

RELEASE NOTE

Date: 31-Mar-23

Subject: Software changes, updates, bug fixes, etc.

Software: Fortanix Data Security Manager

Version: 4.16

OVERVIEW

This document provides an overview of new enhancements, improvements, and resolved issues in the Fortanix Data Security Manager (DSM) 4.16 release.



WARNING:

- It is **REQUIRED** to upgrade Fortanix DSM to version 4.11 or 4.13 before upgrading to version 4.16. If you want to upgrade to 4.16 from an older version, please reach out to the Fortanix Support team.
- After upgrading to version 4.16, Fortanix DSM can **NO LONGER** be downgraded to any prior version. This is due to limitations of common infrastructure components such as Docker and Kubernetes.



NOTE:

- The Fortanix DSM cluster upgrade must be done with Fortanix Support on call. Please reach out to Fortanix Support if you are planning an upgrade.
- The customer's BIOS version must be checked by Fortanix Support prior to the Fortanix DSM software upgrade. If required, the BIOS version should be upgraded to the latest version and verified by Fortanix Support for a smooth upgrade.
- If your Fortanix DSM version is 4.13 or later, then the HSM gateway version must also be 4.13 or later. Similarly, if the HSM Gateway version is 4.13 or later, then your Fortanix DSM version must be 4.13 or later.

ENHANCEMENTS TO EXISTING FEATURES

1. Created different input and output data types for custom tokenization (JIRA: PROD-6079).

This release allows customers to create a custom tokenization security object with two different character sets to perform tokenization and

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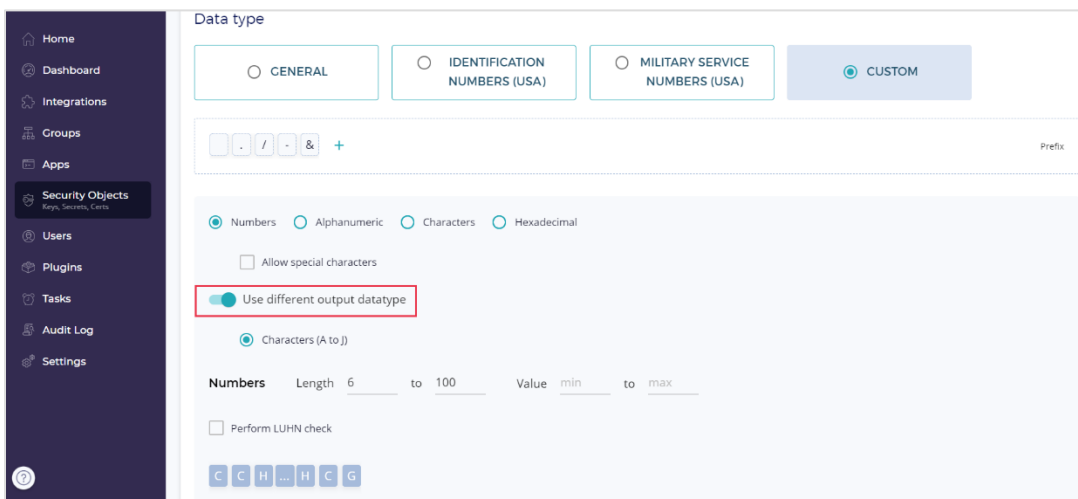
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detokenization so that the input of a particular data type will be tokenized to a different data type for the output token. This feature is allowed only for “Number” data type as raw input data and the tokenized output data can be alphabetic characters from (A-J).



The screenshot shows the 'Data type' configuration page in the Fortanix Data Security Manager. The 'CUSTOM' data type is selected. Under the 'Numbers' section, the 'Use different output datatype' toggle is turned on and highlighted with a red box. Below this, 'Characters (A to J)' is selected. The 'Length' is set to 6 and the 'Value' is set to min to max. The 'Perform LUHN check' checkbox is unchecked. The bottom of the page shows a sequence of characters: C, C, H, ..., H, C, G.

For more details refer to the [User's Guide: Tokenization](#).

2. Enabled External Key Store (XKS) support for AWS KMS for all Fortanix DSM accounts (JIRA: PROD-5621).

External Key Store (XKS) support for AWS KMS is now enabled for all Fortanix DSM accounts. This manifests itself as a new authentication method, “AWS XKS” for app definitions in DSM.

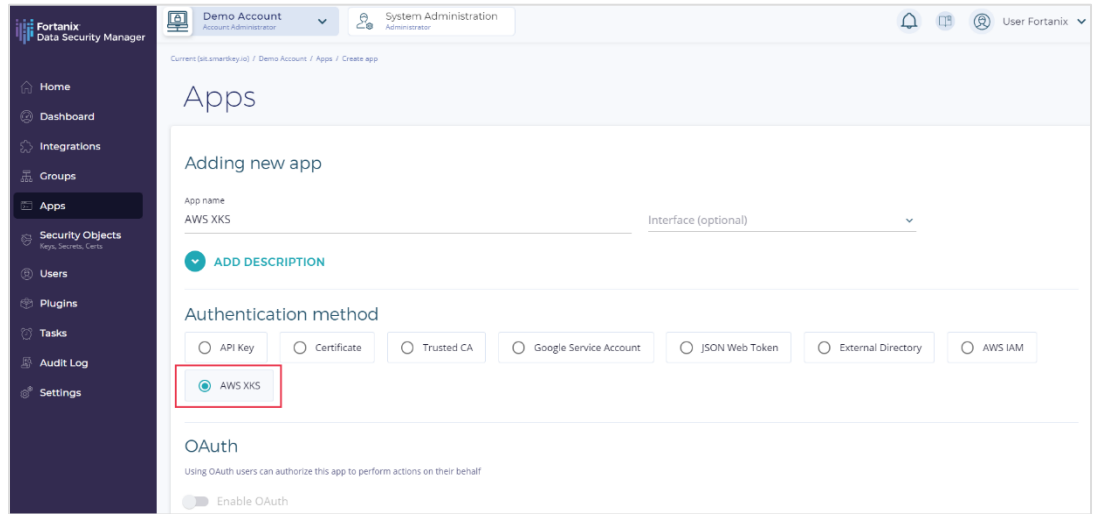
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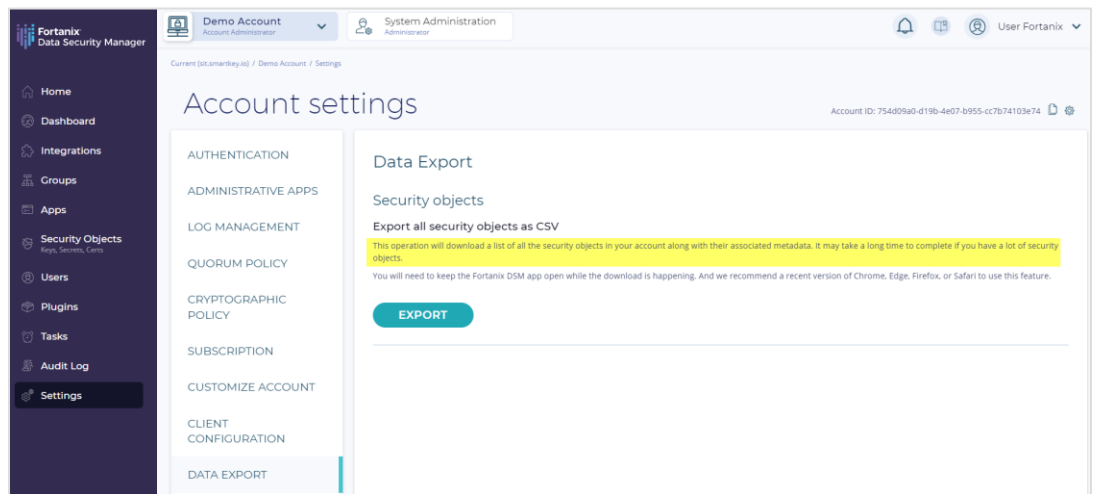
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For more details, refer to [Integration Guide: DSM with AWS XKS](#).

