Cross Region Creation of VM Restore Points

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Overview

As an extension to [VM Restore Points](https://github.com/Azure/Virtual-Machine-Restore-Points) we are providing additional functionality within Azure platform to enable our partners to build BCDR solutions for Azure VMs. One such functionality is:

**Ability to create VM Restore Points directly in the target region by referencing a VM in the source region**

* Scenario where this API can be helpful: Implement a disaster recovery solution to protect VMs from region failure.
* Tentative Private Preview Availability: August 2021

This document will provide you with necessary information about the API surface for creating a restore point directly in a target region so that you can get started to build your DR solution for Azure VMs.

High-level sequence

Graphical user interface, application

Description automatically generated

Cross-region Creation of VM Restore Points

Create Restore Point Collection in target region

First step in creating a VM Restore point in a target region referencing a VM from a source region is to create a RestorePointCollection in the target region

URI Request

PUT https://management.azure.com/subscriptions/{subscriptionId}/resourceGroups/{resourceGroupName}/providers/Microsoft.Compute/restorePointCollections/{restorePointCollectionName}?api-version={api-version}

***Note****: api-version must be 2021-07-01 or later*

Request Body

{

    "name": "name of the restorePointCollection resource",

    "location": "location of the restorePointCollection resource",

    "tags": {

        "department": "finance"

    },

    "properties": {

         "source": {

               “id”: "/subscriptions/{subid}/resourceGroups/{resourceGroupName}/providers/microsoft.compute/virtualMachines/{vmName}"

        }

    }

}

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element Name | Mandatory | Type | Description | |
| name | Yes | String | Name of the restore point collection in target region |
| location | Yes | String | Location of the restore point collection (Target region) |
| tags | No | Object | Tags for the restore point collection |
| properties.source.id | Yes | String | ARM id of the original Virtual Machine in source region |

**NOTE:**For PATCH calls, Request and response body are same as PUT. Only tags can be updated during PATCH calls.

Request Response

The request response will include a status code and set of response headers.

*Status Code*

The operation returns a 201 during create and 200 during Update.

*Response body*

{

    "name": "name of the restorePointCollection resource",

    "id": "CSM Id of restorePointCollection resource",

    "type": "Microsoft.Compute/restorePointCollections",

    "location": "location of the restorePointCollection resource",

    "tags": {

        "department": "finance"

    },

    "properties   ": {

        "restorePointCollectionId": "Guid Id of RestorePointCollection",

        "source": {

            "id": "/subscriptions/{subid}/resourceGroups/{resourceGroupName}/providers/microsoft.compute/virtualMachines/{vmName}",

            "location": "westus"

        }

    }

}

|  |  |  |
| --- | --- | --- |
| Element Name | Type | Description |
| name | String | Name of the restore point collection in target region |
| id | String | Location of the restore point collection (Target region) |
| type | String | Resource type: Microsoft.Compute/restorePointCollections |
| location | String | Location of the restore point collection (Target region) |
| tags | Object | Tags for the restore point collection |
| properties.source.location | String | Location of the source VM. This is a read-only property returned as part of PUT / GET responses |

Create VM Restore Point in Target Region

Next step is to trigger creation of a RestorePoint in the target RestorePointCollection.

URI Request

PUT https://management.azure.com/subscriptions/{subscriptionId}/resourceGroups/{resourceGroupName}/providers/Microsoft.Compute/restorePointCollections/{restorePointCollectionName}/restorePoints/{restorePointName}?api-version={api-version}

***Note****: api-version must be 2021-07-01 or later*

Request Body

{

    "name": "name of the restore point resource",

    "properties": {

"excludeDisks": ["List of disks to be excluded in the RestorePoint"]

    }

}

|  |  |  |  |
| --- | --- | --- | --- |
| Element Name | Mandatory | Type | Description |
| name | Yes | String | Name of the restore point in target region |
| optionalProperties | No | Object | Additional properties to be passed to the extension for executing any pre-freeze script. |
| excludeDisks | No | Object | List of disks which need to be excluded from VM restore point snapshot. Ex:  "excludeDisks":[      {        "id": "fa177bf6-f236-4c55-9a56-c8b3865d6747/disks/FakeDataDiskName?id=027ae215-7665-427a-a71e-002aa12a8145"      },      {        "id": "b598ce1f-9cc4-4eea-a2a2-60578ada2d07/disks/FakeDataDiskName?id=b244a200-04ef-4297-8e9d-60c354c30104"      },      {        "id": "3872b74a-9954-4486-8d70-d824899d6db9/disks/FakeDataDiskName?id=6c8cf5a3-66bd-441f-a175-345f18f7b28c"      }    ], |

**NOTE:** Location of the source VM would be inferred from that of the target RestorePointCollection

### Request Response

The request response will include a status code and set of response headers.

