

Azure Autoscale

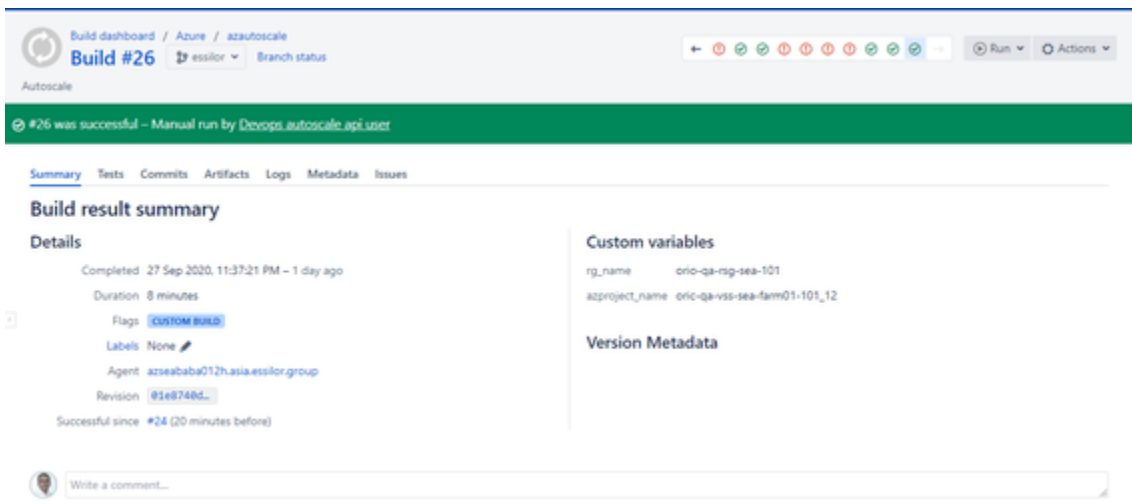
Autoscaling is the process of dynamically allocating resources to match performance requirements. As the volume of work grows, an application may need additional resources to maintain the desired performance levels and satisfy service-level agreements (SLAs). As demand slackens and the additional resources are no longer needed, they can be de-allocated to minimize costs.

Azure provides built-in autoscaling feature : Azure Virtual Machines autoscale via [virtual machine scale sets](#), which manage a set of Azure virtual machines as a group.

Benefits of using Autoscale:

- When we on-board new entities, we can do one click to update the number of instances.
- When CPU or RAM % usage is high during peak hours, the VM scale set can scale-out to take care of the load and can scale-in when load is reduced.
- Save costs !!! and time.

Time to install the apps after autoscale custom script is triggered is 8 min



To deploy code into newly created instances install **Custom Script Extension Version 2** which downloads script from **Azure Storage** and runs scripts on Azure virtual machines. This extension is useful for post-deployment configuration, software installation, or any other configuration /management task.

- **Azure Storage:** Azure storage contains the script that need to be run after vmss instances scales up. You can use the extension to use your Azure Blob storage credentials, to access Azure Blob storage.

Azure storage `infrhubstaseadevops001 containers` → `azautoscaleddeploy deployapp.sh`

deployapp.sh:

```
sh curl -fsSL http://artifactory/generic-local/azure/autoscale/bamboo\_deploy\_app\_to\_new\_vmss.sh -o bamboo_deploy_app_to_new_vmss.sh

sudo sh ./bamboo_deploy_app_to_new_vmss.sh
```

- **"bamboo_deploy_app_to_new_vmss.sh"** contains the actual code which fetch the required details like virtual machine name and resource group name and then triggers bamboo plan <https://bamboo/browse/AZ-AZ>
- Bamboo plan has code to determine application and environment to trigger appropriate application deployment plan after autoscale completes in the azure vmss.

