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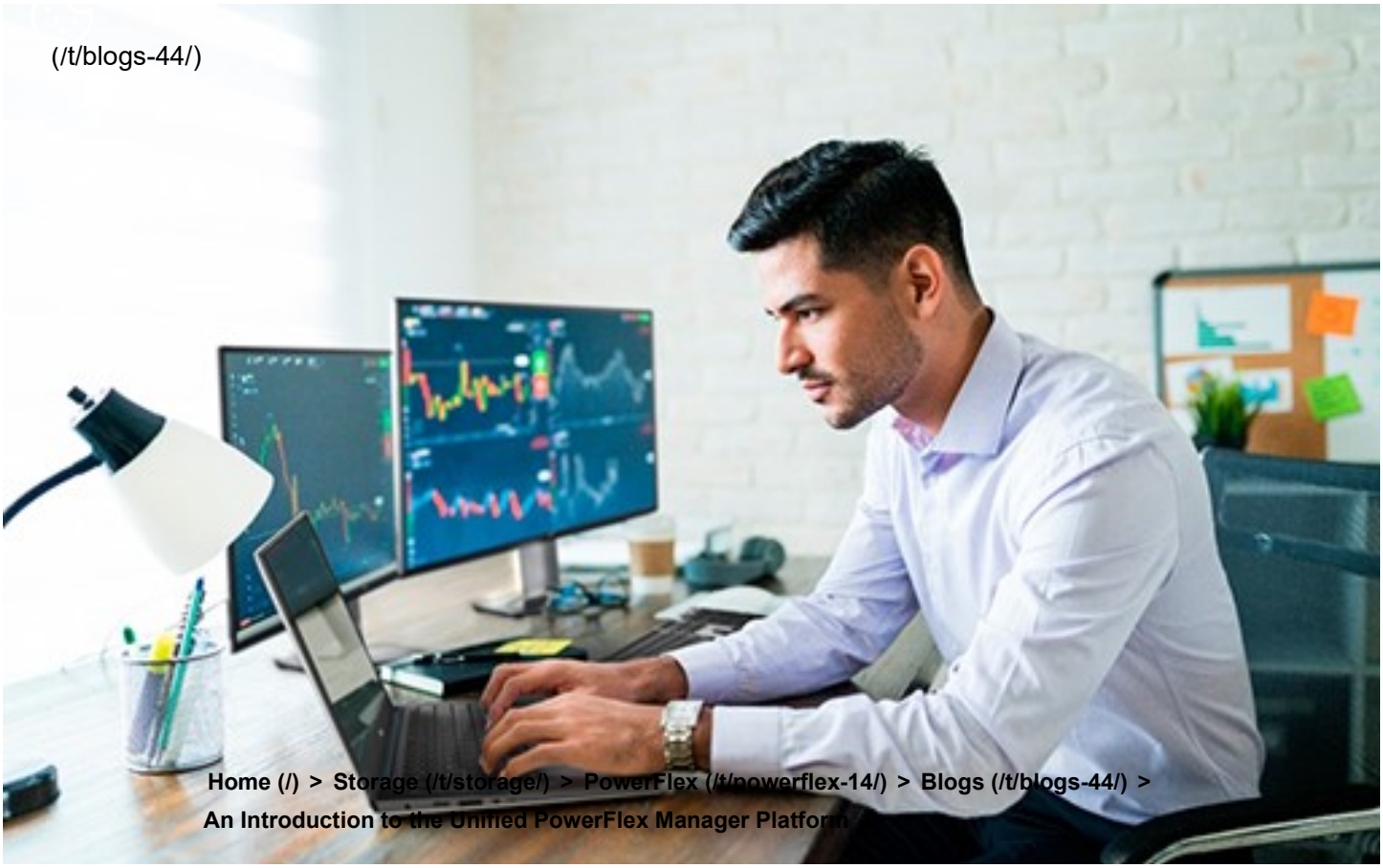

An Introduction to the Unified PowerFlex Manager Platform

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Simon Stevens Tony Foster

We have all heard the well-known quote that “Change is the only constant in life”. Nowhere is this concept more apparent than in the world of IT, where digital transformation has become accepted as a fact of life and standing still is not an option. Anyone - or anything - that stands still in the world of IT faces becoming extinct, or irrelevant, when faced with responding to the ever-changing challenges that businesses must solve to survive and grow in the 21st Century. IT infrastructure has had to evolve to provide the answers needed in today’s

When dealing with the ever-changing IT landscape, software-defined infrastructure is ideally suited to delivering answers for business change. Indeed, many Dell Technologies customers choose PowerFlex as their software-defined infrastructure solution of choice because as a product, it has changed and evolved as much as customers themselves have had to change and evolve.

