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TEKTIT CONSULTING

SLAC 2025

Workshop:

Quality Assurance for Contingency Plans

The “No Restore” Solution

04. June 2025, Secure Linux Administration Conference 2025, Berlin

Schlomo Schapiro, Associate Partner / Principal Engineer, Tektit Consulting

Agenda

9:00	Vorstellung & Erwartungen
9:30	Vortrag (Schlomo)
10:00	Problemstellung (Kleingruppen)
10:30	☕☕☕
10:45	Lösungskonzept (Kleingruppen)
11:45	Ergebnisse vorstellen & besprechen (alle)
12:15	Abschluß (alle)

Business Continuity

A comprehensive strategy ensuring an organization can continue operating and delivering critical functions during and after unexpected disruptions, minimizing downtime and maintaining essential business processes.

Staying in business, no matter what!

Source: Claude.ai

The Timeline

Recovery Time Objective (RTO)

*How **long** to recover?*

DO

Recovery Point Objective (RPO)

*How **old** is the recovery data?*

HAVE

Too Much Data?

The World Will Store 200 Zettabytes Of Data By 2025

"The 2024 Data Attack Surface Report predicts the total amount of data that the world will need to protect over the next two years.

Cybersecurity Ventures predicts that the total amount of data stored in the cloud — which includes public clouds operated by vendors and social media companies (think Apple, Facebook, Google, Microsoft, Twitter, etc.), government-owned clouds that are accessible to citizens and businesses, private clouds owned by mid-to-large-sized corporations, and cloud storage providers — ***will reach 100 zettabytes by 2025, or 50 percent of the world's data at that time, up from approximately 25 percent stored in the cloud in 2015****.*

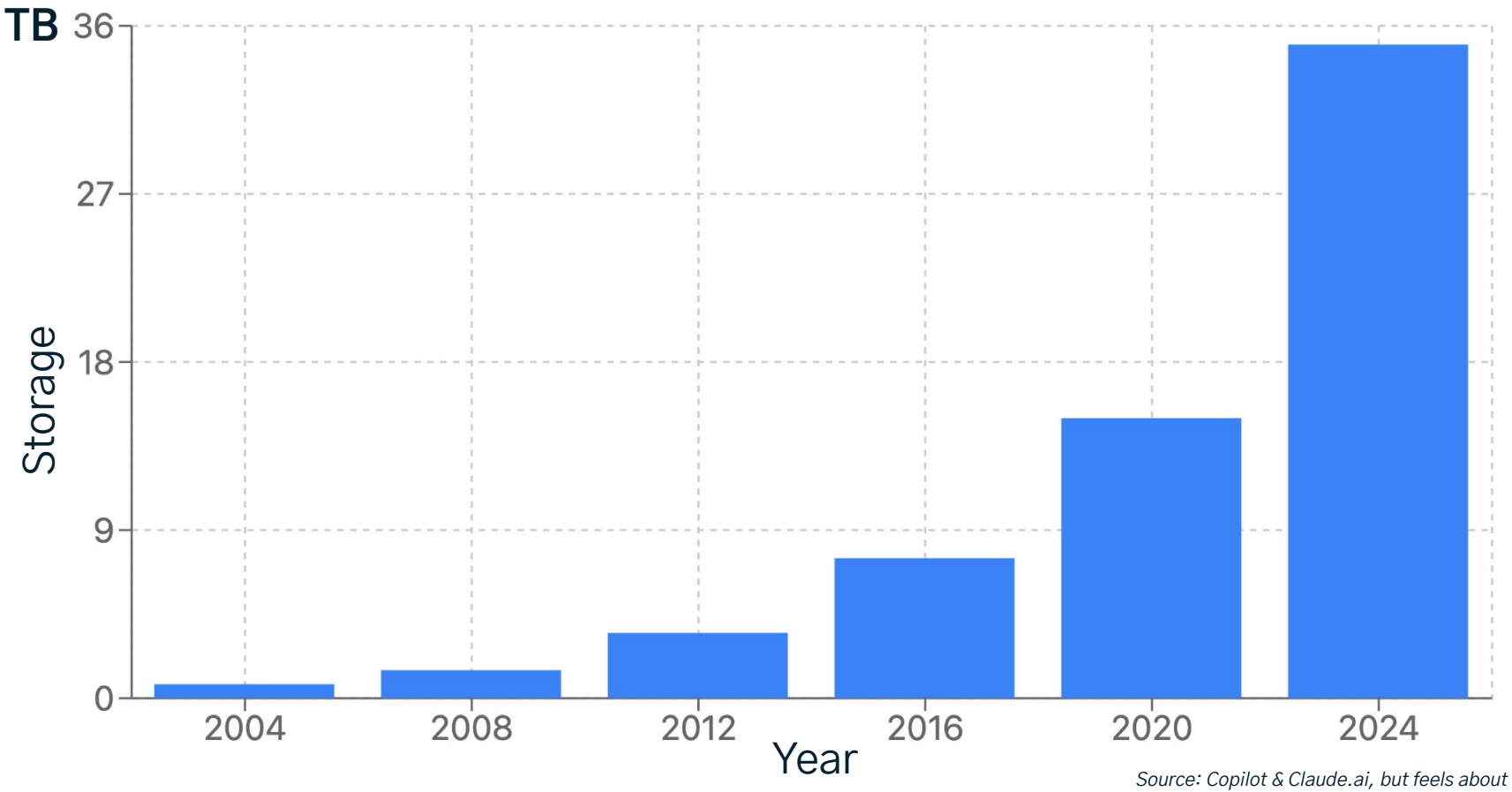
Total global data storage is projected to exceed 200 zettabytes by 2025*. This includes data stored on private and public IT infrastructures, on utility infrastructures, on private and public cloud data centers, on personal computing devices — PCs, laptops, tablets, and smartphones — and on IoT (Internet-of-Things) devices. …"*

