How to Buy Backup and Recovery:

A Customer's Evaluation

Daniel King
VP of IT, Frost Bank

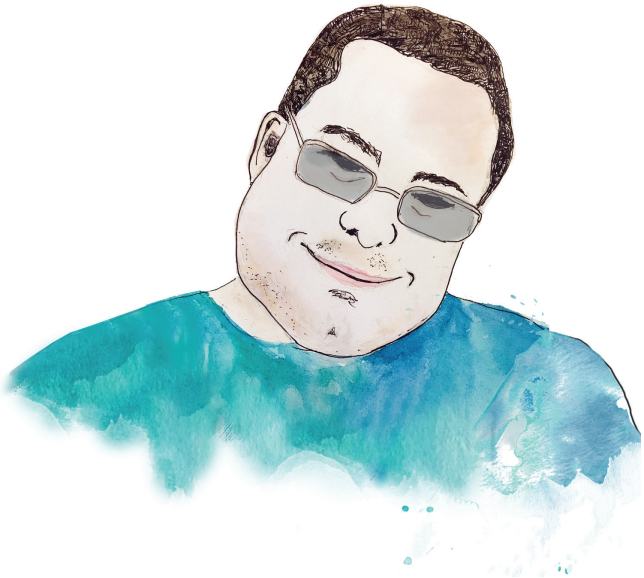
rubrik

The story in this book is entirely Daniel's. Rubrik provided editorial and graphic design assistance but did not provide monetary compensation to Daniel in connection with this publication.

How to Buy Backup and Recovery: A Customer's Evaluation

Table of Contents

DANIEL KING is a seasoned IT professional with over 20 years in the technology space. He is currently employed as Vice President of IT for Frost Bank, a large financial institution based out of Texas. He began his career as a systems administrator in the United States Air Force after graduating from Ashford University. He currently resides in Texas with his wife and three children. In his spare time, he enjoys spending time with his family and his bulldogs and staying on top of trends in Cloud Computing.




THIS
BOOK

INTRODUCTION

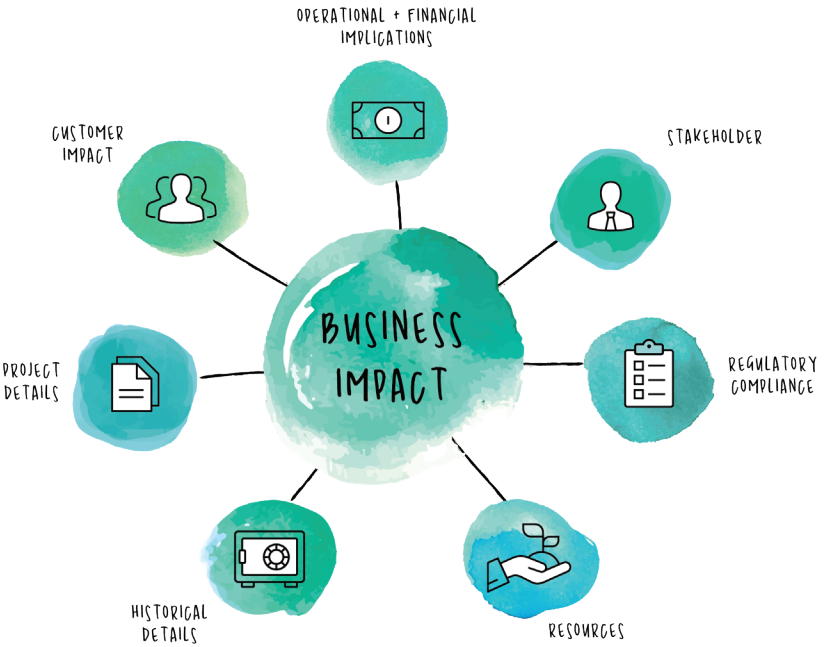
WHAT TO EXPECT FROM THIS BOOK

This book is meant to be a quick read that will provide you with insight on overcoming common obstacles when choosing enterprise backup and recovery technology. This book began when I set out to update my backup technology. As I performed an online search, I was unable to find any source of credible information on new technologies that could help me change the paradigm in the enterprise backup space. In general, traditional backup technologies have excellent backup performance, but tend to struggle around restore performance. I wanted something different that could restore more quickly than my existing platform and take more frequent backups to include intraday restore points. This would decrease the amount of time I had to restore, and decrease my data loss window as well. I also wanted something that would be easier for my teams to use, with minimal training required to become fully operational. I hope that I can provide you with the valuable insights that I wish someone had shared with me during my search for the backup promised land.

WHAT MAKES ME THE EXPERT?

I have been in the technology space for over 20 years. My work experience includes a large Texas-based financial institution and multiple Fortune 500 energy companies. I have been a change leader at each of these organizations, always striving to find a better, more efficient way to bring value to my organization. This includes virtualization, test/dev, and designing new data centers with thousands of servers and applications in them. I am extremely technical in many areas, which has given me the ability to see the big picture due to the vast knowledge that I have acquired from these organizations. This view allows me to execute on projects that have real value and business-changing impact. Leading the charge in moving to a modern backup technology is one of the many areas that were a part of my responsibility. I believe wholeheartedly that if you (the IT leader) are going to sign your name next to a technology purchase on behalf of your company, you must have a good grasp on how it is going to be implemented and operated by your teams. This should include what business impact the technology will have and not just hard dollars saved.

WHAT'S INCLUDED IN BUSINESS IMPACT



WHAT THIS BOOK IS NOT

As with anything in life, there are always caveats to the rules. This book is no exception to that, and therefore it is not meant to be a complete end-all reference guide on how an enterprise should approach backups. Also, I would expect that any IT leader worth their salt is going to do their due diligence and not blindly trust what a vendor—or some random stranger—has told them. A vendor's job is to sell you something. That being said, I hope that you can leverage some of the knowledge I gained along the way and that it can be of value to you and your organization during your search.

BACKUPS ARE A UTILITY

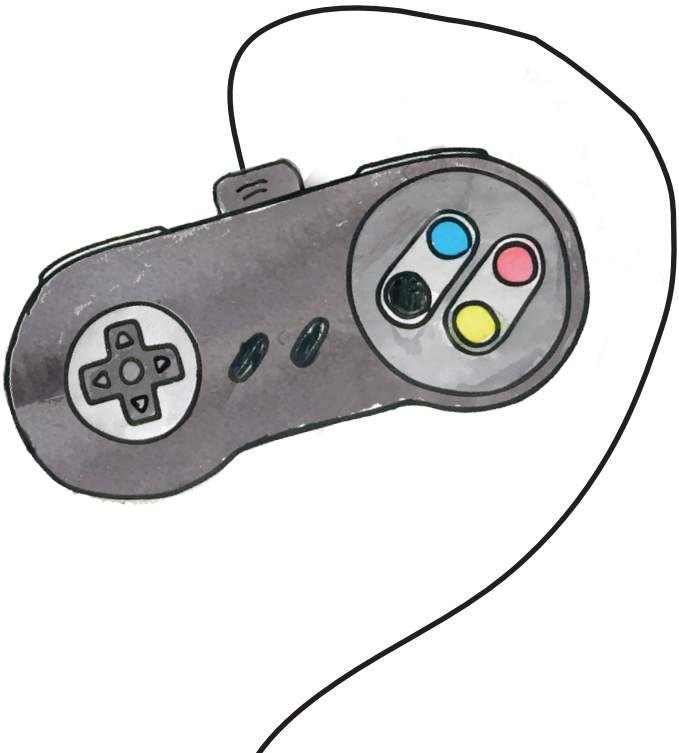
A few Christmases ago, I purchased a gaming console for my children. The kids came flying into my bedroom at 6:00 am begging to open gifts. With our eyes half open, my wife and I headed for the living room. Wrapping paper flew everywhere as my kids opened the gaming console "Santa" had bought for them. I will never forget their giant smiles as they held it up for us to take their picture. "Can we hook this up now, Dad? Please."

That's when it happened—yep—the power went out. In South Texas, we run our air conditioning year-round. It was 92 degrees that December morning and all the AC units coming online caused a surge that shut down the power. Because it was a holiday, service restoration took way longer than usual. To my kids, these hours felt like a lifetime.

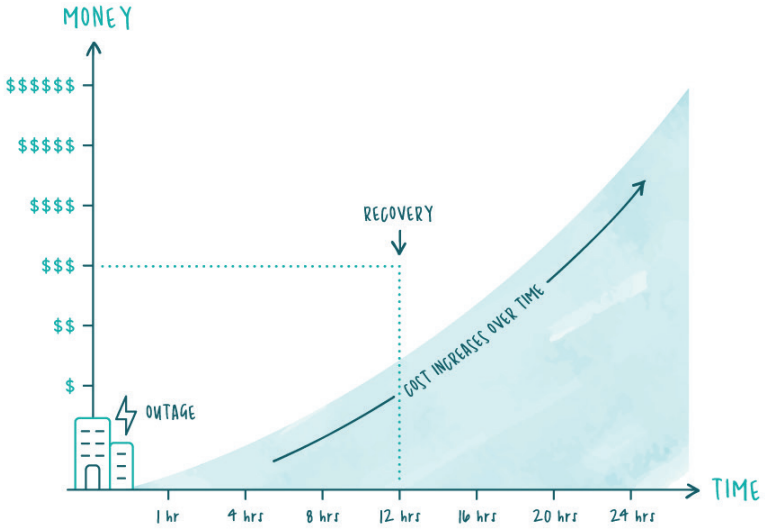
When I say backups are a utility, what I mean is that they are expected to "just work," and when this assumption is proven wrong it can cause severe business impact. Recently, a friend of mine had an unfortunate experience in his data center.

