Real Problems in Virtualized IT Environment

Success Story: 360 Degree Performance optimization in virtualized Datacenters

Customer Challenges

- Ensure the performance of business-critical applications in a virtualized data center

- Improve visibility across the entire virtualized data center

- Visibility and correlation between infrastructure and application performance

- Accelerated troubleshooting

- Scalability of the performance management solution along with virtual data center expansion

Solution Results

- Uila automatically collects and correlates network and application performance data

- Complete transparency from the hardware through the virtualized environment to the applications

- Automatic root-cause identification for performance problems

- Local and time-independent monitoring of the virtualized data center via the intuitive web interface

- Very easy to install, customize and operate

- Common foundation for application and infrastructure performance teams

"Uila simplifies the collaboration between application and infrastructure performance teams."

Joachim Becker

The innovative Uila Performance tool helps German leading insurance companies to efficiently track and resolve potential performance challenges in their datacenter - across the boundaries of hardware, virtualization and applications.

Introduction

IT managers know: Even when everything is running well - the next performance problem is already lurking around. A secure, reliable and high-performance IT production environment is the basis of many successful companies. However, powerful data centers are expensive. This drives companies to improve their IT efficiency in all areas and to optimize their infrastructure. As a result companies increasingly rely on the extensive virtualization for their IT environments. Not only individual application servers are virtualized on a physical host, but increasingly all infrastructures, including network switches and storage systems are virtualized.

The advantages of virtualization are obvious: instead of providing, setting up and operating physical components such as servers and switches, companies invest in a scalable and dynamic data center. On hardware resources, systems that meet the needs can be installed, virtualized and shared by many applications. This means that the entire functionality of, for example, a server or switch is mapped by software. Companies gain time, can scale with increasing demand more easily and deploy applications dynamically on the fly. Thus, the underlying hardware is utilized as best as possible.

Performance Information Overload Challenges

A large insurance company from the **Frankfurt Rhine-Main Metropolitan Region** (Germany) also benefits from these advantages: More than 1,400 virtual machines (VMs) provide application services such as a virtual desktop infrastructure (VDI), e-mail servers and groupware applications for employees in its virtualized data center. Numerous virtual switches (vSwitch) network the virtual components with each other and with the physical outside world. The solution based on VMware ESX utilizes the computing power of more than 135 servers that have more than 270 CPUs.

vCenter, the central management software for VMware environments, provides basic performance data such as CPU, memory, storage and network utilization to manage the infrastructure. These host-related data form an important supporting pillar for the company's

IT operations. But the data is also a burden. The extensively virtualized IT environment, including servers, storage and network switches, is flooding administrators with uncorrelated information.

At the same time, the depth of flooded data is not enough to draw any conclusions about the health of individual components of the virtual infrastructure. This keeps hidden performance problems in the dark. Therefore, the customer had to use additional tools to capture the performance of the network and applications in more detail. However, manually analyzing and correlating this information is an enormous effort but the only way to draw useful conclusions.

In order to better manage the flow of the performance data and dispatch it to dedicate IT teams to address performance problems, the company has divided its virtual environment into (1) the Citrix-based virtual desktop infrastructure (VDI); A dedicated environment with the VDI clients on virtualized hosts, and (2) all other application services in a second virtual datacenter.

To ensure that the performance monitoring servers is not overloaded by the performance data, the information must be quickly abstracted and compacted. The challenges for the IT operations is that if the IT team can not be confronted with an unambiguous, timely correlated event to act on, they quickly lose their value for performance management.

