

Virtana Infrastructure Performance Management (IPM) Analytics

Energize Your AIOps Initiatives with Virtana IPM's Unique Lifecycle Approach

Essentials

Proactively resolve problems and deliver meaningful MTTR reductions through:

- Automatic alarm noiser education through a case-based approach
- Anomaly detection that understands seasonal business behavior
- Cross-domain correlation based on intelligent pattern recognition
- Guided automatic analytical runbooks
- Collaborative discussions and status tracking
- Actionable recommendation store solve infrastructure issues

Continuously balance infrastructure utilization

- Proactively balance and move workloads across hosts, clusters, SANs and storage arrays
- Right size VMs to assure workloads receive the resources they need and reclaim what they don't
- Optimize storage paths & host queues
- Eliminate risk by automating adherence to change management practices

Proactively plan for workload capacity

- Audit global storage capacity, analyze the effect of deduplication and compression
- Forecast and be alerted to how many days or weeks before existing capacity is exhausted across compute, network & storage
- Capture, analyze and simulate workloads in the lab with WorkloadWisdom
- Plan future application workload deployments based on existing workload profiles

Virtana Infrastructure Performance Management (IPM) Lifecycle Approach to AIOps

The hybrid applications that power today's business are complex, integrating multiple providers, clouds, products and partners. They span multiple clouds and data centers at once with unimaginable scale making it impossible for human minds to contextualize and correlate all the potential causes of application slowdowns.

IT Infrastructure operations team must resolve, and if possible, avoid potential issues before they impact the business, its partners, and customers.

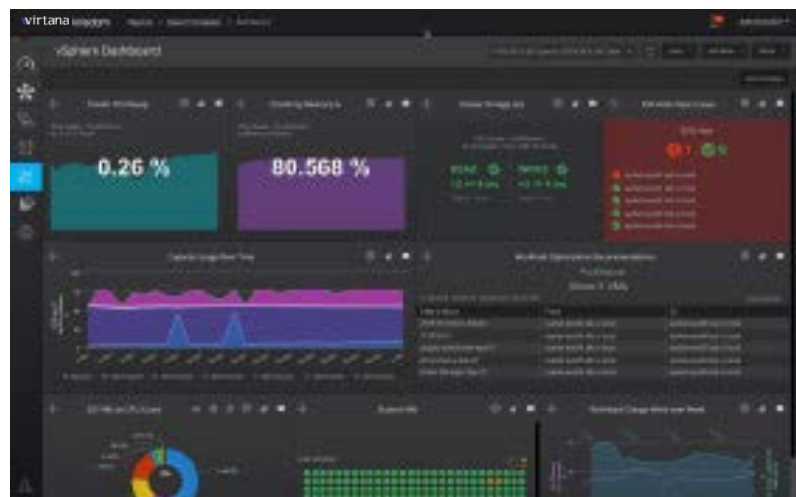


Figure 1 - Virtana IPM's Proactive Dashboard Analytics

Designed from the ground up as an AIOps platform, Virtana IPM utilizes a unique lifecycle approach to delivering intelligent AI-powered infrastructure operations.

Virtana IPM delivers an intelligent platform that monitors, unifies, streamlines, and automates IT operations through a unique, app-centric approach to hybrid infrastructure management that assures deep insights into application performance, consumption and service levels.

It starts with planning capacity for new application workloads while ensuring the needs of those already in production are met. Virtana IPM continually looks for opportunities to avoid resource contention



and exhaustion by forecasting, moving and balancing workloads across the available infrastructure, while adhering to change governance policies.

Problems occur in even the best-run infrastructures. Virtana IPM will meaningfully reduce the Mean-Time-To-Resolution (MTTR) of any hybrid infrastructure issue. It eliminates IT war rooms by automatically detecting, triaging, contextualizing impact, identifying the causes of issues, and providing actionable recommendations, without having to open a conference call.

Virtana IPM combines its app-centric understanding, with a real-time, full-stack view of infrastructure health, performance & capacity to assess short & long-term trends. Building on its heritage as a lossless storage wire- data monitoring platform, Virtana IPM collects machine data, wire data and ecosystem data at frequency and granularity unmatched in the industry.

