

*Disaster Recovery
For
OpenEdge*

What are my Options ?



MIP

A SOCIAL SOLUTION IN A DIGITAL DIMENSION

Pieter J. Meyer

- Joined MIP Holdings in 1998
- Head of DevOps, responsible for the oversight of Software Development and Technical Operational Standards across MIP's teams
- Worked with Progress and it's continually-evolving suite of products since 1994
- Knowledge and areas of expertise extends to most of the Progress OpenEdge products
- Very capable Progress OpenEdge – ABL Developer, Database Administrator and all-round solutions architect and technical consultant, ... and then some more



Pieter J. Meyer





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MIP is a **leading global fintech** that provides **world-class technology solutions** and **software services** to the **umbrella of industries** that exist within **financial services** - Healthcare, Risk & Insurance; Wealth Management; Employee Benefits and Lending, as well as the Business Process Outsourcing industry.

- Overview
- Disaster Recovery
 - DR Terms
 - DR Tiers
 - DR Considerations
- OpenEdge Components
 - OE Backups
 - OE After-Image
 - OE Replication / Plus / Sets
- Conclusion
- Questions

What solutions and methods available to build and achieve the optimal Disaster Recovery (DR) solution for your OpenEdge environment?

Each Disaster Recovery implementation is unique and determined by various factors, which ultimately influence the actual implementation.

The first step is truly understanding and balancing all the relevant factors to achieve the best solution within the business and technical restrictions.

We will explore...

DR Tiers

- from the bare minimum that should be implemented,
- to some of the ultimate solutions currently available and recommended

What each additional tier's advantages and benefits are,
to reduce the risk, loss, and business impact.

We will explore...

What OpenEdge components are available, and how these extend and build on top of each other.

- OE Backups
- OE After-Image
- OE Replication
 - OE Replication Plus
 - Advance Read-Only
 - OE Replication Sets

RPO - Recovery Point Objective

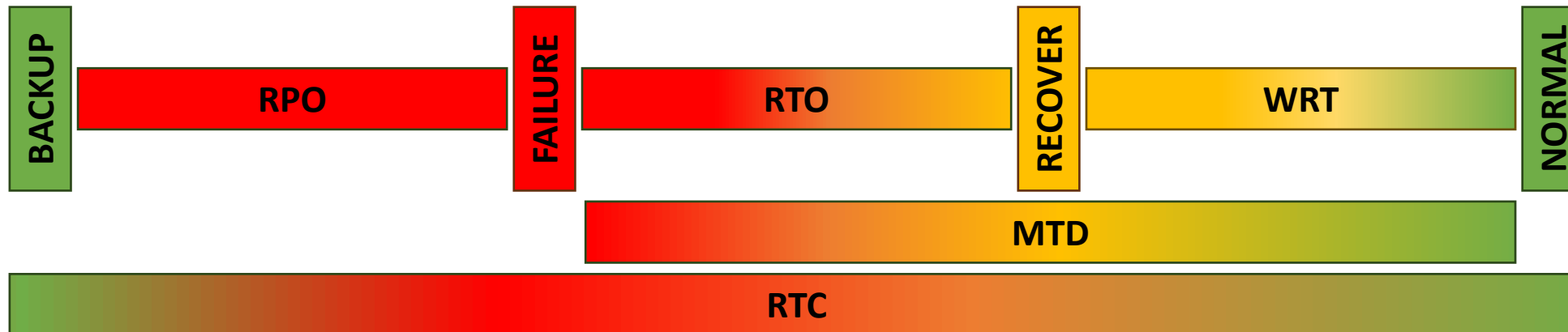
- The maximum acceptable amount of data an organization can afford to lose during a disaster, measured in time

RTO - Recovery Time Objective

- The maximum amount of time a business can tolerate being offline after a disaster before experiencing unacceptable consequences

Both **RPO** and **RTO** are critical parameters in a DR plan

- **RPO** focusing on data loss prevention
- **RTO** focusing on service restoration speed



WRT - Work Recovery Time

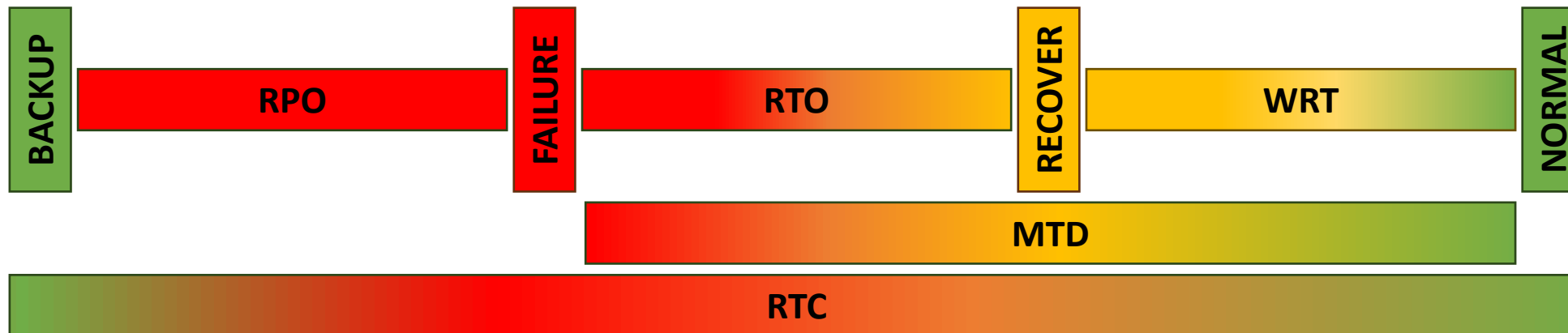
- The maximum tolerable amount of time that is needed to verify the system and/or data integrity and to resume normal business operations

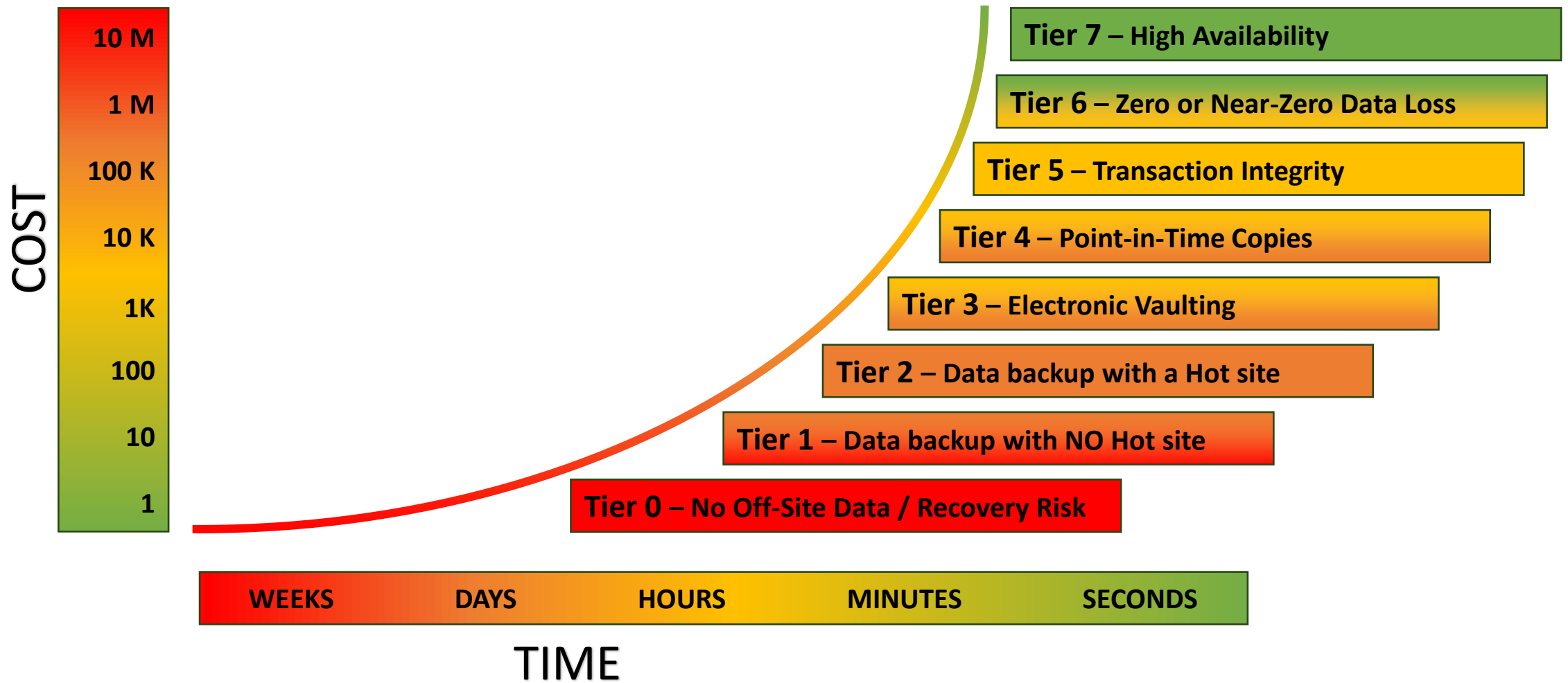
MTD - Maximum Tolerable Downtime

- The absolute longest period a business can be unavailable before experiencing severe, unacceptable financial, operational, or reputational damage

RTC - Recovery Time Capability

- This is the actual time it takes to recover a specific system or function, based on available resources, technology, manpower, and external dependencies



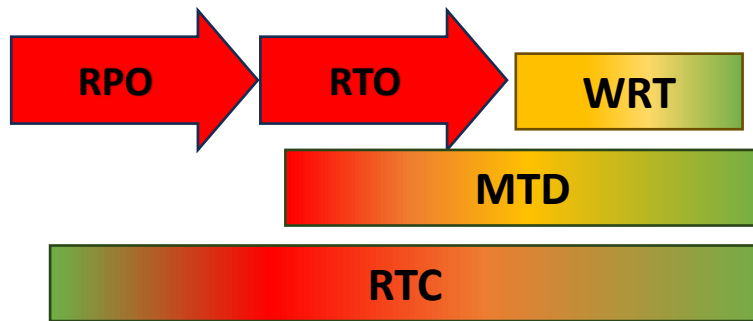


COST

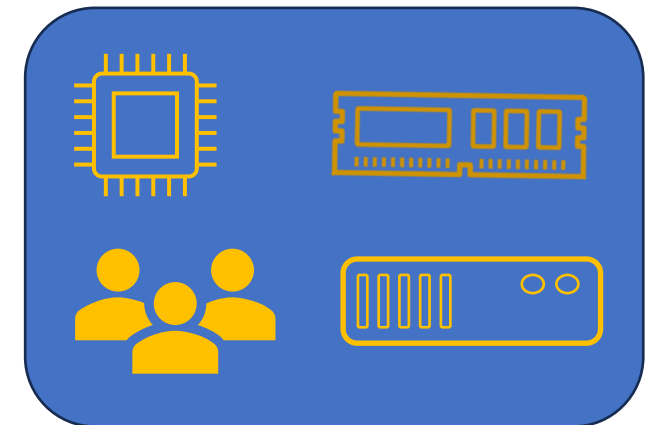
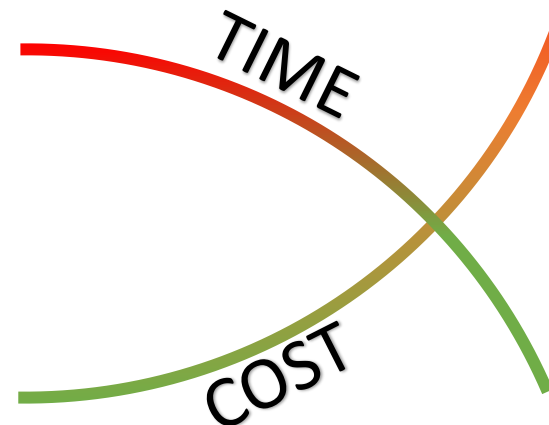
- Cost of Data Lost
- Downtime Financial Loss
- Recovery Cost
- Infrastructure Cost

