

Backup and Recovery Framework

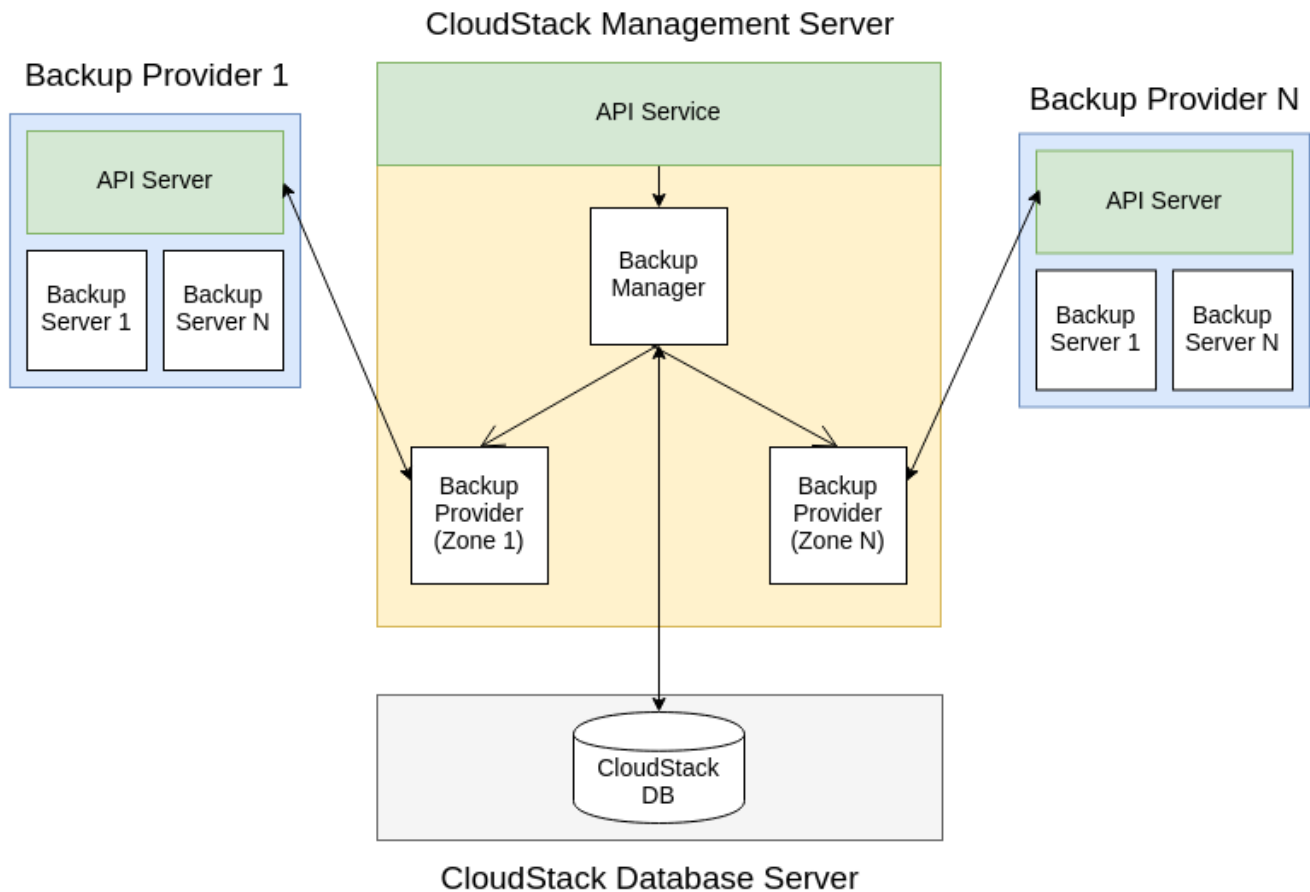
Introduction

This framework provides CloudStack users the ability to backup their guest VMs for recovery purposes, in case they suffer a hardware or software issue with their instances or the underlying infrastructure. This framework allows CloudStack to be integrated with Backup and Recovery providers, as pluggable solutions. Each provider should implement the backup and recovery methods provided by the framework in their own way.

Feature Specification

High level component diagram

It is possible to register a Backup and Recovery provider per zone. The entry point for each API request is the BackupManager. The BackupManager invokes the corresponding BackupProvider registered in a zone, and it should communicate with the Backup and Recovery provider API Server. A high level representation of this is shown in the following diagram:



API

The Backup and Recovery framework defines new functionalities which should be implemented by each Backup and Recovery provider plugin as a pluggable solution.

For administrators:

- Register a Backup and Recovery provider in a zone: This is done via dynamic Zone scoped configurations: `'backup.framework.enabled'` and `'backup.framework.provider.plugin'`
 - `'backup.framework.enabled'` is false by default
 - `'backup.framework.provider.plugin'` is 'dummy' by default. For a zone we can set the Backup provider name in lowercase. Available values for the moment are: 'dummy' and 'veeam'
- List available Backup and Recovery providers in CloudStack: **listBackupProviders** API method.
- List Backup and Recovery Provider Policies: **listBackupPolicies** API method, setting the parameter `'external=true'` and `zoneid=ZONE_ID` It returns every backup policy existing in the `ZONE_ID` backup provider. The goal of this method is listing backup policies to allow administrators to import them into CloudStack, so users can assign them to their guest VMs.

- Import a Backup Policy: **importBackupPolicy** API method. Allows importing an external backup policy from the zone Backup and Recovery provider into CloudStack.
- Delete a Backup Policy from CloudStack: **deleteBackupPolicy** API method. Removes the previously imported backup policy

For users:

- List imported Backup Policies: **listBackupPolicies** API method. Only backup policies imported by the administrator are listed.
- Assign a VM to a Backup Policy: **assignBackupPolicy** API method. This method assigns a VM to a backup policy
- List VM Backups: **listBackups** API method. List existing backups for a VM
- Recover a full backed up VM: **restoreBackup** API method. Restores a VM entirely, from a previously created backup
- Recover a VM volume and attach it to a VM: **restoreBackupVolume** API method. Restores a volume and attaches its to a VM

Schema

This feature introduces changes in the schema, adding the following entities:

- Backup: Represented in the table 'backups'
- Backup Policy: Represented in the table 'backup_policy'
- Backup Policy - VM mapping: Represented in the table 'backup_policy_vm_map'

Backup and Recovery Providers

Each Backup and Recovery provider plugin in CloudStack should implement the BackupProvider interface.

A dummy Backup and Recovery provider is already created, it simply implements each of the methods above.

Screenshots

Zone level settings for registering a Backup and Recovery provider