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Akorri BalancePoint: Cross-Domain Analytics & Capacity Management for the Virtual Data Center

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Enterprise data centers are getting more complex by the day. Huge data stores, critical applications, consolidation, virtualization, and complicated interdependencies make it extremely difficult to thoroughly analyze and optimize business applications across servers, network and storage. Frequently cross-disciplinary teams formed of network storage administrators, server administrators, network administrators, DBAs, and others must attempt to manage and trouble-shoot without good (or any) insight into cross-domain structure and challenges.

Virtualization, specifically server virtualization, has emerged as a tried and true approach for driving up utilization rates and gaining greater agility over the infrastructure. Server virtualization solutions have become the de facto approach to enable wide scale consolidation of multiple physical servers and their applications onto a single pool of centrally managed, highly utilized CPU capacity. However, with this transformation come new challenges. In this brave new world, virtualization complicates visibility, capacity, and performance management.

To combat these new challenges of a virtualized infrastructure, a new discipline has emerged: Cross-Domain Correlation in Virtualized Environments. Cross-Domain Correlation offers deeper and broader insight into multiple layers of the technology stack including applications, server, switches and storage. In addition to advanced insight, Cross-Domain Correlation also provides fine-tuned control mechanisms to optimize the virtualized data center end-to-end.

Akorri has stepped into the forefront of this new technology and management discipline with Akorri BalancePoint. BalancePoint examines, analyzes, and optimizes end-to-end application performance across infrastructure and provides the requisite visibility into virtualized infrastructure. This Product Profile will spotlight Akorri's cross-domain capabilities and its role in the virtualized data center.

The Challenges of a Virtual Data Center

Consolidated infrastructure sports many heterogeneous touchpoints and interdependencies rising from new technologies like Web server-based applications and service-oriented

architecture (SOA). Virtualization too is increasingly omnipresent at all levels of the technology stack including servers, network switches, and back-end storage. Yet IT organizations lack comprehensive and cost-effective methods of correlating business application performance with infrastructure investment. Over-provisioning is rampant,

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service levels go begging, and troubleshooting requires massive amounts of manual effort from multiple stakeholders.

It's not that management tools do not exist, they do. But they concentrate on optimizing the infrastructure around narrow stovepipes in the technology stack. They do not provide cross-domain and application-centric knowledge and remediation — the very thing that today's complex data center requires.

Challenge Specifics

- *Infrastructure changes made in the dark.* Data center administrators make changes to the infrastructure, even though they lack a complete understanding of how the changes will affect each individual application.
- *Unhappy users, unhappy business.* Application users are often the first to be affected by application slowdowns and failures, and unavailable databases and email applications can deeply impact worker productivity. Performance and availability issues also affect the business's bottom line by evaporating time, resources and money.
- *Manual troubleshooting and awkward change management.* Managing application problems takes a large time commitment from multiple data center stakeholders, taking time away from strategic projects. Change management is equally difficult because the lack of visibility makes diagnosis highly suspect, and there is no good way to track resource changes over time.

- *Over-provisioning.* Lacking visibility into the tiered infrastructure, many data center administrators simply throw more capacity into primary and secondary storage tiers in an effort to hold off performance and capacity problems.
- *Threatened service level objectives (SLOs).* The inability to correlate critical applications with the infrastructure, along with difficulties in making comprehensive performance improvements, threatens service level objectives.

Business Case for Cross-Domain Correlation in the Data Center

Cross-domain correlation offers cross-domain analytics and remediation in the virtualized data center. Able to correlate both physical and virtual resources, capabilities include extracting data from multiple sources and layers in a heterogeneous infrastructure, support for near real-time insights, and the ability to perform analysis and remediation throughout the application workflow path. Significant advantages include:

- *Businesses can accurately plan changes in application workloads and infrastructure.* Changes to the application will not compromise the infrastructure, nor will infrastructure changes have a negative impact on the application.
- *Database administrators and users will not be unpleasantly surprised by application slow-downs or stoppages.* Cross-domain correlation visualizes and remediates poorly aligned, conflicting, or over-capacity resources throughout the application data path. Resources and

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connections can be both physical and virtual.