TIME

- Period of Data Loss
- Operational Downtime
- Recovery Time
- Infrastructure Up Time



DISASTER



RESOURCES

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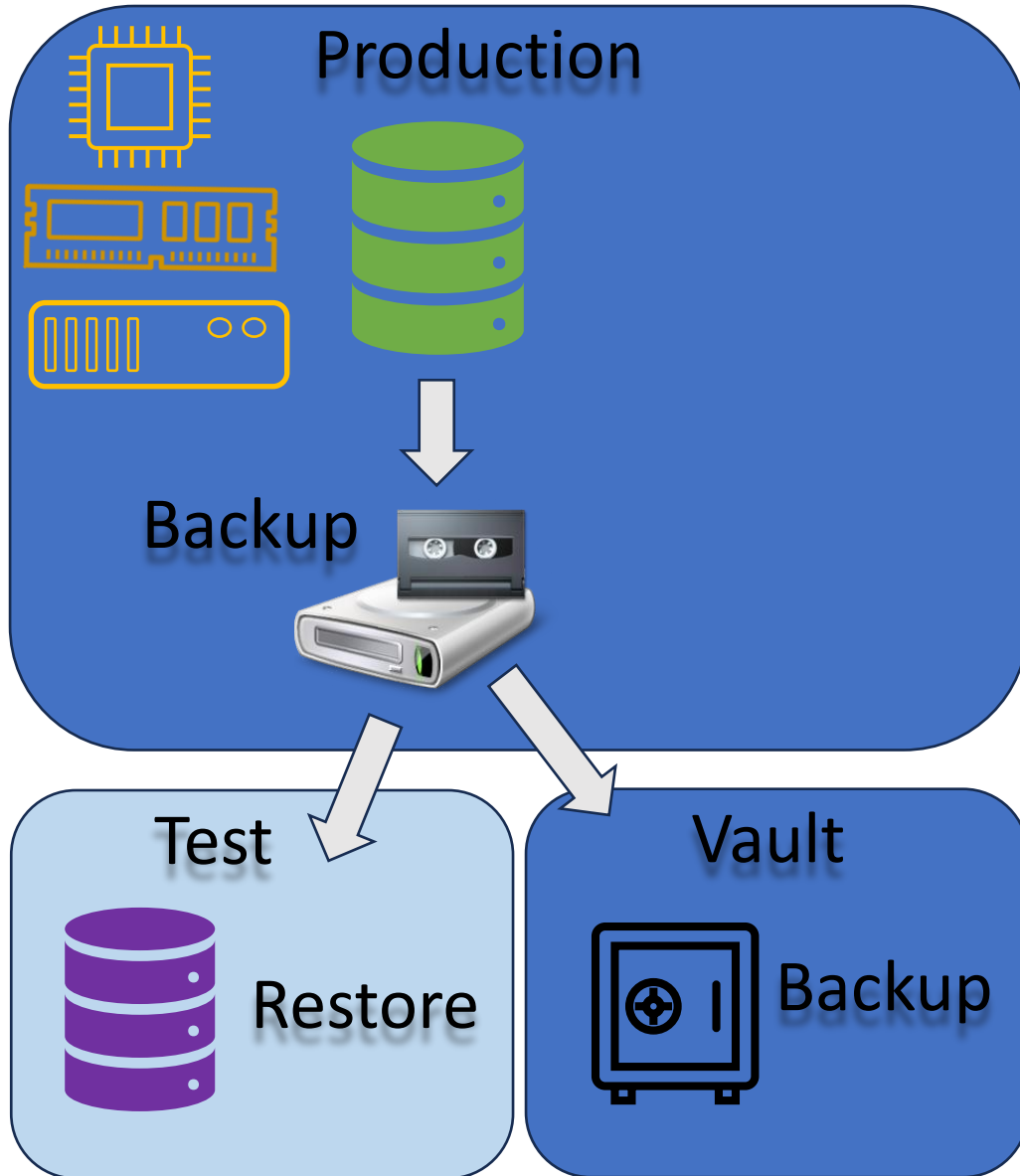
Backing up your database is an important part of database maintenance.

Regular backups provide a starting point for recovery of a database lost to hardware or software failure.

Backup and recovery strategies work together to restore a database that is lost due to a system failure.