In a world where transaction times are now measured in microseconds, most monitoring solutions aggregate data points at 1, 5, 10- or even 15-minutes, leading to visibility blind spots that are unacceptable to today's global real-time hybrid applications. Virtana IPM uses the most granular data available for any monitored environment and ensures that data fidelity is not lost through aggregation or averaging. Put another way; better data leads to better decisions, which leads to better outcomes for application workloads.

Virtana IPM applies lifecycle analytics to plan, optimize, and resolve application workload and hybrid infrastructure health, performance and capacity issues using artificial intelligence. In the case of Virtana IPM, this includes machine learning, statistical methods and heuristics. Put imply, Virtana IPM chooses the best analytic approach for the task at hand.

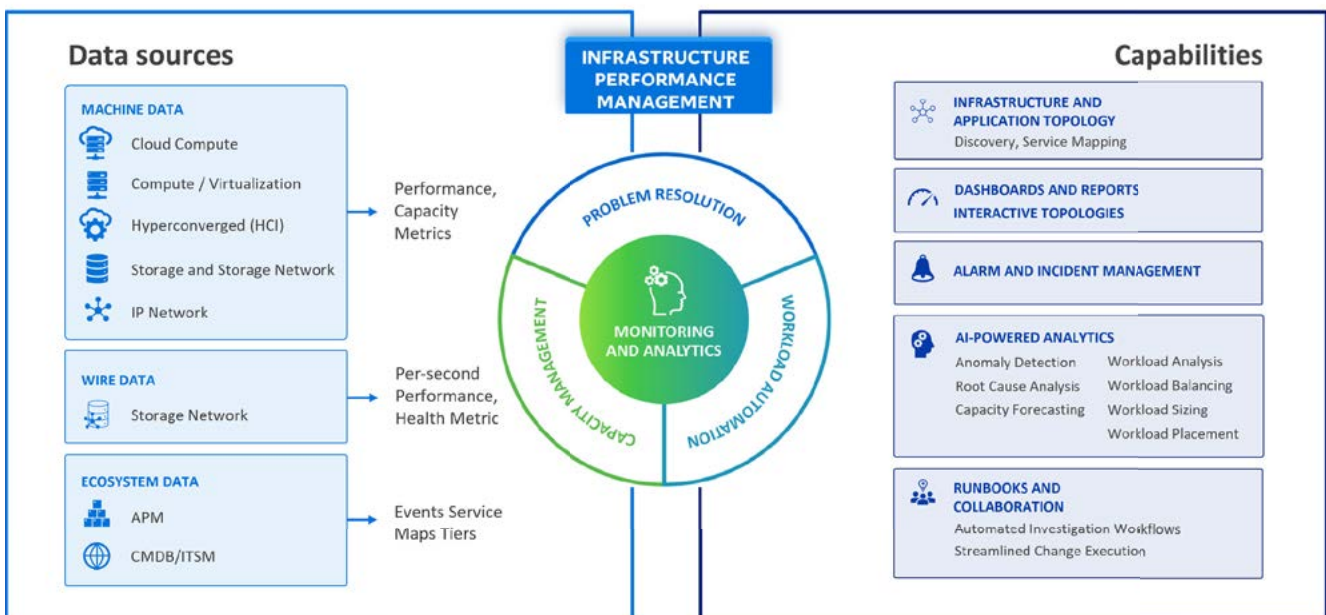


Figure 2 - Virtana IPM Platform Overview



Virtana IPM lifecycle analytics provide an industry-leading capability in three operational lifecycle areas:

- **Problem Resolution** – Analytics to rapidly identify potential issues, triage and resolve before they impact application service delivery and workload performance.
- **Workload Automation** – Analytics to continuously balance your infrastructure, eliminate points of failure and optimize or reclaim resources.
- **Capacity Management** – Analytics to audit available capability, forecast time remaining in days, week, months or years before exhaustion occurs and plan for new workloads and capacity needs.

While Virtana IPM creates implementation scripts to automate workload and infrastructure changes, it realizes the importance of managing risk and assuring compliance. In addition to creating or updating incidents, Virtana IPM’s Workload Automation analytics automatically opens change tickets to implement recommendations. Implementation scripts are then attached directly to tickets to ensure change management processes are followed and potential risks are mitigated.

