Symantec Corporation
Symantec Enterprise Vault Cryptographic Module
Software Version: 1.0.0.2

FIPS 140–2 Non–Proprietary Security Policy

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1.1 Purpose

This is a non-proprietary Cryptographic Module Security Policy for the Symantec Enterprise Vault Cryptographic Module from Symantec Corporation. This Security Policy describes how the Symantec Enterprise Vault Cryptographic Module meets the security requirements of Federal Information Processing Standards (FIPS) Publication 140–2, which details the U.S. and Canadian Government requirements for cryptographic modules. More information about the FIPS 140–2 standard and validation program is available on the National Institute of Standards and Technology (NIST) and the Communications Security Establishment Canada (CSEC) Cryptographic Module Validation Program (CMVP) website at http://csrc.nist.gov/groups/STM/cmvp.

The Symantec Enterprise Vault Cryptographic Module is referred to in this document as the Enterprise Vault Cryptographic Module, the cryptographic module, or the module. This policy was prepared as part of the Level 1 FIPS 140–2 validation of the module.

1.2 References

This document deals only with operations and capabilities of the module in the technical terms of a FIPS 140–2 cryptographic module security policy. More information is available on the module from the following sources:

- The Symantec website (http://www.symantec.com) contains information on the full line of products from Symantec.
- The CMVP website (http://csrc.nist.gov/groups/STM/cmvp/documents/140–1/140val–all.htm) contains contact information for individuals to answer technical or sales–related questions for the module.

1.3 Document Organization

The Security Policy document is one document in a FIPS 140–2 Submission Package. In addition to this document, the Submission Package contains:

- Vendor Evidence Document
- Finite State Model
- Other supporting documentation as additional references

This Security Policy and the other validation submission documentation were produced by Corsec Security, Inc. under contract to Symantec. With the exception of this Non–Proprietary Security Policy, the FIPS 140–2 Submission Package is proprietary to Symantec and is releasable only under appropriate non-disclosure agreements. For access to these documents, please contact Symantec.
This section describes the Symantec Enterprise Vault Cryptographic Module from Symantec Corporation.

2.1 Overview

Symantec provides a broad range of Information Technology (IT) products and services that help organizations to efficiently manage resources, maximize performance, and minimize security risks. Symantec’s product offerings are classified into the following product categories: Security; Information Risk and Compliance; Storage; Infrastructure Operations; and Business Continuity. Symantec, one of the largest makers of security and storage management software, has received recognition as a global leader by a number of research organizations including Gartner and Forrester.

2.1.1 Symantec Enterprise Vault

Symantec Enterprise Vault is a content archiving platform that enables automatic archival of less frequently accessed information into centrally held archives. Using Enterprise Vault, organizations can archive infrequently accessed data from a wide variety of platforms including Exchange Servers; Domino Mail Servers; SharePoint Servers; Simple Mail Transfer Protocol (SMTP) message Servers; and file systems. Enterprise Vault also provides users with the ability to search and retrieve archived information. The Discovery and Compliance Accelerator components provided with Enterprise Vault enable compliance monitoring and legal discovery activities.

2.1.1.1 Enterprise Vault Core Components

Enterprise Vault enables information archival and retrieval through the following core components which are a part of the Enterprise Vault system as shown in Figure 1 below:

- The Enterprise Vault Server– includes services and tasks that perform the tasks of archiving items from target servers, creating indexes of archived items, storing items in the archives, and retrieving archived information.
- The Enterprise Vault Administration Console – configures and manages services, tasks and archives.
- Active Server Page (ASP) Web Access Components – enable users to search and retrieve items in archives.
- SQL Databases – store information related to the Enterprise Vault archives. Services and tasks retrieve information, such as the location of a particular archive, from these databases. The various databases installed as a part of Enterprise Vault include:
  - Enterprise Vault directory database – Enterprise Vault holds configuration data and information about the archives in this database.
  - Vault Store Group Fingerprinting database – Enterprise Vault creates a fingerprint of parts of an item, referred to as Single Instance Storage (SIS) parts, which are suitable for sharing across Vault Stores. For every SIS part, Enterprise Vault checks the fingerprint database to determine if a fingerprint of the SIS part already exists. If a match is found, Enterprise Vault only references the stored SIS part instead of storing it again, allowing for efficient storage and de–duplication of data.
  - Monitoring and Reporting databases – Perform Enterprise Vault monitoring and reporting functions.
The core Enterprise Vault components can be installed on the same or different computers as required.

