IBM Pure Application Implementation Guide

How to guide on the usage of Pure Application

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Change History

Table 1: Document Change History

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<th>Document Revision &amp; Date</th>
<th>Editor</th>
<th>Summary of Change</th>
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<td>First Draft 1.0</td>
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Introduction to IBM Pure Application

IBM Pure Application (PureApp) System is an IBM cloud product offering that provides customers with the software and hardware in one package. PureApp is a single pane of glass that allows the customer to design, deploy and monitor their infrastructure. PureApp basically minimizes the amount of capacity planning needed and eliminates the need for separate acquisition of hardware and software. One of the biggest marketing claims about PureApp is that a customer can be up and running with mission critical infrastructure in 4 hours. This claim will be supported in the scenarios section of this document.

Purpose

This document is a supplement to all IBM Pure Application official documentation. The purpose of this document is to use scenarios to guide the reader on:

1. How to use Pure Application effectively.
2. What requirements to push back on.
3. How to set expectations.

Audience

This document is for customer and consultants who are tasked with implementing IBM Pure Application. This document will help guide the reader with high level decisions. It is not a cookbook on creating PureApp artifacts. User guides for Pure Application are listed in the reference section of this document.
Vocabulary words

Virtual Image - Is either a base OS image like Linux RedHat or an IBM Product image like WebSphere Application Server(WAS) v8.5 Hypervisor addition. Virtual images are building blocks for Virtual System Patterns(VSP) and Virtual Application Patterns(VAP).

Virtual System Pattern(VSP) - Is a set of Virtual images that are running software to create a specific topology of a given IBM software product. An example would be WAS in a cluster topology for high availability. VSP's allow the designer to control how many virtual images are used in the pattern.

Virtual Application Pattern(VAP) - Is a pattern that includes every Infrastructure piece needed to implement a specific solution. Very little configuration or customization is available or needed. An example is IBM Business Process Management(BPM) v8.5. BPM v8.5 on PureApp comes as a VAP so all a user needs to do is fill out a few fields and deploy it. In the case of the BPM v8.5 VAP, the designer has incorporated best practices into the pattern. The VAP itself hides these implementation details from the user. With VAP's the user will not know how many virtual images are used until deployment time.

IBM PureFlex System - The IBM PureFlex System combines compute, storage, networking and virtualization capabilities under a single, unified management console into an infrastructure system that is expert at sensing and anticipating resource needs for your enterprise. PureFlex product is a great candidate for hardware modernization and consolidation projects.

IBM PureApplication System(PureApp) - offers users IT lifecycle simplicity in a box, providing a standardized cloud application platform for your web and database applications. Pure Application is the product associated with rapid deployment of mission critical infrastructure. This paper will mainly be focused on Pure Application.

IBM PureData System - is optimized exclusively for delivering data services to today’s demanding applications with simplicity, speed & lower cost.

IBM delivered Assets - Virtual Images, Virtual System Patterns, Virtual Application Patterns ... etc.

Pure Application workload console - is the single pane of glass that Pure Application is administered from. The user can design, deploy and monitor infrastructure patterns. Some refer to it as the PureApp admin console.

Advanced Middleware Configuration(AMC) - for PureApplication System is application release automation software that you can use to automate product installation, configuration, and application deployment. AMC is a system management tool that comes with PureApp. The use of AMC by a customer will require a commitment to use it as part of their IT shop and technical staff will need training. AMC does have limitations which need to be evaluated by technical staff members. AMC is not cover in this document. For more details on AMC use this URL:
Usage Scenarios
This section will cover 3 possible scenarios. The scenarios will be arranged by length of implementation time. The happy path PureApp implementation will be first and then requirement and complexities will be added in. As implementation scenarios become more complex the time to delivery will increase. Some complexity cannot be avoided but in most cases once the customer is educated on PureApp they can make adjustments in their IT requirements to speed the delivery process up. The scenarios listed below will not cover every possible combination but they will point out the factories that will increase time to delivery.