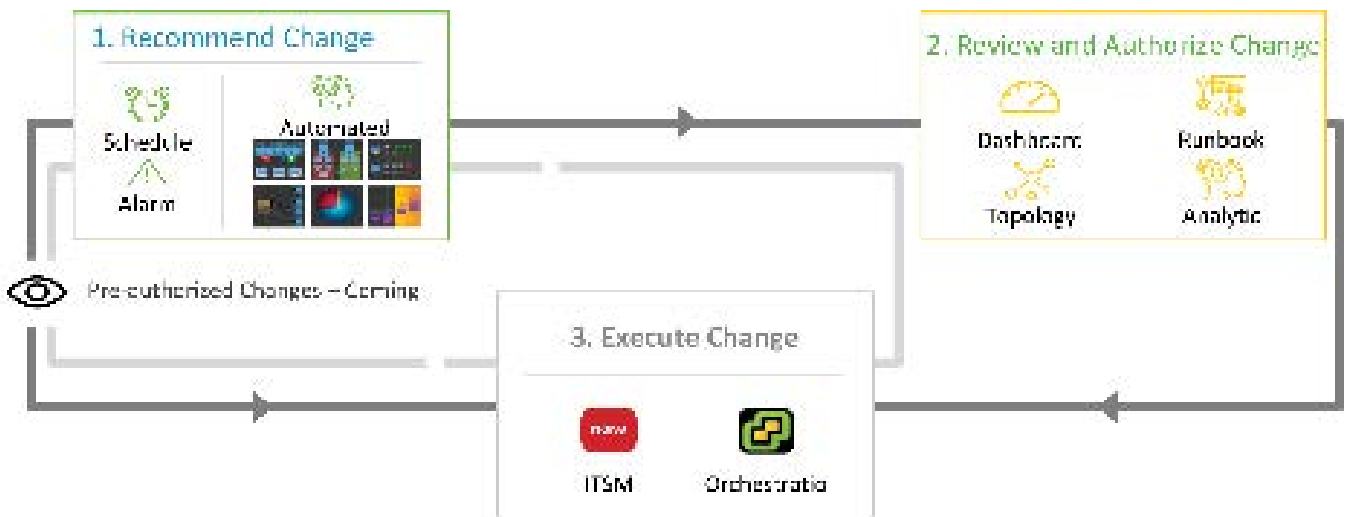


Figure 3 - Virtana IPM's Approach to Workload Automation

Virtana IPM applies lifecycle analytics to plan, optimize and proactively resolve application workload issues. The platform uses a purpose-built investigation framework (analytic-driven runbooks) to orchestrate specific analytics when issues are detected. These analytics are unique to Virtana and designed to solve specific domain issues and available only in Virtana IPM.