### 2.1.1.2 Enterprise Vault Archiving

In order to archive information, Enterprise Vault archiving tasks check target servers at scheduled times. Relevant items are then stored in Enterprise Vault archives. In order to enable fast search and retrieval, Enterprise Vault creates an index of all the archived items. The Enterprise Vault (EV) archiving process is shown in Figure 2 below.

![Figure 2 – EV Archiving Process](image)

### 2.1.1.3 Accessing Enterprise Vault Archives

Any time a user wants to access an archived item, the web access component passes the user request on to the Enterprise Vault services and tasks. Enterprise Vault services and tasks then look up the archives, and return the requested information to the user. Additionally, users may be allowed to restore archived items to their original location. If permitted, users can also delete archived items. The process of accessing Enterprise Vault archives is shown in Figure 3 below.

![Figure 3 – Accessing Enterprise Vault Archives](image)
2.1.2 Enterprise Vault Cryptographic Module

Symantec Enterprise Vault Cryptographic Module is a multi-chip standalone physical embodiment. The module consists of a DLL\(^1\) which interfaces with the Microsoft Cryptographic API\(^2\) to provide the required cryptographic functionality. The Enterprise Vault Cryptographic Module may be used for encryption/decryption of Enterprise Vault passwords, hashing of indexes, and random number generation.

When running on Windows Server 2003 SP2, the module includes implementations of the following FIPS-Approved algorithms:

- Advanced Encryption Standard (AES)
- Triple Data Encryption Algorithm (TDEA or Triple-DES\(^3\))
- Secure Hash Standard (SHS)
- (Keyed—) Hash Message Authentication Code (HMAC)
- RSA\(^4\) signature generation
- FIPS 186–2 General Purpose Pseudo Random Number Generator (PRNG)

When running on Windows Server 2008 R2, the module includes implementations of the following FIPS-Approved algorithms:

- Advanced Encryption Standard (AES)
- Triple Data Encryption Algorithm (TDEA or Triple-DES\(^5\))
- Secure Hash Algorithm (SHA)
- (Keyed—) Hash Message Authentication Code (HMAC)
- RSA\(^6\) signature generation and verification
- SP\(^7\) 800-90 AES-256 based counter mode Deterministic Random Bit Generator (DRBG)

The Symantec Enterprise Vault Cryptographic Module is validated at the FIPS 140–2 Section levels shown in Table 1 below:

### Table 1 – Security Level Per FIPS 140–2 Section

<table>
<thead>
<tr>
<th>Section</th>
<th>Section Title</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cryptographic Module Specification</td>
<td>I</td>
</tr>
</tbody>
</table>

---

\(^1\) DLL – Dynamic–Link Library  
\(^2\) API – Application Programming Interface  
\(^3\) DES – Data Encryption Standard  
\(^4\) RSA – Rivest, Shamir, Adleman  
\(^5\) DES – Data Encryption Standard  
\(^6\) RSA – Rivest, Shamir, Adleman  
\(^7\) SP – Special Publication
2.2 Module Specification

The Symantec Enterprise Vault Cryptographic Module is a software module with a multi–chip standalone embodiment. The overall security level of the module is 1. The physical and logical cryptographic boundaries of the Enterprise Vault Cryptographic Module are defined in the following sections.

2.2.1 Physical Cryptographic Boundary

As a software cryptographic module, the module must rely on the physical characteristics of the host system. The physical boundary of the cryptographic module is defined by the hard enclosure around the host system on which it runs. The module supports the physical interfaces of the host system, including the integrated circuits of the system board, the CPU, network adapters, RAM, hard disk, device case, power supply, and fans. Other devices may be attached to the General Purpose Computer (GPC), such as a display monitor, keyboard, mouse, printer, or storage media. See Figure 4 below for a standard host system block diagram.