200,000,000,000,000,000,000,000 bytes

200,000,000,000 TB

Source: cybersecurityventures.com/the-world-will-store-200-zettabytes-of-data-by-2025/

ERP Storage Requirements (2004-2024)



Source: Copilot & Claude.ai, but feels about right

No Time to Restore All the Data?

Evolution of Disaster Recovery

1980s: The Dawn of Disaster Recovery

- Characteristics: Reliance on manual tape backups, slow recovery processes, and substantial data loss risks.

RPO: 168 hours (7 days)

RTO: 96 hours (4 days)

1990s: The Rise of High Availability

- Improvements: Introduction of disk-based backups, RAID arrays, and hot sites reduced recovery times and data loss potential.

RPO: 48 hours (2 days)

RTO: 72 hours (3 days)

2000s: Virtualization and Improved Replication

- Advancements: Virtual servers enabled more efficient replication and failover, significantly reducing both RPO and RTO.

RPO: 24 hours (1 day)

RTO: 48 hours (2 days)

2010s: Cloud-Based Solutions and Automation

- Innovations: Cloud technologies, real-time replication, and automated failover processes drastically improved recovery capabilities.

RPO: 4 hours

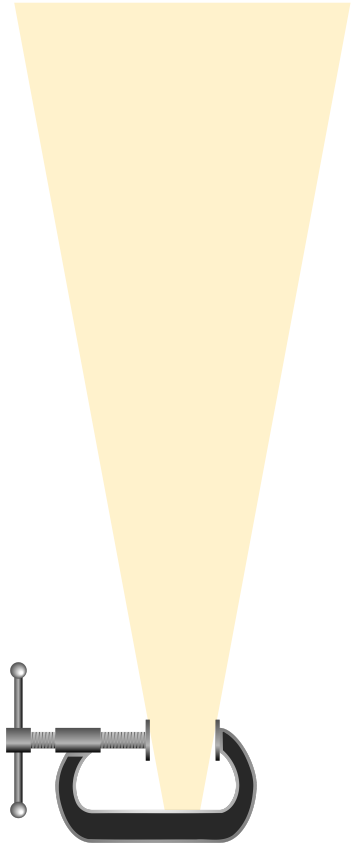
RTO: 8 hours

2020s and Beyond: Near Real-Time Recovery

- Current state: Continuous data replication and advanced cloud technologies enable near-instantaneous recovery for many businesses.

RPO: Minutes

RTO: Minutes to a few hours



Source: Alan Gin, linkedin.com/pulse/evolution-disaster-recovery-business-continuity-high-availability-kuzvc/

How did your storage size increase?

How did your RPO & RTO decrease?

RTO Example: Catastrophic SAN failure (worst case)

Context:

- 140TB SAN storage
- LTO-9 tape library (400 MB/s = 1.44 TB / hour transfer speed)

Full Restore:

- 1 day for “fixing” the SAN storage
- 4 days for full restore
- 1 day overhead

→ minimum 5 days to recover SAN

Questions:

- 1 week recovery time from major outage OK?
- how to manage external relationships & communication during 1 week outage? Stop external processes?
- What if all the local hard disks / physical servers where also affected?
- how can we **test this & validate the projected recovery time?**

SLA = RPO + RTO + 🤞 🙏 ❤️ 🩼 🩹 ?

