Hewlett Packard Enterprise

Operations Manager i

FIPS 140-2 Compliance Statement

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Summary

HPE Operations Manager i complies with Federal Information Processing Standard 140-2 (FIPS 140-2), which defines the technical requirements to be used by Federal Agencies when these organizations specify cryptographic-based security systems for protection of sensitive or valuable data. The compliance of OMi with FIPS 140-2 is ensured by:

1) Integrating validated and NIST-certified third party cryptographic module(s), and using the module(s) as the only provider(s) of cryptographic services;
2) Using FIPS-approved cryptographic functions;
3) Using FIPS-approved and NIST-validated technologies;
4) Using security controls defined in NIST 800-53 (or applicable security controls such as DoD 8500.2), prescribed for cryptographic modules by FIPS 140-2 and applicable for HPE Operations Manager i design, implementation and operation.

Overview

This section describes the different elements that make up the OMi solution.

About Operations Manager i

Operations Manager i is a simplified, unified, IT operations management software. OMi provides automated monitoring, fast root cause identification and prioritization, with automated remedial action.

Operations Agent

The HPE Operations Agent helps you to monitor a system by collecting metrics that indicate the health, performance, availability, and resource utilization of essential elements of the system. When you use the Operations Agent in conjunction with OMi, you can add the capability to monitor business applications, infrastructure, as well as application workloads running on the monitored systems.

Data Flow Probe

The Data Flow Probe is the component responsible for requesting tasks from the server, scheduling and executing discovery and integration tasks, and sending the results back to the OMi server.

For details about how OMi, the Operations Agent, and the Data Flow Probe implement FIPS 140-2 requirements, see the *OMi FIPS Configuration Guide*.

About FIPS 140-2

The Federal Information Processing Standards Publication (FIPS) 140-2, “Security Requirements for Cryptographic Modules,” was issued by the National Institute of Standards and Technology (NIST) in May, 2001. The FIPS 140-2 standard specifies the security requirements for cryptographic modules used within a security system that protects sensitive or valuable data. The requirements can be found in the following documents:

- SECURITY REQUIREMENTS FOR CRYPTOGRAPHIC MODULES

  http://csrc.nist.gov/publications/fips/fips140-2/fips1402.pdf

- Annex A: Approved Security Functions for FIPS PUB 140-2, Security Requirements for Cryptographic Modules

  http://csrc.nist.gov/publications/fips/fips140-2/fips1402annexa.pdf

Note: In this document, the abbreviation “FIPS” means “FIPS 140-2.”

FIPS 140-2 Compliant Modules and Technologies

The benefit of using FIPS 140-2 compliant crypto modules is that the FIPS-approved crypto algorithms are deemed appropriate and that they perform the encrypt, decrypt, and hash functions correctly and in a FIPS-compliant manner.

Modes of Operation

OMi and its components can be configured and operated in the following two modes:

- FIPS-compliant mode: This mode supports FIPS 140-2 compliant cryptographic functions.
- Standard mode: This is a non-FIPS 140-2 compliant mode that uses existing or available cryptography without third-party FIPS-compliant 140-2 crypto modules.

FIPS 140-2 Compliant Third Party Modules

The Apache web server component and the HPE Shared Components are integrated with the third-party FIPS 140-2 compliant cryptographic module *OpenSSL FIPS Object Module v2.0.12.* When they are configured to operate in FIPS-compliant mode, its functions and procedures (such as SSL/TLS connections and encryption of stored sensitive data, which require cryptography such as secure hash, encryption, digital signature, and so on) use the cryptography services provided by the OpenSSL FIPS Object Module configured to run in FIPS mode.

All other OMi components are integrated with the third-party FIPS 140-2 compliant cryptographic module *RSA BSAFE Crypto-J version 6.2.1* When OMi is configured to operate in FIPS-compliant mode, its functions and procedures (such as SSL/TLS connections and encryption of stored sensitive data, which require cryptography such as secure hash, encryption, digital signature, and so on) use the cryptography services provided by RSA BSAFE Crypto-J configured to run in FIPS mode.