The biggest question that needs to be answered before a PureApp implementation starts is WHY?

The answers should include one or more of the following:

1. Rapid deployment of mission critical infrastructure.
2. Entering or expanding the use of cloud technologies.
3. Hardware modernization and consolidation.

Scenario 1: Rapid deployment of mission critical infrastructure.
In this scenario the primary reason the customer bought PureApp was to reduce their Infrastructure delivery time. The 4 hour marketing claim is easily achievable when the customer uses the IBM delivered assets that come with PureApp. To support this statement I will demo a PureApp implementation of IBM Business Process Management (BPM) v8.5 Process Center. PureApp delivers virtual application patterns for BPM v8.5 Infrastructure components.

Assumption: the customer has purchase BPM v8.5.

1. Step 1: logon to your Pure

2. Click Catalog -> Virtual Application
3. Select IBM BPM Pattern Type 8.5
4. Select Process Center

5. Click on the pencil icon to edit.

6. Click on each component and fill in the panel on the right hand side.

7. You can add other components from the palette on the left hand side if you need them but the virtual application patterns are pretty much self contained.
8. Click Save As and give it a name.
9. Saving moves you to Patterns -> Virtual Application Patterns. Environment name given is: DEPC001.

10. Click Deploy and fill out a small panel.
11. Click OK.
12. And within 1 hour and 10 minutes it will be deployed and running.
13. Once the Process Center is up and you have the URL for the Process Center; Use the same procedure to create a Process Server.
14. The only thing that was not implemented here was security. Since IBM BPM v8.5 runs on WAS v8.5 and WebSphere security setup is well documented you might have to add another hour for setting up security. The time to setup WAS security depends on the skill level of the WAS admin.

In summary, just by using the IBM delivered assets the customer can achieve a 4 hour or less deployment of a mission critical Infrastructure.

Scenario 2: Entering or expanding the use of cloud technologies.
In this scenario PureApp is being added to a mature IT shop which may or may not have cloud technology yet. This scenario can range from simple to complex. The level of effort and time to deliver will depend on the following factors: **Customer's willingness and flexibility to change their current processes, procedures and standards.**

**Scenario 2.1: Happy Path.**
In this scenario the customer is not only adding or expanding their cloud presents, they are also migrating their current processes, procedures and standards to a line with the cloud paradigm shift.
Why is this Happy Path? Because this implementation path will end up using the IBM deliver assets as the new standard. As stated earlier, using the IBM delivered assets with IBM PureApp will allow the customer to realize the ROI of rapid deployment.

**Scenario 2.2: None Happy Path.**

In this scenario the customer has a mature IT shop and has invested heavily in processes, procedures and standards that they do not want to abandon. In the extreme case I was involved in, the customer wanted all their naming conventions and standards implemented in every virtual image. Well that means they are not going to be able to use any of the IBM delivered assets, so if no compromise can be reached this implementation will be a re-install, re-implementation and a re-testing of 70% of PureApp. Every product will have to be installed from scratch and tested. This implementation will take as long as a traditional Infrastructure project that deploys new hardware and new software. It is imperative that the customer expectation be set correctly for the duration of this project.

To reduce this extreme case, an evaluation of all processes, procedures and standards must be done. Some organizations are bound by government regulation that will limit their flexibility in specific areas. But it may be possible to negotiate other aspects of the processes, procedures and standards to limit the re-work and use PureApp in the context in which it was designed.

Outside of government regulations, the only must have is the customer’s security. PureApp will more than likely simplify processes and procedures for any customer. Standards are mostly about naming and a name is name! so standards need to be scrutinized so they do not become a roadblock to using IBM delivered assets.

Internal IT staff and consultants need to unite to drive the PureApp implementation to utilize the IBM delivered assets. The IBM deliver assets will provide the ROI that the stakeholders want and expect.