After switching out of bypass mode during a routine service call, their UPS engineer accidentally hit the emergency shutdown switch while putting the door panels back on. The silence in the data center seconds later was almost eerie. Many hours later, the data center was mostly back online with some systems still being restored from backup due to corruption.

As I look back on these stories, I can draw some parallels that apply to my business and any business experiencing an outage for that matter. Like my children, companies also tend to dislike outages. When there is an outage at my company, it doesn't take long before I have multiple levels of senior management hovering around my desk. After assessing the outage, the first question is: how quickly can we restore service?



HOW OUTAGES AFFECT A BUSINESS OVER TIME



As I mentioned previously, backup technologies are considered to be a utility service by the business. The expectation is that the service "just works," and that data can be quickly recovered no matter the amount of data that is restored. The recovery point is where my legacy backup technology started to let me down.

Not only was the technology complex and hard to use, but it was also notoriously slow when restoring data.

My previous recovery time did not meet the expectations of the business. When outages happened, I would often have to explain that the technology we used was designed fifteen years ago for backing up large volumes of data, rather than restoring that data. Ingesting data at an acceptable rate at the local site was fine, but a large restore locally or restores at a different location would finish outside of the agreed upon SLAs (service level agreements).

The SLAs don't even take into consideration the possibility of an actual disaster recovery event in which data must be restored from production datasets to disaster recovery systems. Natural disasters are becoming more and more of a concern for my business. Hurricane Katrina, Hurricane Ike, and Hurricane Harvey caused massive damage to many businesses in Texas. Aside from the storms themselves, the region also suffered from significant flooding and power outages for extended periods of time. This necessitated the need for a robust disaster and recovery plan, which included backup and recovery as critical components. The business wanted services to be capable of a nearly on-demand restore because data is valuable, and it should live and be accessible.

Mass amounts of restores at scale were not going to meet the Recovery Point Objectives (RPOs) due to the issues with restore speeds when using legacy backup technologies. This meant that

Disaster Recovery (DR) of many systems would become an issue if I needed to execute a DR plan.

Furthermore, my exec-level management were increasingly focused on minimizing data loss and minimizing the time to restore systems after a disaster. The business expectation was that I could put them as close to the event with as little data loss as possible, regardless of the size of the dataset. When I'm trying to be a bit contrarian, I'll frame the questions as, "How much data can you afford to lose?" (RPO) and "How long can you afford to be down?" (RTO). For most executives, the immediate answer is "No data loss" and "No downtime." IT is somewhat akin to magic after all. As with most projects, an unlimited budget is helpful here but usually not in the cards.

Their expectations of low data loss and low recovery times were extremely hard to meet when you subscribe to the old-school idea of full backups on Friday and incremental backups during the week. The result was extremely long-running restores with my operations team "performing miracles" at the expense of working late nights and weekend hours to meet these expectations. Our old-school policies and old-school technology just wasn't cutting it anymore.

IN SEARCH OF SOMETHING BETTER

In 2017, I put together a plan to replace my large, aging VMware farm. I had just replaced my storage with an all-flash system from Pure Storage for almost all my workloads, which had a significantly positive impact on the business in a short amount of time. When preparing for this new project, I realized that I needed to change my backup technology. Why was I using outdated technology to protect my high-end virtual machines? It was apparent that it could no longer meet my backup and restore needs. I was paying too much money for solutions that were too complicated, hard to use, had horrible support, and still didn't meet my expectations or those of my business. I knew there had to be something on the market that could help me cost-effectively deliver my service and meet—if not exceed—my needs. Enter modern disruptive backup technologies.

KEY TAKEAWAYS

- Backups are a utility, meaning most people think they should "just work."
- Restore speeds are KING.
- Failures always happen at the most inconvenient times.
- Disaster recovery plans can be invoked by unexpected things like hurricanes, flooding, loss of power, or the cleaning person plugging in the vacuum cleaner.
- Speed of service restoration is key, but historically an afterthought.
- Traditional backup technologies fail to meet current day expectations.

WHAT'S WRONG WITH YOUR BACKUPS?

Right now you probably think that your traditional backups are not nearly as bad as the ones I have described. Surely, I must be exaggerating how slow and terrible legacy backup technologies are in modern environments. However, by the end of this chapter, I am going to convince you that you are wrong. I know I was. When I finish painting the entire picture, take a step back, and you will be able to see the fiasco waiting to happen with your current backup platform. But I promise that we will find a way through it to a better place! To the right is the checklist that I used while evaluating upgrades of my existing platform to a new version, or replacing it entirely with a new technology.

DANIEL'S TECHNOLOGY EVALUATION CHECKLIST

- [ ] EASE OF USE – REDUCE COMPLEXITY AND TRAINING TIME.
- [ ] JUST WORKS – BACKUPS ARE A UTILITY.
- [ ] DEFAULT AUTO PROTECT OF VIRTUAL MACHINES.
- [ ] POLICY-DRIVEN BACKUPS.
- [ ] MORE COST-EFFECTIVE THAN MY EXISTING PLATFORM.
- [ ] MUST PROVIDE FASTER RECOVERY TIMES.
- [ ] INTRADAY SNAPSHOTS ARE A MUST.
- [ ] DR FAILOVER PROCESS INCLUDED.
- [ ] OUT OF THE BOX REPORTING FOR AUDIT, CAPACITY PLANNING, AND FORECASTING IS REQUIRED.

WHY ISN'T THIS EASIER? I CAN GET IT ON AMAZON RIGHT NOW.

In many of today's IT organizations, the idea of siloed teams is disappearing. The concept of having a dedicated job role for a specific task like backup administration is getting crushed by the bimodal, agile, and cross-functional team beast. Every organization that I know is still trying to do more with less, which includes having team members learn multiple new skills. I think much of this is due to the consumerization of technology to include the cloud.

The business mentality is shifting to CIOs realizing that their teams have better things to do than keeping the lights on and daily firefighting. This has a profound impact on how the business views your service because they are now starting to expect this speed out of IT more than ever. This goes back to the need for simpler solutions that just work and don't require a ton of overhead.

On my teams, four members could be involved in day-to-day backup operations. Having a traditional backup technology limits what these team members can be involved in because they have to spend time administering the old complex backup system for over 4,000 virtual machines. New team members are also hard to train because of the complexity of the legacy platform and the increased likelihood of them making configuration mistakes. The legacy platform has hundreds of options and places to configure

clients. You might configure a backup on the client, on the job, or on the group level itself. This makes having a consistent configuration difficult. Of course, the time you'd most often realize a setting was misconfigured was during a restore request.

Even though the process was well defined and documented, some tasks were so complicated that only senior administrators were able to perform them due to the risk involved. This resulted in my handsomely compensated senior team members having to perform basic tasks that should be repeatable and delegated to junior members. Because the UI and configuration were so complex, it was too risky and time-consuming to try to off-load restores to the help desk or a self-service portal. Reducing the amount of time my admins spent on backups became my mission. Watching backup jobs and restores made me want to pull my hair out. It's 2018—I knew there had to be a better way!

MAINTENANCE, UPGRADES, AND RENEWALS... OH MY!

There is a substantial requirement for additional work by all team members during a major release or upgrade of the backup product or backup storage device. With my old backup platform, it would require mass deployments of updated clients that would consume valuable time troubleshooting issues that were bound to come up during the implementation. These issues often plagued my team for weeks or months following an upgrade.

Major upgrades are anything but simple. When faced with upgrading from Networker 8.X to Networker 9.X, it was a parallel install and forklift upgrade. Every major upgrade that we had attempted in the past was met with frustrating results.

Due to the number of systems and size of the data, the idea of having a complete test environment for backups was never a consideration due to the sheer cost of all the associated infrastructure that went along with the backup software.

The amount and value of new features deployed in these upgrades were also laughable. Any value gained from new features quickly declined with an offsetting problem, which would require a hotfix. Obtaining the needed hotfix after an update was next to impossible with our legacy vendor. For this reason, we actively chose to wait for multiple minor releases to be out in the wild.

That brings us to the final point in this section—maintenance renewals. Renewals would come in from our vendor every year, and every year my team would spend a week trying to decipher what was on the renewal and if it was even close to accurate. If you're reading this, you probably know what I am talking about. It's that 40-page renewal invoice that they hope you will just pay, and not actually review, because it has every client, node, and hard disk written as a single line item. Since we always took the time to review it, we found multiple mistakes in the renewal document. If we hadn't reviewed it, we would have just paid that additional amount without questioning it. We adopted a strategy of letting someone else test the new features and work out all the bugs in order to avoid the pain.

