IBM

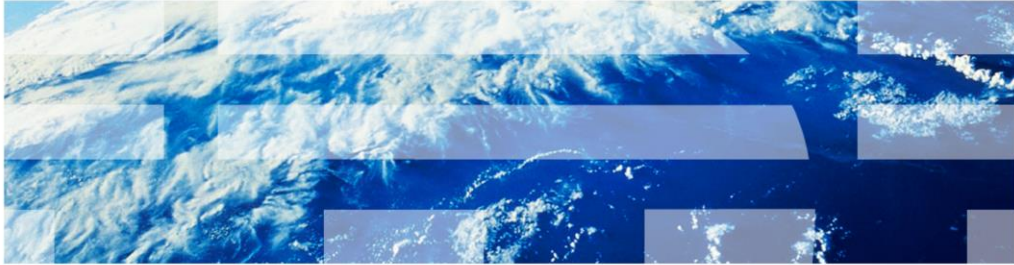# IBM PureApplication System

New features in V1.1

This presentation will introduce you to the key new features of IBM PureApplication™ System 1.1.

Table of contents

- Windows support
- Simplified disaster recovery
- File system encryption
- Operating system update management
- Improved license management features
- Other enhancements

New features in V1.1

This presentation will discuss several feature areas at a high level, including support for Windows-based workloads, disaster recovery capabilities, integrated file system encryption, operating system update management, and license management for non-IBM products.

Windows support

New features in V1.1

This section will cover support for Windows-based workloads in IBM PureApplication System.

Windows support

- Deploy patterns with one or more components on: Microsoft Windows 2008 Server R2 FP1 (64bit)
- Microsoft Windows 2012 (64bit)
  – Virtual system and virtual application patterns
- Bring-your-own-license design allows you to use licenses you already own
- Patterns made available for select Microsoft products
  – Microsoft SQL Server 2008 R2 SP2
  – Microsoft SharePoint V2010 SP1
- Use extend and capture or Image Construction and Composition Tool to create your own Windows-based patterns

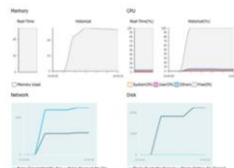4   New features in V1.1   © 2013 IBM Corporation

PureApplication System V1.1 introduces support for workload patterns with components running on Microsoft Windows 2008 or 2012 on the W1500 model. This includes support for both virtual application patterns and virtual system patterns. IBM provides virtual system patterns for Microsoft SQL Server 2008 and Microsoft SharePoint 2010. You can also use the Image Construction and Composition Tool or "extend and capture" to build your own custom Windows-based patterns. You provide your own Windows binaries and licenses, so you can use your organization's existing investment in Windows licenses.

Deploying Windows-based patterns is similar to deploying Linux- or AIX®-based patterns. You can attach script packages to your Windows-based images to automate deploy-time or post-deploy configuration tasks. Windows-based deployments are integrated with the system's shared services, such as the proxy service and the monitoring service. Operating system updates for Windows-based virtual machines can be provided by the IBM Endpoint Manager shared service

Section

Simplified disaster recovery

This section will introduce the disaster recovery capabilities of PureApplication System V1.1.

Disaster recovery scenarios and capabilities

- Address key business continuity scenarios
  - Recovery from unplanned failures
    - Primary site failure / primary IPAS failure
  - Planned failover
    - Requirements for customer shops to demonstrate that they can failover and run for a period of time on backup

- Disaster recovery provides capability to failover from one rack to another.
  - Built-in administration of disaster recovery process
  - Ensure all customer data and runtimes are replicated to backup system

- Solution coverage for all application workloads
  - Applies to all applications and patterns
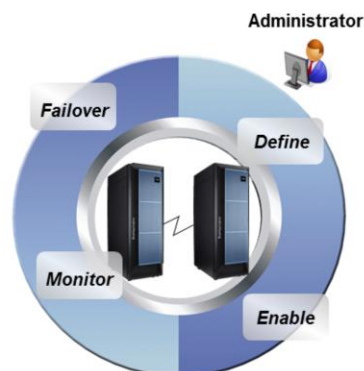
- Planned failover - Zero data loss
- Unplanned failover - Near zero data loss
- Time to recover – Measured in several hours to restart workloads on backup and update external network routers
- Up to 8000 kilometers between primary and backup racks

