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Self-Deployment of Datacenter Servers Through BMC Reserved Storage

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SELF-DEPLOYMENT OF DATACENTER SERVERS THROUGH BMC RESERVED STORAGE

New server automatic self-deployment by using prerecorded configuration, popularly used in a data center environments.

Problem Statement:

In data center, a new server deployment is a process of configuring BIOS and peripheral controllers and finally installing Operating System with associated drivers & software.

In today's scenario server deployment is carried out either manually or through automation. In case of manual deployment (as mentioned above), admin will setup BIOS and configures peripheral controllers followed by an Operating System installation. Configurability is highly achievable in both hardware and software customizations. Time and human efforts required for deployment will linearly increase as per number of servers. In case of automated deployment, the server configuration parameters are provided by the admin/users as a pre-requisite to the automation process or tools which does automatic server deployment without much manual intervention.

Automation deployments are limited with the below cons:

1. Firmware (including BIOS/UEFI) customizations are very much limited compare to software.
2. Maintenance efforts are high for updating these tools on various Linux distributions and window flavors.
3. Complexity in aggregating various tools & orchestrating them together for automation.
4. Maintenance cost.

Today the growing challenges faced by data center admins are not only to overcome the above limitations but also to achieve improvised automation levels with minimal manual intervention. Increasing automation levels will proportionally increase the number of tools getting integrated in the automation framework, directing to high maintenance cost. This is an important area to be addressed to make the data center maintenance easy and achieve high productivity with less efforts.

Limitations of current products:

- Depends on infrastructure setup like PXE, and other software products for orchestration.

Proposed Solution:

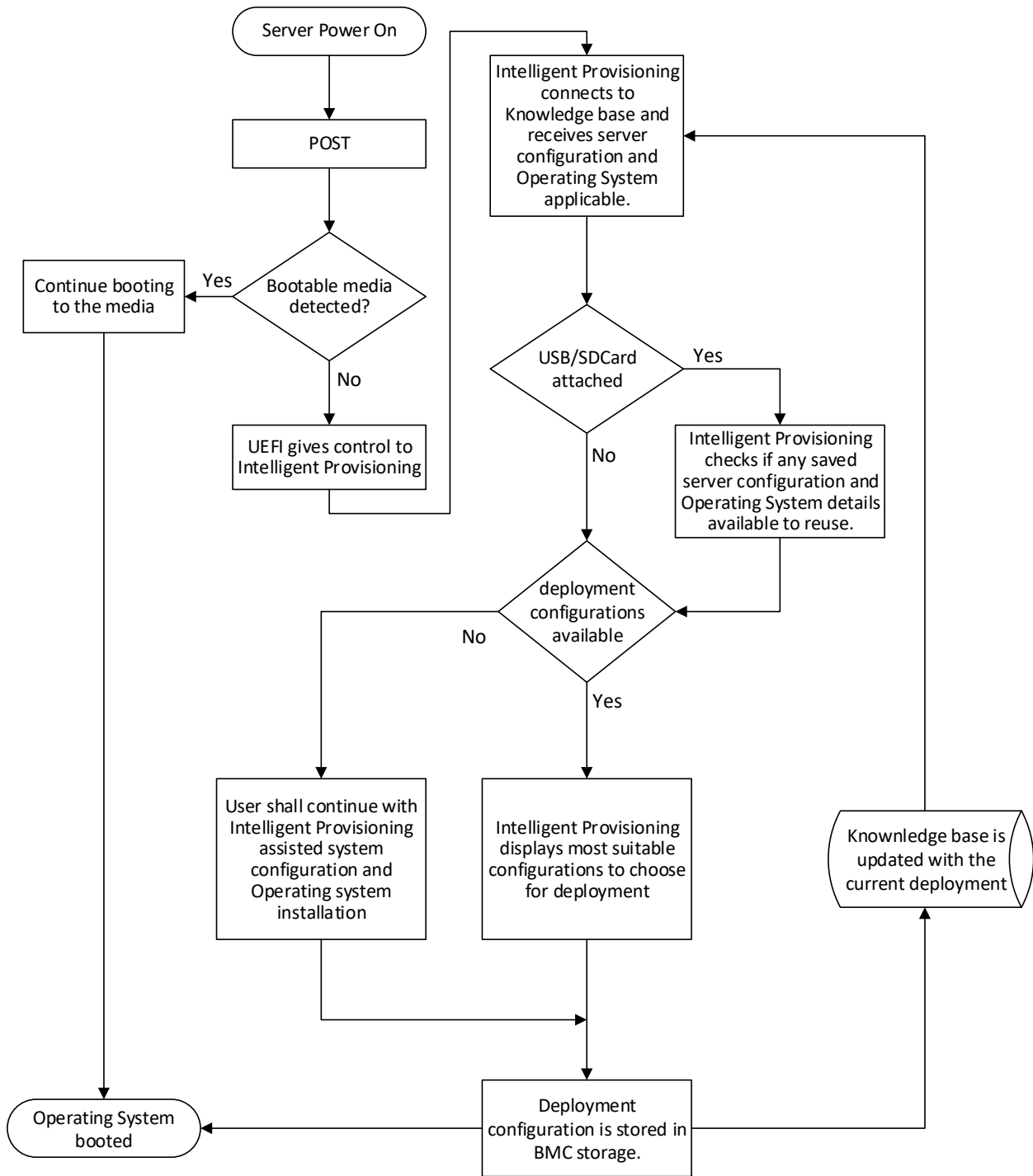
Collecting the common server configuration patterns from each server's BMC storage data center and reusing them to deploy new servers automatically with more appropriate server configuration.

A group of similar servers will be configured with same set of configurations in a data center. These server configuration patterns are recorded and it is used for suggesting best suitable server configurations for any newly added server in that data center.

Problems solved:

1. Simplifies server deployment process by leveraging our existing product Intelligent Provisioning
2. Improving automation levels with minimal manual intervention.
3. No need to maintain automation tool, so reduces the maintenance cost
4. Firmware (including BIOS/UEFI) level customization possible.

Complete flow diagram:



Implementation Details:

When a server is deployed from scratch all the firmware configurations and software customization will be recorded in its own BMC (management controller) storage using Intelligent Provisioning. When each server is deployed in this method, the particular server's Intelligent Provisioning will have the complete deployment configuration details. These deployment configurations are collected and stored in a repository in a secured manner, and using data mining algorithms a knowledge base is created to suggest most frequently and popularly used configurations and operating systems deployed. Now any server which need a deployment shall go for a self-deployment process by placing a request (via Intelligent Provisioning) to Knowledge base. Depending on the user preference or by most popular list Intelligent Provisioning will pull deployment settings from knowledge base and perform installation process.

Advantage:

1. Server deploys itself automatically.
2. No user intervention required.
3. Reduces Data Center maintenance & time for recursive deployments.
4. Reduce Data Center administration cost.

Abstract:

Server deployment is a process of configuring BIOS, peripheral controllers and installing Operating System with associated drivers & software. In manual server deployment, admins will setup BIOS and peripheral controllers followed by an Operating System installation. As time and human efforts required for deployment will linearly increase with more servers. In automated server deployment, setup complexity grows, with increase in number of tools getting integrated in the automation framework, leading to a high maintenance cost in terms of tool maintenance. By recording various server configuration patterns and reusing them to self-deploy new servers automatically via HPE intelligent provisioning. This eases data center maintenance activities and achieve high productivity with less effort.

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