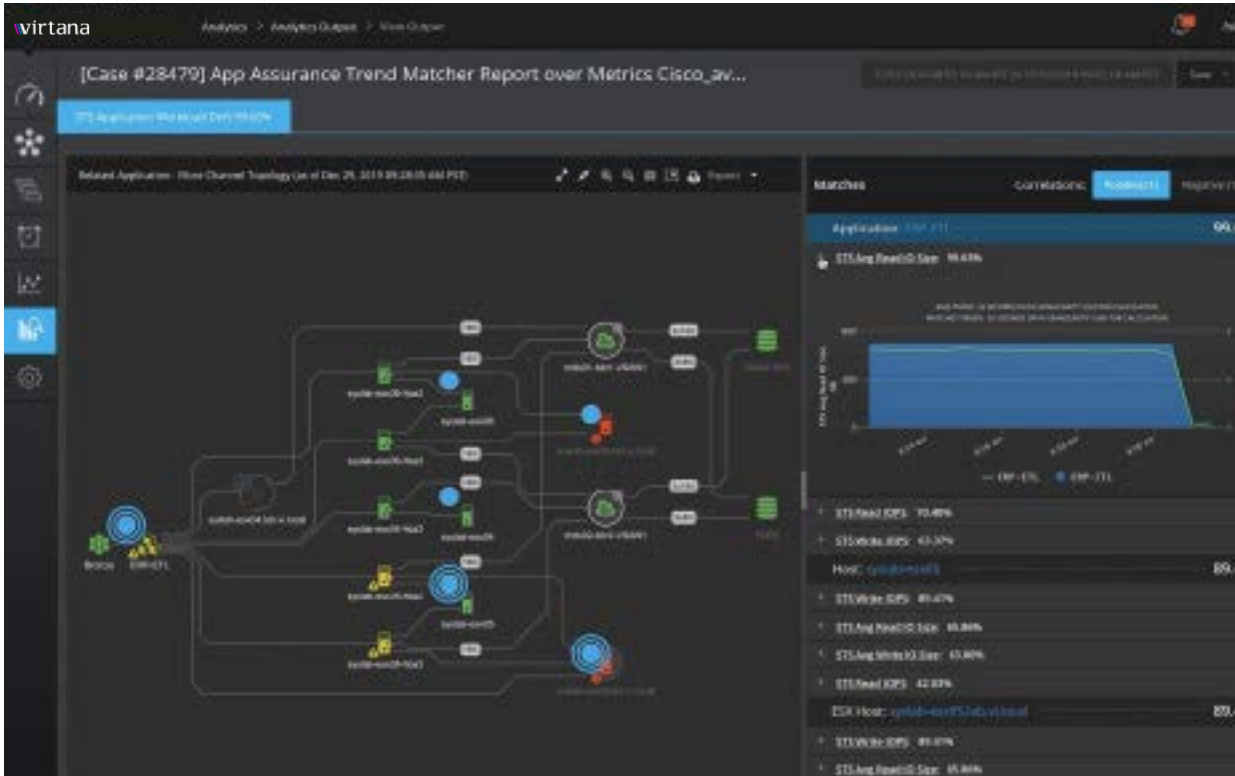


Figure 4 - Virtana IPM's Cross-Domain Correlation Trend Matcher

Lifecycle Analytics Available in Virtana IPM

Problem Resolution		<p>Anomaly Detection and Prioritization with Event Advisor</p> <ul style="list-style-type: none"> • Detects anomalous event patterns and provides a prioritized list of events that impact infrastructure.
		<p>Cross-Domain Correlation with Trend Matcher</p> <ul style="list-style-type: none"> • Identifies specific issues in infrastructure based on pre-defined or user-created scenarios. • Correlates and prioritizes performance issues to the infrastructure responsible using topology, statistical analysis and pattern matching.
		<p>Seasonal behavior analysis with Seasonal Trend</p> <ul style="list-style-type: none"> • Analyzes workload behavior to identify seasonal behavior. • Identifies abnormal trends in workload behavior. • Predicts resource needs over time for a user-selected entity and metrics based on historical patterns. • Alerts based on deviation from the observed behavior.

