SUSE Virtualization

Protect SUSE Virtualization Workloads with Storware Backup and Recovery

Extend Data Protection Across Virtual Machines and Containers

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Summary

This guide describes the deployment and configuration of Storware Backup and Recovery to extend policy-driven data protection for virtual machine and container workloads managed by SUSE Virtualization.

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1 Introduction

Organizations rely on diverse software that cannot be effectively managed in silos. IT environments must bridge the gap between VM workloads and containerized applications. **SUSE Virtualization** is the Kubernetes-native platform that manages VMs and containers side by side. This unifies operations and infrastructure, reducing IT costs. **Storware Backup and Recovery** complements SUSE Virtualization with an agentless, policy-driven data protection solution. It can back up and snapshot VMs, containers, and core cloud applications. This delivers a layer of data resiliency that reduces downtime, streamlines recovery, and improves cybersecurity. Integrating Storware Backup and Recovery with SUSE Virtualization helps organizations support mixed workloads, improve resilience, and reduce costs.

1.1 Scope

This guide describes how to deploy and configure Storware Backup and Recovery to protect virtual machine workloads running on SUSE Virtualization.

It provides step-by-step instructions for integrating Storware Backup and Recovery with SUSE Virtualization and validating backup and restore operations.

1.2 Audience

This guide is intended for virtualization administrators, systems administrators, infrastructure architects, platform engineers, and backup administrators responsible for protecting workloads running on SUSE Virtualization.

Before following this guide, you should have the following knowledge and experience:

- Basic Linux administration skills
- Familiarity with Kubernetes and `kubectl`
- Experience managing virtual machines and storage
- Basic understanding of SUSE Virtualization and backup concepts

1.3 Acknowledgments

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- Artur Wójcik, Senior IT Infrastructure Architect, Storware
- Jacek Kochan, Senior Infrastructure Specialist, Storware

2 Architecture

This section provides a planning and architecture overview for deploying Storware Backup and Recovery with SUSE Virtualization.

The focus is to describe a high-level design that delivers reliable backup and recovery capabilities for virtual machine workloads running on a cloud-native virtualization platform.

The integrated solution combines SUSE Virtualization with Storware Backup and Recovery to provide centralized data protection, policy-driven backup operations, and rapid recovery for enterprise workloads.

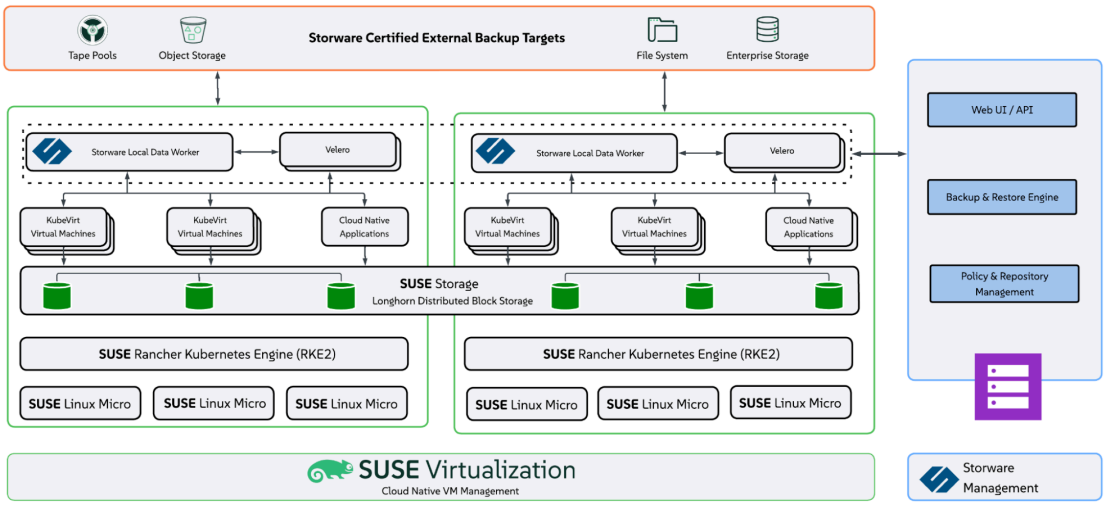

FIGURE 1: ARCHITECTURE DIAGRAM: SUSE VIRTUALIZATION WITH STORWARE BACKUP AND RECOVERY

2.1 SUSE Virtualization

SUSE Virtualization (https://www.suse.com/products/rancher/virtualization/) is a lightweight, hyperconverged infrastructure solution, enabling the management of virtual machines and containers side-by-side on a unified, cloud-native platform.

