



security key-manager commands

ONTAP 9.11.1 commands

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Table of Contents

security key-manager commands	1
security key-manager add	1
security key-manager create-key	2
security key-manager delete-key-database	3
security key-manager delete-kmip-config	4
security key-manager delete	5
security key-manager prepare-to-downgrade	6
security key-manager query	6
security key-manager restore	9
security key-manager setup	12
security key-manager show-key-store	15
security key-manager show	16
security key-manager update-passphrase	18
security key-manager backup show	19
security key-manager config modify	20
security key-manager config show	21
security key-manager external add-servers	22
security key-manager external disable	23
security key-manager external enable	23
security key-manager external modify-server	25
security key-manager external modify	26
security key-manager external remove-servers	27
security key-manager external restore	28
security key-manager external show-status	29
security key-manager external show	31
security key-manager external azure check	34
security key-manager external azure disable	36
security key-manager external azure enable	36
security key-manager external azure rekey-external	38
security key-manager external azure rekey-internal	39
security key-manager external azure restore	39
security key-manager external azure show	40
security key-manager external azure update-client-secret	41
security key-manager external azure update-credentials	42
security key-manager external gcp check	43
security key-manager external gcp disable	44
security key-manager external gcp enable	45
security key-manager external gcp rekey-external	45
security key-manager external gcp rekey-internal	46
security key-manager external gcp restore	47
security key-manager external gcp show	47
security key-manager external gcp update-credentials	49
security key-manager key create	49

security key-manager key delete	51
security key-manager key migrate	51
security key-manager key query	52
security key-manager key show	56
security key-manager key key-table create	59
security key-manager key key-table delete	60
security key-manager key key-table modify	61
security key-manager key key-table show	62
security key-manager onboard disable	64
security key-manager onboard enable	64
security key-manager onboard show-backup	65
security key-manager onboard sync	66
security key-manager onboard update-passphrase	67
security key-manager onboard verify-backup	68
security key-manager policy show	69

security key-manager commands

security key-manager add

(DEPRECATED)-Add a key management server

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and may be removed in a future release. Use [security key-manager external add-servers](#) instead.

This command adds a key management server at the indicated IP address to its list of four possible active key management servers. The command fails if there are already four key management servers configured. This command is not supported when the Onboard Key Manager is enabled.

Parameters

-address <IP Address> - IP Address

This parameter specifies the IP address of the key management server you want to use to store keys.

[-server-port <integer>] - Server TCP Port

This parameter specifies the TCP port on which the key management server will listen for incoming connections.

Examples

The following example adds the key management server with address 10.233.1.98, listening for incoming connections on the default TCP port 5696, to the list of key management servers used by the external key manager:

```
cluster-1::> security key-manager add -address 10.233.1.198
```

The following example adds the key management server with address 10.233.1.98, listening for incoming connections on TCP port 15696, to the list of key management servers used by the external key manager:

```
cluster-1::> security key-manager add -address 10.233.1.198 -server-port  
15696
```

Related Links

- [security key-manager external add-servers](#)

security key-manager create-key

(DEPRECATED)-Create a new authentication key

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and may be removed in a future release. Use [security key-manager key create](#) instead.

This command creates a new authentication key (AK) and stores it on the configured key management servers. The command fails if the configured key management servers are already storing more than 128 AKs. If command fails due to more than 128 keys in cluster, delete unused keys on your key management servers and try the command again. This command is not supported when the Onboard Key Manager is enabled.

Parameters

[-key-tag <text>] - Key Tag

This parameter specifies the key tag that you want to associate with the new authentication key (AK). The default value is the node name. This parameter can be used to help identify created authentication keys (AKs). For example, the key-manager query command key-tag parameter can be used to query for a specific key-tag value.

[-prompt-for-key {true|false}] - Prompt for Authentication Passphrase

If you specify this parameter as true, the command prompts you to enter an authentication passphrase manually instead of generating it automatically. For security reasons, the authentication passphrase you entered is not displayed at the command prompt. You must enter the authentication passphrase a second time for verification. To avoid errors, copy and paste authentication passphrases electronically instead of entering them manually. Data ONTAP saves the resulting authentication key/key ID pair automatically on the configured key management servers.

Examples

The following example creates an authentication key with the node name as the default key-tag value:

```
cluster-1::> security key-manager create-key

Verifying requirements...

Node: node1
Creating authentication key...
Authentication key creation successful.
Key ID: 0000000000000000020000000000100D0F7C2462D626B739FE81B89F29A092F.

Node: node2
Key manager restore operation initialized.
Successfully restored key information.
```

The following example creates an authentication key with key-tag "disk1-key":

```
cluster-1::> security key-manager create-key -key-tag disk1-key

Verifying requirements...

Node: node1
Creating authentication key...
Authentication key creation successful.
Key ID: 00000000000000000200000000000100B8297A6189BC24B9B84C1916ED576857.

Node: node2
Key manager restore operation initialized.
Successfully restored key information.
```

The following example creates an authentication key with a user-specified authentication passphrase:

```
cluster-1::> security key-manager create-key -prompt-for-key true

Enter a new passphrase::

Reenter the passphrase::

Verifying requirements...

Node: node1
Creating authentication key...
Authentication key creation successful.
Key ID: 000000000000000002000000000001006268333F870860128FBE17D393E5083B.

Node: node2
Key manager restore operation initialized.
Successfully restored key information.
```

Related Links

- [security key-manager key create](#)

security key-manager delete-key-database

(DEPRECATED)-Deletes the key hierarchy for the Onboard Key Manager

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description



This command is deprecated and might be removed in a future release. Use [security key-manager onboard disable](#) instead.

The `security key-manager delete-key-database` command permanently deletes the Onboard Key Manager configuration from all nodes of the cluster.

Examples

The following example deletes the Onboard Key Manager configuration from all nodes of the cluster:

```
cluster-1::*> security key-manager delete-key-database
```

```
Warning: This command will permanently delete all keys from the Onboard  
Key Manager.
```

```
Do you want to continue? {y|n}: y
```

Related Links

- [security key-manager onboard disable](#)

security key-manager delete-kmip-config

(DEPRECATED)-Deletes the KMIP configuration

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description



This command is deprecated and may be removed in a future release. Use [security key-manager external disable](#) instead.

The `security key-manager delete-kmip-config` command permanently deletes the Key Management Interoperability Protocol (KMIP) server configuration from all nodes of the cluster.



The keys stored by the external KMIP servers cannot be deleted by Data ONTAP, and must be deleted by using external tools.

Examples

The following example deletes the KMIP-server configuration from all nodes of the cluster:

```
cluster-1::*> security key-manager delete-kmip-config
```

Warning: This command will permanently delete the KMIP-server configuration

from all nodes of the cluster.

Do you want to continue? {y|n}: y

The KMIP-server configuration has been deleted from all nodes of the cluster.

The keys stored by the external KMIP servers cannot be deleted by Data ONTAP,
and must be deleted by using external tools.

Related Links

- [security key-manager external disable](#)

security key-manager delete

(DEPRECATED)-Delete a key management server

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and may be removed in a future release. Use [security key-manager external remove-servers](#) instead.

This command removes the key management server at the indicated IP address from the list of active key management servers. If the indicated key management server is the sole storage location for any key that is in use by Data ONTAP, you will be unable to remove the key server. This command is not supported when the Onboard Key Manager is enabled.

Parameters

-address <IP Address> - IP Address

This parameter specifies the IP address of the key management server you want to remove from use.

Examples

The following example removes the key server at IP address 10.233.1.198 from the set of configured key management servers:

```
cluster-1::> security key-manager delete -address 10.233.1.198
```


Related Links

- [security key-manager external remove-servers](#)

security key-manager prepare-to-downgrade

Prepares all configured Key managers for downgrade

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description



This command is deprecated and might be removed in a future release.

The `security key-manager prepare-to-downgrade` command disables the Onboard Key Manager features that are not supported in releases prior to ONTAP 9.1.0. The features that are disabled are Onboard Key Manager support for Metrocluster configurations and Volume Encryption (VE).

Examples

The following example disables the Onboard Key Manager support for Metrocluster configurations and Volume Encryption (VE):

```
cluster1::*> security key-manager prepare-to-downgrade
```

security key-manager query

(DEPRECATED)-Display the key IDs stored in a key management server.

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and may be removed in a future release. Use [security key-manager key query](#) instead.

This command displays the IDs of the keys that are stored on the key management servers. This command does not update the key tables on the node. To refresh the key tables on the nodes with the key management server key tables, run the [security key-manager restore](#) command. This command is not supported when the Onboard Key Manager is enabled.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node

This parameter specifies the name of the node that queries the specified key management servers. If this parameter is not specified, then all nodes will query the specified key management servers.

[-address <IP Address>] - IP Address

This parameter specifies the IP address of the key management server that you want to query.

[-key-id <key id>] - Key ID

If you specify this parameter, then the command displays only the key IDs that match the specified value.

[-key-tag <text>] - Key Tag

If you specify this parameter, then the command displays only the key IDs that match the specified value. The key-tag for Volume Encryption Keys (VEKs) is set to the UUID of the encrypted volume.

[-key-type <Key Usage Type>] - Key Type

If you specify this parameter, then the command displays only the key IDs that match the specified value.

[-count <integer>] - (DEPRECATED)-Key Server's Total Key Count

The value `count` is deprecated and may be removed in a future release of Data ONTAP. This parameter specifies the total number of keys stored in the key management servers. If you specify this parameter, then the command displays only the key IDs retrieved from the key management servers whose total key count matches the specified count number.

[-restored {yes|no}] - Key/Key ID Pair Present in Node's Key Table?

This parameter specifies whether the key corresponding to the displayed key ID is present in the specified node's internal key table. If you specify 'yes' for this parameter, then the command displays the key IDs of only those keys that are present in the system's internal key table. If you specify 'no' for this parameter, then the command displays the key IDs of only those keys that are not present in the system's internal key table.