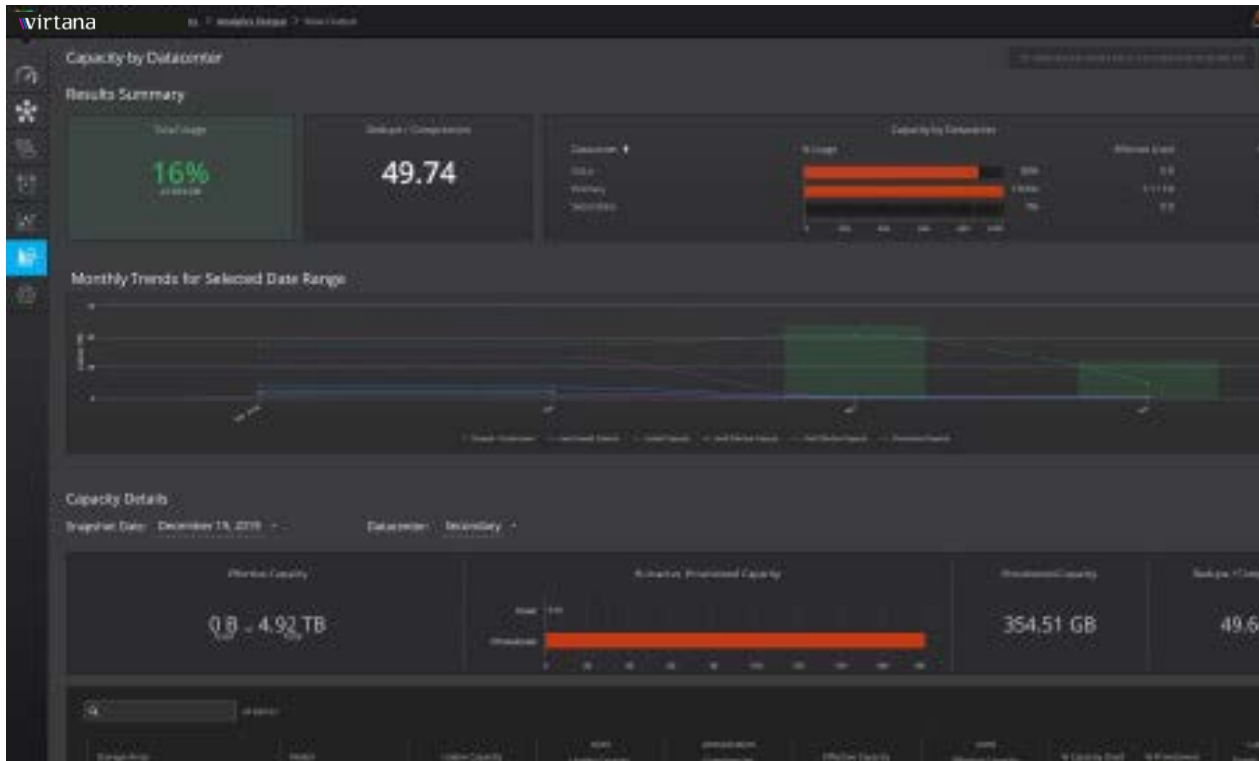

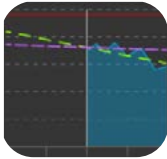



Figure 5 - Virtana IPM's Global Capacity Auditor

Lifecycle Analytics Available in Virtana IPM

Capacity Management		<p>Analyze Global Storage Capacity with Capacity Auditor</p> <ul style="list-style-type: none"> • Provides a Global, month-over-month and storage array-level insights into storage usage and deduplication or compression rates being achieved. • Predictive. Forecast and plan for future capacity needs for each storage array. • Automatically adapts to changes in your technology stack.
		<p>Predict Capacity needs with the Capacity Forecaster</p> <ul style="list-style-type: none"> • Predicts time to capacity exhaustion for servers, VMs, networks and storage. • Reviews historical data to calibrate long-term and short-term usage trends to account for dynamic infrastructures.
		<p>Plan App Workloads with VM Deployment Advisor</p> <ul style="list-style-type: none"> • Identifies the optimal cluster deployment for your new VMs for VMware, IBM PowerVM® and Microsoft Hyper-V® environments. • Allows new application workloads to be templated against existing similar workloads.