To ensure a secure and optimized base, SUSE Virtualization is deployed on SUSE Linux Micro, an immutable, enterprise-grade operating system purpose-built for containerized and virtual workloads.

Furthermore, the platform integrates natively with SUSE Rancher Prime.

This integration equips the architecture with centralized authentication, access control, observability, and built-in security, empowering operators to manage diverse workloads across data center and edge environments using a consistent operational model.

SUSE Virtualization v1.8.0 was used in the development of this guide.

2.2 Storware Backup and Recovery

Storware Backup and Recovery (https://storware.eu/storware-backup-recovery/) provides centralized, policy-driven backup and recovery capabilities for virtualized and cloud-native environments.

Integrated with SUSE Virtualization through Kubernetes APIs and leveraging Velero as the Kubernetes-native framework for orchestrating backup and restore operations, Storware protects virtual machine metadata and persistent volumes while enabling automated backup scheduling and recovery.

Running within the SUSE Virtualization cluster, Velero interacts with Kubernetes resources and persistent volumes to capture and recover virtual machine data and metadata.

The solution supports S3-compatible repositories for backup storage and helps organizations improve business continuity and cyber resilience through secure and reliable data protection.

Storware Backup and Recovery 7.5.0 was used in the development of this guide.

3 Deployment

This section describes how to deploy and configure SUSE Virtualization and Storware Backup and Recovery to protect virtual machine workloads.

3.1 Installing SUSE Virtualization

Deploy a SUSE Virtualization cluster before installing Storware Backup and Recovery.

1. Install SUSE Virtualization by following the SUSE Virtualization documentation (https://documentation.suse.com/cloudnative/virtualization/).
2. Verify that the cluster is healthy and accessible.
3. Ensure that `kubectl` is configured with cluster administrator privileges.
4. Confirm that virtual machines can be created successfully.

3.2 Installing Storware Backup and Recovery

Deploy the Storware Backup and Recovery server and configure the backup destination.

1. Download the Storware Backup and Recovery installation image and create a virtual machine for the SBR server by following the Storware installation guide (https://docs.storware.eu/deployment/installation).
2. Configure the SBR Node and perform the initial configuration, including applying the license, by following the Storware initial configuration guide (https://docs.storware.eu/deployment/initial-configuration).
3. Configure a backup destination according to the Storware backup destination documentation (https://docs.storware.eu/deployment/backup-destinations).
4. Verify that the Storware Backup and Recovery services are running and that the Web interface is accessible.

4 Preparation

Log in to a SUSE Virtualization node using SSH and obtain root privileges. The remaining procedures in this section are performed from the cluster node.

4.1 Enable the snapshot feature gate

Enable the Snapshot feature gate by running the following command:

```
kubectl -n harvester-system patch kubevirt kubevirt --type=json -
p='[{"op":"add","path":"/spec/configuration/developerConfiguration/featureGates/-",
```

```
"value":"Snapshot"}]'
```

4.2 Configure the default VolumeSnapshotClass

Configure Longhorn snapshots as the default CSI snapshot class.

1. Configure `longhorn-snapshot` as the default `VolumeSnapshotClass`.

```
kubectl annotate volumesnapshotclass longhorn-snapshot \
snapshot.storage.kubernetes.io/is-default-class="true" \
--overwrite
```

2. Verify the configuration.

```
kubectl get volumesnapshotclass
```

4.3 Install Velero

Install Velero on the SUSE Virtualization Kubernetes cluster to enable Kubernetes-native backup and restore orchestration for virtual machines and persistent volumes.

