8

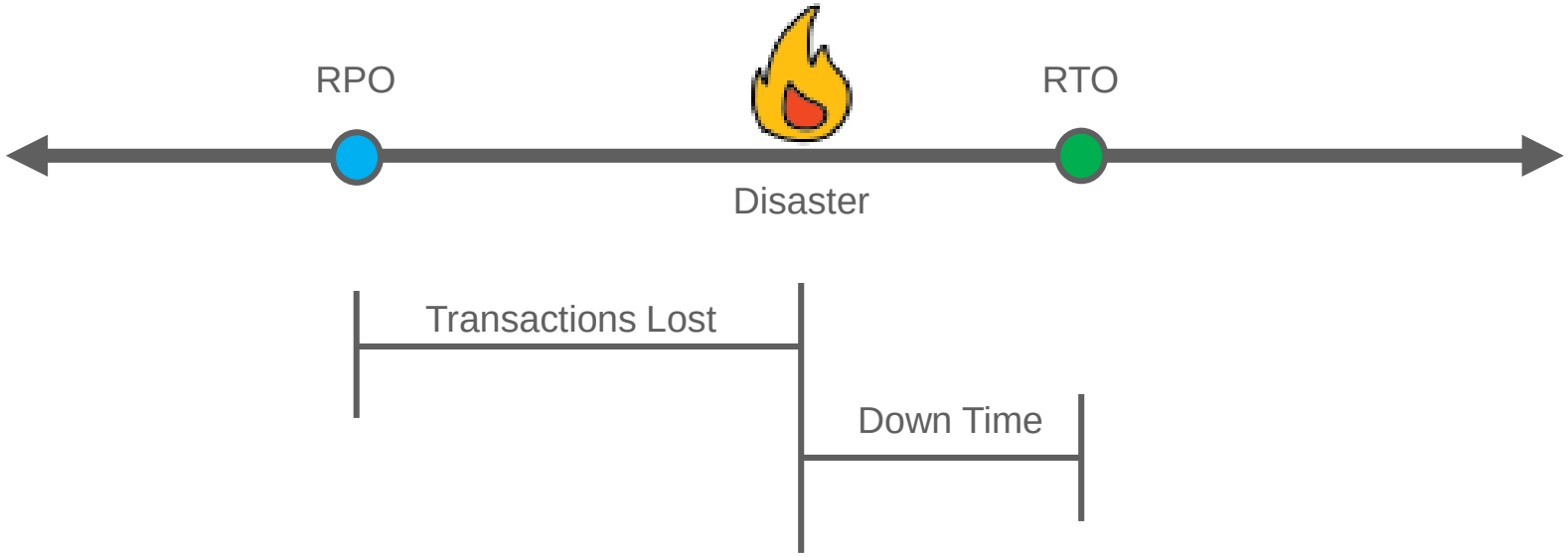
Data Backup Operations

Module Objective

After completing this lesson, you should be able to:

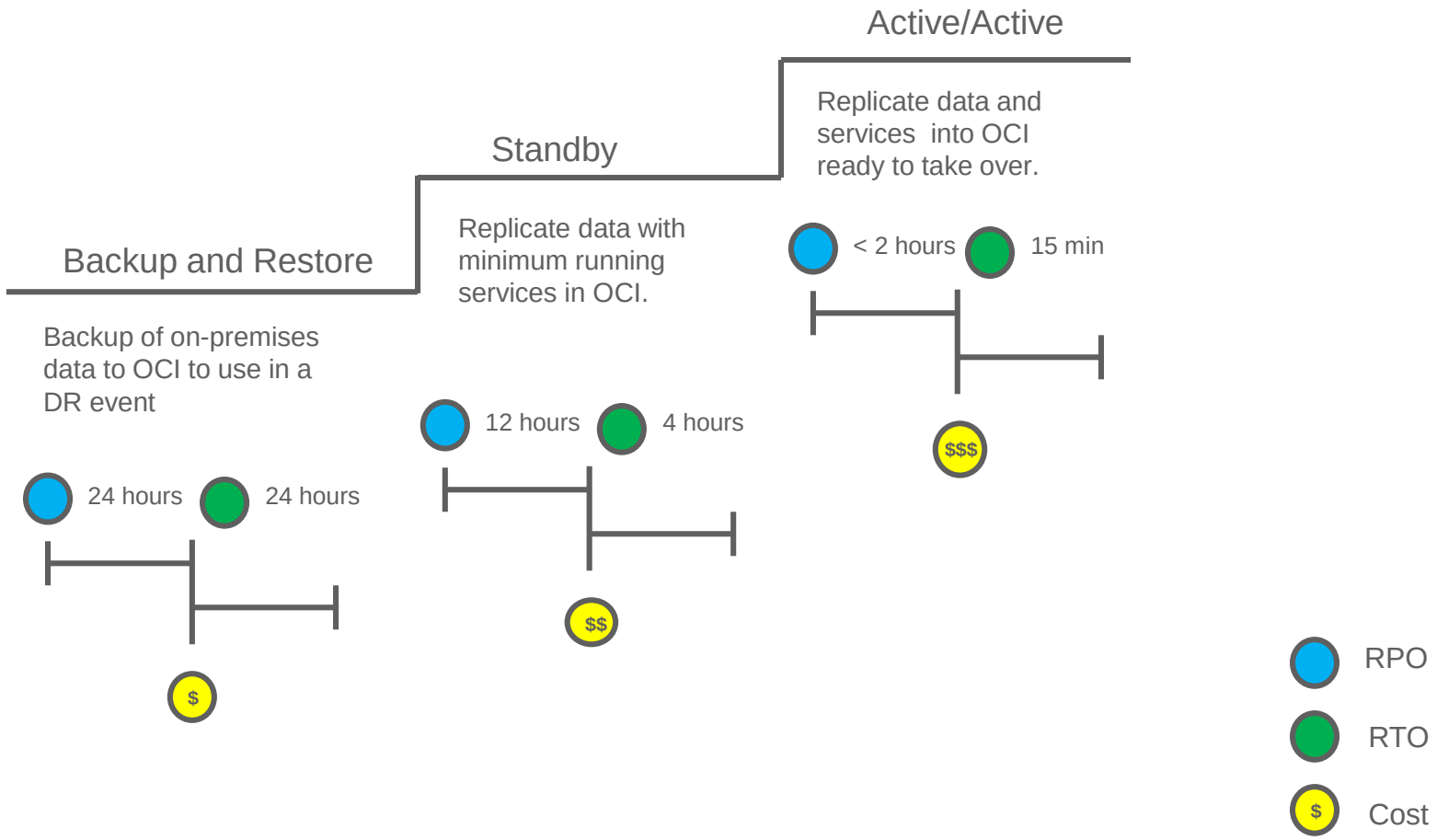
- Understand RTO and RPO
- Block Volume Backup Options
- Object Storage Life Cycle Management
- Database Backup Options
- Backup Strategy

What is RTO and RPO?



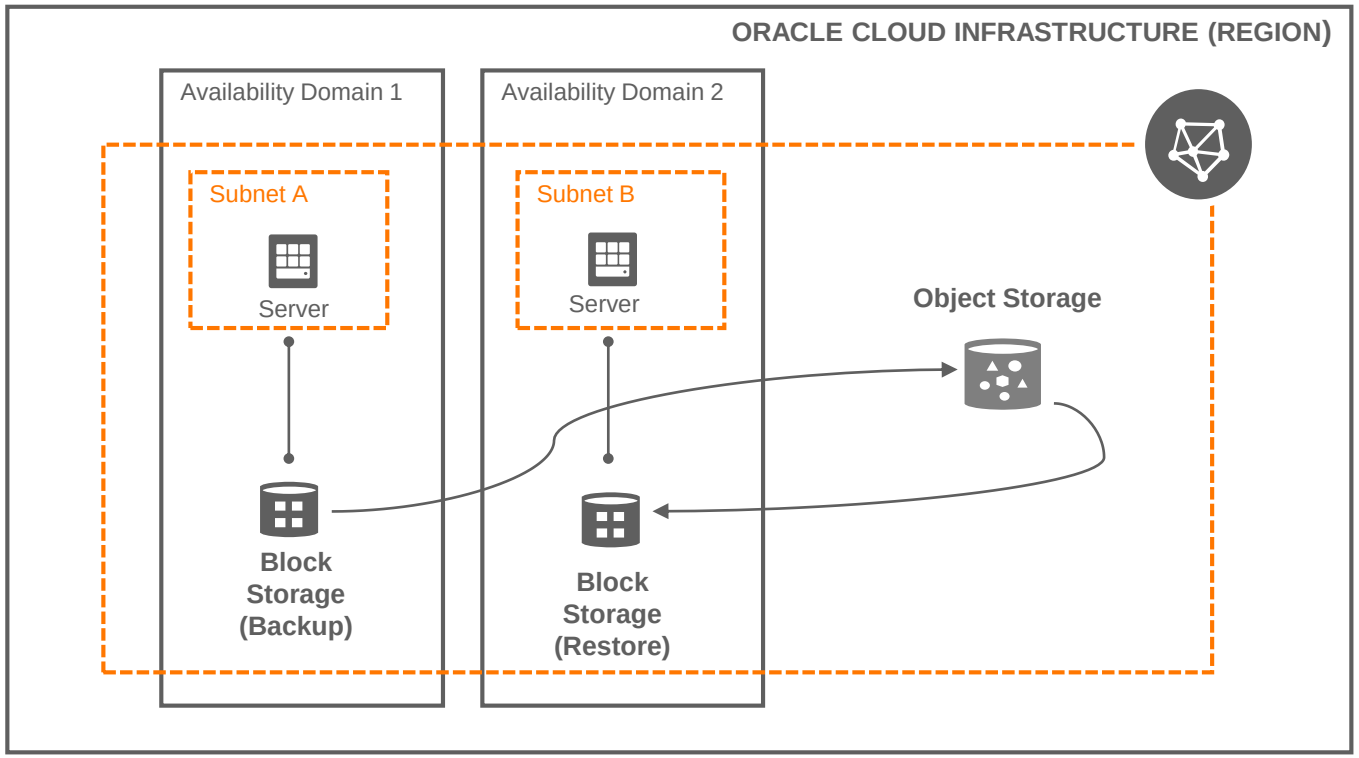
- Recovery Point Objective (RPO) refer to your company's loss tolerance: the amount of data that can be lost before significant harm to the business occurs.
- Recovery Time Object (RTO) refers to how much time an application can be down without causing significant damage to the business.

