INSIDE THE DELL POWERMAXOS 10.1 RELEASE

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OVERVIEW

Dell Technologies has updated its high-end block storage OS, PowerMaxOS, with version 10.1. The update focuses on several key areas, including data reduction, power usage monitoring, and cybersecurity certification.

Dell has increased its data reduction guarantee from 4:1 to 5:1 for open systems, improving efficiency and reducing the need for additional storage arrays. The update also includes real-time energy and environmental monitoring, allowing customers to monitor heat, humidity, and power draw within racks.

PowerMaxOS 10.1 introduces cybersecurity enhancements, including Transport Layer Security (TLS) 1.3 for better authentication and Security Technical Implementation Guide (STIG) compliance for certain PowerMax models. Anomaly detection in I/O patterns and Cyber Intrusion Detection for z Systems are also part of the update.

DELIVERING INCREASED EFFICIENCY

Dell's new PowerMaxOS 10.1 update introduces several new storage efficiency features aimed at making data centers more sustainable and energy-efficient:

- **Real-time Monitoring**: The release includes a real-time power and environmental monitoring dashboard. This allows users to monitor power for all components in a rack, including voltage, current, and frequency. Additionally, it provides insights into the temperature and humidity of the storage rack. Organizations can make informed decisions to optimize their energy usage with these metrics.

- **Dynamic Data Mobility**: This feature enables the relocation of workloads to different arrays, ensuring that resources are maximized and utilized efficiently.

- **Enhanced Data Deduplication and Compression**: The update introduces improved data deduplication and compression technology. It promises a new 5:1 data reduction guarantee for open systems.

- **Performance Efficiency**: The new PowerMaxOS release offers up to 2.8 times more performance per watt of energy consumed. This boosts the efficiency of data processing and can lead to significant electricity cost savings.

- **Data Reduction Guarantee**: Dell has improved data efficiency by increasing the data reduction guarantee from 4:1 to 5:1 for open systems data. This means that for every unit of data stored, the updated PowerMaxOS can reduce it to just one-fifth of its original size through deduplication and compression. This enhancement helps organizations make more efficient use of their storage capacity.

- **Enhanced Capacity**: The update includes significant advancements in productivity and efficiency, resulting in a remarkable 14x increase in capacity per rack unit compared to the previous release. This means that organizations can store more data in the same physical space, which can lead to cost savings and reduced data center footprint.

- **Power Efficiency**: Power efficiency is another critical aspect of data efficiency. Dell has introduced a real-time Power Consumption Dashboard, powered by an intelligent Power Distribution Unit (iPDU), to monitor and optimize power usage. By providing insights into power consumption, organizations can better plan their workloads, reduce energy costs, and minimize their environmental impact.

- **Environmental Impact**: The update also highlights a reduction in CO_2 emissions by an impressive 82 percent compared to previous models. This reduction contributes to a more sustainable and environmentally friendly solution, aligning with the growing focus on environmental responsibility in data center operations.

- **Compression Engine Hardware**: To achieve these data reduction and power efficiency improvements, Dell has introduced a new compression engine hardware card inside the PowerMax chassis. This hardware enhancement plays a crucial role in optimizing data storage and power consumption.

This a solid set of improvements emphasizing the environmental and cost-saving aspects of efficient storage management. Combined with what Dell was already delivering with PowerMax, these new features will help users build a more energy-efficient, sustainable data center.

INCREASED CYBER-RESILIENCY

The cyber resilience elements in Dell's PowerMaxOS 10.1 update focus on strengthening the security and resilience of data storage systems, particularly in the face of cyber threats. Here are the key cyber resilience elements:

- **Storage-Based Cyber Detection**: One of the significant additions in PowerMaxOS 10.1 is the introduction of storage-based cyber detection. This feature is tailored for mainframe environments, which are often high-value targets for cyberattacks. By incorporating cyber detection directly into the storage system, PowerMax can identify and respond to potential cyber threats more effectively, enhancing the overall security posture.

- **TLS 1.3 Support**: The update includes support for Transport Layer Security (TLS) 1.3, which is a modern and secure protocol for encrypting data in transit. TLS 1.3 improves authentication and encryption, making it harder for attackers to intercept or tamper with data while it's being transferred.

- **STIG Compliance**: PowerMaxOS 10.1 has received certification from the US Federal Department of Defense (DoD) and is listed on the Approved Products List. This certification ensures that PowerMax complies with stringent security standards outlined in the Security Technical Implementation Guide (STIG), which is a set of cybersecurity guidelines and best practices. It includes measures like intrusion detection alerts, user lockout policies, and other safeguards to enhance security.

- **Data Sanitizer**: Before decommissioning an array, this tool uses a NIST-compliant process to erase all data, ensuring that old storage systems don't pose a data leakage risk.

- **Anomaly Detection**: The update introduces intelligent anomaly detection based on pattern recognition of performance, capacity, and data reduction. This feature helps identify unusual activities or deviations from normal behavior, which could be indicative of a cyberattack or security breach. Administrators can take proactive actions based on these alerts to mitigate potential threats.

- **Predictive Analytics and Remediation**: Dell's CloudIQ, integrated with PowerMaxOS 10.1, adds an AI/ML-based predictive analytics engine. This engine can predict potential issues related to storage and recommend proactive remediation actions. By identifying and addressing potential vulnerabilities before they occur, organizations can strengthen their cybersecurity posture.