LEGACY BACKUP LICENSING IS A CLOWN FIESTA

CLOWN FIESTA:
"A RIDICULOUS SCENARIO IN WHICH NO ONE IS REALLY SURE ON WHAT IS TAKING PLACE."
—URBAN DICTIONARY, 2017

I have mixed emotions about the licensing models used by traditional backup vendors. While we just reviewed the complexity of maintenance renewals in the previous section, now I'll walk through the Ph.D you need to understand how the products are licensed. Several questions remind me of why I am not too fond of traditional licensing models:

- What terms are in your software license agreement?
- What conditions are missing from your software licenses agreement?
- Do you use any specialized modules or protocols like DD Boost?
- How are they licensed?
- Which licensing model does your company use?
- Is it capacity-based or agent-based?

Guess what? Legacy vendors make this hard on purpose.

PRO/CON CHECKLIST

CLIENT BASED

PROS

- TYPICALLY MOST COST-EFFECTIVE METHOD.
- EASY TO UNDERSTAND AND USE.

CONS

- DIFFICULT TO MANAGE AND KEEP TRACK OF LARGE NUMBER OF AGENTS.
- HARD TO SCALE.
- PURCHASING LARGE VOLUME OF ADD-ON AGENTS MAY NOT BE COST EFFECTIVE.

CAPACITY BASED

PROS

- TYPICALLY COMES WITH ADD-ON MODULES INCLUDED.
- YOU DON'T HAVE TO WORRY ABOUT THE NUMBER OF AGENTS YOU HAVE.
- SOFTWARE FOR THINGS LIKE PROXY OR MEDIA SERVERS ARE INCLUDED.
- SCALING IS EASIER IN THIS MODEL BY FAR.

CONS

- IT'S BASED ON THE AMOUNT OF DATA THAT YOU BACKUP.
- THIS SEEMS LIKE A GOOD IDEA UNTIL YOU HAVE TO EXPAND BECAUSE OF DATA GROWTH.

That's not all! Beyond licensing models and expenses, additional factors to be aware of when trying to understand the total cost of traditional backup products are:

- Do you have physical proxies or virtual proxies?
- What resources will they take?
- Do you have Data Domain or other storage subsystems for your backups that also have their maintenance and licensing?

During my time with a legacy vendor, I had to license Data Domain Boost (DD Boost) as two separate items. Once for the software, and once on the storage device side for enabling the protocol. DD Boost is expensive, but it is where all the magic happens for ingestion speeds.

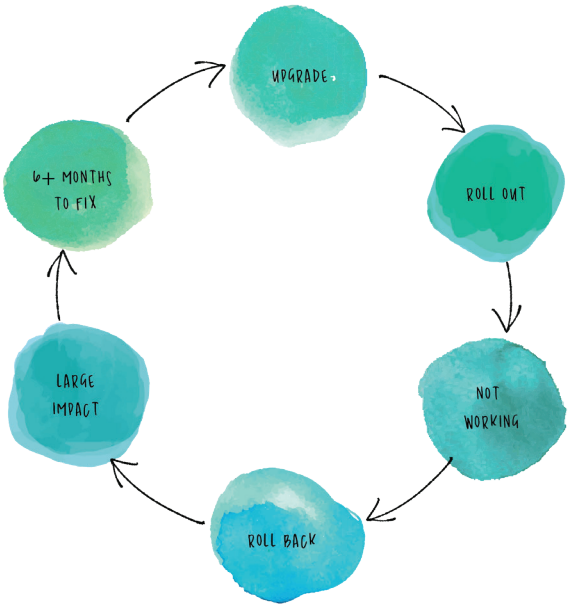
Legacy licensing models are difficult to understand; in either scenario, you will have to spend time just to discern what you have versus what you are paying for. Again, this is not something that I want to think about when looking for a new backup product. But because licensing is extremely painful and time-consuming in the legacy backup world, it has to be considered.

DEATH BY A THOUSAND ADD-ON MODULES

The standard agent isn't going to be enough to backup all your workloads. You are going to need additional modules from your legacy backup technology to ensure that you can protect all your workloads. Things like Exchange, SharePoint, AIX, and Linux will require a different agent than the normal windows agent.

Managing all of these different modules and agents becomes difficult because every time you update your software on either the protecting system or the backup system itself, you need to check to ensure that the agent and additional modules are compatible with what you're running. This could include things like bare metal recovery agents to item level restore of objects in Microsoft Exchange. VMware-based image level backups mitigate some of this. But to get file level backups, it usually requires the agent to be installed inside each VM. I have found the compatibility between agents and modules can cause extremely frustrating issues. This tends to creep up when upgrades are performed on the backup system.

THE IMPACT NORMALLY GOES SOMETHING LIKE THIS:



1. Upgrade the system to a new version.
2. Roll out new agents to pilot wave of protected systems.
3. Learn that the needed feature from module doesn't work on a critical system.
4. Roll back to the previous agent. If that doesn't work, roll back the entire system to the earlier version.
5. Everything is tied to the backup system, so the impact is large.
6. Wait for the fix for the broken module, which may take months.

REPORTING...WHO NEEDS REPORTING?

Necessary information about job status, completion times, and failures should be easy to get from your backup product. Sadly, basic reporting in traditional backup software is lacking, and the reporting I experienced looked like it was implemented as an afterthought rather than a critical aspect of the product. The rise of modern UIs and dashboards has left vast room for improvements in the backup space.

Trying to use these insufficient, built-in reporting mechanisms made me resort to attempts at extracting the data myself so that I could recompile it for presentation purposes. Management often expects that one can just go into the backup software, generate this data with a few clicks of the mouse, and make a pretty graph instantly appear.

In some cases, entire reporting modules that require professional services like EMC Data Protection Advisor (DPA) might need to be purchased to perform these functions. DPA is expensive and hard to use. Should reporting truly require your team to have another skill set? Should it really be another module or add-on that needs additional licensing and physical or virtual resources?

SINCE WHEN DOES AUDIT CARE ABOUT BACKUPS?

Working for a financial institution comes with regulations and compliance responsibilities—it's just part of the job. Due to things like FINRA, external auditors, and additional regulatory agencies over the last few years, we have been required to provide detailed reporting on our critical system's backup sets.

This is where the need for the necessary reporting we talked about in the last section comes into play. Reporting requirements are becoming more critical as regulations increase. With my traditional backup system, my team had to manually compile this information and then present it back to the audit team. My long-term goal was to have the capability to give the audit team a login to the backup system that gave them read-only access, multi-tenancy, or scheduled reports that delivered the exact information they needed.

CAPACITY PLANNING AND BUDGET FORECASTING

We have already established that many traditional backup platforms typically have complex architecture and licensing models. Due to the complexity of the systems, it becomes difficult to fully understand the complete requirements when trying to plan for capacity and forecast budgets. If the system can't even do basic reporting correctly, how are you supposed to make future expansion decisions to meet the growing business needs?

Discovering the big picture requires you to have a complete understanding of what piece you may need to expand capacity. Many times the backup storage system has different reporting from the backup software platform, but you can't decide to expand one without understanding the impact on the other. It's very important to understand how these costs contribute to your TCO.

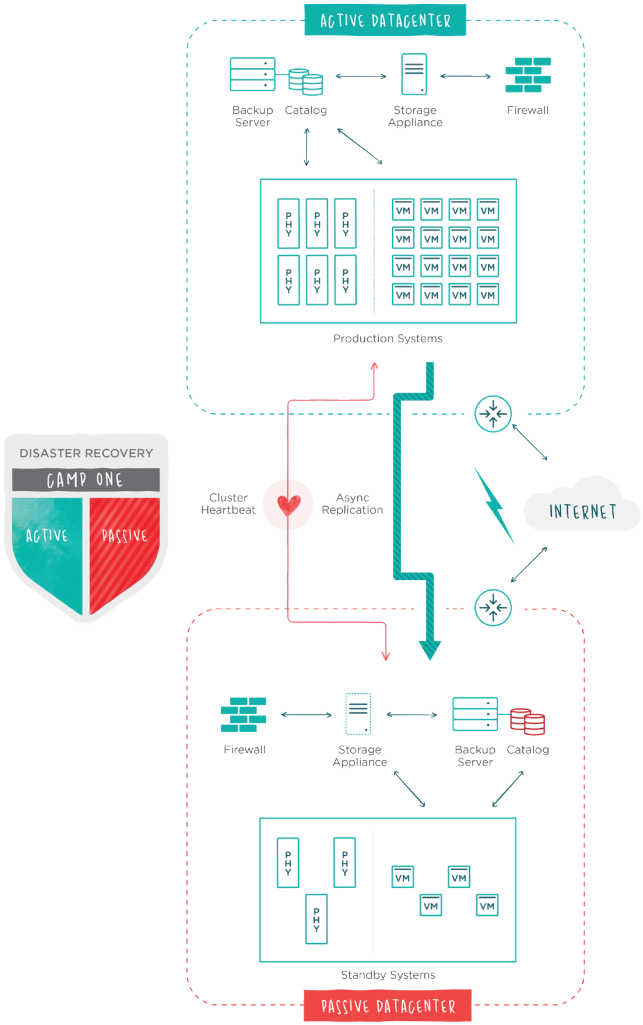
DR FAILOVER AND RECOVERY OPTIONS ARE A JOKE

Let's be clear—there is DR as it relates to primary systems and DR as it relates to backup systems. Primary system DR is usually "Active/Passive" and involves things like array-based replication and systems that sit in the data path (and need to be resilient enough to do so). In addition, Active/Passive DR often includes a huge price tag for the automation and testing capabilities. There are also large infrastructure requirements for the DR to have a second copy of the replicated primary data. To get a low enough RPO and RTO, businesses often don't have any other choice.