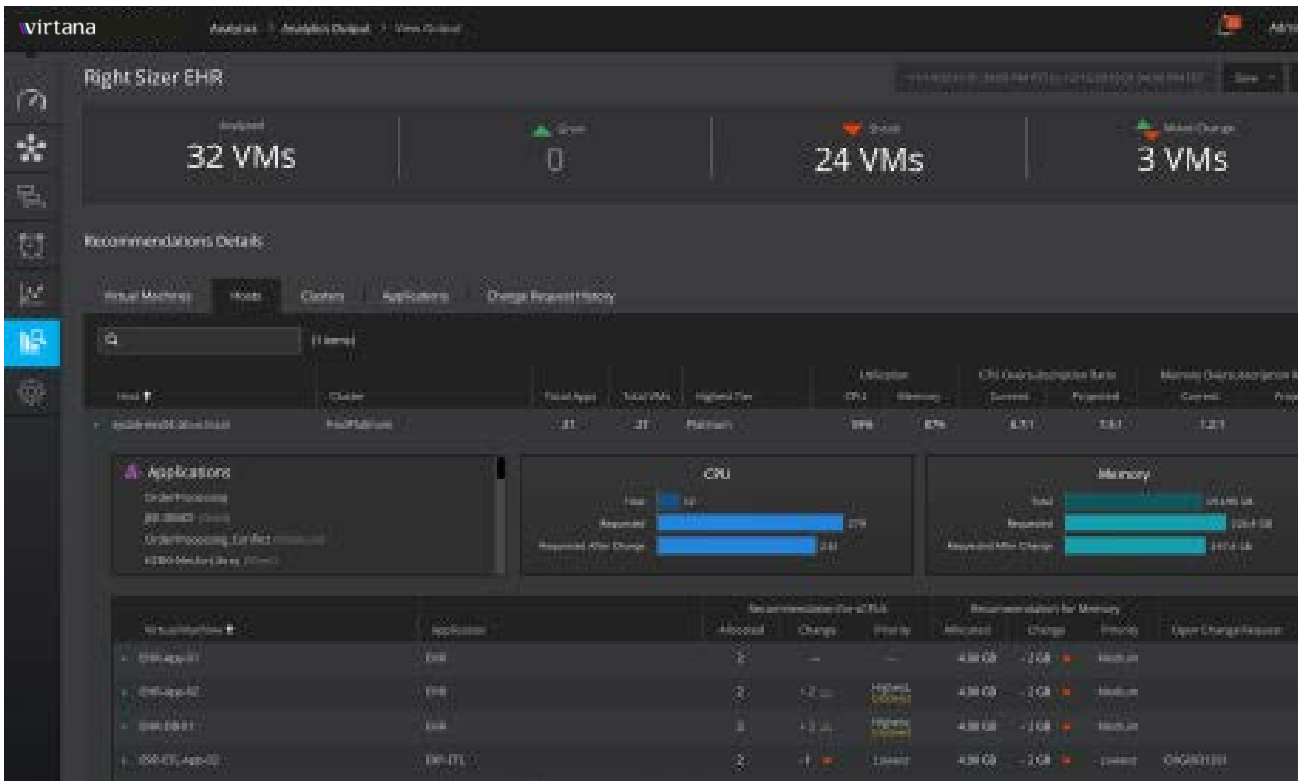




Figure 6 - Virtana IPM's Workload Right Sizer

Workload Automation




Automation Optimize Placement with VM Coordinator

- Proactively assesses your virtualized environment resource balancing.
- Analyzes long term historical data to identify optimal moves of VMs in a cluster across CPU, Memory and storage and provides implementation scripts for VMWare®.
- Avoids continuous vMotion sickness by optimally re-balancing clusters using a revolutionary approach that tests every permutation and its impact.



Prioritize or Reclaim resources with the Workload Right Sizer

- Proactively assess the resource needs of VMs, Hosts, Clusters and Applications and sizes VMs accordingly.
- Assigns or reclaims resources based on business value or SLA associated with applications that own the VMs.
- Automatically creates Change Requests in ServiceNow® with implementation scripts attached for proposed changes.



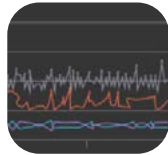
Balance Load Across Storage Ports with Storage Port Balancer

- Assesses your storage array front-end ports and provides optimal re-balancing based on application workload importance and workload attributes such as block size.
- Identifies overloaded storage ports and makes rebalancing recommendations, using intelligent decision-making to maintain parity, redundancy, and data groups.

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Workload Automation



Recreate Workloads in the Lab with Workload Analysis

- Analyzes and captures an application or host storage workloads for replay in the lab using Virtana's WorkloadWisdom.
- Provides realistic workload simulations to replay in a lab to assess and resolve issues or to test new configurations.



HBA Queue Optimization with Queue Solver

- Analyzes your HBA interfaces and workloads read/write latency, to determine and recommend the optimal queue depth.



Application Path Optimization with Balance Finder

- Analyzes data traffic and throughput of selected hosts to determine if the traffic is balanced.
- Assures and optimizes host data multi-pathing.
- Verifies HBA settings and recommends changes to multipath configurations.

Virtana IPM's industry-leading lifecycle approach to AIOps ensures infrastructure teams can meet dynamic needs of hybrid application and business conditions. Its unique set of AI-powered analytics are designed to solve specific issues that occur in production whilst providing actionable recommendations that adhere to your change management and governance processes.

By applying the right analytics to the problem at hand from machine learning, to statistical analysis and heuristics Virtana IPM will empower every member of the operations and application teams, while delivering real cost-savings, and the need for costly and ineffective war rooms and eliminating finger pointing.

Energize Your AIOps Initiatives with Virtana IPM and empower your organization to respond faster, take the guess work out of planning, continuously optimize infrastructure delivery and proactively resolve issues.

Try Virtana IPM today for free today at: <https://www.virtana.com/products/infrastructure-performance-management/>