interopLab

Bloombase InteropLab – Use Cases and Certification: Bloombase StoreSafe and VMware Cloud on Amazon Web Services (VMC on AWS)

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1. Document Revision History

Revision	Date	Revised By	Comments
0.9	2018-05-08	Michael Brew, Bloombase	Initial Draft for Discussion
0.91	2018-05-16	Michael Brew, Bloombase	Diagrams revised

2. Introduction

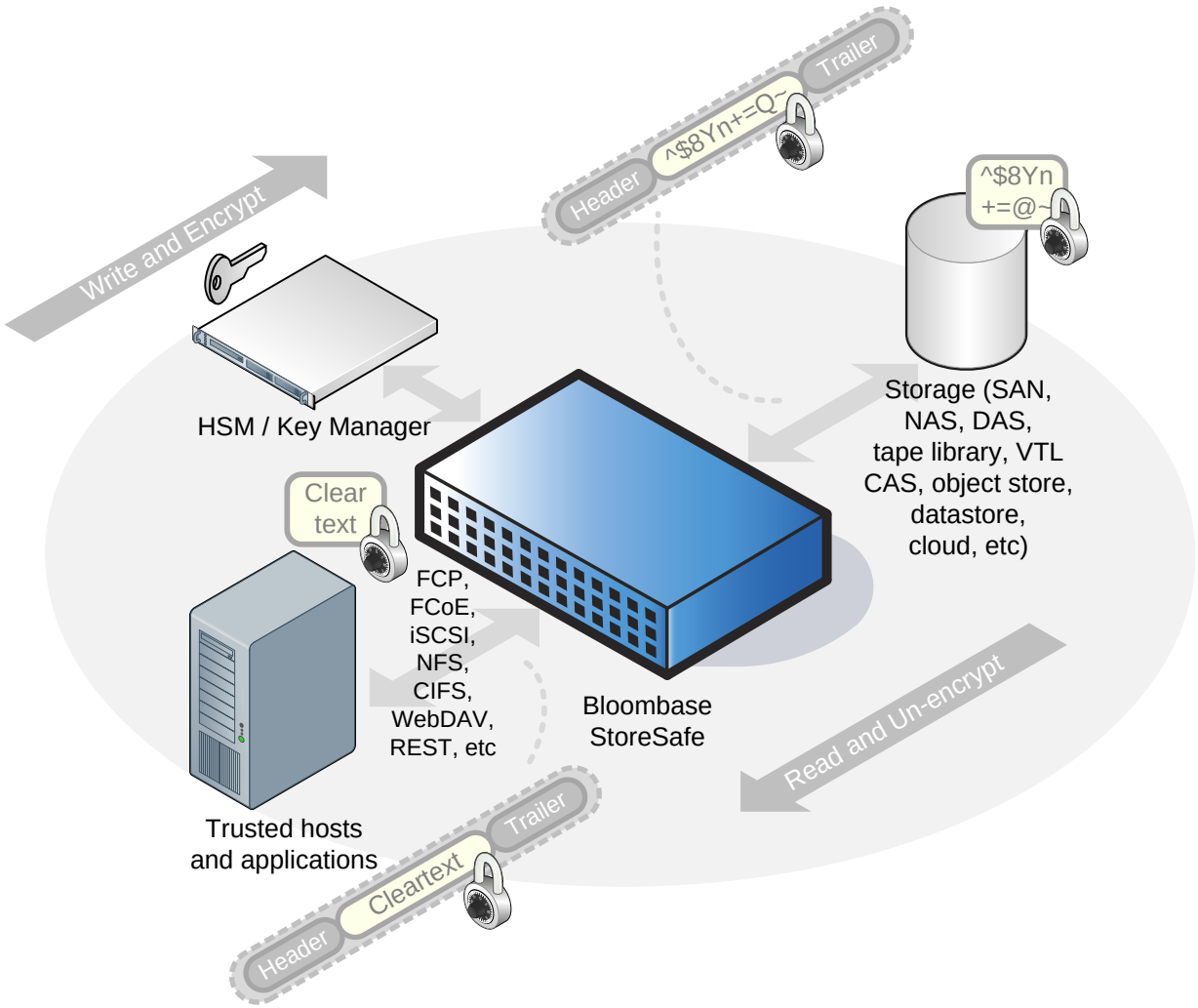
This document outlines the use case scenarios of implementing Bloombase Next-Generation Data-at-Rest Encryption solution with VMware Cloud on Amazon Web Services (VMC on AWS).

Traditional IT security measures regard outsiders as origins of cyber-attacks. Firewalls, Intrusion Detection Systems (IDS), Intrusion Prevention Systems (IPS), content filters, anti-virus, anti-malware, anti-spyware, SSL-VPN, Unified Threat Management (UTM), etc. all sits at the frontline defending core IT infrastructure at the perimeter only.