DR, as it relates to backup systems, complements "primary DR technologies;" it's often quite painful and comes with much, much longer RPOs and RTOs. Let's not even talk about testing a tape-based recovery or recovering from tape.

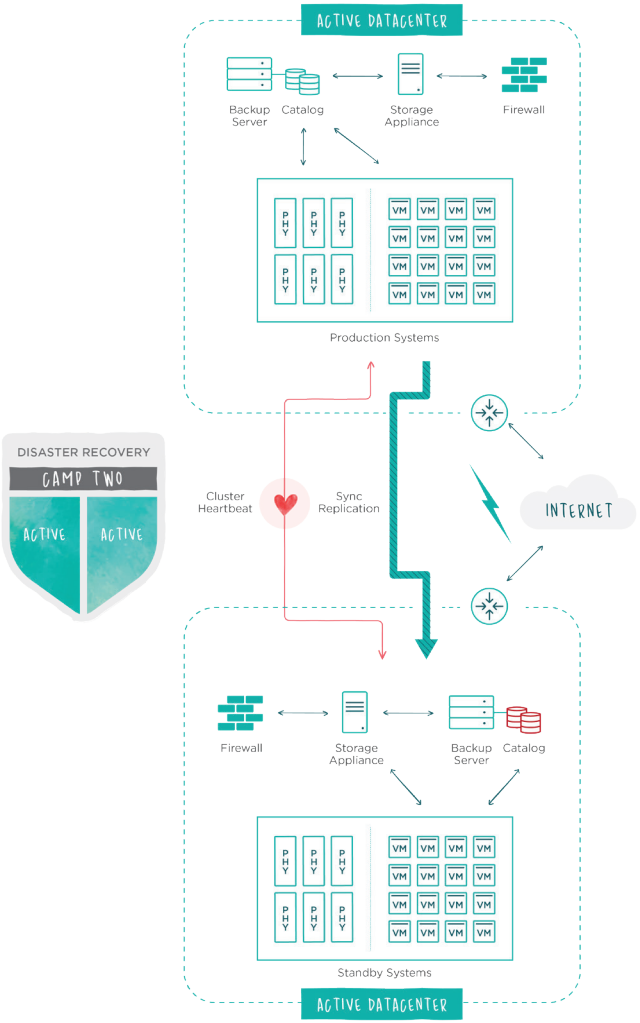
Replication of the jobs and catalog are still needed, but you must also do some additional work to move the catalog to the DR backup system. This process can take time, typically two to six hours, especially if you don't exercise this process on a regular basis. This must be done before you can even begin restoring production jobs at the recovery site. Being prepared and having a well-defined process is vital for this method to be effective. Also be sure to set realistic expectations for your business on how long the recovery will actually take.

ACTIVE/PASSIVE FAILOVER DIAGRAM:



The second type is Active/Active failover in which the catalogs and jobs can be restored at the DR site. This requires complex replication mechanisms to get the information, including catalog information, from one side to the other (job cloning and backup storage appliance replication). The critical factor here is that Active/Active systems work fine, but are complicated and extremely expensive to set up and maintain.

ACTIVE/ACTIVE FAILOVER DIAGRAM:



INTO THE ABYSS WE GO, AND DON'T EVEN GET ME STARTED ON SUPPORT

The first relationship you have with your backup vendor is primarily via their sales team. The sales team gets paid on commission for your purchase. This requires that they present themselves as caring and engaging to you and understanding of your organization's needs. Spoiler alert: the salesperson's job is to sell you something. This doesn't mean once the deal is done that everything will be sunshine and rainbows like they promised. I find that it is better to gauge how much a company is committed and cares about the customer by the quality and level of support that they invest in.

Customers often form long-term opinions of their vendor based upon the quality of service provided by customer support interactions. That great feeling and relationship that the sales team worked so hard to sell can quickly turn to resentment if it's not coupled with a high-caliber support team. I highly suggest engaging the support team if you're looking at new products before you make your final decision.

I can't say my support experiences with my previous backup vendors were ever great. When I opened a ticket, I usually got routed to the same person. You know the one I am talking about. It's the guy who sounds like he is so excited to talk to you (sense my sarcasm yet?)

He is bursting with enthusiasm to assist you with your issue… you know, the one that makes you feel like you called your cable service provider.

Rest assured, with this kind of support, your ticket will get looked at in one to two weeks.

Since when does excellent support start with making your customer feel like they are sending their ticket into a black hole? The part that drove me crazy was the lack of feedback. I'd often question if they were even working on my issue because there was no transparency. Not only did it feel like I was sending tickets into the abyss, but the level-one technician who I often got paired with was apparently not fully trained on the product. Then I'd have to wait to be transferred to a level-two person after hours of troubleshooting my issue over the phone.

KEY TAKEAWAYS

- The idea of siloed teams is disappearing as employees are faced with ever-expanding responsibilities.
- Upgrades and maintenance are harder and more time consuming than they should be.
- Licensing is made to be artificially complex.
- Add-on modules require testing with various software and operating systems.
- Reporting is typically hard to use and not accurate.
- Audit has become interested in the backup environment.
- DR failover process is extremely complex and expensive to do correctly.
- Sending tickets to what feels like a never ending abyss will not make you feel great about your life.

A NEW CHALLENGER HAS APPEARED!

Upon reviewing options that existed in the backup market, I quickly discovered that there were new challengers on the scene. These challengers were out to try and solve the problems of the traditional backup systems. I found these new solutions interesting because the architecture seemed to leverage modern technologies like hyper-converged infrastructure, modern applications platforms with APIs for automation, Test/Dev capabilities, and far simpler user interfaces (UIs).

THE FOLLOWING TABLE SHOWS A FEW OF THE VENDORS THAT I EVALUATED IN MY SEARCH FOR A NEW PLATFORM:

TRADITIONAL BACKUP SYSTEMS	MODERN BACKUP SYSTEM
* EMC NETWORKER + DATA DOMAIN	RUBRIK
IBM SPECTRUM PROTECT (FORMERLY KNOWN AS TIVOLI STORAGE MANAGER – TSM)	COHESITY
COMMVAULT	
VERITAS	
*VEEAM	

* NOTE: WE OWNED THIS PLATFORM.

THIS IS THE SCORECARD THAT I USED WHEN EXAMINING EACH VENDOR:

BACKUP PLATFORM SCORECARD - SCORE 1 TO 5 (5= BEST)	
EASE OF USE FOR DAILY OPERATIONS	
TIME IT WILL TAKE TO RETRAIN MY TEAM	
SEARCH WITHIN THE PRODUCT	
REPORTING	
BACKUP SPEED (VIRTUAL MACHINE, NAS, DATABASE)	
RESTORE SPEED (VIRTUAL MACHINE, NAS, DATABASE)	
AUTOMATION CAPABILITIES	
INTEGRATION WITH OTHER PRODUCTS OR REST API\SELF-SERVICE	
ARCHITECTURAL COMPLEXITY	
SCALABILITY AS A PLATFORM	
DEPLOYMENT SPEED	
OVERALL COMPLETENESS OF THE SOLUTION	
COST \ VALUE	
TOTAL POINTS	

TRADITIONAL BACKUP PLATFORMS

In the previous chapters, I have established the multitude of things that my traditional backup platform was not providing me with, so I am not going to cover this again with a full chart for each legacy vendor. However, for reference, I have attached how I scored my existing platforms.

"NETWORKER AND DD SCOREGARD" - SCORE 1 TO 5 (5 =BEST)	
EASE OF USE FOR DAILY OPERATIONS	1
TIME IT WILL TAKE TO RETRAIN MY TEAM	5
SEARCH WITHIN THE PRODUCT	2
REPORTING	1
BACKUP SPEED (VIRTUAL MACHINE, NAS, DATABASE)	4
RESTORE SPEED (VIRTUAL MACHINE, NAS, DATABASE)	2
AUTOMATION CAPABILITIES	1
INTEGRATION WITH OTHER PRODUCTS OR REST API\SELF-SERVICE	1
ARCHITECTURAL COMPLEXITY	1
SCALABILITY AS A PLATFORM	1
DEPLOYMENT SPEED	1
OVERALL COMPLETENESS OF THE SOLUTION	3
COST \ VALUE	2
TOTAL POINTS	25/65

"IBM SPECTRUM PROTECT AKA TSM" SCORECARD - SCORE 1 TO 5 (5=BEST)	
EASE OF USE FOR DAILY OPERATIONS	1
TIME IT WILL TAKE TO RETRAIN MY TEAM	5
SEARCH WITHIN THE PRODUCT	3
REPORTING	2
BACKUP SPEED (VIRTUAL MACHINE, NAS, DATABASE)	3
RESTORE SPEED (VIRTUAL MACHINE, NAS, DATABASE)	3
AUTOMATION CAPABILITIES	2
INTEGRATION WITH OTHER PRODUCTS OR REST API\SELF-SERVICE	1
ARCHITECTURAL COMPLEXITY	1
SCALABILITY AS A PLATFORM	1
DEPLOYMENT SPEED	1
OVERALL COMPLETENESS OF THE SOLUTION	3
COST \ VALUE	1
TOTAL POINTS	27/65

VEEAM

When I think of modern backup providers, I assumed that Veeam would be one of my logical choices. Initially, I had placed them in the modern day backup category, but after some in-depth consideration, I decided to move them to the Traditional Backup Systems category.