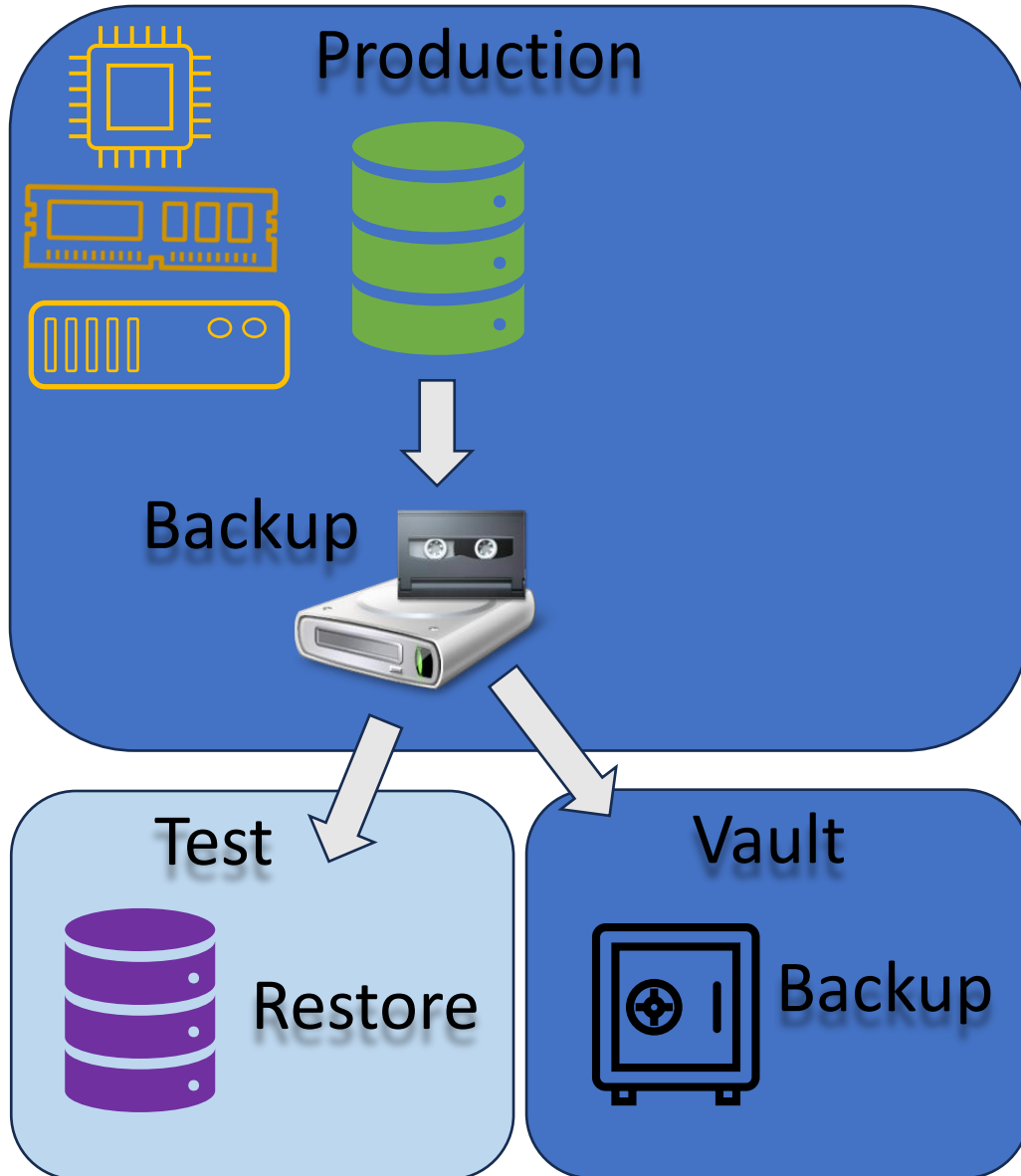
OpenEdge Backups

- Full / Incremental Backups
- Online / Offline



Tier 1 – Data backup with NO Hot site

Tier 3 – Electronic Vaulting



Single backup on Server



OpenEdge Database Server

```
[user@server:/backup] # database.bup
```

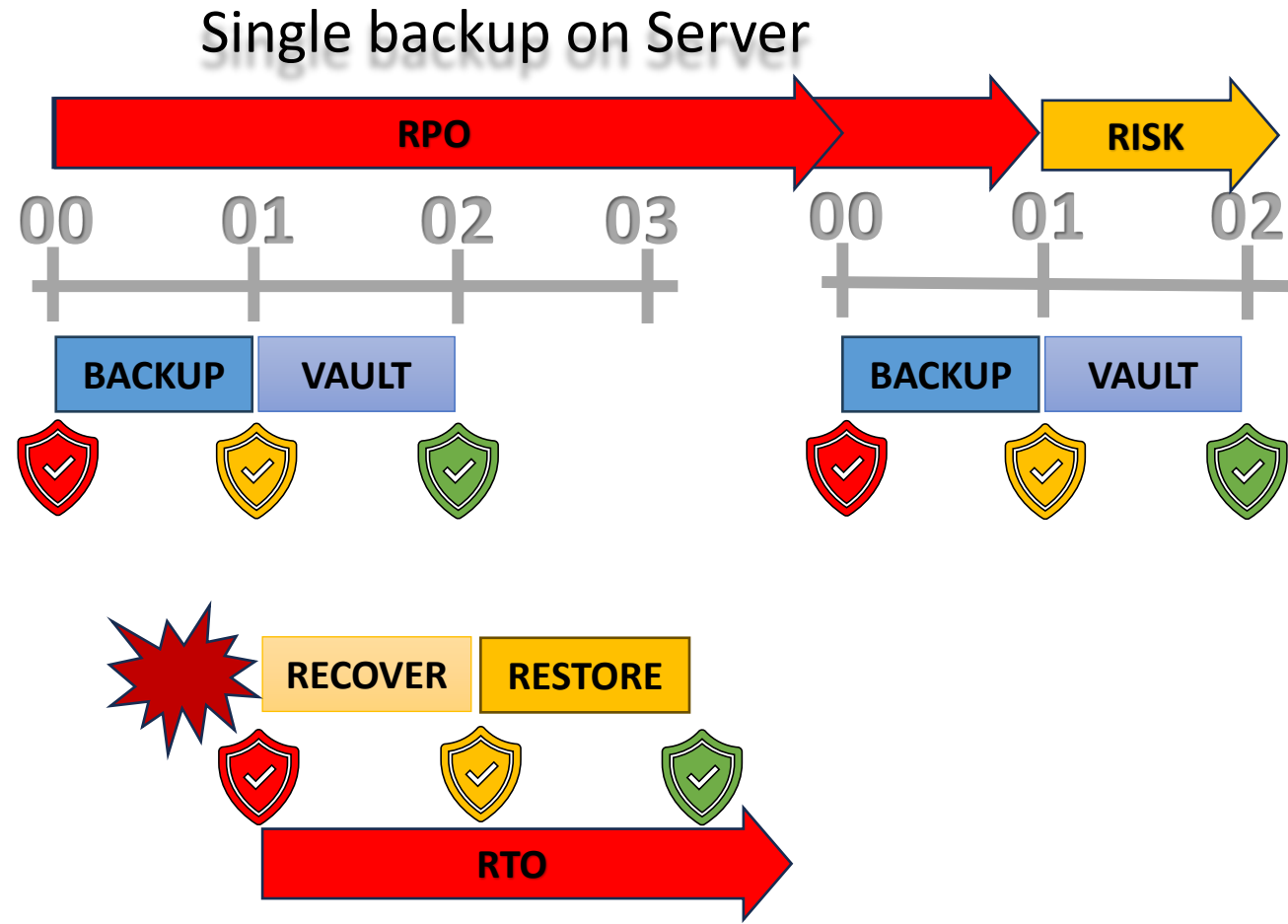
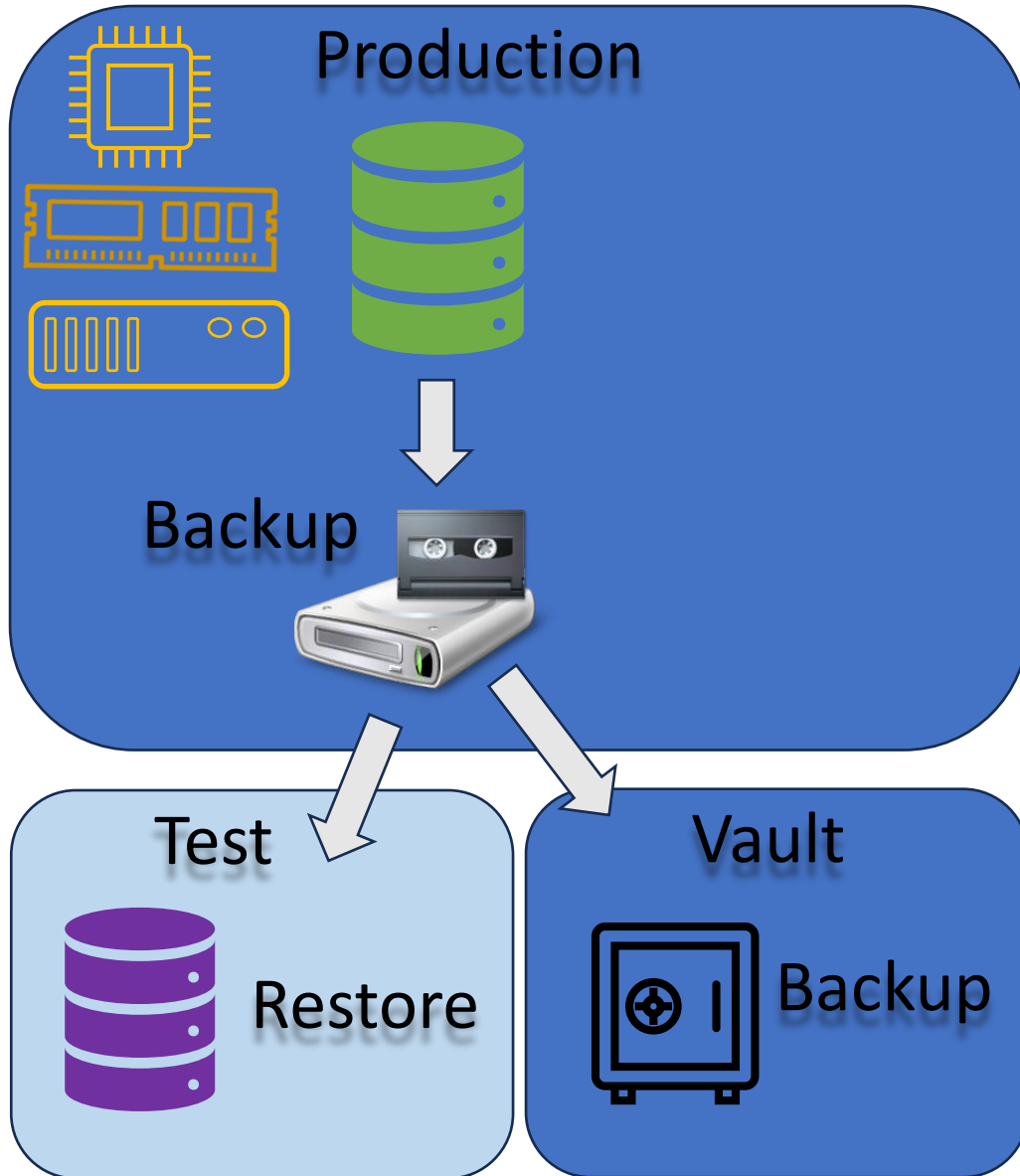
Multiple backups on Server



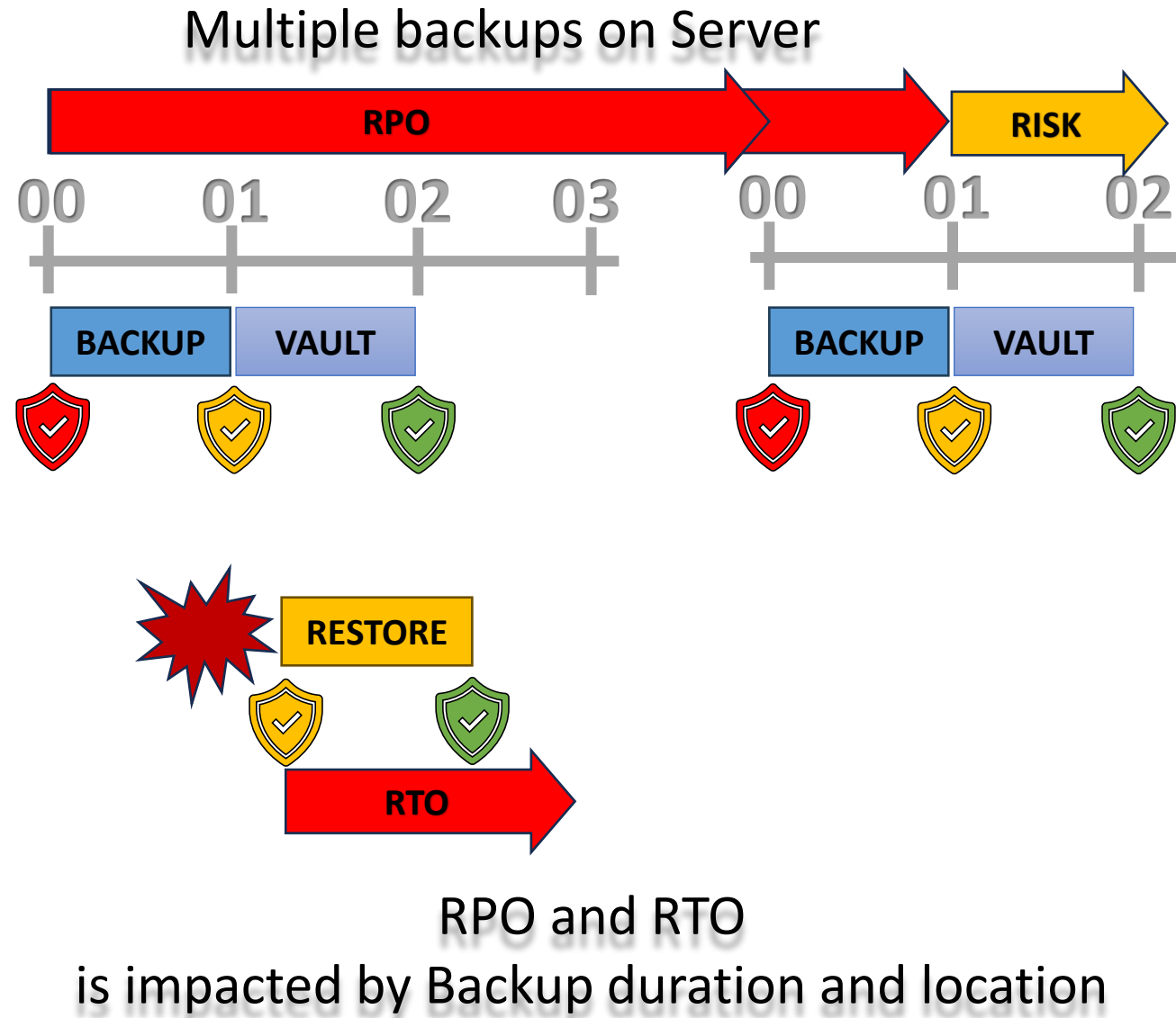
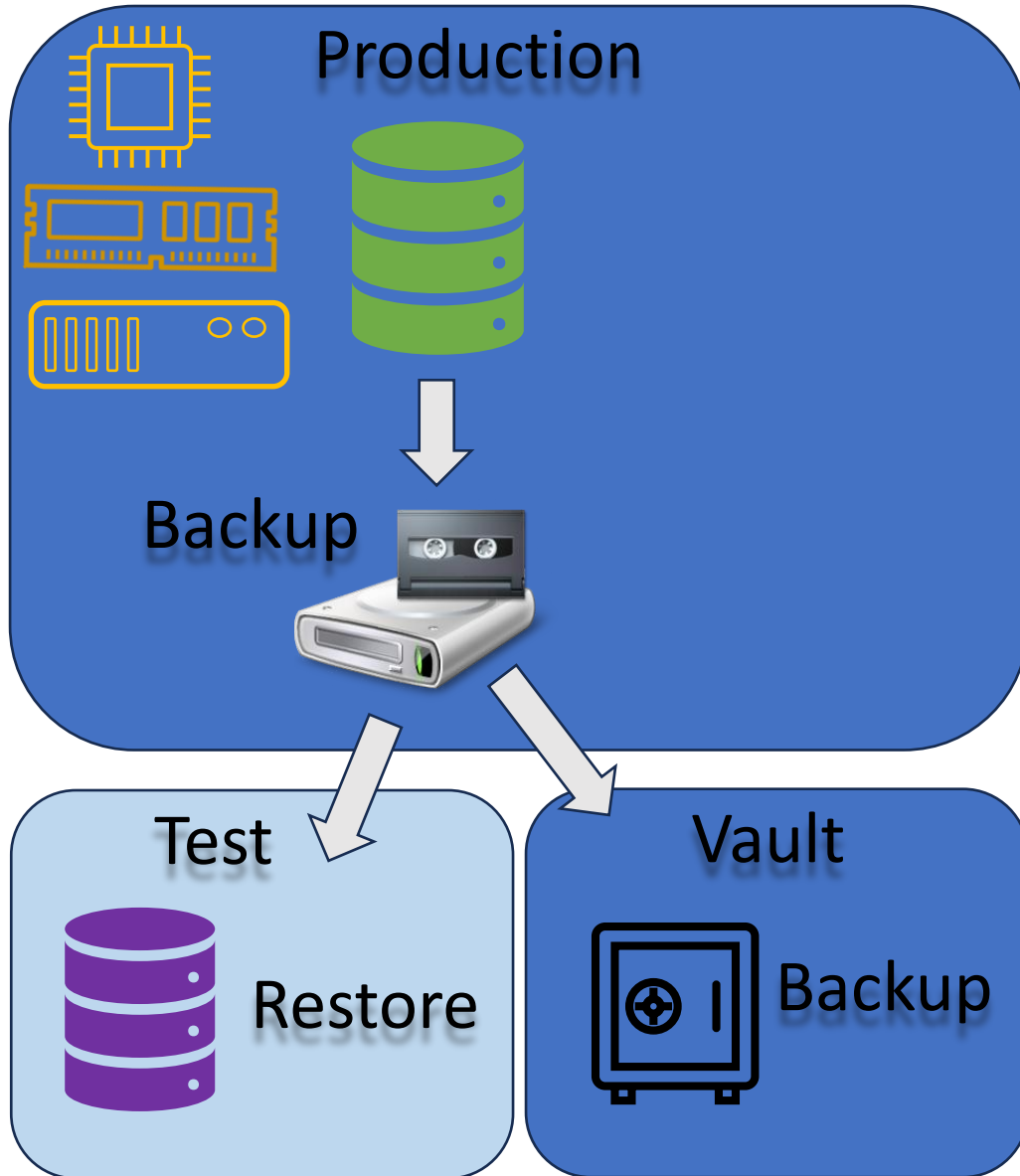
OpenEdge Database Server

