RFP GUIDE

Agile Storage

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Overview

Selecting a new storage platform is one of the most daunting exercises IT teams face. IT professionals have to weigh and balance many considerations in the decision, like:

- The ability to meet current and (hopefully) long-term capacity and performance requirements
- Compatibility with current systems and infrastructure
- Cost containment, including ongoing operating resources for management, space, and power

Of these considerations, the most challenging is usually selecting a storage system that both meets today's needs and is agile enough to grow, expand, and stay performant over time. And yet, it promises a very big payoff if done correctly. After all, you're probably updating your storage because your current storage can't expand or adapt enough to meet your requirements. To be clear, that's not your team's fault—most storage systems simply weren't designed to adapt and grow much over time. Legacy storage vendors in fact rely on you refreshing your storage every three to five years. They tout new features and architectures that you can only get through a complete re-buy of storage: the dreaded forklift refresh.

Your selection criteria from all those years ago were based on your storage requirements at the time along with an estimate of your needs over the next few years. Let's face it—very few IT teams have a fortune teller on staff that can predict the future. Given the fast pace of change and unpredictability in IT, doesn't it make sense to have a system that can adapt to your organization's changing requirements over time?

Imagine if you could keep a storage system for eight years or more, while it continues to expand and stay modern. How much more agile and responsive could your IT team be to changes in your organization, markets, and the world at large? What other projects and initiatives could your team take on if you didn't have to worry about storage bottlenecks? The good news is that there are storage systems available today built on an agile architecture and delivering IT agility. The trick lies in knowing the right questions to ask to uncover and confirm the best option for you.

As you likely know well, the request for proposal (RFP) is an essential tool for making IT architectural decisions. A good RFP helps create a level playing field among the different choices and vendors and makes comparison and selection easier. A common challenge in developing an RFP is to know what questions to ask to help match your requirements with vendor offerings.

To help you through that process, we've designed a set of criteria that you can add to your organization's RFP process for storage systems. They are based on real-world experience with proven agile storage architectures. These questions can help you highlight a storage system's ability to stay agile over time. Use the vendor responses to weigh future needs, both known and unknown, against vendor claims and capabilities. This guide is not meant to be exhaustive, but to help show the key requirements of storage upgradeability and agility.

What to Look For in Agile Storage

Upgradeable Architecture

Agile storage grows with your organization. Hardware and software components should allow for simple, non-disruptive upgrades and expansion. What does this look like in real-world situations?

Non-disruptive Hardware and Controller Upgrades

Controller modules are where most of the processing and I/O management takes place in today's storage arrays. They should be hot-swappable for the latest-generation models. This increases performance and capacity limits, which may be holding your IT infrastructure back. Be sure that you don't have to move your data off of the array, or slow your applications and data access down, to do the upgrade.

All-inclusive Software Features, and Upgrades without Disruption

Software should also be simple to upgrade, without any downtime or performance hit. Truly agile storage infrastructures should allow big advancements simply through a software upgrade. Updated software comes with advanced features like replication, clustering, and ransomware recovery, as well as better data reduction rates and improved performance. When even these new software features are included in a subscription instead of requiring additional licenses, then costs and management complexity can be better contained as well.

Flash Media Designed to Work with Newer Controllers and Flash

One of the "gotchas" that legacy storage technology can spring on users is a promise of updated controller hardware. Often, that hardware doesn't work with the flash already in the existing system. Or, a vendor can offer new, denser, faster flash media technologies that likewise can't mix with your existing flash media. Both of these scenarios mean a re-buy of all your capacity, once again. A re-buy will probably trigger another expensive and disruptive data migration as well. This disruption and expense can outweigh the benefits of upgradeable controllers or new flash media. Make sure your vendor has a track record of backward-compatibility between flash of different types and controller generations.

Consolidating Capacity with No Disruption

Over time, denser flash media will become available. Wouldn't it be nice if you could consolidate flash as you expand and grow? That way your overall storage footprint doesn't have to grow exponentially. Make sure your vendor enables you to consolidate flash without a data migration, so you can avoid disruption and extra cost.

Verifiable History of Delivering Non-disruptive Upgrades

The Russian proverb of "trust, but verify" should apply to how a storage vendor's claims of non-disruptive upgrades have been used in the field, how many customers have gone through the process, and exactly what is involved. If a vendor can't provide ready customer references and success stories, that is a red flag about their ability to deliver in the long term.

