



“The Hitachi solution was chosen to provide more mileage to the new emerging challenges and technological advancement growth at the MVML facility.”

*Mr. B. Venkatakrishnan
 Head of IT
 Mahindra Vehicle Manufacturers Ltd. (MVML)*

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INDUSTRY Manufacturing

SOLUTIONS **Modular Platform, Virtualization, Business Continuity and Replication**
Hardware — Hitachi Adaptable Modular Storage 2100
Software — Hitachi Dynamic Provisioning software, Hitachi In-System Replication software bundle



Mahindra Vehicle Manufacturers Ltd., Trusts Hitachi Modular Storage Solution to Support Plant Expansion

Mahindra Vehicle Manufacturers Ltd. (MVML), is a complete manufacturing facility for heavy and light commercial vehicles, SUVs, pick-up vehicles and 4-wheeler vehicles for domestic and export business. It operates on a 700-acre campus in Chakan, the Pune district of India. The successful plant anticipated growth and expansion of its operations with the commissioning of new shops. To support that growth, MVML chose to expand its IT environment with a solution based on Hitachi modular storage with virtualization and replication software.

About MVML

Founded in 1945 as a steel trading company, Mahindra entered automotive manufacturing in 1947 to bring the iconic "Willy's Jeep" onto Indian roads. Over the years, they have diversified into many new businesses in order to better serve the needs of customers.

Today, the Mahindra Group is a US\$12.5 billion multinational group with more than 137,000 employees in over 100 countries across the globe. Its current operations span over 17 key industries that form the foundation of every modern economy. It serves: aerospace, aftermarket, agribusiness, automotive, components, consulting

services, defense, energy, farm equipment, finance and insurance, industrial equipment, information technology, leisure and hospitality, logistics, real estate, retail and 4-wheeler industries.

MVML was designed and built as a green-field facility to integrate the best in technology, environmental sustainability, social responsibility and operational excellence. Spread across 700 acres, MVML in Chakan offers a flexible and eco-friendly manufacturing layout, with over 2000 employees located onsite.

MVML anticipates further growth as the plant gradually expands its operations with the commissioning of new shops. To date,

there are 14 major shops catering to heavy, light and SUV type vehicles. The plant is also supported by a separate supplier park, a stockyard of approximately 200 acres and other entity companies of Mahindra & Mahindra Ltd., within the campus. The entire campus development is planned in phases. Of the 700 acres, 280 acres have been developed in phase 1, which includes the 14 shops.

The Infrastructure

The IT backbone at MVML has been developed with high redundancy for taking care of the overall business requirement and providing high resource availability to critical business applications. The architecture and solution currently deployed was selected to cater to the next couple of years' requirements, keeping in mind the future growth and expansions of the facility.

The state-of-the-art data center at MVML is best in class. This has been designed to accommodate the latest technology servers, database, sophisticated networking devices and high-end application systems to support its modern manufacturing facility. Copper cables were replaced by fiber cable in the server consolidation stage. By operating a virtualized environment (VMware) on the server end, MVML thereby reduces physical hardware and saves power, space, green gases and cost.



"The Hitachi storage solution helped us to meet the dynamic requirements of our green facility. We are now able to provision, monitor and deliver services on the fly, as well as build upon our global best practices."

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Head of IT
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The Challenges

While the phase 1 development of the facility was targeted to manufacture 150,000 vehicles per annum with the 14 shops gone live, the overall facility after complete development would produce 650,000 vehicles per annum.

The following challenges and requirements were anticipated:

1. Data growth with exponential increase of data usage per annum
2. Data security and accuracy
3. Infrastructure to be open and scalable to handle future growth
4. Manageability and reliability of the crucial business data
5. Data availability from the statutory and compliance point of view
6. Storage space requirement for hosting new services on the fly
7. Hosting of critical repository servers for each shop (currently 14 shops)
8. High efficiency of the servers and applications
9. Serving both internal and external customers with high application uptime
10. Ease operational requirements

The Out-of-the-box Solution

The entire manufacturing process was designed to run on an automated mode using the MES (Manufacturing Execution Systems), which would ride on the IT backbone across the 14 shops. The applications rollout for this demanded 40 physical servers to host the whole gamut of process control systems.

After thorough study of the requirement, the IT team at MVML in Chakan devised an out-of-box solution with an innovative approach, and accepted no limits. The solution consolidated the entire requirement, thereby reducing it to 6 physical servers on the VM platform. To support the design, Hitachi Adaptable Modular Storage (AMS) was chosen to blend with the overall architecture.

MVML deployed AMS 2100 for its mission-critical "Factory Automation" application. In its deployment landscape, MVML includes multiple virtual servers on very few scalable physical servers. Storage is provisioned from AMS 2100 using iSCSI interface.

Hitachi Dynamic Provisioning software provides thin provisioning capabilities. At the same time it delivers required performance through wide-stripping data across all the disks in the designated pool. In addition, Hitachi In-System Replication software bundle assists MVML in creating quick snapshots of production data for development and testing purposes.

Solution Supports Innovation and Growth

According to the Head of IT at MVML, Mr. B. Venkatakishnan, "The key to any business' success is its solid infrastructure. A versatile, scalable and future-ready plant was the vision behind the new Mahindra Automotive manufacturing facility. An innovative engineering, a frugal mindset, manufacturing excellence and environmental sensitivity have always been the hallmark of this new plant," he continues. "The Hitachi solution was chosen to provide more mileage to the new emerging challenges and technological advancement growth at the MVML facility."



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