1. Create the `velero.yml` configuration file.

```
snapshotsEnabled: false

credentials:
  useSecret: true
  secretContents:
    cloud: |
      [default]
      aws_access_key_id = minio
      aws_secret_access_key = minio123

initContainers:
- name: velero-plugin-for-aws
  image: velero/velero-plugin-for-aws:v1.7.0
  volumeMounts:
  - mountPath: /target
    name: plugins

configuration:
  features: EnableCSI
```

```
  backupStorageLocation:
  - name: default
    provider: aws
    bucket: velero
    config:
      region: minio
      s3ForcePathStyle: true
      s3Url: http://minio.velero.svc:9000
```

2. Add the Helm repository.

```
helm repo add vmware-tanzu https://vmware-tanzu.github.io/helm-charts
helm repo update
```

3. Install Velero.

```
helm install velero vmware-tanzu/velero \
  --namespace velero \
  --create-namespace \
  -f velero.yml
```

4. Verify that the Velero pods are running.

```
kubectl get pods -n velero
```

4.4 Generate access credentials

Generate credentials that allow Storware Backup and Recovery to access the cluster.

1. Create a service account.

```
kubectl create serviceaccount storware -n default
```

2. Create a cluster role binding.

```
kubectl create clusterrolebinding storware-admin \
--clusterrole=cluster-admin \
--serviceaccount=default:storware
```

3. Generate an access token.

```
kubectl create token storware -n default --duration=87600h
```

4. Save the generated token for use during cluster registration.

4.5 Configuring SUSE Virtualization

Register the cluster in Storware Backup and Recovery.

1. Log in to the Storware Backup and Recovery Web interface.
2. Navigate to *Virtual Environments* > *Virtualization Providers*.
3. Click *Create*.
4. Select *Kubernetes* as the virtualization provider.
5. Enter the cluster URL, for example:

```
https://harvester.local:6443
```

Note

Be sure to use the URL or IP address of your SUSE Virtualization cluster.

6. Enable *Use token*.
7. Enable *Trust certificates* if required.
8. Paste the access token generated previously into the *Access key* field.
9. Click *Save*.