3. Updated the UI description for the DSM Data Export feature (JIRA: ROFR-3946).

The description of the Data Export feature has been updated to make it clear that only the security object metadata, not the sensitive data, is being exported.



4. New improved Audit log table pagination design (JIRA: ROFR-3789).

- Added support to search audit logs using the “Select a month” filter to search audit logs for any 31-day period.

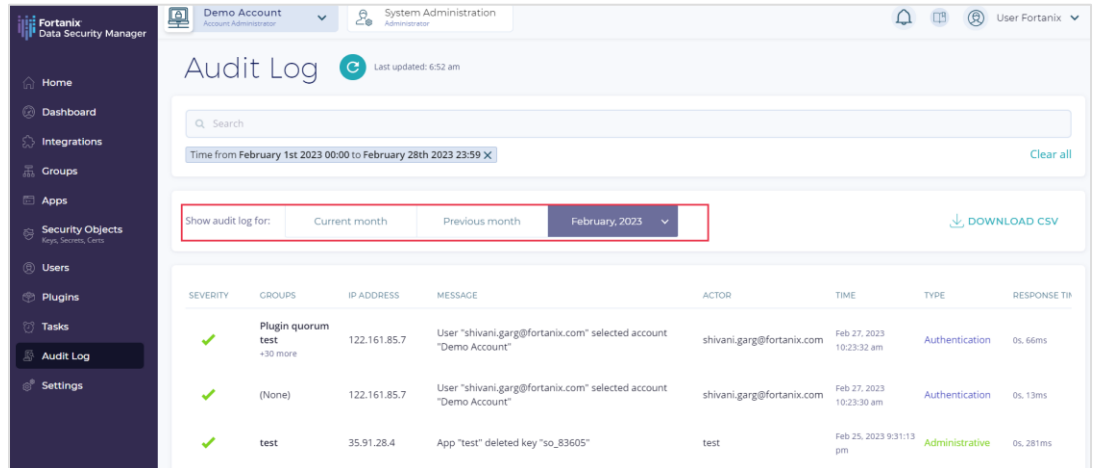
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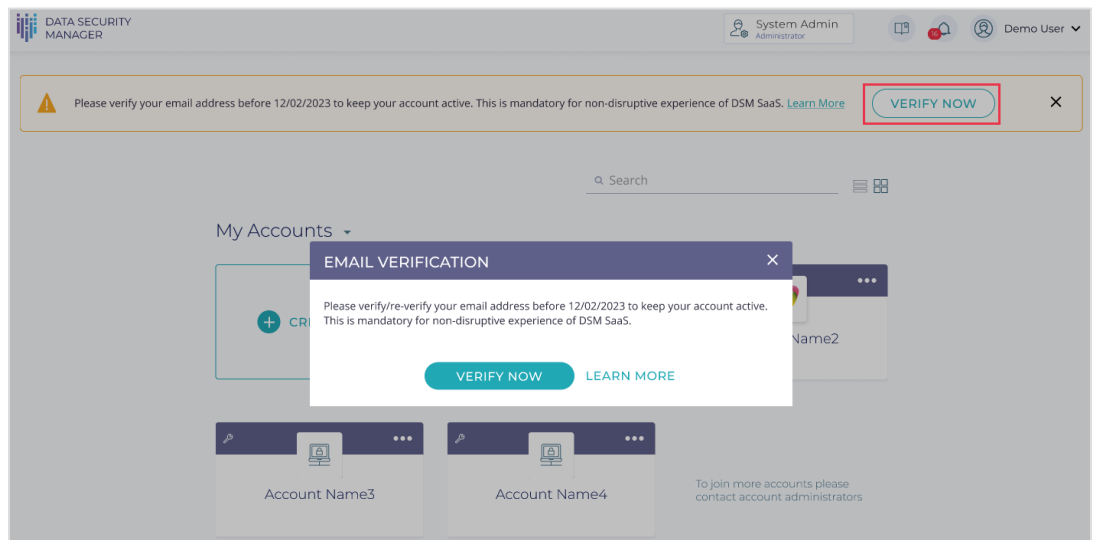
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5. Added Email Verification pop-up banner for DSM SaaS users to verify their email address (JIRA: ROFR-3885).

- This banner is displayed only for unverified users to re-verify their email addresses.
- The banner will be displayed on the DSM Accounts list page and DSM, CCM, and CAI Accounts Home page.