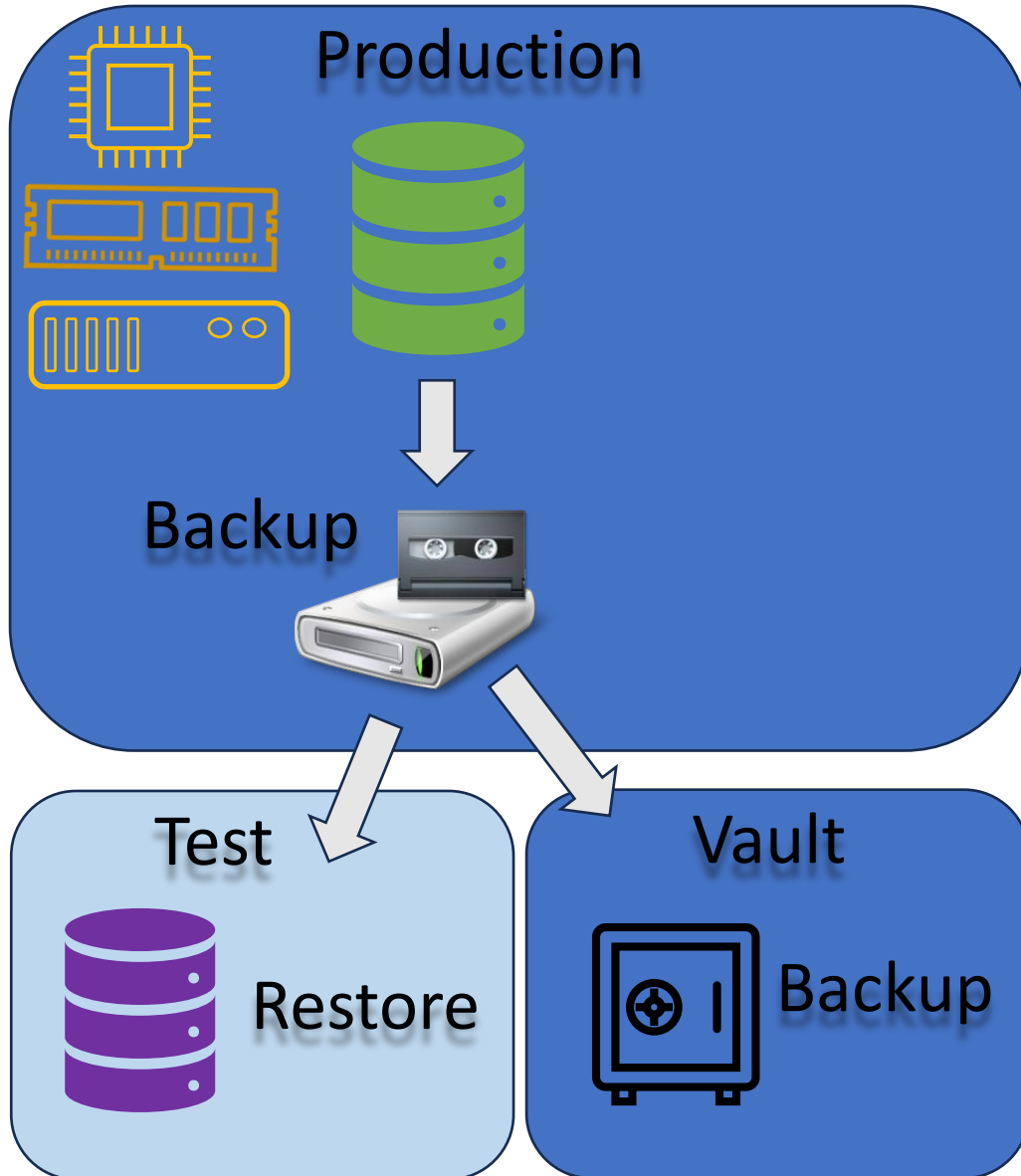
```
[user@server:/backup] # database.bup.0  
[user@server:/backup] # database.bup.1  
[user@server:/backup] # database.bup.2  
[user@server:/backup] # database.bup.3  
[user@server:/backup] # database.bup.4  
[user@server:/backup] # database.bup.5  
[user@server:/backup] # database.bup.6
```

- Full backups
- Incremental backups

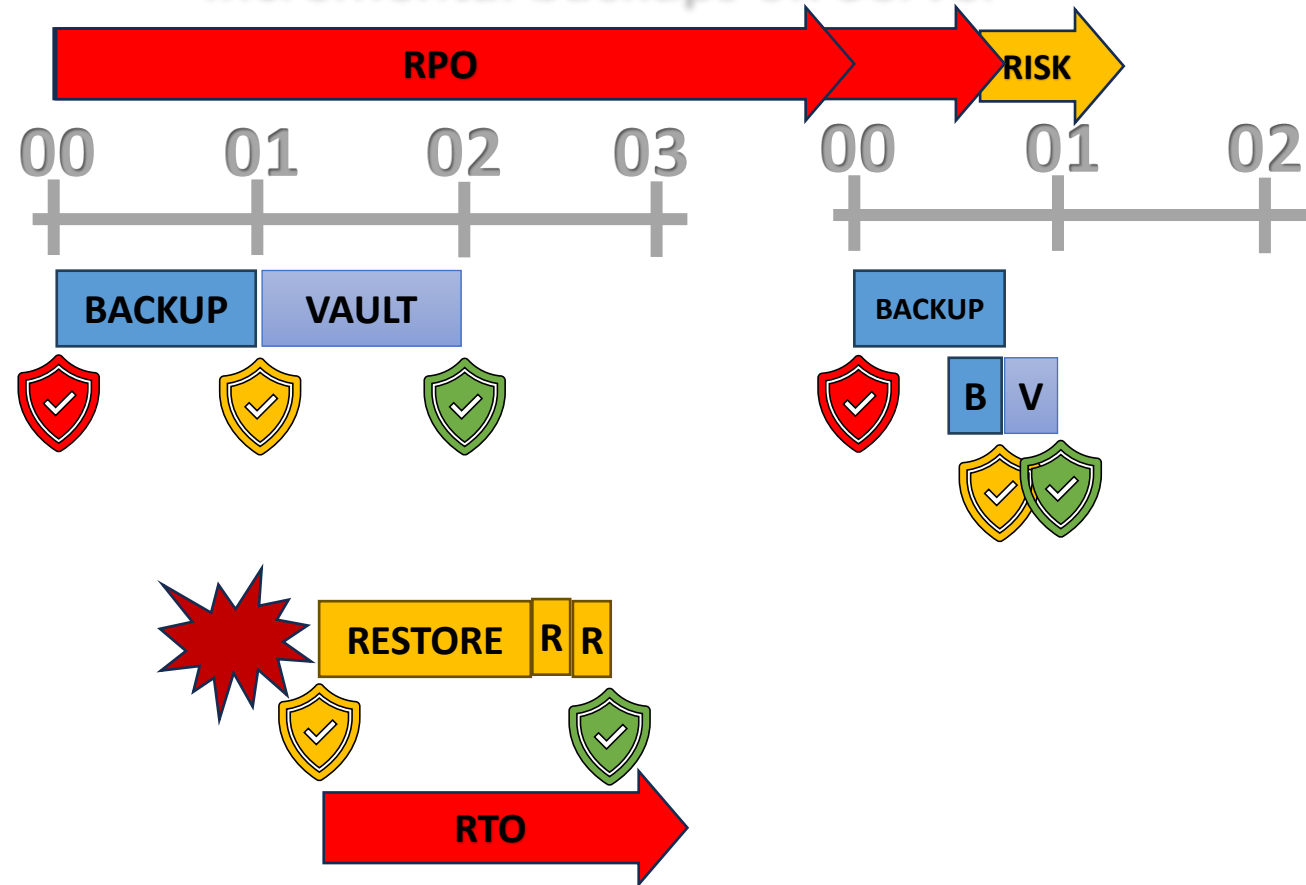


RPO and RTO
is impacted by Backup duration and location





Incremental backups on Server



Benefit for large database to non-production

After-Imaging is a process where database changes are continuously logged into specially formatted after-image (AI) files.