[-key-manager-server-status {available|not-responding|unknown}] - Command Error Code

This parameter specifies the connectivity status of the key management server. If you specify this parameter, then the command displays only the key IDs retrieved from the key management servers with specified status.

Examples

The following example shows all the keys on all configured key servers, and whether those keys have been restored for all nodes in the cluster:

```
cluster-1::> security key-manager query
```

```
Node: node1
```

```
Key Manager: 10.0.0.10
```

```
Server Status: available
```

Key Tag	Key Type	Restored
-----	-----	-----
node1	NSE-AK	yes
Key ID:		
000000000000000000002000000000001001d71f3b2468d7e16a6e6972d3e66452000000000000000000		
301a4e57-9efb-11e7-b2bc-0050569c227f	VEK	yes
Key ID:		
000000000000000000002000000000005004d03aca5b72cd20b2f83eae1531c605e000000000000000000		

```
Node: node2
```

```
Key Manager: 10.0.0.10
```

```
Server Status: available
```

Key Tag	Key Type	Restored
-----	-----	-----
node1	NSE-AK	yes
Key ID:		
000000000000000000002000000000001001d71f3b2468d7e16a6e6972d3e66452000000000000000000		
301a4e57-9efb-11e7-b2bc-0050569c227f	VEK	no
Key ID:		
000000000000000000002000000000005004d03aca5b72cd20b2f83eae1531c605e000000000000000000		

If any listed keys have "no" in the "Restored" column, run "security key-manager restore" to restore those keys.

The following example shows all keys stored on the key server with address "10.0.0.10" from node "node1" with key-tag "node1":

```
cluster-1::> security key-manager query -address 10.0.0.10 -node node1
-key-tag node1
```

Node: node1

Key Manager: 10.0.0.10

Server Status: available

Key Tag	Key Type	Restored
node1	NSE-AK	yes

Key ID:
0000000000000000000020000000000001001d71f3b2468d7e16a6e6972d3e66452000000000000000000

If any listed keys have "no" in the "Restored" column, run "security key-manager restore" to restore those keys.

The following example shows the Volume Encryption Key (VEK) with key-tag (i.e., volume UUID) "301a4e57-9efb-11e7-b2bc-0050569c227f" on nodes where that key has not been restored:

```
cluster-1::*> security key-manager query -key-type VEK -key-tag 301a4e57-
9efb-11e7-b2bc-0050569c227f -restored no
```

Node: node2

Key Manager: 10.0.0.10

Server Status: available

Key Tag	Key Type	Restored
301a4e57-9efb-11e7-b2bc-0050569c227f	VEK	no

Key ID:
0000000000000000000020000000000005004d03aca5b72cd20b2f83eae1531c605e000000000000000000

If any listed keys have "no" in the "Restored" column, run "security key-manager restore" to restore those keys.

Related Links

- [security key-manager key query](#)
- [security key-manager restore](#)

security key-manager restore

(DEPRECATED)-Restore the key ID pairs from the key management servers.

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and may be removed in a future release. Use [security key-manager external restore](#) instead.

This command retrieves and restores any current unrestored keys associated with the storage controller from the specified key management servers. This command is not supported when the Onboard Key Manager is enabled.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node

This parameter specifies the name of the node that is to load the key IDs into its internal key table. If not specified, all nodes retrieve keys into their internal key table.

[-address <IP Address>] - IP Address

If this parameter is specified, the command restores only from key management server at the specified IP address. If not specified the command restores from all available key management servers.

[-key-id <key id>] - Key ID

If this parameter is specified, the command restores only the specified key IDs.

[-key-tag <text>] - Key Tag

This parameter specifies the value associated with the key ID pair at the time of their creation. If specified, restore only key ID pairs associated with the specified key tag. If not specified, all key ID pairs for the cluster are retrieved.

[-count <integer>] - (DEPRECATED)-Key Server's total Key Count

The value *count* is deprecated and may be removed in a future release of Data ONTAP. This parameter specifies the total number of keys stored in the key management servers. If this parameter is specified, then the command displays only the key IDs retrieved from the key management servers whose total key count matches the specified count number.

[-key-manager-server-status {available|not-responding|unknown}] - Command Error Code

This parameter specifies the connectivity status of the key management server. If you specify this parameter the command displays only the key IDs retrieved from key management servers with specified status.

Examples

The following command restores keys that are currently on a key server but are not stored within the key tables

on the cluster:

```
cluster-1::> security key-manager restore
Node: node1
  Key Manager: 10.0.0.10
  Server Status: available

Key IDs
-----
000000000000000000002000000000001001d71f3b2468d7e16a6e6972d3e6645200000000000
000000
000000000000000000002000000000005004d03aca5b72cd20b2f83eae1531c605e0000000000
000000
Node: node2
  Key Manager: 10.0.0.10
  Server Status: available

Key IDs
-----
000000000000000000002000000000001001d71f3b2468d7e16a6e6972d3e6645200000000000
000000
000000000000000000002000000000005004d03aca5b72cd20b2f83eae1531c605e0000000000
000000
```

The following loads any keys that exist on the key servers with IP address 10.0.0.10 with key-tag "node1" that are not currently stored in key tables of the nodes in the cluster. In this example, a key with that key-tag was missing from two nodes in the cluster:

```

cluster-1::> security key-manager restore -address 10.0.0.10 -key-tag
node1
Node: node1
    Key Manager: 10.0.0.10
    Server Status: available

Key IDs
-----
000000000000000000002000000000001001d71f3b2468d7e16a6e6972d3e6645200000000000
000000
Node: node2
    Key Manager: 10.0.0.10
    Server Status: available

Key IDs
-----
000000000000000000002000000000001001d71f3b2468d7e16a6e6972d3e6645200000000000
000000

```

Related Links

- [security key-manager external restore](#)

security key-manager setup

(DEPRECATED)-Configure key manager connectivity

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and might be removed in a future release. To set up external key manager, use [security key-manager external enable](#) , and to set up the Onboard Key Manager use [security key-manager onboard enable](#) instead.

The `security key-manager setup` command enables you to configure key management. Data ONTAP supports two mutually exclusive key management methods: external via one or more key management interoperability protocol (KMIP) servers, or internal via an Onboard Key Manager. This command is used to configure an external or internal key manager. When configuring an external key management server, this command records networking information on all node that is used during the boot process to retrieve keys needed for booting from the KMIP servers. For the Onboard Key Manager, this command prompts you to configure a passphrase to protect internal keys in encrypted form.

This command can also be used to refresh missing onboard keys. For example, if you add a node to a cluster that has the Onboard Key Manager configured, you will run this command to refresh the missing keys.

For the Onboard Key Manager in a MetroCluster configuration, if the [security key-manager update-passphrase](#) command is used to update the passphrase on one site, then run the `security key-manager setup`

command with the new passphrase on the partner site before proceeding with any key-manager operations.

Parameters

`[-node <nodename>]` - Node Name

This parameter is used only with the Onboard Key Manager when a refresh operation is required (see command description). This parameter is ignored when configuring external key management and during the initial setup of the Onboard Key Manager.

`[-cc-mode-enabled {yes|no}]` - Enable Common Criteria Mode?

When configuring the Onboard Key Manager, this parameter is used to specify that Common Criteria (CC) mode should be enabled. When CC mode is enabled, you will be required to provide a cluster passphrase that is between 64 and 256 ASCII character long, and you will be required to enter that passphrase each time a node reboots.

`[-sync-metrocluster-config {yes|no}]` - Sync MetroCluster Configuration from Peer

When configuring the Onboard Key Manager in a MetroCluster configuration, this parameter is used to indicate that the `security key-manager setup` command has been performed on the peer cluster, and that the `security key-manager setup` command on this cluster should import the peer's configuration.

`[-are-unencrypted-metadata-volumes-allowed-in-cc-mode {yes|no}]` - Are Unencrypted Metadata Volumes Allowed in CC-Mode

If Common Criteria (CC) mode is enabled this parameter allows unencrypted metadata volumes to exist. These metadata volumes are created internally during normal operation. Examples are volumes created during SnapMirror and Vserver migrate operations. The default value is `no`.

Examples

The following example creates a configuration for external key management:

```
cluster-1::> security key-manager setup
Welcome to the key manager setup wizard, which will lead you through
the steps to add boot information.

Enter the following commands at any time
"help" or "?" if you want to have a question clarified,
"back" if you want to change your answers to previous questions, and
"exit" if you want to quit the key manager setup wizard. Any changes
you made before typing "exit" will be applied.

Restart the key manager setup wizard with "security key-manager setup". To
accept a default or omit a question, do not enter a value.

Would you like to configure the Onboard Key Manager? {yes, no} [yes]: no
Would you like to configure the KMIP server environment? {yes, no} [yes]:
yes
```

The following example creates a configuration for the Onboard Key Manager:


```
cluster-1::> security key-manager setup
Welcome to the key manager setup wizard, which will lead you through
the steps to add boot information.
```

```
Enter the following commands at any time
"help" or "?" if you want to have a question clarified,
"back" if you want to change your answers to previous questions, and
"exit" if you want to quit the key manager setup wizard. Any changes
you made before typing "exit" will be applied.
```

```
Restart the key manager setup wizard with "security key-manager setup". To
accept a default or omit a question, do not enter a value.
```

```
Would you like to configure the Onboard Key Manager? {yes, no} [yes]: yes
Enter the cluster-wide passphrase for the Onboard Key Manager. To continue
the
configuration, enter the passphrase, otherwise type "exit":
Re-enter the cluster-wide passphrase:
After configuring the Onboard Key Manager, save the encrypted
configuration data
in a safe location so that you can use it if you need to perform a manual
recovery
operation. To view the data, use the "security key-manager backup show"
command.
```

The following example creates a configuration for the Onboard Key Manager with Common Criteria mode enabled:

```
cluster-1::> security key-manager setup -cc-mode-enabled yes
Welcome to the key manager setup wizard, which will lead you through
the steps to add boot information.
```

Enter the following commands at any time
"help" or "?" if you want to have a question clarified,
"back" if you want to change your answers to previous questions, and
"exit" if you want to quit the key manager setup wizard. Any changes
you made before typing "exit" will be applied.