6. Improved the activity logs for DSM apps and users (JIRA: ROFR-3901).

The activity logs on the apps and user's detail page and list view page now also show the audit logs when the apps or users are actors or objects.

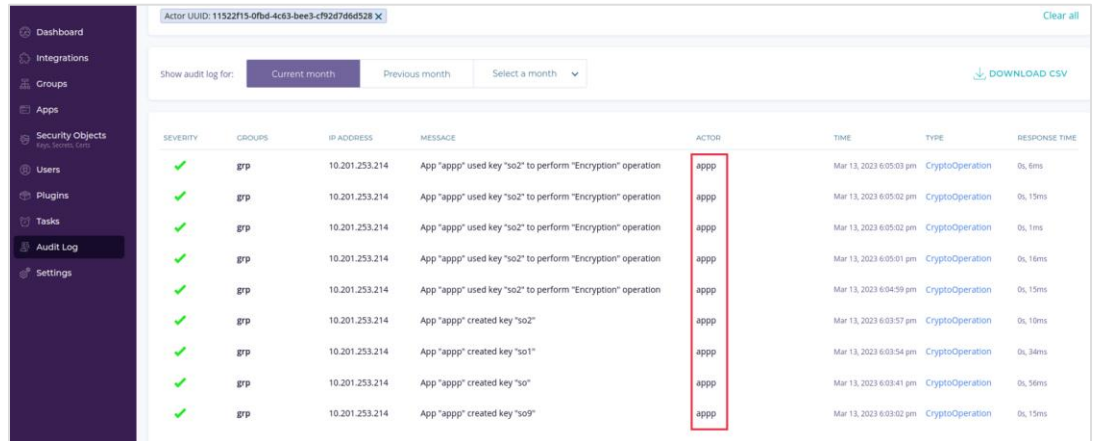
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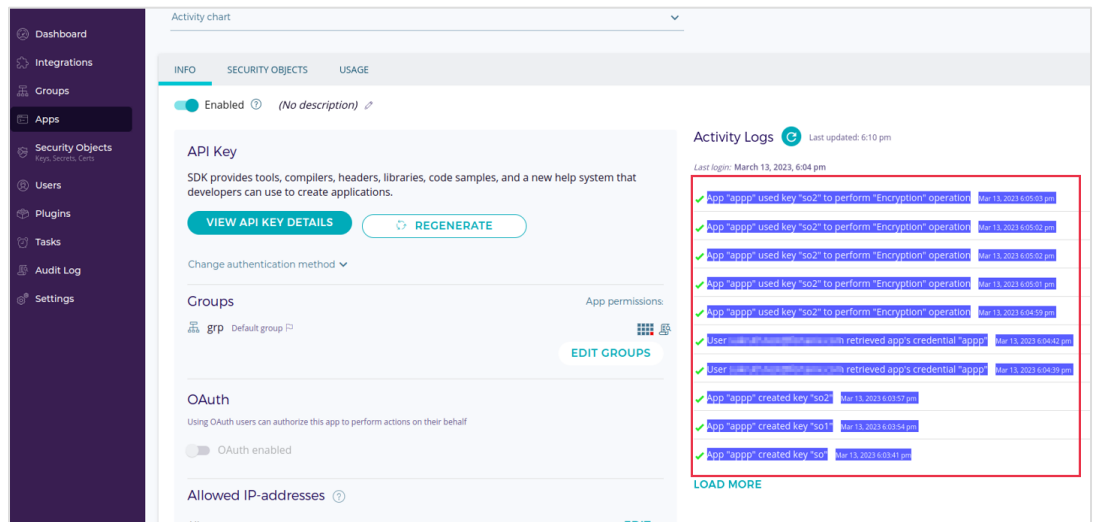
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| SEVERITY | GROUPS | IP ADDRESS | MESSAGE | ACTOR | TIME | TYPE | RESPONSE TIME |
|----------|--------|----------------|--|-------|-------------------------|-----------------|---------------|
| ✓ | grp | 10.201.253.214 | App "app" used key "so2" to perform "Encryption" operation | app | Mar 13, 2023 6:05:03 pm | CryptoOperation | 0s, 6ms |
| ✓ | grp | 10.201.253.214 | App "app" used key "so2" to perform "Encryption" operation | app | Mar 13, 2023 6:05:02 pm | CryptoOperation | 0s, 15ms |
| ✓ | grp | 10.201.253.214 | App "app" used key "so2" to perform "Encryption" operation | app | Mar 13, 2023 6:05:02 pm | CryptoOperation | 0s, 1ms |
| ✓ | grp | 10.201.253.214 | App "app" used key "so2" to perform "Encryption" operation | app | Mar 13, 2023 6:05:01 pm | CryptoOperation | 0s, 16ms |
| ✓ | grp | 10.201.253.214 | App "app" used key "so2" to perform "Encryption" operation | app | Mar 13, 2023 6:04:59 pm | CryptoOperation | 0s, 15ms |
| ✓ | grp | 10.201.253.214 | App "app" created key "so2" | app | Mar 13, 2023 6:03:57 pm | CryptoOperation | 0s, 10ms |
| ✓ | grp | 10.201.253.214 | App "app" created key "so1" | app | Mar 13, 2023 6:04:54 pm | CryptoOperation | 0s, 34ms |
| ✓ | grp | 10.201.253.214 | App "app" created key "so" | app | Mar 13, 2023 6:03:41 pm | CryptoOperation | 0s, 56ms |
| ✓ | grp | 10.201.253.214 | App "app" created key "so9" | app | Mar 13, 2023 6:03:02 pm | CryptoOperation | 0s, 15ms |



API Key

SDK provides tools, compilers, headers, libraries, code samples, and a new help system that developers can use to create applications.

