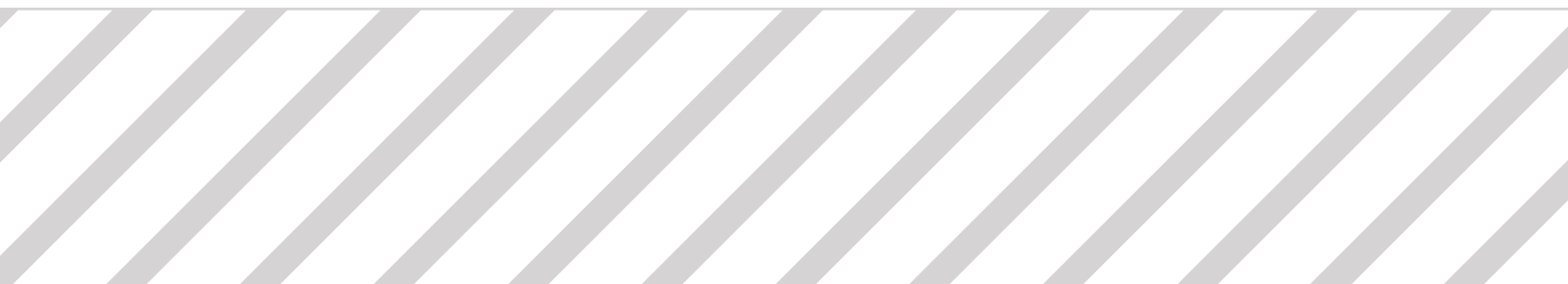




# FLASHARRAY™ IMPLEMENTATION PROFESSIONAL **STUDY GUIDE**

EXAM NUMBER: FAIP\_001



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# FLASHARRAY IMPLEMENTATION PROFESSIONAL STUDY GUIDE

**Objective:** This study guide is designed to help you prepare for the Pure Storage FlashArray Implementation Professional Exam, exam number FAIP\_001.

**Audience:** This self-study guide is intended for those who wish to undertake self-study or review activities before taking the actual Pure FlashArray Implementation Professional exam. The guide is not intended as a substitute for training or hands-on time with Pure Storage® products.

**How to make the most of this study guide:** The study guide summarizes the key topics on the Pure FlashArray Implementation Professional exam for you in an easy to use format. It is organized closely around the exam objectives but does not cover all potential questions from the exam and does not guarantee success on the actual exam. We suggest this guide be used in conjunction with our free online or in-person training covering installation concepts and process.

We hope you find this guide useful in your journey towards Pure Storage Certification, and we welcome your feedback by sending an email to [certification@purestorage.com](mailto:certification@purestorage.com).

# PRE-INSTALL

During the Pre-install phase, we do the following things:

- Review the calendar invite and be sure the info is clear and the Pre-install Checklist or any other docs expected are attached
- Review/Validate the information in the Pre-install Checklist.
- Look up the customer in CA to see what they currently have to have a jump start on the customer's level of Pure
- Contact the SE or AE if no SE is listed for the account to see if there's any special instructions they would like completed during the install/onsite visit. ie: purity level, cards to be added, etc. I would suggest this step prior to contacting the customer.
- Verify Power, Rack space, cabling
- Verify correct array was ordered, e.g. model, capacity, host protocol (this step could be difficult if access to salesforce is not there)
- Location of install/NDU, onsite contact, date/time of work, any special instructions via customer communication (phone or email).
- Request the Data Center access ticket from the customer
- Download the latest Purity code before going onsite
- Share with the customer the Phonehome requirements and make sure the required ports are open on their firewall

## **VALIDATION** (VALIDATE THE SITE SURVEY DATA)

### **Understand/Apply**

- Discuss pre-site checklist with customer ahead of installation—Do we have this on the support site?
- Validate configuration site survey document is accurate and feasible
- Validate IPs are all on the same subnet
- Ensure host array name is valid
  - special characters, spaces, etc
- Ensure proxy name is valid
- Verify Purity version to be installed