---

8 EMI/EMC – Electromagnetic Interference / Electromagnetic Compatibility
2.2.2 Logical Cryptographic Boundary

The logical cryptographic boundary of the module executing in memory is shown in Figure 4. The module’s services can be called by the Symantec Enterprise Vault components. The module is utilized by every component of Enterprise Vault that uses the encryption/decryption, hashing and random number generation functionality.
The cryptographic module was tested and found compliant on the following platforms:

- Windows Server 2003 SP2, 32-bit
- Windows Server 2008 R2, 64-bit

Additionally, the vendor affirms that the cryptographic module is also fully supported on the following platforms:

- Windows Server 2003 SP2, 64-bit
- Windows Server 2008, 32-bit
- Windows Server 2008, 64-bit

### 2.3 Module Interfaces

The module’s logical interfaces exist in the software as an API. Physically, ports and interfaces are those of the host server. The API and physical interfaces can be categorized into following interfaces defined by FIPS 140–2:

- Data Input
- Data Output
- Control Input
- Status Output
• Power Input
A mapping of the FIPS 140–2 logical interfaces, the physical interfaces, and the module can be found in the following table:

<table>
<thead>
<tr>
<th>FIPS Interface</th>
<th>Physical Interface</th>
<th>Logical Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Input</td>
<td>USB ports, network ports, serial ports, SCSI/SATA ports, DVD/CD drive, audio ports</td>
<td>Arguments for API calls that contain data to be used or processed by the module</td>
</tr>
<tr>
<td>Data Output</td>
<td>Display port (e.g. VGA, HDMI, DVI, etc.), USB ports, network ports, serial ports, SCSI/SATA ports, audio ports, DVD/CD drive</td>
<td>Arguments for API calls that contain or point to where the result of the function is stored</td>
</tr>
<tr>
<td>Control Input</td>
<td>USB ports, network ports, serial ports, power switch</td>
<td>API Function calls and parameters that initiate and control the operation of the module</td>
</tr>
<tr>
<td>Status Output</td>
<td>Display port (e.g. VGA, HDMI, DVI, etc.), serial ports, network ports</td>
<td>Return values from API function calls and error messages</td>
</tr>
<tr>
<td>Power Input</td>
<td>AC Power Ports</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### 2.4 Roles and Services

Symantec Enterprise Vault Cryptographic Module is validated at FIPS 140–2 Level 1. Therefore, it does not perform authentication of any operators. The module supports the following two roles for operators, as required by FIPS 140–2: Crypto–Officer (CO) role and User role. Both roles are implicitly assumed when the services are utilized.

**Note 1:** Table 3 and Table 4 use the following definitions for CSP⁹ access.

- **R – Read:** The plaintext CSP is read by the service.
- **W – Write:** The CSP is established, generated, modified, or zeroized by the service.
- **X – Execute:** The CSP is used within an Approved (or allowed) security function or authentication mechanism.

**Note 2:** Input parameters of an API call that are not specifically a signature, hash, message, plaintext, ciphertext, or a key are NOT itemized in the “Input” column, since it is assumed that most API calls will have such parameters.

**Note 3:** The “Input” and “Output” columns are with respect to the module’s logical boundary.

#### 2.4.1 Crypto–Officer Role

The operator in the Crypto–Officer role installs, uninstalls, and administers the module via the host platform’s Operating System (OS) interfaces.