7   New features in V1.1   © 2013 IBM Corporation

PureApplication System V1.1 includes new disaster recovery capabilities that allow recovery of workloads from a primary rack to an inactive standby rack in the case of planned or unplanned failures. System-wide asynchronous data replication enables recovery of all application workloads to the standby rack, which can be located up to 8000 kilometers from the primary rack. Recovery time is typically several hours, based on the amount of time required to restart the workloads on the backup system and update the external network to rout traffic accordingly. In the case of planned failover to the standby rack, no data is lost, and there is near zero data loss in the unplanned failover case. The system console provides an easy-to-use interface for establishing trust between two racks, enabling replication, and for initiating planned failover.

Data-at-rest encryption

This section will cover the support for data-at-rest encryption in PureApplication System V1.1.
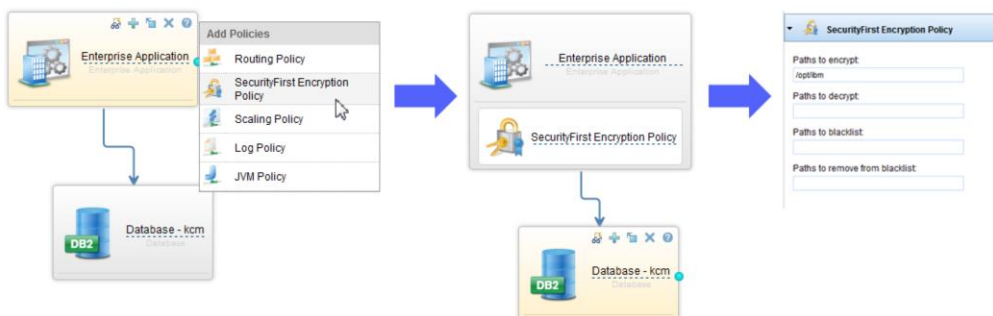
Integrated file system encryption

- Ensure security of data at rest with integrated file system encryption
  - Specify paths to be encrypted using the pattern editor interface

- Support for all virtual application patterns virtual system patterns
  - Virtual application support through encryption policy
  - Virtual system support through script package

- Requires separate purchase
  - IBM Encryption Pattern for Guardium® Encryption Expert
    - Policy-based encryption service
    - Managed using Guardium Data Security Manager
    - http://www-01.ibm.com/software/data/guardium/encryption-expert/
  - IBM Encryption Pattern for SecurityFirst SPx BitFiler
    - Standalone encryption service
    - http://www.securityfirstcorp.com/spx_bitfiler.html

PureApplication System V1.1 includes support for protecting your data-at-rest by using integrated file system encryption products that can be configured using the pattern editors in the workload console. These products are purchased separately, and provide data-at-rest encryption for both your virtual application patterns and virtual system patterns. The IBM Encryption Pattern for Guardium Encryption Expert provides support for integrating your patterns with a Guardium Data Security Manager, enabling centralized, policy-based management of data encryption services. The IBM Encryption Pattern for SecurityFirst SPx BitFiler provides a stand-alone encryption service for your patterns, and exposes configuration parameters for setting encryption rules for each virtual machine.

Encryption support for virtual application patterns

- Encryption support is provided by encryption policies
  - SecurityFirst Encryption policy
  - Guardium Encryption policy
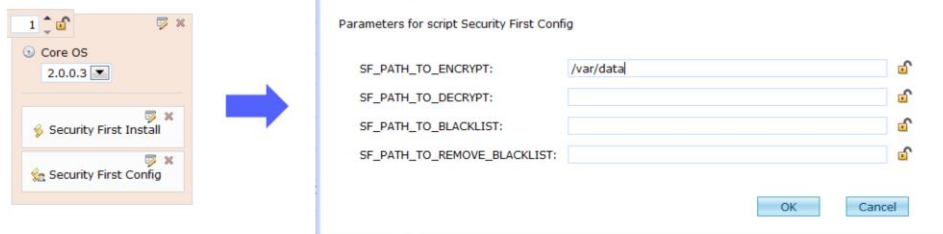- Add policies at component or application level

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To enable file system encryption for your virtual application patterns, you must first add the pattern type for the product you have purchased to your system. You can then add a security policy to your pattern at the component level or the application level. The encryption policy provides fields for specifying which directories should be encrypted when the pattern is deployed.