RPO/RTO and Costs



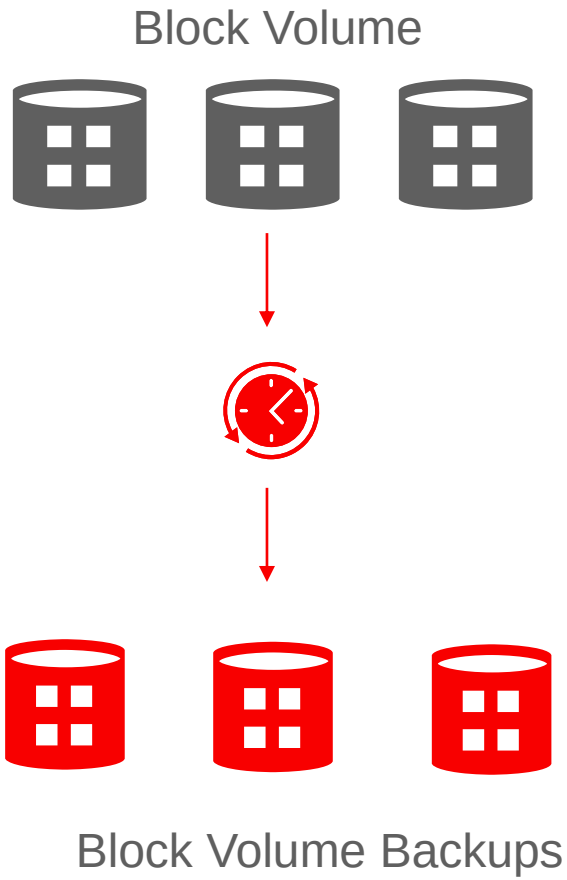
Backup Options for Block Volume

Block Volume Backup and Restore



- Complete point-in-time complete snapshot copy of your block volumes
  - Encrypted and stored in the Object Storage Service, and can be restored as new volumes to any Availability Domain within the same region
  - On-demand, one-off block volume backups provide a choice of incremental versus full backup options
  - Can restore a volume in less than a minute regardless of the volume size