---

⁹ CSP – Critical Security Parameter
An operator assumes the CO role by invoking one of the following services:

### Table 3 – Crypto–Officer Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Input</th>
<th>Output</th>
<th>CSP and Type of Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initialize module</td>
<td>API call parameters</td>
<td>Status</td>
<td>None</td>
</tr>
<tr>
<td>Show status</td>
<td>None</td>
<td>Status</td>
<td>None</td>
</tr>
<tr>
<td>Run self–tests on demand</td>
<td>None</td>
<td>Status</td>
<td>None</td>
</tr>
</tbody>
</table>

#### 2.4.2 User Role

The operator in the User role is a consumer of the module’s security services. The role is assumed by invoking one of the following cryptographic services:

### Table 4 – User Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Input</th>
<th>Output</th>
<th>CSP and Type of Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generate random number (Windows Server 2003 SP2 – FIPS 186–2)</td>
<td>API call parameters</td>
<td>Status, random bits</td>
<td>FIPS 186–2 RNG seed – RX FIPS 186–2 seed key – RX</td>
</tr>
<tr>
<td>Generate random number (Windows Server 2008 R2 – SP 800-90)</td>
<td>API call parameters</td>
<td>Status, random bits</td>
<td>SP 800-90 RNG seed – RX</td>
</tr>
<tr>
<td>Generate message digest (SHS)</td>
<td>API call parameters, message</td>
<td>Status, hash</td>
<td>None</td>
</tr>
<tr>
<td>Generate keyed hash (HMAC)</td>
<td>API call parameters, key, message</td>
<td>Status, hash</td>
<td>HMAC key – RWX</td>
</tr>
<tr>
<td>Zeroize key</td>
<td>API call parameters</td>
<td>Status</td>
<td>AES key – W TDES key – W HMAC key – W RSA private/public key – W</td>
</tr>
<tr>
<td>Symmetric encryption</td>
<td>API call parameters, key, plaintext</td>
<td>Status, ciphertext</td>
<td>AES key – RWX TDES key – RWX</td>
</tr>
<tr>
<td>Symmetric decryption</td>
<td>API call parameters, key, ciphertext</td>
<td>Status, plaintext</td>
<td>AES key – RWX TDES key – RWX</td>
</tr>
</tbody>
</table>
2.5 Physical Security

The Symantec Enterprise Vault Cryptographic Module is a software module, which FIPS defines as a multi–chip standalone cryptographic module. As such, it does not include physical security mechanisms. Thus, the FIPS 140–2 requirements for physical security are not applicable.

2.6 Operational Environment

The module was tested and found to be compliant with FIPS 140–2 requirements on the following platforms:

- GPC with an Intel Celeron processor running Windows Server 2003 SP2, 32–bit
- GPC with an Intel Core 2 Duo processor running Windows Server 2008 R2, 64-bit

Symantec affirms that the module also executes in its FIPS–Approved manner (as described in this Security Policy) on the following other Operating Systems:

- Windows Server 2003 SP2, 64–bit
- Windows Server 2008, 32-bit
- Windows Server 2008, 64-bit

The Crypto–Officer shall ensure that the Operating System (OS) is configured to a Single User mode of operation. All cryptographic keys and CSPs are under the control of the operating system, which protects the CSPs against unauthorized disclosure, modification, and substitution. The module only allows access to CSPs through its well–defined API.

2.7 Cryptographic Key Management

When running on Windows Server 2003 SP2, the module implements the FIPS–Approved algorithms listed in Table 5 below.

### Table 5 – FIPS–Approved Algorithm Implementations (Windows Server 2003 SP2)

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Certificate Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algorithm</td>
<td>Certificate Number</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------</td>
</tr>
<tr>
<td>AES in ECB(^{10}), CBC(^{11}) modes with 128, 192, and 256 bit keys</td>
<td>818</td>
</tr>
<tr>
<td>Triple–DES in ECB, CBC modes with 112 and 168 bit keys</td>
<td>691</td>
</tr>
<tr>
<td>RSA (ANSI X9.31, PKCS(^{13}) #1.5, PSS) sign with 1024, 1536, 2048, 3072, 4096 bit keys</td>
<td>395</td>
</tr>
<tr>
<td>SHA(^{14})–1, SHA–256, SHA–384, SHA–512</td>
<td>816</td>
</tr>
<tr>
<td>FIPS 186–2 General Purpose PRNG</td>
<td>470</td>
</tr>
</tbody>
</table>

Table 6 – FIPS–Approved Algorithm Implementations (Windows Server 2008 R2)