Restart the key manager setup wizard with "security key-manager setup". To
accept a default or omit a question, do not enter a value.

```
Would you like to configure the Onboard Key Manager? {yes, no} [yes]: yes
Enter the cluster-wide passphrase for the Onboard Key Manager. To continue
the
configuration, enter the passphrase, otherwise type "exit":
Re-enter the cluster-wide passphrase:
After configuring the Onboard Key Manager, save the encrypted
configuration data
in a safe location so that you can use it if you need to perform a manual
recovery
operation. To view the data, use the "security key-manager backup show"
command.
```

Related Links

- [security key-manager external enable](#)
- [security key-manager onboard enable](#)
- [security key-manager update-passphrase](#)

security key-manager show-key-store

Displays the configured key manager key stores.

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command displays the list of configured key managers.

Parameters

```
{ [-fields <fieldname>,...]
```

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

[`-instance`] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[`-vserver <vserver name>`] - Vserver

If you specify this parameter, then the command will list the key manager configured for the given Vserver.

[`-key-store <Key Store>`] - Key Store

If you specify this parameter, then the command displays only the vservers that have the given key-store configured.

[`-state <Key Store state>`] - Key Store State

If you specify this parameter, then the command displays only the vservers that have the given state configured.

[`-keystore-type <Key Store Type>`] - Key Store Type (Azure/AWS etc)

If you specify this parameter, then the command displays only the vservers that have the given keystore-type configured. This parameter is used to specify a particular type of external key manager. If this parameter is specified and 'key-store' is provided as 'onboard', the "security key-manager show-key-store" command will not return any entries.

[`-policy <text>`] - Key Manager Policy Name

If you specify this parameter, then the command displays only the vservers that have the given policy.

Examples

The following example shows all configured key managers in the cluster. In the example, the admin vserver has the Onboard Key Manager configured and the data vserver "datavs1" has external key management configured:

```
cluster-1::> security key-manager show-key-store
```

Vserver	Key Store	Key Store Type
cluster-1	onboard	-
datavs1	external	AKV

security key-manager show

(DEPRECATED)-Display key management servers

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and may be removed in a future release. Use [security key-manager external show](#) instead.

This command displays the key management servers configured on the cluster. This command is not

supported when the Onboard Key Manager is enabled.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>`, ... parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-status]

If you specify this parameter, the command displays the status of each key management server.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node

This parameter specifies the name of the node that you want to retrieve key management server status for. If parameter is not specified, all nodes will retrieve the key management servers status.

[-address <IP Address>] - IP Address

Shows only a key management server registered with the input address. It is also possible to show multiple key management servers.

[-server-port <integer>] - Server TCP Port

If you specify this parameter, the command displays only key servers listening on this port.

Examples

The following example lists all configured key management servers:

```
cluster-1::> security key-manager show
```

Node	Registered Key Manager
-----	-----
node1	10.225.89.33
node2	10.225.89.33

The following example lists all configured key management servers, the TCP port on which those servers are expected to listen for incoming KMIP connections, and their server status:

```
cluster-1::> security key-manager show -status
```

Node	Port	Registered Key Manager	Status
-----	-----	-----	
node1	5696	10.225.89.33	available
node2	5696	10.225.89.33	available

Related Links

- [security key-manager external show](#)

security key-manager update-passphrase

(DEPRECATED)-Update cluster-wide passphrase

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description



This command is deprecated and might be removed in a future release. Use [security key-manager onboard update-passphrase](#) instead.

The `security key-manager update-passphrase` command provides a way to update the cluster-wide passphrase, created initially by running the [security key-manager setup](#) command, that is used for the Onboard Key Manager. This command prompts for the existing passphrase, and if that passphrase is correct then the command prompts for a new passphrase.

When the `security key-manager update-passphrase` command is executed in a MetroCluster configuration, then run the [security key-manager setup](#) command with the new passphrase on the partner site before proceeding with any key-manager operations. This allows the updated passphrase to be replicated to the partner site.

Examples

The following example updates the cluster-wide passphrase used for the Onboard Key Manager:

```
cluster-1::*> security key-manager update-passphrase
```

```
Warning: This command will reconfigure the cluster passphrase for the  
Onboard
```

```
Key Manager.
```

```
Do you want to continue? {y|n}: y
```

```
Enter current passphrase:
```

```
Enter new passphrase:
```

```
Reenter the new passphrase:
```

```
Update passphrase has completed. Save the new encrypted configuration data  
in
```

```
a safe location so that you can use it if you need to perform a manual  
recovery
```

```
operation. To view the data, use the "security key-manager backup show"  
command.
```

Related Links

- [security key-manager onboard update-passphrase](#)
- [security key-manager setup](#)

security key-manager backup show

(DEPRECATED)-Show salt and wrapped keys as a hex dump

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and might be removed in a future release. Use [security key-manager onboard show-backup](#) instead.

This command displays the backup information for the Onboard Key Manager, which would be used to recover the cluster in case of catastrophic situations. The information displayed is for the cluster as a whole (not individual nodes). This command is not supported for an external key management configuration.

Examples

The following example displays the Onboard Key Manager backup data for the cluster:

[illegible]

Related Links

- security key-manager onboard show-backup

security key-manager config modify

Modify key management configuration options

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description

This command modifies the key management configuration options.

Parameters

[-cc-mode-enabled {true|false}] - Enable Common Criteria Mode (privilege: advanced)

This parameter modifies the configuration state of the Onboard Key Manager (OKM) Common Criteria (CC) mode. CC mode enforces some of the policies required by the Common Criteria "Collaborative Protection Profile for Full Drive Encryption-Authorization Acquisition" (FDE-AA cPP) and "Collaborative Protection Profile for Full Drive Encryption-Encryption Engine" documents.

[-health-monitor-polling-interval <integer>] - Health Monitor Polling Period (in minutes) (privilege: advanced)

This parameter modifies the the polling interval of the keyserver health monitor at the cluster level.

[-cloud-kms-retry-count <integer>] - Cloud KMS connection retry count (privilege: advanced)

This parameter modifies the the cloud keymanager connection retry count at the cluster level.

Examples

The following command enables Common Criterial mode in the cluster:

```
cluster-1::*> security key-manager config modify -cc-mode-enabled true
```

The following command modifies the keyserver health monitor polling interval to be 30 minutes:

```
cluster-1::*> security key-manager config modify -health-monitor-polling  
-interval 30
```

The following command modifies the cloud keymanager connection retry count to 3:

```
cluster-1::*> security key-manager config modify -cloud-kms-retry-count 3
```

security key-manager config show

Display key management configuration options

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description

This command displays the key management configuration options.

The "cc-mode-enabled" option reflects the current configuraton state for Common-Criteria (CC) mode for the Onboard Key Manager. CC mode is an operational mode that enforces some of the policies required by the Common Criteria "Collaborative Protection Profile for Full Drive Encryption-Authorization Acquisition" (FDE-AA

cPP) and "Collaborative Protection Profile for Full Drive Encryption-Encryption Engine" documents. The feature can be enabled when the Onboard Key Manager is configured using the [security key-manager setup](#) command or after the Onboard Key Manager is configured using the [security key-manager config modify](#) command.

Examples

The following example displays the state of all key-manager configuration options:

```
cluster-1::*> security key-manager config show
CC-Mode  health-monitor-polling-interval  cloud-kms-retry-count
Enabled  (in minutes)
-----
true     30                               0
```

Related Links

- [security key-manager setup](#)
- [security key-manager config modify](#)

security key-manager external add-servers

Add external key management servers

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command adds the key management servers of the given hosts and ports to the given Vserver's external key manager's list of four possible key management servers. When adding key management servers to the external key manager associated with the admin Vserver, you must run the same command specifying the same set of key servers on the peer cluster. When adding key management servers to a data Vserver, you can run the `security key-manager external add-servers` command on the active cluster only, as the command is replicated to the peer cluster. However, you need to ensure that the key management servers specified are reachable from both clusters. This command is not supported if external key management is not enabled for the Vserver. Use this command to add primary key servers. To modify the list of secondary key servers associated with a primary key server, use the [security key-manager external modify-server](#) command.

Parameters

-vserver <vserver name> - Vserver Name

Use this parameter to specify the Vserver on which to add the key management servers.

-key-servers <Hostname and Port>,... - External Key Management Servers

Use this parameter to specify the list of additional key management servers that the external key manager uses to store keys.

Examples

The following example adds two key management servers to the list of servers used by the external key manager for Vserver cluster-1. The first key management server's hostname is keyserver1.local and is listening on the default port 5696, and the second key management server's IP is 10.0.0.20 and is listening on port 15696:

```
cluster-1::> security key-manager external add-servers -vserver cluster-1
-key-servers keyserver1.local, 10.0.0.20:15696
```

Related Links

- [security key-manager external modify-server](#)

security key-manager external disable

Disable external key management

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command disables the external key manager associated with the given Vserver. If the key manager is in use by ONTAP, you cannot disable it. When disabling the external key manager associated with the admin Vserver, you must run the same command on the peer cluster. When disabling the external key manager for a data Vserver, you can run the `security key-manager external disable` command on the active cluster only, as the command is replicated on the peer cluster. This command is not supported when the Onboard Key Manager is enabled for the given Vserver.

Parameters

-vserver <vserver name> - Vserver Name (privilege: advanced)

Use this parameter to specify the Vserver on which the external key manager is to be disabled.