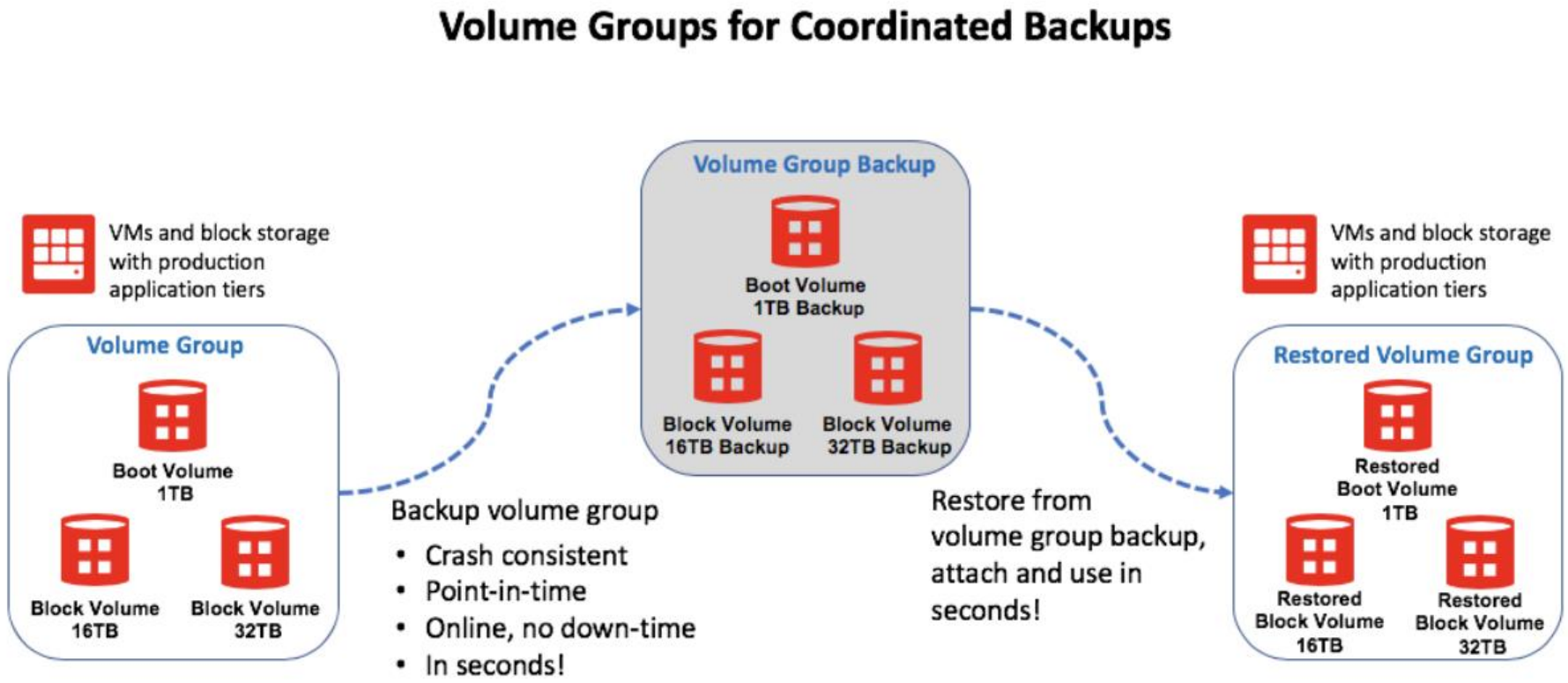
Automated and Policy-Based Scheduled Block Storage Backups



Automated policy-based: backups automatically on a schedule and retain them based on the selected backup policy. Three backup policies:

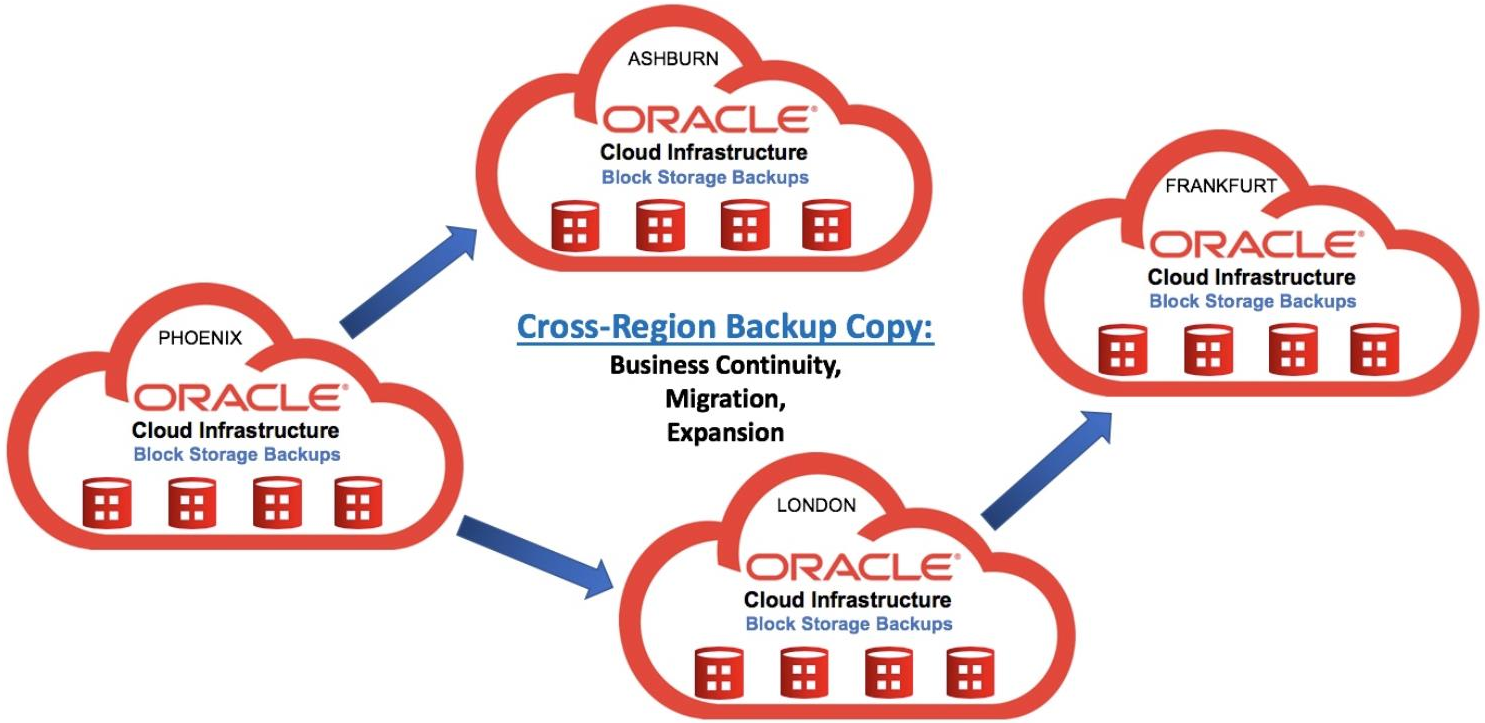
- **Bronze:** monthly incremental backups, retained for twelve months (+full yearly backup, retained for 5 years)
- **Silver:** weekly incremental backups, retained for four weeks (+ Bronze)
- **Gold:** daily incremental backups, retained for seven days (+Silver, + Bronze)