Extension schema:

The Custom Script Extension configuration specifies things like script location and the command to be run. You can store sensitive data in a protected configuration, which is encrypted and only decrypted inside the target virtual machine.

customConfig.json:

```
{
  "fileUri": [" Script location URI "],
  "commandToExecute": "sh deployapp.sh"
}
```

Installation Steps:

STEP 1: Install custom extension name Deployapp and OS Hardening script to mount /data1

Install extension through Azure CLI:

- **az vmss extension set --vmss-name {my-vmss-name} --name customScript -g {myrg} --version 2.0 --publisher Microsoft.Azure.Extensions --extension-instance-name OshDeployapp --no-auto-upgrade --protected-settings @./customConfig.json**

customConfig.json:

```
{
  "fileUri": ["https://infrhubstaseadevops001.blob.core.windows.net/azautoscaleddeploy/deployapp.sh?sp=r&st=2020-10-07T07:58:16Z&se=2025-10-07T15:58:16Z&spr=https&sv=2019-12-12&sr=b&sig=3bZTZt2xiwzgi%2Ba8yW5h4WcZdSJkK0%2BRM7DOtqlF8no%3D", "https://infrhubstaseadevops001.blob.core.windows.net/azautoscaleddeploy/OSH-RH7-NGv6.sh?sp=r&st=2020-10-07T07:59:49Z&se=2025-10-07T15:59:49Z&spr=https&sv=2019-12-12&sr=b&sig=8svhN5fZGMOM0tvAY9bc%2Fszzx9Uv3bA33WKkdmUTayo%3D", "https://infrhubstaseadevops001.blob.core.windows.net/azautoscaleddeploy/osh_and_deployapp.sh?sp=r&st=2020-10-07T08:00:39Z&se=2025-10-07T16:00:39Z&spr=https&sv=2019-12-12&sr=b&sig=Fm7UhdpyFVP4I9omgOHtHrCaYm13KWfx4IJAbgNrlGY%3D"], "commandToExecute": "sh ./osh_and_deployapp.sh"
}
```

deployapp.sh

```
https://infrhubstaseadevops001.blob.core.windows.net/azautoscaleddeploy/deployapp.sh?sp=r&st=2020-10-07T07:58:16Z&se=2025-10-07T15:58:16Z&spr=https&sv=2019-12-12&sr=b&sig=3bZTZt2xiwzgi%2Ba8yW5h4WcZdSJkK0%2BRM7DOtqlF8no%3D
```

OSH-RH7-NGv6.sh

```
https://infrhubstaseadevops001.blob.core.windows.net/azautoscaleddeploy/OSH-RH7-NGv6.sh?sp=r&st=2020-10-07T07:59:49Z&se=2025-10-07T15:59:49Z&spr=https&sv=2019-12-12&sr=b&sig=8svhN5fZGMOM0tvAY9bc%2Fszzx9Uv3bA33WKkdmUTayo%3D
```

osh_and_deployapp.sh

```
https://infrhubstaseadevops001.blob.core.windows.net/azautoscaleddeploy/osh_and_deployapp.sh?sp=r&st=2020-10-07T08:00:39Z&se=2025-10-07T16:00:39Z&spr=https&sv=2019-12-12&sr=b&sig=Fm7UhdpyFVP4I9omgOHtHrCaYm13KWfx4IJAbgNrlGY%3D
```

STEP 2: Set do not run extn on over provisioning VM's

- Scale sets currently default to "**overprovisioning: true**" in VMs. With overprovisioning turned on, the scale set actually spins up more VMs than you asked for, then deletes the extra VMs once the requested number of VMs are successfully provisioned. Overprovisioning improves provisioning success rates and reduces deployment time.
- when Overprovision is enabled, extensions need to launch only on the requested number of VMs which are finally kept.

doNotRunExtensionsOnOverprovisionedVms=true

This property will hence ensure that the extensions do not run on the extra overprovisioned VMs.

az vmss update -g {myrg} -n {autoscale-vmss-name} --set doNotRunExtensionsOnOverprovisionedVms=true

STEP 3: Enable email notification when scaling

- **Autoscale Action settings:**
- **Notify Action :** Defines what notifications should occur when an autoscale event occurs based on satisfying the criteria of one of the autoscale setting's profiles. Autoscale can notify one or more email addresses or make calls to one or more webhooks.
 - Scale - Scale VMs in or out
 - Email - Send email to subscription admins, co-admins, and/or additional email address you specify
- **Autoscale settings using CLI:**

Update autoscale settings to add an email notification.

az monitor autoscale update -g {myrg} -n {autoscale-vmss-name} --add-action email devops@essilor.com.sg autoscale@essilor.com.sg

We can add multiple emails address by providing space delimiter between them.