Examples

The following example removes the external key manager for Vserver cluster-1:

```
cluster-1::*> security key-manager external disable -vserver cluster-1
Warning: This command will permanently delete the external key management
configuration for Vserver "cluster-1".
Do you want to continue? {y|n}: y
```

security key-manager external enable

Enable external key management

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command enables the external key manager associated with the given Vserver. This command is not supported when a key manager for the given Vserver is already enabled. When enabling the external key manager associated with the admin Vserver, you must run the same command specifying the same set of key servers on the peer cluster. When enabling the external key manager for a data Vserver, you can run the `security key-manager external enable` command on the active cluster only, as the configuration will be replicated on the peer cluster. However, you must ensure that the key management servers specified in the `security key-manager external enable` command are reachable from both clusters. Only primary key servers can be added using this command.

Parameters

-vserver <vserver name> - Vserver Name

Use this parameter to specify the Vserver on which the external key manager is to be enabled.

-key-servers <Hostname and Port>,... - List of External Key Management Servers

Use this parameter to specify the list of up to four key management servers that the external key manager uses to store keys.

-client-cert <text> - Name of the Client Certificate

Use this parameter to specify the unique name of the client certificate that the key management servers use to ensure the identity of Data ONTAP.

-server-ca-certs <text>,... - Names of the Server CA Certificates

Use this parameter to specify the unique names of server-ca certificates that Data ONTAP uses to ensure the identify of the key management servers.

[-policy <text>] - Key Manager Policy

Use this parameter to specify a specific key manager security policy to be used by this key manager.

Examples

The following example enables the external key manager for Vserver cluster-1. The command includes three key management servers. The first key server's hostname is `ks1.local` and is listening on port 15696. The second key server's IP address is 10.0.0.10 and is listening on the default port 5696. The third key server's IPv6 address is `fd20:8b1e:b255:814e:32bd:f35c:832c:5a09`, and is listening on port 1234.

```
cluster-1::> security key-manager external enable -vserver cluster-1 -key
-servers
ks1.local:15696,10.0.0.10,[fd20:8b1e:b255:814e:32bd:f35c:832c:5a09]:1234
-client-cert AdminVserverClientCert -server-ca-certs
ServerCaCert1,ServerCaCert2
```

security key-manager external modify-server

Modify key server properties

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command modifies configuration information for configured key management servers. When modifying a key management server from the external key manager associated with the admin Vserver, you must run the same command specifying the same set of parameters on the peer cluster. When modifying a key management server from a data Vserver, you can run the `security key-manager external modify-server` command on the active cluster only as the command is replicated on the peer cluster. However, if the password associated with a key management server is modified, then you must run the `security key-manager external modify-server` command specifying the same password on the peer cluster as the password is not replicated between clusters. This command is supported only when external key manager has been enabled for the given Vserver.

Parameters

-vserver <vserver name> - Vserver Name

Use this parameter to specify the Vserver on which to modify the key management server configuration.

-key-server <Hostname and Port> - External Key Server

Use this parameter to specify the primary key management server for which the command modifies the configuration.

[-secondary-key-servers <Remote InetAddress>,...] - Secondary Key Servers

Use this parameter to specify the secondary key management servers that will be members of the set of clustered key servers. When specifying a secondary key server, a port number cannot be associated with the secondary key server.

[-timeout <integer>] - Key Server I/O Timeout (privilege: advanced)

Use this parameter to specify the I/O timeout, in seconds, for the selected key management server.

[-username <text>] - Authentication User Name (privilege: advanced)

Use this parameter to specify the username with which Data ONTAP authenticates with the key management server.

Examples

The following example modifies the I/O timeout to 45 seconds for Vserver cluster-1, key server keyserver1.local:

```
cluster-1::> security key-manager external modify-server -vserver cluster-1 -key-server keyserver1.local -timeout 45
```

The following example modifies the username and passphrase used to authenticate with key server keyserver1.local:

```
cluster-1::> security key-manager external modify-server -vserver cluster-1 -key-server keyserver1.local -username ksuser
Enter the password:
Reenter the password:
```

The following example modifies the secondary key management servers `secondarykeyserver1.local` and `secondarykeyserver2.local` to be in a cluster configuration with the primary key management server `keyserver1.local`

```
cluster-1::> security key-manager external modify-server -vserver cluster-1 -key-server keyserver1.local -secondary-key-servers secondarykeyserver1.local,secondarykeyserver2.local
```

security key-manager external modify

Modify external key management

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command modifies the external key manager configuration associated with the given Vserver. When modifying the external key manager configuration associated with the admin Vserver, you must run the same command specifying the same parameters on the peer cluster. When modifying the external key manager configuration associated with a data Vserver, you can run the `security key-manager external modify` command on the active cluster only as the configuration modifications are replicated on the peer cluster. This command is not supported when external key management is not enabled for the given Vserver.

Parameters

-vserver <vserver name> - Vserver Name

Use this parameter to specify the Vserver on which the key manager to be modified is located.

[-client-cert <text>] - Name of the Client Certificate

Use this parameter to modify the name of the client certificate that the key management servers use to ensure the identity of Data ONTAP. If the keys of the new certificate do not match the keys of the existing certificate, or if the TLS connectivity with key-management servers fails with the new certificate, the operation fails. Running this command in the diagnostic privilege mode ignores failures and allows the command to complete.

[-server-ca-certs <text>,...] - Names of the Server CA Certificates

Use this parameter to modify the names of server-ca certificates that Data ONTAP uses to ensure the identity of the key management servers. Note that the list provided completely replaces the existing list of certificates. If the TLS connectivity with key-management servers fails with the new list of server-ca certificates, the operation fails. Running this command in the diagnostic privilege mode ignores failures and allows the command to complete.

Examples

The following example updates the client certificate used with the key management servers:

```
cluster-1::> security key-manager external modify -vserver cluster-1  
-client-cert NewClientCert
```

security key-manager external remove-servers

Remove external key management servers

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command removes the key management servers at the given hosts and ports from the given Vserver's external key manager's list of key management servers. If any of the specified key management servers is the sole storage location for any key that is in use by Data ONTAP, then you are unable to remove the key server. When removing key management servers from the external key manager associated with the admin Vserver, you must run the same command specifying the same set of key servers on the peer cluster. When removing key management servers from a data Vserver, you can run the `security key-manager external remove-servers` command on the active cluster only as the command is replicated on the peer cluster. This command is not supported when external key management is not enabled for the given Vserver. Use this command to remove primary key servers. To modify the list of secondary key servers associated with a primary key server, use the [security key-manager external modify-server](#) command.

Parameters

-vserver <vserver name> - Vserver Name

Use this parameter to specify the Vserver on which the external key manager is to be removed.

-key-servers <Hostname and Port>,... - External Key Management Servers

Use this parameter to specify the list of key management servers that you want to remove from the external key manager.

[-force {true|false}] - Bypass OOQ Check?

Set this parameter to true to bypass checks for out of quorum nodes.

Examples

The following example removes the key management server `keyserver1.local`, listening on the default port of 5696 and the key management server at IP `10.0.0.20`, listening on port of 15696.

```
cluster-1::*> security key-manager external remove-servers -vserver  
cluster-1  
-key-servers keyserver1.local,10.0.0.20:15696
```

Related Links

- [security key-manager external modify-server](#)

security key-manager external restore

Restore the key ID pairs from the key management servers.

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command retrieves and restores any current unrestored keys associated with the storage controller from the specified key management servers. When restoring keys from the external key manager associated with the admin Vserver, you must run the same command on the peer cluster. When restoring keys from a data Vserver, you can run the `security key-manager external restore` command on the active cluster only as the command is replicated on the peer cluster. This command is not supported when external key management has not been enabled for the Vserver. This command only restores keys from primary key servers.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node

This parameter specifies the name of the node that will load unrestored key IDs into its internal key table. If not specified, all nodes retrieve unrestored keys into their internal key table.

[-vserver <vserver name>] - Vserver Name

This parameter specifies the Vserver for which to list the keys. If not specified, this command restores key for all Vservers.

[-key-server <Hostname and Port>] - Key Server

If this parameter is specified, this command restores keys from the key management server identified by the host and port. If not specified, this command restores keys from all available key management servers.

[-key-id <Hex String>] - Key ID

If you specify this parameter, then the command restores only the key IDs that match the specified value.

[-key-tag <text>] - Key Tag

If you specify this parameter, then the command restores only the key IDs that match the specified key-tag. The key-tag for Volume Encryption Keys (VEKs) is set to the UUID of the encrypted volume. If not specified, all key ID pairs for any key tags are restored.

Examples

The following command restores keys that are currently on a key server but are not stored within the key tables on the cluster. One key is missing for vserver cluster-1 on node1, and another key is missing for vserver datavs on node1 and node2:

```
cluster-1::> security key-manager external restore
Node: node1
      Vserver: cluster-1
      Key Server: 10.0.0.1:5696

Key ID
-----
-----
00000000000000000000200000000000100a04fc7303d9abd1e0f00896192fa9c3f0000000000
000000
Node: node1
      Vserver: datavs
      Key Server: tenant.keyserver:5696

Key ID
-----
-----
00000000000000000000200000000000400a05a7c294a7abc1e0911897132f49c380000000000
000000
Node: node2
      Vserver: datavs
      Key Server: tenant.keyserver:5696

Key ID
-----
-----
00000000000000000000200000000000400a05a7c294a7abc1e0911897132f49c380000000000
000000
```

security key-manager external show-status

Show the set of configured external key management servers

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command displays connectivity information between Data ONTAP nodes and configured external key management servers.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>`, ... parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node Name

If you specify this parameter, then the command displays the connectivity information for only the given node.

[-vserver <vserver name>] - Vserver Name

If you specify this parameter, then the command displays the key management servers for only the given Vserver.

[-key-server <Hostname and Port>] - Primary Key Server

If you specify this parameter, then the command displays the connectivity information for only the key management servers with the given primary key server host name or IP address listening on the given port.

[-key-server-status {available|not-responding|unknown}] - Key Server Status

If you specify this parameter, then the command displays the connectivity information for only the key management servers with the given status.