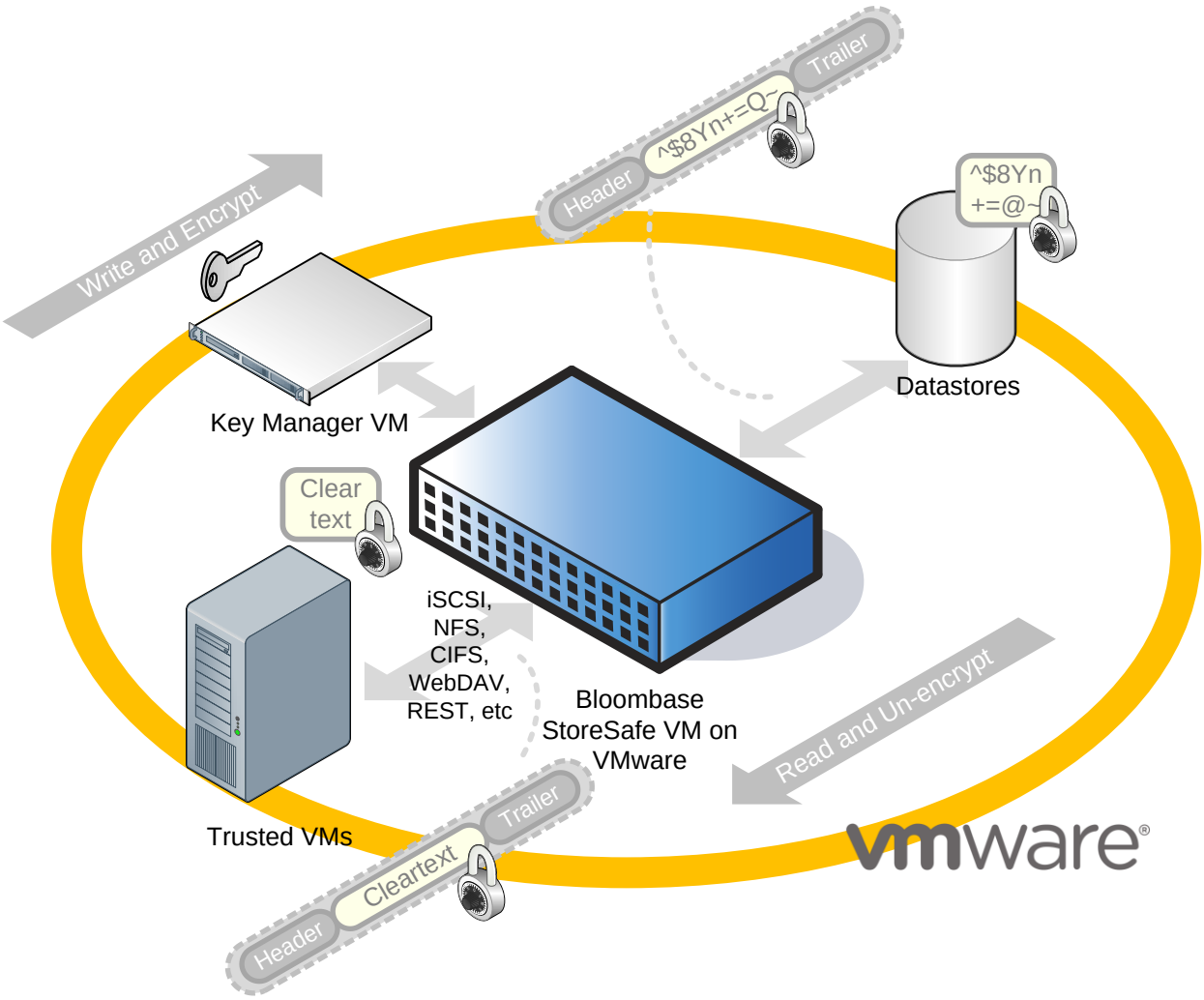
As unknown attacks, insider threats and targeted attacks are on the rise, sensitive and invaluable business data residing on core enterprise storage sub-systems in plain leaves business automation in huge vulnerabilities. Encryption of data-at-rest is generally perceived as the last-line-of-defense as inked in numerous industry best practices. Nevertheless, enterprises adopting application-specific encryption usually have to pay tremendous efforts on implementation and push the mission-critical applications in performance degradation and risks. The demand for application transparent data at-rest encryption solution and the drive for various information regulatory compliance which has to be high performance, easy to deploy, effortless integration, extensive infrastructure support, sustainable, scalable and fast to deploy as a turnkey solution drives the creation of Bloombase. Bloombase was created with the mission

to address data security needs for both traditional IT and next-generation data-center infrastructures. Bloombase's goal to shrink-wrap the clear-text enterprise sensitive data-at-rest into cipher-text and enable trusted software applications and hosts to access the cipher-text data as-if they are in the clear.

