# ELC – Virtual Machine- Proof of Concept (POC)

# Initial Draft version v1.1 Submitted to



By



**Wipro Technologies** 

### **Revision History**

Version	Date of Revision	Description of Change	Reason for Change	Reviewed By
1.1	31-Oct-23	Initial Draft	NA	Felix & Kannan

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#### Overview

Azure Virtual Machines (VMs) are a key component of Microsoft Azure's Infrastructure as a Service (IaaS) offering. They provide on-demand computing resources in the form of virtualized hardware, allowing you to run Windows or Linux-based applications and workloads in the cloud. Here's an overview of Azure Virtual Machines. The best practice of Azure Policy will ensure the ELC Cloud operations team to adhere to the ELC Global information security policy guidelines respect to the Cloud Security and follow the Azure Virtual machine Security policy. This procedure enables the technology controls and processes needed to ensure transparency and auditability across the technology environment, which will empower ELC's ability to perform investigations, regulatory audits, and incident and problem management to make sure the best practices are followed adhered as per the regulatory standards.

#### **Purpose and Scope**

As per the ELC's Global Information Security, Adopting the Azure Security benchmarks and the Azure Security Policy framework to Secure ELC Cloud services by creating and implementing strong Azure security policies in the Azure services for Virtual machines in the cloud environment through the Azure security policy to protect and secure the instances, workload running through the VM. Azure Security benchmarks can be referred in the Appendix.

## 1.0 Best Practice 01 - Azure Backup should be enabled for linux Virtual Machines.

#### 1.1 Description

Ensure protection of your Azure Virtual Machines by enabling Azure Backup. Azure Backup is a secure and cost-effective data protection solution for Azure.

#### 1.2 Control Domain

NIST\_SP\_800-53\_R5, CMMC Level 3

#### 1.3 Non-Compliance Message

In accordance with ELC IT-Security Compliance & Azure Benchmark, it is recommended to enable the Azure Backup for Virtual Machines. Please Notify to 'elcitprod@service-now.com' for any non-compliance or assistance required.

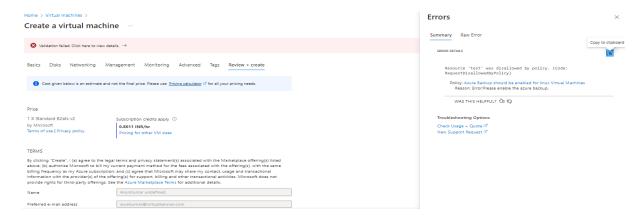


Figure 1 - Validation Failed error summary details.

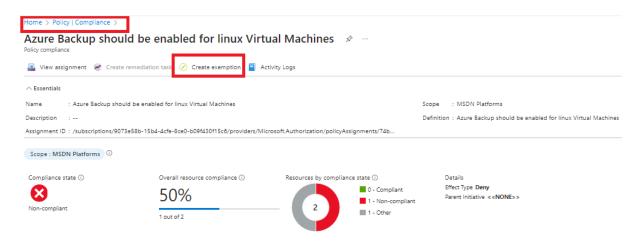


Figure 2 - Select the policy, Click on Create Exemption.

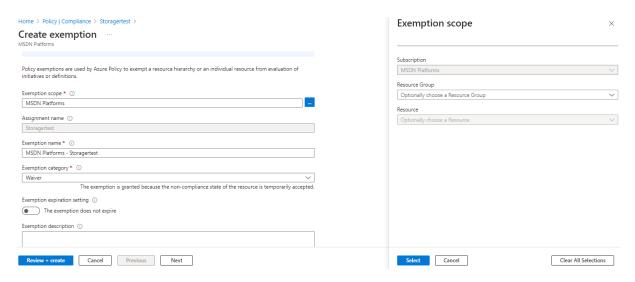


Figure 3 - Select the Exemption Scope (Subscription/ Resource Group / Resource).

#### 2.0 Best Practice 02 - Linux machines that have accounts without passwords.

#### 2.1 Description

Machines are non-compliant if Linux machines that have accounts without passwords.

