PURE

FlashArray™ Architect Associate

Exam Number: FAAA_004

PURE STORAGE CERTIFIED

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About Pure Storage® Certified Exams

Demonstrate your knowledge, skills and ability to identify, qualify, and architect FlashArray solutions by completing the FlashArray Architect Associate certification exam. Pure Storage's certification exams have been developed following industry best practices to strive for reliable and valid test score interpretations.

This guide has three purposes:

- to provide information to help you prepare for the Pure Storage exam
- to provide recommended references to prepare for the Pure Storage FlashArray Architect Associate Exam

- to help you determine if you are ready to sit for the exam

This guide outlines the knowledge, skills, and abilities required of a "minimally qualified candidate" for a specific job role, which will be evaluated in the exam.

Section 1: Exam Registration Instructions

1.1. Exam Information

- Exam name: Pure Storage FlashArray Architect Associate

- Exam number: FAAA_004

- Exam cost: $129 (US Dollars)

- Number of questions: 60

- Question types: Multiple Choice (three, four, or five options; one, two, or three correct answers)

- Time limit: 120 minutes

1.2. Creating an Online Account

1. Go to the ExamStudio Storefront.

2. Select "Pure Storage FlashArray Architect Associate".

3. Either confirm the scheduling process or log in. The system will automatically recognize if you are eligible and will allow you to move forward.

4. Log in to your candidate dashboard and click "Schedule" under the Actions tab.

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5. Select the appropriate time zone; then, select the date and time you want to take the exam. Please note that exams require a 24-hour lead time to schedule. The earliest date on which you can make a reservation is the next business day.

6. Complete a technical compatibility check by visiting https://go.proctoru.com/testitout

1.3. Online Exam Computer Requirements

We strongly recommend taking your exam on a personal device, if possible, to avoid possible security issues with the proctoring software. Your computer must meet the minimum requirements of ProctorU, including:

- A stable broadband internet service with a download speed of at least 12Mbps down and 3Mbps up
- Chrome or Firefox web browser. Download ProctorU extensions: Chrome or Firefox
- Webcam
- Microphone

To check if your computer meets the minimum requirements of the exam provider, visit https://go.proctoru.com/testitout. To watch a video on how ProctorU works, please click here.

ProctorU Requirements:

Ensuring our exams are secure only increases the value of a Pure certification. Info provided here will walk you through the steps to take just before your exam, including testing your equipment, what you need to have on hand for your exam, and what you can expect from the launch process. **Your computer must meet the minimum requirements of ProctorU.**

1.4. Day of the Exam

Requirements:

- You must provide one form of government-issued photo ID (e.g., driver's license, passport).
- If you do not provide acceptable proof of identification via webcam to the proctor prior to the exam, you will not be allowed to take the exam. No refund or rescheduling is provided when an exam cannot be started due to failure to provide proper identification.
- You must also consent to have your photo taken. The ID will be used for identity verification only and will not be stored.
- You must be in a private, well-lit environment such as a conference room or home office.
- You must close all third-party programs and unplug any secondary monitors.
- The proctor will ask you to show your desk and surroundings before your exam can start.
- You cannot consult notes or books during the exam. The proctor will not allow the use of documents, materials, or websites during the exam.
- Make sure you have downloaded the ProctorU extension for either Chrome or Firefox.

Log in to Launch the Exam

To launch the exam, log in to your ExamStudio account.

1. Enter your login credentials.
2. Click "Start Exam" under the Actions tab on your dashboard.

> **NOTE:** The timer for your exam does not start until the proctor launches the exam. You will have 120 minutes to complete the exam. You may start your exam once the countdown timer reaches 0:00:00. If you do not start your exam within 15 minutes of this time frame, the system will automatically mark you as a No-Show and you will not be able to take your exam.

Special Considerations

- To reset a forgotten password, visit https://portal2.examstudio.com/ResetPassword.aspx?id=100106. Once you reset your password, you can log in via your candidate portal.
- For additional questions regarding ProctorU, please visit this link.
- For any other additional questions or concerns, please contact the Pure Storage certification team at certadmin@purestorage.com.