Veeam is a software-only play; you need to provide the backup storage repositories and hardware that the platform runs on. This means more architectural complexity, training, and hidden costs to consider. The software seems much simpler than the other vendors listed in this category, but there is also the hidden level of complexity especially as your environment grows.

In my scenario, I probably would have chosen to use my existing Data Domain with OST. That means unless I also upgraded my Data Domain, my restore speeds would still have suffered. While the software appeared on the surface to be easier to use, this platform did not line up with the overall goals I had for backups at my organization.

"VEEAM WITH EXISTING DD" SCOREGARD - SCORE 1 TO 5 (5=BEST)	
EASE OF USE FOR DAILY OPERATIONS	3
TIME IT WILL TAKE TO RETRAIN MY TEAM	3
SEARCH WITHIN THE PRODUCT	3
REPORTING	3
BACKUP SPEED (VIRTUAL MACHINE, NAS, DATABASE)	4
RESTORE SPEED (VIRTUAL MACHINE, NAS, DATABASE)	2
AUTOMATION CAPABILITIES	3
INTEGRATION WITH OTHER PRODUCTS OR REST API\SELF-SERVICE	3
ARCHITECTURAL COMPLEXITY	2
SCALABILITY AS A PLATFORM	1
DEPLOYMENT SPEED	3
OVERALL COMPLETENESS OF THE SOLUTION	3
COST \ VALUE	3
TOTAL POINTS	36/65

CHANGING THE GAME WITH DISRUPTIVE BACKUP TECHNOLOGIES

Being extensively familiar with traditional backup technologies, I knew that we needed something vastly different. The market seemed to be shaping up with two new contenders—Rubrik and Cohesity. I needed to determine which one was going to best suit my organization. Besides, we would only have enough free time to evaluate one solution. The goal was to test without causing a significant impact on my team's existing day-to-day operations. Below are the reasons why (or why not) I chose to bring in an evaluation unit for each one.

COHESITY

At first glance, Cohesity seemed like a good product, but there were a few areas that led to me not wanting to spend any more time learning about this product.

PROS

- USER INTERFACE SEEMED SIMPLE.
- COULD HAVE REPLACED EXISTING DATA DOMAIN WITH JUST A BACKUP STORAGE DEVICE.

CONS

- STILL HAD TO MANAGE BACKUP JOBS, WHICH FELT LIKE A TRADITIONAL SYSTEM.
- PRODUCT SEEMED TO BE SEARCHING FOR AN IDENTITY—IS IT SECONDARY STORAGE OR A BACKUP PRODUCT?
- DIDN'T SEEM TO BE AS COMPLETE OVERALL AS OTHER VENDORS.
- PUSHY SALES TACTICS USED BY THE RESELLER AND REPEATED ATTEMPTS TO UNDERCUT THE BID WITHOUT HAVING ANY KNOWLEDGE OF THE ARCHITECTURE OR SIZING.

Hopefully you can understand why I chose not to dig into the scorecard approach given the items above.

RUBRIK

RUBRIK SCORECARD – SCORE 1 TO 5 (5=BEST)	
EASE OF USE FOR DAILY OPERATIONS	5
TIME IT WILL TAKE TO RETRAIN MY TEAM	4
SEARCH WITHIN THE PRODUCT	5
REPORTING	4
BACKUP SPEED (VIRTUAL MACHINE, NAS, DATABASE)	4
RESTORE SPEED (VIRTUAL MACHINE, NAS, DATABASE)	4
AUTOMATION CAPABILITIES	4
INTEGRATION WITH OTHER PRODUCTS OR REST API\SELF-SERVICE	4
ARCHITECTURAL COMPLEXITY	4
SCALABILITY AS A PLATFORM	4
DEPLOYMENT SPEED	4
OVERALL COMPLETENESS OF THE SOLUTION	3
COST \ VALUE	4
TOTAL POINTS	53/65

KEY TAKEAWAYS

- Veeam is really a software-only play, lacks the ability to scale, and requires you to provide the backup storage repositories and hardware that the platform runs on.
- Legacy vendors scored poorly on things like automation, architectural complexity, and scalability.
- New solutions leverage modern technologies like hyper-converged infrastructure, modern applications platforms with APIs for automation, and simpler user interfaces.
- At first glance, Cohesity seemed like a good product, but I still would have had to manage backup jobs, which felt like a traditional system.
- Cohesity seemed to be unsure if it was a secondary storage product or a backup product.

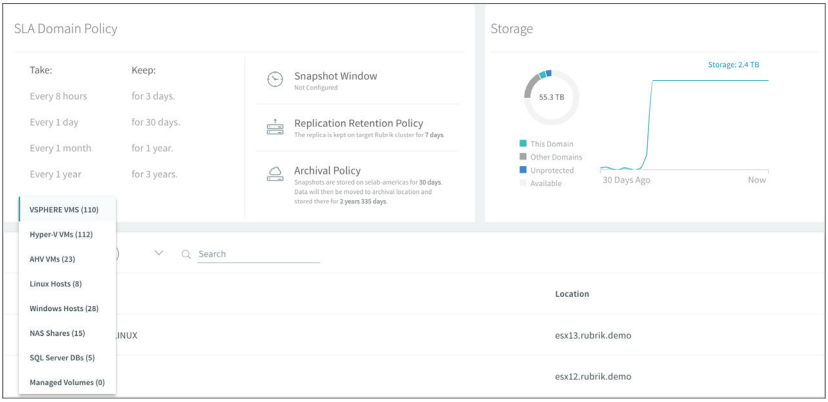
Even if you disagree with my individual scoring, I hope the scorecard approach and details above are helpful. If nothing else, create your own scorecard—there's nothing worse than a solution that doesn't work out and you're left holding the bag without a good set of evaluation criteria to justify your decision.

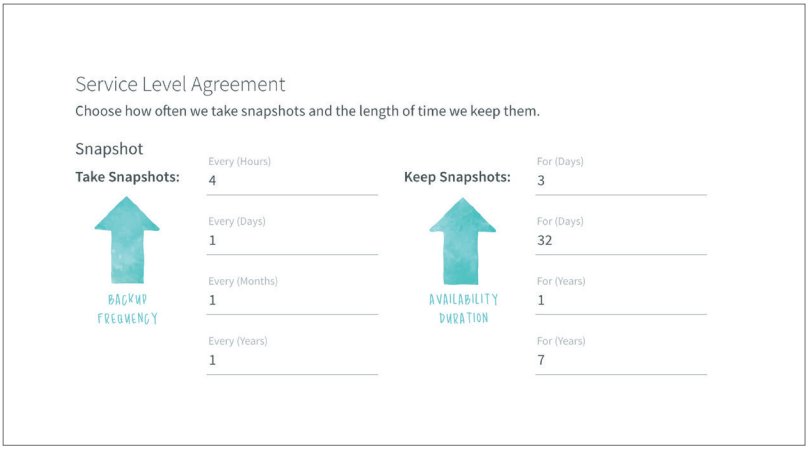
AND THE WINNER IS...

After evaluating more than seven backup vendors, I ultimately selected Rubrik's Cloud Data Management platform. As I did with the other vendors, I used my scoring chart to determine the best fit for my company and team. As I went through my criteria, Rubrik had high scores across the board; from cost savings to cloud capabilities to scalability and functionality, Rubrik's offering rose above the competition. In the following sections, I'll delve into some of the reasons I chose this solution and how it could help you enhance and simplify backup and recovery at your organization.

KEEP IT SIMPLE SMARTY

Daily operational management—just the phrase is enough to make most backup admins want to disappear. At a different point in my life, I was that admin wishing to run for the hills when I thought about the hours it was going to take me to monitor and manage jobs. Luckily for me (and you!), times have changed. After implementing Rubrik's solution, we now use one SLA policy engine to automate all of our backup and recovery jobs. With just a few clicks, I was able to set up policies for archival, replication, and backup, which drastically reduced management time for my team. No one wants to have senior team members in the weeds of managing backup jobs. Rubrik has helped me delegate work to more junior staff members while giving back time to more senior team members to become more strategic. With Rubrik, lengthy backup windows, broken job scheduling, and uncertain recoveries are relics of the past.