Volume Group Backup



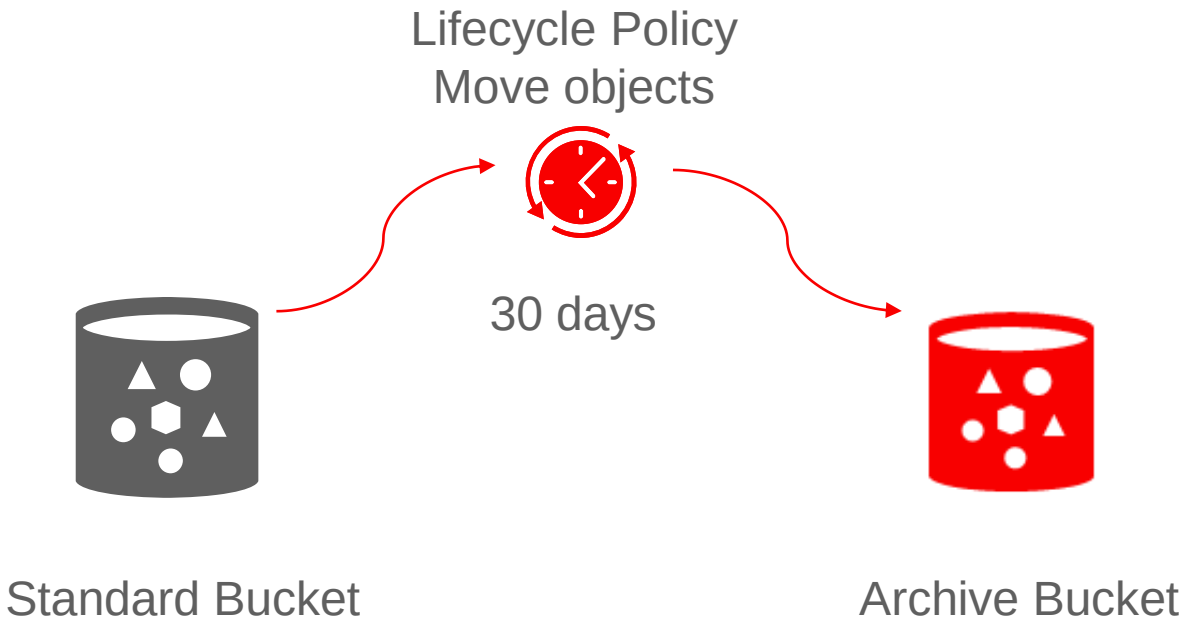
Block Volume Cross Region Backup

You can copy backups to a different region and It will be possible apply cross region copy to manual or scheduled backups so that backups created in one region are seamlessly copied to another region. Cross region backups are just like regular backups encrypted during transit and at rest.