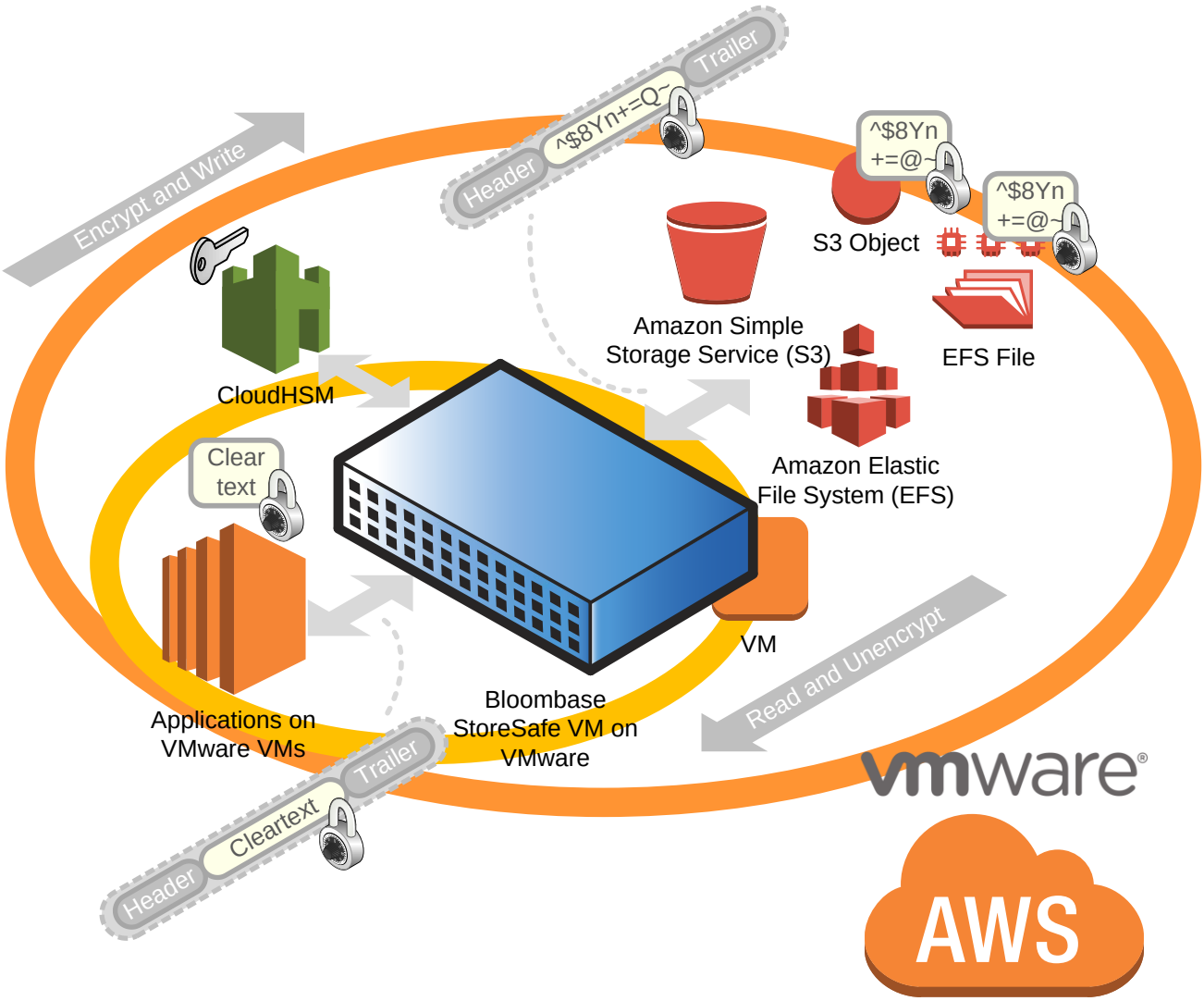
Essentially Bloombase StoreSafe agentless unified storage encryption security solution performs as storage proxy running as bump-in-the-wire configuration providing transparent encryption and un-encryption of contents stored in enterprise Network Attached Storage (NAS), Storage Area Network (SAN), RESTful object stores, cloud storage service endpoints for authorized hosts and applications.



Unlike traditional data at-rest encryption offerings in the market which form factor as proprietary hardware appliances, Bloombase assumes a transformative approach to provide real-time encryption of enterprise storage systems by a software-defined approach. Bloombase StoreSafe software appliance is ready to deploy on any x86-architecture hardware server appliance. Extending to the virtual data-center space, Bloombase StoreSafe offers the capability to run as virtual appliance on any QEMU-compliant virtual hypervisors securing virtual machine data and virtual storage systems. Bloombase also enables organizational customers to run Bloombase StoreSafe encryption as compute instance so as to scale encryption to data on the cloud and extend the capability to secure application workload on the cloud.



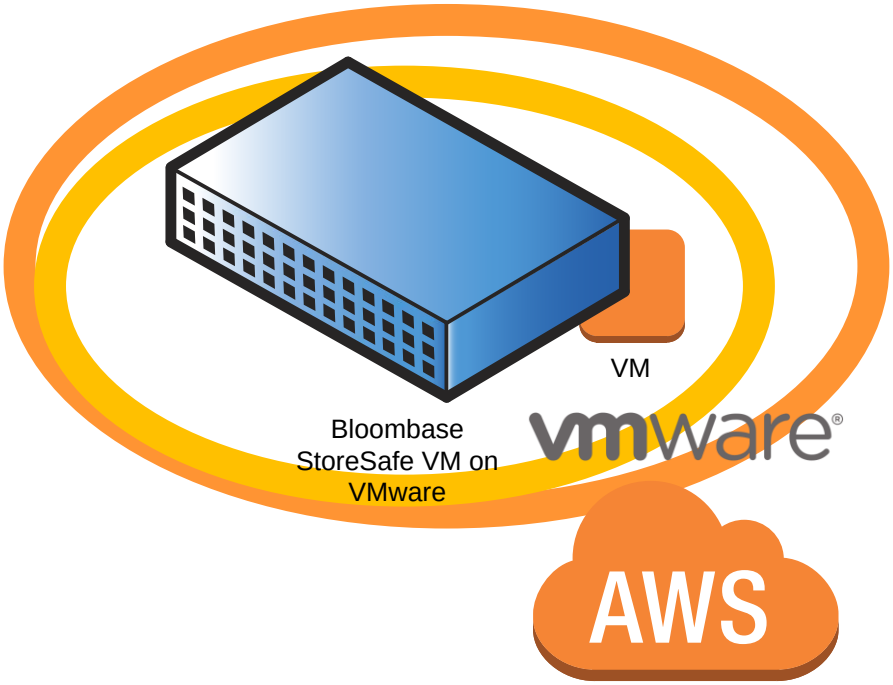
This document outlines the use cases of Bloombase next-generation data encryption solution with VMware Cloud on Amazon Web Services (VMC on AWS) for mission-critical data-at-rest encryption protection for usage scenarios of encryption of Amazon Elastic File System (EFS) and Amazon Simple Storage Service (S3) with centralized Amazon CloudHSM key management.