In addition, the available, traditional performance monitoring tools do not fully capture direct communication between virtual machines on a host therefore create monitoring blind spots. The lack of transparency is also a challenge for the client's infrastructure and application performance teams.
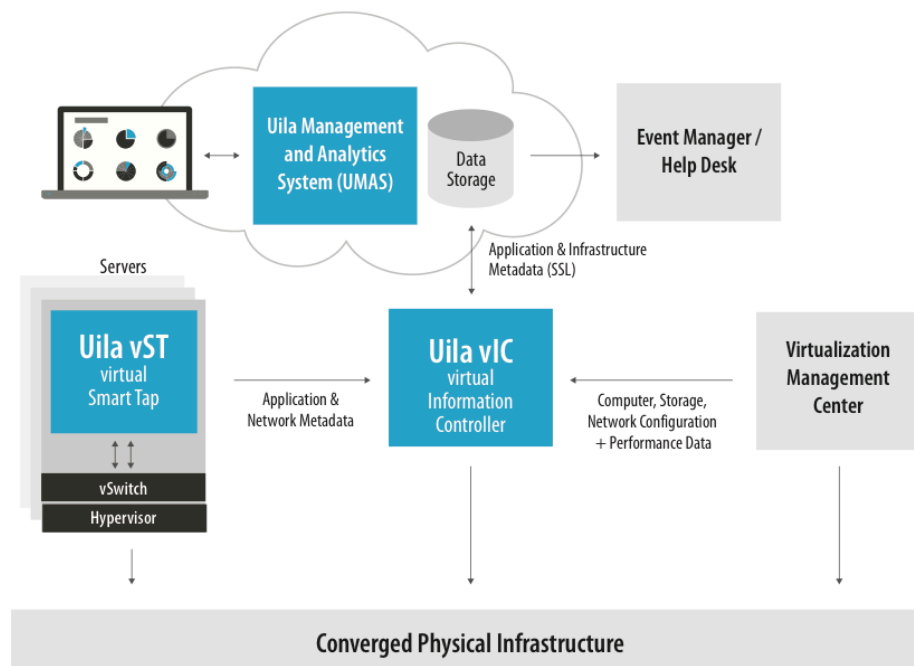
Overview of the Uila AA-IPM Architecture shows which data are collected and where the measured values are from

Intuitive Yet Powerful

To ensure that the IT staff of the insurance company are able to work productively, they need a solution that can depend on and to react to as fast as possible. To this end, the company is pursuing an overarching approach to manage its data center, where the application and infrastructure performance teams can work together.

In the discussion, it soon became clear that "there were no acute, serious performance problems, but the customer was looking for a solution that would combine all the performance data, provide correlated analytics and present actionable conclusions" explains Jos Root at NETCOR, the IT performance specialist. A task for Uila (pronounced Wee-la), a powerful software tool that specializes in application and infrastructure performance management in modern, virtualized data centers.

During presentation of the Uila solution, the customer immediately realized that the performance management tool of the American software vendor meets the requirements. Uila comprehensively collects all relevant performance data, analyzes their interdependencies and prepares the results visually in a comprehensible manner. IT staff are given clearly structured, reliable statements on the health status of the entire datacenter or selected components. They can quickly identify and resolve the root causes of performance problems. Uila also provides valuable trend information where bottlenecks can already be seen today or foreseen. IT staff can thereby optimize the infrastructure to match its business processes.

Monitoring Gaps Finally Closed

Uila closed monitoring gaps left behind by traditional management tools in virtualized data centers. Specifically the gap is the lack of (1) correlation and analysis between the hardware and the virtual infrastructure, and (2) the dependency visibility between the virtualized environment and the applications running on it.

Uila solution makes an important contribution to a complete transparency from the hardware through the virtualization to the individual applications. Among other things, Uila automatically detects over 4,000 applications, tracks its transactions and dependencies, and monitors network and TCP performance in detail.

The system consists of several components: the central management software UMAS (Uila Management & Analysis System), the virtual information controller (vIC) and several virtual smart taps (vST). vST accesses the network traffic at the vSwitch, generates application- and network-relevant metadata such as the end user experience as well as TCP performance metrics and directs them to the vIC. It also collects the metrics generated by VMware vCenter, such as memory, CPU and storage usage. Finally, vIC transmits all information through an SSL-secured connection to the UMAS. UMAS prepares the data and displays the state of health of the infrastructure. UMAS is available as a cloud-based service or as a locally deployed instance. Through its web interface, IT managers can monitor their data center performance at any time and from any location. Uila guides users with industry best practice methods through its automated troubleshooting processes.
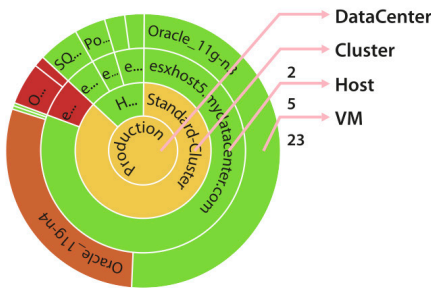
Performance Ring Overview of the complete virtual infrastructure. The Ring shows the Health score of the VMs, Hosts, Clusters, and the Datacenter from outside to inside. Color Highlighting occur when values exceed the automatically created Baselines.