In summary, there will always be items that are not flexible and things that need to be implemented from scratch (like non-IBM products). But the starting from scratch work needs to be kept to a minimum or PureApp will not be able to provide the ROI potential that it was designed to deliver.

**Scenario 3: Hardware modernization and consolidation.**

In every IT shop it is inevitable that hardware will be replaced by modern fasted machines. In this scenario there are a few different paths that can be taken. The IBM delivered assets are based on IBM products like WebSphere branded Products, DB2 and Data Power. We will focus on which path to take and when to take it. In this scenario there are a series of IBM developerWorks Articles that are listed in the reference section. These articles can provide more detail to the reader when they are ready for detail.
The application being moved is an ear file. The PureApp Admin uses the IBM delivered assets to setup a Target WAS environment. Then deploys the target environment and installs the ear file(App). I know that to simple.

Scenario 3.2: Happy Path - Part 2.
The application being moved is several ear files and a set of jyhton scripts to configure them. The PureApp Admin uses the IBM delivered assets to setup a Target WAS environment. Then deploys the target environment and installs the Apps. The Admin uses putty and sftp to connect to the deployment manager. The jython scripts are transfer to the deployment manager. The jython scripts are run just like on any other WAS environment. Oh! Yes! once a Virtual System Pattern is deployed its like working with any other system.

Scenario 3.3: Automated Happy Path - Part 3.
The application being moved is several ear files and a set of jyhton scripts to configure them. The PureApp Admin uses the IBM delivered assets to setup a Target WAS environment. Part of the setup of the Target system would be the use of scripting packages to automatically deploy the Application after the environment is up and running. Time would need to be add to the project for testing and debug of scripts. How much time would depend on the skill level of the script author.

Scenario 3.4: Extend and Capture Path.
In this case the application being moved needs additional artifacts like jar files. The PureApp Admin can pick a virtual image and extend it. Once virtual image is extended, the admin can use putty and sftp to customize the IBM product (like WAS) and then use the capture feature to create a new virtual image that includes the customers jar files. Now that new virtual image can be used for created VSP and VAP. Time would need to be add to the project for testing of additional artifacts. Since these are customer artifacts, test script maybe available. The extend and capture user guide can be found at this URL: http://publib.boulder.ibm.com/infocenter/ieduasst/stg1r0/topic/com.ibm.iea.ipas/ipas/1.0/Image_creation_and_customization/IPASv1_VirtualImagesExtendCapture.pdf

Scenario 3.5: IBM Image Construction and Composition Tool (ICCT) - Part 1.
In this case the application being moved needs a third party software product installed. ICCT can be used to create an installation and configuration bundle for third party product. Once the bundle is complete a virtual image can be extended to install and configure the Bundle. The bundling of software and adding it to a virtual images is an ICCT feature that cannot be achieved with Extend and Capture, well at least not easily. The bundling of software take a product specialist to develop the install, configure and reset scripts. Once a decision is make to use ICCT the project has entered an Infrastructure development phase so the plan will have to account for the design, development and testing of the software bundle and virtual image. The need to acquire specialized skill for the third party software may need to be added also. The ICCT Red Book can be found at this URL: http://www.redbooks.ibm.com/redbooks/pdfs/sg248042.pdf
Scenario 3.6: IBM Image Construction and Composition Tool (ICCT) - Part 2.

In this case the application being moved needs a Non-IBM product like Oracle. ICCT can be used to create an installation and configuration bundle for Oracle. Once the bundle is complete, the virtual image will need to be created from a base OS like Linux Red Hat. The OS image will need to meet the specification and requirements of Oracle. Basically this scenario depicts starting from scratch. This scenario is no different than doing an infrastructure project from scratch on any type of hardware. Once a decision is made to create a virtual image from scratch the plan will have to account for the design, development and testing of the software bundle, the virtual image, virtual pattern integration and specialized skills for Oracle and Red Hat that will be needed. The ICCT Red Book can be found at this URL:  http://www.redbooks.ibm.com/redbooks/pdfs/sg248042.pdf

In summary, as you can see as we progressed through these 6 flavors of scenario 3 the further we get from the IBM delivered assets the more PureApp is just like the infrastructure of IT passed. The whole point to adapting PureApp is to depart from our IT passed.