The following use cases cover all security capabilities supported by the Bloombase data-at-rest security solution.

2.1 Use Cases for VMware Cloud on AWS

This section includes use cases of Bloombase StoreSafe Virtual Appliance on VMC on AWS delivering security services as a VMware Virtual Machine.



2.1.1 Bloombase StoreSafe deployment by OVF

Bloombase StoreSafe OVF template created at on-premises VMware ESXi is deployed to the VMC on AWS for normal operation.

Example Use Case: Upload Bloombase StoreSafe OVF template via the VMC web management console. A new Bloombase StoreSafe virtual machine/appliance is deployed to VMC on AWS. The Bloombase StoreSafe virtual machine is powered on to start delivering encryption services.

2.1.2 Bloombase StoreSafe deployment by vMotion

Bloombase StoreSafe virtual machine/appliance running on-premises VMware ESXi is migrated to the VMC on AWS using vMotion for normal operation.

Example Use Case: Migrate a Bloombase StoreSafe virtual machine running on-premises to VMC on AWS via vMotion to deliver encryption services.

2.1.3 Bloombase StoreSafe text console

Manage the Bloombase StoreSafe virtual machine deployed on the VMC on AWS by accessing the text console.

Example Use Case: Access the Bloombase StoreSafe text console at VMC console. Login with the same administrator credentials as the Bloombase StoreSafe instance on-premises. Configure network parameters and bring the Bloombase StoreSafe virtual machine online.

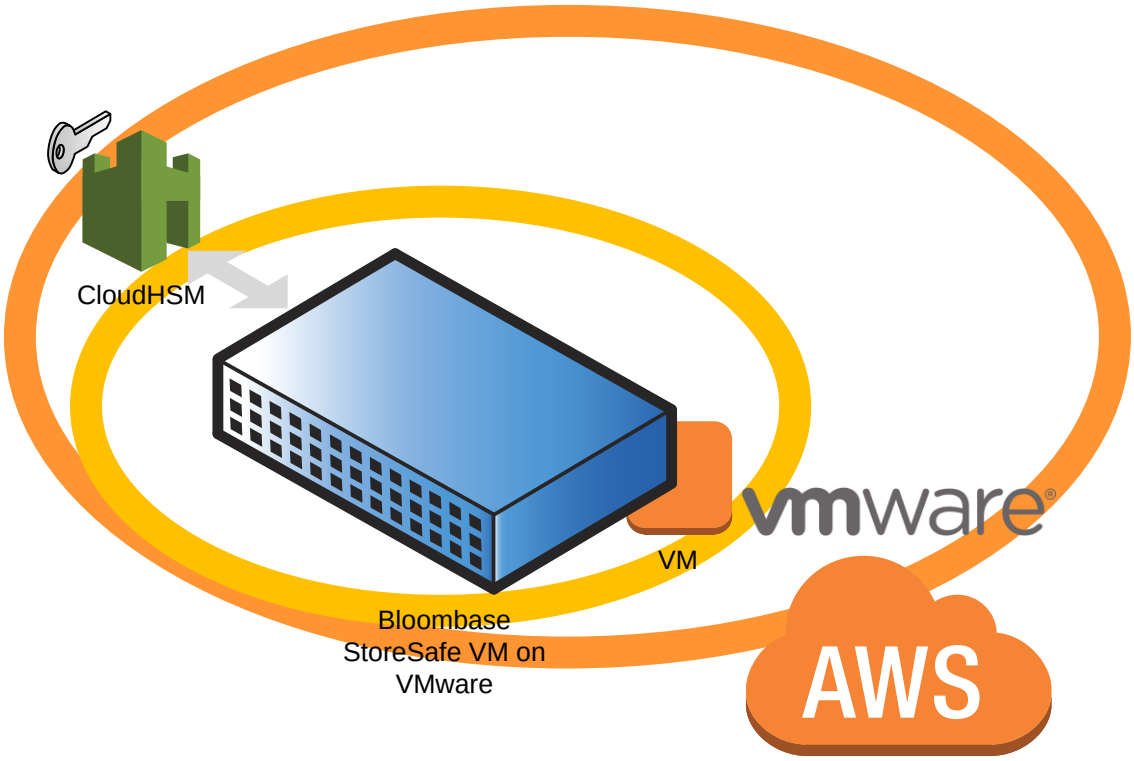
2.1.4 Bloombase StoreSafe web management console

Manage the Bloombase StoreSafe virtual machine deployed on the VMC on AWS by accessing the web management console.

Example Use Case: Access the Bloombase StoreSafe web management URL at https://‹bloombase›:8443 from a web browser. Login with the same administrator credentials as the Bloombase StoreSafe instance on-premises. View dashboard.

2.2 Use Cases for Amazon CloudHSM

This section includes the use cases of Bloombase StoreSafe Virtual Appliance on VMC on AWS delivering encryption security of data-at-rest with centralized key management at Amazon CloudHSM over PKCS#11 protocol.