## **VERIFY** (VERIFY THE CONFIGURATION AND ENVIRONMENT PRE-REQUISITES FOR INSTALLATION)

- Verify appropriate power requirements
  - HA power available and within reach?
- Join meeting to discuss customer requirements w/ sales team

- Verify shipping
- Verify access to datacenter (installer)
- Verify that the array is not part of an active cluster
  - Engage sales team
- Verify sufficient rack space
- Verify physical connections
  - network and host
- Determine if the location is a “dark” site

### **PRE-INSTALL SUPPORT** (ENGAGE PURE STORAGE SUPPORT FOR PRE-INSTALL)

- Open a support case (if appropriate). A support case is needed anytime we go onsite and touch any customer’s equipment.
- Contact support to obtain the relevant info before install/upgrade
  - Acquire code, consolidation plan, ...etc from Support

## **INSTALL**

During installation the Implementation Engineer will need to verify the correct equipment has been delivered. This can be done first by checking the packing label on the side of the boxes followed up by unpacking and visually inspecting what was delivered. The IE should also check to make sure that the boxes were not damaged in shipping and contact support if they have been.

The IE will rack the equipment in the appropriate location. After racking is complete IE will need to attach the host interfaces, management interfaces, SAS cabling if the array has external shelves, and power. Once the array is powered on the IE will either install the requested version of Purity or start the Pure Setup process. If a different version of Purity has been requested the IE will follow the FlashArray Installation: Changing Purity// FA Version on a Fresh FlashArray documentation.

Once the setup process is started on the array the IE will follow the Install document information provided by the customer. After setup is complete the IE will request that support run health checks on the array and verify that the customer can log in.

### **PHYSICAL INSTALL** (PERFORM PHYSICAL INSTALLATION OF THE ARRAY)

#### **Understand/Apply**

- Follow step by step the documented install guide
  - Install shelf/shelves, drives, arrays, rails

- Rack array in customer environment and attach cables
- Verify cabling
  - ETH, FC, iSCSI

## **SW INSTALLATION** (PERFORM SOFTWARE INSTALLATION OF THE ARRAY)

### **Understand/Apply**

- Execute the required software changes on the FlashArray to configure the environment
- Update firmware as necessary
- Verify serial console connection
- Log into the array
- Validate connectivity

## **INSTALL SUPPORT** (ENGAGE PURE STORAGE SUPPORT FOR INSTALL)

### **Requirements:**

- Contact support to validate array health
- Verify remote assist connectivity (unless “dark” site)

# **PRE-UPGRADE**

During the Pre-Upgrade phase, we do the following things:

- Verify the new HW shipped is correct (NDU Kit, FC vs iSCSi, Number of host ports ...)
- Verify the array got approved by NDU\_SWAT
  - Check if the array is on the code level recommended by NDU\_SWAT
  - Ensure all the issues found by NDU\_SWAT are resolved or a plan/case is created to fix the issue prior to going onsite
- Confirm the return boxes are shipped and RMA labels are created

# UPGRADE

There are two primary hardware upgrades that are done in the field. The first is an upgrade from the older FlashArray-3xx/4xx line of arrays to the current generation //M or //X. The second is an intra-series upgrade from a current //M or //X to a higher end model. In general the upgrades are very similar but there are some differences.

During a FlashArray-3xx/4xx upgrade to //M or //X the IE will need to prepare the //M or //X before the actual hardware upgrade can occur. The IE will need to make sure that the appropriate version of code is installed and that the upgrade script is run on each controller in the //M or //X. Cable labels are sent with the upgrade kit and must be applied to the correct cables before starting the upgrade. The IE will also need to verify that support has run upgrade and health checks before starting the upgrade process on the FlashArray-4xx.

Once support has validated that the array is ready for upgrade the IE will need to verify that host IO to the array is balanced across both controllers. Once host IO is verified the IE can start the hardware upgrade by removing the first FlashArray-3xx/4xx controller followed by racking the //M or //X array. After racking the new array the cabling will be attached to the appropriate locations and the controller brought online. Once the new controller is up and stable the same process will occur for the remaining FlashArray-3xx/4xx controller.

