Simplifying Remote Systems Management on HPC Clusters

1. **Abstract**

High Performance Computing (HPC) environments often comprise a huge data center housing thousands of compute nodes designed to incorporate powerful multi-core processors. Administrators often use multiple tools to deploy and manage these complex environments. Integrating the Systems Management tools seamlessly with the Cluster Manager, however, can be time-consuming and difficult. As HPC environments continue to grow in size and complexity, remote systems management have become increasingly challenging. Dell HPC solution helps address these challenges with a modular, hybrid architecture designed to easily integrate System Management Solutions for cluster administrators.
The objective of this tutorial is to explain the basic architecture of HPC Cluster Solutions, Remote Systems Management, followed by a demonstration of cluster deployment and management of HPC clusters, focusing on the integration of Cluster Solution with various Systems management utilities.

2. **Duration of the tutorial**

This tutorial will consist of a series of presentations, each of not more than 45 minutes duration. The overall tutorial will require half a day (4 hours).

3. **Target audience**

This tutorial should be of interest to a large number of participants from academic institutions, government organizations, research & development establishments, and commercial organizations.

4. **Detailed lecture outline**

The tutorial covers the following topics:

(A) HPC Cluster Solutions: Introduction
  i) Basic Architecture.
  ii) Software Components.

(B) Installation and Deployment.
  i) Concept of Node Groups and Repositories.
  ii) Installation Procedure.

(C) Management and Monitoring
  i) Cluster Management Utilities.
  ii) Cluster Monitoring Utilities.
  iii) Systems Management Utilities.

(D) Using the Dell kit and Dell Systems Management tools.
  i) Out of Band Management.
  ii) Setting the BMC and BIOS options.

5. **Vita of each presenter**

1) Toby Sebastian is a Senior Engineering Analyst in the Enterprise Solutions Group at Dell India R & D Center, Bangalore. Toby has a B.Tech. in Computer Science and Engineering from the University of Calicut. His current interests include HPC clustering packages, high- end interconnects, and performance analysis of parallel applications.

2) Sreeram Vedantham is a Development Engineer Lead at Dell India R&D Center. His current interests include, various high-speed interconnects, HPC cluster stacks, and Workload Management softwares. He is also involved in development of various Enterprise Solutions Advisor offerings from Dell.

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