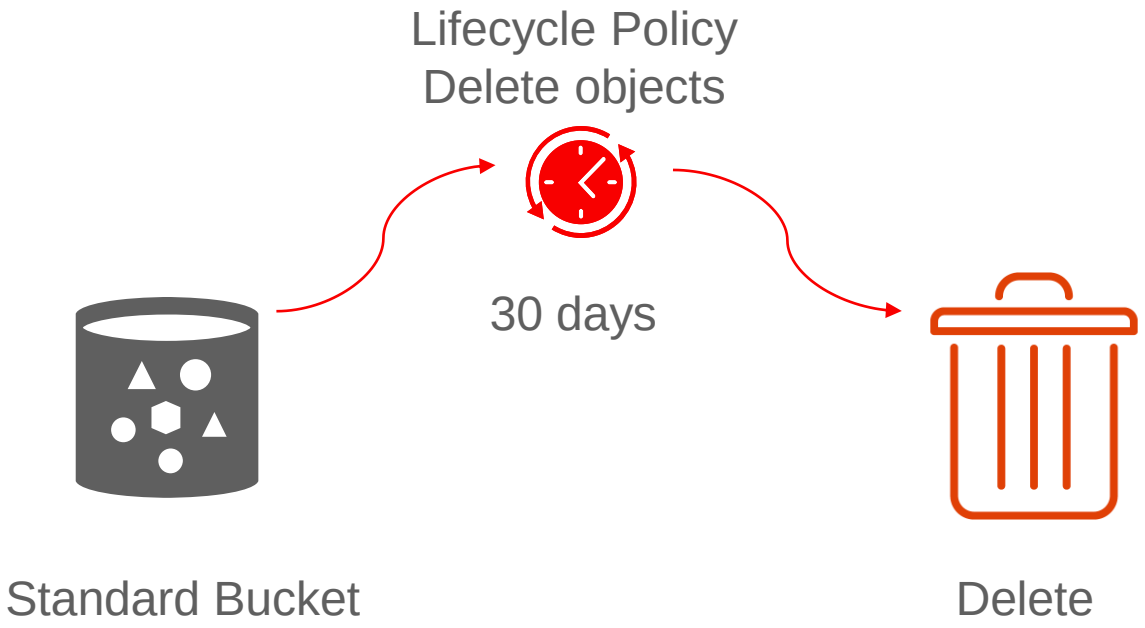
Object Storage Life Cycle Management

Object Storage Lifecycle Management



- Define lifecycle rules to automatically archive or delete objects after a specified number of days
- Applied at the bucket or object name prefix level. If no prefix is specified, the rule will apply to all objects in the bucket
- A rule that deletes an object always takes priority over a rule that would archive that same object
- Enable or disable a rule to make it active or inactive

Object Storage Lifecycle Management



- Define lifecycle rules to automatically archive or delete objects after a specified number of days
- Applied at the bucket or object name prefix level. If no prefix is specified, the rule will apply to all objects in the bucket
- A rule that deletes an object always takes priority over a rule that would archive that same object
- Enable or disable a rule to make it active or inactive