Restore Time = Biggest **Problem & Unknown**

Let's get rid of the restore time!
Let's exercise restore all the time!

Restore **every** backup immediately

Replacement system is **ready** for usage

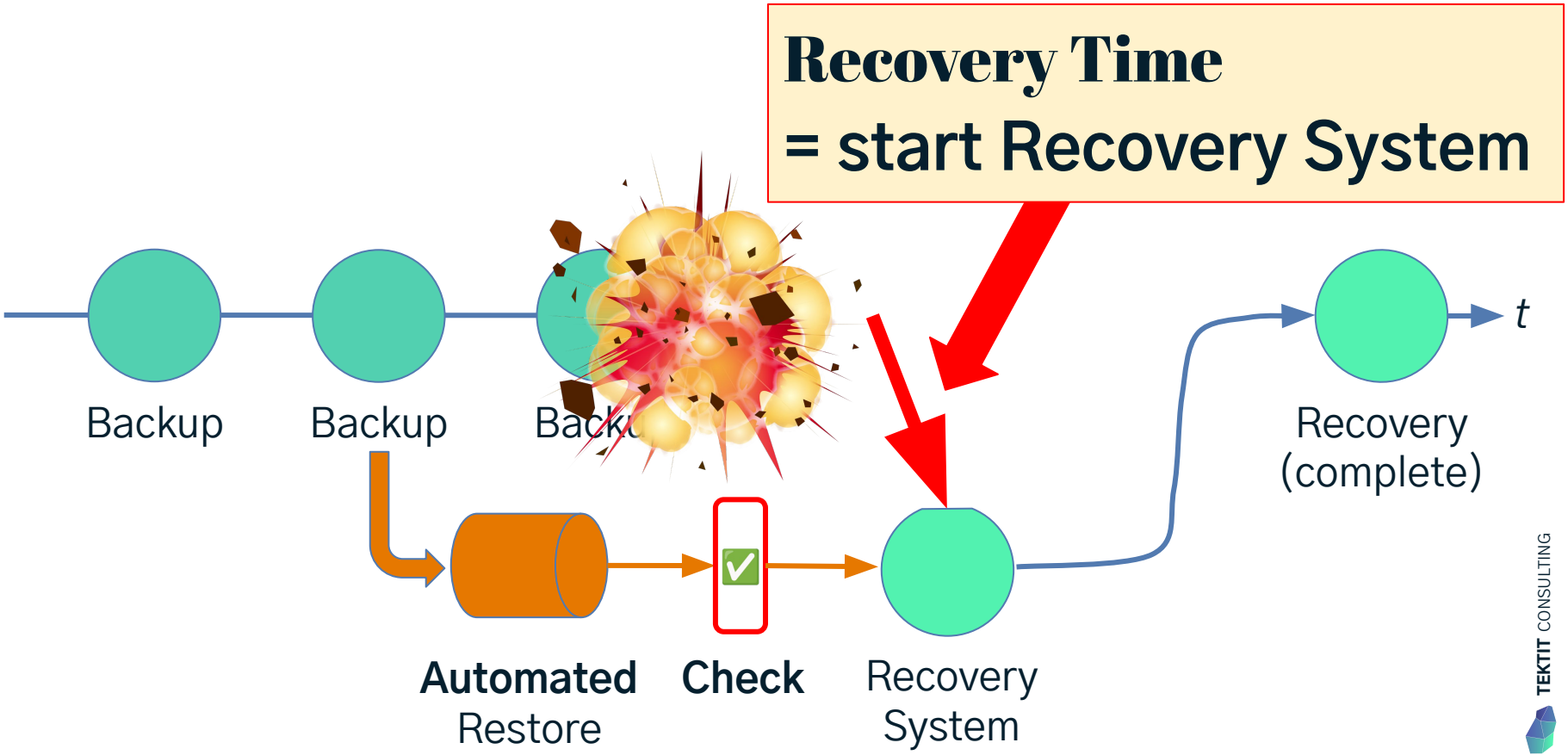
Fixed RTO

Try to **restore** when needed

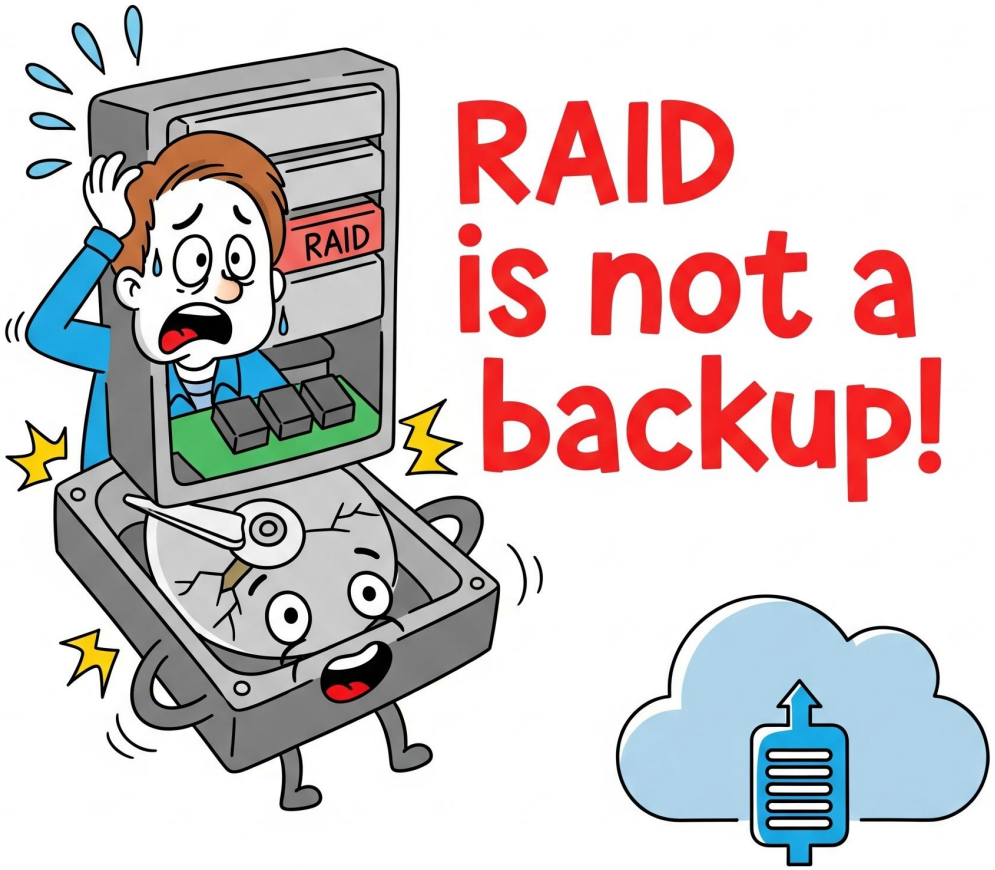
→

Switch to working & verified recovery system

The "No Restore" Solution



Also consider



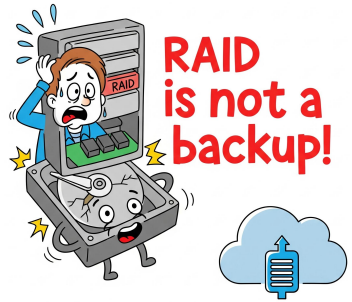
Also consider

✅ Reducing RPO: Snapshots ➕ Replication ➕ Offsite Backup

✅ “Only business critical systems”:
- Avoid illusion of clarity
- Tech evolves much faster than paper (Business Impact Analysis)
- Users solve problems themselves outside of official applications & processes

✅ SaaS applications
- Do you still have **possession** of your own data?
- There is no backup!
- If there is a ~~backup~~ export, you cannot restore it!
- Often also business critical or part of other business critical processes
- What is your RPO & RTO and your contingency plan?

✅ ROI for automation
- Cheaper to develop automation than to run many BC tests
- Scope of automation much bigger than manual BC exercises
- **Guaranteed & provable quality for contingency plans**



