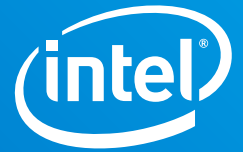


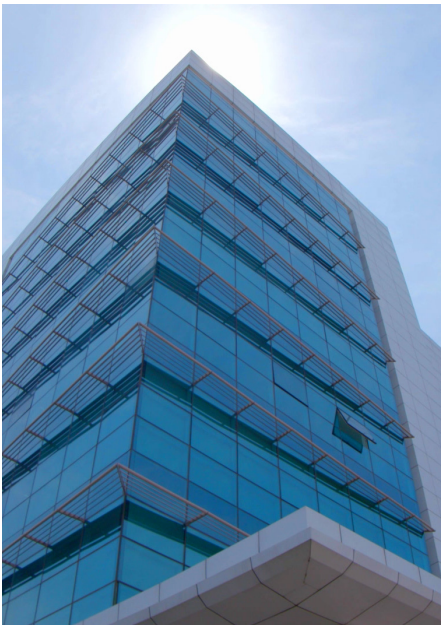
CASE STUDY

Communications Industry
Data Center Solutions



Tata Communications Deploys a Software-Defined Data Center with Mirantis OpenStack* and Intel

Innovative solution achieves enterprise-class gains from predictive analytics to operational efficiency.



TATA COMMUNICATIONS

Tata Communications is a leading global provider of a breadth of communications products and services. Its portfolio of data center services includes private cloud, managed hosting services, virtualized private data centers, compliance with ISO standards, and cloud enabling for the enterprise. In the highly competitive communications industry, Tata Communications turned to Intel to collaborate on data center modernization—from software-defined infrastructure to predictive analytics—that would transform its own operations and those of its customers.

Challenge

Tata Communications' global customer base demands faster time to market, reduced CAPEX and total cost of ownership (TCO), and improved operational efficiencies. They are seeking ways to shift expenditures from facility spending to invest more in IT. Meeting these demands requires an agile technology foundation that provides high workload availability, consistently available infrastructure, elasticity, pay-per-use models, and automation of IT services. In addition, Tata Communications and its customers face the ongoing costs of data center monitoring and risks of component failure.

Says Tata Communications vice president, Karthikeyan Subbiah, "What we needed was an architecture where we were able to collect data with regard to failures of components in data centers, whether hard disk failure, memory failure, inflow and outflow information, or CPU errors. We needed to be able to build a capability where we were able to predict these events in advance and thereby help reduce downtime and improve overall reliability of the cloud service. Plus, we wanted to make sure that we had rapid recovery from any service disruption."

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Solution

In collaboration with Intel, Tata Communications began planning and piloting a phased solution designed to meet both its immediate and long-term strategic goals. Intel® architecture provided a high-performance, security-enabled, scalable, and standardized foundation that supported the Mirantis distribution of OpenStack*. Tata Communications chose OpenStack to help ensure integration with multiple platforms and offer more technology choice to its customers. Intel worked closely with Tata Communications, providing the reference architecture source code and algorithms essential for the hardware and software integration.

Tata Communications built a sampler utilizing Intel® Intelligent Platform Management Interface (Intel® IPMI) to collect data (e.g., inflow and outflow temperature) and monitor

activity. When a utilization threshold is exceeded, Tata Communications can immediately take action, migrating workloads onto other nodes. As important, with Intel IPMI, Tata Communications can use core platform data to predict when there's likely to be a failure based on one of the components.

Intel's open telemetry framework, Snap, enables flexible processing of telemetry data and platform metrics on an agent (e.g., machine learning), as well as excellent data center scheduling and workload management. With Snap, Tata Communications can collect relevant data, process it in a standardized way, and do analytics on top. Principal engineer for Intel's Data Center Group, Nishi Ahuja, explains, "Snap provides access to data not only from servers, but other sources within that solution stack, whether it's the OS or application layer. And you can use a single API to collect, process, and publish the data."

