# Golden Image Management: Process, Implementation & Best Practices

## 1. Introduction

Golden Image Management is a crucial aspect of IT infrastructure, enabling the efficient deployment, maintenance, and standardization of virtual machines (VMs). A Golden Image is a pre-configured system image containing essential software, security settings, and custom configurations. Using Golden Images, organizations can streamline deployments, ensure consistency, and improve security while reducing provisioning time.

## 2. Benefits of Golden Image Management

* The implementation of Golden Image Management offers several key benefits:
* Faster provisioning of new VMs with pre-installed applications and settings.
* Ensures uniform security and compliance across all deployments.
* Reduces post-deployment configuration efforts and potential misconfigurations.
* Centralized management simplifies version control and auditing.

## 3. Golden Image Lifecycle

### 3.1 Creating a Golden Image

The process of creating a Golden Image involves setting up a virtual machine with all necessary software, security settings, and system optimizations. The steps involved include:

1. Deploying a base VM on Azure.
2. Installing required applications (Monitoring tools, Security agents, Log collectors).
3. Configuring system settings (User accounts, Firewall rules, Network configurations).
4. Optimizing the VM by cleaning unnecessary files and reducing image size.
5. Capturing the VM as an image using Azure Image Management.

### 3.2 Deploying VMs Using Golden Images

Once a Golden Image is created, it serves as a blueprint for deploying new VMs efficiently. VM deployment using Golden Images can be automated using Infrastructure-as-Code (IaC) tools such as Terraform or Azure DevOps Pipelines.

* Use Terraform to automate VM creation using Golden Images.
* Store Golden Images in Azure Image Gallery for centralized access.
* Ensure that all newly deployed VMs inherit the pre-installed software and security settings.

### 3.3 Updating Golden Images & Versioning Strategy

To ensure that deployed VMs remain up-to-date and secure, a structured update process for Golden Images is necessary. The update process follows these steps:

1. Identify required software and OS updates.
2. Apply updates and security patches to the Golden Image.
3. Create a new version (e.g., Golden Image v2, v3, etc.).
4. Deploy new VMs using the latest version while updating existing ones.

### 3.4 Updating Existing VMs

For VMs that were created using an older version of the Golden Image, updates need to be applied using the following methods:

* Windows VMs: Use SCCM or Azure Update Management to install required updates.
* Linux VMs: Use Ansible playbooks for applying necessary software updates.
* Major version updates: Redeploy VMs using the latest Golden Image version.

## 4. Automation & Tools for Image Management

Golden Image Management relies on automation tools to streamline deployment and updates. Some key tools include:

* Terraform: Automates VM creation using Golden Images.
* Azure DevOps: Enables continuous integration and automated deployments.
* SCCM: Manages Windows VM updates post-deployment.
* Ansible: Automates software installation and configuration for Linux VMs.

## 5. Best Practices for Golden Image Management

* Regularly update Golden Images with new software versions and security patches.
* Maintain version control (e.g., v1, v1.X, v1.X+1) to track updates efficiently.
* Test new Golden Images in a staging environment before production use.
* Automate provisioning and updates to reduce manual efforts and ensure consistency.

## 6. Conclusion

Golden Image Management is a robust approach to streamlining VM deployments, ensuring consistency, and maintaining security compliance. By leveraging automation tools and versioning strategies, organizations can enhance efficiency, reduce operational overhead, and improve infrastructure reliability.