[-status-details <text>] - Key Server Status Details

If you specify this parameter, then the command displays the connectivity information for only the key management servers with the given status details.

[-secondary-key-servers <text>,...] - Secondary Key Servers

If you specify this parameter, then the command displays the connectivity information of only the primary key management servers that have the given secondary key management servers.

Examples

The following example lists all configured key management servers for all Vservers:

```
cluster-2::*> security key-manager external show-status
```

Node	Vserver	Primary Key Server	Status

node1			
	datavs	keyserver.datavs.com:5696	
available			
		Secondary Servers: ks1.local	
	cluster-1	10.0.0.10:5696	
available			
		fd20:8b1e:b255:814e:32bd:f35c:832c:5a09:1234	
available			
node2			
	datavs	keyserver.datavs.com:5696	
available			
		Secondary Servers: ks1.local	
	cluster-1	10.0.0.10:5696	
available			
		fd20:8b1e:b255:814e:32bd:f35c:832c:5a09:1234	
available			

8 entries were displayed.

security key-manager external show

Show the set of configured external key management servers.

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command displays the external key management servers configured on the cluster for a given Vserver. No entries are displayed when external key management is not enabled for the given Vserver. This command displays the primary external key management servers, along with any associated secondary key servers, configured on the cluster for a given Vserver.

Parameters

```
{ [-fields <fieldname>,...]
```

If you specify the `-fields <fieldname>`, ... parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-vserver <vserver name>] - Vserver Name

If you specify this parameter, then the command displays only the key management servers for the given Vserver.

[-key-server <text>] - Key Server Name with port

If you specify this parameter, then the command displays only the key management servers with the given primary key server host name or IP address listening on the given port.

[-client-cert <text>] - Name of the Client Certificate

If you specify this parameter, then the command displays only the key management servers using a client certificate with the given name.

[-server-ca-certs <text>, ...] - Names of the Server CA Certificates

If you specify this parameter, then the command displays only the key management servers using server-ca certificates with the given names.

[-timeout <integer>] - Server I/O Timeout

If you specify this parameter, then the command displays only the key management servers using the given I/O timeout.

[-username <text>] - Authentication User Name

If you specify this parameter, then the command displays only the key management servers using the given authentication username.

[-policy <text>] - Security Policy

If you specify this parameter, then the command displays only the key management servers using the given key manager policy.

[-secondary-key-servers <text>, ...] - Secondary Key Servers

If you specify this parameter, then the command displays only the key management servers with the given secondary key servers.

Examples

The following example lists all configured key management servers for all Vservers:

```
cluster-1::> security key-manager external show
Vserver: datavs
    Client Certificate: datavsClientCert
    Server CA Certificates: datavsServerCaCert1, datavsServerCaCert2
    Security Policy: IBM_Key_Lore
```

Primary Key Server

keyserver.datavs.com:5696

Vserver: cluster-1

Client Certificate: AdminClientCert
 Server CA Certificates: AdminServerCaCert
 Security Policy:

Primary Key Server

10.0.0.10:1234

Secondary Servers: ks1.local, ks2.local
fd20:8b1e:b255:814e:32bd:f35c:832c:5a09:1234
ks1.local:1234
4 entries were displayed.

The following example lists all configured key management servers with more detail, including timeouts and usernames:

```

cluster-1::> security key-manager external show -instance
Vserver: datavs
    Client Certificate: datavsClientCert
    Server CA Certificates: datavsServerCaCert1, datavsServerCaCert2
    Primary Key Server: keyserver.datavs.com:5696
        Timeout: 25
        Username: datavsuser
    Security Policy: IBM_Key_Lore
    Secondary Key Servers:
Vserver: cluster-1
    Client Certificate: AdminClientCert
    Server CA Certificates: AdminServerCaCert
    Primary Key Server: 10.0.0.10:1234
        Timeout: 25
        Username:
    Security Policy:
    Secondary Key Servers: ks1.local, ks2.local
Vserver: cluster-1
    Client Certificate: AdminClientCert
    Server CA Certificates: AdminServerCaCert
    Primary Key Server: fd20:8b1e:b255:814e:32bd:f35c:832c:5a09:1234
        Timeout: 25
        Username:
    Security Policy:
    Secondary Key Servers:
Vserver: cluster-1
    Client Certificate: AdminClientCert
    Server CA Certificates: AdminServerCaCert
    Primary Key Server: ks1.local:1234
        Timeout: 45
        Username:
    Security Policy:
    Secondary Key Servers:
4 entries were displayed.

```

security key-manager external azure check

Show detailed status of the Azure Key Vault configurations

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command displays the Azure Key Vault (AKV) Key Management Service (KMS) status.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>`, ... parameter, the command output also includes the specified field or fields. You can use `-fields ?` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node (privilege: advanced)

If this parameter is specified then the command displays only the AKV status for the given node.

[-vserver <Vserver Name>] - Vserver Name (privilege: advanced)

If this parameter is specified then the command displays only the AKV status for the given Vserver.

[-category <Categories for KMS status check>] - Component (privilege: advanced)

If this parameter is specified then the command displays only the AKV status for the given category.

Category	Description
-----	-----
service_reachability	Cloud KMS Reachability
ekmip_server	Embedded KMIP Server Reachability
kms_wrapped_key_status	Status of KMS Wrapped Keys On

Cluster

[-status <Status Check>] - Status (privilege: advanced)

If this parameter is specified then the command displays only the AKV status entries matching the given status.

OK
FAILED
UNKNOWN

[-detail <text>] - Status Details (privilege: advanced)

This field displays the detailed status message, if available.

Examples

The example below displays the status of all components of all AKV KMS configured on the node.

```
cluster-1::> security key-manager external azure check -node vsim1
Vserver: vs1
Node: vsim1

Category: service_reachability
          Status: OK

Category: ekmp_server
          Status: OK

Category: kms_wrapped_key_status
          Status: OK
```

security key-manager external azure disable

Disable Azure Key Vault

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command disables the Azure Key Vault (AKV) associated with the given Vserver. If the AKV is in use by ONTAP, you cannot disable it. This command is not supported if AKV has not been enabled for the Vserver.

Parameters

-vserver <Vserver Name> - Vserver (privilege: advanced)

Use this parameter to specify the Vserver on which the AKV is to be disabled.

Examples

The following example disables the AKV for Vserver v1.

```
cluster-1::>security key-manager external azure disable -vserver v1
```

security key-manager external azure enable

Enable Azure Key Vault

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command enables the Azure Key Vault (AKV) associated with the given Vserver. An Azure application and AKV must be deployed on the Azure portal prior to running this command. This command is not supported for the admin Vserver, or if a key manager for the given data Vserver is already enabled. This command is also

not supported in a MetroCluster environment.

Parameters

-vserver <Vserver Name> - Vserver

Use this parameter to specify the Vserver on which the AKV is to be enabled.

-client-id <text> - Application (Client) ID of Deployed Azure Application

Use this parameter to specify the client (application) ID of the deployed Azure application.

-tenant-id <text> - Directory (Tenant) ID of Deployed Azure Application

Use this parameter to specify the tenant (directory) ID of the deployed Azure application.

-name {(ftp|http)://(hostname|IPv4 Address|['IPv6 Address'])...} - Deployed Azure Key Vault DNS Name

Use this parameter to specify the DNS name of the deployed AKV.

[-authentication-method <AKV Authentication Method>] - Authentication Method for Azure Application

Use this parameter to specify either client_secret authentication or certificate authentication for the deployed AKV.

-key-id {(ftp|http)://(hostname|IPv4 Address|['IPv6 Address'])...} - Key Identifier of AKV Key Encryption Key

Use this parameter to specify the key identifier of the AKV Key Encryption Key (KEK).

Examples

The following example enables the AKV for Vserver v1. An Azure application with client-id "4a0f9c98-c5aa-4275-abe3-2780cf2801c3", tenant-id "8e21f23a-10b9-46fb-9d50-720ef604be98", client secret (not echoed to the screen for security purposes) and an AKV with DNS name "https://akv-keyvault.vault.azure.net" is deployed on the Azure portal. An AKV KEK with DNS name "https://akv-keyvault.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74" is created on the Azure portal for the AKV.

```
cluster-1::>security key-manager external azure enable -client-id
4a0f9c98-c5aa-4275-abe3-2780cf2801c3 -tenant-id 8e21f23a-10b9-46fb-9d50-
720ef604be98 -name https://akv-keyvault.vault.azure.net -key-id
https://akv-
keyvault.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74
-authentication-method client_secret -vserver v1
```

Enter the client secret for Azure Key Vault:

Re-enter the client secret for Azure Key Vault:

The following example enables the AKV for Vserver v1. An Azure application with client-id "4a0f9c98-c5aa-4275-abe3-2780cf2801c3", tenant-id "8e21f23a-10b9-46fb-9d50-720ef604be98", a client certificate (not echoed to the screen for security purposes) and an AKV with DNS name "https://akv-keyvault.vault.azure.net"

is deployed on the Azure portal. An AKV KEK with DNS name "https://akv-keyvault.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74" is created on the Azure portal for the AKV.

```
cluster-1::>security key-manager external azure enable -client-id
4a0f9c98-c5aa-4275-abe3-2780cf2801c3 -tenant-id 8e21f23a-10b9-46fb-9d50-
720ef604be98 -name https://akv-keyvault.vault.azure.net -key-id
https://akv-
keyvault.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74
-authentication-method certificate -vserver v1
```

Enter the client certificate for Azure Key Vault:

security key-manager external azure rekey-external

Rekey an external key of the Vserver

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command results in the key hierarchy being protected by the user designated AKV key encryption key (KEK). Prior to running this command, the user should have already made the necessary change on the Azure portal to use a new KEK for their key vault. The key-id used in this command is the key ID associated with the user's new AKV KEK. Upon successful completion of this command, the internal keys for the given Vserver will be protected by the new AKV KEK.