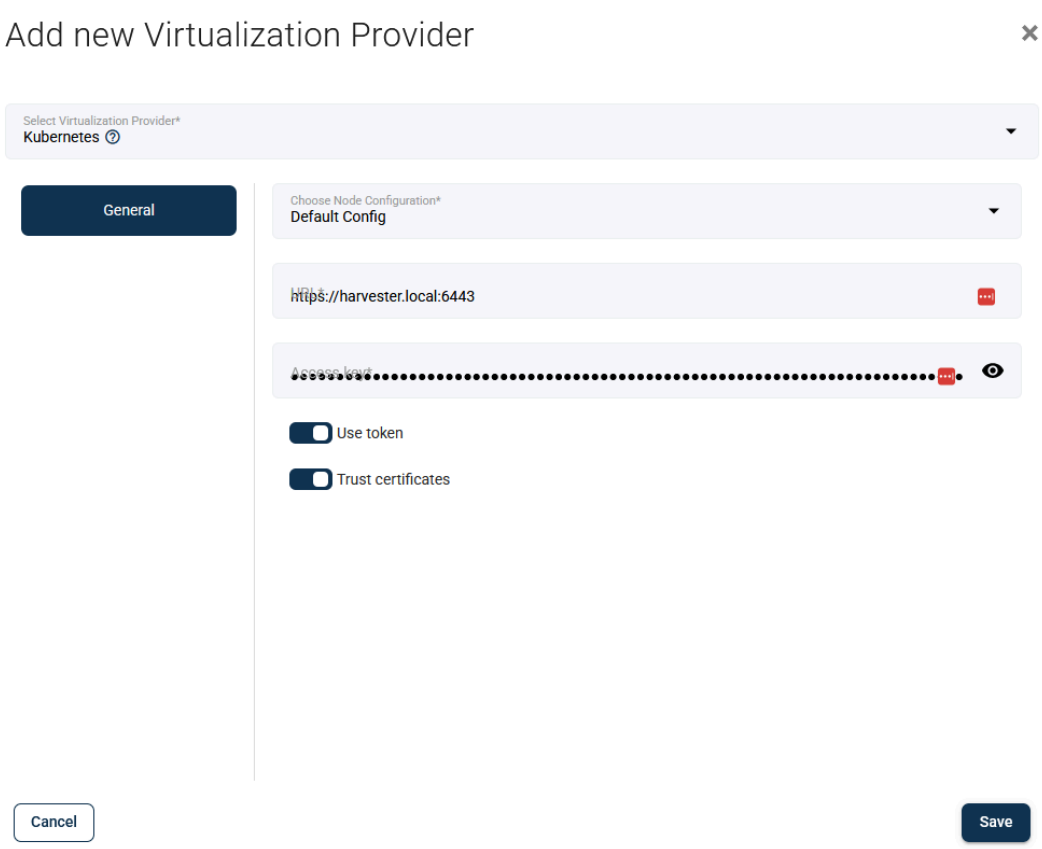

FIGURE 2: REGISTERING THE SUSE VIRTUALIZATION CLUSTER IN STORWARE BACKUP AND RECOVERY

10. Click *Yes, Continue* when asked to confirm inventory synchronization.

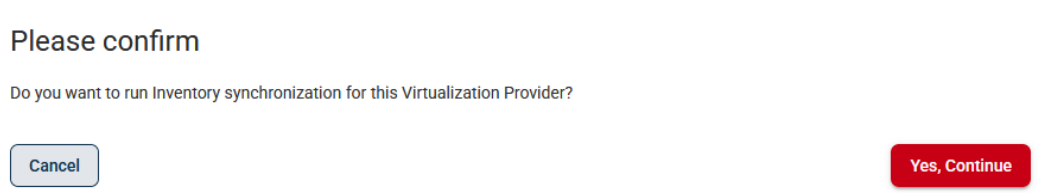

FIGURE 3: CONFIRM INVENTORY SYNCHRONIZATION DIALOG

11. Wait for the synchronization job to complete successfully in the *Workflow Executions* console.

12. Navigate to *Virtual Environments* > *Instances* and verify that the SUSE Virtualization virtual machines and pods are discovered and listed successfully.

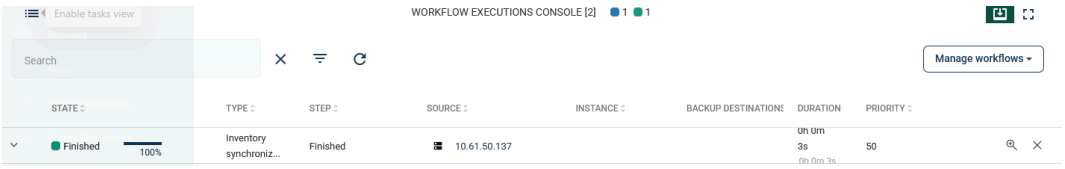

FIGURE 4: DISCOVERED VIRTUAL ENVIRONMENT INSTANCES

5 Validating the solution

This section validates the integration.

Note

Log in to the Storware Backup and Recovery Web interface to perform the remaining procedures.

5.1 Create backup policy

1. Go to *Virtual Environments* > *Backup Policies*.
2. Click *Create*.
3. Configure the policy settings.
    a. On the *General* tab, enter a name in the *Name* field.
    b. On the *Project visibility* tab, limit visibility if needed, or leave the default *Visibility for all projects*.
    c. On the *Auto-assignment* tab, choose *Assign only* or *Assign and remove*. Enter a regex rule in *Create Regex based rule*, for example `.*`.

