

Here's a practical, size-aware playbook for **SQL Server backup + retention** across **On-prem**, **AWS**, and **Azure**. It's organized by database size and gives you concrete schedules, tooling, retention tiers, and gotchas.

Size bands (use these as a guide)

- **Small:** < 200 GB
- **Medium:** 200 GB–2 TB
- **Large:** 2–10 TB
- **Very Large (VLDB):** >10 TB (or anything where backup/restore time is a business constraint)

On-Prem SQL Server

Size	Target RPO/RTO	Backup Pattern	Retention & Tiers	Tooling	Notes / Gotchas
Small	RPO ≤ 15 min, RTO ≤ 1 hr	Full nightly; Diff every 6–8 hrs; Log every 5–15 min	14–35 days on disk; monthly fulls 12–84 mo on cheaper storage/tape; offsite copy	SQL Agent / Maintenance Plans / Ola Hallengren; Backup Compression + CHECKSUM	Encrypt (backup encryption or TDE); verify with <code>RESTORE VERIFYONLY</code> ; weekly test restore
Medium	RPO ≤ 5–15 min, RTO ≤ 2–4 hrs	Full weekly (striped to multiple files); Diff daily; Log 5–10 min	35–90 days local; monthly 1–7 yrs (disk/tape/object store via gateway)	Ola Hallengren + PowerShell; block- level copies for offsite	Use striped + compressed backups; network-throttle offsite; keep msdb + server-level objects backed up
Large	RPO ≤ 1–5 min, RTO ≤ 2–8 hrs	Full weekly copy-only , striped ; Diff 12–24 hrs; Log 1–5 min	90–180 days local; monthly/quarterly 1–10 yrs (object storage/tape)	Ola + <code>BACKUP ... WITH COMPRESSION, CHECKSUM, MAXTRANSFERSIZE, BUFFERCOUNT</code> ; Robocopy/rsync for offsite	Consider backups from AG secondaries ; ensure IO bandwidth supports restore times; pre-create files on DR
VLDB	RPO ≤ 1–2 min, RTO agreed (often staged)	File/Filegroup strategy; Partial backups; Log 1–2 min; Diff by filegroup	180+ days + LTR 1–10 yrs; immutable/air- gapped copy	AG secondaries for offload; storage snapshots + VSS-consistent SQL freeze scripts	Use storage snapshots (not a substitute —pair with logs for PITR); rehearse tail- log + piecemeal restores

On-prem extras

- Immutable/air-gapped copies block ransomware (WORM NAS, object-lock, or tape).
- Use `WITH CHECKSUM` and `VERIFYONLY`; run DBCC CHECKDB regularly.
- Document restore chains; keep Server-level items (logins, jobs, linked servers) scripted and backed up.

AWS (SQL Server)

A) Amazon RDS for SQL Server (fully managed)

Size	RPO/RTO	Backup Pattern	Retention	Tooling	Notes
Small/Medium	PITR to seconds; RTO mins-hrs	Automated daily snapshot + TX log streaming (AWS)	PITR 1–35 days; manual snapshots for months/years (can copy cross-region)	RDS automated backups; AWS Backup for policy	Minimal ops: set retention window; enable cross-region copy; test restore to a temp instance
Large/VLDB	PITR to seconds; RTO constrained by snapshot restore time	Same as above	Same as above + lifecycle to S3 Glacier	RDS + AWS Backup lifecycle	For VLDB, test restore time ; schedule off-peak snapshots; consider Multi-AZ for HA (not backup)

B) SQL Server on EC2

Size	RPO/RTO	Backup Pattern	Retention	Tooling	Notes
Small/Medium	RPO 5–15 min	Full/Diff/Log (native) to S3 via BACKUP TO URL	35–90 days hot; S3 IA / Glacier 1–10 yrs	Ola + S3 + AWS Backup policies; S3 Object Lock	Encrypt (backup encryption + KMS); use Object Lock (compliance mode)
Large	RPO 1–5 min	Striped, compressed Full weekly; Diff daily; Log 1–5 min to S3	90–180 days + Glacier LTR	Same	Back up from AG secondary ; use enhanced networking ; validate throughput for restores
VLDB	RPO 1–2 min	Combine storage snapshots (EBS) + frequent log backups to S3	Snapshots short-term; logs + periodic fulls to Glacier for LTR	AWS Backup for snapshot policies; native for logs	Snapshots give fast volume recovery; logs give PITR . Rehearse time-of-day restore workflow

Azure (SQL Server)

A) Azure SQL Database / Managed Instance (PaaS)

Size	RPO/RTO	Backup Pattern	Retention	Tooling	Notes
All sizes	PITR typically 5–10 min RPO, RTO mins-hrs	Platform full/diff/log (automatic)	PITR 7–35 days; Long-Term Retention (LTR) weekly fulls up to 10 yrs	Platform backups; LTR policies; Cross-region copy	Set PITR window to 35 days if needed; enable LTR (weekly/monthly/yearly cadence); test point-in-time restores regularly

PaaS: you don't run native backups for PITR; you can export **BACPAC** for archives (schema+data).