Pleasantly surprised, the insurance company also found the low resource requirements to deploy the Uila solution. "In large environments, Uila vIC (Virtual Information Controller, an virtual appliance) comes with an average of vCPU load of 275 MHz and typically requires less than 400 kbps network bandwidth per port group," says Joachim Becker from NETCOR, who oversaw the Uila installation at the customer site. In addition, there are about 70 MHz vCPU and 200 kbps network bandwidth for each vST (Virtual Smart Traffic Tap, a small footprint VM).

Root Cause: Uila Identify Root Cause Automatically

Uila solution was easily deployed without any problems. "Only in the case of the very specific and customized configuration did we have to go hand in hand with the customer," concludes Becker. Thanks to its sensible basic settings, the tool immediately visualizes helpful performance data that are correlated in terms of time and event. This eliminates the need for a complex manual analysis and correlation of the information.

After clicking on an any application service on screen, Root Cause View automatically points out the root cause for the application performance degradation. In this case, the view shows the number of MySQL transactions and response times to and from a VM, including correlated performance metrics of the virtual / physical infrastructure and dependencies to other services. At the bottom are the application transactions (query/response) themselves, as well as their contents.

The operation of the tool is largely self-explanatory: Colored rings visualize the health scores of the displayed objects. In regular operation, the rings are green. In the case of problems, the health value decreases and the display changes to yellow, orange or red. If the value exceeds or falls below auto profiled or user defined thresholds, the system will trigger an alarm. By clicking, the user can zoom in an object and get detailed information. The learning curve is sharp, and expensive training is not necessary.

Uila is unique in its ability to automatically identify root cause of degraded application performance. For this purpose, it comprehensively analyzes the collected and correlated data of all participating layers - from the physical infrastructure to the virtualized environment and the operating systems to the applications.

In the "Root Cause View", users can immediately recognize which areas of the Infrastructure work normally (green) and where problems occur (red). A simple click on any object, Uila provides an overview of the correlated performance data. It is fast to see which transactions are running badly - such as database queries with long response times. The "Root Cause Summary" shows red to highlight the root cause components - for example the "CPU Health". In the further drill down, Uila describes in detail the problem and exact root causes. IT managers are also able to zoom into the view and focus on different areas.

For example, they can isolate individual processes that have contributed to overloading the CPU. Uila also helps the IT team to solve problems quickly and sustainably through helpful links to external knowledge base. One of Uila's specialties is the grouping of critical resources into groups, such as virtualized e-mail and groupware servers based on MS Exchange or IBM Notes / Domino. These groups can be specifically made available to the relevant departments. "For example, the application management team has at all times the health status of the managed business-critical applications," explains product specialist Becker.

Using Uila, the insurance team was able to quickly and in detail determine when backup operations started and how they affected certain servers and the infrastructure. For example, some VMs were mistakenly set to perform backups during the day and compete for the available bandwidth with business-critical applications. Such information helps the customer to construct and optimize their infrastructure.

Shared View and Tool Promotes Collaboration

One thing that should not be underestimated: Uila supports the collaboration of application and infrastructure performance teams - and their common goal of providing the end-user with fast and responsive IT. Thanks to Uila, both departments have the same view of problems - this avoids misunderstandings and finger pointing.

"Our customer had not seen such high information density combined with such intuitive usability in any other tools." Jos Root summarized. "The informative presentation of the correlated information has also convinced him." Alternative solutions evaluated by the customer could not deliver a similar user-friendly output - and they were also more expensive.

Jos Root is particularly pleased with the feedback.

The insurance company intends to acquire further Uila licenses after a planned expansion of the data center. "This shows how satisfied this customer is with the solution. Uila gives it an important added value, with which it better align its IT with its business objectives"

Uila's AA-IPM provides IT managers with comprehensive data center visibility from application performance to virtualized environments. Application dependency mapping provides 1-click Root Cause identification.

Uila was founded in 2013 in Santa Clara. California, USA.

Is an established company in the field of IT performance management. For the fields of products, training and services, NETCOR provides comprehensive solution, consulting and customer support.

Existing expertise and skills are documented through numerous certifications and used together with ITIL to create added value for IT operations with the customer.

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