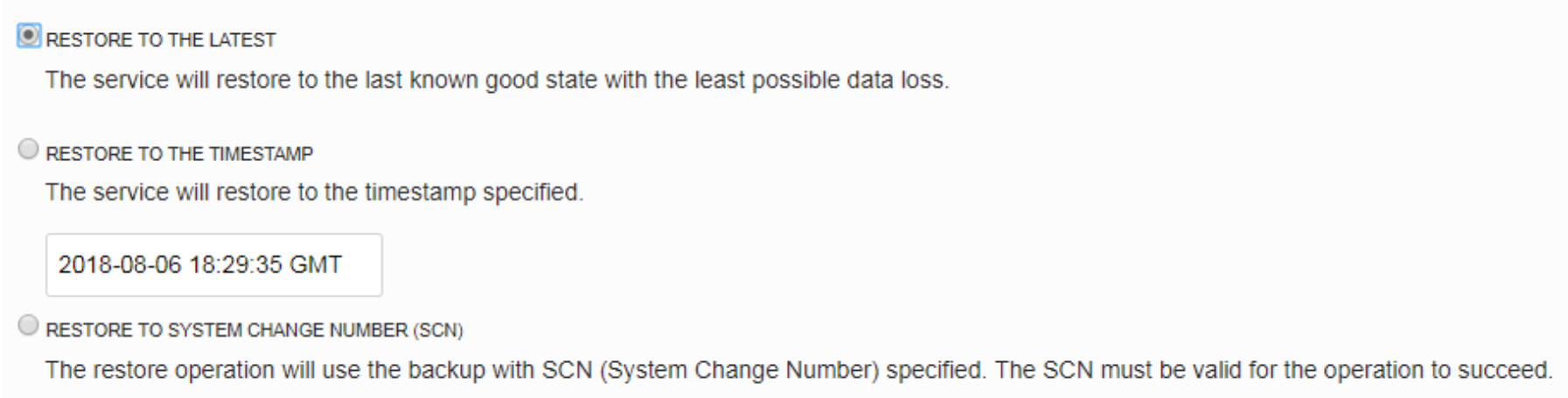
Database Backup Options

Autonomous Data Warehouse – Backup and recovery

- Autonomous Data Warehouse automatically backs up your database for you. The retention period for backups is 60 days.
- The manual backups are put in your Cloud Object Storage bucket. When you initiate a point-in-time recovery Autonomous Data Warehouse decides which backup to use for faster recovery.

DB Systems Backup / Restore

- Managed backup and restore feature for VM/BM DB Systems; Exadata backup process requires creating a backup config file
- Backups stored in Object or Local storage
- DB System in private subnets can leverage Service Gateway
- Backup options
  - Automatic incremental – runs once/day, repeats the cycle every week; retained for 30 days
  - On-demand, standalone/ full backups



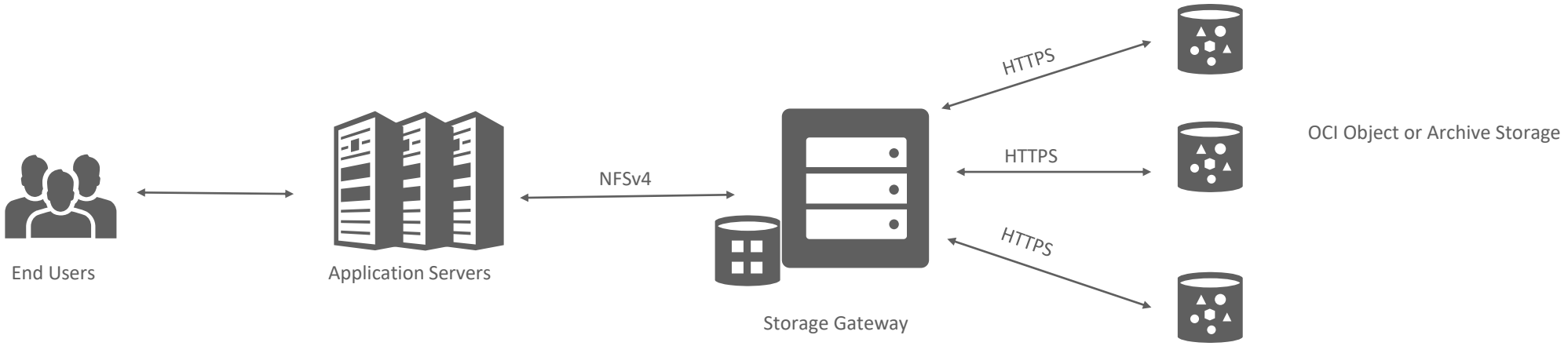
DB Systems Automatic backups

- By default, automatic backups are written to Oracle owned object storage (customers will not be able to view the object store backups)
- Default policy cannot be changed at this time
- The backup window is defined by Oracle
- Automatic backups will run between midnight and 6:00 AM in the time zone of the DB system's region
- Backup jobs are designed to be automatically re-tried
- Oracle automatically gets notified if a backup job is stuck
- All backups to cloud Object Storage are encrypted
- Link to troubleshooting backup issues https://docs.us-phoenix-1.oraclecloud.com/Content/Database/Troubleshooting/Backup/backupfail.htm

Backup Strategy using Storage Gateway

Storage Gateway Service

- Storage Gateway is installed as a Linux Docker instance on one or more hosts in your on-premises data center.
- Storage Gateway exposes an NFS mount point that can be mounted to any host that supports an NFSv4 client. The Storage Gateway mount point maps to an Object Storage bucket.



