Whitepaper

BlackBerry Workspaces Appliance-X

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Overview

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Workspaces is a document-centric security platform that allows enterprise users to easily and effectively access, share and control all their important documents across the extended enterprise on any tablet, smartphone, or PC – even those beyond IT's control.

The Workspaces next-generation virtual appliance is typically installed on-premise by customers, or deployed in a cloud or managed hosting environment by managed service providers.

Feature	Description
Control	Restricts who can view, print, edit, or forward documents.
Tracking	Provides visibility into who views, forwards, edits, or prints organizational documents, where and when they use the documents, and maintains a full audit trail for compliance purposes.
Remote document wipe	Workspaces administrators can remove access to documents at any time, even after they have been downloaded.
Device optimized access	Render documents in high fidelity, and with platform-neutral controls that allow access of documents on PCs, mobile devices, or using a web browser.
Workspace	You can create a site, such as a virtual data room, to allow for document collaboration.
Quick Send	Securely share documents using Microsoft Outlook, or a web-based GUI.
File Sync	Provides real time updates of all documents accessed through the various Workspaces end user interfaces.

Design requirements

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Based on extensive experience in deployment of virtual appliances in the field, Workspaces developed the next-generation appliance to meet several design requirements.

Table 1: Virtual appliance design requirements

Design Requirement	Description
Simple deployment and upgrade	You can deploy the Workspaces virtual appliance in a variety of virtual environments within a matter of hours.
High-level security	The virtual appliance meets the highest security and compliance criteria, and provides rich functionality to protect documents stored and shared using the Workspaces system.
Scalability	You can deploy the Workspaces server on varying hardware resources and easily scale out.
Built-in high availability	You can configure the Workspaces virtual appliance with built-in high availability, running multiple front-end web servers and redundant software modules, thereby ensuring there are no single points of failure. If you run multiple front-end web server, an external load balancer is required.
Inegrate with enterprise systems	The Workspaces virtual appliance integrates with existing document repositories, such as SharePoint, Windows File Shares and cloud storage services. It also integrates with other key enterprise IT and security systems, such as Active Directory and identity management providers, DLP systems, log management systems, hardware security modules, and more. Workspaces supports OAuth 2.0 and SAML protocols.
Support for multiple hypervisors and stacks	You can deploy the Workspaces virtual appliance in a way that is agnostic to the underlying hypervisor, whether it is based on VMware, Hyper-V or KVM.
Single and multiple-tenant options	Customers, MSPs and OEMs can use the Workspaces next generation virtual appliance to provide secure file sharing and sync services to multiple organizational units or to multiple customers.

Architecture

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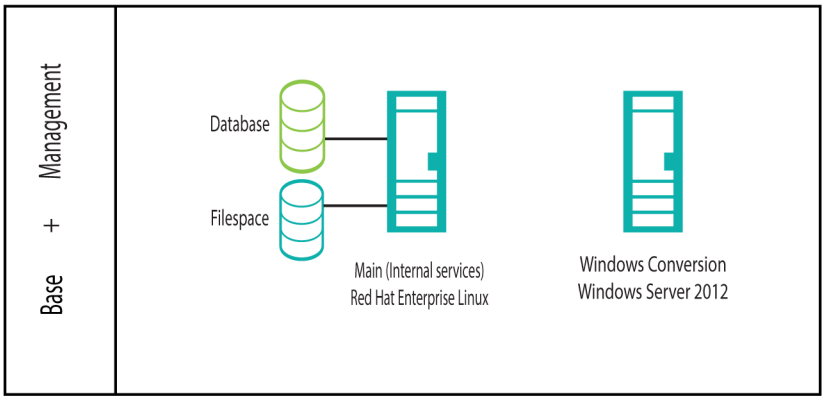
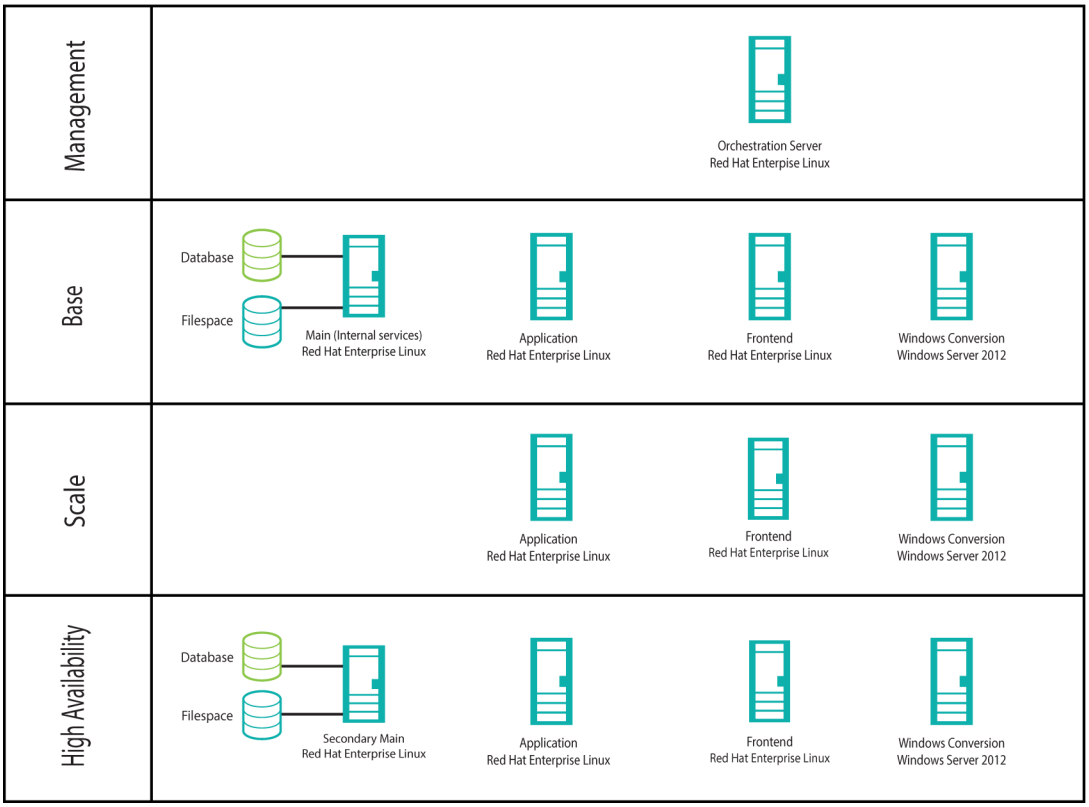
The Workspaces next-generation virtual appliance is a composite system consisting of multiple virtual machines. These virtual machines are responsible for the system's front-end web and management interfaces, load balancing, document converters, and other internal components.