Parameters

-vserver <Vserver Name> - Vserver (privilege: advanced)

This parameter specifies the Vserver for which ONTAP should rekey the AKV KEK.

-key-id {(ftp|http)://(hostname|IPv4 Address|['IPv6 Address'])...} - Key Identifier of a new AKV Key Encryption Key (privilege: advanced)

This parameter specifies the key id of the new AKV KEK that should be used by ONTAP for the provided Vserver.

Examples

The following command rekeys AKV KEK for data Vserver v1 using a new key-id key2.

```
cluster-1::> security key-manager external azure rekey-external -vserver
v1 -key-id https://kmip-akv-keyvault.vault.azure.net/keys/key2
```

security key-manager external azure rekey-internal

Rekey an internal key of the Vserver

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command rekeys the internal Vserver key hierarchy by changing the top-level internal key encryption key (KEK). Upon successful completion of the command, all keys in the Vserver key hierarchy will be protected by the new top-level KEK.

Parameters

-vserver <Vserver Name> - Vserver (privilege: advanced)

This parameter specifies the Vserver for which ONTAP should rekey the SVM KEK.

Examples

The following command rekeys the SVM KEK for data Vserver v1.

```
cluster-1::> security key-manager external azure rekey-internal -vserver  
v1
```

security key-manager external azure restore

Restore missing keys of Azure Key Vault

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command retrieves and restores any current unrestored keys associated with the given Vserver to the nodes internal key tables. This command is not supported when AKV has not been enabled for the Vserver.

Parameters

-vserver <Vserver Name> - Vserver

This parameter specifies the Vserver to which the missing keys will be restored.

Examples

The following command restores missing keys for the data vservice v1 (which has AKV configuration) to the internal key tables on the cluster.

```
cluster-1::> security key-manager external azure restore -vserver v1
```

security key-manager external azure show

Display Azure Key Vaults configuration

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command displays the Azure Key Vault (AKV) configuration for a given Vserver.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>`, ... parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-vserver <Vserver Name>] - Vserver

If you specify this parameter, then the command displays only the AKV configuration for the given Vserver.

[-client-id <text>] - Application (Client) ID of Deployed Azure Application

If you specify this parameter, then the command displays only the AKV configuration with the given client id.

[-tenant-id <text>] - Directory (Tenant) ID of Deployed Azure Application

If you specify this parameter, then the command displays only the AKV configuration with the given tenant id.

[-name { (ftp|http) :// (hostname|IPv4 Address| ' [' IPv6 Address']) ...}] - Deployed Azure Key Vault DNS Name

If you specify this parameter, then the command displays only the AKV configuration with the given key vault name.

[-state {available|not-responding|unknown}] - Azure Key Vault Cluster State

If you specify this parameter, then the command displays only the AKV configuration with the given state. The state can be either available or unknown.

[-key-id { (ftp|http) :// (hostname|IPv4 Address| ' [' IPv6 Address']) ...}] - Key Identifier of AKV Key Encryption Key

If you specify this parameter, then the command displays only the AKV configuration with the given key id.

[-unavailable-nodes <text>] - Names of Unavailable Nodes

If you specify this parameter, then the command displays only the AKV configuration with the given unavailable-nodes.

[-authentication-method <AKV Authentication Method>] - AKV Authentication Method

If you specify this parameter, then the command displays only the AKV configurations with the given authentication method.

Examples

The following example lists all Vservers with AKV configuration.

```
cluster-1::>security key-manager external azure show
Vserver: v1
Client ID: 4a0f9c98-c5aa-4275-abe3-2780cf2801c3
Tenant ID: 8e21f23a-10b9-46fb-9d50-720ef604be98
Key ID: https://akv-
keyvault.vault.azure.net/keys/key1/a8e619fd8f234db3b0b95c59540e2a74

Name                               State
-----
https://akv-keyvault.vault.azure.net  unknown
Unavailable Nodes:                  node1
```

security key-manager external azure update-client-secret

(DEPRECATED)-Update client secret for Azure Key Vault

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description



This command is deprecated and may be removed in a future release. Use [security key-manager external azure update-credentials](#) instead.

This command provides a way to update the client secret that is used for the Azure Key Vault (AKV) configured for the given Vserver. The command is initially set by running the [security key-manager external azure enable](#) command. This command is not supported if AKV has not been enabled for the Vserver.

Parameters

-vserver <Vserver Name> - Vserver (privilege: advanced)

Use this parameter to specify the Vserver for which the AKV client secret is to be updated.

Examples

The following example updates the AKV client secret for the data Vserver v1.

```
cluster-1::> security key-manager external azure update-client-secret
-vserver v1

Enter new client secret:

Re-enter new client secret:
```

Related Links

- [security key-manager external azure update-credentials](#)
- [security key-manager external azure enable](#)

security key-manager external azure update-credentials

Update client credentials for the Azure Application

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command provides a way to update the authentication credentials that are used for the Azure Key Vault (AKV) configured for the given Vserver. The credentials are initially set by running the [security key-manager external azure enable](#) command. This command is not supported if AKV has not been enabled for the Vserver.

Parameters

-vserver <Vserver Name> - Vserver (privilege: advanced)

Use this parameter to specify the Vserver for which the AKV client credentials are to be updated.

-authentication-method <AKV Authentication Method> - Authentication Method for the Azure Application (privilege: advanced)

Use this parameter to specify the authentication method.

Examples

The following examples show two ways of updating the AKV client credentials for the data Vserver v1.

```
cluster-1::> security key-manager external azure update-credentials
-vserver v1 -authentication-method client_secret
```

Enter new client secret:

Re-enter new client secret:

```
cluster-1:> security key-manager external azure update-credentials
-vserver v1 -authentication-method certificate
```

Enter the client certificate for Azure Key Vault:

Related Links

- [security key-manager external azure enable](#)

security key-manager external gcp check

Show detailed status of the Google Cloud KMS configuration

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command displays the Google Cloud Key Management Service (KMS) status.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node (privilege: advanced)

If this parameter is specified then the command displays only the Google Cloud KMS status for the given node.

[-vserver <Vserver Name>] - Vserver Name (privilege: advanced)

If this parameter is specified then the command displays only the Google Cloud KMS status for the given Vserver.

[-category <Categories for KMS status check>] - Component (privilege: advanced)

If this parameter is specified then the command displays only the Google Cloud KMS status for the given category.

Category	Description
-----	-----
service_reachability	Cloud KMS Reachability
ekmip_server	Embedded KMIP Server Reachability
kms_wrapped_key_status	Status of KMS Wrapped Keys On
Cluster	

[-status <Status Check>] - Status (privilege: advanced)

If this parameter is specified then the command displays only the Google Cloud KMS status entries matching the given status.

OK
FAILED
UNKNOWN

[`-detail <text>`] - Status Details (privilege: advanced)

This field displays the detailed status message, if available.

Examples

The example below displays the status of all components of all Google Cloud KMS configured on the node.

```
cluster-1::> security key-manager external gcp check -node vsim1
Vserver: vs1
Node: vsim1

Category: service_reachability
          Status: OK

Category: ekmp_server
          Status: OK

Category: kms_wrapped_key_status
          Status: OK
```

security key-manager external gcp disable

Disable a Google Cloud KMS

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command disables the Google Cloud Key Management Service (GCKMS) associated with the given Vserver. GCKMS cannot be disabled if it is in use by ONTAP. This command will fail if GCKMS has not been enabled for the Vserver.

Parameters

`-vserver <Vserver Name>` - Vserver (privilege: advanced)

Use this parameter to specify the Vserver on which the GCKMS is to be disabled.

Examples

The following example disables the GCKMS for Vserver v1.

```
cluster-1::>security key-manager external gcp disable -vserver v1
```

security key-manager external gcp enable

Enable a Google Cloud KMS

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command enables the Google Cloud Key Management Service (GCKMS) associated with the given Vserver. A GCP project and GCKMS must be deployed on the GCP portal prior to running this command. GCKMS can only be enabled on a data Vserver that doesn't already have a key manager configured. GCKMS cannot be enabled in a MetroCluster environment.

Parameters

-vserver <Vserver Name> - Vserver

Use this parameter to specify the Vserver on which the GCKMS is to be enabled.

-project-id <text> - Google Cloud KMS Project(Application) ID

Use this parameter to specify the project ID of the deployed GCP project.

-key-ring-name <text> - Google Cloud KMS Key Ring Name

Use this parameter to specify the key ring name of the deployed GCP project.

-key-ring-location <text> - Google Cloud KMS Key Ring Location

Use this parameter to specify the location of the key ring.

-key-name <text> - Google Cloud KMS Key Encryption Key Name

Use this parameter to specify the key name of the GCKMS Key Encryption Key (KEK).

Examples

The following example enables the GCKMS for Vserver v1. The parameters in the example command identify a Google Cloud Platform (GCP) project application deployed on the GCP. The GCP project application has a Project ID "test_project", a key ring name "key_ring_for_test_project", a key ring location "secure_location_for_key_ring" and a key name "testKEK".

```
cluster-1::*> security key-manager external gcp enable -vserver v1
-project-id test_project -key-ring-name key_ring_for_test_project -key
-ring-location secure_location_for_key_ring -key-name testKEK
```

Enter the contents of the Google Cloud Key Management Service account key file (json file): Press <Enter> when done

security key-manager external gcp rekey-external

Rekey an external key of the Vserver

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command replaces the existing GCP key encryption key (KEK) and results in the key hierarchy being protected by the user specified GCP KEK. The GCP key ring in use by the GCP Portal should be updated to use the new KEK prior to running this command. Upon successful completion of this command, the internal keys for the given Vserver will be protected by the new GCP KEK.

Parameters

-vserver <Vserver Name> - Vserver

This parameter specifies the Vserver for which ONTAP should rekey the GCP KEK.

-key-name <text> - Google Cloud KMS Key Encryption Key Name

This parameter specifies the key name of the new GCP KEK that should be used by ONTAP for the provided Vserver.