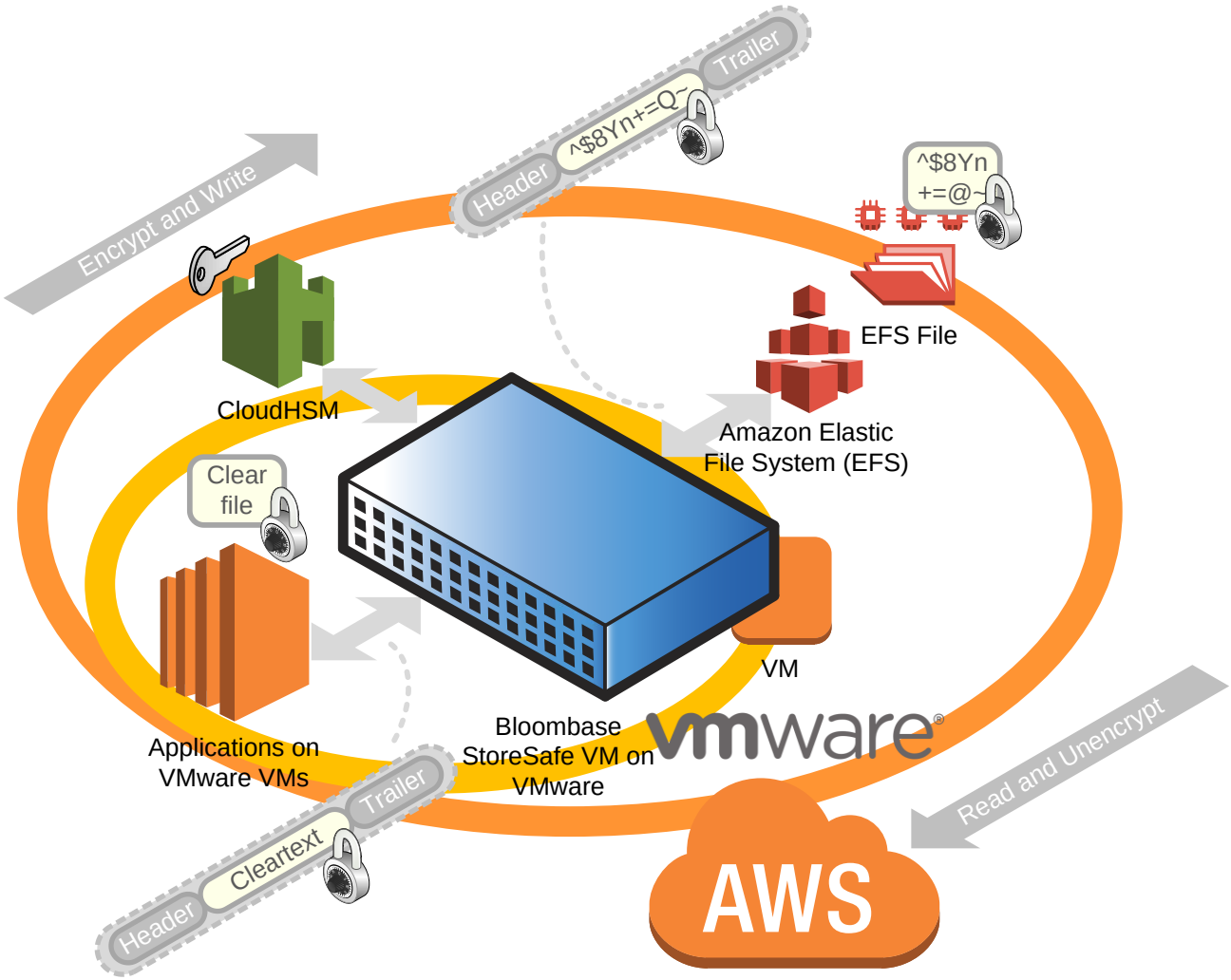
2.2.1 Bloombase StoreSafe integration with Amazon CloudHSM for centralized lifecycle key management

Bloombase StoreSafe virtual machine when after migrated to VMC on AWS is able to access the pre-configured Amazon CloudHSM cryptographic key objects for data encryption security processing.

Example Use Case: Access Bloombase StoreSafe web management console to inquire and test connectivity to the cryptographic key objects managed at Amazon CloudHSM.

2.3 Use Cases for Amazon Elastic File System (EFS)

This section includes the use cases of Bloombase StoreSafe Virtual Appliance on VMC on AWS delivering encryption security of Amazon Elastic File System (EFS) as storage backend over NFS network storage protocol.



2.3.1 Bloombase StoreSafe NFS virtual storage with host network access control

Only authorized hosts are allowed to access Bloombase StoreSafe NFS virtual storages.

Example Use Case: Access Bloombase StoreSafe NFS virtual storage at host with authorized IP network address resulting in successful connection to Bloombase StoreSafe NFS virtual storage, otherwise, access denied error is returned.

2.3.2 Bloombase StoreSafe NFS virtual storage

List and browse Bloombase StoreSafe NFS virtual storages.

Example Use Case: List and browse Bloombase StoreSafe NFS virtual storages from host with authorized IP network address resulting in listing of Bloombase StoreSafe NFS virtual storage network shares.

2.3.3 Bloombase StoreSafe NFS virtual storage network share connection

Connect and access Bloombase StoreSafe NFS virtual storages.

Example Use Case: Access Bloombase StoreSafe NFS virtual storage from host with authorized IP network address resulting in successful connection to Bloombase StoreSafe NFS virtual storage network shares, otherwise, access denied error is returned.