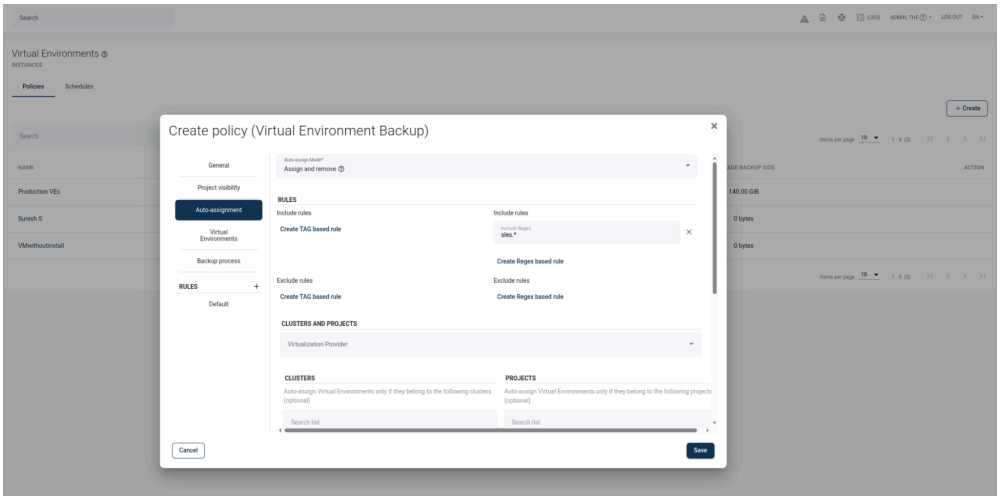

FIGURE 5: CREATE POLICY AUTO-ASSIGNMENT SETTINGS

d. On the *Virtual Environments* tab, select existing virtual machines manually.

4. Configure the backup schedule.

   a. Go to the *Rules* tab.

   b. Change the *Default name* if needed.

   c. Select the backup destination created during the initial setup, or leave the default destination if only one is configured.

   d. Click *Create Schedule* and configure the schedules.