Again there will always be current IT assets that may not easily transition into PureApp but its best to do our do diligent to see if there is any possible way to use those IBM delivered assets as a first choice.
Executive Summary:
The IBM Pure Application Product was designed to minimize delivery time of mission critical Infrastructure. As the scenarios show the closer the implementation plan is to using the IBM delivered assets the greater the potential for realizing a 4 hour deployment time. But it is very likely that the IBM delivered assets cannot be used without some modifications. Listed below is a table that lists out the assorted level of effort that should be expected for a given path. The intent of this table is to give a ball park estimate of time and resource required to achieve specific tasks in the project plan. Obviously as more details are provided these estimates may vary. In this table, it is assumed that the PureApp admin is not also a product expert.

<table>
<thead>
<tr>
<th>Implementation Path</th>
<th>Time Estimate</th>
<th>Extra Resources required</th>
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<tr>
<td>Using IBM Virtual Application Patterns</td>
<td>4-8 Hours</td>
<td>A technical Product expert to assist the PureApp admin setup the customers Security in PureApp. Example: WAS admin, DB2 admin</td>
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<tr>
<td>Using IBM Virtual System Patterns - as delivered</td>
<td>4-8 hours</td>
<td>A technical Product expert to assist the PureApp admin setup the customers Security in PureApp. Example: WAS admin, DB2 admin</td>
</tr>
<tr>
<td>Using Virtual System Patterns - Custom built</td>
<td>2-3 days</td>
<td>A technical Architect to assist the PureApp Admin in the build, deploy and test the pattern. A technical Product expert to assist the PureApp admin setup the customers Security in PureApp.</td>
</tr>
<tr>
<td>Using IBM Virtual Image - minor extensions</td>
<td>3-4 weeks</td>
<td>A PureApp Admin to extend and capture the new image. A PureApp Admin to build, deploy and test a new pattern. A technical Product expert to assist the PureApp admin setup the customers Security in PureApp. A technical expert who can document and assist the installation and testing of the minor extension.</td>
</tr>
<tr>
<td>Using IBM Virtual Image - major extensions</td>
<td>2-6 months</td>
<td>An OS technical expert to assist the PureApp admin in build or extend the base OS image so it meets the Third Party software requirements and specifications. A third party product technical expert to assist the PureApp admin install and setup the product. A technical Product expert to assist the PureApp admin setup the customers Security in PureApp. <strong>NOTE:</strong> This is a start from scratch estimate.</td>
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</tbody>
</table>
References:
Preparing for IBM PureApplication System, Part 1: Onboarding applications overview

developerWorksTechnical topicsWebSphereTechnical libraryPreparing for IBM PureApplication
System, Part 2: Is your application ready to become virtual?

Preparing for IBM PureApplication System, Part 3: Choosing a database option

developerWorksTechnical topicsWebSphereTechnical libraryPreparing for IBM PureApplication
System, Part 4: Onboarding applications to the cloud using the Advanced Middleware Configuration
tool V1.1

Preparing for IBM PureApplication System, Part 5: Developing virtual application patterns for IBM
Workload Deployer with Rational Application Developer


Creating Smart Virtual Appliances with IBM Image Construction and Composition Tool:

Using IBM Image Construction and Composition Tool:

IBM Education Assistant for PureApp:
overpage.html

Automating Deployment in the cloud:
http://www.youtube.com/watch?v=T0VnVaONaw&list=PLAS508B797DAECDDBF&index=14

Pure Application workload console(admin console):
http://www.youtube.com/watch?v=P4wNBW_LQo0&list=PLAS508B797DAECDDBF