2.3.4 Mount Bloombase StoreSafe NFS virtual storage

Mount Bloombase StoreSafe NFS virtual storage as network mount-point.

Example Use Case: Mount Bloombase StoreSafe NFS virtual storage from host with authorized IP network address resulting in successful connection to Bloombase StoreSafe NFS virtual storage and be able to access as a network mount-point on Linux.

2.3.5 Store and encrypt contents at Bloombase StoreSafe NFS virtual storage via mount point

Store files at Bloombase StoreSafe NFS virtual storage as network drive with contents encrypted and persisted physically at backend Amazon EFS.

Example Use Case: Create and store files or folders at mounted Bloombase StoreSafe NFS virtual storage from host with authorized IP network address as network mount-point as if normal virtual-plain files and folders. Search for known-text contents at physical Amazon EFS as NFS network share resulting not found as entire contents of file are fully encrypted by Bloombase StoreSafe.

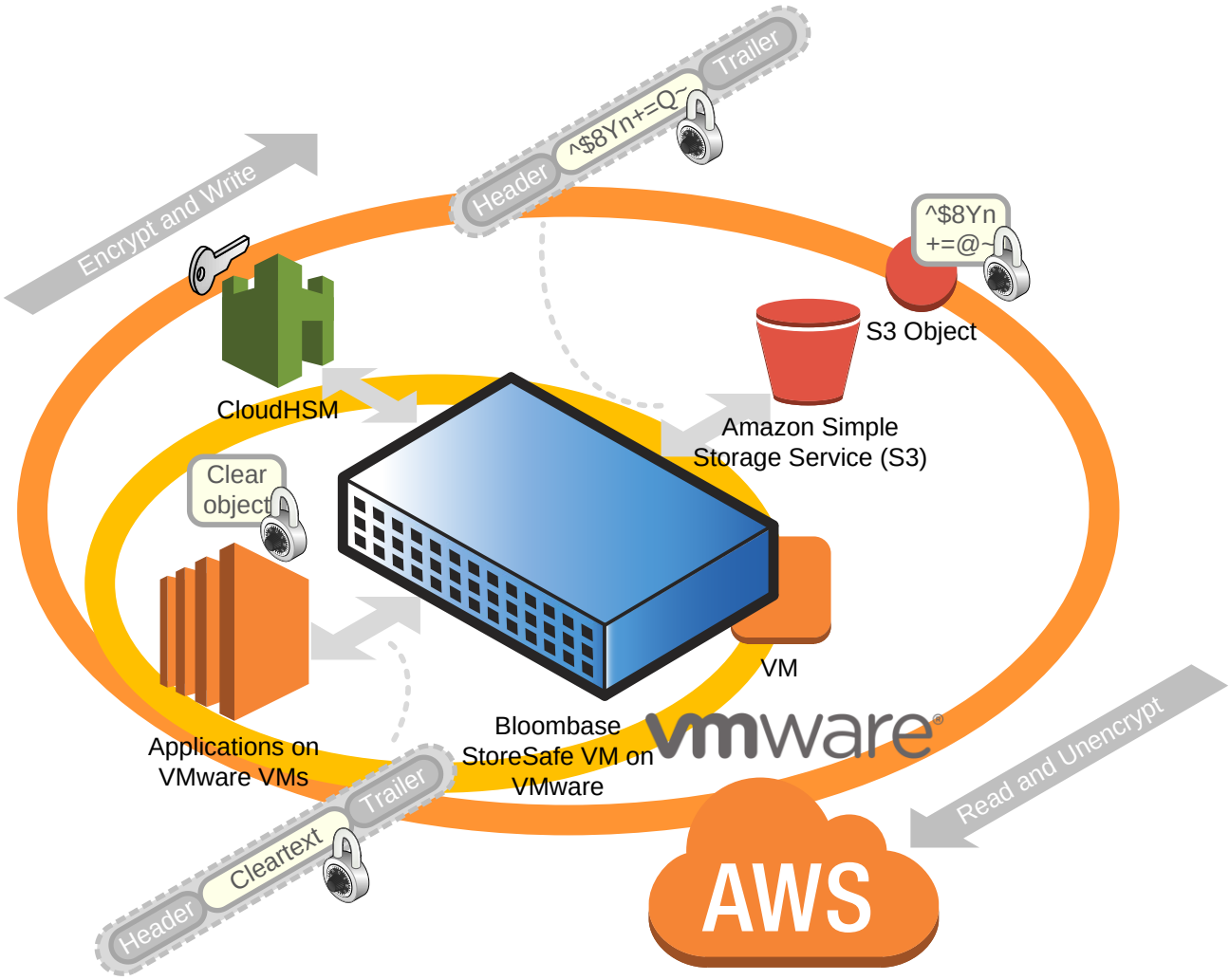
2.3.6 Retrieve and un-encrypt contents at Bloombase StoreSafe NFS virtual storage via local file system

Retrieve files and contents at Bloombase StoreSafe NFS virtual storage as network drive with contents un-encrypted as retrieved from backend Amazon EFS.

Example Use Case: Access and read files or folders at mounted Bloombase StoreSafe NFS virtual storage from host with authorized IP network address as network mount-point as if normal virtual-plain files and folders.

2.4 Use Cases for Amazon Simple Storage Service (S3)

This section includes use cases of Bloombase StoreSafe Virtual Appliance on VMC on AWS delivering encryption security of Amazon Simple Storage Service (S3) as storage backend over REST/HTTP network storage protocol.



