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systems

CRUCIAL ROLE OF SYSTEM INTEGRATION

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Advanced and emerging technologies are often complex and difficult to configure and require special care to implement. Lack of familiarity can quickly escalate into delays and cost overruns, devastating budgets and project deadlines. This becomes very crucial for HPC/AI systems because of the inherent complexity of these systems.

System integration (also referred to as IT integration or software integration) is the process of joining software and hardware modules into one cohesive infrastructure. The goal is to make these systems work together smoothly to share information and processes more efficiently.

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At **ON DEMAND SYSTEMS PTE LTD**, we employ a proven methodology to ensure successful system integration for HPC/AI systems. Below is a diagram providing an overview of our approach towards HPC/AI System Integration Methodology.
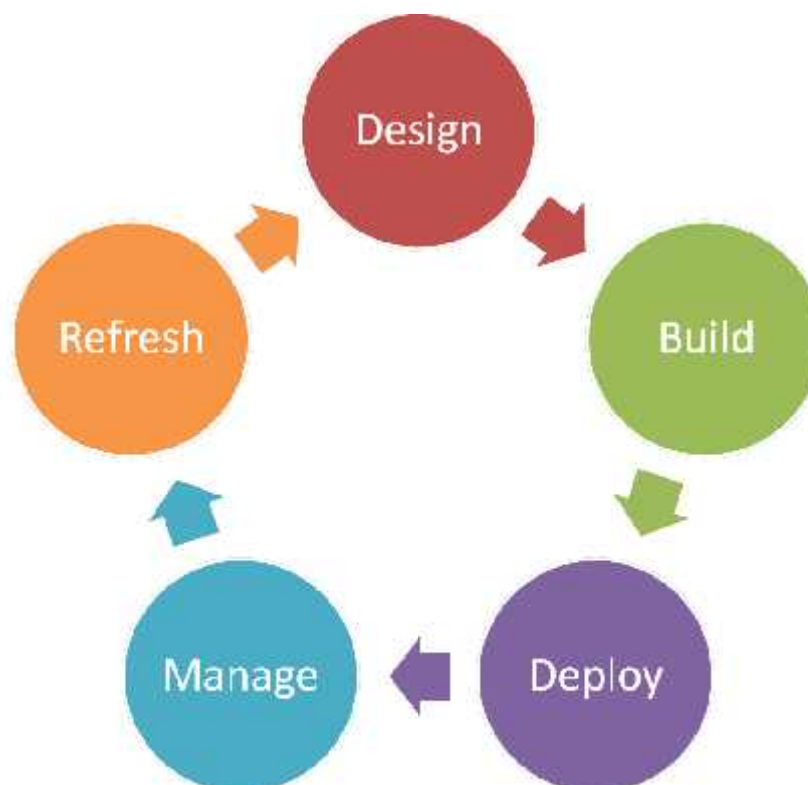

Figure 1 – ODS's System Integration Methodology

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- **Design**

The design stage is very critical for the success of the HPC/AI projects. Each component, such as Compute, GPU Compute, Network, Storage and Data Management, needs to be carefully designed based on the research needs and use cases. Due consideration is needed to delve into workloads such as compute intensive, memory bound, I/O intensive, network intensive requiring low latency networks. Each of these requirements would lead to a design which specifically addresses the use case.

- **Build**

Build AI and HPC server clusters at scale at factory or onsite with expertise to rack and stack, cabling, and validation of full HPC/AI clusters. Following the design is critical for successful deployment.

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- **Deploy**

Deployment involves on-site integration and validation by HPC/AI experts. The on-site integration would focus on operationalizing all the system/software components such as Storage, Network, GPU Compute, Cluster Management, Scheduling, Data Management and Authentication. It is important to secure the cluster and its data by integrating with security, identity and governance platforms. System-level testing and project management expertise accelerates system availability and performance.

- **Manage**

Maximizing system availability, uptime and monitoring system performance is the primary goal apart from keeping the cluster and its components up-to-date.

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- **Refresh**

Work with researchers and scientists to assess their changing and evolving research needs. Refreshing the key elements such as compute, network, storage of the HPC/AI infrastructure with an aim to maximize system performance. The tech refresh would initiate the process of design-build-deploy.

Partnering with HPC/AI System Integrators can significantly reduce time and effort. Their specialized expertise and resources fill critical gaps that most organizations can't cover internally. Embark on your HPC/AI journey by assessing your internal capabilities and collaborating with a System Integrator that can seamlessly bridge any gaps.