



Reduce Operating Expenses in Data Centers With Cumulus Linux

Overview

Open networking in the data center enables disaggregation of networking hardware from the network operating system (“OS”) that powers it. As IT organizations employ this approach, they enjoy unprecedented choice, flexibility and savings. Building the hardware infrastructure shifts from what platform is most affordable to building high capacity networks with the best hardware platforms. Managing the network shifts from what features are needed to leveraging the best operating system, data center tools and partner for a solution.

Essentially, businesses can build the infrastructure they need, with the best ecosystem, at an affordable price. Use of industry-standard (a.k.a., “white box” or “bare-metal”) switches running this OS drives acquisition cost savings, with 2-3x CapEx savings expected on average. Savings associated with CapEx only scratches the surface. In most networking organizations, OpEx is a larger component of the budget than CapEx. In fact, 451 Research reports that 61% of networking expenses are in OpEx while 39% are CapEx².

Cumulus® Linux® is the leading operating system for open networking hardware. Being Linux, it enables the richest ecosystem for open networking and drives significant OpEx savings. This paper highlights the five major contributors to these savings.

Top OpEx savings drivers

1. Choice
2. Management Tools
3. Automation
4. Architecture
5. Transparency

Choice drives flexibility

Open networking lets customers choose the best hardware and operating system for their needs by leveraging an unlocked model that increases flexibility.

- **Flexibility** – Leverage the best solution, reuse hardware, choose the best software subscription model.
- **Hardware sparing** – Spare hardware instead of purchasing expensive service contracts for hardware.

***Enterprise** — businesses can choose to spare hardware instead of incurring high cost on hardware service contracts*



- **Reduced procurement risk** – Cumulus Linux provides a wide choice of certified, compatible networking switches. It reduces procurement risks since there is no lock-in to a single vendor. Customers can choose the hardware and partner that meets their needs and lead time.

Management tools drive data center efficiencies

Since Cumulus Linux is Linux, the operating system works with many of the existing server orchestration, monitoring and configuration management tools already deployed in data centers today.

- **Network infrastructure tooling at no additional cost** – By leveraging existing tools.
- **Infrastructure wide investment** – Instead of buying specific tools for the network.
- **Streamlined data center operations** – Reduced overhead and education needed for new tools.
- **Smoother server-like OS management** – Cumulus Linux has its own package repository and automated security updates, just like server operating systems.

Zetta.io — Re-purposes standard Linux tools to build better solutions

Ooyala — Chef Cookbooks, already deployed on servers worldwide, are now utilized for servers and networks alike

Automation drives speed of service delivery

The Linux OS accelerates service delivery through the use of industry-standard automation concepts and solutions. This accelerates service delivery, reduces risks associated with human errors, and enables network teams to free precious time to focus on architectures.

- **Automated switch provisioning** – In minutes instead of days, enabled by Open Networking Install Environment (“ONIE”), zero touch provisioning, scripts and templates.
- **Workflows** – Integrate with the Linux networking OS, ensuring systematic data center orchestration instead of manual coordination between teams that can take days.
- **Correct cabling** – Prescriptive Topology Manager (PTM) compares the physical topology to a pre-determined logical topology before configuring switches and notifies administrators of errors.

University of Texas at San Antonio — 4-8x operational improvement through automated provisioning.

Large Web-Scale Cloud Provider — Prescriptive Topology Manager detects mis-cabled network ports (historically 20%) for improved deployments with fewer errors.



Architecture drives scalable architectures

IP fabrics enable affordable high capacity, simple expansion and high availability

- **High Availability** – L3 Clos fabrics are simple and use multi-pathing, leading to higher availability.
- **Affordable capacity** – Using fixed form factor switches and industry standard switches reduces overall CapEx, leaving extra budget for additional capacity.
- **Simple expansion** – L3 Clos fabrics scale out easily, simplifying the process of adding new racks without losing fabric capacity.
- **Simple troubleshooting** – Simpler architectures deliver simplified troubleshooting

***Dreamhost** — IP Fabric architecture enables scalable, resilient, simple designs with reduced mean-time-to-recovery (MTTR).*

Transparency speeds integration

Customers benefit from the transparency of Linux by leveraging existing tools, patches, easy access to a massive community of Linux experts and being able to customize at their own pace.

- **Rapid Integration and innovation** – Customize at your pace, independent of vendor upgrade cycles.
- **Rapid Deployment** – Verify source code and patches for specific releases and packages and assess the level of testing and risk prior to upgrading software to speed upgrade cycles.
- **Massive Linux community** – The Linux community spans a large pool of experts, packages and material readily available to reference and help
- **Collaboration** – Cumulus Networks contributes innovations back to the Linux community. Customers can take advantage of these innovations with Cumulus Linux or other Linux platforms.

***OrionVM:** The same automation stack works on networks without significant integration development.*

Every IT organization faced with data center capacity issues, service delivery delays, or slow feature development cycles with traditional networking vendors should carefully consider how Cumulus Linux can drive process improvements, CapEx savings, and considerable OpEx savings across these five areas.



For more information, check out these resources:

- TCO/CapEx savings calculator at cumulusnetworks.com/tco
- Cumulus Workbench remote lab at cumulusnetworks.com/cw
- Product information at cumulusnetworks.com/product/overview/

^[1] Source - Capex white paper: Bare Metal switches, is there a cost benefit?

^[2] Source - 451 Research Wave 11 Networking Study, voice of enterprise networking

About Cumulus Networks

Unleash the power of Open Networking with Cumulus Networks. Founded by veteran networking engineers from Cisco and VMware, Cumulus Networks makes the first Linux operating system for networking hardware and fills a critical gap in realizing the true promise of the software-defined data center. Just as Linux completely transformed the economics and innovation on the server side of the data center, Cumulus Linux is doing the same for the network. It is radically reducing the costs and complexities of operating modern data center networks for service providers and businesses of all sizes. Cumulus Networks has received venture funding from Andreessen Horowitz, Battery Ventures, Sequoia Capital, Peter Wagner and four of the original VMware founders. For more information visit cumulusnetworks.com or follow [@cumulusnetworks](https://twitter.com/cumulusnetworks).

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How Companies Reduce OpEx with Cumulus Linux



University of Texas at San Antonio — Speed of service delivery
4-8x operational improvement through automated provisioning.

Ooyala — Speed of service delivery
Reduced traditional cluster deployment time from months to a single weekend.



Large web-scale cloud provider — Speed of service delivery
Prescriptive Topology Manager detects mis-cabled network ports (historically 20%) for improved deployments with fewer errors.

Dreamhost — Scalable architectures
IP Fabric architecture enables scalable, resilient, simple designs with reduced mean-time-to-recovery (MTTR).



Orion VM — Rapid integration
The same automation stack works on networks without significant integration development.