[VIEW API KEY DETAILS](#) [REGENERATE](#)

Change authentication method ▼

Groups

grp Default group

[EDIT GROUPS](#)

OAuth

Using OAuth users can authorize this app to perform actions on their behalf

☐ OAuth enabled

Allowed IP-addresses

Activity Logs Last updated: 6:10 pm

Last login: March 13, 2023, 6:04 pm

| | | |
|---|--|-------------------------|
| ✓ | App "app" used key "so2" to perform "Encryption" operation | Mar 13, 2023 6:05:03 pm |
| ✓ | App "app" used key "so2" to perform "Encryption" operation | Mar 13, 2023 6:05:02 pm |
| ✓ | App "app" used key "so2" to perform "Encryption" operation | Mar 13, 2023 6:05:02 pm |
| ✓ | App "app" used key "so2" to perform "Encryption" operation | Mar 13, 2023 6:05:01 pm |
| ✓ | App "app" used key "so2" to perform "Encryption" operation | Mar 13, 2023 6:04:59 pm |
| ✓ | User [admin@10.201.253.214] retrieved app's credential "app" | Mar 13, 2023 6:04:42 pm |
| ✓ | User [admin@10.201.253.214] retrieved app's credential "app" | Mar 13, 2023 6:04:39 pm |
| ✓ | App "app" created key "so2" | Mar 13, 2023 6:03:57 pm |
| ✓ | App "app" created key "so1" | Mar 13, 2023 6:04:54 pm |
| ✓ | App "app" created key "so" | Mar 13, 2023 6:03:41 pm |

[LOAD MORE](#)

7. Improved the drop down component for loading KEKs in the drop down for the "Configure KEK from an existing group" workflow in the New Groups page and Group's detail page (JIRA: ROFR-3891).

- Only three groups will be shown at a time in the drop down menu and the remaining groups can be selected using a scroll.

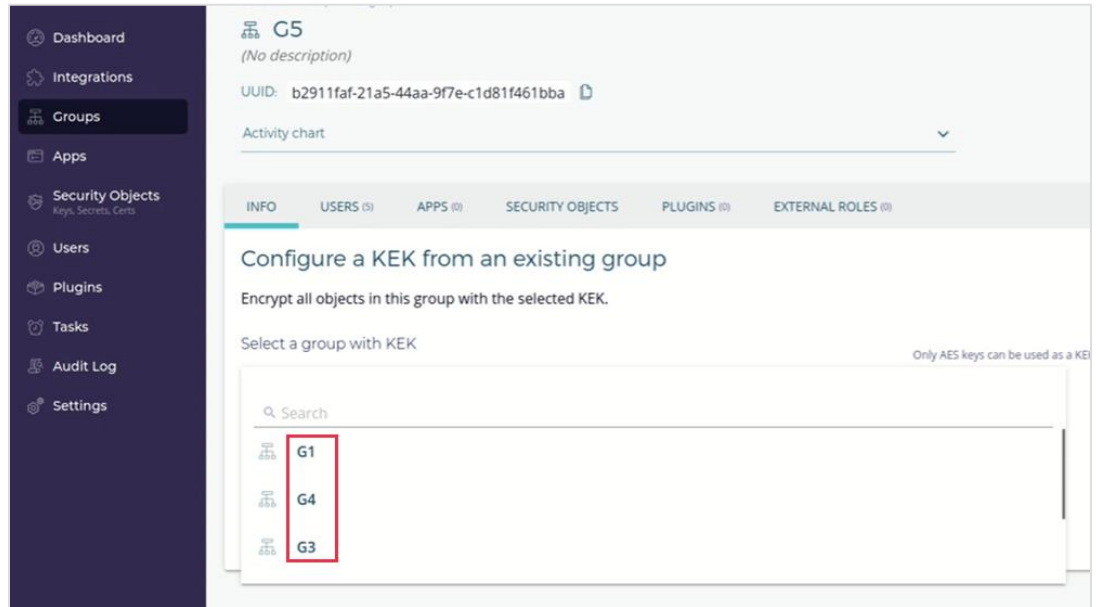
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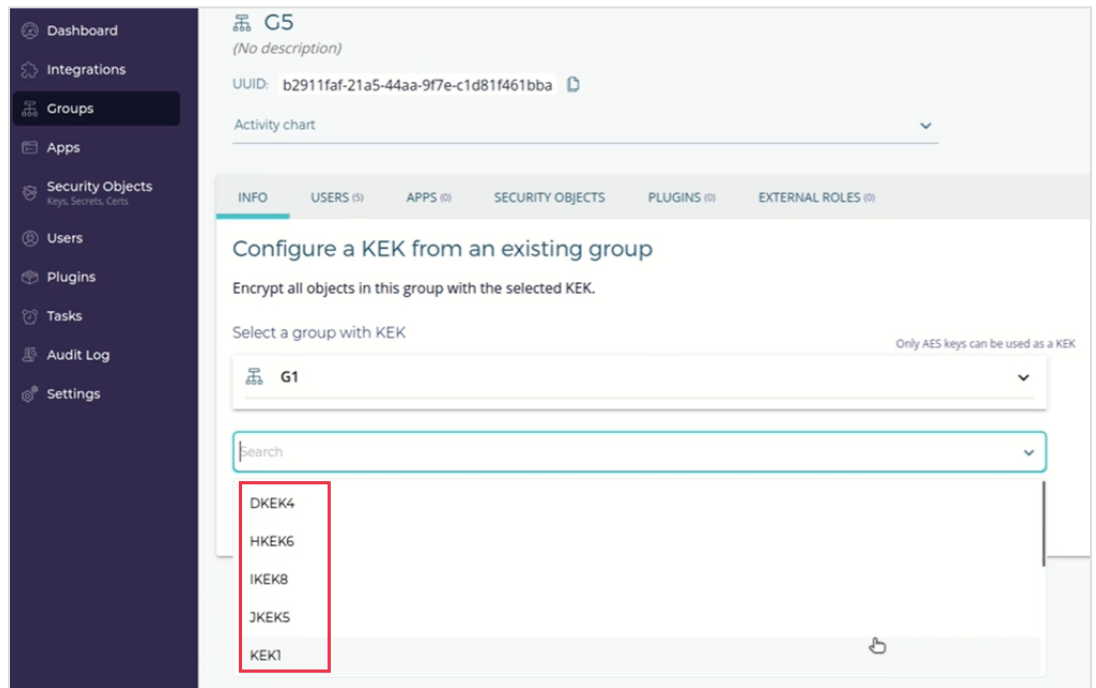
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- The KEKs in the dropdown menu are now sorted by name in ascending order.
- Added padding below the KEK drop down menu so that you can view at least 6 KEKs without extra scroll.