SLA Domain Policy
Take:
Keep:
Every 8 hours
for 3 days.
Every 1 day
for 30 days.
Every 1 month
for 1 year.
Every 1 year
for 3 years.
Snapshot Window
Not Configured
Replication Retention Policy
The replica is kept on target Rubrik cluster for 7 days.
Archival Policy
Snapshots are stored on selab-americas for 30 days.
Data will then be moved to archival location and stored there for 2 years 335 days.
Storage
Storage: 2.4 TB
55.3 TB
This Domain
Other Domains
Unprotected
Available
30 Days Ago
Now
VSPHERE VMs (110)
Hyper-V VMs (112)
AHV VMs (23)
Linux Hosts (8)
Windows Hosts (28)
NAS Shares (15)
SQL Server DBs (5)
Managed Volumes (0)
Search
Location
esx13.rubrik.demo
esx12.rubrik.demo


Service Level Agreement
Choose how often we take snapshots and the length of time we keep them.
Snapshot
Take Snapshots:
Every (Hours)
4
Every (Days)
1
Every (Months)
1
Every (Years)
1
BACKUP FREQUENCY
Keep Snapshots:
For (Days)
3
For (Days)
32
For (Years)
1
For (Years)
7
AVAILABILITY DURATION

WILL SET-UP AND TRAINING BE A HUGE PAIN?

The ease with which I could train my team on the new product was an important factor for me. Most people that have gone through the process of implementing new technology at any company know that the most challenging aspect is ensuring that all of your employees are trained on how to use it. Not only do they need to be trained, but they also need to adopt the use of the product. If you've been through this process, you know that it's incredibly frustrating to select a new platform only to find resistance from your team or an inability to understand how to use it. As I mentioned above, Rubrik is extremely simple to manage, but it's also simple to set up and learn how to use. The implementation took less than half an hour, and you don't need a master's degree, professional services, and multi-day training to use it. It just works, right out of the box.

GOOGLE-LIKE SEARCH WITHIN THE PLATFORM

When was the last time you had a question and did anything besides quickly type it into your phone or computer and wait for the answer to pop up instantly? Google processes roughly 40,000 queries every second. The ubiquitous use of Google has programmed people to need instant solutions and results, which is precisely what Rubrik's platform provides. With instant search capabilities, you can quickly find a single file, message, or object from a backup and restore into a live running system without any downtime. Not only is this granular search and recovery convenient, but it also saves a lot of time by allowing you to restore just what you're looking for instead of the entire database. One of my peers has a document management system at their company with files that are named in hexadecimal (i.e. "fe32bd41.pdf") with hundreds of thousands of files in each folder. Previously, restoring a single corrupted file would take an hour or more due to the time it took to browse the folder tree, wait for folders to expand, and scroll through them. The ability to search by file name takes what used to be a several hour restore response time down to minutes. Suffice it to say, he's now a hero at his company.

CONTROL PLANE

Think back to roughly five years ago—there was likely a time when you were coming home late from a conference, or a night out, and you needed a ride home. To accomplish this, you had to find the number for a cab company, give them a call, wait for them to arrive, hope they were able to find you, and then cross your fingers you were carrying enough cash. Fast forward to today. When you need to get from A to B, you open Uber or Lyft, and with one button you request a car. The app already has all of your financial information stored, and your phone location settings allow the driver to find exactly where you are. It's seamless.

The difference between a traditional taxi and current rideshare platforms is how I see the difference between how legacy vendors manage backup and how Rubrik manages backup. Always-on services require a new paradigm and a new way of thinking about data management. Rubrik Blob Engine is a distributed version control system, detached from any underlying application and infrastructure like storage, on-prem, or cloud. With one click, the Blob Engine can orchestrate data from on-premises to the cloud, cloud to cloud, and cloud to on-premises. It provides core data management services, including replication, deduplication, immutability, archival, and retention. There's even a whole white paper about this if you'd like to read more.

SECURITY

Frequently, people think of security as something that's applied to the data generated via transactions. We encrypt data in-flight to ensure data is secure against eavesdropping or manipulation as it travels across a network. We even put in place checks on data in our primary systems to ensure the data we care about can't be hacked.

But what about data that's already been backed up and is now sitting on a device in a data center or on tape? A lot of people think that data is already secure because you can't recover it easily. This is just not accurate. Backup data needs to be instantly accessible, searchable, and archivable. The caveat here is that if we unlock that data for our backups, the information also needs to be unbreachable. Whenever there is any data movement, or it's at rest, it needs to be secure. Let's imagine for a second that someone walked into my server room, grabbed a hard drive, and took it with them. In this scenario, they should not be able to plug it in and gain access to all of my files without proper authentication.

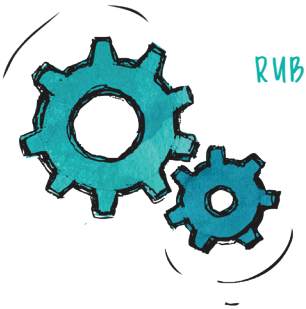
Let's think about this outside the realm of enterprise backup and instead, think about how security relates to you on a personal level. Many of you have a key to your front door, an encrypted garage door opener, and a security system to make sure that no one can

get into your house without the alarm going off. But for the sake of argument, let's say you also tape the security code onto your front door with a sign saying "Please rob me." That's not secure. How would you feel if all of your important and valuable belongings were taken? Most systems are like this. They operate under the assumption of "security by obscurity" in that they hope no one figures out how easy they are to get into. Having Rubrik is like having a magic "instant recovery button" that you could press, and all of your stuff would be brought back should it ever be taken.

In addition to everyday security concerns, ransomware has been a growing problem for the financial sector, and it's one that can't be ignored. Last year, my organization was hit with a ransomware attack, and we had not yet implemented Rubrik. The attack only affected certain portions of the namespace, but the recovery process was painfully slow and interrupted business as usual. The recovery option we had with our legacy vendor had to use restore of files from the snapshot directory. If we'd had Rubrik at the time of the attack, we would have been covered by immutable backups built natively into the platform.

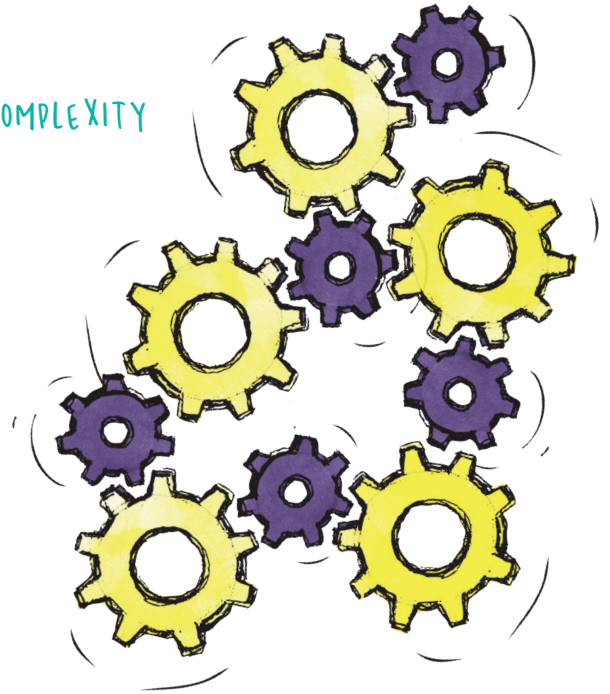
'ALL YOU CAN EAT' AGENTS

If you've been in the IT space as long as I have, you're likely quite familiar with agents. While Rubrik can backup at a VM level (no agents required!), it also has a unique approach to agents. It's so unique, they don't even like the term "agent" but instead, call them "connectors." Simply put, Rubrik is uniquely engineered to discover physical or virtual machines easily. To do this, the user must perform a one-time installation of software connectors to enable communications with physical or virtual Linux, Windows, Microsoft SQL servers. I was able to configure Rubrik to protect each type of machine that I have at appropriate service levels, and I was able to do it in less than a minute for each machine. Also, as with all data types in Rubrik, I can use the same SLA policies to automatically archive snapshots offsite to the cloud to enable business continuity and perform restores of individual files or application objects simply and quickly. It's the same approach whether restoring locally or from the cloud and is simple enough to be done without senior IT support.



RUBRIK SIMPLICITY

TRADITIONAL COMPLEXITY



WEB-BASED APIS

The real beauty and benefit of web-based APIs is the ability to automate nearly everything that was once manual, clunky, and time-consuming with a traditional backup vendor. When I was still learning about Rubrik's offerings, they told me, "If you can do it in the GUI, you can automate it for your workflows." This was certainly music to my ears, but I approached the claims with a certain amount of skepticism. Now that I am up and running with the solution, I see the accuracy in what they had promised in some of our initial meetings. With RESTful APIs, you can automate and orchestrate all of your workflows. Want to have a specific set of actions happen over and over again without a backup admin doing it manually? Rubrik's platform can do that effortlessly. Gone are the days of asking yourself, "Did I remember to submit a backup form for that server I requested?" You won't have to think, "Will I need a restore? Oh shoot, the backup was never configured." Rather than letting these concerns and manual actions slow you down, you just make it part of the provisioning process and have your IaaS solution configure protection when a system is requested.