Appliance-X (Basic)



Appliance-X (Advanced)



The Workspaces virtual appliance virtual machines run hardened Redhat Enterprise Linux and one or more instances of Windows Server.

File storage for the virtual appliance installation is a NAS, SAN, NFS, or an externally deployed Object-Storage. This component stores the encrypted customer files and the permissions database data.

The virtual appliance optionally supports a set of connectors to enterprise repositories, such as SharePoint, Windows File Shares, and various cloud storage services. Additionally, RESTful APIs provide connectivity to virtually any other enterprise systems.

You deploy and manage the next-generation virtual appliance using an orchestration server, which is based on SaltStack. SaltStack is a modern configuration management and remote execution platform that allows quick and easy deployment of a standard configuration. Alternatively, you can customieze the SaltStack orchestration component to run on different hypervisors, granularly deploying a variable number of modules on a variable number of virtual machines, as required by scalability and security policy considerations.

Security

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The Workspaces virtual appliance is a multi-tier application with strict separation between the web application serving the users, the database that contains the system meta-data, and a secure file system that contains the encrypted documents.

Workspaces web applications employ Role Based Access Control security methodology. The software's security layer restricts users according to security permissions, with no ability to move across unauthorized boundaries. Using compartmentalized software architecture, The Workspaces server components use compartmentalized software architecture to protect against outside intrusion.

Encryption

Workspaces uses the industry-standard Advanced Encryption Standard (AES), used by businesses and governments to protect sensitive information. All user data transmissions over the Internet to and from the Workspaces servers are sent using HTTPS, and are encrypted using SSL that employs strong keys (128-256 bit, depending on the browser capabilities. 256-bit minimum can be set).

All key data fields that contain data from user input, registration, content, and policies are encrypted. The storing of the documents and meta-data in encrypted form ensures that even if intruders obtain the actual physical disks on which they reside, they will not be able to read or modify them.

Each document is stored encrypted using its own unique cryptographic key, and thereby gaining access to one key does not invalidate the security of the rest of the documents in the system. The keys are stored in secure keystore. You can connect an additional hardware security module (HSM) to the Workspaces virtual appliance, storing the system’s keys externally, with the highest level of security.

Secure document boundaries

The Workspaces web application is further separated into components that handle meta-data and components that handle users' documents. These components each reside in their own security context with a strict interface and communicate betwee themselves over SSL utilizing APIs. This architecture ensures the protection and separation of users' documents, even in the face of maliciously crafted documents.

Encrypted documents are stored in a manner that prevents association between the document itself and meta-data information such as the document’s owner, recipients, or the original file name.

Identity management integration

In addition to its built-in authentication mechanisms, Workspaces intefaces with Active Directory or any SAML or OAuth compliant identity provider to provide SSO, identity federation, and multi-factor authentication.

DLP integration

You can integrate Workspaces with DLP systems using the ICAP protocol, or you can integrate into the DLP discovery and classification to provide actionable protection to files classified as confidential by the DLP system.

Logging

You can configure the virtual appliance to report events captured by varios SIEM solutions.

Legal notice

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