Details about how to configure OMi and its components to conform to FIPS 140-2 appear in *OMi FIPS Configuration Guide*.

TLS

All the OMi components communications are secured with FIPS-compliant Transport Layer Security TLS1.0 or higher. It is relying on FIPS 140-2 approved hash algorithms and symmetric and asymmetric ciphers.

- TLS handshake, key negotiation, and authentication provide data integrity and make use of secure hash, asymmetric key cryptography and digital signature
- TLS encryption of data in transit provides confidentiality and makes use of symmetric cryptography

Secure Hash

Per FIPS 140-2 standards, OMi, in the FIPS compliant mode, uses the following secure hash algorithm:

SHA-256

Symmetric Cryptography

Per FIPS 140-2 standards, OMi, in the FIPS 140-2 compliant mode, uses the following symmetric key algorithm:

AES (ECB, CBC) [256 bit key size]

Message Digest

Per FIPS 140-2 standards, OMi, in the FIPS compliant mode uses the following digital signature hash algorithm:

SHA-256

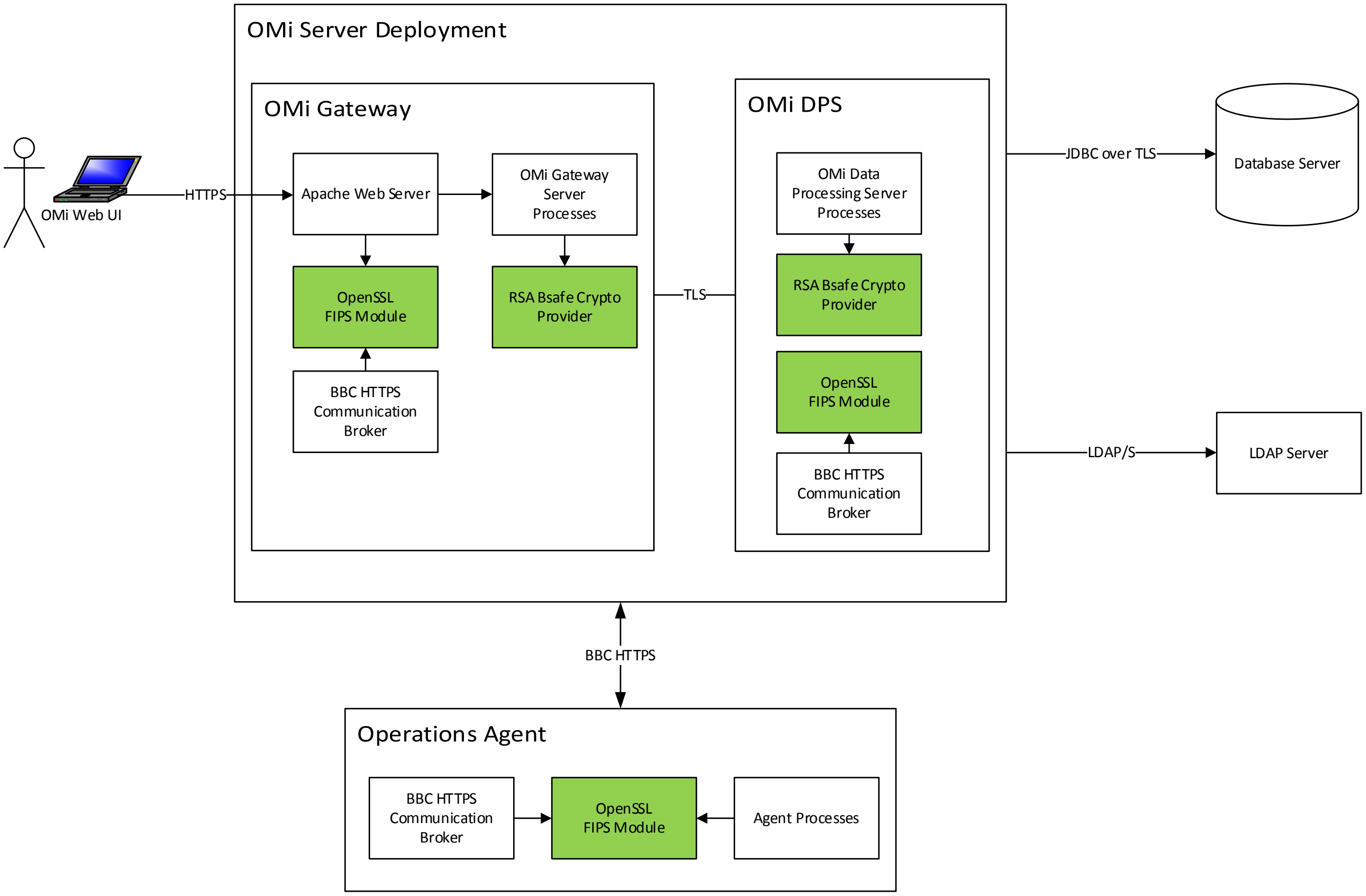
OMi and FIPS 140-2

In addition to the automated process of installing and configuring OMi in FIPS mode using the configuration wizard, you also need to manually configure the client for FIPS mode. This includes manually installing the RSA BSAFE Crypto J module on the client system.

For instructions on both manual and automated steps required to set up OMi in FIPS mode, see the *OMi FIPS Configuration Guide*.

FIPS 140-2 Architecture

All OMi instances in an OMi deployment must be run in FIPS-compliant mode. OMi does not support a deployment architecture that contains a mix of OMi instances that run in FIPS and non-FIPS mode.



Supported Platforms

See the *HPE Software Product Support Matrix* for more information.

Supported Modes and cryptography

- FIPS mode – supports FIPS 140-2. In this mode, only FIPS compliant cryptographic functions, default algorithms, and key lengths are used.
- Standard mode – non-FIPS 140-2 compliant mode, with standard existing or available cryptography without third party FIPS 140-2 crypto modules.