[-project-id <text>] - Google Cloud KMS Project (Application) ID

This parameter specifies the new project ID of the new GCP KEK that should be used by ONTAP for the provided Vserver.

[-key-ring-name <text>] - Google Cloud KMS Key Ring Name

This parameter specifies the new key ring name of the new GCP KEK that should be used by ONTAP for the provided Vserver.

[-key-ring-location <text>] - Google Cloud KMS Key Ring Location

This parameter specifies the new key ring location of the new GCP KEK that should be used by ONTAP for the provided Vserver.

Examples

The following command rekeys GCP KEK for data Vserver v1 using a new key-name key1.

```
cluster-1::> security key-manager external gcp rekey-external -vserver v1  
-key-name key1
```

security key-manager external gcp rekey-internal

Rekey an internal key of the Vserver

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command rekeys the internal Vserver key hierarchy by changing the SVM key encryption key (KEK). Upon successful completion of the command, all keys in the Vserver key hierarchy will be protected by the new top-level KEK.

Parameters

-vserver <Vserver Name> - Vserver (privilege: advanced)

This parameter specifies the Vserver for which ONTAP should rekey the SVM KEK.

Examples

The following command rekeys the SVM KEK for data Vserver v1.

```
cluster-1::> security key-manager external gcp rekey-internal -vserver v1
```

security key-manager external gcp restore

Restore missing keys of a Google Cloud KMS

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command retrieves and restores any unrestored keys associated with the given Vserver to each node's internal key tables.

Parameters

-vserver <Vserver Name> - Vserver

This parameter specifies the Vserver to which the missing keys will be restored.

Examples

The following command restores missing keys for the data Vserver v1 (which has GCKMS enabled) to the internal key tables on each node in the cluster.

```
cluster-1::> security key-manager external gcp restore -vserver v1
```

security key-manager external gcp show

Display Google Cloud KMS configuration

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command displays the Google Cloud Key Management Service (GCKMS) configuration.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-vserver <Vserver Name>] - Vserver

If you specify this parameter, then the command displays only the GCKMS configuration for the given Vserver.

[-project-id <text>] - Google Cloud KMS Project (Application) ID

If you specify this parameter, then the command displays only the GCKMS configuration with the given project id.

[-key-ring-name <text>] - Google Cloud KMS Key Ring Name

If you specify this parameter, then the command displays only the GCKMS configuration with the given key ring name.

[-key-ring-location <text>] - Google Cloud KMS Key Ring Location

If you specify this parameter, then the command displays only the GCKMS configuration with the given key ring location.

[-key-name <text>] - Google Cloud KMS Key Encryption Key Name

If you specify this parameter, then the command displays only the GCKMS configuration with the given key name.

[-state {available|not-responding|unknown}] - Google Cloud KMS Cluster State

If you specify this parameter, then the command displays only the GCKMS configuration with the given state. The state can be either available or unknown.

[-unavailable-nodes <text>] - Names of Unavailable Nodes

If you specify this parameter, then the command displays only the GCKMS configuration with the given unavailable-nodes.

Examples

The following example lists all Vservers with GCKMS configuration.

```
cluster-1::>security key-manager external gcp show
      Vserver: SAMPLE_VSERVER
      Project ID: SAMPLE_PROJECT_ID
      Key Ring Location: SAMPLE_KEY_RING_LOCATION
      Key Name: SAMPLE_KEY_NAME
```

Key Ring Name	State
-----	-----
SAMPLE_KEY_RING_NAME	unknown
Unavailable Nodes:	node1

security key-manager external gcp update-credentials

Update Google Cloud Project's Service Account Credentials

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command allows the user to update the application credential which is used by the Google Cloud Key Management Service (GCKMS) configured for the given Vserver. The application credential is initially set by running the [security key-manager external gcp enable](#) command. This command will fail if GCKMS has not been enabled for the Vserver.

Parameters

-vserver <Vserver Name> - Vserver (privilege: advanced)

Use this parameter to specify the Vserver for which the GCKMS application credential will be updated.

Examples

The following example updates the GCKMS application credential for the data Vserver v1.

```
cluster-1::> security key-manager external gcp update-credentials -vserver
v1
```

```
Enter the new application credential: Press <Enter> when done
```

Related Links

- [security key-manager external gcp enable](#)

security key-manager key create

Create a new authentication key

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description

This command creates a new authentication key (AK) and stores it on the the admin Vserver's key management servers. The command fails if the configured key management servers are already storing more than 256 AKs. If this command fails because there are more than 256 AKs in the cluster, delete unused keys on the Vserver's key management servers and retry the command. This command is not supported when external key management is not enabled for the admin Vserver.

Parameters

`[-key-tag <text>]` - Key Tag

This parameter specifies the key tag to associate with the new authentication key (AK). The default value is the node name. This parameter can be used to help identify created authentication keys (AKs). For example, the [security key-manager key query](#) command's key-tag parameter can be used to query for a specific key-tag value.

`[-prompt-for-key {true|false}]` - Prompt for Authentication Passphrase

If you specify this parameter as true, then the command prompts you to enter an authentication passphrase manually instead of generating it automatically. For security reasons, the authentication passphrase you entered is not displayed at the command prompt. You must enter the authentication passphrase a second time for verification. To avoid errors, copy and paste authentication passphrases electronically instead of entering them manually. Data ONTAP saves the resulting authentication key/key ID pair automatically on the configured key management servers.

Examples

The following example creates an authentication key with the node name as the default key-tag value:

```
cluster-1::> security key-manager key create
Key ID:
00000000000000000000200000000000100d0f7c2462d626b739fe81b89f29a092f0000000000
000000
```

The following example creates an authentication key with a user-specified authentication passphrase:

```
cluster-1::> security key-manager key create -prompt-for-key true
Enter a new passphrase:
Reenter the passphrase:
Key ID:
000000000000000000002000000000001006268333f870860128fbe17d393e5083b0000000000
000000
```

Related Links

- [security key-manager key query](#)

security key-manager key delete

Delete an existing authentication key

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description

This command removes an authentication key from the configured key management servers on the admin Vserver. The command fails if the given key is currently in use by Data ONTAP. This command is not supported when external key management is not enabled for the admin Vserver.

Parameters

-key-id <Hex String> - Authentication Key ID (privilege: advanced)

Use this parameter to specify the key ID of the key that you want to remove.

Examples

The following example deletes an authentication key:

```
cluster-1::*> security key-manager key delete -key-id
000000000000000000000020000000000001006268333f870860128fbe17d393e5083b0000000000
000000
```

security key-manager key migrate

Migrate keys from the admin Vserver's the Onboard Key Manager to a data Vserver's external key manager and vice versa

Availability: This command is available to *cluster* and *Vserver* administrators at the *advanced* privilege level.

Description

This command provides a mechanism to migrate the existing keys of a data Vserver from the admin Vserver's key manager to their own key manager or vice versa. The keys stay the same and the data is not rekeyed, only the keys are migrated from one Vserver's key manager to another. After a successful migration to the new key manager, the data Vserver keys are deleted from the previous key manager.

Parameters

-from-vsver <vsver name> - Vserver Name (privilege: advanced)

Use this parameter to specify the name of the Vserver whose key manager the keys are migrated from.

-to-vsver <vsver name> - Vserver Name (privilege: advanced)

Use this parameter to specify the name of the Vserver whose key manager the keys are migrated to.

Examples

The following example migrates the keys of "datavs" data Vserver from "cluster-1" admin Vserver's key manager to "datavs" data Vserver's key manager:

```
cluster-1::> security key-manager key migrate -from-vserver cluster-1 -to
-vserver datavs
```

The following example migrates the keys of "datavs" data Vserver from "datavs" data Vserver's key manager to "cluster-1" admin Vserver's key manager:

```
cluster-1::> security key-manager key migrate -from-vserver datavs -to
-vserver cluster-1
```

security key-manager key query

Display the key IDs.

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command displays the IDs of the keys that are stored in the configured key managers. This command does not update the key tables on the node. Primary key servers, along with any associated secondary key servers, are displayed in the output.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node

Use this parameter to specify the name of the node that queries the specified key management servers. If this parameter is not specified, then all nodes query the specified key management servers.

[-vserver <vserver name>] - Vserver Name

Use this parameter to specify the Vserver for which to list the keys.

[-key-server <Hostname and Port>] - Key Server

This parameter specifies the host and port of the key management server that you want to query. This parameter is used only with external key managers.

[`-key-id <Hex String>`] - Key Identifier

If you specify this parameter, then the command displays only the key IDs that match the specified value.

[`-key-tag <text>`] - Key Tag

If you specify this parameter, then the command displays only the key IDs that match the specified value. The key-tag for Volume Encryption Keys (VEKs) is set to the UUID of the encrypted volume.

[`-key-type <Key Usage Type>`] - Key Type

If you specify this parameter, then the command displays only the key IDs that match the specified value.

[`-restored {true|false}`] - Restored

This parameter specifies whether the key corresponding to the displayed key ID is present in the specified node's internal key table. If you specify 'true' for this parameter, then the command displays the key IDs of only those keys that are present in the system's internal key table. If you specify 'false' for this parameter, then the command displays the key IDs of only those keys that are not present in the system's internal key table.

[`-key-store <Key Store>`] - Key Store

Use this parameter to specify the key manager type from which to list the keys.

[`-key-user <vserver name>`] - Key User

If you specify this parameter, then the command displays only the key IDs that are used by the specified Vserver.

[`-key-manager <text>`] - Key Manager

This parameter specifies the identity of the key manager. For external key managers that will be the host and the port of the key server. In other cases that will be the name of a corresponding key manager.

[`-key-store-type <Key Store Type>`] - Key Store Type

If you specify this parameter, then the command displays only the key IDs that are used by the specified key manager type.

[`-crn <text>`] - Cloud Resource Name

This parameter specifies the Cloud Resource Name (CRN) of the key. If you specify this parameter, then the command displays only the key IDs that contains such CRN.