#### 2.2 Control Domain

NIST\_SP\_800-53\_R5, ISO27001 - 2013, CMMC Level 3

#### 2.3 Non-Compliance

Message In accordance with ELC IT-Security & Compliance, it is recommended to create a password for the virtual machine. Please Notify to 'elcitprod@service-now.com' for any non-compliance or assistance required.

```
'properties": {
 "displayName": "Linux machines that have accounts without passwords",
"policyType": "Custom",
 "mode": "Indexed",
"description": "Requires that prerequisites are deployed to the policy assignment scope. For details, visit
  "metadata": {
    "version": "3.0.0"
    "requiredProviders":
        Microsoft.GuestConfiguration"
     guestConfiguration": {
       "name": "PasswordPolicy_msid232",
   },
"createdBy": "829e58c3-742e-4964-aba4-58334c64fa42",
"createdOn": "2023-10-11T01:28:27.163312Z",
"updatedBy": null,
    "updatedOn": null
  "parameters": {
     "IncludeArcMachines": {
       "type": "String",
      "metadata": {
        "displayName": "Include Arc connected servers",
"description": "By selecting this option, you agree to be charged monthly per Arc connected machine.",
"portalReview": "true"
       "allowedValues": [
         "true",
"false"
```

```
"datastax",
"couchbase",
"scalegrid",
"checkpoint",
"paloaltonetworks",
"debian",
"credativ"

},

{
    "field": "Microsoft.Compute/imagePublisher",
    "equals": "OpenLogic"
},

{
    "field": "Microsoft.Compute/imageSKU",
    "notLike": "6*"
}

}

{
    "allof": [
    {
        "field": "Microsoft.Compute/imagePublisher",
        "equals": "oracle"
},

{
        "field": "Microsoft.Compute/imagePublisher",
        "equals": "oracle"
},

{
        "field": "Microsoft.Compute/imagePublisher",
        "equals": "oracle"
},

{
        "field": "Microsoft.Compute/imageSKU",
        "notLike": "6*"
}
```



Figure 4 - Validation Failed error summary details.

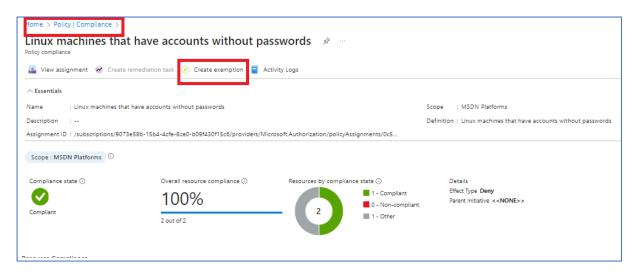


Figure 2 - Select the policy, Click on Create Exemption.

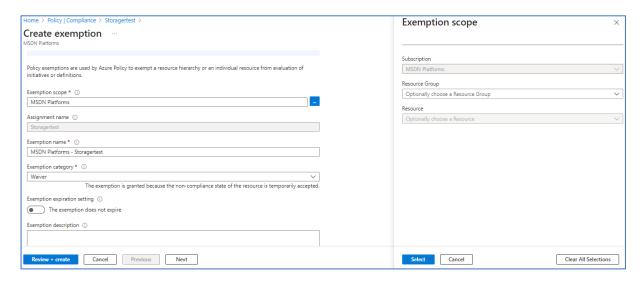


Figure 3 - Select the Exemption Scope (Subscription/ Resource Group / Resource).

## 3.0 Best practice 03 - Authentication to Linux machines should require SSH keys.

#### 3.1 Description

Machines are non-compliant if Linux machines that have accounts without SSH keys.

#### 3.2 Control Domain

NIST\_SP\_800-53\_R5, Azure\_Security\_Benchmark\_v3.0, CMMC 2.0 Level 2

#### 3.3 Non-Compliance Message

In accordance with ELC IT-Security & Compliance, it is recommended to create a SSH keys for the virtual machine to access. Please Notify to 'elcitprod@service-now.com' for any non-compliance or assistance required.

```
"field": "Microsoft.Compute/imagePublisher",
    "equals": "center-for-internet-security-inc"
},
{
    "field": "Microsoft.Compute/imageOffer",
    "notLike": "Cis-windows*"
},
{
    "allOf": [
        "field": "Microsoft.Compute/imagePublisher",
        "equals": "Suse"
        },
        {
        "field": "Microsoft.Compute/imageSKU",
        "notLike": "11*"
        }
    ]
},
{
    "allOf": [
        "field": "Microsoft.Compute/imagePublisher",
        "equals": "Canonical"
        },
        {
        "field": "Microsoft.Compute/imagePublisher",
        "equals": "Canonical"
        },
        {
        "field": "Microsoft.Compute/imageSKU",
        "notLike": "12*"
        }
}
```

```
field": "Microsoft.Compute/imageOffer",
    "like": "linux*"
}

allof": [
    "anyof": [
    "field": "Microsoft.Compute/virtualMachines/osProfile.linuxConfiguration",
    "exists": "true"
    },
    {
        "field": "Microsoft.Compute/virtualMachines/storageProfile.osDisk.osType",
        "like": "Linux*"
    }
}

anyof": [
    "field": "Microsoft.Compute/imagePublisher",
    "exists": "false"
    },
    {
        "field": "Microsoft.Compute/imagePublisher",
        "exists": "false"
        "notIn": [
        "OpenLogic",
        "RedHat",
        "credativ",
        "Suse",
        "suse",
```

```
"microsoft-dsvm",
                   "Oracle",
                   "AzureDatabricks",
                   "azureopenshift"
"allOf": [
    "value": "[parameters('IncludeArcMachines')]",
"equals": "true"
    "anyOf": [
        "allOf": [
             "field": "type",
            "equals": "Microsoft.HybridCompute/machines"
            "field": "Microsoft.HybridCompute/imageOffer",
```

```
"parameters": {
  "IncludeArcMachines": {
    "type": "String",
    "metadata": {
      "displayName": "Include Arc connected servers",
"description": "By selecting this option, you agree to be charged monthly per Arc connected machine.",
"portalReview": "true"
    },
"allowedValues":[
      "true",
"false"
    ],
"defaultValue": "false"
  "effect": {
   "type": "String",
    "metadata": {
      "displayName": "Effect",
       "description": "Enable or disable the execution of this policy"
    },
"allowedValues": [
       "AuditIfNotExists",
      "deny",
"Disabled"
    "defaultValue": "deny"
```

