

Lower TCO often a byproduct.
About Our Industry

Common Themes
Common Elements & Patterns
Common Elements & Patterns

- Change Value
- Same Fundamentals
- Start More Proprietary
- Change Value
- New Circumstances
- End More Open
Open Source Has Happened in Each Tech Era
Value & Innovation Pressures Make It So

- **Mainframe / Mini**
  - All Closed (Start)
  - Linux (Later)

- **Open Systems**
  - Mostly Closed
  - Unix Wars
  - Cards / Drives
  - Ethernet
  - TCP/IP

- **PC Server**
  - Partly Closed
  - HW Interop
  - Windows
  - Linux, BSD
  - Open Source

- **Cloud**
  - Open
  - Everything
  - Closed
  - Everything
  - Open / Closed
  - Hybrids
Profiling Organizations
We’re Probably All on a Few Spectrums

Nothing is New
Don’t Invent Here
Hardware
Evolution
Shared Destiny

Everything is New
Not Invented Here
Software
Revolution
Own Destiny
Competing Philosophies in an IT Organization

- Nothing is New
- Don’t Invent Here
- Hardware
- Evolution
- Shared Destiny
- Everything is New
- Not Invented Here
- Software
- Revolution
- Own Destiny

- Safe
- Practical
- Visionary
My Change Over the Last 10 Years

- Nothing is New
- Don’t Invent Here
- Hardware
- Evolution
- Shared Destiny
- Everything is New
- Not Invented Here
- Software
- Revolution
- Own Destiny
It’s Probably Been Done Already. Just Not for You.
Learn the Past. Make it Better.

- Nothing is New
- Don’t Invent Here
- Hardware
- Evolution
- Shared Destiny
- Practical
- Everything is New
- Not Invented Here
- Software
- Revolution
- Own Destiny
Confession:
I Was Not a Fan of OCP
Open hardware turned out to be a good idea.
More on Markets, Later
On Veteran IT Shops

(Or What I Recall from My Times in Them)

Good. Bad. Selection Pressures.
What I Love About Veteran IT

- Documented
- Systematic
- Rule Based

Fakers

Smart
Practical
No-Bullshit
Sometimes We Evolve to This

“It’s all been done.”

“Don’t touch it, it’s working.”

“It doesn’t need to change.”

“I just manage the supplier.”

“The supplier does all the engineering work.”
It’s Easy to Think This is The Reason Why
(It’s Also Often Wrong)

This is Often The Reason Why

The world was once totally broken.

We have made order from chaos.

We are not going back to chaos.

Chaos = downtime, unplanned costs, pain
We End Up Here By Solving Problems
Revolution → Chaos → Order & Stability (and often, Stagnation)

- Less Confusion, More Focus
- Less Empowerment, More Stability
- Outsource Innovation & Risk
- Pay to Solve. Pay to Blame.
Natural Evolution Towards Conservatism & Safety

- Nothing is New
- Don’t Invent Here
- Hardware
- Evolution
- Shared Destiny
- Everything is New
- Not Invented Here
- Software
- Revolution
- Own Destiny
Successful Veteran IT Values Uptime Above All
Value
On the Phenomenon of “Open”


Beer
- Cheap
- Plentiful
- Paid for by Someone Else

Freedom
- Innovative
- Idea Driven
- Future is in Your Hands.
Cost vs. Freedom to Innovate.

**Combustion**
- High supply & standardization
- Optimization: high cost, low return
- Risk in falling behind
- Cheap now. Low potential.

**Electric**
- Limited supply & standardization.
- Optimization: high cost, high return
- Risk in getting to scale
- Expensive now. High potential.
Open Source on The Spectrum

Nothing is New — Everything is New
Don’t Invent Here — Not Invented Here
Hardware — Software
Evolution — Revolution
Shared Destiny — Own Destiny
Open Source Is Both

Nothing is New
Don’t Invent Here
Hardware
Evolution
Shared Destiny

Everything is New
Not Invented Here
Software
Revolution
Own Destiny
Open Source Also Enables Freedom to Move

- Nothing is New
- Don’t Invent Here
- Hardware
- Evolution
- Shared Destiny
- Mature Open Source
- New Open Source
- Everything is New
- Not Invented Here
- Software
- Revolution
- Own Destiny
Open Source Has Happened in Each Tech Era
Value & Innovation Pressures Make It So

Mainframe / Mini
All Closed (Start)
Linux (Later)

Open Systems
Mostly Closed
Unix Wars
Cards / Drives
Ethernet
TCP/IP

PC Server
Partly Closed
HW Interop
Windows
Linux, BSD
Open Source

Cloud
Open
Everything
Closed
Everything
“History does not repeat itself, but it often rhymes.”

