



Backup strategies for the 2020s

How to ACTUALLY protect yourself

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Agenda

- *The current environment*
- *The current threat*
- *The current problem*
- *A history of backups*
- *What is “safe” in a modern environment?*
- *What is immutability*
- *How do we use immutability?*
- *How can we acquire immutability?*
- *What are the problems with various solutions?*
- *What does my business need to do to not be a newspaper headline?*

About Me / Mirazon

CTO for IT solutions provider Mirazon

- Been with Mirazon as a systems engineer, solutions architect and then CTO since 2007
- VCAP, VMCE, VMCA, MCSE
- Been designing and administering virtual environments and backup for the better part of two decades
- Mirazon was Veeam's first North American gold partner
- Supports technology for businesses of all shapes and sizes
- Learn more at mirazon.com!

The Current Environment

Absolutely Terrifying

- Environments are more complex than ever
- Even small businesses often have hybrid environments
- ERP/CRM are more ingrained and harder to upgrade
- Servers are more stable than ever
- Environmental complexity means more work to upgrade
- New zero-day exploits are popping up daily
- Constant security vulnerabilities mean patching has to be constant
- Hundreds of security vendors, products, theories and tools with more popping up every day

The Current Threat

Also Absolutely Terrifying

- No longer just viruses made for the purpose of destruction
- Ransomware is the name of the game
- Fully automated ransomware on the rise
 - One bad email attachment can spread it everywhere
 - Many can avoid detection by common AV products
 - Initial ransom
 - Follow-up blackmail
- Actual malicious actors more common
 - Not just a big business problem
 - Small businesses can pay less, but are normally easier to take over
 - With money involved, everyone is a target

The Current Problem

Even More Terrifying

- Due to the current environment and threat:
 - Surviving fully unscathed is becoming more unlikely
 - Becoming more a question of ‘when’ not ‘if’
 - Nearly impossible to keep everything up on security patches
 - Even if you do, zero days are still more common
- Malicious actors actively target backups
 - Often the first thing they look for
- How do you prevent an incident?
- How do you recover from an incident?

A history of backups

A more lighthearted discussion

- Backups started as just file copies
 - Tape was the cheapest thing to put it on, HDD were EXPENSIVE
- 90s into early 2000s – image level backups
 - File restores often required full image restores
 - Full image restores often still didn't work
 - Tapes were still the go-to solution for server backups
- Mid 2000s virtualization starts taking hold
 - Traditional backups can't cope
 - Server sprawl wrecks backup methodologies
 - Tapes are AWFUL at random IO, and backing up/restoring dozens of servers to a single tape caused a lot of problems

A history of backups

A more light hearted discussion

- 2010s modern backup software starts taking hold
 - Virtualization aware
 - Made for server sprawl
 - Allow granular and innovative restore methodologies
 - Needed faster storage capable of random IO
 - Caused a switch to hard disks for always-on backups
 - Relied on always-on backup copies or replicas for quick DR
 - “3-2-1 rule” popularized for **Three** copies of data on **Two** different media with **One** being offsite
- We were left in a perfect situation for ransomware/malicious actors

What's “safe”

Safety in numbers

- In the 1990s and early 2000s, we were worried about ‘a’ backup
- If taken offsite, wow, high operational maturity
- Most offsite backups were using the only backup copy
 - This creates some obvious concerns about how it was transported
 - This lead to places like Iron Mountain becoming popular
 - This also meant VERY long restore periods
- Now we NEED immediate access to backups
 - CEO deletes PPT right before big board meeting
- Now we NEED a second copy of storage/backups elsewhere
- Now we NEED an un-changeable copy of backups

What is “immutable/immutability”?

Unable to be...muted?

- Definitions!
 - “Computers. (in object-oriented programming) of or noting an object with a fixed structure and properties whose values cannot be changed.” – dictionary.com
 - “not capable of or susceptible to change” – Merriam Webster
 - “not changing, or unable to be changed” – Cambridge Dictionary
- Relevant definition - Data that:
 - Can't be changed
 - Can't be deleted
 - Can't be encrypted
 - Can't be modified

How do we use Immutability

“...then lobbest thou thy Holy Hand Grenade of Antioch towards thy foe, who, being naughty in My sight, shall snuff it.”