1.5. Exam Scoring

- One point is awarded for each correct answer to a single-response or multi-response question.
- No points are awarded for either incorrectly answered or unanswered single-response or multi-response questions.

1.6. After the Exam

Your candidate record will be updated with the results of your exam 24-48 hours following the exam. Please see Section 1.7 of this exam guide for instructions on how to review your candidate record.

If You Pass:

Your candidate record will have an eCertificate when you achieve a certification, as well as a Pure Storage certification logo for this exam. A certification is valid for 2 years. Upon expiration, you will need to take the exam again.

If You Fail:

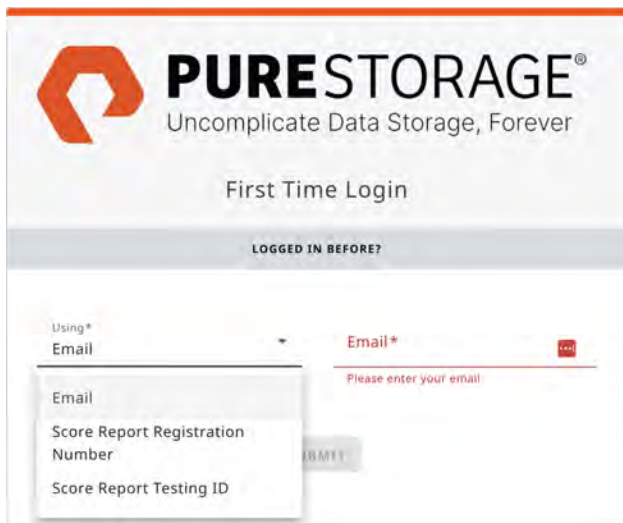You will need to wait 72 hours to re-schedule the exam.

1.7. Your Candidate Record

To access your candidate record, visit https://cp.certmetrics.com/purestorage/en/login. From here, you will be able to access your score report(s).

The first time you log in, you will need to create an account.

To create an account:

1. Click "Never logged in before?" on the landing page.
2. Enter either your email address or data from your score report, as shown below.
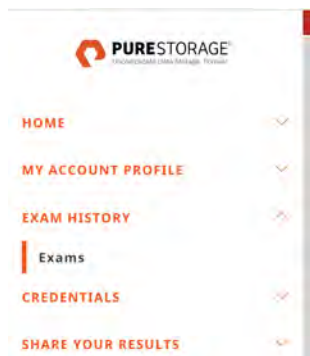
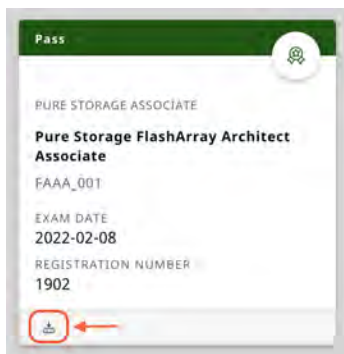**3.** You will receive an email with instructions on how to access your account.

Once you create your account, you will be able to log in with your login ID and password.

To retrieve your score report(s):

After you log in, click Exam History, then Exams.
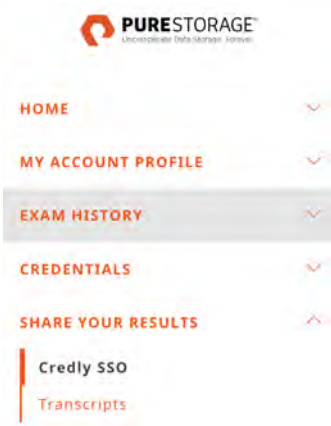

You will then see the exam card view for each of your exams. Click the icon in the lower left to download your score report.

To share your results:

Click Share Your Results. From this menu, you can connect to Credly to download your digital badge and certificate.

You can also create a custom transcript that you can download or share.

Section 2: Pure Storage FlashArray Architect Associate Exam Topics

2.1. Domain Names and Distribution

The job tasks measured on the exam are grouped into the following domains of practice and the questions on the exam are distributed as follows:

NOTE: Each question carries the same weight, and there is no partial credit for any question.