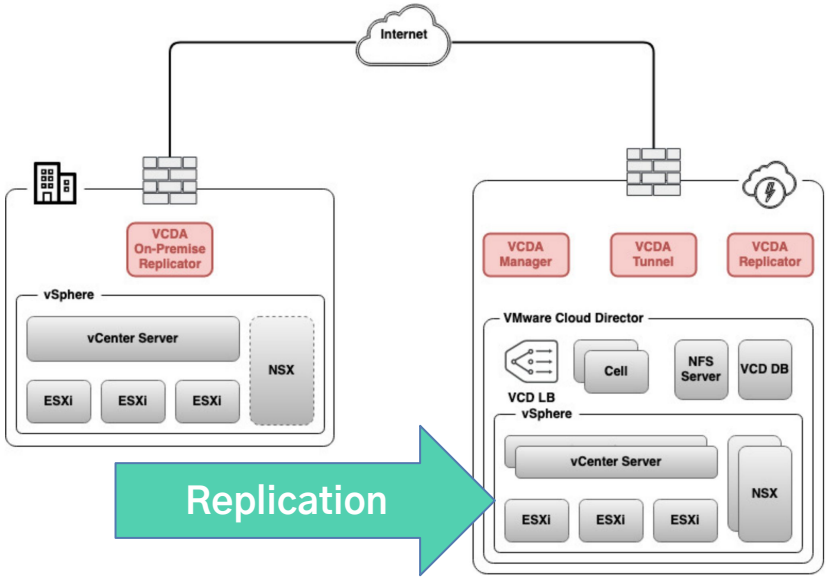
Disaster Recovery as a Service (DRaaS)

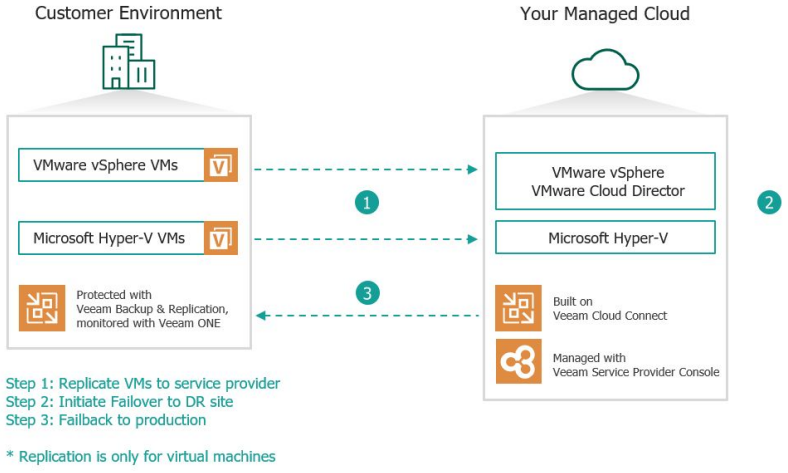
VMware

- VMware Cloud Director Availability
- Disaster Recovery as a Service

Veeam

- VMware vSphere VMs
- Microsoft Hyper–V VMs





Some Personal Materials

- Relax and Recover (ReaR) Open Source Project (since 2006), Automated Linux Disaster Recovery (Video stackconf 2024)
- The Simple High Available Linux File Server (SambaXP 2008), Virtualisierte Cold-Standby-Server für Linux (iX 4/2008)
- “easyVCB” Open Source Project, VMware “No Restore Solution” (2008), now “VMware Live Recovery” & “Veeam Recovery Orchestration”
- Mission Impossible: Complete Disaster Recovery for Google Workspace (Research, Article, Video 2022)
- DevOps Risk Mitigation – Test Driven Infrastructure (Video euroPython 2014)

Quality Assurance for Contingency Plans

Automate the disaster recovery to eliminate the risk & uncertainty.

Switch to a ready recovery system to quickly recover from outages.

“Test Driven Development” for Business Continuity !

Q&A — How may I help you?

tkt.dev/schlomo

We are not consultants. We are Partners, Coaches, Humans, Enablers, Catalysts, Sparring Partners, Experts … and sometimes a little annoying.

I focus on **IT strategy**, IT governance, technology and architecture management, security and compliance automation, related organisational changes, business continuity, open source and cloud technologies – and I'm available as a Principal Engineer or Technical Product Owner for short-term / interim support.

Examples:

- **Business-IT alignment & leveraging**, developing required skills and abilities for 21st century IT, leverage AI
- **SaaS compliance & governance**, data possession vs. ownership, IAM, integrations, backup & DR, shadow IT
- **Compliance Automation**, finding the "golden path" to a "golden state" via **Platform Engineering**
- **Secrets Management** for Datacenter, Cloud Infrastructure, IaaS/PaaS/SaaS
- **Open Source**, from usage to contribution, writing policies, using SBOM, establishing Open Source Stewardship
- **Good Engineering Practices**, GitOps, test driven development, good architecture decisions, known tech strategy
- **Business Continuity and Disaster Recovery** for office, Cloud infrastructure, data center & SaaS, with quality assurance, emergency communication & collaboration, hot & cold standby, no-restore solution, ransomware protection, Linux Disaster Recovery / Bare Metal Restore with "Relax and Recover (rear)" Open Source tooling

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