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Certificate Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES in ECB, CBC, CFB(^8)(^{15}) modes with 128, 192, and 256 bit keys</td>
<td>1168</td>
</tr>
<tr>
<td>Triple–DES in ECB, CBC, CFB8 modes with 112 and 168 bit keys</td>
<td>846</td>
</tr>
<tr>
<td>RSA (ANSI X9.31, PKCS #1.5) sign/verify with 1024, 1536, 2048, 3072, 4096 bit keys</td>
<td>568</td>
</tr>
<tr>
<td>RSA (ANSI X9.31) key generation with 1024, 1536, 2048, 3072, 4096 bit keys</td>
<td>559</td>
</tr>
<tr>
<td>SHA–1, SHA–256, SHA–384, SHA–512</td>
<td>1081</td>
</tr>
<tr>
<td>SP(^{16}) 800-90 AES-256 based counter mode DRBG</td>
<td>23</td>
</tr>
</tbody>
</table>

The module implements the following non-Approved algorithm allowed in FIPS mode:

---

10 ECB – Electronic Codebook
11 CBC – Cipher Block Chaining
12 ANSI – American National Standards Institute
13 PKCS – Public–Key Cryptography Standards
14 SHA – Secure Hash Algorithm
15 CFB8 – Cipher Feedback (8-bit)
16 SP – Special Publication
• RSA Key Transport (key establishment methodology provides between 80 and 150 bits of encryption strength)

When running on Windows Server 2003 SP2, the module supports the following non–FIPS approved algorithms which are only available in a non–FIPS mode of operation:

• ANSI X9.31 RSA key-pair generation
• ANSI X9.31 RSA signature verification
• RC\textsuperscript{17}
• RC4
• MD\textsuperscript{18}
• MD2
• MD4
• DES

When running on Windows Server 2008 R2, the module supports the following non–FIPS approved algorithms which are only available in a non–FIPS mode of operation:

• RC2
• RC4
• MD5
• MD2
• MD4
• DES

The CSPs supported by the module are shown in Table 7 below. Please note that the “Input” and “Output” columns are in reference to the module’s logical boundary. Keys that enter and exit the module via an API call parameter are in plaintext.

<table>
<thead>
<tr>
<th>CSP/Key</th>
<th>Input</th>
<th>Output</th>
<th>Storage</th>
<th>Zeroization</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES key</td>
<td>API call parameter</td>
<td>Never</td>
<td>Plaintext in volatile memory</td>
<td>By API call, power cycle</td>
<td>Encryption, decryption</td>
</tr>
<tr>
<td>TDES key</td>
<td>API call parameter</td>
<td>Never</td>
<td>Plaintext in volatile memory</td>
<td>By API call, power cycle</td>
<td>Encryption, decryption</td>
</tr>
<tr>
<td>HMAC key</td>
<td>API call parameter</td>
<td>Never</td>
<td>Plaintext in volatile memory</td>
<td>By API call, power cycle</td>
<td>Message Authentication with SHA–1 and SHA–2s</td>
</tr>
<tr>
<td>RSA private key</td>
<td>API call parameter</td>
<td>Never</td>
<td>Plaintext in volatile memory</td>
<td>By API call, power cycle</td>
<td>Signature generation, decryption</td>
</tr>
<tr>
<td>RSA public key</td>
<td>API call parameter</td>
<td>Never</td>
<td>Plaintext in volatile</td>
<td>By API call, power cycle</td>
<td>Signature verification,</td>
</tr>
</tbody>
</table>

\textsuperscript{17} RC – Rivest Cipher
\textsuperscript{18} MD – Message Digest
2.7.1 Key Generation

When running on Windows Server 2003 SP2, the module uses a FIPS–Approved FIPS 186–2 General Purpose PRNG implementation to generate cryptographic keys. When operating on Windows Server 2008 R2, the module uses a FIPS-Approved SP 800-90 AES-256 based counter mode DRBG for the generation of cryptographic keys.

2.7.2 Key Entry and Output

The cryptographic module itself does not support key entry or key output from its physical boundary. However, keys are passed to the module as parameters from the applications resident on the host platform via the exposed APIs. Similarly, keys and CSPs exit the module in plaintext via the well–defined exported APIs.