B) SQL Server on Azure VM (IaaS)

Size	RPO/RTO	Backup Pattern	Retention	Tooling	Notes
Small/Medium	RPO 5–15 min	Full/Diff/Log to Azure Blob (BACKUP TO URL)	14–90 days; move to Cool/Archive tiers; LTR 1–10 yrs	Ola + Azure Backup (VM or SQL-aware); Immutable Blob	Use Storage Accounts with immutability ; enable ADE/TDE
Large	RPO 1–5 min	Striped compressed backups to Blob; Diff daily; Log 1–5 min	90–180 days hot; Archive 1–10 yrs	Azure Backup for application-consistent snapshots + native logs	Back up from AG secondary ; check egress/ingress throughput for restores
VLDB	RPO 1–2 min	Managed application-consistent snapshots (Azure Backup) + frequent log backups ; filegroup strategy	Snapshots short/mid-term; Archive LTR	Azure Backup policies + lifecycle mgmt	Use instant restore for short retention; pair with logs for PITR; test piecemeal restore

Example native schedules (on-prem/EC2/Azure VM)

Small / Medium (single DB)

-- Full nightly

```
BACKUP DATABASE Sales TO URL='https://blob/backup/Sales_full_$(Date).bak' WITH COMPRESSION, CHECKSUM;
```

-- Differential q12h

```
BACKUP DATABASE Sales TO URL='https://blob/backup/Sales_diff_$(DateHour).bak' WITH DIFFERENTIAL, COMPRESSION, CHECKSUM;
```

-- Log every 10 minutes

```
BACKUP LOG Sales TO URL='https://blob/backup/Sales_log_$(DateTime).trn' WITH COMPRESSION, CHECKSUM;
```

Large / VLDB (striped)

```
BACKUP DATABASE Sales TO
```

```
DISK='X:\bkp\Sales_full_1.bak', DISK='Y:\bkp\Sales_full_2.bak',
```

```
DISK='Z:\bkp\Sales_full_3.bak', DISK='W:\bkp\Sales_full_4.bak'
```

```
WITH COMPRESSION, CHECKSUM, BLOCKSIZE=65536, MAXTRANSFERSIZE=4194304, BUFFERCOUNT=512, STATS=5;
```

Filegroup (VLDB partials)

```
BACKUP DATABASE Sales READ_WRITE_FILEGROUPS
```

```
TO DISK='X:\bkp\Sales_partial.bak' WITH COPY_ONLY, COMPRESSION, CHECKSUM;
```

Retention policy templates (mix & match)

Tier	Keep	What	Where
Hot	14–35 days	All logs + diffs + most recent fulls	Fast disk / Standard blob / S3 Standard
Warm	3–6 mo	Weekly fulls + monthly fulls	Azure Cool / S3 IA
Cold (LTR)	1–10 yrs	Monthly/Quarterly/Yearly fulls	Azure Archive / S3 Glacier Deep Archive / Tape
Immutable	Business-critical chains	Fulls/logs as needed	Immutable Blob / S3 Object Lock / WORM

Retention tips

- Align to **regulatory** needs (e.g., 7 yrs for finance).
- Lifecycle rules to auto-tier (Cool/Archive, S3 IA/Glacier).
- Keep **metadata**: scripts of logins, jobs, linked servers; **msdb** backups (on-prem/laaS).

Testing & governance (don't skip)

- **Monthly**: Automated **test restore** to non-prod; run **DBCC CHECKDB** on the restored copy.
- **Quarterly**: **Point-in-time** drill (pick a timestamp within the log chain).
- **Annually**: **Full recovery rehearsal** (documented steps, measured RTO).
- Track: backup **success**, **duration**, **throughput**, and **restore tests** in a dashboard.

Quick chooser (rules of thumb)

- Need **hands-off PITR** with long retention? → **Azure SQL (LTR)** or **RDS** with AWS Backup.
- Need **native control** or very custom schedules? → **laaS/On-prem** with **Ola Hallengren** + object storage.
- **Large/VLDB** with tight RTO? → Combine **storage snapshots** (fast volume recovery) + **log backups** (PITR).
- **Ransomware resilience** → always add an **immutable** copy (Immutable Blob / S3 Object Lock / tape).