#### Status Code

This is a long running operation; hence the operation returns a 201 during create. The client is expected to poll for the status using the operation. (Both the Location and Azure-AsyncOperation headers are provided for this purpose.)

During restore point creation, the ProvisioningState would appear as Creating in GET restore point API response. If creation fails, its ProvisioningState will be Failed. ProvisioningState would be set to Succeeded when the data copy across regions is initiated.

**NOTE**: The status of data movement can be tracked via “InstanceView” property. Restore Point is considered usable (can be used to restore a VM) only when copy of all the disk restore points are successful.

*Response body*

##### Initial Response Body

{

    "id": "CSM Id of the restore point",

    "name": "name of the restore point",

    "sourceMetadata": {

        "vmId": "Unique Guid of the VM from which the restore point was created",

        "location": "source VM location",

        "hardwareProfile": {

            "vmSize": "Standard\_A1"

        },

        "osProfile": {

            "computername": "",

            "adminUsername": "",

            "secrets": [

                {

                    "sourceVault": {

                        "id": "/subscriptions/<subId>/resourceGroups/<rgName>/providers/Microsoft.KeyVault/vaults/<keyvault-name>"

                    },

                    "vaultCertificates": [

                        {

                            "certificateUrl": "https://<keyvault-name>.vault.azure.net/secrets/<secret-name>/<secret-version>",

                            "certificateStore": "certificateStoreName on Windows"

                        }

                    ]

                }

            ],

            "customData": "",

            "windowsConfiguration": {

                "provisionVMAgent": "true|false",

                "winRM": {

                    "listeners": [

                        {

                            "protocol": "http"

                        },

                        {

                            "protocol": "https",

                            "certificateUrl": ""

                        }

                    ]

                },

                "additionalUnattendContent": [

                    {

                        "pass": "oobesystem",

                        "component": "Microsoft-Windows-Shell-Setup",

                        "settingName": "FirstLogonCommands|AutoLogon",

                        "content": "<XML unattend content>"

                    }

                ],

                "enableAutomaticUpdates": "true|false"

            },

            "linuxConfiguration": {

                "disablePasswordAuthentication": "true|false",

                "ssh": {

                    "publicKeys": [

                        {

                            "path": "Path-Where-To-Place-Public-Key-On-VM",

                            "keyData": "PEM-Encoded-public-key-file"

                        }

                    ]

                }

            }

        },

        "storageProfile": {

            "osDisk": {

                "osType": "Windows|Linux",

                "name": "OSDiskName",

                "diskSizeGB": "10",

                "caching": "ReadWrite",

                "managedDisk": {

                    "id": "CSM Id of the managed disk",

                    "storageAccountType": "Standard\_LRS"

                },

            },

            "dataDisks": [

                {

                    "lun": "0",

                    "name": "datadisk0",

                    "diskSizeGB": "10",

                    "caching": "ReadWrite",

                    "managedDisk": {

                        "id": "CSM Id of the managed disk",

                        "storageAccountType": "Standard\_LRS"

                    },

                }

            ]

        },

        "diagnosticsProfile": {

            "bootDiagnostics": {

                "enabled": true,

                "storageUri": " http://storageaccount.blob.core.windows.net/"

            }

        }

    },

"optionalProperties": "opaque bag of properties to be passed to extension",

    "consistencyMode": "CrashConsistent | FileSystemConsistent | ApplicationConsistent",

    "provisioningState": "Succeeded | Failed | Creating | Deleting",

    "provisioningDetails": {

        "creationTime": "Creation Time of Restore point in UTC",

        "totalUsedSizeInBytes": "25",

        "statusCode": "status code reported by the extension",

        "statusMessage": "status message reported by the extension"

    }

}

##### Final Response Body

{

    "id": "CSM Id of the restore point",

    "name": "name of the restore point",

    "sourceMetadata": {

        "vmId": "Unique Guid of the VM from which the restore point was created",

        "location": "source VM location",

        "hardwareProfile": {

            "vmSize": "Standard\_A1"

        },

        "osProfile": {

            "computername": "",

            "adminUsername": "",

            "secrets": [

                {

                    "sourceVault": {

                        "id": "/subscriptions/<subId>/resourceGroups/<rgName>/providers/Microsoft.KeyVault/vaults/<keyvault-name>"