Domain	Percent of Exam
Qualify, Sell, and Architect	42%
Subscriptions and DX	20%
Array Monitoring and Architecture	38%

2.2. Task Information with Resources

Within each domain, you will be asked about specific tasks you should be able to perform as a Pure Storage Certified FlashArray Architect Associate, including but not limited to:

Qualify, Sell, and Architect
- Identify solutions based on customer requirements.
  - Pure Storage FlashArray Limits

- Size a solution based on customer needs.

    o   Pure FlashArray Sizer

- Identify market trends and opportunities.

    o   Ransomware Solution Center

    o   Portworx Solution Center

- Demonstrate an understanding of FlashArray use cases.

    o   Pure Storage Solutions

    o   Verticals and Industries

- Demonstrate an understanding of unified storage on FlashArray.

    o   FA File - FAQ

Subscriptions and DX

- Identify benefits of Pure's Evergreen program.

    o   Evergreen//One Sales

    o   Evergreen//Forever Sales

    o   Evergreen//Flex Sales

    o   Evergreen Storage Program Description

- Identify benefits of Pure's Love Your Storage and Right Size Guarantee.

    o   Evergreen Storage Program Description

- Determine future capacity, performance, and upgrade requirements

    o   Workload Simulations

    o   Hardware Simulations

    o   Snapshot Policy Simulations

Array Monitoring and Architecture

- Explain FlashArray's high availability architecture.
    - ActiveCluster FAQ
    - ActiveDR FAQ
    - Purity Replication Requirements and Interoperability Matrix
    - Purity CloudSnap Best Practices and Users Guide
- Define FlashArray features.
    - ActiveCluster Solution Overview
    - ActiveDR Solution Overview White Paper
    - Purity CloudSnap Best Practices Guide
- Explain data reduction methods.
    - FlashArray Architect Associate Instructor-led course
- Identify components of FlashArrays.
    - FlashArray Hardware
    - FlashArray Architect Associate Instructor-led course
- Analyze performance metrics.
    - Pure1 Manage - Overview
    - Pure1 Manage - Virtual Machines
    - Pure1 Manage - Dashboard
    - Pure1 Manage - Performance
- Analyze capacity usage
    - Pure1 Manage - Dashboard
    - Pure1 Manage - Capacity

Section 3: The Pure Storage Certified FlashArray Architect Associate Job Role

This exam is designed for individuals who are currently performing or have previous work experience with the job responsibilities of a Pure Storage Certified FlashArray Architect Associate.

3.1. The Minimally Qualified Candidate (MQC)

To pass the exam, you must have at least the minimum level of knowledge, skills, and abilities required of a Pure Storage Certified FlashArray Architect Associate. The MQC is a Pure Storage employee or partner technical seller who has 1-3 years of storage industry experience and 3-12 months of Pure Storage experience. The MQC has general knowledge of the Pure Storage portfolio and associated market differentiation with an emphasis on product positioning and qualifying solutions. The MQC knows how to architect storage solutions including Pure FlashArray, Evergreen, and Pure1.

The Pure Storage Certified FlashArray Architect Associate should be able to perform the following tasks without any assistance:

- Differentiate between use cases for different FlashArrays (E, X, C, XL, Cloud Block Store)

- Articulate unified storage on Flash Array (block and file)

- Describe the capabilities of a FlashArray feature set

- Determine proper FlashArray configurations using Sizer

- Articulate the Pure Storage Evergreen and Pure1 features and benefits

- Explain the design principles behind the Pure FlashArray and how the design principles differentiate Pure from competitors such as:

  - o   variable block size architecture, and

  - o   dedupe/compression rates

- Qualify when to use FlashArray for a workload

- Identify how availability works for FlashArray (data protection, replication, resiliency (Raid-HA)

3.2. MQC Work Experience

A minimally qualified Pure Storage Certified FlashArray Architect Associate typically has the following work experience:

- Associate-level role
- Between 1 and 3 years of storage industry experience
- Between 3 and 12 months of Pure Storage experience

Section 4: Determine Exam Readiness

Nothing guarantees that you will pass your test; however, the more practical work experience you have, the better your chances of passing the test. Use the following self-assessment preparation worksheet to evaluate your level of readiness.