Configure Scale-In Policy Run history JSON **Notify** Diagnostics settings

☐ Email administrators

☐ Email co-administrators

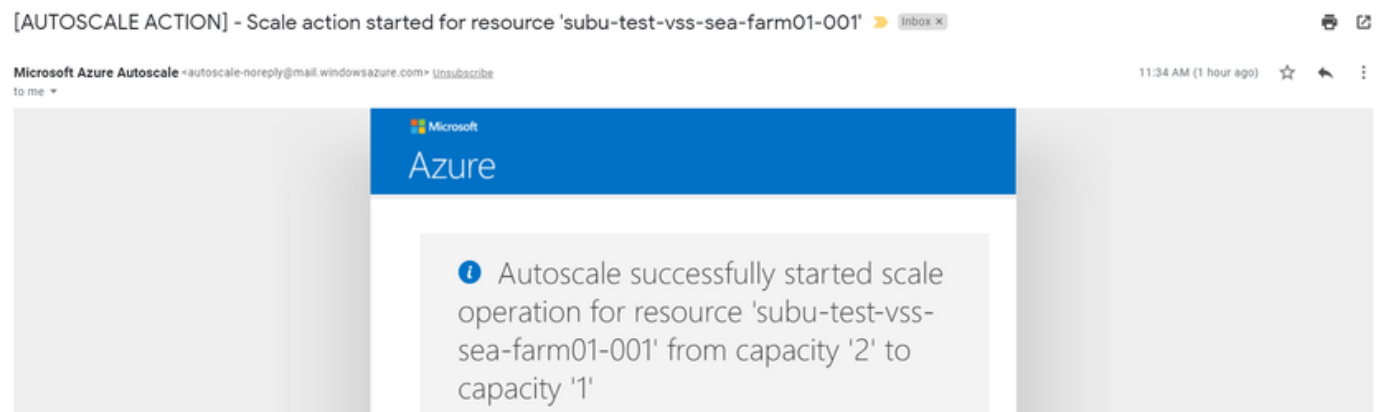
Additional administrator email(s) ⓘ

devops@essilor.com.sg ✓

Webhook ⓘ

HTTP or HTTPS endpoint to route autoscale notifications to

Email Notification looks like:



- To create a microsoft.insights/autoscalesettings resource, add the following JSON to the resources section of your template.

Template format:

```
"notifications": [
{
  "operation": "Scale",
  "email": {
    "sendToSubscriptionAdministrator": "false",
    "sendToSubscriptionCoAdministrators": "false",
    "customEmails": [
      "autoscale@essilor.com.sg",
      "devops@essilor.com.sg"
    ]
  }
},
]
```

Full template format for Autoscale settings refer <https://docs.microsoft.com/en-us/azure/templates/microsoft.insights/2015-04-01/autoscalesettings#template-format>

Trouble shooting:

When the Custom Script Extension runs, the script is created or downloaded into a directory that's similar to the following example. The command output is also saved into this directory in stdout and stderr files.

/var/lib/waagent/custom-script/download/0/

- Directory contains files including script and output files.

deployapp.sh

stdout

stderr

- To troubleshoot, first check the Linux Agent Log, ensure the extension ran, check:

/var/log/waagent.log

/var/log/azure/custom-script/handler.log

References:

Custom extension script: <https://docs.microsoft.com/en-us/azure/virtual-machines/extensions/custom-script-linux>

Azure extension : <https://docs.microsoft.com/en-us/cli/azure/vmss/extension?view=azure-cli-latest>

Virtual machine scale sets: <https://docs.microsoft.com/en-us/rest/api/compute/virtualmachinescalesets/get#virtualmachinescaleset>

Trouble shooting : <https://docs.microsoft.com/en-us/azure/virtual-machines/extensions/custom-script-linux#troubleshooting>

Autoscale monitor update CLI: <https://docs.microsoft.com/en-us/azure/azure-monitor/platform/autoscale-webhook-email#virtual-machine-scale-sets>

Autoscale settings : <https://docs.microsoft.com/en-us/azure/templates/microsoft.insights/2015-04-01/autoscalesettings#template-format>

Autoscale notification: <https://docs.microsoft.com/en-us/azure/azure-monitor/platform/autoscale-webhook-email#virtual-machine-scale-sets>