2.7.3 Key/CSP Storage and Zeroization

The module does not persistently store any keys or CSPs. Symmetric keys are either provided by or delivered to the calling process, and are subsequently destroyed by the module at the completion of the API function call.

2.8 EMI/EMC

Enterprise Vault Cryptographic Module is a software module. Therefore, the only electromagnetic interference produced is that of the host platform on which the module resides and executes. FIPS 140–2 requires that the host systems on which FIPS 140–2 testing is performed meet the Federal Communications Commission (FCC) EMI and EMC requirements for business use as defined in Subpart B, Class A of FCC 47 Code of Federal Regulations Part 15. However, all systems sold in the United States must meet these applicable FCC requirements.
2.9 Self–Tests

2.9.1 Power–Up Self–Tests
The Symantec Enterprise Vault Cryptographic Module performs the following self–tests at power–up when running on Windows Server 2003 SP2:

- Software integrity test
- Known Answer Tests (KATs)
  - Triple–DES 168 ECB encrypt/decrypt
  - Triple–DES 168 CBC encrypt/decrypt
  - Triple–DES 112 ECB encrypt/decrypt
  - Triple–DES 112 CBC encrypt/decrypt
  - AES 128 ECB encrypt/decrypt
  - AES 192 ECB encrypt/decrypt
  - AES 128 CBC encrypt/decrypt
  - AES 192 CBC encrypt/decrypt
  - AES 256 CBC encrypt/decrypt
  - SHA–1
  - SHA–256
  - SHA–384
  - SHA–512
  - HMAC SHA–1
  - HMAC SHA–256
  - HMAC SHA–384
  - HMAC SHA–512
- RSA sign/verify test
- FIPS 186–2 RNG

The Symantec Enterprise Vault Cryptographic Module performs the following self–tests at power–up when running on Windows Server 2008 R2:

- Software integrity test
- Known Answer Tests (KATs)
  - Triple–DES 168 ECB encrypt/decrypt
  - AES 128 ECB encrypt/decrypt
  - SHA–384
  - SHA–512
  - HMAC SHA–1
  - HMAC SHA–256
  - HMAC SHA–384
  - HMAC SHA–512
  - SP 800-90 CTR\textsuperscript{19} \_DRBG KAT
- RSA sign/verify

2.9.2 Conditional Self–Tests
The Symantec Enterprise Vault Cryptographic Module performs the following conditional self–tests:

- RSA pair-wise consistency test
- Continuous RNG test

\textsuperscript{19} CTR – Counter mode
2.10 Mitigation of Other Attacks

This section is not applicable. The module does not claim to mitigate any attacks beyond the FIPS 140-2 Level 1 requirements for this validation.
3 Secure Operation

The Symantec Enterprise Vault Cryptographic Module meets Level 1 requirements for FIPS 140–2. The sections below describe how to place and keep the module in FIPS–approved mode of operation.

3.1 Initial Setup

When the module is loaded by the host Symantec Enterprise Vault software application, the module assumes a FIPS–Approved mode if a FIPS–Approved algorithm is requested. Immediately after the module is loaded, it performs a self–integrity test. If the integrity test succeeds, the module performs all other required FIPS power–up self–tests. If the module passes all self–tests, then the module enters a FIPS–Approved mode of operation. The module implicitly assumes a non–FIPS mode if a non–FIPS approved algorithm is requested. The only way to cause the module to return to a FIPS mode is to reload the module, cycle the power, or reboot the host OS.

3.2 Crypto–Officer Guidance

FIPS 140–2 mandates that a software cryptographic module at Security Level 1 be restricted to a single operator mode of operation. Prior to installing the module, the Crypto–Officer must ensure the host system OS is configured for single–user mode.