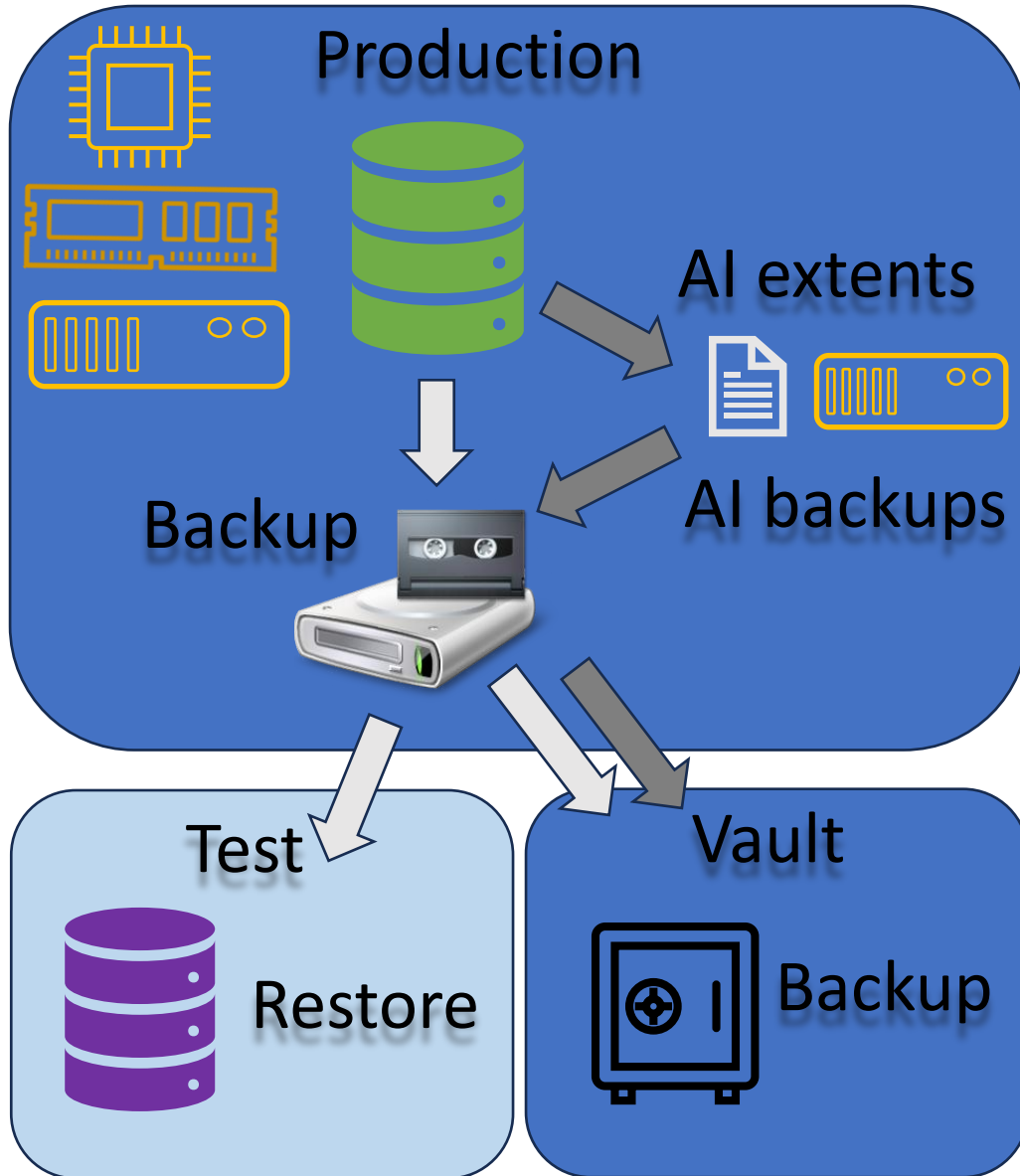
In conjunction with the last backup, AI files can be used with the roll-forward recovery process to restore a database to a (point-in-time) condition it was in before you lost the database, without losing completed transactions that occurred since the last backup.

Additional:

- AI Extents
- AI Backups

AI File Rotation

- Size based
- Time based
- Combination
- Auto / Manual

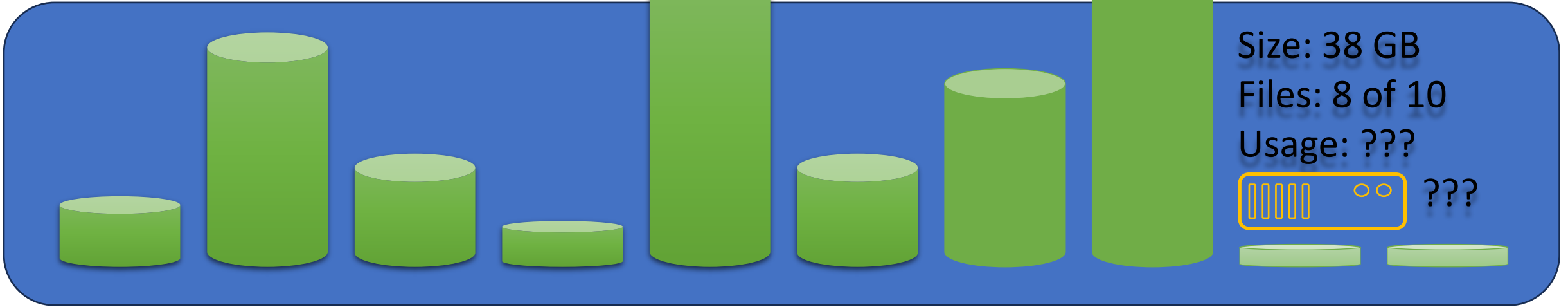


Tier 1 – Data backup with NO Hot site

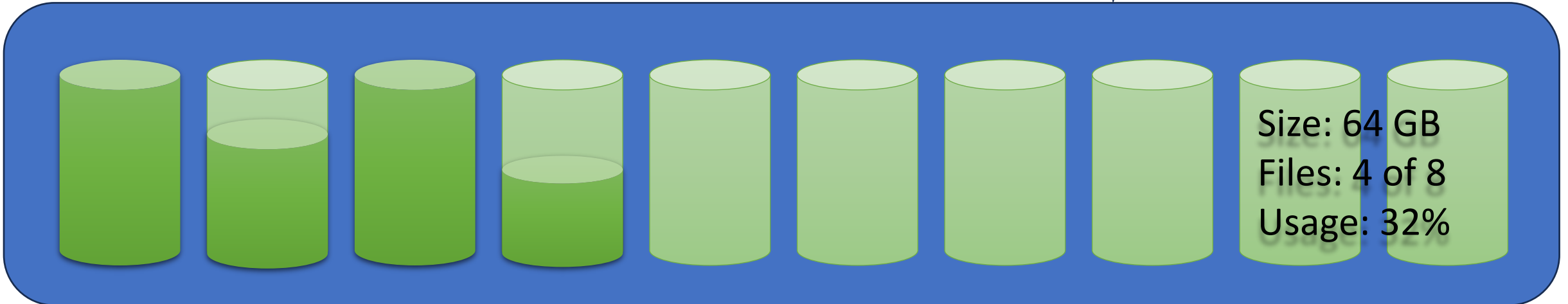
Tier 3 – Electronic Vaulting

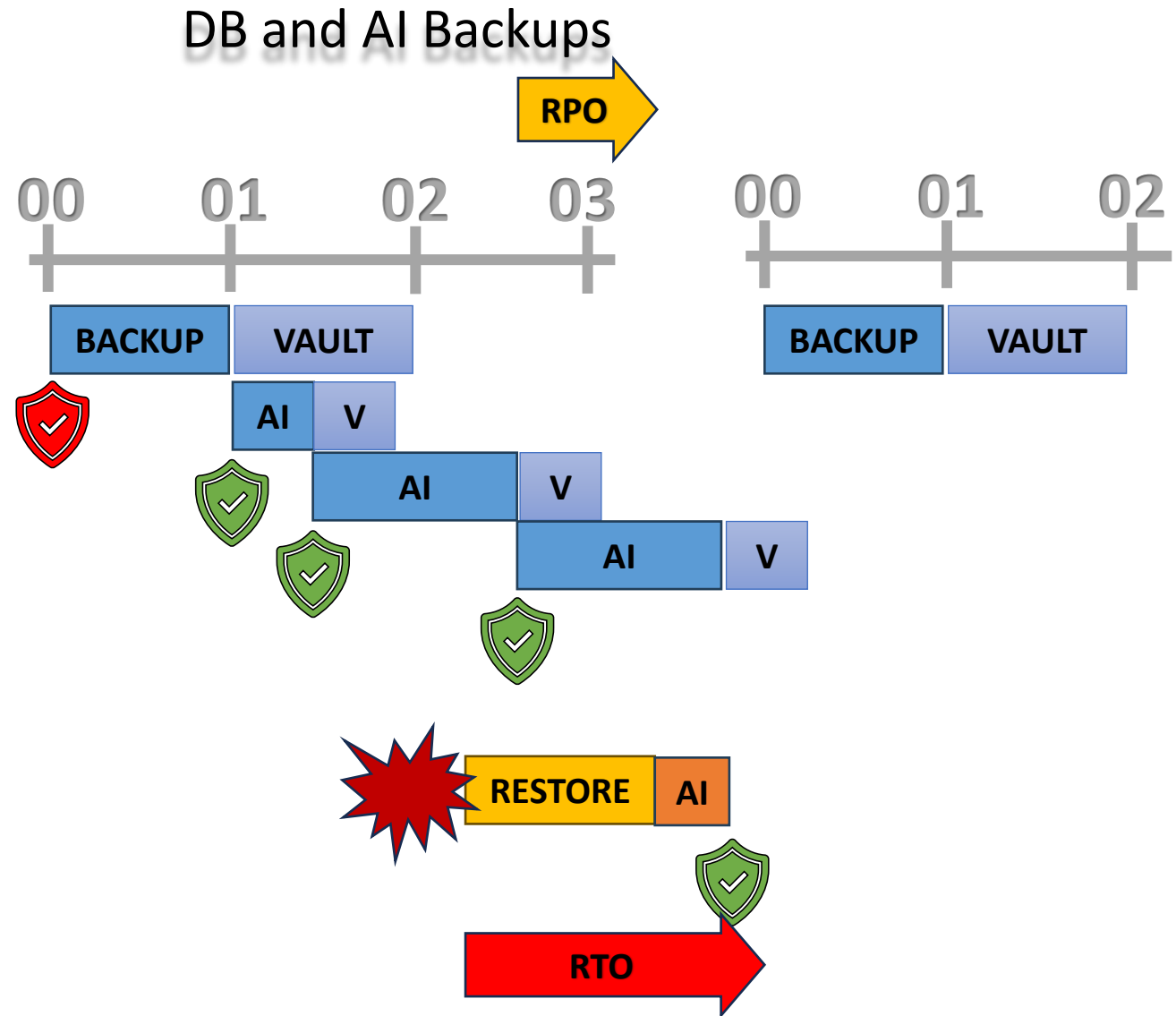
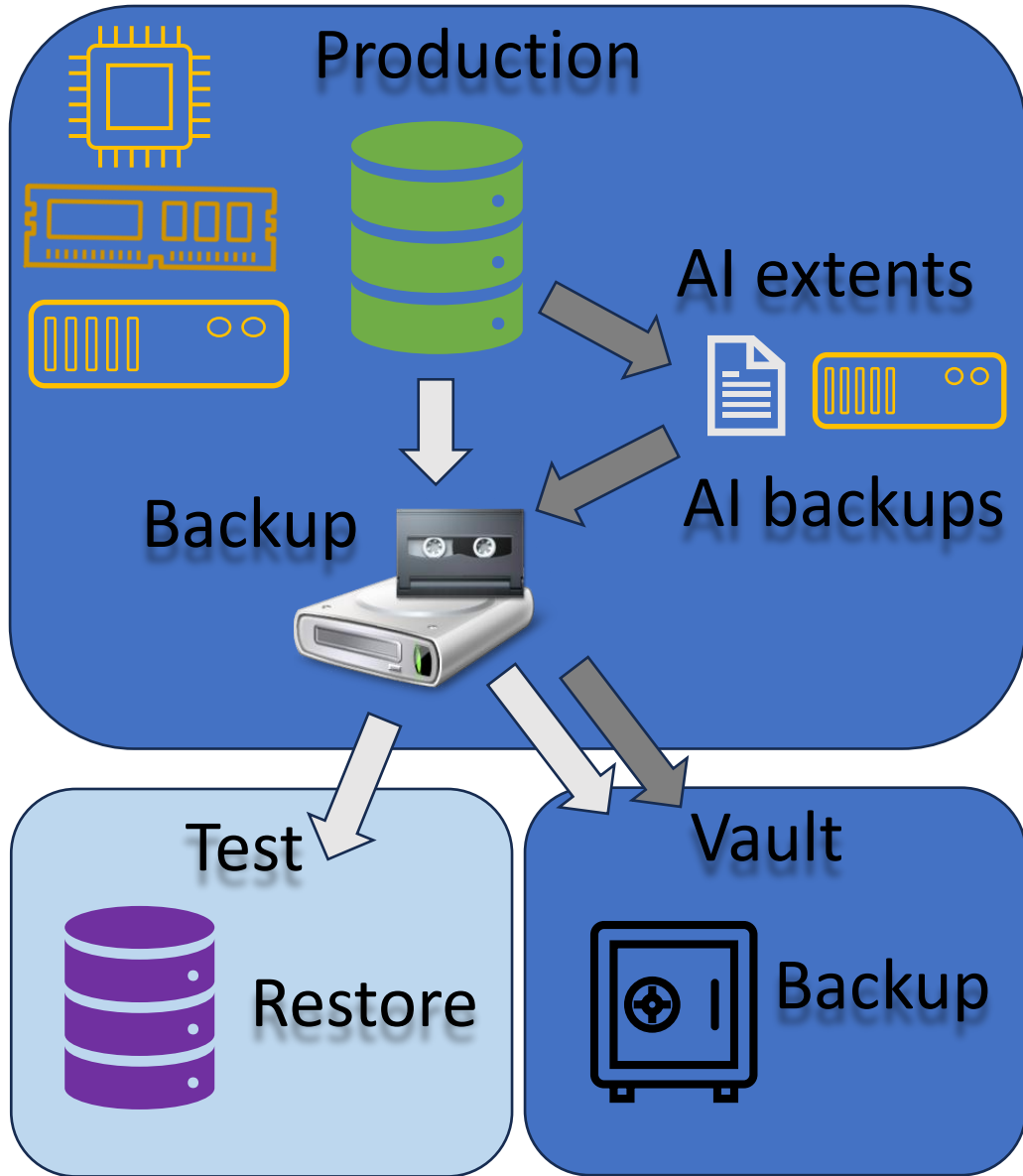
Tier 4 – Point-in-Time Copies