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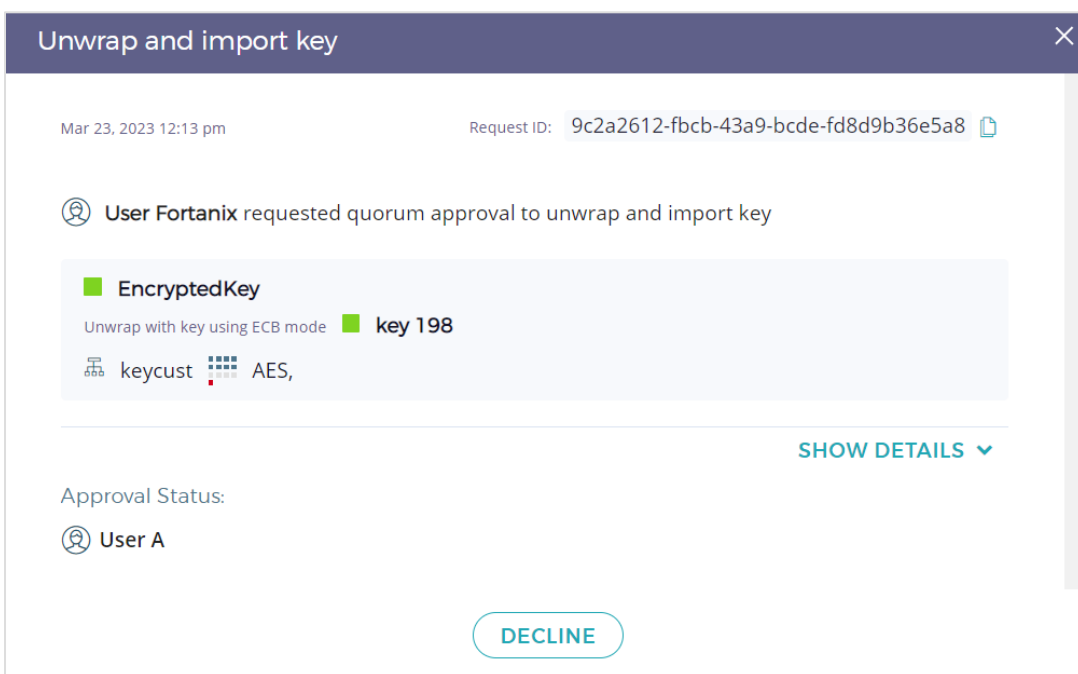
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8. Added a human-readable view for quorum approval request modal window when importing a key that has been encrypted (JIRA: ROFR-2941).

Improved the modal window for quorum approval requests when importing a key that has been encrypted with another key.



9. The group detailed view security objects show/hide columns list is now consistent with the main security objects show/hide columns list (JIRA: ROFR-2830).

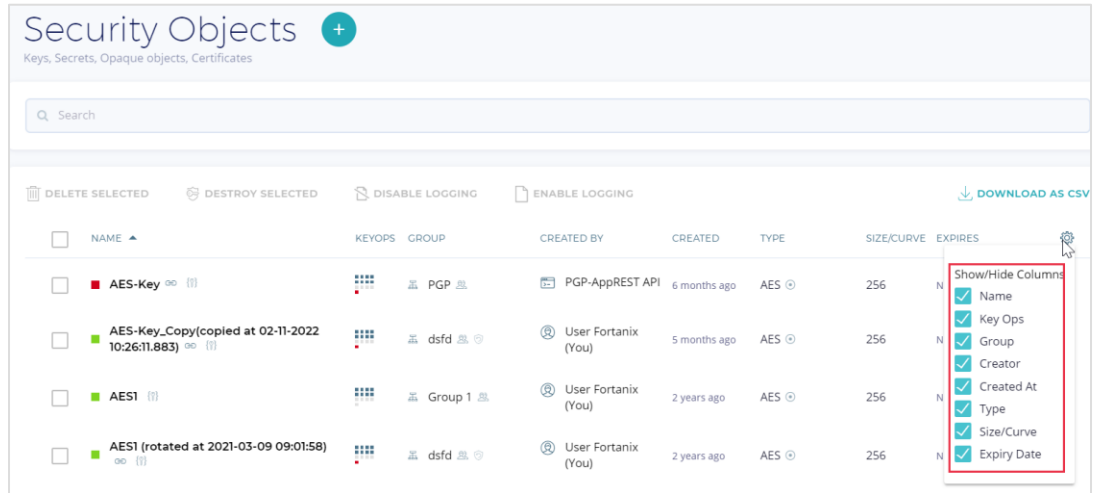
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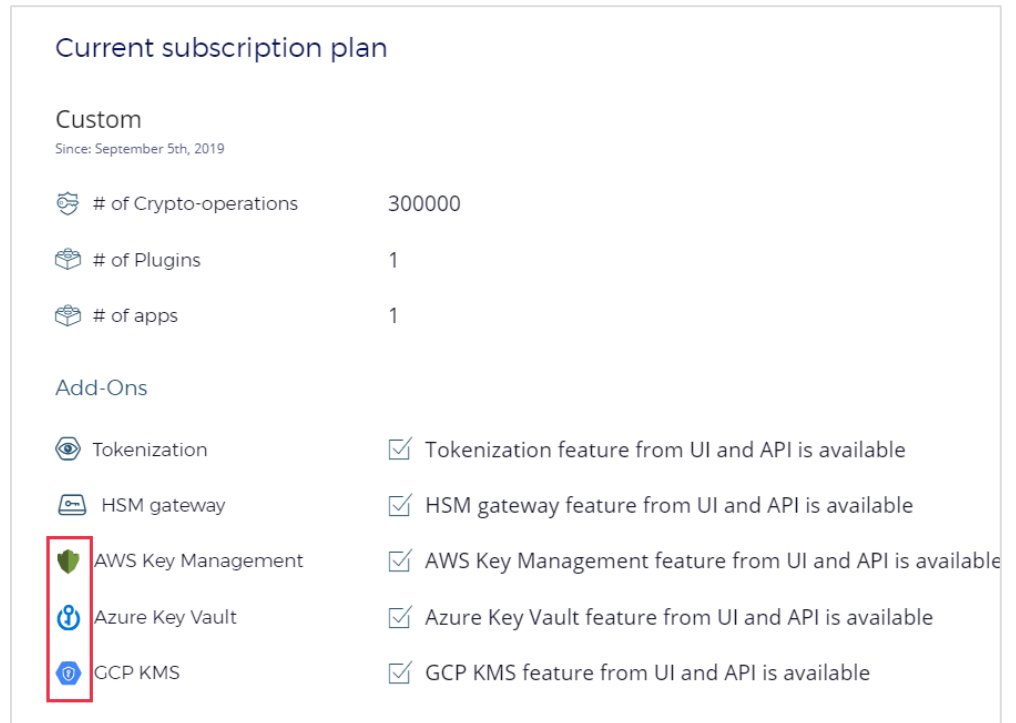
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10. Updated the AWS KMS, GCP, and Azure icons on the DSM SaaS subscription page (JIRA: ROFR-2488).