However, there are times when evolution itself is not enough to bring about inevitable changes that must occur - sometimes there must be a revolution! When it comes to IT infrastructure, managers are often given the “coin toss” of only being able to pick from either evolution or revolution. Faced with such a decision, managers often choose evolution over revolution – a simpler, more palatable path.

This was the dilemma that PowerFlex developers faced – continue with various separate management planes or unify them. Our developers were already planning to introduce several new features in PowerFlex 4.0, including PowerFlex File Services and NVMe/TCP connectivity. Adding new features to existing products generally means having to change the existing management tools and user interfaces to integrate the new functionality into the existing toolset. PowerFlex has a broad product portfolio and a broad set of management tools to match, as shown in the following figure. The uptake of customers using PowerFlex Manager was proof-positive that customers liked to use automation tools to simplify their infrastructure deployments and de-risk life-cycle management (LCM) tasks.

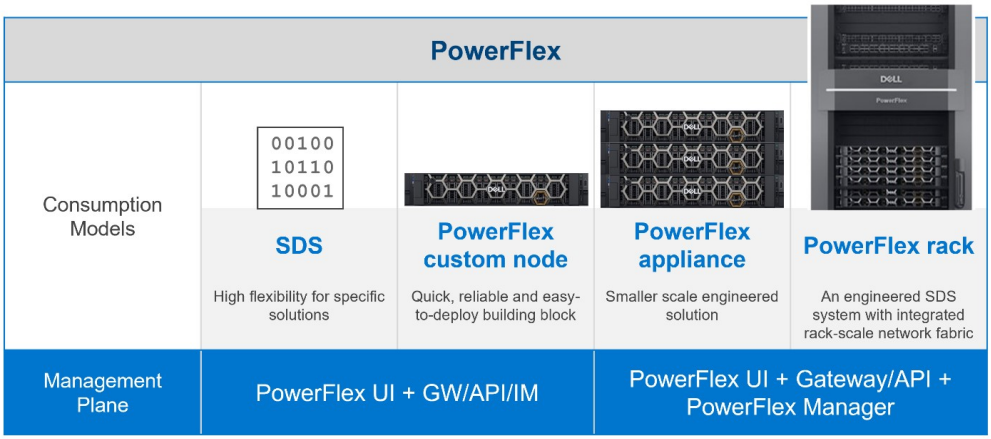

Figure 1: PowerFlex management planes, before PowerFlex 4.0

surface in the future, as the onward progression of IT transformation continues.

Aiming to enhance the hybrid datacenter infrastructure that our customers are gravitating towards, simply evolving the existing management planes was not going to be sufficient. The time had come for revolution instead of evolution for the world of PowerFlex management.

The answer is simple to state, but not easy to achieve – design a new Management & Orchestration platform that reduces complexity for our customers. The goal was to simplify things by having a single management plane that is suitable for all customers, regardless of their consumption model. Revolution indeed!

Given a blank drawing board, the PowerFlex Team drew up a list of requirements needed for the new PowerFlex Management stack. The following is a simplified list:

- Unified RBAC and User Management. Implement single sign-on for authentication and authorization, ensuring that only a single set of roles is needed throughout PowerFlex.
- Have a single, unified web UI – but make it extensible, so that as new functionality becomes available, it can easily be added to the UI without breaking it. The addition of “PowerFlex File Services” with PowerFlex 4.0 is proof that this approach works!
- Create a single REST endpoint for all APIs, to ensure that both the legacy and the modern endpoints are accessible through a standardized PowerAPI.
- Ensure that the management stack is highly available, self-healing, and resilient.
- Centralize all events from all PowerFlex components – the SDS itself, switches, nodes, and resources, so that it simplifies the generation of alerts and call home operations.