- Can't be primary data
 - Because this has to change thousands of times a day
- Can't be the replica at the DR site
 - Because this also has to change every time updates come
- Can be a copy of primary data
- Can be a copy of replica data
- Can be a backup
 - Offsite
 - Secondary
 - Primary

How can we acquire immutability?

Many ways of varying usefulness

- **THE CLOUD!!!** (mark it off your buzzword bingo card)
 - Azure offers immutability
 - Variable costs
 - Multiple tiers
 - *immutable
 - AWS offers immutability
 - Variable costs
 - Multiple tiers
 - S3 Immutability has broad general support
 - Wasabi offers immutability
 - Fixed costs
 - One tier
 - S3 Immutability has broad general support
 - Other cloud vendors – Varying combinations of the above

How can we acquire immutability?

Many ways of varying usefulness

- THE CLOUD!!!
 - Costs change based on how much you put there
 - Costs change for most based on how fast you want the data
 - Must have internet capable of getting data there
 - Latency for getting data into the cloud
 - It's somewhere not on premises
 - How do you plan to use the data?

How can we acquire immutability?

Many ways of varying usefulness

- SAN snapshots
 - On-premise, so “no variable cost” (just storage, but may dedupe)
 - SUPER fast
 - Often on same physical device as production
 - If on a separate device, you have to pay for it
 - “All your eggs are in one basket” – prod data, and ‘backup’ copy
- Tape
 - On-premise, so “no variable cost” (just buy tapes)
 - Fast (sequentially)
 - Normally not the primary backup, but a copy
 - When ejected, extremely safe
 - Earned a bad reputation in previous generations

How can we acquire immutability?

Many ways of varying usefulness

- General purpose object-based appliances
 - On-premise, so possibly “no variable cost” (just storage, but may dedupe)
 - Often would also host production data (see before re: eggs)
 - Generally faster than cloud
 - Many support immutability
 - Architecture is often one of three
 - Build your own with software
 - Room for mistakes in design that could mitigate immutability
 - You’re fully responsible for configuration
 - Can be complicated
 - Buy commercial
 - Often very expensive
 - Beholden to their design, often scale-out
 - Often has a size barrier to entry
 - Might not integrate with backup software

How can we acquire immutability?

Many ways of varying usefulness

- Purpose Built Appliance
 - On-premise, no variable cost
 - Fast
 - Exists in one location (unless you put another copy elsewhere)
 - No latency on backups landing here
 - Integrates with backup software
 - Not many options for this, only know of one: Object First Ootbi

Object First Ootbi

Backup appliance purposely built for Veeam

- Object First founded by the same people as Veeam
- Fully self-contained object-based appliance
 - One-click updates
 - Compatible with Veeam 12 object storage for primary backups
 - 7.2k capacity drives with NVMe Cache drive
 - 64 TB and 128TB capacity sizes
 - 10 Gbit connectivity
 - HTML 5 UI for easy management
 - Can stack multiple units in a scale out design for larger capacities

Object First Ootbi

Backup appliance purposely built for Veeam

- Provides immediate immutability on primary backup
- Don't have to wait to copy to the cloud
- Supports all backup and restore methodologies of Veeam
 - Instant on
 - File level
 - Explorers
 - SureBackup
 - Straight to cloud

What does a 2020s backup solution look like?

Protection-in-depth

- Veeam update to the 3-2-1 rule: 3-2-1-1-0
- **Three** copies of Backups
- **Two** mediums
- **One** offsite
- **One** is air-gapped or immutable
- **Zero** errors after automated testing and validation
- What does that look like in practice?

What does a 2020s backup solution look like?

No cloud example one: SAN snapshots + actual backups

- Snapshots of primary SAN marked as immutable
- Primary backups going to normal disks
- Secondary backups going to a second site
- Pros
 - No variable/changing costs
 - Instant and recent immutability
 - Primary backups are fast
 - Both backup copies support all restore methodologies
- Cons
 - Very annoying to restore from SAN snapshot
 - Survivability dependent on where you put things
 - Only immutable copy is also on primary device

What does a 2020s backup solution look like?

No cloud example two: tapes

- Primary backups going to normal disks
- Secondary backups going to tapes taken offsite
- Pros
 - No variable/changing costs
 - Primary backups are fast
 - No changes to current backups, just taking a second copy offsite
 - Doesn't need bandwidth
- Cons
 - Survivability dependent on where you put things
 - Could lose data since it isn't immutable until it gets to second site
 - Only primary copy supports all restore methodologies, secondary has to be copied back to disk first

What does a 2020s backup solution look like?