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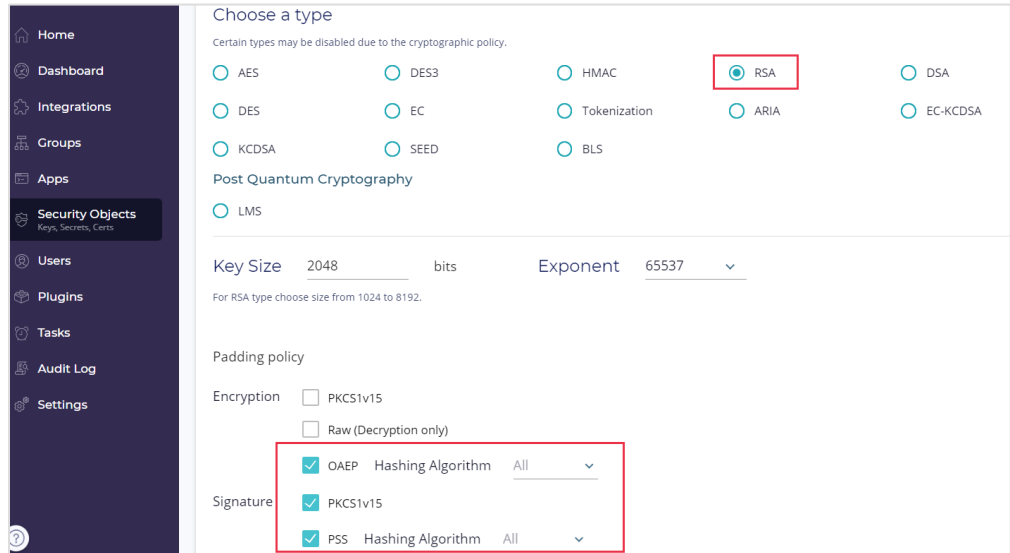
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11. The RSA key creation flow in DSM now selects the default Encryption and Signature Padding policy (JIRA: ROFR-2192).



Choose a type

Certain types may be disabled due to the cryptographic policy.

☐ AES ☐ DES3 ☐ HMAC ☒ RSA ☐ DSA

☐ DES ☐ EC ☐ Tokenization ☐ ARIA ☐ EC-KCDSA

☐ KCDSA ☐ SEED ☐ BLS

Post Quantum Cryptography

☐ LMS

Key Size bits Exponent

For RSA type choose size from 1024 to 8192.

Padding policy

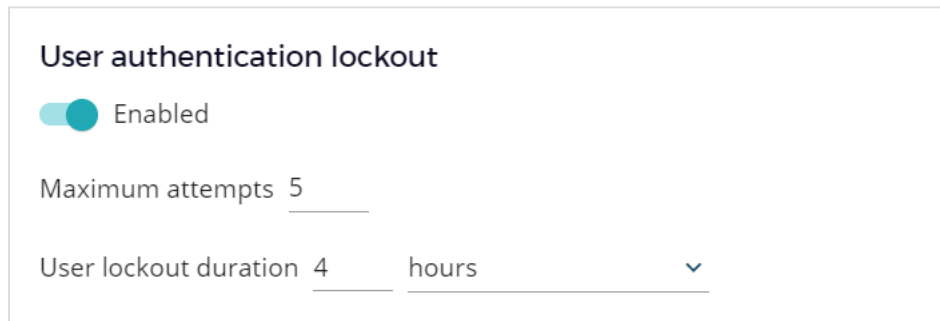
Encryption ☐ PKCS1v15 ☐ Raw (Decryption only)

☒ OAEP Hashing Algorithm All

Signature ☒ PKCS1v15 ☒ PSS Hashing Algorithm All

12. Added System Administration setting to configure the authentication retries in Fortanix DSM and lock user temporarily (JIRA: PROD-6406).

This release adds a setting that allows a system administrator to set the maximum number of authentication attempts and the amount of time an account is temporarily locked to stop unauthorized access when the user tries to log in to Fortanix DSM with a wrong password.



User authentication lockout

☒ Enabled

Maximum attempts

User lockout duration hours

OTHER IMPROVEMENTS

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- Added control-plane toleration to Kubernetes workloads (JIRA: DEVOPS-3674).
- Node attestation now uses ("IAS-v4") version 4 instead of version 3 (JIRA: PROD-6355). NOTE: IAS-v3 will be deprecated soon, after which you will not be able to upgrade to DSM versions below 4.8.
- Improved SWDist to handle duplicate files more efficiently (JIRA: DEVOPS-3052).
- Implemented a global service for refreshing the approval requests list (JIRA: ROFR-2869).
- Improved User Interface support for LMS, ECKCDSA, and BLS key parameters when rotating, copying, or deriving these keys (JIRA: ROFR-3922).
- Removed the maximum length limit on the email address input field (JIRA: ROFR-3936).
- A deactivated key can now be automatically enabled using the `mark_key_disable_when_deactivated` parameter by setting its value to `false`. (JIRA: PROD-6028) For more information, refer to [Enabling a Deactivated Key](#).

INTEGRATIONS

1. Added support for Fortanix DSM with BeyondTrust Password Safe integration (JIRA: UX-2125). For more information, refer to [DSM with BeyondTrust Password Safe Guide](#).
2. Added support for Easy Wizard integration for DSM with Salesforce (JIRA: ROFR-3900). For more information, refer to [DSM with Salesforce using easy wizard integration Guide](#).