Open Source Has Happened.
Open Source Is Happening.
Open Source Will Continue to Happen.
...
Future Instances of It Will Have Many Similarities, Some Differences.
How this Applies to You
Why Are You Here?

The Big Question.
I Want More Control Over My Technology Stack

A Central Element of Every Hyperscale Success Story
What it’s like listening to hyperscale talks at first...
...later
Why?
Which is More Motivational: Watching a DIY Show or a Beauty Pageant?
Do It Yourself
DIY Analysis → DIY Infra

Self Analysis

Your Team. Your Stack. Your Engineers. Your Supply Chain.
We’re All Complicated

Team Resources
- Engineering
- Operations
- Supply Chain

Culture
- Risk / Reward
- Commit / Decommit
- Value of Failure

Program Management
- Complexity
- Process
- Inputs / Outputs

Vision
- Cost
- Operational Efficiency
- Innovation & Freedom
Map Your Team

- Nothing is New
- Don’t Invent Here
- Hardware
- Evolution
- Shared Destiny
- Everything is New
- Not Invented Here
- Software
- Revolution
- Own Destiny
Who Needs to Move? To Where? On Which Axis?

- Nothing is New
- Don’t Invent Here
- Hardware
- Evolution
- Shared Destiny

- Safe
- Practical
- Visionary

- Everything is New
- Not Invented Here
- Software
- Revolution
- Own Destiny
Too Much of Anything Is Not the Right Combo

- Nothing is New
- Don’t Invent Here
- Hardware
- Evolution
- Shared Destiny

- Safe
- Nothing Launched

- Practical
- Nothing Special

- Visionary
- Disaster in the Making

- Everything is New
- Not Invented Here
- Software
- Revolution
- Own Destiny
Goals & Value

Setting Goals on TCO. Determining Critical Features.
Stack Migration vs. Deconstruction.
Infrastructure-centric Apps.
Setting Goals With Infrastructure TCO

Warning: Start, Not End (For Most)
TCO Roadmap
Unit Cost Analysis
Innovate on Units
Architects & Dirty Hands Adventures in Sourcing SW Eng. & Ops Love Infra
No Critical Path Take Your Time Start Safe
What are Realistic Goals?
Talk About Your Shop in Future Sense

Now?
Six Months
One - Three Years

What Unblocked?
New Powers
More than $ Acq.

(Re)Distribute Resources
Add Services
Security & Availability
Better Utilization
Two Kinds of Stacks. Two Kinds of Teams.
You Probably Grew Your Own Cloud Practice. Grow Your Own Infra Practice, too

SaaS
PaaS
IaaS

DevOps
Sourcing

Private
Backoffice

DevOps
Sourcing
Supply Chain

Operating
System
FW / Drivers
Performance
Phased-in Bulk Deploy
Continuous Forecast
Your Goals with Infra-centric Apps

- Freedom
  Build a Tool Stack
  Great Interop

- Experimentation
  Learning Lab
  Pick Your App

- Hack to Learn
  Hack to Deploy
  Untried Stack Combinations
Tips for Getting Started
How to Get Started: Sourcing & Supply

Network
- Individual units
- Wide software choice

Storage
- Buy by the rack
- Major OS Support
- Scale-out software

Compute
- Buy by the rack
- Major OS support
- Same or New Apps

Components
- Buy off OCP Supplier AVL
- Don’t do your own
- Volume justifies AVL add
Welcome to the OCP Marketplace, where you can research products, review specifications and collateral, as well as find out how to purchase OCP products, so you can realize the many benefits of our open community. Use this tool to determine the right mix of OCP technologies to design and purchase a system that meets your specific needs.