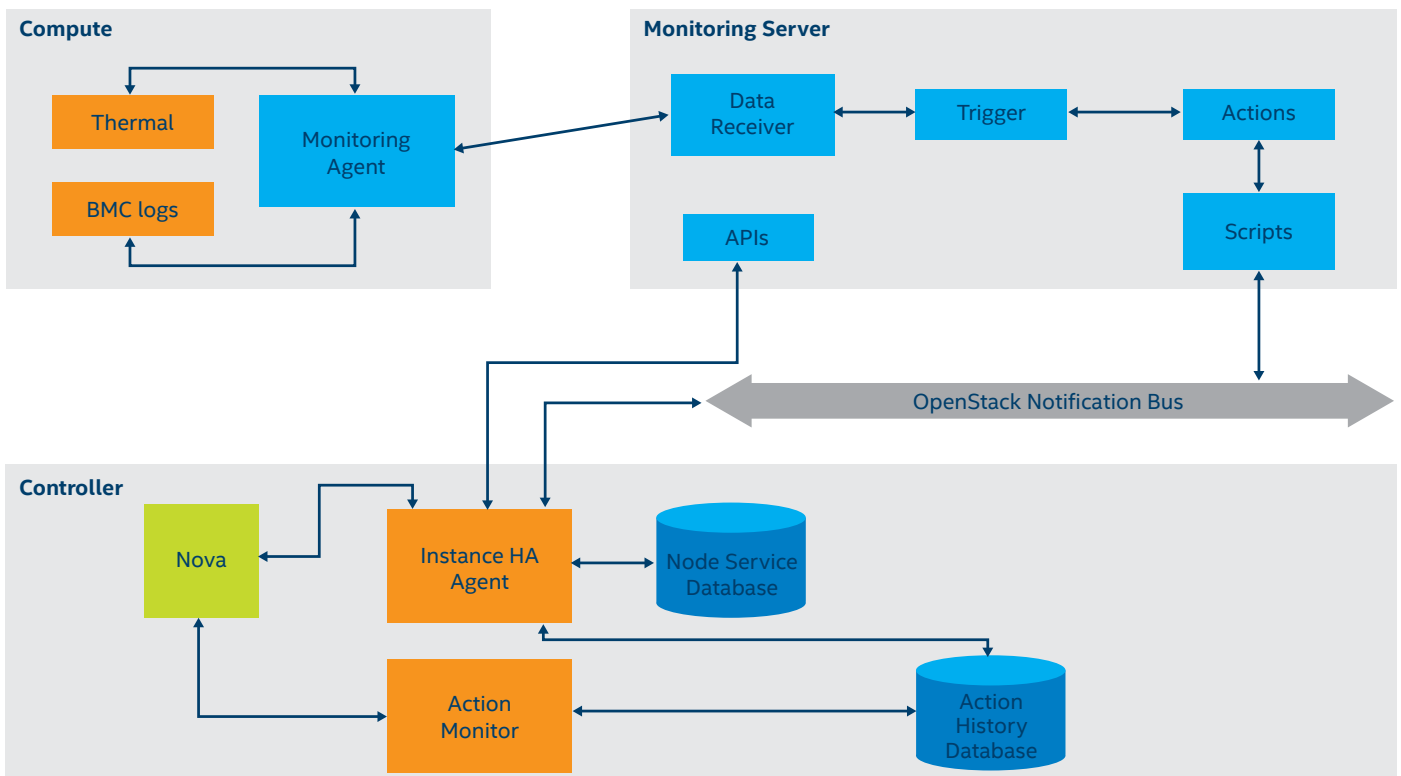
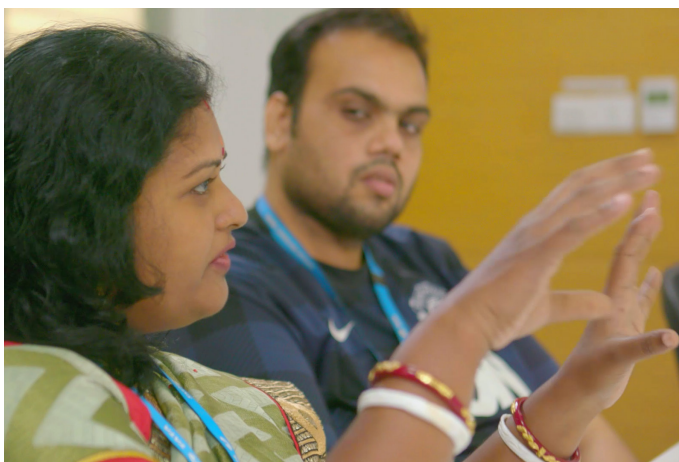


Figure 1. Basic solution architecture



Result

With the integrated Intel and Mirantis OpenStack solution, Tata Communications has the capability to predict failures and to improve service reliability. This translates into delivering better SLAs and satisfying the real requirement of a consistently available infrastructure. Says Karthikeyan, "Because we're able to interact very closely with the platform, we have the analytics to understand how workloads are performing on a particular node. We can optimize performance and do workload balancing, and this reduces the overall TCO." Nishi concurs, "Tata Communications was looking to build a high availability solution. By providing the capability to continuously monitor their infrastructure and proactively and automatically take action, they now have workloads available 24/7 and meet improved SLA requirements."

Solution Summary

Tata Communications continues to grow enterprise cloud services for a diverse customer base seeking reliable workload availability. Intel and Tata Communications are collaborating on the data center and cloud technologies to provide high availability, garner insight into the hardware, enable analytics around prediction of failures, and offer a platform for a framework to capture data from any source, whether at the hardware, OS, or application level.

As Tata Communications moves forward with a software-defined infrastructure and data center, orchestration and automation take center stage, resulting in further data center efficiencies. Combining automated provisioning and installation with the telemetry analytics capabilities means Tata Communications can automatically take action based on the hardware data insight.

Looking ahead, Tata Communications and Intel will explore extending the Intel Snap framework to applications and operating systems to further enhance the cloud architecture. This may include complex memory failure prediction by applying Snap and Intel technologies with dynamic prediction capabilities.

The ongoing partnership is allowing both Tata Communications and Intel to innovate on the edge of communications services. Tata Communications aims to provide more secure, integrated, managed services across hybrid deployments. Karthikeyan sums up the potential, "We think that through our cloud-enabled managed hosting services, we will help enterprises on their journey of cloud and digital transformation." Adds Nishi, "Intel is now very much looking into the approach of 'outside in.' We are getting feedback from customers, such as Tata Communications, and from there determining the right features needed on a platform."

Where To Get More Information

For more information on Intel data center solutions, visit intel.com/cloud.

Solution Ingredients

Intel Intelligent Platform Management Interface (Intel IPMI)

Intel Snap open telemetry framework

Mirantis distribution of OpenStack



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OpenStack*

OpenStack* is open source software for creating private and public clouds. The software controls large pools of compute, storage, and networking resources throughout a data center, managed through a dashboard or via the OpenStack API. OpenStack works with many enterprise and open source technologies, making it ideal for heterogeneous infrastructure, and has a strong ecosystem community.

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