The location of the error details depends on what aspect of Azure Policy you're working with & error summary details.



Figure 5 - Validation Failed error summary details.

#### 3.6 Exceptions

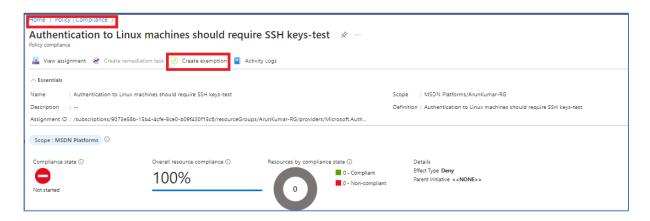


Figure 2 - Select the policy, Click on Create Exemption.

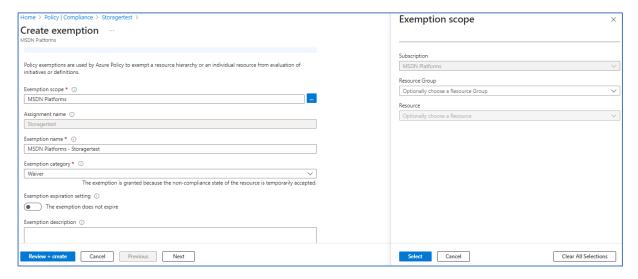


Figure 3 - Select the Exemption Scope (Subscription/ Resource Group / Resource).

## 4.0 Best practice 04 - Boot Diagnostics should be enabled on Linux virtual machines.

#### 4.1 Description

Machines are non-compliant if Boot Diagnostics on disable in Linux virtual machines.

#### 4.2 Control Domain

Azure\_Security\_Benchmark\_v3.0.

#### 4.3 Non-Compliance Message

In accordance with ELC IT-Security & Compliance, it is recommended to enable the Boot Diagnostics on virtual machines. Please Notify to 'elcitprod@service-now.com' for any non-compliance or assistance required.

```
"allOf": [
                                       "field": "type",
                                        "equals": "Microsoft.Compute/virtualMachines"
                                       \textbf{"field": "Microsoft.Compute/virtualMachines/diagnosticsProfile.bootDiagnostics.enabled", and the substitution of the subst
                                        "notEquals": "true"
              "effect": "[parameters('effect')]"
},
"id": "/subscriptions/9073e58b-15b4-4cfe-8ce0-b09f430f15c6/providers/Microsoft.Authorization/policyDefinitions
"
"type": "Microsoft.Authorization/policyDefinitions",
 "name": "2dd5225f-1230-497e-ad04-bd8166b0c7de",
 "systemData": {
    "createdBy": "arunkumar@virtualkannan.com",
       "createdByType": "User",
       "createdAt": "2023-11-01T07:28:16.4690394Z",
        "lastModifiedBy": "arunkumar@virtualkannan.com",
        "lastModifiedByType": "User",
        "lastModifiedAt": "2023-11-01T07:28:16.4690394Z"
```



Figure 6 - Validation Failed error summary details.

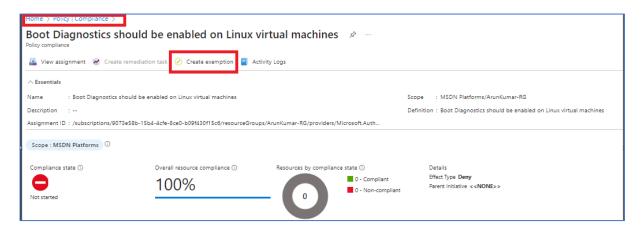


Figure 2 - Select the policy, Click on Create Exemption.