Type of search
- Orderable Products
  - Specifications & Design
  - Collateral

Status
- OCP Accepted (72)
- OCP Inspired (31)

Architecture Category
- Network (31)

Solution Provider
- Edgcore (26)
- FTDC:HL Techno-Solutions
- Corporation (26)
- Myra Solutions (26)
- HPE (26)
- Cumulus Networks (26)
- ColorChip (1)

100G QSFP28 CWD4 LITE TRANSCEIVER
- Model #: C100-Q028
- Description: 100G QSFP28 CWD4 Lite Transceiver
- Part #: C100-Q028
- Spec #: 50136
- Manufacturer: ColorChip
- Tags: N/A
- Solution Provider: ColorChip

CUMULUS EXPRESS BACKPACK CHASSIS - FULLY POPULATED 100GBE - FRONT TO BACK
- Model #: N/A
- Description: Cumulus Express offers turnkey solution featuring an open networking switch, which is preloaded with the Cumulus Linux operating system, installed with an active license key, and bundled with 3-years of support.
- Part #: C100-13-S-5-F-B
- Spec #: 50144
- Manufacturer: Cumulus Networks
- Tags: N/A
- Solution Provider: Cumulus Networks

CUMULUS EXPRESS BACKPACK CHASSIS - HALF POPULATED 100GBE - FRONT TO BACK
- Model #: N/A
- Description: Cumulus Express offers turnkey solution featuring an open networking switch, which is preloaded with the Cumulus Linux operating system, installed with an active license key, and bundled with 3-years of support.
- Part #: C100-13-S-5-F-B
- Spec #: 50144
- Manufacturer: Cumulus Networks
- Tags: N/A
- Solution Provider: Cumulus Networks
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Search Marketplace

Type of search
- Orderable Products
- Specifications & Design Collateral

Status
- OCP Accepted (72)
- OCP Inspired (31)

Architecture Category
- Rack & Power (21)
- Network (51)
- Integrated Solution (29)
- Storage (11)
- Server (27)

Solution Provider
- Edgecore (26)
- ITOCHU Techno-Solutions Corporation (42)
- Hynix Solutions (38)
- QCT (18)
- Penguin Computing (19)
- Wayne (19)
- HPE (10)
- HPE Cloudline (5)
- Rackspace (5)
- Infortp (1)
- Compellent Networks (10)

WIWYN BRYCE CANYON (SAS12G) STORAGE SERVER WITH 1 SERVER CARD SUPPORTING 72 HOT-PLUGGABLE HDDS.

- Model: SV700002-L
- Part #: SV700002
- Spec: SAS12G
- Manufacturer: Wayfin
- Tags: N/A
- Solution Provider: WiWyn

Description: Integrated storage server that provides powerful storage capability with easy scalability. The leading SAS12G storage server in the industry, featuring up to 72 hot-pluggable HDD with redundant data.

WIWYN BRYCE CANYON (SAS12G) STORAGE SERVER COMPRISING 2 SERVER CARDS WITH UP TO 36 HOT-PLUGGABLE HDDS EACH.

- Model: SV700002
- Part #: SV700002
- Spec: SAS12G
- Manufacturer: Wayne
- Tags: N/A
- Solution Provider: WiWyn

Description: Integrated storage server that provides powerful storage capability with easy scalability. The leading SAS12G storage server in the industry, featuring up to 72 hot-pluggable HDD with redundant data.

View Details

FIND OUT HOW TO BECOME AN OPEN SOLUTION PROVIDER

FEATURE your products HERE
Tips for Getting Help from the OCP Community

- Find Like Minds
- Find Like Sizes
- Developer Focus
- Consumer Focus

- OCP Marketplace
- Solution Providers
- Travel
- Visit “The Store”

- Co-Market. **Loudly.**
- Blog. Social Media.
- Promote Who Helps

- Invest. Persist.
- Try New Things.
- Contribute, Eventually
Open Will Happen to You
Just a Matter of Time
OPEN.

FOR BUSINESS.