Faced with this wish list, the team decided to build a new “unified” PowerFlex Manager to satisfy the “one management pane” requirement. But how to deliver a UI that is flexible enough to deal with serving different applications from a single web UI? How can this support a highly available and extensible management platform? It became clear to all that a new M&O stack was needed to achieve these aims and that the answer was to leverage the use of microservices, running as part of a larger, containerized platform.

certificate management, identity management, secrets management. It also manages Docker and Helm registries.

Using this new platform as a base, the PowerFlex Team then deployed additional microservices on top of it to micro-manage services specific to PowerFlex. Different micro-frontends can be called upon, depending on the operational context. While the overall PowerFlex Manager GUI application can be run as one “generic” UI, it can call out to different micro-frontends when required. This means that implementing and using microservices simplifies the transfer of previous element managers into the unified PowerFlex Manager world. For example, the traditional PowerFlex Block UI (the PowerFlex Presentation Server UI from PowerFlex 3.6) is now treated as one microservice, while the PowerFlex Manager Lifecycle Manager is now handled by several microservices all working in tandem. Plus, it becomes simple to add a new micro-frontend to handle the “PowerFlex File” functionality that has been released with PowerFlex 4.0 into the GUI as well. Because each GUI section now has its own micro-frontend, the UI now meets the “flexible and extensible” requirement.

This flexibility gives our existing PowerFlex customers assurance as they move from version 3.6 to 4.0. And equally important, it means there is now a single unified manager that can cover all consumption models, as shown in the following figure:

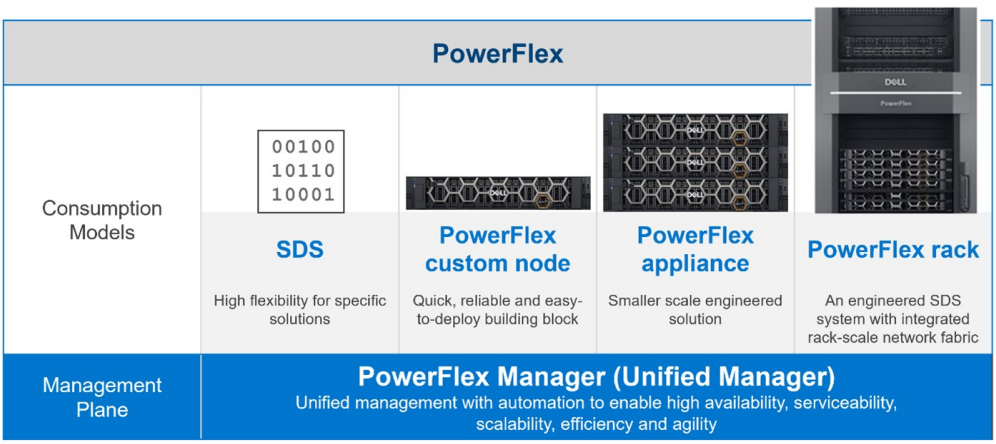

Figure 2. The unified PowerFlex Management Plane with PowerFlex 4.0

Finally, what does the new unified PowerFlex Manager look like? Existing

Services tabs respectively:

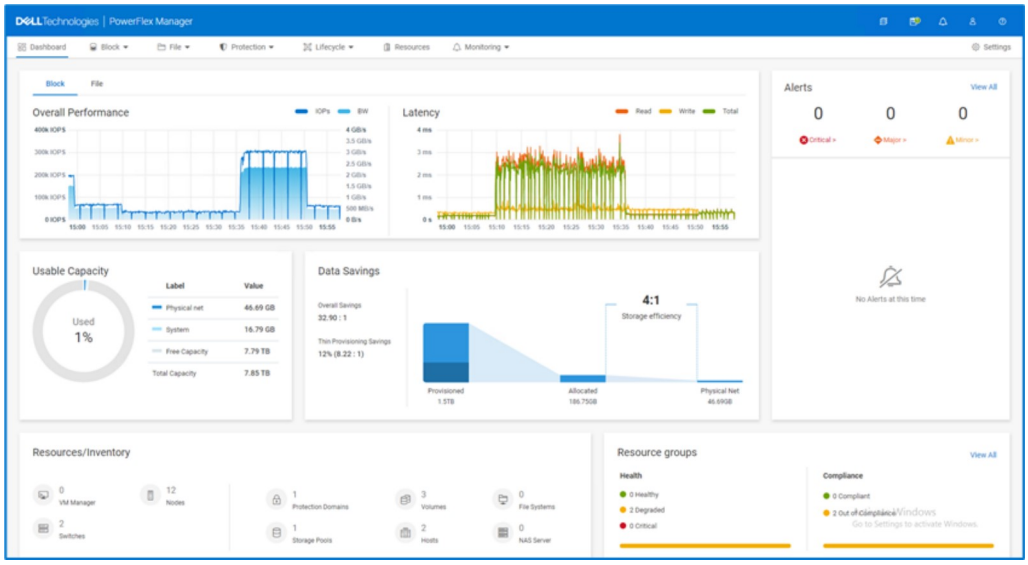

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Figure 3. The unified PowerFlex Manager 4.0 Dashboard

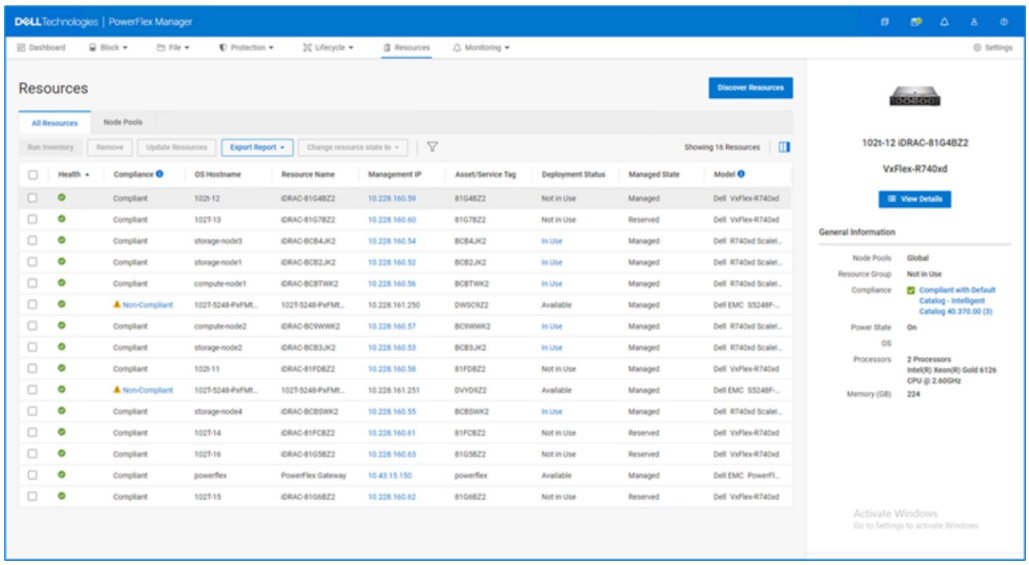

Figure 4. The unified PowerFlex Manager 4.0 – Resources

While we cannot stop progress, we can always excel when faced with an ever-changing landscape. Customers already choose PowerFlex when they want to deploy highly performant, scalable, resilient, and flexible software-defined

they are, can be handled easily when deployed on top of PowerFlex.

The enhancements made to PowerFlex provide many possibilities for modern datacenters and their administrators, especially when faced with the constant digital transformation seen in IT today. This is seen in how the various PowerFlex management consoles have been unified to allow continued change and growth to meet organizations' needs. Yet, there is also continuity with previous versions of the UI, ensuring an easy transition for users when they have migrated to 4.0. If you are interested in finding out more about PowerFlex and all it has to offer your organization, reach out to your Dell representative.

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Anyone who has used or managed PowerFlex knows that an environment is built from three lightweight software components: the MDM, the SDS, and the SDC. To deploy a PowerFlex environment, the typical steps are:

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What to do with all that data? Answer: SingleStore on PowerFlex

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Every organization has data, every organization has databases, every organization must figure out what to do with all that data from those databases. According to research by the University of Tennessee, Knoxville's Haslam College of Business (https://haslam.utk.edu/news/happy-

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