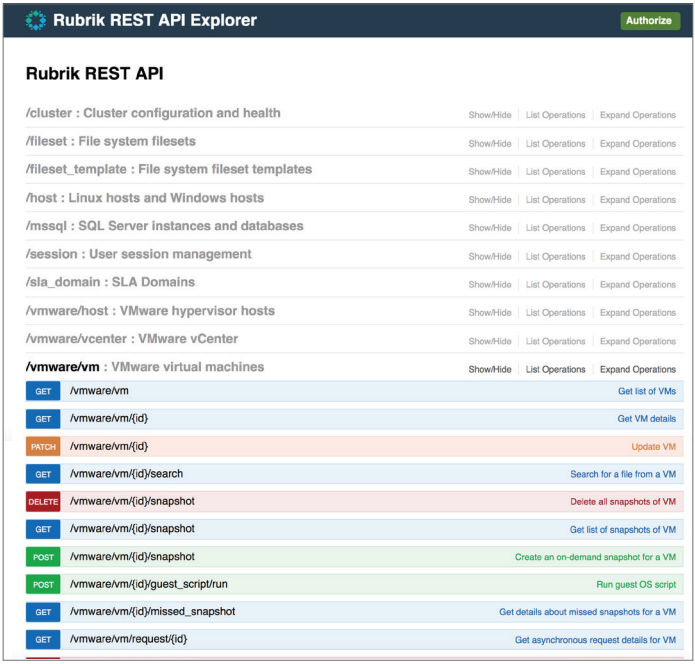
HOW WE USE THE RUBRIK API:

- Auto protection for SQL databases by integration into our existing provisioning process.

- Automated SQL integrity checks using the API and SQL live mounts.

- SQL deployment script validation on SQL live mount db.
- External reporting to a home grown management tool.

In the future, I am looking forward to integrating this into our service catalog system so that users can request ad hoc backups an and file restores.



IT'S ALL ABOUT THE MONEY

How much is this going to cost? When purchasing a new product, this is usually in the top three questions you're going to research. How will this affect my bottom line? Is the return worth the investment? Will this save me money in the long run? These were all questions I asked myself during the vendor review process. When it came to Rubrik, the hard cost savings were easy to see and proven out by numerous customer testimonials. Due to software convergence, most companies using Rubrik see a reduction in the cost of thirty to fifty percent, and the simplicity of management further increases savings over time.

I am not at liberty to give out the specific details around my purchase of Rubrik. However, I can tell you that Rubrik created a substantial amount of value for me and my organization compared to my previous solutions.

Let's be real though—this is a hard topic that's based on a lot of variables. For a real dollars-and-cents answer, you'll need to work with a local Rubrik sales team. Based on my experience, doing so won't be scary.

Ultimately, for me, Rubrik is providing value that far outweighs the cost.

READY TO DECREASE RTOS + RPOS?

A very real and extremely worrisome part of working in IT is knowing that at some point you'll likely have to deal with a business disruption or disaster. Many of you have probably been at an organization that went through this, was not prepared, and faced the consequences. Because Rubrik provides near-zero RTOs for virtual machines and SQL databases, you'll be more than prepared if your organization is faced with this unfortunate situation. Organizations that have Rubrik can instantly recover from ransomware, failures, and other disasters with no data rehydration in production needed.

There's so much more I could say here, but how about a single story to make the point?

We had a situation where restoring a critical system from backup took 30 hours. That was 30 hours of highly-visible impact to the business at a branch level with executives keenly aware of the issue. With Rubrik, that recovery would have been 15 minutes. In addition to the quick recovery time, intraday snapshots ensure that I have minimal data loss.

Seem too good to be true? It reminds me of the time I first saw VMware vMotion. Luckily, Rubrik can prove it. Simply request a demo to see for yourself.

RUBRIK SUPPORT

In chapter two, I mentioned encountering issues with my legacy system and feeling like putting in a ticket for a fix was like sending it out into the abyss. Would I ever get a response? Was I even being heard? With the Rubrik team, any questions I've ever had were answered, and any support I've ever needed was readily available. What I appreciate most is that you will never go through the frustrating scenario of calling a support rep, explaining your issue, and then being passed to another person who you have to start all over with. Rubrik's unique support ensures that the same professional support engineer will be with you from beginning to end.

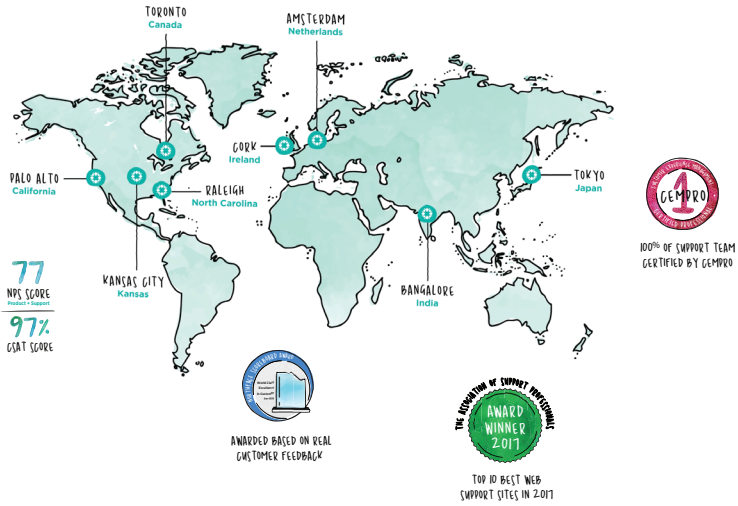
The way they handle support is so unique that the organization won one of the ten best web support sites awards in 2017. It's comforting to know that the support for such a critical business platform has your back and is efficient, reliable, and proactive. For example, after an upgrade, our VSS Writer was broken. We contacted Rubrik support, who gave us a fix quickly and let us move forward. I was so impressed because they both fixed the bug in record time and genuinely cared about our problem. I realize that no matter what, software will always have issues. However, it's how you respond to your customer's questions that counts.

There's another aspect here that is almost "managed service" like. While Rubrik's support team isn't a managed service as such, upgrades are so much simpler in two ways. First, when you need to upgrade the Rubrik code, you simply open a support ticket and it's

done on your schedule. There's no need for an expensive professional services engagement spanning days or weeks. Second, Rubrik connectors (Linux, Windows, SQL) can auto-update themselves without requiring a reboot.

One of the other things I love about Rubrik support is that the appliances phone home. I know that Rubrik support has visibility into my devices and is always checking their health. They help me ensure that my system is running optimally.

These two items have removed days to weeks of work whenever we upgrade and has enabled us to move to the most current code versions seamlessly.



KEY TAKEAWAYS

- Rubrik cuts RTOs to near-zero and provides native immutability to combat ransomware.
- Support isn't an afterthought, and Rubrik uses a system that ensures 24-7 coverage and guarantees that you will have one person handling your entire case.
- Backup jobs used to be a pain, but they don't have to be with SLA policies.
- You don't need a Master's Degree to learn how to use Rubrik. It just works right out of the box.
- The ubiquitous use of Google has programmed people to need instant solutions and results, which is precisely what Rubrik's platform provides.
- With one click, the Blob Engine can orchestrate data from on-premises to the cloud, cloud to cloud, and cloud to on-premises.
- The beauty of web-based APIs is the ability to automate nearly everything that was once manual, clunky, and time-consuming with a traditional backup vendor.
- Most companies that implement Rubrik see a 30-50% price reduction.

ADVANCED TOPICS

DR RECOVERY IS BUILT IN

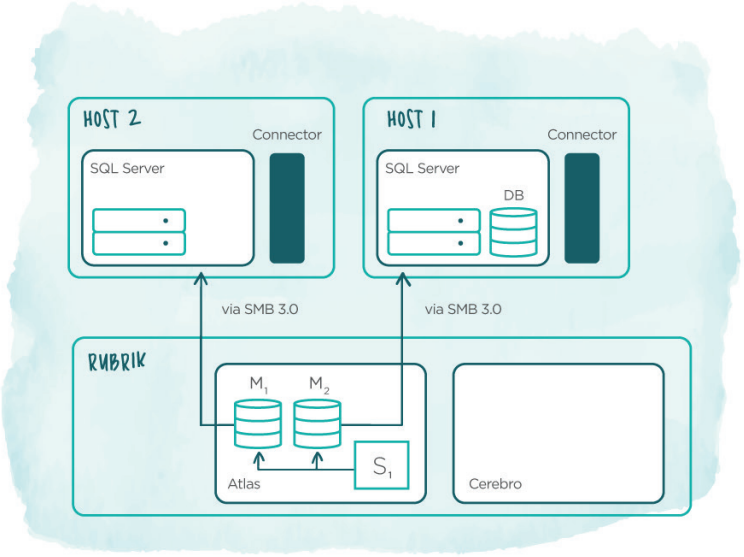
If "big data" was the buzzword (buzz-phrase?) of the last two years, then "disaster recovery," commonly referred to as DR, is the buzzword of 2018. Call it a symptom of the times, or just a better awareness about what an outage could do to your business, but leaders today have DR on the brain, and any backup and recovery solution must have this capability to be truly useful. Rubrik provides asynchronous, de-duplicated replication for physical and virtualized environments to orchestrate data across data centers and clouds. Customers can use one policy engine to setup backup, replication, and archival schedules on-site or in the cloud. Rubrik's platform allows the user to accumulate more recovery points for all of their applications, instantly recover anywhere at no additional licensing cost, and deliver point-in-time recoveries for intelligent log management.