Flexible Ownership Program

Apart from the architecture of your storage, vendor business practices can adversely affect your IT agility. You can avoid costly repurchasing of either storage components or the entire system via included upgrades and transparent trade-in programs, which protect your storage investment. If you don't have to keep coming up with new budget and resources when you need to upgrade, you will be much more agile.

Included Controller Upgrades at Regular Intervals

Keeping your storage modern and agile, and at least on the same schedule that you used to run forklift upgrades in the past, gives you confidence that you will be able to meet growing workloads and new user requirements. If these are included in a subscription, then problems associated with budgets and resources are minimal. Learn ahead of time what the terms and requirements are to help avoid unpleasant surprises. For example, check if you can move to the latest-generation controllers, or if you're limited to something only marginally better than what you originally bought.

On-demand Controller Upgrades for Unplanned Events

Most IT professionals aren't blessed with the gift of ESP. Changes in business priorities, mergers and acquisitions, and changing macro conditions all require IT to respond quickly. If you can upgrade and expand your storage when you need to, with full credit trade-ins, you can be truly agile. Again, be sure to find out about any limitations, such as exactly what kind of credit you will receive for your old equipment and how often you can exercise a trade-in.

Credit for Flash Consolidation

We mentioned flash consolidation above, shrinking your storage footprint while you expand with denser flash, without disruption. Wouldn't that feature be even more useful if you didn't have to re-buy the capacity that you are replacing? Ask your vendor if they have a flash trade-in program, and make sure you know what the trade-in credit is. It should be fixed and predictable so that you can plan on it when you need it.

All-inclusive Software, Including New Features

Does the array ownership program include all software that runs on the array? Or do some advanced features require extra licenses, if they are even offered? Keep in mind that many legacy storage vendors offer separate "mid-range" and "enterprise" product lines, where advanced features (like data protection and replication) are only available on the larger, more expensive products. And to maximize agility, make sure that any software subscription includes new features and updates that may be released over time. Those new features may be crucial as your data and requirements grow over time.

Proven Track Record of Delivering on Promises

Again, it's always better to verify any vendor's claims. How long has the ownership program offered the included upgrade or trade-in feature? How many customers have taken advantage of it over time? Can you speak with any of those customers to see how the reality matches up with the promise? You can minimize your risk by choosing a vendor with a transparent, successful program.

Sample RFP Questions

Section 1: Upgradeable Architecture

Describe the system's overall ability to upgrade and expand non-disruptively.

- Can data remain in place during all upgrades, or does it need to be moved off the affected storage array (whether onto another array, backup device, or cloud-based service)?
  - If data can remain in place, please explain how this is accomplished.
- Please provide a timeline of how long this capability has been in use in production systems (when first released and the approximate number of successful customer upgrades).
- If the system can't upgrade and expand non-disruptively, what is the recommended procedure? How long does it typically take to perform, and what are the performance or data availability impacts?

Can software version updates be done without taking the system offline, and without any reduction in performance?

- Does this apply to major ("x.0") software version upgrades as well?
  - If yes, please explain how this is accomplished.
- Please provide a timeline of how long this capability has been in use in production systems (when first introduced and the approximate number of successful customer upgrades).
- Are any optional or third-party products required to accomplish software upgrades?
- If not, what is the recommended procedure? How long does it typically take to perform, and what are the performance or data availability impacts?

Can array controllers be updated without taking the system offline and without any reduction in performance?

- Can data remain in place during all controller upgrades, or does it need to be moved off the affected storage array (whether onto another array, backup device, or cloud-based service)?
  - If data can remain in place, please explain how this is accomplished.
- Can this non-disruptive controller upgrade process be used when moving to different generations of a controller? If not, please detail limitations.
- Please provide a timeline of how long this capability has been in use in production systems (when first introduced and the approximate number of successful customer upgrades).
- If not, what is the recommended procedure? How long does it typically take to perform, and what are the performance or data availability impacts?

Can flash storage media be expanded without taking the system offline, and without any reduction in performance?

- If yes, please explain how this is accomplished.

Can older-generation flash storage media be used with newer controllers after upgrades, or does the controller upgrade require an upgrade to newer flash media as well?

- If older media can be used with newer controllers:
  - Please provide a timeline of how long this capability has been in use in production systems (when first introduced, and the approximate number of successful customer upgrades).
  - Is this compatibility promised for future generations of controller upgrades?
  - Are there any performance impacts or feature limitations when using older flash media with newer controllers?
- If older media cannot be used with newer controllers:
  - What is the recommended procedure for migrating data off the older flash onto newer flash, how long does it typically take to perform, and what are the performance or data availability impacts?
  - Can the customer receive trade-in credits for older media toward the new media that is required?
  - Are there any limitations to the trade-in program for flash media?