4.1. Exam Prerequisites

There are no prerequisites for the Pure Storage FlashArray Architect Associate Examination.

4.2. On-the-Job Experience

Pure Storage exams measure knowledge, skills, and abilities for a specific job role. One of the best ways to prepare for the exam is to make sure you have the minimum work experience, as described in this guide.

4.3. Self-Assessment Preparation Worksheet

Use the following worksheet to review the exam topics and assess your own readiness. If you need additional preparation on a certain topic, there are additional links to information in the prior Task Information section as well as a Recommended Learning section where you will find recommendations and links to those learning opportunities.

Topic	Yes	No
Qualify, Sell, and Architect	**Yes**	**No**
Determine customer challenges solved by FlashArray		
Identify customer workloads appropriate for FlashArray (e.g., Virtualization, Archive, Backup/Restore)		
Determine future workload placement on existing or future arrays		
Demonstrate an understanding of the difference between raw, usable and effective capacities		
Determine correct FlashArray series based on customer requirements		
Determine sufficient combination/number of front end ports with given bandwidth based on requirements		
Identify key benefits of deploying an all-flash array		
Identify use cases for different consumption models		
Identify appropriate placement of customer workloads between FlashArray//C, //X, //XL, and Cloud Block Store		

Subscriptions and DX	Yes	No
Identify differences between available Evergreen programs		
Identify the customer benefits of the Evergreen program		
Describe what a guaranteed Data Reduction Rate is and how it applies to the Right Size Guarantee		
Determine future workload placement using Workload Planner in Pure1		
Explain the benefits of self service upgrades		
Detail the protections afforded to customers by the Right Size Guarantee		
Determine a customer's future capacity needs		

Array Monitoring and Architecture	Yes	No
Explain the lifecycle of an I/O		
Explain how RAID-HA works		
Explain how FlashArray's controllers fail over		
List the features of a FlashArray		
Identify basic feature functionality		
Identify the benefits of FlashArray features		
Outline the components that make up FlashArray Data Reduction		
Define the difference between Data Reduction and Total Reduction		
Compare Purity//FA in-line vs Data at rest reduction		
Describe the various DirectFlash modules		
Identify the different components in a FlashArray		
Identify rack space needed by FlashArray components		
Explain DirectFlash benefits over SSDs		
Use performance dashboards		
Interpret performance and capacity graphs		
Analyze performance and capacity or a specific time period		

4.4. Recommended Training

Training is not required to sit for the exam, but classes are available to provide additional information to help prepare for the exam. These classes are listed below.

Pure Core Portfolio
Pure Core Portfolio is a self-paced, 4-hour training that provides an overview of the Pure Storage products and portfolio. By taking this course, you will gain a high-level understanding of why the product was made, its basic components, and how it can best be used. All learners are encouraged to take this training.

Pure Core Portfolio - Partner Link

Pure Core Portfolio - Internal Link

FlashArray Architect Associate
This instructor-led training is designed to provide learners with a more in-depth understanding of the FlashArray. It will cover common use cases, benefits, features, and functionality of the FlashArray. Learners will also be able to position and roughly size the FlashArray at the end of this course. Self-paced labs will not be completed during the course but are available for learners to provide hands-on practice. While this course is not an exam prep course, the content is extremely relevant to the exam and will help prepare candidates to sit for it.

FlashArray Architect Associate – Instructor-Led Course – Partner Link

FlashArray Architect Associate – Instructor-Led Course – Internal Link

Section 5: Pure Storage FlashArray Architect Associate Sample Questions

Review and practice taking exam questions to get a sense for the types of questions on the exam. Please note that your performance here does not indicate how you will do on the actual exam. To fully prepare for the exam, closely review the topic areas and objectives in this Exam Guide.
The correct answers are at the end of the Exam Guide.

1. A Windows Server SQL administrator wants to know the current capacity and performance usage of the FlashArray. The array is currently not phoning home and the administrator does not want to access the FlashArray management UI. What other option can the Pure Architect recommend to help the user manage the FlashArray?