In addition to the plug-ins for virtual application patterns, each encryption pattern includes script packages for use with your virtual system patterns. You can attach these script packages to the parts in your virtual system patterns to install and configure encryption support for that part. Configuration options for encryption are specified as script package parameters in the pattern editor.
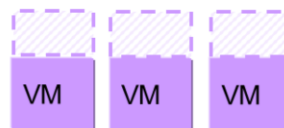
Virtual application enhancements

New features in V1.1

This section will cover enhancements to virtual applications in PureApplication System V1.1.

Vertical scaling

VM   VM   VM

Adding resource to an existing VM takes **seconds**

Horizontal scaling

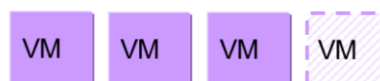VM   VM   VM   VM

Adding a VM takes **minutes**

- PureApplication System offers options for scaling patterns to address demand spikes:
  - Vertical: increase processor or memory resource allocated to existing virtual machines
  - Horizontal: add additional virtual machines, start additional nodes/server instances, tie into existing environment
  - Combination: use vertical scaling first, then use horizontal scaling
- User-defined policies govern scaling decisions
  - Types of policies available differ by pattern

13   New features in V1.1   © 2013 IBM Corporation

PureApplication System supports automated, policy-based scaling for virtual applications. In version 1.0, this capability was implemented through horizontal scaling, adding additional virtual machine instances to meet the performance goals defined by the scaling policy. Version 1.1 now supports both horizontal and vertical scaling options for your virtual application patterns. Vertical scaling provides options for adding processor or memory resources to existing virtual machine instances, based on criteria defined by the scaling policy. Vertical scaling can improve the performance of your application more quickly than horizontal scaling, since adding resources to an existing virtual machine takes seconds, whereas launching a new virtual machine takes several minutes. PureApplication System scaling policies let you combine vertical and horizontal scaling, so that you can first increase the resources available to existing virtual machines, and add additional virtual machines if the goals defined by your policy are still not being met.

Virtual application pattern type updates

- Perform pattern type upgrades without application downtime
  - For uninterrupted service, the deployment must have at least two of each role
    - Otherwise, batch update is performed and outage occurs, similar to V1.0
  - If a role is not involved in upgrade, those VMs are skipped

- Application remains available throughout rolling update

In PureApplication System V1.0, updating the pattern type for a deployed virtual application pattern required application downtime, since all virtual machines in the topology get updated at the same time, and every virtual machine would be restarted, even if it did not contain any components affected by the pattern type update. Version 1.1 allows deployments to be updated in two phases, so that half of the deployment is taken offline and updated while the other half of the deployment continues to serve application traffic. This capability requires there to be at least two of each component type in the deployed application. Additionally, a VM that does not contain any plug-ins affected by the pattern type update is skipped, and does not require a restart.

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License management

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This section will discuss enhancements to the license management features of PureApplication System V1.1.

Non-catalog product license support

- System console > System > Product licenses

PureApplication System now offers license management support for non-IBM software products. There are now two sections in the product licenses view, one labeled "IBM Software Catalog product licenses," and one labeled "Non-catalog product licenses." The new "non-catalog product licenses" section provides an interface where you can define non-IBM products so that their license usage can be monitored in the same way that products in the IBM software catalog can be monitored.

Licensing metric options

- More licensing metrics
  - Processor value unit (PVU)
  - Server (Virtual instance / virtual machine)
  - Compute node (physical server) [new in V1.1]
  - Processor core [new in V1.1]

Describe the license you want to add

Product	My New Product
Product ID	A Free-format ID Field
License type	Per Core

PVU
Server
Compute Node
Per Core

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To add a new product, use the system console interface to enter the product name and a product ID. The "product ID" field is a free format text field where you define a unique ID to identify the non-catalog software product. You will add this same product ID to any virtual images that contain the non-catalog software product you are tracking. In addition to the product ID, you also specify the licensing metric that will be used to track the product's license usage. In addition to the PVU and per-server metrics that were available in version 1.0, version 1.1 can also track license usage on a per-compute-node or per-core basis.