LIVE MOUNTS CHANGE THE GAME OF DISASTER RECOVERY

In the past, when businesses had to access a massive backup—one that was hundreds of gigabytes, or even terabytes, in size it would require hours to copy all of the backup data over the network onto a SQL Server host. With my previous, traditional vendor, these high recovery time objectives were a pain point for my team and me. Enter Rubrik Live Mount for SQL Server databases. This capability gives users the ability to Live Mount databases and bring backups of databases online within a matter of a few seconds. This lets the

end-user achieve near-zero RTOs while also reaping the benefits of point-in-time restores and incremental-forever backups.

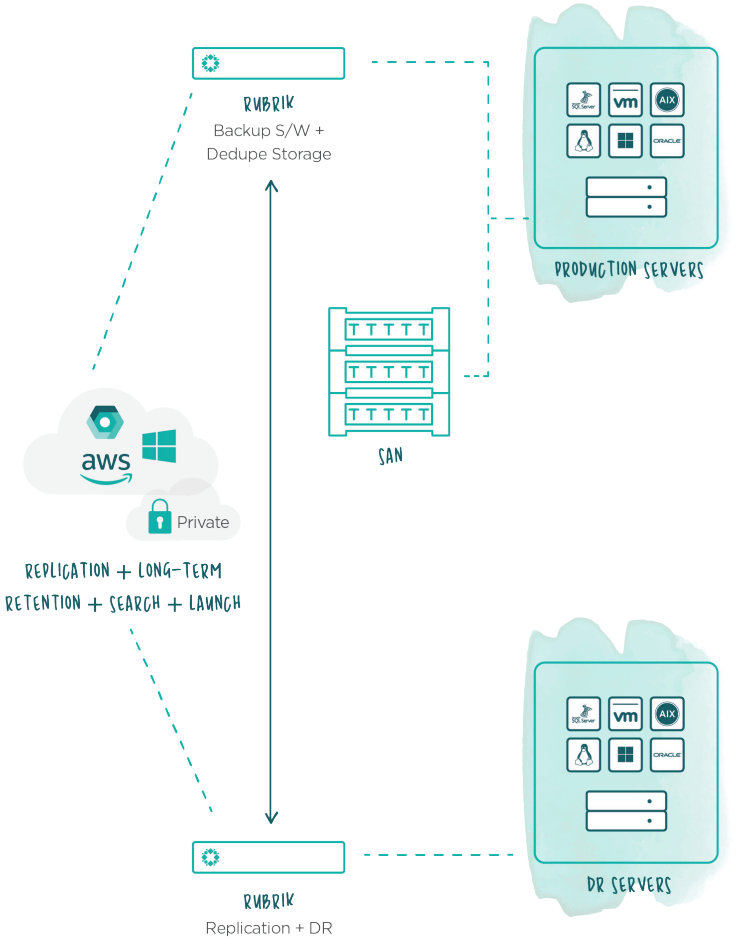
Recently, I had a restore that occured on my traditional backup platform. This restore was a single virtual machine that took around 31 hours to recover. This same system on Rubrik takes just minutes to live mount and return to service. Talk about changing the game.



BIDIRECTIONAL REPLICATION IS SIMPLE

One of the major tenets of any disaster recovery strategy is the ability to replicate data bi-directionally between data centers. Traditionally, there were multiple configuration steps to set up replication for a backup environment. Rubrik simplifies this with a policy-driven approach that requires only a couple of clicks in the UI. A toggle switch sets Rubrik's asynchronous replication; choose your replication target and adjust the slider to set the retention on your replication target. It's that easy! Global deduplication provides further benefits that avoid unnecessary network and storage costs throughout the full fabric. This is huge, as it keeps the CAPEX cost down.

Restores at the remote site have all the same functionality as a local backup. I simply go to the remote SLA domain and search for the object I wish to restore. This means that you're able to restore a live mount, any file, virtual machines, NAS file system, or databases easily and quickly at the remote location.


RUBRIK
Backup S/W +
Dedupe Storage
PRODUCTION SERVERS
SAN
aws
Private
REPLICATION + LONG-TERM
RETENTION + SEARCH + LAUNCH
RUBRIK
Replication + DR
DR SERVERS

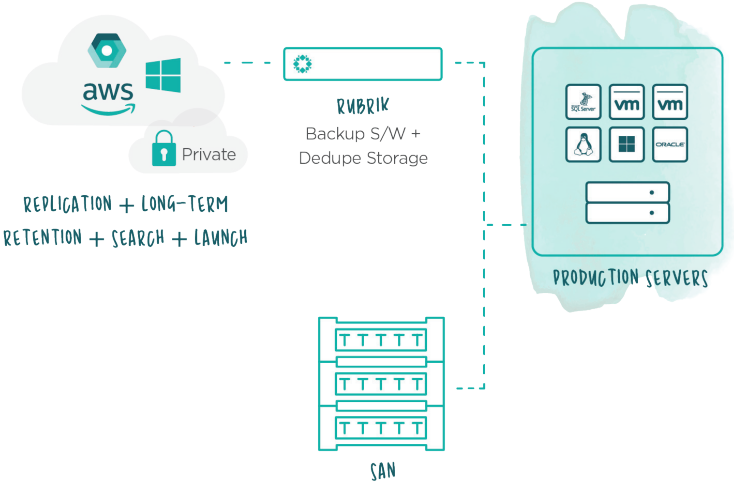
ARCHIVE TO CHEAPER STORAGE OR TO THE CLOUD

Cloud has gotten a bad rap for being an expensive option for enterprises. However, there are many ways that archiving to the cloud ends up saving companies money. One example, which has a tangible financial impact for Rubrik users, is the company's approach to optimizing the transfer of data in and out of the public cloud. The most prominent factors impacting the cost of S3 and Azure Blob Storage is the amount of data you store and the bandwidth incurred to restore that data from the cloud to your on-premises environment.

Rubrik addresses the storage cost issue by deduplicating and compressing the backup data before it lands in S3 or Blob Storage, reducing the amount of storage space required. To optimize for data egress transfer costs, Rubrik can restore data on-premises while retrieving only the blocks that the requested data are mapped to instead of an entire disk image.

OTHER POTENTIAL COST SAVINGS

In my environment we used a few other products for backup and recovery. These were in additional layers of protection and included things like Site Recovery Manager and Idera SQL Safe for SQL backups. When I switched to Rubrik, I was able to remove or reduce the amount of additional software we were using to help protect my systems. These additional cost savings were a pleasant surprise that I had not calculated into my initial ROI.


aws
Private
REPLICATION + LONG-TERM
RETENTION + SEARCH + LAUNCH
RUBRIK
Backup S/W +
Dedupe Storage
vm
vm
ORACLE
PRODUCTION SERVERS
SAN

KEY TAKEAWAYS

- Rubrik simplifies replication for backup environments with a policy-driven approach that requires only a couple of clicks in the UI.
- Leaders today have DR on the brain, and any backup and recovery solution must have this capability to be truly useful.
- Rubrik's Live Mounts help companies achieve near-zero RTOs.
- Traditionally, bidirectional replication was complicated. Rubrik simplifies this with a policy-driven approach.
- Rubrik addresses storage costs in the cloud by deduplicating and compressing the backup data before it lands in S3 or Blob Storage, reducing the amount of storage space required.

FINAL REVIEW

Right now, you might be in the position that I was in before I found Rubrik. You might have an existing backup system that has been failing you, and much to your chagrin, management has been questioning what's going on, and it's up to you to provide them with answers. You've reached the point that I had when I started on my journey to find a better backup and recovery solution. It's time to make a change! Remember, there are new options available to you rather than the status quo and you shouldn't be afraid to make a change.

I hope that my investigation into the current backup and recovery space helps make yours easier. After reading this book, I want you to feel armed with the knowledge to ask the right questions and figure out the solution that matches your needs. A couple things are certain—enterprise companies are too complex to have lousy backups, and your team has better things to do than manage backup jobs and deal with complicated, expensive licensing.

After selecting Rubrik, I've been able to change the dynamic of my team, achieve significant cost savings, and gain a positive operational impact by giving people different types of work than just administering backups and making sure jobs are complete.

During your search, remember that an enterprise-level backup and recovery solution must be scalable, simple to use, and the total cost of the platform should be less than you are currently paying with your traditional system.

There is one last thing I would like to do in this book. I invite you to take the "quote versus renewal" challenge. If you don't believe me about how simple this product is, just ask the Rubrik sales team for a quote, and compare that to other quotes or the last renewal of your existing platform.

I promise you there is an alternative to seeing a ten page quote or renewal with every single disk and cable listed as a line item. It all starts here. With Rubrik, the entire process "just works."

Thank you for reading. Don't Backup. Go Forward.