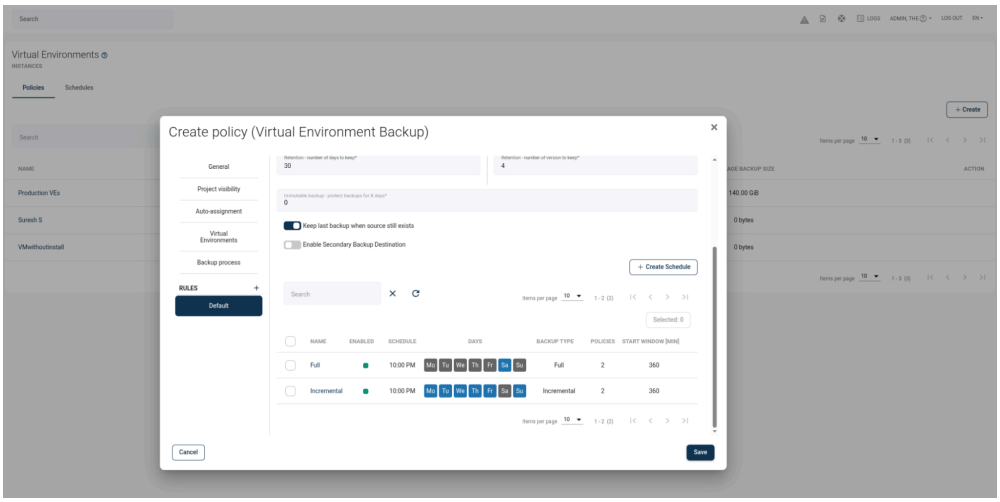

FIGURE 6: CREATE POLICY RULES AND SCHEDULES SETTINGS

5. Click *Save*.

6. Verify that *VM Count* includes the selected virtual machines.

5.2 Back up a virtual machine

1. Go to *Virtual Environments* > *Instances*.

2. Select a virtual machine and click the *Backup* icon in the *Action* column.

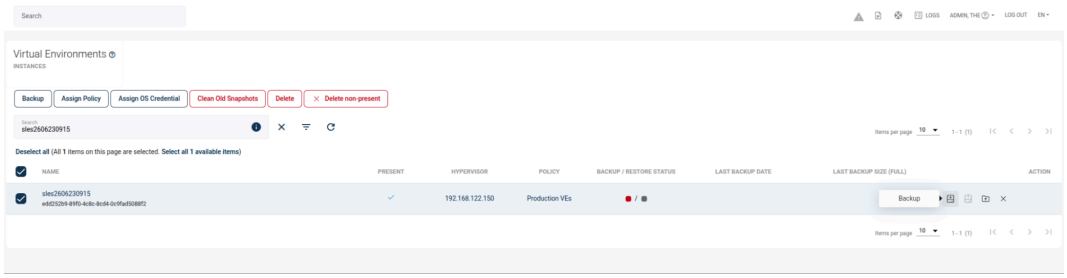

FIGURE 7: STARTING A MANUAL VIRTUAL MACHINE BACKUP

3. In the *Backup* window, select *Full* or *Incremental* for the backup type

4. Click *Backup* to start the operation.

5. Monitor the progress in the *Workflow Executions* console.

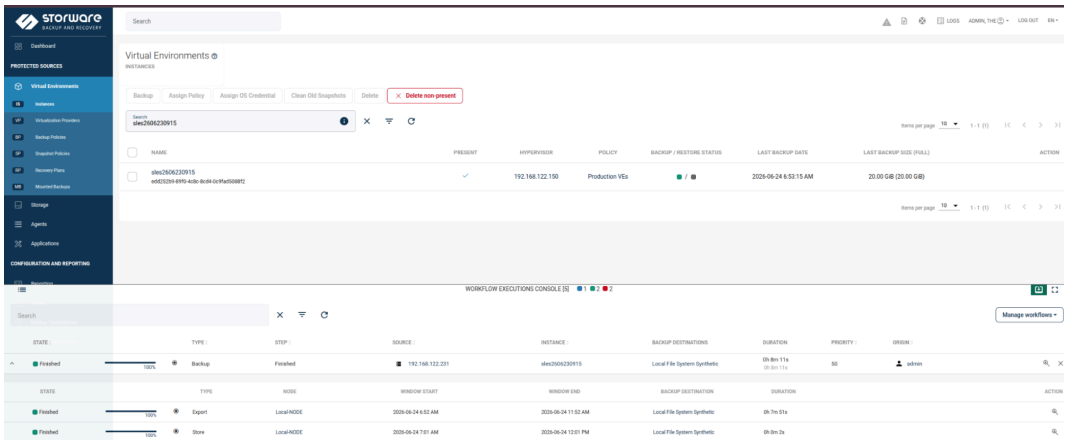

FIGURE 8: MONITORING THE BACKUP TASK IN THE WORKFLOW EXECUTIONS CONSOLE

5.3 Restore a virtual machine

1. Go to *Virtual Environments* > *Instances*.
2. Select a virtual machine and click the *Restore* icon in the *Action* column.