2.4.1 Bloombase StoreSafe S3 virtual storage with access control

Only authorized clients are allowed to access Bloombase StoreSafe S3 virtual storages.

Example Use Case: Access Bloombase StoreSafe S3 virtual storage at host with authorized credentials resulting in successful connection to Bloombase StoreSafe S3 virtual storage, otherwise, access denied error is returned.

2.4.2 Bloombase StoreSafe S3 virtual storage

List and browse Bloombase StoreSafe S3 virtual storages as S3 buckets.

Example Use Case: List and browse Bloombase StoreSafe S3 virtual storages from host with authorized credentials resulting in listing of Bloombase StoreSafe S3 virtual storage in form of S3 buckets.

2.4.3 Bloombase StoreSafe S3 virtual storage network share connection

Connect and access Bloombase StoreSafe S3 virtual storages.

Example Use Case: Access Bloombase StoreSafe S3 virtual storage from host with authorized credentials resulting in successful connection to Bloombase StoreSafe S3 virtual storage as S3 buckets, otherwise, access denied error is returned.

2.4.4 Store and encrypt contents at Bloombase StoreSafe S3 virtual storage

Store objects at Bloombase StoreSafe S3 virtual storage as generic S3 bucket with contents encrypted and persisted physically at backend Amazon S3 bucket.

Example Use Case: Create and store objects at Bloombase StoreSafe S3 virtual storage from host with authorized credentials as if normal virtual-plain objects. Retrieve physical object from backend Amazon S3 to examine if contents are in cipher-text form.

2.4.5 Retrieve and un-encrypt contents at Bloombase StoreSafe S3 virtual storage

Retrieve objects at Bloombase StoreSafe S3 virtual storage as generic S3 bucket with contents un-encrypted as retrieved from backend Amazon S3 bucket.

Example Use Case: Access and read objects at Bloombase StoreSafe S3 virtual storage from host with authorized credentials as if normal virtual-plain objects.

2.5 The Bloombase Solution Configuration Screens

2.5.1 Installation

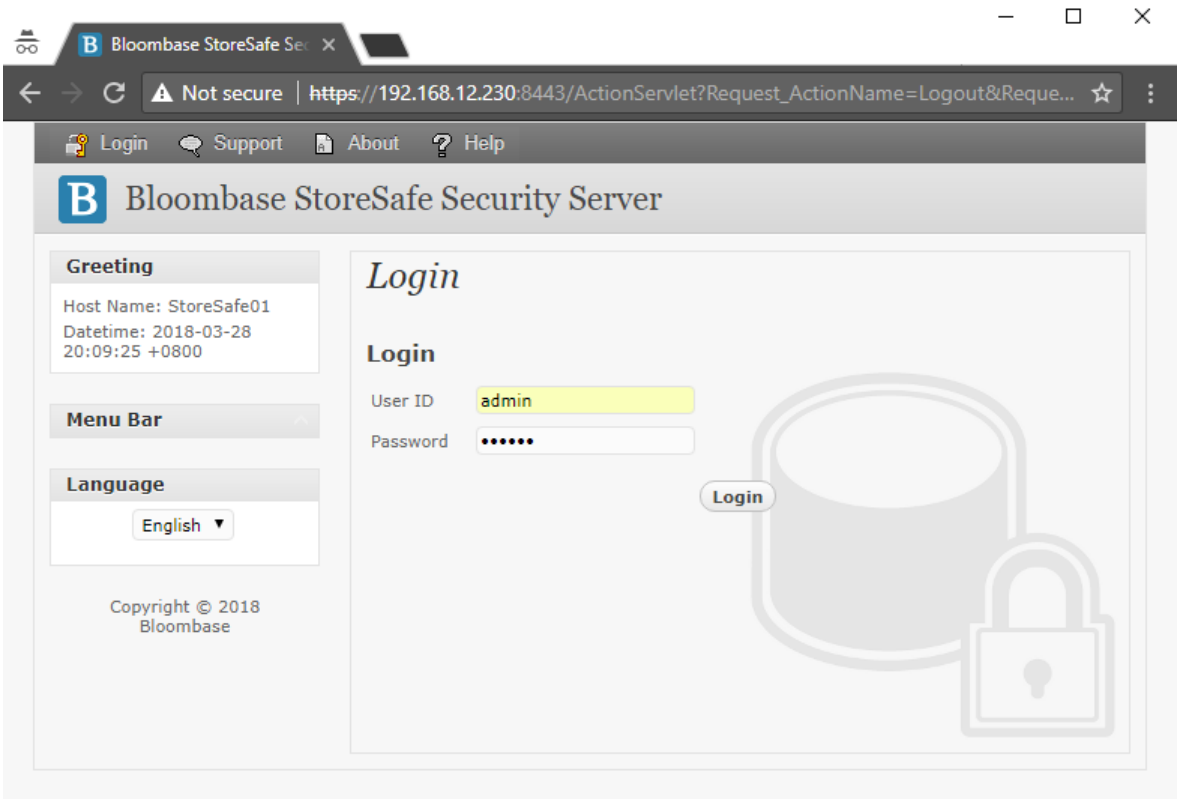
The Bloombase StoreSafe software appliance in form of ISO images can be directly mounted as virtual disk media on VMware ESXi for virtual appliance installation or are available as installation CD/DVD to be installed directly from disk drives for hardware appliance deployment.

Bloombase StoreSafe can also be deployed on VMware ESXi as OVF template or by utilizing vMotion tool.

