

RFP GUIDE

Agile Storage

Core storage requirements for an agile IT infrastructure.



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Overview

As the volume of both structured and unstructured data continues to grow, a well-thought-out and holistic approach is critical when selecting a new storage platform.

Data generated by machine learning, IoT, analytics, and artificial intelligence are examples of unstructured data and comprise the majority of data growth, while structured data is created from traditional deployments such as a relational database management system (RDBMS).

With the diversity of these workloads and data types, IT professionals should consider these three factors in their assessment of storage offerings for traditional purchases (CAPEX model):

- **Scalability and upgradeability:** The ability to meet current and long-term capacity and performance needs
- **Operational efficiency:** How easy is it for IT staff to deploy, manage, optimize, and upgrade storage systems
- **Cost containment:** How to minimize ongoing operating resources required for management, real-estate, power, and cooling

Successful selection criteria will enable IT teams to deploy storage that has an architecture and management software that will meet today's needs and be agile enough to grow, expand, and stay modern over time. This is critical to keep up with workload and data growth and modern application deployments.

You're likely updating your storage because your current storage can't expand or adapt enough to meet your needs. Most legacy storage systems simply weren't designed to adapt and grow much over time. Legacy storage vendors expect that you will refresh your storage every three to five years, as they are unable to scale to meet application demands. Meanwhile, they tout new software capabilities and architectures that often require complete rebuy of storage: the dreaded forklift refresh.

Your prior selection criteria were likely based on your needs 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 who can predict future needs perfectly. Given the fast pace of change and unpredictability in IT, doesn't it simply make sense to have a system that can adapt to your organization's needs 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 deliver IT agility. The trick lies in knowing the right questions to ask to uncover and confirm the best option for you.

The request for proposal (RFP) is an essential tool as you make IT architectural decisions. A good RFP can help 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 provides the key requirements of storage upgradeability and agility.



What to Look for in Agile Storage

Upgradeable Architecture

Agile storage grows with your needs. 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 Performance Upgrades

Performance is affected most by the storage processing modules in an array—sometimes called controllers, blades, or main processing units. For simplicity, we'll use the term “controller” in the rest of this document. Controller modules are where most of the processing and I/O management takes place. 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 an array, or slow your applications and data access down to do an upgrade.

Software Upgrades without Disruption

Software should also be simple to upgrade, without any downtime or performance hit. Truly agile storage infrastructure enables big advancements simply through a software upgrade. Updated software comes with new features like replication and clustering, as well as better data reduction rates and faster performance.

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 old system. A vendor can also offer new, denser, faster flash media technologies that likewise can't mix with your old flash media. Both of these

scenarios create the need for a rebuy of all your capacity, once again.

A rebuy will probably trigger another expensive and disruptive data migration.

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? This means that 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 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, it 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 provides confidence that you will be able to meet growing workloads and new user requirements. If these are included in a subscription, problems associated with budgets and resources are minimal. Learn first 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.

Any-time Controller Upgrades for Unplanned Events

IT professionals are unfortunately not blessed with the gift of ESP. Changes in business priorities, mergers and acquisitions, and 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 and exactly what kind of credit you will receive for your old equipment.

Intelligent Storage Management Software

Robust storage management software is critical in enabling IT staff to easily handle the day-to-day tasks associated with deploying and optimizing the storage environment to meet application demands. It should be cloud based and enable all of your storage systems to be managed from any device, with just a web browser or a mobile application. It should also provide full-stack monitoring with predictive analysis and insights into capacity, performance, and energy consumption.

Due to the dynamic nature of data growth, effective storage management software should provide the ability to predict array capacity and performance, as well as model existing and new workloads in order to optimize performance. More detailed storage management features are found below in the RFP sample questions.

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 rebuy the capacity that you are replacing? Ask your vendor if they have a flash trade-in program and make sure you know the value of the trade-in credit. It should be fixed and predictable so that you can plan on it when you need it.

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 versions be upgraded 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).
- If not, what is the recommended procedure? How long does it typically take to perform, and what are the performance or data availability impacts?
- Are any optional or third-party products required to accomplish software upgrades?

Can array controllers be upgraded 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.)?



Section 3: Intelligent Storage Management Software

- Is the management software cloud based?
- Does it enable all arrays to be managed from any device via a web browser or mobile application?
- Does it use analytics to provide critical information about the health and functioning of the entire stack, including predictive fault analysis and alerting?
- Can it predict array capacity and performance as well as model existing and new workloads?
- Does it show/model the effect of potential capacity or performance upgrades on all workloads in your environment as well as new workloads?
- Can it show the performance and capacity over time of scaling or deleting workloads?
- Can it model the effect of migrating a workload to another array in your deployment, or the effect of scaling, cloning, or migrating a workload within your environment?
- Does it provide predictive fault analysis and resolution?
- Can it determine if the storage infrastructure is running the latest software version? And if not, can it notify IT staff to upgrade in order to take advantage of new features?
- Does it provide deep performance metrics on volumes and VMs in your VMware environments such as latency, bandwidth, and IOPs of your workflows?



Other Resources

- 451 Research wrote a [Pathfinder Report](#) that addresses many of the issues surrounding IT agility and how storage plays a part.
- IDC Analyst 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

- Get more insights on selecting the right storage for your organization at www.purestorage.com/evergreen.

purestorage.com

800.379.PURE