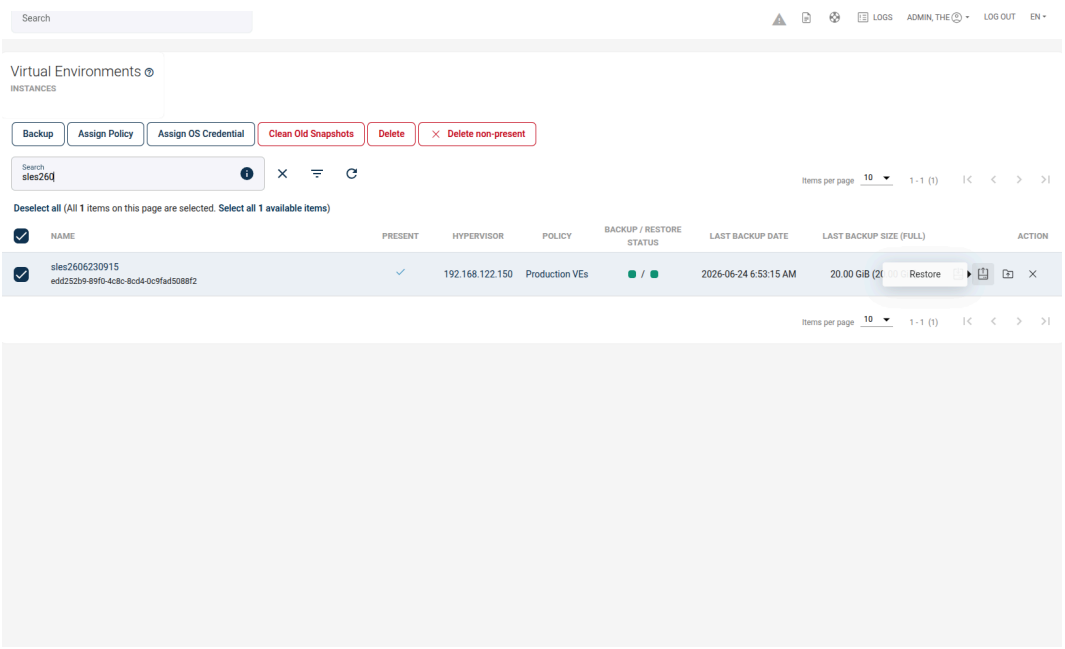

FIGURE 9: RESTORE ACTION ICON IN THE INSTANCES LIST

3. Select *Restore to virtualization provider* to restore the virtual machine.
4. In the *Restore to virtualization provider* wizard, configure the restore settings.
5. On the *General* tab, select the backup version from the *Backup location* field.
6. Optionally enable *Change name of the restored virtual environment.*
7. Leave the *Storage* and *Networking* tabs with the default settings.
8. On the *Advanced* tab:
    a. Enable *Delete original virtual environment if it exists* if required.
    b. Enable *Power on virtual machine after restore* if desired.
9. Click *Summary* and review the configuration.
10. Click *Restore* to start the operation.

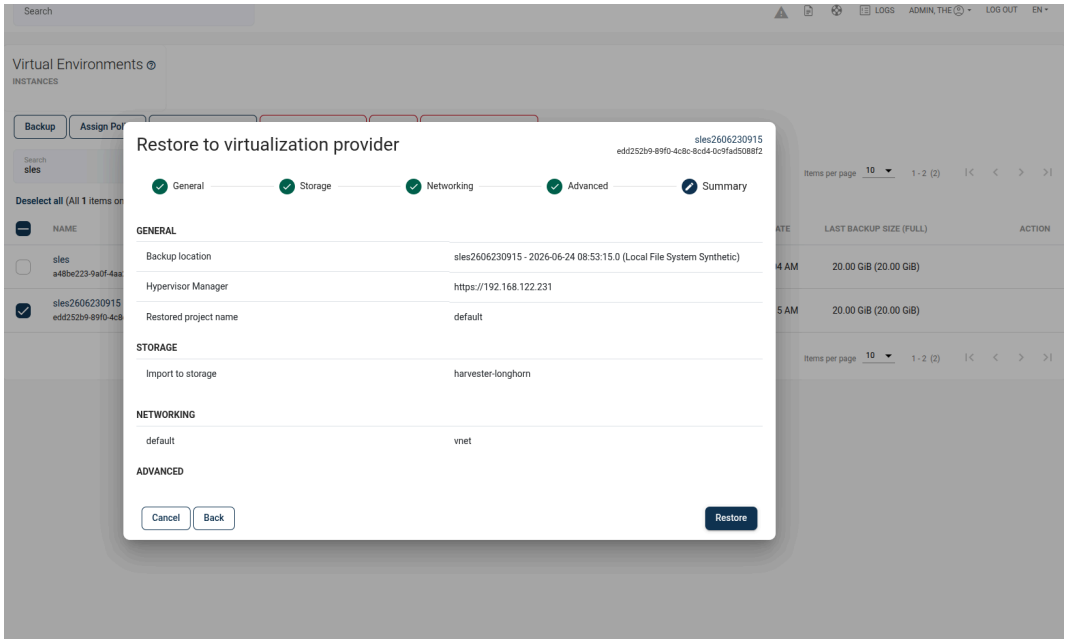

FIGURE 10: REVIEWING THE RESTORE CONFIGURATION SUMMARY

11. Monitor the progress in the *Workflow Executions* console.
12. Verify that the restore completes and the virtual machine is operational in *Virtual Environments* > *Instances*.

5.4 Verify the restored virtual machine

1. Log in to the SUSE Virtualization Web interface.
2. Navigate to *Virtual Machines*.
3. Verify that the restored virtual machine is present in the list.
4. Confirm that the restored virtual machine is in the *Running* state.