To configure the Windows OS for single–user mode, the Crypto–Officer must ensure that all remote guest accounts are disabled in order to ensure that only one operator can log into the Windows OS at a time. The services that need to be turned off for Windows are:

- Fast–user switching (irrelevant if server is a domain member)
- Terminal services
- Remote registry service
- Secondary logon service
- Telnet service
- Remote desktop and remote assistance service

3.3 User Guidance

The Enterprise Vault Cryptographic Module is designed for use by the Symantec Enterprise Vault application. The module does not input, output, or persistently store CSPs with respect to the physical boundary. The user is responsible for providing persistent storage of the cryptographic keys and CSPs, and to ensure that keys are transmitted outside the physical cryptographic boundary in a secure manner.
## Acronyms

### Table 8 – Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES</td>
<td>Advanced Encryption Standard</td>
</tr>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>ASP</td>
<td>Active Server Page</td>
</tr>
<tr>
<td>CBC</td>
<td>Cipher Block Chaining</td>
</tr>
<tr>
<td>CMVP</td>
<td>Cryptographic Module Validation Program</td>
</tr>
<tr>
<td>CPU</td>
<td>Central Processing Unit</td>
</tr>
<tr>
<td>CSEC</td>
<td>Communications Security Establishment Canada</td>
</tr>
<tr>
<td>CSP</td>
<td>Critical Security Parameter</td>
</tr>
<tr>
<td>CTR</td>
<td>Counter Mode</td>
</tr>
<tr>
<td>DES</td>
<td>Data Encryption Standard</td>
</tr>
<tr>
<td>DLL</td>
<td>Dynamic–Link Library</td>
</tr>
<tr>
<td>DRBG</td>
<td>Deterministic Random Bit Generator</td>
</tr>
<tr>
<td>ECB</td>
<td>Electronic Codebook</td>
</tr>
<tr>
<td>EMC</td>
<td>Electromagnetic Compatibility</td>
</tr>
<tr>
<td>EMI</td>
<td>Electromagnetic Interference</td>
</tr>
<tr>
<td>EV</td>
<td>Enterprise Vault</td>
</tr>
<tr>
<td>FCC</td>
<td>Federal Communications Commission</td>
</tr>
<tr>
<td>FIPS</td>
<td>Federal Information Processing Standard</td>
</tr>
<tr>
<td>GPC</td>
<td>General Purpose Computer</td>
</tr>
<tr>
<td>HMAC</td>
<td>(Keyed–) Hash Message Authentication Code</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>KAT</td>
<td>Known Answer Test</td>
</tr>
<tr>
<td>LED</td>
<td>Light Emitting Diode</td>
</tr>
<tr>
<td>MD</td>
<td>Message Digest</td>
</tr>
<tr>
<td>NIST</td>
<td>National Institute of Standards and Technology</td>
</tr>
<tr>
<td>NVLAP</td>
<td>National Voluntary Laboratory Accreditation Program</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
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<tr>
<td>---------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>OS</td>
<td>Operating System</td>
</tr>
<tr>
<td>PKCS</td>
<td>Public Key Cryptography Standards</td>
</tr>
<tr>
<td>PRNG</td>
<td>Pseudo Random Number Generator</td>
</tr>
<tr>
<td>RAM</td>
<td>Random Access Memory</td>
</tr>
<tr>
<td>RC</td>
<td>Rivest Cipher</td>
</tr>
<tr>
<td>RNG</td>
<td>Random Number Generator</td>
</tr>
<tr>
<td>RSA</td>
<td>Rivest Shamir and Adleman</td>
</tr>
<tr>
<td>SATA</td>
<td>Serial Advanced Technology Attachment</td>
</tr>
<tr>
<td>SCSI</td>
<td>Small Computer System Interface</td>
</tr>
<tr>
<td>SHA</td>
<td>Secure Hash Algorithm</td>
</tr>
<tr>
<td>SHS</td>
<td>Secure Hash Standard</td>
</tr>
<tr>
<td>SIS</td>
<td>Single Instance Storage</td>
</tr>
<tr>
<td>SMTP</td>
<td>Simple Mail Transfer Protocol</td>
</tr>
<tr>
<td>SP</td>
<td>Special Publication</td>
</tr>
<tr>
<td>TDES</td>
<td>Triple Data Encryption Standard</td>
</tr>
<tr>
<td>USB</td>
<td>Universal Serial Bus</td>
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</table>