CLIENT IMPROVEMENTS

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1. Extended BLS algorithm support to the DSM Java client (JIRA: PROD-6478).
2. Published the Microsoft CNG/EKM Provider client (Windows 64bit Installer) (JIRA: DEVOPS-3408).
3. Published the Microsoft CNG Fortanix DSM client to the public repository (JIRA: DEVOPS-3326). *For more details refer to the Instructions to [install the CNG client from public repo](#).*

DSM-ACCELERATOR CLIENT IMPROVEMENTS

- **DSM-Accelerator JCE Provider:**
 - Added support for providing private CA signed cert in DSM-Accelerator JCE Provider (JIRA: PROD-6430). *For more details, refer to the [DSM-Accelerator JCE Developer's Guide](#).*
 - Added support for GCM, CCM, and OFB modes in DSM-Accelerator JCE Provider (JIRA: PROD-6022).
- **DSM-Accelerator Webservice:**
 - a. Added GET / endpoint support in DSM-Accelerator web service (JIRA: PROD-6274).

QUALITY ENHANCEMENTS/UPDATES

- Added a script that checks whether cold standby nodes are joined or removed successfully (JIRA: DEVOPS-3754). The script is available at the location `/opt/fortanix/sdkms/bin/node_info.sh`.
- Added a script to automate prechecks using Sensu so that users can configure a Sensu check and run it using Sensu agent (JIRA: DEVOPS-3753). *For more information, refer to the [Administration Guide: Fortanix DSM Upgrade Checks using Sensu – Automated](#).*

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- **Improved the cluster restore automation script for better performance (JIRA: DEVOPS-3752).** For more information, refer to the [Administration Guide: Fortanix DSM Cluster Restoration Guide – Automated](#).
- **Added a script to automate DC labeling configuration (JIRA: DEVOPS-3709).** For more information, refer to the [Administration Guide: DSM Data Center Labeling - Automated](#).

BUG FIXES

- Fixed an issue where the user was unable to detokenize with `cipher_char_set` and `preserve` parameter (**JIRA: PROD-6538**).
- Fixed an issue where email confirmation link sent during user signup had an invalid user ID (**JIRA: PROD-6509**).
- Fixed a crash in the DSM app creation flow (**JIRA: ROFR-3967**).
- Fixed an issue that failed to enable the “Public key published” and resulted in an error upon Save (**JIRA: ROFR-3966**).
- Fixed an issue where the default permissions were not enabled when creating an AES key in the AWS KMS and Azure Key Vault groups (**JIRA: ROFR-3965**).
- Fixed an uncaught error when regenerating the DSM app credentials and setting an expiry date (**JIRA: ROFR-3963**).
- Fixed a page crash when searching a DSM group using the groups filter (**JIRA: ROFR-3961**).
- Fixed an error that breaks the UI when creating an HMG configuration with TLS set to `disabled` or `opportunistic` (**JIRA: ROFR-3947**).
- Fixed an issue where the DSM UI did not show the secret when clicking on the **Show** button (**JIRA: ROFR-3945**).
- Fixed an issue where the DSM-Accelerator webservice did not support PEM-formatted private keys (**JIRA: PROD-6436**).

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- Fixed the alignment when the AWS keys are in “Pending deletion” state (**JIRA: ROFR-3921**).
- Fixed a 500 status error when the `size` query parameter is 0 in the `GET` audit logs API (**JIRA: PROD-6367**).
- Fixed an issue where the Quorum approval policy still exists even after deleting it from the **Account Settings** page (**JIRA: ROFR-3913**).
- Fixed an issue where admin apps were not shown in the “Created by” column in the security objects table view (**JIRA: ROFR-3911**).
- Fixed an issue that did not allow removing the HMG configuration from a FIPS-backed group (**JIRA: ROFR-3883**).
- Fixed the following issues for the following DSM application workflows (**JIRA: ROFR-3882**).
 - a. Fixed an issue that resulted in displaying the wrong Credentials button label during a DSM app creation of a particular interface type.
 - b. Fixed inconsistent label for the submit button when changing an application’s authentication method.
- Fixed an issue in the EC key generation workflow where the “Curve” value should be blank rather than unknown (**JIRA: ROFR-3871**).
- Fixed an issue where an LDAP user was not able to log in when the cluster is in read-only mode (**JIRA: DEVOPS-3552**).
- Fixed some UX issues in the easy wizard integration for Cloud Data Control with log aggregation (**JIRA: ROFR-3855**).
- Fixed an issue where the KCV value was missing in the security object CSV reports (**JIRA: ROFR-3903**).
- Fixed an issue where a user gets a “Token is invalid” error due to a conflicting email address in the email verification workflow (**JIRA: ROFR-3809**).

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- Fixed an issue in DSM-Accelerator JCE where GCM, CCM, and OFB modes were not supported for AES encrypt or decrypt operations (**JIRA: PROD-6022**).
- Fixed an issue in DSM-Accelerator JCE where "iv" was required to perform decryption for AES cipher mode: ECB, KW, or KWP and for DES and DES3 modes: ECB (**JIRA: PROD-6021**).
- Fixed an issue where triggering an email change should not break the previous email verification state (**JIRA: PROD-6020**).
- Fixed an issue where key wrapping using the RSA key did not show the supported padding schemes (**JIRA: ROFR-3750**).
- Fixed an issue where even after enabling the **Get All Approval Requests** custom role, the user was unable to see the request in the **Tasks** tab (**JIRA: PROD-2336**).
- Fixed different audit backup TAR file names in the Azure container (**JIRA: DEVOPS-3068**).
- Fixed incorrect user email verification state (**JIRA: PROD-4833**).
- Fixed an issue where the user was unable to update the authentication token in the Splunk log management configuration in the System Administration settings (**JIRA: ROFR-2919**).
- Fixed an issue where the user was unable to disable the "audit log" on a secret or opaque object (**JIRA: ROFR-2421**).
- Fixed an issue where the user was unable to get into maintenance mode while connecting to IPMI using IPMI SOL (**JIRA: DEVOPS-3339**).
- Fixed an issue where the user was unable to get into maintenance mode using the `ipmitool sol activate` when performing an Ubuntu recovery (**JIRA: DEVOPS-3339**).