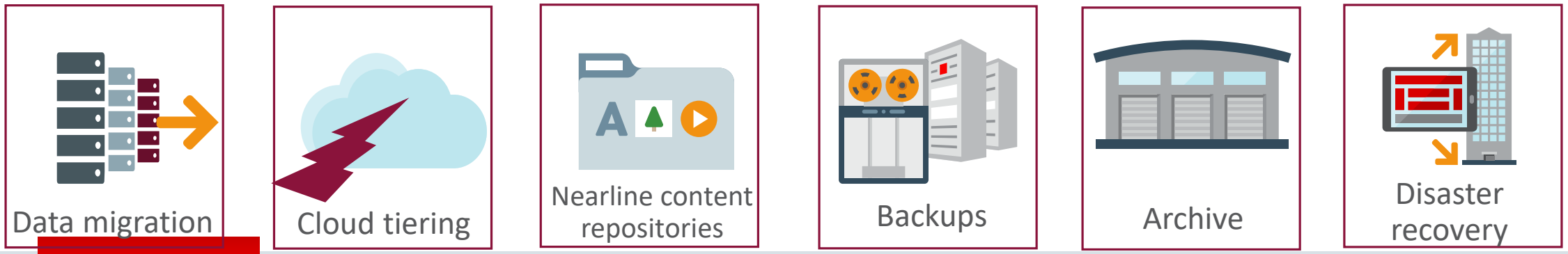
Storage Gateway – Two Main Use Case Categories:

Hybrid cloud: on-premises applications actively use cloud storage content

- Use cloud storage and archive as a low cost, high durability data tier
- Create a permanent data archive in cloud
- Extend on-premises data center to the cloud with limitless back-end storage
- Enhance disaster recovery and business continuity using remote cloud resources

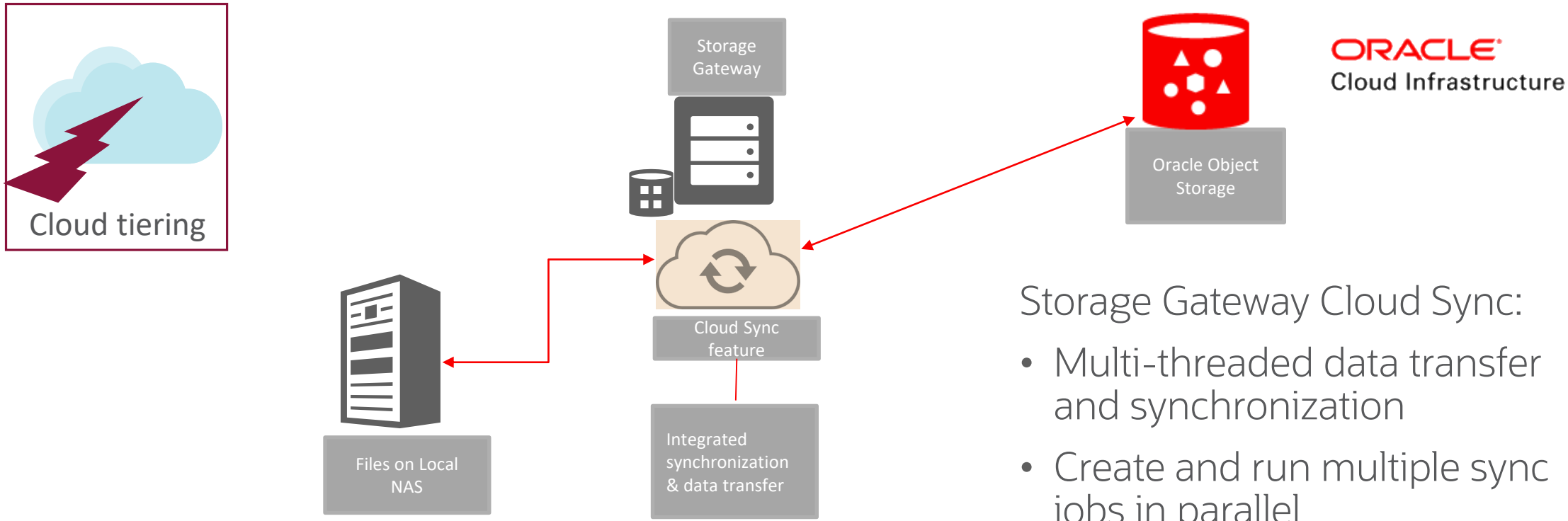
One-time data migration or periodic transfers

- Move data to cloud for app migration or adjacent analysis
- Copy data to cloud as it's written
- Move existing bulk data one time



Hybrid Cloud – Tiering, using Cloud Sync Feature

Move on-premises data sets from local NAS, via the gateway, into the cloud



Storage Gateway Cloud Sync:

- Multi-threaded data transfer and synchronization
- Create and run multiple sync jobs in parallel
- Reports upload status

Summary

- Understand concepts of RTO and RPO
- What are the options available for Block Volume Backup
- How Object Storage Life Cycle Management works
- Understand your Database Backup Options
- Backup Strategy using Storage Gateway