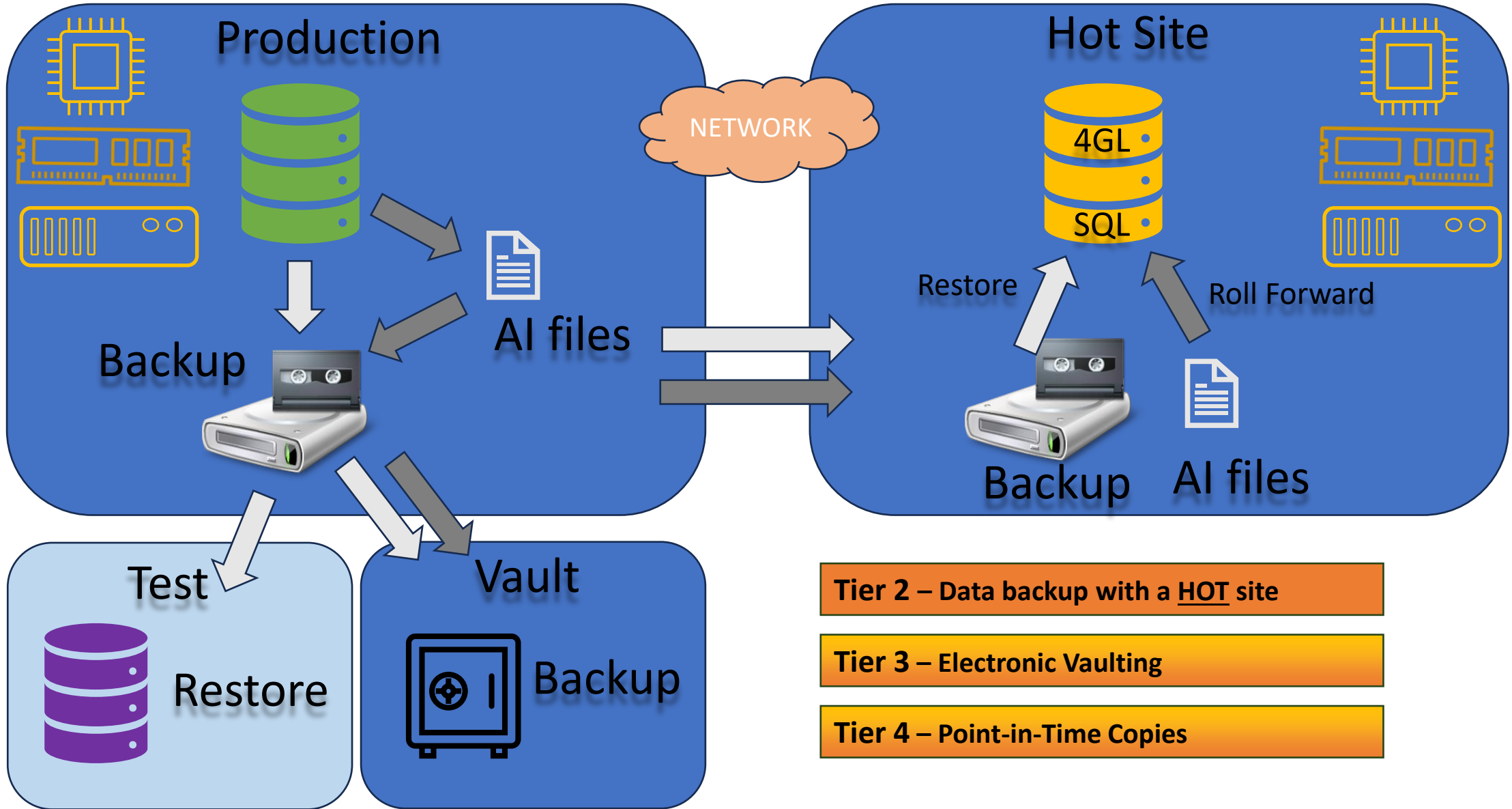
Variable Extents

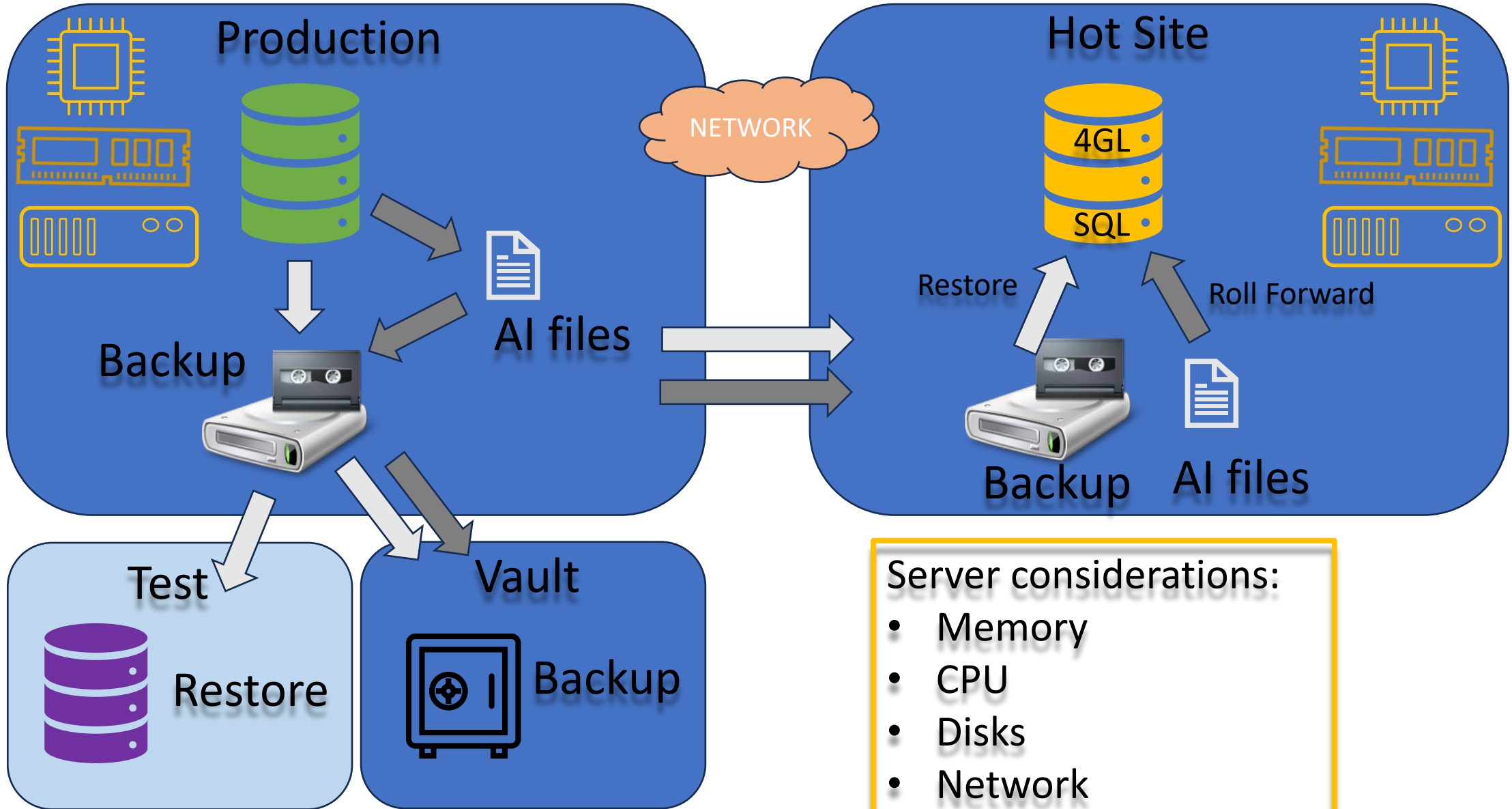


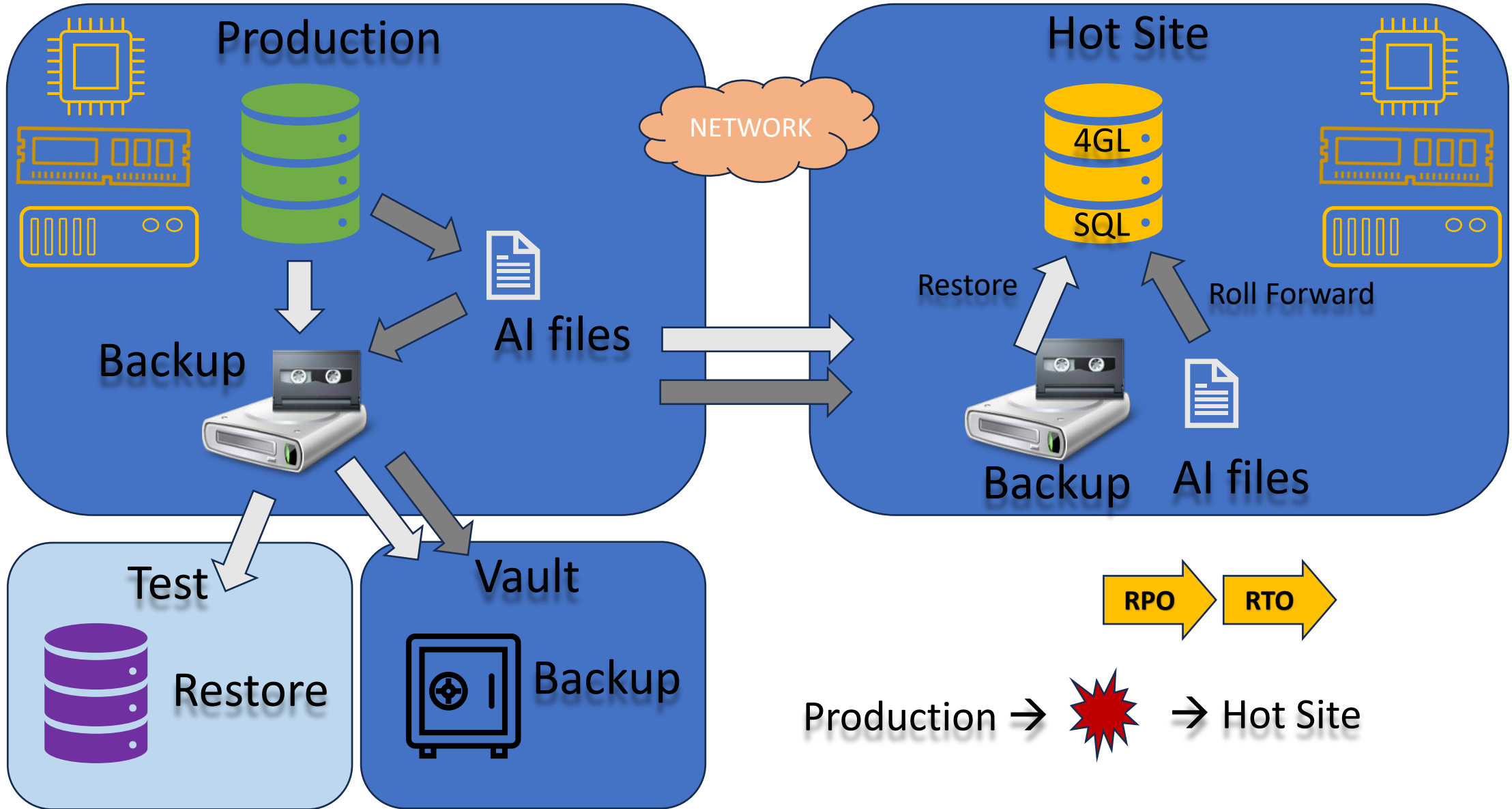
Fixed Extents











It is important to understand the differences in licensing between the use of After-Imaging to replicate data to a warm standby database and using OpenEdge Replication.

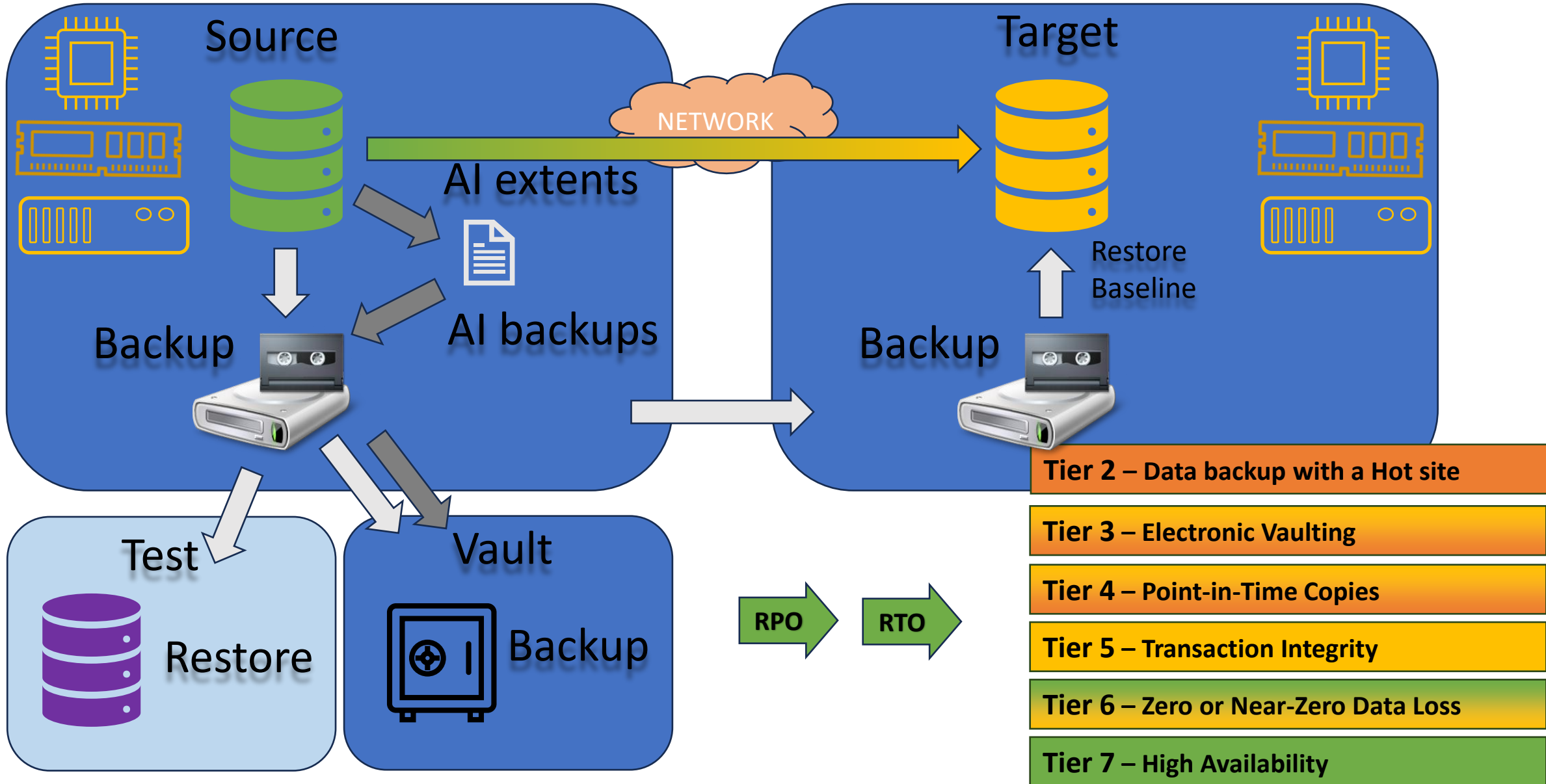