- *Cost-effective and highly automated cross-domain root cause analysis saves time and money.* This allows effective troubleshooting across the entire technology stack and allows data center administrators to efficiently optimize both applications and infrastructure.

Enter Akorri BalancePoint

Akorri was founded in January 2005 and is based in Littleton, Massachusetts. Akorri introduced their BalancePoint software to the enterprise data center in January 2007.

Akorri BalancePoint is a cross-domain discovery and analysis software that currently ships on an appliance and provides end-to-end visibility, monitoring, modeling and analysis between applications and infrastructure. Akorri addresses serious issues in the consolidated and virtualized data center: it provides discovery, transparency and centralized views across the entire data center technology stack, is application-centric, and operates in the heterogeneous environment that is the reality in today's data center. BalancePoint bridges the management gap between applications and their infrastructure by correlating, analyzing, and presenting cross-domain information.

Its agent-less architecture simplifies data center architecture and provides ease of deployment and ongoing maintenance. BalancePoint continually models application infrastructure to create a near real-time

performance model of applications and their resources. Akorri provides a knowledge base, auto-discovery, and collection of application performance across both physical and virtualized infrastructure components.

BalancePoint software is agent-less. Once the appliance is attached via standard Ethernet ports, a wizard leads the user through identifying IP address ranges of server and storage resources. The engine quickly validates elements and places them into its Performance Relational Database (PRDB) knowledge base. Once the discovery process is complete, BalancePoint Examiner then communicates with and validates the elements within affected IP address ranges along with the model of the application environment. The outcome is ViewPoint Topology, a detailed performance-based view of the application infrastructure topology, resources, dependencies, and usage. From then on BalancePoint performs a continuous data collection process that dynamically updates the ViewPoint Topology and reports on current service levels. BalancePoint yields application-specific information in a consistent viewscreen and can drill down to detailed reports on database, file email, and streaming media applications.

BalancePoint provides two modules with a single interface: Examiner for cross-domain visibility and Analyzer for cross-domain analysis.

BalancePoint Examiner: Cross-Domain Visibility

Effective cross-domain management requires the ability to discover, monitor, and measure

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resources across both application and infrastructure. Examiner monitors performance and SLO compliance, and identifies root causes of poorly performing applications.

Examiner is agent-less for fast deployment and upgrade cycles and for non-disruptive discovery and data collection across applications, servers, and storage. Examiner maps applications directly to their infrastructure resources, which allows IT to visually track resource health and alignment.

Examiner discovers the topology of the data center, including visualizing both physical and logical relationships between applications and infrastructure elements. The module includes information on performance and dynamically updates all resources belonging to its range of IP addresses in near real-time. Examiner also offers cross-domain insight into application and infrastructure performance and drills down into multiple data center layers. BalancePoint's constantly updated knowledge base provides an accurate and time-based model of the application environment. This near real-time performance modeling enables Examiner to conduct SLO monitoring and issue performance-based alerts when SLO is threatened. The alerts provide immediate cross-domain analysis to pinpoint even obscure problems.

Examiner also offers Application Fingerprinting, which models application workloads and matches them to the state of the application's infrastructure. A single view (fingerprint) summarizes an application's

status and health, which allows IT to base resource planning on application performance rather than mere capacity.

BalancePoint Analyzer: Cross-Domain Analysis

The Analyzer module interacts with application and infrastructure events, allowing administrators to set dynamic thresholds based on historical behavior, make predictive analyses, and effectively manage seasonal spikes. For example, application-aware storage analysis automatically characterizes disk group workloads and identifies disk groups' over- or under-utilization. Analytics help to determine if volumes should be migrated and if the disk group can support additional capacity or performance. Application-aware storage management also provides intelligent provisioning, identifies optimal infrastructure for application workloads, and performs application-aware LUN and volume migration.