Can flash media of different generations, sizes, and geometries be mixed in a single array, so that system capacity can be expanded over time without rebuying capacity?

- Please provide a timeline of how long this capability has been in use in production systems (when first introduced, and the approximate number of customers using capability).
- Please explain any limitations to this capability.

Can array capacity be consolidated onto higher-density media within the array later, without taking the system offline, and without any reduction in performance?

- Please provide a timeline of how long this capability has been in use in production systems (when first introduced and the approximate number of successful customer consolidations).
- If not, what is the recommended procedure? How long does it typically take to perform, and what are the performance or data availability impacts?

Section 2: Ownership Program and Investment Protection

Are controller upgrades included in an optional subscription, maintenance, or other ownership programs, based on upgrading at regular intervals, to protect customer investment while modernizing the array?

- If so, what are the requirements and approximate costs for selecting the option?
- What are the general terms of the option in regards to:
  - Timing of included upgrades
  - Number of times upgrades can be received
  - Other factors that impact receiving upgrades
- Please provide a timeline of how long this feature has been available to customers (when first introduced and the approximate number of customers using the upgrade program)
- Please explain any limitations to this capability:
- Do upgrades include the most recent or latest-generation controllers?
- If upgrades do not include the latest-generation controllers, is it clear how the new controllers will be different from the existing ones (one generation later, X% more performance, or other measures)?

Are controller upgrades available on demand, as part of an optional subscription, maintenance, or other ownership programs, based on upgrading at a time of customer's choosing, to increase IT agility and protect customer investment while upgrading array?

- If so, what are the requirements and approximate costs for selecting the option?
- What are the general terms of the option:
  - How long must the subscription be in effect before upgrading?
  - How many times can this option be exercised in a given period?
  - If this is a trade-in program, does the customer receive full or only partial credit for the old controllers?
  - Are there other factors that impact receiving upgrades?
- Please provide a timeline of how long this feature has been available to customers (when first introduced and the approximate number of customers who have used the upgrade program)
- Please explain any limitations to this capability:
  - Do on-demand upgrades include the most recent or latest-generation controllers?
  - If upgrades do not include the latest-generation controllers, is it clear how the new controllers will be different from the existing ones (one generation later, x% more performance, or other measures)?
  - Can this on-demand upgrade also be used to move to higher-performing controllers within the same generation?
  - Can this on-demand upgrade be used for both latest-generation and higher-performing controllers within the same upgrade?

Can flash media be traded in for newer, denser media, so that capacity doesn't need to be repurchased while expanding and consolidating capacity (i.e., reducing the physical size of the array)?

- If so, what are the requirements and approximate costs for selecting the option?
- What are the general terms of the option:
  - How long must the subscription be in effect before trading-in flash?
  - How many times can this option be exercised in a given period?
  - How much credit does the customer receive for the older flash?
  - Are there other factors that impact the flash trade-in option?
- Please provide a timeline of how long this feature has been available to customers (when first introduced and the approximate number of customers who have used the trade-in program).
- Please explain any limitations to this capability:
  - Can this feature be used to upgrade to newer flash technologies (e.g., NVMe-based flash, etc.)?

Does the array come with all software included, or are there some advanced features that require additional licenses and cost?

- If some features are not included in the purchase price of the array, what are those optional features, and what are the approximate costs for selecting the options?
- What functions of the array will be limited if those options are not purchased?
  - Example: data replication, data protection, ransomware recovery, etc.
- Will future array software releases, including any new array functionality, be included as part of a subscription?
  - If so, is there a verifiable history of delivering new array features without requiring additional costs or software licenses?
- Are some advanced data features only available on high-end "enterprise" product lines?
  - Example: data replication, data protection, ransomware recovery, etc.

Other Resources

- 451 Research wrote a Pathfinder Report that addresses many of the issues surrounding IT agility and how storage plays a part.
- IDC Research Vice President, Infrastructure Systems, Platforms and Technologies Eric Burgener has scrutinized the Evergreen™ architecture behind Pure Storage® FlashArray™ and how it has delivered a more agile IT infrastructure to thousands of organizations.

For More Information

- Visit purestorage.com/rethinkstorage for additional insights on selecting the right storage for your organization.

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