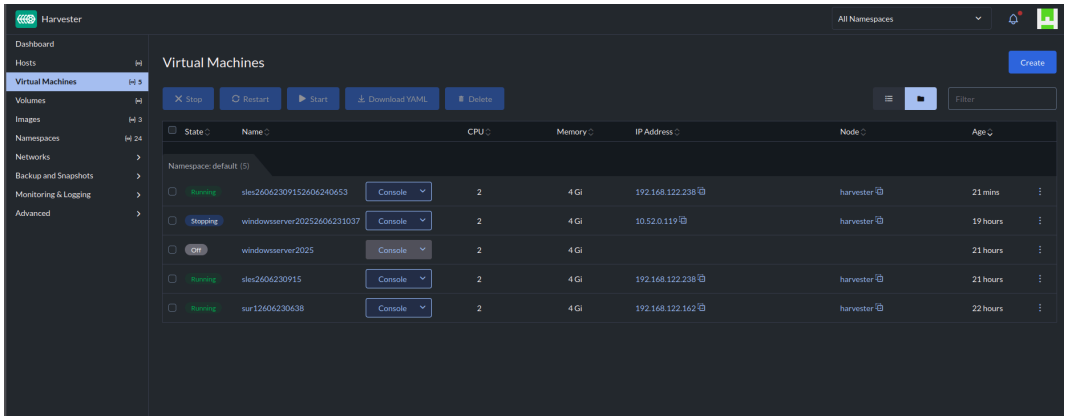

FIGURE 11: RESTORED VIRTUAL MACHINE RUNNING IN THE SUSE VIRTUALIZATION CONSOLE

6 Summary

This guide describes the deployment and configuration of Storware Backup and Recovery to extend policy-driven data protection for virtual machine and container workloads managed by SUSE Virtualization.

7 Frequently Asked Questions (FAQ)

1. **Which SUSE Virtualization storage classes are supported for snapshot-based backups?**
   Storware Backup and Recovery uses Velero with the Container Storage Interface (CSI) framework for backup and restore operations.
   Any storage class that supports CSI with a corresponding `VolumeSnapshotClass` is compatible with snapshot-based backups.
   The default storage class for SUSE Virtualization is Longhorn. SUSE Virtualization supports a broad ecosystem of storage providers through the Container Storage Interface (CSI), which you can designate for the default storage class.

2. **Can Storware Backup and Recovery protect virtual machines with multiple disks?**
   Yes. Storware Backup and Recovery captures all persistent volumes attached to a virtual machine during the backup operation.
   During the restore process, the persistent volumes are recreated and automatically reattached to the virtual machine, restoring the complete virtual machine configuration and associated storage.

3. **What are the sizing recommendations for the Storware Backup and Recovery server?**

The recommended sizing for the Storware Backup and Recovery server depends on the number of protected virtual machines and the backup frequency.
For a small environment with up to 25 virtual machines and daily backups, the following minimum configuration is recommended:

- CPU: 4 vCPUs
- Memory: 8 GiB RAM
- OS disk: 100 GiB
- Backup repository disk: Sized according to the total protected data and the required retention period. As a baseline, allocate at least 1.5 times the total uncompressed data size.

For larger environments, consult Storware sizing guidance or your SUSE representative for environment-specific recommendations.

4. **Is Velero required for protecting SUSE Virtualization workloads?**
   Yes. Storware Backup and Recovery leverages Velero to orchestrate Kubernetes-native backup and restore operations.
   Velero integrates with the CSI snapshot framework to protect virtual machine metadata and persistent volumes, ensuring that both virtual machine configuration and associated storage are included during backup and restore operations.

5. **How does the solution protect against ransomware?**
   Storware Backup and Recovery supports immutable backup repositories when used with object storage platforms that provide object lock capabilities, such as S3 Object Lock.
   When immutability is enabled, backup data cannot be modified or deleted during the configured retention period, even if the primary SUSE Virtualization environment is compromised.
   Additionally, storing backup data in an isolated network segment separate from the production SUSE Virtualization cluster reduces the risk that a ransomware event affecting the cluster can propagate to the backup repository.
   For configuration details, refer to the Storware ransomware protection documentation (https://docs.storware.eu/).

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