BalancePoint Analyzer works across multiple domains of application, servers and storage. Analyzer automatically cross-correlates application performance indicators with infrastructure contention and provides a single view across domains. Analyzer turns resulting information into actionable recommendations that allow IT to both remediate and optimize their infrastructure to serve application needs.

Time-series visualization provides interactive visuals of meaningful resource utilization metrics. The technique's contextually relevant information allows historical trend analysis. Sophisticated Delta-Time analysis

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compares changes in application performance over time, which allows IT to assess unplanned events and to track and validate purposeful changes.

BalancePoint 1.5

Building on its main product features, Akorri has released BalancePoint 1.5 with new VMware and Oracle capabilities as well as a comprehensive set of features for application-aware storage management.

BalancePoint and VMware

BalancePoint 1.5 enables comprehensive IO performance analysis into VMware along with the ability to drill-down into back-end storage. This protects and optimizes VMware environments by improving application performance, troubleshooting and server consolidation, and enabling production application deployments on VMware.

BalancePoint's collection of VMware features provides unique tools for VMware environments. The tools include discovery, end-to-end performance visibility, and accelerating VMware in production environments.

Examiner for VMware provides discovery, application fingerprinting, infrastructure topology and reporting for VMware environments. Examiner for VMware allows visibility into VMware environments from application to storage. And since Examiner for VMware is VMotion aware, BalancePoint data travels with the guest as it moves.

Analyzer for VMware provides cross-domain analytics in VMware environments along

with storage analysis and recommendations. This deep level of specific analysis enables data center administrators to consolidate virtualized servers. BalancePoint's VMware features include end-to-end performance visibility for ESX Server and VM guests, which enhance Virtual Center management and provide performance visibility and control.

BalancePoint and Oracle

Examiner for Oracle provides deep insight into Oracle deployments. Examiner automatically maps Oracle databases to storage infrastructure including instances and schema elements. Examiner also creates an Oracle topology and provides visibility into complex Oracle deployments, as well as troubleshooting Oracle performance and capacity issues.

Dynamic Thresholds and Storage Analysis

These BalancePoint features include GuidePoint Dynamic Thresholds and GuidePoint Storage Analysis. Dynamic Thresholds predicts performance for the next 48 hours based on historical behavior, which helps to manage seasonality and identify spikes in future activity. GuidePoint Storage Analysis uses advanced analytics to assess storage system utilization and performance to help match application workloads to the appropriate storage resources, and provides new intelligent LUN and volume migration tools.

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BalancePoint Benefits

- **Performance optimization and improvement.** Improves application performance across entire data center infrastructure and optimizes infrastructure for applications.
- **SLO compliance.** Guards against application slow-downs and resource failures.
- **End-to-end troubleshooting and performance optimization.** Cross-domain root cause analysis enables deep insight into the entire application data path. In turn this slashes the time administrators must spend to troubleshoot and optimize their data centers.
- **Maximizes data center TCO.** BalancePoint enables intelligent provisioning and capacity planning, which leverages existing resources and optimizes future planning and purchases.
- **Change management.** Deep and broad visibility allows accurate diagnosis along the entire technology stack. This enables administrators to make changes to applications or infrastructure without guessing (or being surprised) at ripple changes. Change management also has historical value, since BalancePoint tracks

changes and outcomes over time for a variety of resources across the data center.

Taneja Group Opinion

Akorri BalancePoint allows IT to gain deep levels of insight and remediation within their complex environments and to optimize capacity and performance levels for what matter the most - applications. Taneja Group believes that Akorri BalancePoint is at the forefront of the Cross-Domain Correlation movement. BalancePoint is already a front-runner in the campaign to gain insight and control over all layers of the highly virtualized data center.

Akorri BalancePoint's cross-domain discovery and analytical engine simply and quickly discovers and validates resources, safeguards SLO for applications, guards against under- and over-provisioning, enables cross-functional teams to work together to optimize the data center, and improves ROI by treating applications and infrastructure holistically rather than as a collection of discrete parts. We will watch Akorri with interest, and anticipate that BalancePoint will become a critical component of managing and optimizing the highly complex data center of tomorrow.

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