                    },

                    "vaultCertificates": [

                        {

                            "certificateUrl": "https://<keyvault-name>.vault.azure.net/secrets/<secret-name>/<secret-version>",

                            "certificateStore": "certificateStoreName on Windows"

                        }

                    ]

                }

            ],

            "customData": "",

            "windowsConfiguration": {

                "provisionVMAgent": "true|false",

                "winRM": {

                    "listeners": [

                        {

                            "protocol": "http"

                        },

                        {

                            "protocol": "https",

                            "certificateUrl": ""

                        }

                    ]

                },

                "additionalUnattendContent": [

                    {

                        "pass": "oobesystem",

                        "component": "Microsoft-Windows-Shell-Setup",

                        "settingName": "FirstLogonCommands|AutoLogon",

                        "content": "<XML unattend content>"

                    }

                ],

                "enableAutomaticUpdates": "true|false"

            },

            "linuxConfiguration": {

                "disablePasswordAuthentication": "true|false",

                "ssh": {

                    "publicKeys": [

                        {

                            "path": "Path-Where-To-Place-Public-Key-On-VM",

                            "keyData": "PEM-Encoded-public-key-file"

                        }

                    ]

                }

            }

        },

        "storageProfile": {

            "osDisk": {

                "osType": "Windows|Linux",

                "name": "OSDiskName",

                "diskSizeGB": "10",

                "caching": "ReadWrite",

                "managedDisk": {

                    "id": "CSM Id of the managed disk",

                    "storageAccountType": "Standard\_LRS"

                },

                "diskRestorePoint": {

                    "id": "/subscriptions/<subId>/resourceGroups/<rgName>/restorePointCollections/<rpcName>/restorePoints/<rpName>/diskRestorePoints/<diskRestorePointName>"

                }

            },

            "dataDisks": [

                {

                    "lun": "0",

                    "name": "datadisk0",

                    "diskSizeGB": "10",

                    "caching": "ReadWrite",

                    "managedDisk": {

                        "id": "CSM Id of the managed disk",

                        "storageAccountType": "Standard\_LRS"

                    },

                    "diskRestorePoint": {

                        "id": "/subscriptions/<subId>/resourceGroups/<rgName>/restorePointCollections/<rpcName>/restorePoints/<rpName>/diskRestorePoints/<diskRestorePointName>"

                    }

                }

            ]

        },

        "diagnosticsProfile": {

            "bootDiagnostics": {

                "enabled": true,

                "storageUri": " http://storageaccount.blob.core.windows.net/"

            }

        }

    },

"optionalProperties": "opaque bag of properties to be passed to extension",

    "consistencyMode": "CrashConsistent | FileSystemConsistent | ApplicationConsistent",

    "provisioningState": "Succeeded | Failed | Creating | Deleting",

    "provisioningDetails": {

        "creationTime": "Creation Time of Restore point in UTC",

        "totalUsedSizeInBytes": "25",

        "statusCode": "status code reported by the extension",

        "statusMessage": "status message reported by the extension"

    }

}

|  |  |  |
| --- | --- | --- |
| Element Name | Type | Description |
| Name | String | Specifies the name of the restore point. |
| consistencyMode | String | Currently this is just an output property specified by the server. In future, client can also specify this value to indicate the type of restore point to be created. |
| sourceMetadata | Object | Properties of the resource from/for which the restore point was created. These properties are captured at the time of creation of the restore point |
| provisioningState | String | ProvisioningState of the RestorePoint resource. We would mark the ProvisioningState as Terminal, once we kick-off DataMove for that restore point, since data move is a long-running process. The status of data movement can be tracked via “InstanceView” properties. |
| diskRestorePoint.id | String | A unique id for each Disk attached to the VM |

## Get VM Restore Points with Copy/Replication Status

Once creation of VM Restore Points is initiated, you can track the data copy status by calling GET instance View (?$expand=instanceView) on the VM Restore Point.