Design Assurance

OMi automatically uses FIPS-compliant cryptographic methods for the following:

- HTTPS communication (if configured) between clients and the OMi web server or load balancer
- HTTPS communication (if configured) between RTSM clients and RTSM
- HTTPS communication between HPE Operations Agents or Operations Connectors (OpsCx) and OMi (HTTPS required by default)
- LDAP/S communication between OMi and LDAP server
- Java keystore and Java Runtime Environment
- Policy signing
- JDBC over TLS connection with the Database server

Key Management

Many aspects of key management, such as random number and key generation, are provided by functions of RSA BSAFE Crypto-J crypto module, and thus meet FIPS 140-2 compliance requirements. The application-specific key management functions include

- Key storage, key protection, and key access functions meet FIPS 140-2 compliance requirements and use the RSA BSAFE Crypto-J module.
- Keys are generated, changed and transported in a protected manner. Keys are not available in open or stored unprotected.

Acronyms

AES
Advanced Encryption Standard.

HMAC DRBG
Keyed-hash message authentication code deterministic random bit generator, which is a random number generation algorithm.

FIPS
Federal Information Processing Standard.

IdM
Identity Management component.

JVM
Java Virtual Machine.

OMi
Operations Manager i

PKCS 12
Personal Information Exchange Syntax Standard #12.

REST
Representational State Transfer.

RSA
An algorithm for public-key cryptography. RSA stands for Ron Rivest, Adi Shamir and Leonard Adleman.

SSL
Secure Sockets Layer, which is the standard security technology for establishing an encrypted link between a web server and a browser.

TLS
Transport Security Layer.

References

OMi FIPS Configuration Guide

HPE Software Product Support Matrix

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The title page of this document contains the following identifying information:

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