OS update management

New features in V1.1

This section covers operating system update management capabilities in PureApplication System V1.1.

OS update management (1 of 2)

IBM provides a certificate to grant system-wide access to updates from Red Hat

Each cloud group has a YUM repository, automatically populated with the latest content

OS administrator invokes YUM in individual virtual machines, and has access to updates and additional libraries

OS Mgmt

YUM

provides certificate to Red Hat, gets list of available updates and libraries

```
bash-4.1# yum list
Loaded plugins: product-id, rhui-lb
Installed Packages
BESAgent.x86_64               9.0.586.0-rhe5          installed
ConsoleKit.x86_64             0.4.1-3.el6             @anaconda-RedHa
ConsoleKit-libs.x86_64        0.4.1-3.el6             @anaconda-RedHa
DeviceKit-power.x86_64        014-3.el6               @ftp3-updates
GConf2.x86_64                 2.28.0-6.el6            @anaconda-RedHa
LINUX4AE.noarch               2.1-1.13.hl             installed
MAKEDEV.x86_64                3.24-6.el6              @anaconda-RedHa
ModemManager.x86_64           0.4.0-3.git20100628.el6 @anaconda-RedHa
NetworkManager.x86_64         1:0.8.1-34.el6_3        @ftp3-updates
NetworkManager-glib.x86_64    1:0.8.1-34.el6_3        @ftp3-updates
```

19   New features in V1.1   © 2013 IBM Corporation

Version 1.1 provides new shared services that simplify the process of acquiring and installing operating system updates from deployed virtual machines. For Linux-based deployments, the Red Hat OS Update shared service provides a local Yellowdog Updater, Modified (YUM) repository for each cloud group. The shared service uses an IBM-provided certificate to download the latest updates from Red Hat, and automatically populates the local YUM repositories. Deployed virtual machines are automatically configured to be aware of the local YUM repositories, so an OS administrator can use the YUM command on deployed virtual machines to install the latest updates.

OS update management (2 of 2)

Connect to an existing external IBM Endpoint Manager (IEM) Server. IEM knows how to connect to existing IBM AIX and Microsoft Windows update repositories

Each cloud group gets its own IBM Endpoint Manager relay, and each VM is deployed with an IBM Endpoint Manager client

OS administrator drives updates and installation of additional libraries through IEM

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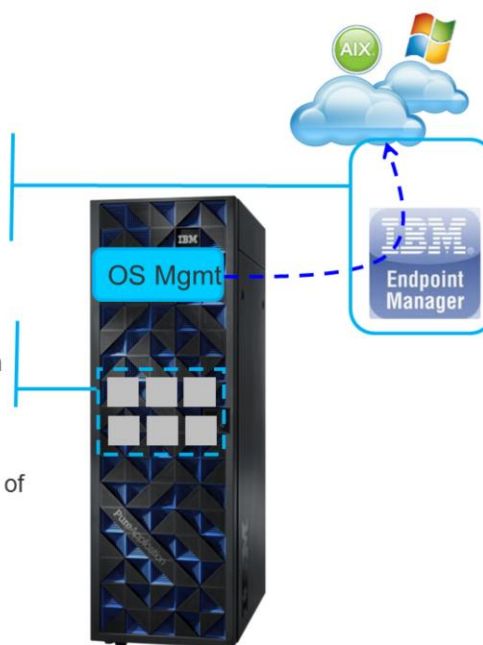
PureApplication System uses IBM Endpoint Manager to provide operating system updates for AIX- and Windows-based workloads. The IBM Endpoint Manager shared service implements an IBM Endpoint Manager relay, which connects to your organization's IBM Endpoint Manager server. Deployed virtual machines are automatically configured to locate the local relay within a cloud group using a locally installed IBM Endpoint Manager client, so an operating system administrator can install updates on the virtual machines using the local client.

Other enhancements

New features in V1.1

This section will cover several other enhancements in PureApplication System V1.1.