- **Redundancy and Availability**: Cyber resilience also includes ensuring that data remains available and accessible, even in the face of cyberattacks. PowerMax includes features like SRDF/Metro SmartDR (SRM) for mission-critical availability and NVMe/TCP support for VMware vVols, which can enhance data redundancy and availability.

- **Cyber Intrusion Detection for z Systems (zCID)**: PowerMaxOS 10.1 introduces the industry's first mainframe storage-based intrusion detection system. This feature monitors z/OS workloads, identifies normal variations in the system, and establishes user-customizable rules that trigger alerts if an intrusion is detected.

- **Security Awareness and Reporting**: PowerMaxOS 10.1 offers real-time telemetry and monitoring capabilities, allowing organizations to stay informed about power consumption, environmental conditions, and potential security risks. This awareness enables storage administrators to make informed decisions and respond to security incidents promptly.

These cyber-resiliency enhancements in PowerMaxOS 10.1 are pivotal in a world where data breaches and cyber threats are rampant, ensuring that data stored within the system remains secure and uncompromised.

UPDATED AUTOMATION & AIOPS

Automation and AIOps (Artificial Intelligence for IT Operations) are being rapidly adopted within nearly every IT organization. This allows IT administrators to streamline operations, eliminate redundancy, and optimize storage infrastructure by reducing manual intervention and ensuring more efficient and accurate operations.

The new update introduces automation and AIOps (Artificial Intelligence for IT Operations) features to streamline storage management, enhance efficiency, and improve overall system performance. Here are the key automation and AIOps features:

- **Dynamic Data Mobility**: Dynamic Data Mobility is an automation feature that enables the seamless movement of data between supported PowerMax and non-PowerMax storage arrays. This functionality is akin to VMware's vMotion for storage. It allows organizations to automatically discover, configure, and migrate data across storage arrays. This feature optimizes workload placement, load balancing, and migration, providing flexibility to adapt to changing business conditions.

- **AI-Driven Autonomous Health Checks**: PowerMaxOS 10.1 incorporates AI-driven Autonomous Health Checks through pattern recognition and predictive analytics. These checks identify potential vulnerabilities and issues before they occur. When vulnerabilities are detected, proactive remediation recommendations are sent to the system log for corrective action. This helps organizations maintain system health and prevent downtime or performance degradation.

- **Power Consumption Dashboard**: The PowerMaxOS update includes a real-time Power Consumption Dashboard. This dashboard is powered by an

intelligent Power Distribution Unit (iPDU) that integrates with PowerMax. It provides actionable insights into power usage, environmental conditions, and power planning. Administrators can monitor electricity consumption, voltage, current, external temperature, and humidity within the data center racks. This real-time monitoring enables organizations to optimize power usage efficiently.

- **Predictive Analytics Engine**: CloudIQ, integrated with PowerMaxOS 10.1, incorporates a predictive analytics engine. This engine uses AI and machine learning to predict imminent behavior related to storage performance, capacity, and health. It can anticipate capacity needs, suggest how to reclaim unused storage, and identify and resolve performance bottlenecks. By providing proactive recommendations, CloudIQ helps administrators optimize their storage infrastructure.

- **Anomaly Detection**: Both PowerMax and CloudIQ feature intelligent anomaly detection based on pattern recognition. This functionality identifies deviations from normal performance, capacity, or data reduction behavior. Anomalies can be indicative of potential security threats or system issues. When anomalies are detected, administrators receive alerts, allowing them to take immediate action to mitigate risks.

- **Integration with Unisphere**: Unisphere for PowerMax, which has been enhanced in the update, now offers AIOps capabilities. It provides administrators with a comprehensive view of system health and performance. The new version of Unisphere takes monitoring and health checks from descriptive to predictive, automating IT operations processes through event correlation, anomaly detection, and causality determination.

- **Recommendation Engine**: Unisphere includes a recommendation engine that suggests actions to mitigate issues or optimize system performance. These recommendations are based on AI-driven insights and best practices. Administrators can follow these recommendations to ensure the efficient operation of their storage systems.

Dell also introduces a new software defined NVMe/TCP utility to aid in automating storage resource setup using NVMe/TCP. This can reduce the setup time for these resources by up to 44%.

ANALYSIS

PowerMax emphasizes using modern AI technologies and automation tools to make the storage infrastructure more intelligent, efficient, and easier to manage. This improves the system's performance and security and frees IT personnel from routine tasks, allowing them to focus on strategic initiatives.

There's a lot of goodness in the new PowerMax software release. The latest version brings greater data reduction capabilities. The new data reduction guarantee increased from a 4:1 ratio to 5:1 for open systems. Such improvements in data reduction not only mean storage savings but also translate to operational efficiencies, especially vital in uncertain economic times. The faster evolution of Dell's data reduction capabilities, moving from 3.5:1 to 4:1 and now to 5:1 within a few years, showcases the company's commitment to drive storage efficiency.

The update also underscores the importance of cybersecurity in today's digital landscape. The features contained within this update are significant and welcome. The added Cyber Intrusion Detection for Z Systems is a notable step in ensuring mainframe security.

The closest competitive solution to PowerMax is Pure Storage's FlashArray//XL, which has an equally compelling sustainability and density story. Competition is good for enterprise IT. It drives choice and ensures that critically essential features, such as those in the new PowerMaxOS release, continue evolving.

Dell is the number one storage vendor in the world by a wide margin. The company could easily rest on its laurels, but it instead continues to innovate to deliver the features most needed by enterprise IT. The new PowerMaxOS update is simply another example of Dell's continuing innovation in enterprise storage.