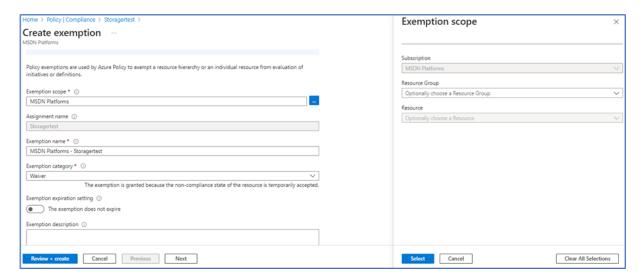


Figure 3 - Select the Exemption Scope (Subscription/ Resource Group / Resource).

## 5.0 Best practice 05 - A managed identity should be enabled on your machine.

#### 5.1 Description

Machines are non-compliant Resources managed by Auto manage should have a managed identity.

#### 5.2 Control Domain

NIST\_SP\_800-53\_R5, Azure\_Security\_Benchmark\_v3.0.

#### 5.3 Non-Compliance Message

In accordance with ELC IT-Security & Compliance, it is recommended to managed identity should be enabled on your machine. Please Notify to 'elcitprod@service-now.com' for any non-compliance or assistance required.

```
"properties": {
    "displayName": "A managed identity should be enabled on your machine",
    "policyType": "Custom",
    "mode": "Indexed",
    "description": "Resources managed by Automanage should have a managed identity.",
    "metadata": {
        "version": "1.0.0-preview",
        "preview": true,
        "createdby: "829e58c3-742e-4964-aba4-58334c64fa42",
        "createdon": "2023-11-01T10:42:11.21305762",
        "updatedBy": null
        ,
        "updatedBy": null
        },
        "parameters": {
        "effect": {
            "displayName": "Effect",
            "description": "Enable or disable the execution of the policy"
        },
        "allowedValues": [
            "Audit",
            "deny",
            "Disabled"
        ],
        "defaultValue": "deny"
        }
    },
    policyRule": {
        "if": {
            "allof": [
```



Figure 7 - Validation Failed error summary details.

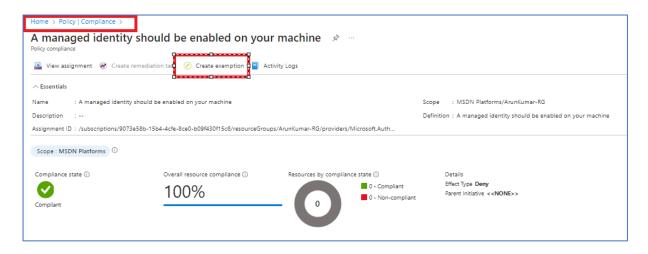


Figure 2 - Select the policy, Click on Create Exemption.

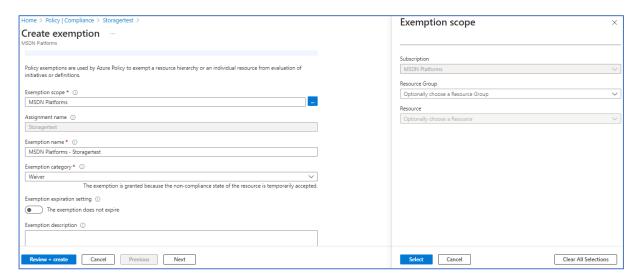


Figure 3 - Select the Exemption Scope (Subscription/ Resource Group / Resource).

#### 6.0 Appendix

#### **6.1** Abbreviations

Abbreviations	Descriptions
CIS	Center for Internet Security
СММС	Cybersecurity Maturity Model Certification
VM	Virtual Machine
IoT	Internet of Things
NIST	National Institute of Standards and Technology
NA	Not Applicable

#### 7.0 Reference Document links

- Azure Security Benchmark 3.0
   Overview of the Azure Security Benchmark v3 | Microsoft Learn
- <a href="https://elcompanies.sharepoint.com/:f:/s/CloudSecurity/EijeYgvn7QJMroSKfXcXaSUBX8h5fditQG2ZMtJHPpNSzQ?e=wwhdsH">https://elcompanies.sharepoint.com/:f:/s/CloudSecurity/EijeYgvn7QJMroSKfXcXaSUBX8h5fditQG2ZMtJHPpNSzQ?e=wwhdsH</a>
- Regulatory Compliance

  Regulatory Compliance details for ISO 27001:2013 Azure Policy | Microsoft Learn