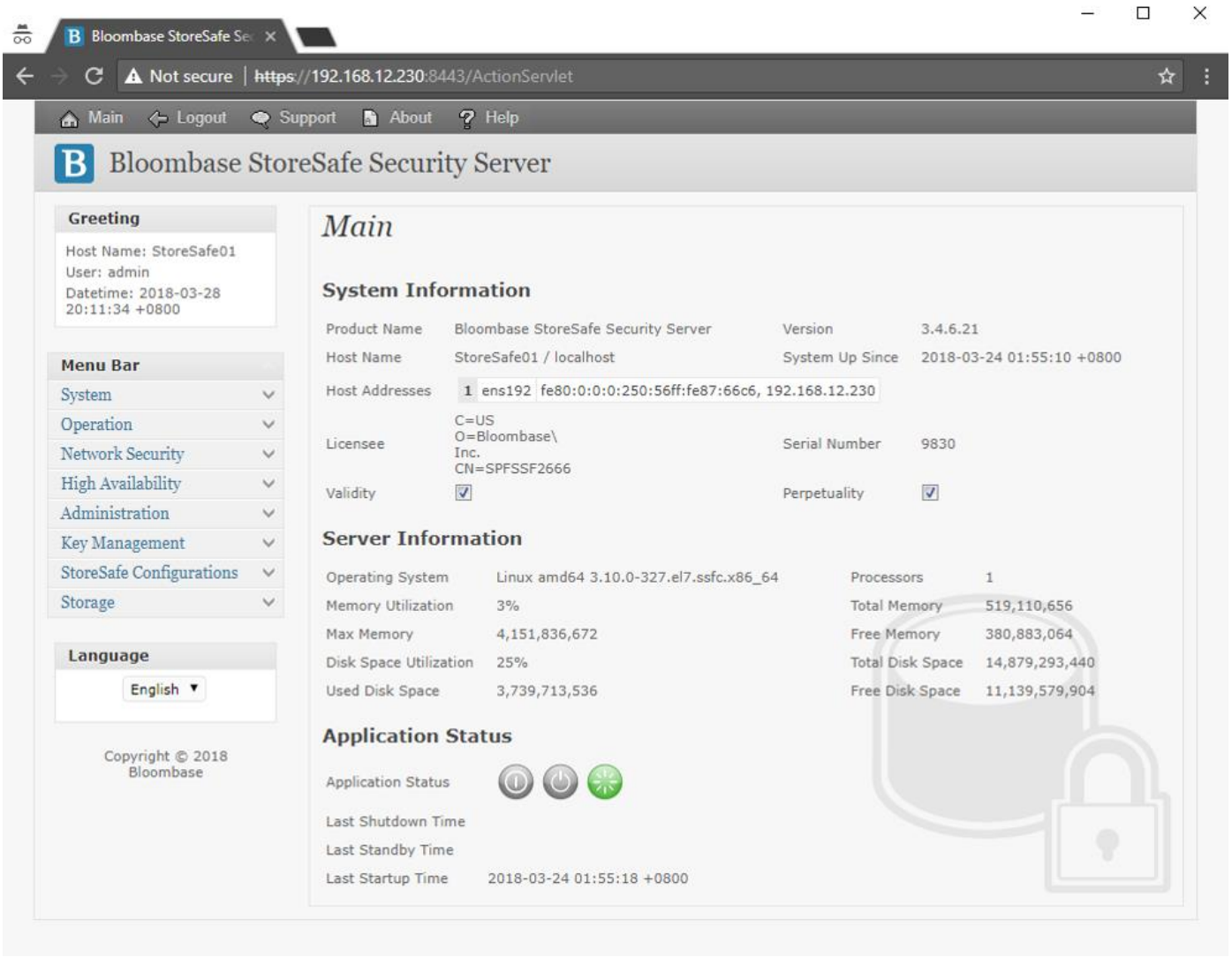
Bloombase StoreSafe software appliance installer will guide you through the rest of the installation process.

2.5.2 Management

Bloombase StoreSafe Web Administration Console Login page.



The Main dashboard page of the Bloombase StoreSafe web console displays the system and server information.


Bloombase StoreSafe Se
Not secure | https://192.168.12.230:8443/ActionServlet
Main
Logout
Support
About
Help
Bloombase StoreSafe Security Server
Greeting
Host Name: StoreSafe01
User: admin
Datetime: 2018-03-28 20:11:34 +0800
Menu Bar
System
Operation
Network Security
High Availability
Administration
Key Management
StoreSafe Configurations
Storage
Language
English
Copyright © 2018 Bloombase
Main
System Information
Product Name
Bloombase StoreSafe Security Server
Version
3.4.6.21
Host Name
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Validity
Perpetuality
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Last Standby Time
Last Startup Time
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3. Bloombase Interoperability and Certification

Certification of Bloombase StoreSafe with VMware Cloud on Amazon Web Services (VMC on AWS) will be deemed complete and accepted by Bloombase when the Use Case designs in this document are demonstrated on a releasable version of the VMware Cloud on AWS.

An Exit Form document for each platform will be co-developed to capture the detailed test scenarios for Certification.

4. References

Bloombase StoreSafe, https://www.bloombase.com/products/storesafe/

VMware Could on AWS, https://cloud.vmware.com/vmc-aws

AWS CloudHSM, https://aws.amazon.com/cloudhsm

Amazon Elastic File System (EFS), https://aws.amazon.com/efs

Amazon Simple Storage Service (S3), https://aws.amazon.com/s3