No cloud example three: Object First at second site

- Primary backups going to normal disks
- Secondary backups going to DR site (which might just be another business office, or a data center) onto Object First with immutability
- Pros
 - No variable/changing costs
 - Primary backups are fast
 - No changes to current backups, just adding a second site
 - Supports all restore methods for all backup copies
- Cons
 - Survivability dependent on where you put things
 - Need bandwidth between sites
 - Could lose data since it isn't immutable until it gets to second site

What does a 2020s backup solution look like?

No cloud example four: Object First at primary site

- Primary backups going to immutable disks.
- Secondary backups going to DR site (which might just be another business office, or a data center)
- Pros
 - No variable/changing costs
 - Primary backups are fast
 - Latest (and most frequently used) backup immediately immutable
 - No changes to current backups, just adding a second site
 - Supports all restore methods for all backup copies
- Cons
 - Survivability dependent on where you put things
 - Need bandwidth between sites

What does a 2020s backup solution look like?

No cloud example five: Object First at both sites

- Primary backups going to Object First with immutability
- Secondary backups going to DR site (which might just be another business office, or a data center) Object First with immutability
- Pros
 - No variable/changing costs
 - Primary backups are fast
 - Latest (and most frequently used) backup immediately immutable
 - Supports all variable restore methods for all backup copies
 - Second copy is also immutable and online
- Cons
 - Survivability dependent on where you put things
 - Need bandwidth between sites

What does a 2020s backup solution look like?

Cloud example one:

- Primary backups going to normal disks
- Secondary backups going to a cloud provider with immutability
- Pros
 - Primary backups are fast
 - Primary backup supports all restore methodologies
 - Secondary backups are offsite and support immutability
- Cons
 - Variable cloud costs
 - Restore times from the cloud are extremely variable
 - Secondary backup copy RTO/RPO may be limited by bandwidth/resources available
 - Can have immutability gap between initial backups and when they get to cloud
 - Secondary backup restore methodologies may be limited by design

What does a 2020s backup solution look like?

Cloud example two:

- Primary backups going to Object First with immutability
- Secondary backups going to a cloud provider with immutability
- Pros
 - Primary backups are fast
 - Primary backup supports all restore methodologies
 - Latest (and most frequently used) backup immediately immutable
 - Secondary backups are offsite
 - Can have immutability at multiple locations
- Cons
 - Variable cloud costs
 - Restore times from the cloud are extremely variable
 - Secondary backup copy RTO/RPO may be limited by bandwidth/resources available
 - Can have immutability gap between initial backups and when they get to cloud
 - Secondary backup restore methodologies may be limited by design

What does a 2020s backup solution look like?

Cloud example three:

- Primary backups going to Object First with immutability
- Secondary backups going to second location
- Third backups going to cloud with immutability
- Pros
 - Primary backups are fast
 - Primary backup supports all restore methodologies
 - Latest (and most frequently used) backup immediately immutable
 - Secondary backups are offsite
 - Can have immutability at multiple locations
- Cons
 - Variable cloud costs
 - Restore times from the cloud are extremely variable but they're for emergencies

How do you stay out of the newspaper

Infrastructure-in-depth

- Defense in depth
 - Firewalls, EDR, SIEM, Email filtering, Security Awareness Training
- Infrastructure segmentation
 - Get hypervisor and backups into limited and restricted network
- Patch, patch, and patch again
- Stay on supported versions of software
- Multi-tiered BC/DR solution
 - Multiple copies of data
 - Immutable copies of data, somehow, somewhere
 - Copies offsite
- **TEST ALL COPIES OF YOUR BACKUPS!!!!!!!!!!**

How Mirazon can help

It's a challenging world

- BC/DR assessment – where are you, what's covered, what's not?
- BC/DR documentation – help document all of your current BC/DR for you, both as a DR plan, and runbook
- All Veeam services
 - Initial installation
 - Upgrades
 - Automated backup testing
 - Periodic manual testing
 - DR testing
- Object First
 - The industry's only backup appliance made for Veeam
 - Purpose built immutability in the primary backup copy



Thank you for attending

Do you have any questions?

We can talk publicly, or have a private follow-up.

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