KNOWN ISSUES

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- When a node is removed from a 3-node cluster with build 4.2.2087, and the 2-node cluster is upgraded with build 4.3.xxxx, it is possible that the deploy job is exited and marked completed before cluster upgrade (**JIRA: DEVOPS-2068**).
Workaround: If all the pods are healthy, you can deploy the version again.
- The sync key API returns a “400 status code and response error” due to the short-term access token expiry during the sync key operation of a group linked to AWS KMS (**JIRA: PROD-3903**).
- `exclude` does not work in the `proxy` config for operations such as attestation (**JIRA: PROD-3311**).
- Unable to create an app when a Custom Group Role has the **Create Apps** permission enabled (**JIRA: PROD-5764**).

FORTANIX DATA SECURITY MANAGER PERFORMANCE STATISTICS

- Series 2**

| KEY TYPES AND OPERATIONS | THROUGHPUT (Operations/second on a 3-node cluster) |
|------------------------------------|---|
| AES 256: CBC Encryption/Decryption | 4,830/4,704 |
| AES 256: GCM Encryption/Decryption | 4,818/4,742 |
| AES 256: FPE Encryption/Decryption | 2,280/2,235 |
| AES 256 Key Generation | 1,163 |
| | |
| RSA 2048 Encryption/Decryption | 4,311/1,034 |
| RSA 2048 Key Generation | 30 |
| RSA 2048 Sign/Verify | 1,039/4,229 |
| EC NISTP256 Sign/Verify | 1,021/581 |

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| KEY TYPES AND OPERATIONS | THROUGHPUT (Operations/second on a 3-node cluster) |
|---|---|
| Data Security Manager Plugin (Hello world plugin) | 1,845 (invocations/second) |

- **Azure Standard_DC8_v2**

| KEY TYPES AND OPERATIONS | THROUGHPUT (Operations/second on a 3-node [Standard_DC8_v2] cluster) |
|---|---|
| AES 256: CBC Encryption/Decryption | 3,497/3,506 |
| AES 256: GCM Encryption/Decryption | 3,480/3,506 |
| AES 256: FPE Encryption/Decryption | 1,820/1,767 |
| AES 256 Key Generation | 1,000 |
| RSA 2048 Encryption/Decryption | 3,185/1,045 |
| RSA 2048 Key Generation | 41 |
| RSA 2048 Sign/Verify | 1,038/3,275 |
| EC NISTP256 Sign/Verify | 819/492 |
| Data Security Manager Plugin (Hello world plugin) | 1,617 (invocations/second) |

- **Series 2 JCE**

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| KEY TYPES AND OPERATIONS | THROUGHPUT (Operations/second on a 3-node cluster) |
|---|---|
| AES 256: CBC Encryption/Decryption | 3,901/3,871 |
| AES 256 Key Generation | 1,163 |
| | |
| RSA 2048 Key Generation | 30 |
| RSA 2048 Sign/Verify | 813/1,925 |
| EC NISTP256 Sign/Verify | 816/516 |
| | |
| Data Security Manager Plugin (Hello world plugin) | 1,811 (invocations/second) |

- Azure Standard_DC8 JCE

| KEY TYPES AND OPERATIONS | THROUGHPUT (Operations/second on a 3-node [Standard_DC8 JCE] cluster) |
|---|--|
| AES 256: CBC Encryption/Decryption | 3,059/3,189 |
| AES 256 Key Generation | 1,028 |
| | |
| RSA 2048 Key Generation | 40 |
| RSA 2048 Sign/Verify | 778/1,685 |
| EC NISTP256 Sign/Verify | 655/426 |
| | |
| Data Security Manager Plugin (Hello world plugin) | 1,629 (invocations/second) |

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FORTANIX DATA SECURITY MANAGER – ACCELERATOR PERFORMANCE STATISTICS

• Runtime Environment



NOTE:

- The following table lists the standard recommended runtime environment. You can choose a higher configuration for better performance.
- DSM-Accelerator was run in the runtime environment listed below for performance testing.

| ITEM | SPECIFICATION |
|-----------------|---|
| Number of Cores | 4 |
| CPU | Intel(R) Xeon(R) CPU E5-2673 v4 @ 2.30GHz |
| RAM | 32 GiB |

• DSM-Accelerator Webservice



NOTE: The performance numbers below are captured with a single node; if you need higher performance or throughput, then we recommend adding multiple nodes.

| KEY TYPES AND OPERATIONS | THROUGHPUT (Operations/second on a 1-node cluster) |
|------------------------------------|---|
| AES 256: CBC Encryption/Decryption | 9,925/9,926 |
| AES 256: GCM Encryption/Decryption | 9,730/9,682 |
| AES 256: FPE Encryption/Decryption | 3,897/3,845 |

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- **Additional Modes**

| KEY TYPES AND OPERATIONS | THROUGHPUT (Operations/second on a 1-node cluster) |
|---|---|
| AES 256: CBCNOPAD Encryption/Decryption | 8,948/8,715 |
| AES 256: CFB Encryption/Decryption | 9,971/10,036 |
| AES 256: CTR Encryption/Decryption | 10,006/9,998 |
| AES 256: OFB Encryption/Decryption | 9,941/9,946 |

BEST PRACTICES

Because our quality assurance process includes continuous security testing, Fortanix recommends keeping all Fortanix products updated with the latest releases as soon as possible. As an overall strategy to reduce risk exposure, customers are encouraged to follow best practices, which include:

- Always keep the product version up to date.
- Only issue accounts to trusted administrators.
- Utilize strong passwords.
- Monitor logs.
- Restrict physical access to the appliance to trusted administrators.
- Create two System Administrator accounts.
- Enable daily backups for the cluster.

INSTALLATION

To download the DSM SGX (on-prem/Azure) and Software (AWS/Azure/VMWare) packages, click [here](#).

RELEASE NOTE

Date: 31-Mar-23

Subject: Software changes, updates, bug fixes, etc.

Software: Fortanix Data Security Manager

Version: 4.16

SUPPORT

For any questions regarding this release note, please contact support@fortanix.com

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Fortanix Data Security Manager SaaS Release Notes
Release 4.16