Backup and restore enhancements

- Backup support for virtual images

- Performance oriented, improved throughput
    – Run tasks in parallel
    – Compress databases before encryption

- Send email when backup process is complete
    – Include backup job's history and statistics

- Certificate handling improvements
    – Warn if certificate is not located on the backup host (you will need to re-import)
    – Warn about expired certificates
    – Increase certificate expiration date of generated certificates from 30 to 366 days

- Backup progress indicators
    – Event notifications when backup process starts or completes
    – Details in job's "message" (visible in popup on job queue page)
    – Detailed state information for the sub-tasks, update frequently

PureApplication System V1.1 includes several improvements to the backup and restore capabilities introduced in V1.0. In addition to backing up the system's management data, you can now back up the virtual images stored in the catalog to an external location. V1.1 has also introduced several performance improvements to the backup process, and the "blocking" time during which management configuration changes cannot be made has been greatly reduced. Changes to the user interface include warnings for certificates that cannot be located and expired certificates, and there are also more detailed backup progress indicators.

Version 1.1 of the plug-in development kit includes several enhancements designed to simplify the plug-in development process. New editors provide form-based editing and validation for JavaScript Object Notation files. You can now connect directly from the PDK to a running virtual machine, to remotely update and run files, rather than having to use a separate client to transfer files to a virtual machine and run them manually.

For workloads involving a database and an application server, it is desirable to have a more complete understanding of the application's performance particularly as transactions flow from the application server to the database server. In previous releases, the performance behavior is understood on the application server side and on the database server side, using the integrated monitoring tools. However, the space in between the application server and database server is not covered by any built-in monitoring tool.

The Database Performance Monitor (DPM) has the capability, called Extended Insight (EI), to monitor the activity between the application server and the database server and report on various statistics, metrics, and trends to assist in the isolation and diagnosis of performance or availability issues.

The Extended Insight client installs automatically for your virtual application patterns that include the wasdb2 plug-in. So for example, the pattern 'IBM Web Application Pattern' automatically includes the client.

For patterns that do not get the client automatically, you can install and configure the client manually. The information center shows you the steps to do this.

Extended Insight requires the Database Performance Monitor (DPM) shared service.

License agreements for script packages

- Multi-lingual license agreements are specified in script package zip
- License acceptance is tracked on the script package
- When a pattern is imported, there is a link from the pattern page to any script package licenses
- A pattern can only be deployed or cloned if all the licenses in the script packages in the pattern are accepted

New features in V1.1   © 2013 IBM Corporation

You can setup licenses for script packages and for virtual system patterns containing those script packages. The user interface provides license agreement pages for script packages that look similar to the license agreement pages for virtual images in the catalog. After you import a script package or virtual system pattern containing a license agreement, you must accept the license before using the imported item.

If you do not accept all license agreements in a script package, you cannot clone or deploy patterns that contain it.

Summary

New features in V1.1

This section will summarize the presentation.

PureASv11_New_Features_Overview.ppt

Summary

- Key enhancements in V1.1
  - Support for Windows-based workloads
  - Simplified disaster recovery
  - Data-at-rest encryption
  - Operating system update management
  - License management for non-IBM products

- Information Center links
  - W1500
    http://pic.dhe.ibm.com/infocenter/psappsys/v1r1m0/topic/com.ibm.puresystems.appsys.1500.doc/iwd/gsr_changes.html

  - W1700
    http://pic.dhe.ibm.com/infocenter/psappsys/v1r1m0/topic/com.ibm.puresystems.appsys.1700.doc/iwd/gsr_changes.html

27   New features in V1.1   © 2013 IBM Corporation

PureApplication System V1.1 includes several important new and enhanced features. The W1500 model now supports Microsoft Windows workloads in addition to Linux-based workloads. New disaster recovery capabilities make it easy to configure a standby system to take over in case of a failure of your primary system. Optional encryption patterns provide data-at-rest encryption support for your virtual application and virtual system patterns. New shared services make it easier to manage operating system updates for your deployed virtual machines, and the system's license management capabilities have been extended to support non-IBM products. For more information on new features in this release, see the "What's new" page in the Information Center.

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