    A. Pure1 Workload Planner

    B. Purity//FA UI Analysis Page

    C. FlashArray Management Extension for Microsoft SQL Server Management Studio

    D. FlashArray Solutions Extension for Windows Admin Center

2. A customer with a very limited budget for both production and DR sites wants to purchase a FlashArray//X storage solution with the following specifications:

    - The lowest RPO possible
    - The ability to backup snapshots to S3
    - The IP latency between the two data centers is 10ms
    - Does not require a high-performance array

    Which FlashArray model and replication solution meets the customer's requirements?

    A. 2x FlashArray//X50R3 with ActiveCluster and CloudSnap

    B. 2x FlashArray//X20R3 with ActiveCluster and CloudSnap

    C. 2x FlashArray//X50R3 with ActiveDR and CloudSnap

    D. 2x FlashArray//X20R3 with ActiveDR and CloudSnap

3. An administrator intends to incorporate a FlashArray into their VMware environment and plans to establish multiple connections between the ESXi hosts. They intend to utilize VMware's Native Multipathing (NMP).
    What is the recommended NMP policy for this setup?

    A. Most recently used

    B. Enhanced round robin

    C. Fixed path

    D. Least queue depth

4. What additional benefits are provided with an Evergreen//Forever subscription compared to a //Foundation subscription?

    A. The customer gets included replacement of failed components.

    B. Customers can purchase hardware upgrades and deploy them non-disruptively.

    C. Capacity consolidation provides trade-in credit for additional storage buys.

    D. Customer controller upgrades will be non-disruptive.

5. A DirectFlash module unexpectedly fails.
What does RAID-HA do in this case?

    A. Copy mirrored data to 2 hot spares for FlashArray//M and 4 for FlashArray//X arrays.

    B. Rebuild from parity and write data to designated hot spare DirectFlash modules.

    C. Copy mirrored data from the DirectFlash module to the boot drive and NVRAM if required

    D. Rebuild data using parity and write it to empty space allocated on DirectFlash modules.

6. A pair of FlashArrays are configured for ActiveCluster in Uniform Configuration. They have a stretched pod between them containing volume A, which needs to remain online at the Prod Site even if the replication network and mediator goes down.
Which option must be set?

    A. Set Preferred Array at the host level for Prod Site

    B. Set Failover Preference at the pod level for Prod Site

    C. Set Preferred Array at the Pure1 Cloud Mediator for Prod Site

7. What is the primary purpose of Pure1 Workload Planner in the context of managing FlashArray systems?

    A. To monitor power consumption of FlashArray devices.

    B. To provide real-time diagnostic reports.

    C. To predict future storage requirements and optimize workload placement.

    D. To configure RAID levels on FlashArray disks.

8. What are two key differences between SSDs and DirectFlash modules? (Select two.)

    A. DirectFlash Modules utilize a Flash Translation Layer (FTL) in each module.

    B. SSDs utilize a Flash Translation Layer (FTL) in each module.

    C. DirectFlash modules are always PCIe connected.

    D. SSDs minimize write-amplification by allowing global garbage collection at a low level.

9. When considering data protection in a FlashArray environment, which method provides both zero RPO (Recovery Point Objective) and zero RTO (Recovery Time Objective)?

    A. Asynchronous snapshot replication

    B. ActiveDR replication

    C. Active Cluster replication

10. A customer has stringent RTO (Recovery Time Objective) requirements and a need for real-time data replication. They are willing to invest in high-performance storage. Which FlashArray model and replication solution should the customer consider to meet their needs?

    A. FlashArray//X with ActiveCluster replication

    B. FlashArray//C with Asynchronous replication

    C. FlashArray//M with ActiveCluster replication

Section 6: Answer Key

Correct answers are shown below in *bold italics*.

1. A Windows Server SQL administrator wants to know the current capacity and performance usage of the FlashArray. The array is currently not phoning home and the administrator does not want to access the FlashArray management UI.

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    B. FlashArray//C with Asynchronous replication

    C. FlashArray//M with ActiveCluster replication

Support

For information on Pure Storage's certification programs, visit this link. To contact us, please email certadmin@purestorage.com.

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