If you are using OpenEdge Replication or After-Imaging, you will need to purchase a license that matches the user count of your Enterprise database.

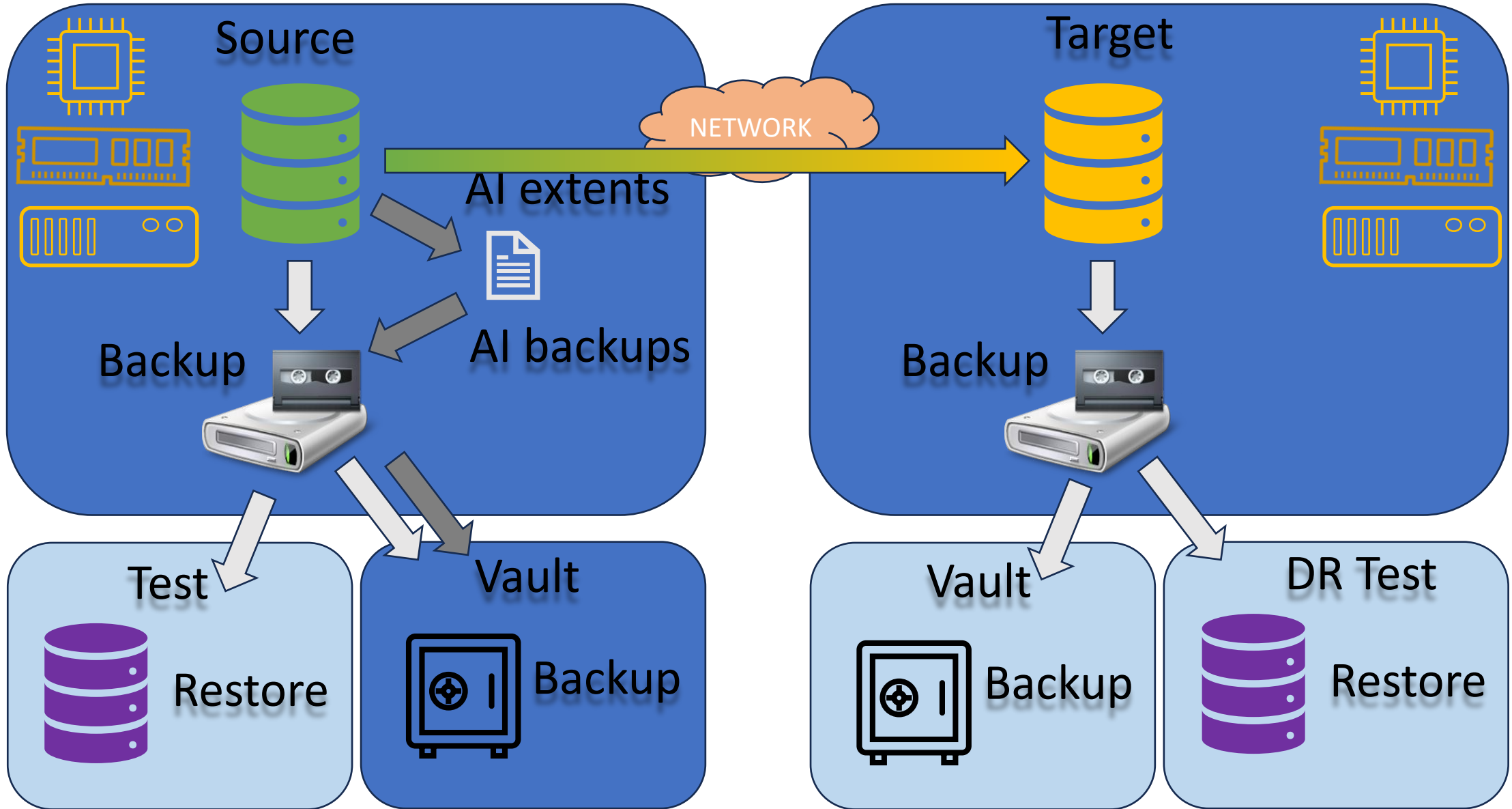
If you purchase these licenses specifically for OpenEdge Replication or Replication Plus, the cost is generally less per user than the cost per user for a warm standby using After-Imaging.

