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Final Copy of Case Study

Status:

Laureate

Year:

2013

Organization Name:

Directorate of Information Technology (DIT), Government of Maharashtra, India

Organization URL:

<http://it.maharashtra.gov.in/SITE/Home/Home.aspx>

Project Name:

Maharashtra Cloud

Please select the category in which you are submitting your entry

Emerging Technology

Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less.)

Maharashtra State Data Center (MH SDC) is the shared, reliable and secure infrastructure services center for hosting and managing the e-Governance Applications of State and its constituent departments. MH-SDC has been developed to consolidate services, applications and infrastructure to provide efficient electronic delivery of G2G, G2C and G2B services. These services are rendered through a common delivery platform seamlessly supported by core Connectivity Infrastructure such as Maharashtra State Wide Area Network (MSWAN) and Common Service Center (CSC) connectivity extended up to village level. MH-SDC provides many functionalities like Central Repository of the State, Secure Data Storage, Online Delivery of Services, Citizen Information/Services Portal, State Intranet Portal, Disaster Recovery, Remote Management and Service Integration etc. During implementation of Maharashtra State Data Centre (MH SDC), the State had conceptualized on implementing Virtualization for efficient utilization of the infrastructure in SDC. The objective of this initiative was to reduce SDC cost drastically while increasing the IT capacity with maximum flexibility. A

PoC on virtualization using VMWare and Microsoft Hyper-V was started in November 2011, leading to implementation of a fully operational Cloud by May 2012. MahaGov Cloud is an initiative to provide IaaS, PaaS and SaaS Cloud service to various departments in the Government of Maharashtra. The MahaGov Cloud is implemented in State Data Centre and is extensively used by departments for website and application hosting. The Cloud offering at MHSDC provides varied services such as IaaS, SaaS, PaaS. We have more than 300 servers in the cloud to offer services. In terms of modules, we have a database and choices of operating systems such as Windows, Linux, etc. SAN storage is available on demand. This project is unique as it is the first model in India where the data center services are offered on cloud for Government and by Government.

When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)

The project was first implemented in May 2012. Technology Involved: The setup for VMWare cloud is as below: VMWare Cloud has 302 VMs running on 24 Physical Servers (Intel Xeon 2 X 6 core 2.93 GHz each) (5 blades have 96 GB RAM and 8 blades have 48 GB RAM). 143 Applications/Websites are running on VMWare Cloud. The setup for MS Cloud is as below: MS Cloud has 25 VMs running on 6 Physical Servers (3 blades of Intel Xeon 2 X 4 core 2.66 GHz, 48 GB RAM each and 3 blades of Intel Xeon 2 X 6 core 2.93 GHz, 96 GB RAM) 7 Applications/Websites are running on MS Cloud. Upgrade to Win 2012 to be done soon to augment the MS Cloud setup. The following services are offered as a part of the Cloud Solution: 1. Infrastructure as a Service (IaaS) 2. Platform as a Service (PaaS) 3. Software as a Service (SaaS) 4. Miscellaneous Services. The following innovative services are also provided as a part of the Cloud Solution: 1. Software as a Service (SaaS) 2. BI as a Service (BaaS) 3. GIS as a Service (GISaaS) 4. API as a Service (APIaaS) 5. Survey as a Service (SyaaS).

Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less.)

Implementation of the project is complete.

Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less.)

Operational benefits: Following are some of the benefits of cloud implementation in Maharashtra SDC: Due to Template and Clone features, the time to provision a Server along with OS and Database has reduced tremendously and benefited the Server Team in SDC. Using feature of thin provision of storage and memory, resources are efficiently utilized and allocated as per the requirement and performance. Features like Live Migration has helped the SDC team to manage planned maintenance without requiring any downtime of the application. Management and monitoring of Cloud setup is effectively done using the dashboard, alerts and reports generated from the Cloud system. Backup of VMDK or VHD files leads to quicker restoration of the server whenever required. The operations team has benefited by the cloud implementation in

administrative, operations, backup restore and reporting areas. New server creations, rollout, migration and movement is done in matter of minutes as against hours. Dynamic scalability of resources on demand and delegation of administrative rights have been provided. Restoration of servers using VADP can be achieved within minutes. Customer benefits: Server creation and rollout is faster. Time taken to allocate a system to departments has been reduced from hours to minutes. Dynamically resources can be varied based on demand. Financial benefits: Need not invest in procurement of additional hardware when cloud is in place and resources are being shared, so cost is saved on new hardware. Potential Money Saved through Cloud is Rs. 500 million. Others: Key objectives include saving on time provisioning servers, faster deployment of applications, saving resources by sharing them across the cloud. Better control and administrative benefits over the cloud.

Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here: (In 300 words or less.)

This project could be considered an innovation and adopted across other Indian States using the following business models Option 1: Private Cloud Service Provider in SDC. A private cloud service provider/operator can be selected using a competitive bidding/ RFP process for implementing the cloud infrastructure at SDC. The service provider/operator can then leverage the existing physical space and non-IT infrastructure of SDC. IT procurement for cloud implementation will be done by the selected cloud service provider. Option 2: State's nodal agency can take a lead and act as a cloud service provider. This model is best suited for the nodal agencies having: 1. Availability of sufficient funds to aid future capacity planning and procurement of infrastructure to support the cloud environment. 2. Highly skilled composite team working in coordination with the Data Center Operator (DCO) to provide the required support. Option 3: Other State SDC as Cloud service provider. In this business model one can use to leverage the SDC outside the home State and its cloud infrastructure. This can be used for Sharing Common Applications and to set up Disaster Recovery capabilities for critical applications. All the procurement will be done by the other State nodal agency and the services will be charged as per the chargeback mechanism agreed and signed between the two States. This is mostly suitable for small states in which, instead of spending on creation of SDC, the services of other state can be utilized. Option 4: Dedicated Government cloud for multiple states. At the Central Government level, National data centers are set up to host the central governments applications. These data centers in addition to hosting the central government applications can be connected to all the states and provide cloud environment.



If there are any other details that the judges should know about this project, please note them here. (In 300 words or less.)

The following services are provided using the Cloud solution: Colocation Service: Department brings application/website & all supporting hardware infrastructure. It only requires SDC infrastructure like rack space, power, cooling, firewall and other managed services. Managed hosting: Department brings only application/website and requires all the SDC infrastructure including bandwidth. Dedicated Servers are provided instead of Cloud Service Cloud Service: Department brings only application/website and requires all the SDC infrastructure including bandwidth. Virtual Instance is provided in Cloud Setup at SDC. Infrastructure as a Service and Platform as a service of cloud is provided.