### URI Request

GET https://management.azure.com/subscriptions/{subscriptionId}/resourceGroups/{resourceGroupName}/providers/Microsoft.Compute/restorePointCollections/{restorePointCollectionName}/restorePoints/{restorePointName}?$expand=instanceView&api-version={api-version}

***Note****: api-version must be 2021-07-01 or later*

### Request Response

{

    "id": "CSM Id of the restore point",

    "name": "name of the restore point",

    "properties": {

        "sourceMetadata": {

            "vmId": "Unique Guid of the VM from which the restore point was created",

            "location": "source VM location",

            "hardwareProfile": {

                "vmSize": "Standard\_A1"

            },

            "osProfile": {

                "computername": "",

                "adminUsername": "",

                "secrets": [

                    {

                        "sourceVault": {

                            "id": "/subscriptions/<subId>/resourceGroups/<rgName>/providers/Microsoft.KeyVault/vaults/<keyvault-name>"

                        },

                        "vaultCertificates": [

                            {

                                "certificateUrl": "https://<keyvault-name>.vault.azure.net/secrets/<secret-name>/<secret-version>",

                                "certificateStore": "certificateStoreName on Windows"

                            }

                        ]

                    }

                ],

                "customData": "",

                "windowsConfiguration": {

                    "provisionVMAgent": "true|false",

                    "winRM": {

                        "listeners": [

                            {

                                "protocol": "http"

                            },

                            {

                                "protocol": "https",

                                "certificateUrl": ""

                            }

                        ]

                    },

                    "additionalUnattendContent": [

                        {

                            "pass": "oobesystem",

                            "component": "Microsoft-Windows-Shell-Setup",

                            "settingName": "FirstLogonCommands|AutoLogon",

                            "content": "<XML unattend content>"

                        }

                    ],

                    "enableAutomaticUpdates": "true|false"

                },

                "linuxConfiguration": {

                    "disablePasswordAuthentication": "true|false",

                    "ssh": {

                        "publicKeys": [

                            {

                                "path": "Path-Where-To-Place-Public-Key-On-VM",

                                "keyData": "PEM-Encoded-public-key-file"

                            }

                        ]

                    }

                }

            },

            "storageProfile": {

                "osDisk": {

                    "osType": "Windows|Linux",

                    "name": "OSDiskName",

                    "diskSizeGB": "10",

                    "caching": "ReadWrite",

                    "managedDisk": {

                        "id": "CSM Id of the managed disk",

                        "storageAccountType": "Standard\_LRS"

                    },

                    "diskRestorePoint": {

                        "id": "/subscriptions/<subId>/resourceGroups/<rgName>/restorePointCollections/<rpcName>/restorePoints/<rpName>/diskRestorePoints/<diskRestorePointName>"

                    }

                },

                "dataDisks": [

                    {

                        "lun": "0",

                        "name": "datadisk0",

                        "diskSizeGB": "10",

                        "caching": "ReadWrite",

                        "managedDisk": {

                            "id": "CSM Id of the managed disk",

                            "storageAccountType": "Standard\_LRS"

                        },

                        "diskRestorePoint": {

                            "id": "/subscriptions/<subId>/resourceGroups/<rgName>/restorePointCollections/<rpcName>/restorePoints/<rpName>/diskRestorePoints/<diskRestorePointName>"

                        }

                    }

                ]

            },

            "diagnosticsProfile": {

                "bootDiagnostics": {

                    "enabled": true,

                    "storageUri": " http://storageaccount.blob.core.windows.net/"

                }

            }

        },

"optionalProperties": "opaque bag of properties to be passed to extension",

        "consistencyMode": "CrashConsistent | FileSystemConsistent | ApplicationConsistent",

        "provisioningState": "Succeeded | Failed | Creating | Deleting",

        "provisioningDetails": {

            "creationTime": "Creation Time of Restore point in UTC",

  "totalUsedSizeInBytes": "25",

         "statusCode": "status code reported by the extension",

         "statusMessage": "status message reported by the extension"

        },

        "instanceView": {

            "statuses": [

                {

                    "code": "ReplicationState/succeeded",

                    "level": "Info",

                    "displayStatus": "Replication succeeded"

                }

            ],

            "diskRestorePoints": [

                {

                    "id": "<diskRestorePoint Arm Id>",

                    "replicationStatus": {

                        "status": {

                            "code": "ReplicationState/succeeded",

                            "level": "Info",

                            "displayStatus": "Replication succeeded"

                        },

                        "completionPercent": "<completion percentage of the replication>"

                    }

                }

            ]

        }

    }

}

|  |  |  |
| --- | --- | --- |
| Element Name | Type | Description |
| instanceView | Object | Contains the Aggregate Replication State of the RestorePoint as well as replication status of individual Disk Restore Points |
| instanceView.statuses | Object | Aggregate Replication State of the RestorePoint target region |
| instanceView.statuses.diskRestorePoints | Object | Replication status of individual Disk Restore Points |
| completionPercent | String | Shows the completion percentage of cross-region copy/replication |

***Note****: Other fields in the response are same as the Restore Point PUT response above.*