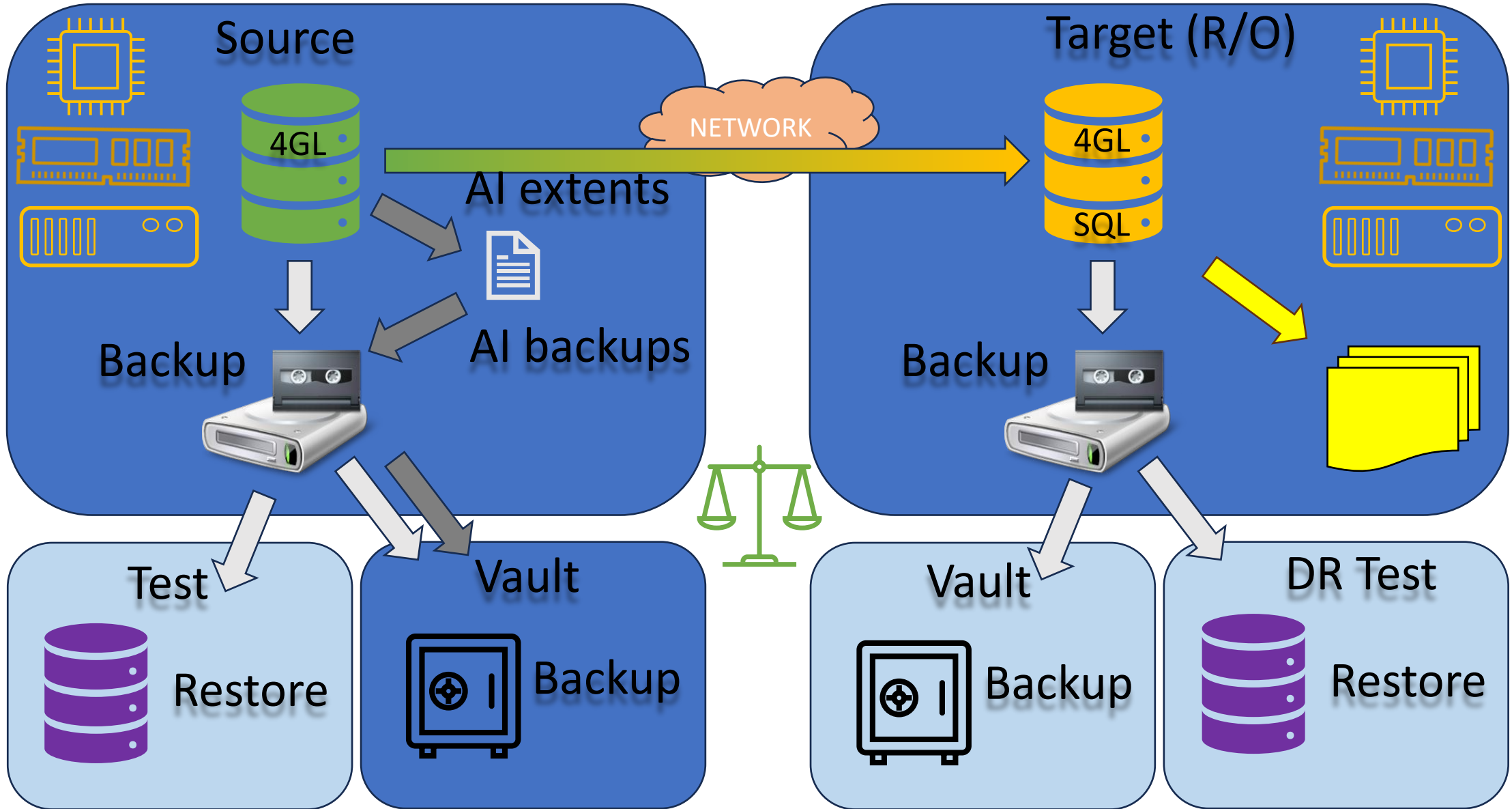
Using OpenEdge Replication, you can replicate a local OpenEdge database, known as the SOURCE database, to up to two remote OpenEdge databases, known as TARGET databases, that are running on one or more servers and/or data centers.

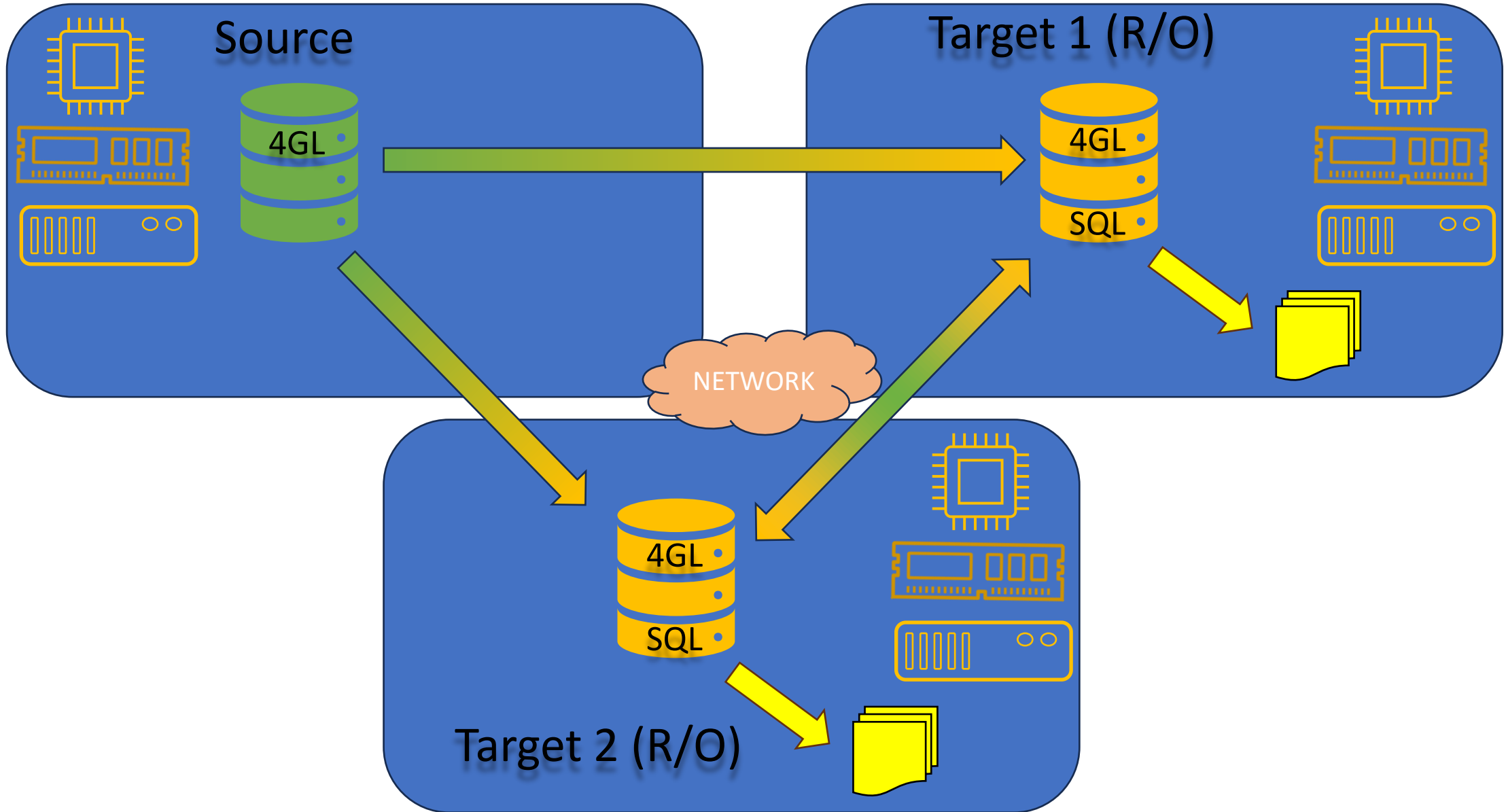
This duplication allows you to keep OpenEdge databases identical while also providing a hot standby in case a database fails.

If a database does fail, a replica becomes active, ensuring that mission-critical data is available 24 hours a day, seven days a week to your users.







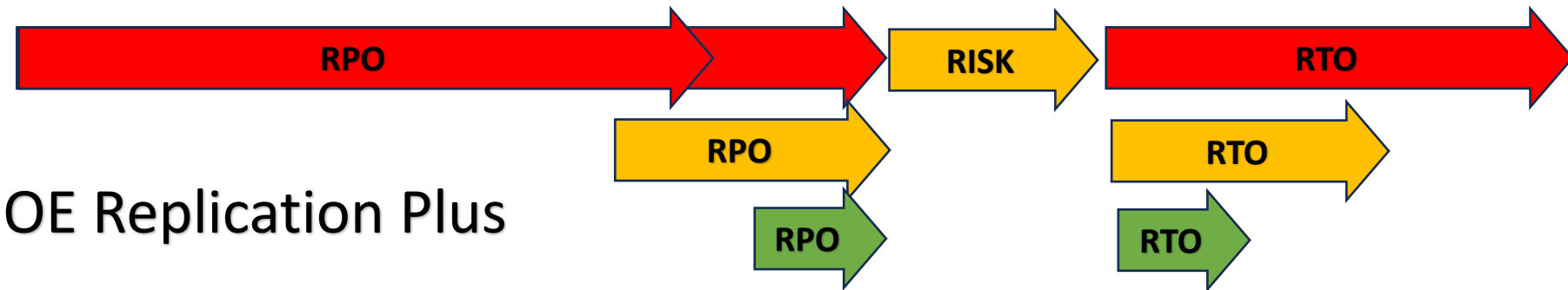


Use the OpenEdge components available.



Start small and extent to achieve the best available DR solution.
(within the business and technical restrictions)

- OE Backups
- OE After-Image
- OE Replication / OE Replication Plus



Hope this knowledge will also assist you, not just to implement, but also to motivate the best suitable, acceptable, and affordable solution to Business.



Q&A



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