During an intra-series upgrade additional Power Supply Units(PSU) and NVRAM modules may be sent if the array is being upgraded to one of the higher end array models. The process follows the same basic steps outlined for an upgrade from FlashArray-3xx/4xx to //M or //X when replacing controllers. An upgrade to //X may require an additional swing shelf and prepwork before the NDU actually takes place. These are covered in the upgrade guide linked below.

For capacity consolidation, the IE will need to follow an approved plan provided by support and the FlashArray Shelf Removal Guide. Based on the final configuration to be attained the plan may require multiple site visits by the IE to complete the work.

## HARDWARE UPGRADES (PERFORM HARDWARE UPGRADES)

### Understand/Apply

- Consolidate capacity
- Follow step by step the documented install guide
  - Install shelf/shelves, drives, arrays, rails
- Rack array in customer environment and attach cables
- Verify cabling
  - ETH, FC, iSCSI
- Realign write groups - Not needed by an IE during an upgrade but needed for cap consolidation

## **SW TASKS** (PERFORM SOFTWARE RELATED TASKS)

### **Understand/Apply**

- Upgrade array to target code provided by sales team
- Consolidate capacity
- Execute the required software changes on the FlashArray to configure the environment
- Verify serial console connection
- Log into the array
- Validate connectivity
- Convert replication type as appropriate
- Set any required tune-ables

## **UPGRADE SUPPORT** (ENGAGE PURE STORAGE SUPPORT FOR UPGRADES)

### **Remember**

- Contact support to validate array health
- Verify remote assist connectivity (unless “dark” site)

## **POST-INSTALL/UPGRADE**

After a hardware upgrade is complete Support will need to run post upgrade health checks. While support is running health checks the IE can start packing up the old equipment in the empty Pure Storage boxes that were shipped to the customer. The controllers, Infiniband cables, old shelf NVRAM modules, and SAS cables all need to be packaged up and sent back to Pure Storage. RMA labels will then need to be affixed to the boxes. Once complete the IE will let the appropriate groups know at Pure Storage who will then schedule to have the old array picked up.

Also, the IE will need reach out to the customer to confirm that the array and all hosts are healthy before leaving the site.

## **CONFIRMATION** (CONFIRM SUCCESSFUL INSTALL/UPGRADE AND CUSTOMER SATISFACTION)

### **Remember**

- Send out post-installation report to both customer and sales team with any comments
- Execute post-install checks according to installation document
  - hardware\_check, SAS\_view, install\_check, purehw list, puredrive list
- Ask customer to log onto array’s web GUI



- Ask customer to confirm receipt of alert emails
- Confirm customer satisfaction
- Verify hardware appears properly in GUI/CLI
- Pack parts in boxes and affix RMA labels

## **POST-INSTALL SUPPORT** (ENGAGE PURE STORAGE SUPPORT FOR UPGRADES)

### **Remember**

- Contact support to validate array health
- Verify remote assist connectivity (unless “dark” site)

## **WALKTHROUGH** (PERFORM A HIGH LEVEL PRODUCT AND GUI WALKTHROUGH WITH CUSTOMER TO FAMILIARIZE THEM WITH SOLUTION)

### **Remember**

- Walk customer through basic “getting started” tasks of administration
- Ensure the “Pure customer experience”
- Perform a demo to show the customer how to navigate the GUI and manage their storage
- Share with the customer any relevant documentation (Best Practice MPIO Settings, VMWare best practice, FlashArray User Guide, ...)

## **RESOURCES**

[FlashArray //M Product Page](#)

[FlashArray //X Product Page](#)

[Pure Storage Technical Blogs](#)

[Pure Storage Youtube Technical Channel](#)

[Pure Storage Support Site](#)

*Note: Pure Storage Support site requires account registration*



Pure Storage, Inc.  
Twitter: [@purestorage](#)  
[www.purestorage.com](#)

650 Castro Street, Suite #260  
Mountain View, CA 94041

T: 650-290-6088  
F: 650-625-9667

Sales: [sales@purestorage.com](#)  
Support: [support@purestorage.com](#)  
Media: [pr@purestorage.com](#)

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