[`-policy <text>`] - Key Store Policy

This optional parameter specifies the policy name of the key manager. If you specify this parameter, then the command displays only the key IDs that are associated with the specified policy.

[`-encryption-algorithm <text>`] - Encryption algorithm for the key

This optional parameter specifies the encryption algorithm of the key. If you specify this parameter, then the command displays only the keys of the specified algorithm type.

Examples

The following example shows all of the keys on all configured key servers, and whether or not those keys have been restored for all nodes in the cluster:

```
cluster-1::> security key-manager key query
```


Node: node1

Vserver: cluster-1

Key Manager: onboard

Key Manager Type: OKM

Key Tag	Key Type	Encryption	Restored
node1	NSE-AK	AES-256	true
Key ID: 000000000000000000002000000000001000c11b3863f78c2273343d7ec5a67762e0000000000 000000			
node1	NSE-AK	AES-256	true
Key ID: 000000000000000000002000000000001006f4e2513353a674305872a4c9f3bf7970000000000 000000			
node1	NSE-AK	AES-256	true
Key ID: 00000000000000000000200000000000100e1f6b27094485d2d74408bca673b25eb0000000000 000000			
node1	NSE-AK	AES-256	true
Key ID: 00000000000000000000200000000000100ea73be83ec42a7a2bd262f369cda83a40000000000 000000			

Node: node1

Vserver: datavs

Key Manager: keyserver.datavs.com:5965

Key Manager Type: KMIP

Key Tag	Key Type	Encryption	Restored
eb9f8311-e8d8-487e-9663-7642d7788a75	VEK	XTS-AES-256	true
Key ID: 0000000000000000000020000000000004001cb18336f7c8223743d3e75c6a7726e0000000000 000000			
9d09cbbf-0da9-4696-87a1-8e083d8261bb	VEK	XTS-AES-256	true
Key ID: 0000000000000000000020000000000004064f2e1533356a470385274a9c3ffb9770000000000 000000			
40c3546e-600c-401c-b312-f01be52258dd	VEK	XTS-AES-256	true
Key ID: 000000000000000000002000000000000401e6f2b09744582d74d084cb6a372be5b0000000000 000000			
9b195ecb-35ee-4d11-8f61-15a8de377ad7	VEK	XTS-AES-256	true
Key ID: 00000000000000000000200000000000040ea73be83ec42a7a2bd262f369cda83a40000000000 000000			

Node: node2

Vserver: cluster-1

Key Manager: onboard

Key Manager Type: OKM

Key Tag	Key Type	Encryption	Restored
---------	----------	------------	----------

node1	NSE-AK	AES-256	true
-------	--------	---------	------

Key ID:

000000000000000002000000000001000c11b3863f78c2273343d7ec5a67762e0000000000000000000000

node1	NSE-AK	AES-256	true
-------	--------	---------	------

Key ID:

000000000000000002000000000001006f4e2513353a674305872a4c9f3bf7970000000000000000000000

node1	NSE-AK	AES-256	true
-------	--------	---------	------

Key ID:

00000000000000000200000000000100e1f6b27094485d2d74408bca673b25eb0000000000000000000000

node1	NSE-AK	AES-256	true
-------	--------	---------	------

Key ID:

00000000000000000200000000000100ea73be83ec42a7a2bd262f369cda83a40000000000000000000000

Node: node2

Vserver: datavs

Key Manager: keyserver.datavs.com:5965

Key Manager Type: KMIP

Key Tag	Key Type	Encryption	Restored
---------	----------	------------	----------

eb9f8311-e8d8-487e-9663-7642d7788a75	VEK	XTS-AES-256	true
--------------------------------------	-----	-------------	------

Key ID:

000000000000000002000000000004001cb18336f7c8223743d3e75c6a7726e0000000000000000000000

9d09cbbf-0da9-4696-87a1-8e083d8261bb	VEK	XTS-AES-256	true
--------------------------------------	-----	-------------	------

Key ID:

000000000000000002000000000004064f2e1533356a470385274a9c3ffb9770000000000000000000000

40c3546e-600c-401c-b312-f01be52258dd	VEK	XTS-AES-256	true
--------------------------------------	-----	-------------	------

Key ID:

00000000000000000200000000000401e6f2b09744582d74d084cb6a372be5b0000000000000000000000

9b195ecb-35ee-4d11-8f61-15a8de377ad7	VEK	XTS-AES-256	true
--------------------------------------	-----	-------------	------

Key ID:

0000000000000000020000000000040ea73be83ec42a7a2bd262f369cda83a40000000000000000000000

security key-manager key show

(DEPRECATED)-Display encryption key IDs stored in the Onboard Key Manager

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description



This command is deprecated and might be removed in a future release. Use [security key-manager key query](#) instead.

This command displays the key IDs of the authentication keys (NSE-AK) and SVM keys (SVM-KEK) that are available in Onboard Key Manager. This command is not supported for an external key management configuration.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-detail]

If this parameter is specified, the command displays additional details about the key IDs.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-node {<nodename>|local}] - Node

If this parameter is specified, the command displays information only about key IDs that are located on the specified storage system.

[-key-store <Key Store>] - Key Store

If this parameter is specified, the command displays information only about key IDs that are managed by the specified key management. For example, use *onboard* for the Onboard Key Manager.

[-key-id <text>] - Key Identifier

If this parameter is specified, the command displays information only about the specified key IDs.

[-key-tag <text>] - Key Tag

If this parameter is specified, the command displays information only about key IDs that have the specified key tags.

[-key-location <text>] - Key Location

If this parameter is specified, the command displays information only about key IDs that are located on the specified key location. For example, use *local-cluster* for the Onboard Key Manager.

[-used-by <Key Usage Type>] - Used By

If this parameter is specified, the command displays information only about key IDs that are associated with the specified application usage of the keys. For example, "NSE-AK" would display key IDs only for NSE

drives.

`[-restored {yes|no}] - Restored`

If this parameter is specified, the command displays information only about key IDs that have the specified value of restored keys. If restored is `yes`, then the corresponding key is available (normal). If restored is `no`, use the [security key-manager setup](#) command to restore the key. See the man page for [security key-manager setup](#) for details.

Examples

The following example shows all keys stored in the Onboard Key Manager:

```

cluster-1::> security key-manager key show

Node: node1
Key Store: onboard
Used By
-----
NSE-AK
    Key ID:
000000000000000002000000000001001bc4c708e2a89a312e14b6ce6d4d49d40000000000
000000
NSE-AK
    Key ID:
000000000000000002000000000001005e89099721f8817e65e3aeb68be1bfca0000000000
000000
SVM-KEK
    Key ID:
00000000000000000200000000000a0046df92864d4cece662b93beb7f536610000000000
000000

Node: node2
Key Store: onboard
Used By
-----
NSE-AK
    Key ID:
000000000000000002000000000001001bc4c708e2a89a312e14b6ce6d4d49d40000000000
000000
NSE-AK
    Key ID:
000000000000000002000000000001005e89099721f8817e65e3aeb68be1bfca0000000000
000000
SVM-KEK
    Key ID:
00000000000000000200000000000a0046df92864d4cece662b93beb7f536610000000000
000000
6 entries were displayed.

```

The following example shows a detailed view of all keys stored in the Onboard Key Manager:

```
cluster-1::> security key-manager key show -detail
```

Node: node1

Key Store: onboard

Key ID	Key Tag	Used By	Stored In
--------	---------	---------	-----------

Restored

```
-----  
-----
```

0000000000000000000020000000000001001bc4c708e2a89a312e14b6ce6d4d49d4000000000000000000			
--	--	--	--

-	NSE-AK	local-cluster	yes
---	--------	---------------	-----

0000000000000000000020000000000001005e89099721f8817e65e3aeb68be1bfca000000000000000000			
--	--	--	--

-	NSE-AK	local-cluster	yes
---	--------	---------------	-----

000000000000000000002000000000000a0046df92864d4cece662b93beb7f53661000000000000000000			
---	--	--	--

-	SVM-KEK	local-cluster	yes
---	---------	---------------	-----

Node: node2

Key Store: onboard

Key ID	Key Tag	Used By	Stored In
--------	---------	---------	-----------

Restored

```
-----  
-----
```

0000000000000000000020000000000001001bc4c708e2a89a312e14b6ce6d4d49d4000000000000000000			
--	--	--	--

-	NSE-AK	local-cluster	yes
---	--------	---------------	-----

0000000000000000000020000000000001005e89099721f8817e65e3aeb68be1bfca000000000000000000			
--	--	--	--

-	NSE-AK	local-cluster	yes
---	--------	---------------	-----

000000000000000000002000000000000a0046df92864d4cece662b93beb7f53661000000000000000000			
---	--	--	--

-	SVM-KEK	local-cluster	yes
---	---------	---------------	-----

6 entries were displayed.

Related Links

- [security key-manager key query](#)
- [security key-manager setup](#)

security key-manager key key-table create

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description

This command creates an entry in the key manager key table. It does not create a new key.

Parameters

-key-id <Hex String> - Key ID

This parameter specifies the key ID of the new entry in the table.

-key-type <Key Usage Type> - Key Usage Type

This parameter specifies the key type of the new entry. The following key types are supported: NSE-AK, AEK, VEK, NEK and SVM-KEK.

-encryption-algorithm <text> - Encryption Algorithm For The Key

This parameter specifies the encryption algorithm associated with the key.

-creation-time <MM/DD/YYYY HH:MM:SS> - Key Creation Time

This parameter specifies the date and time that the key was created. The date and time format is "MM/DD/YYYY HH:MM:SS".

Examples

The following example creates an entry in the table:

```
cluster-1::> security key-manager key key-table create -key-id
00000000000000000200000000000500e9ccf3f08e7533d9cd0298e1ebe6c100000000000
000000 -key-type SVM-KEK -encryption-algorithm AES-256 -creation-time
01/01/2022 01:01:59

cluster-1::> security key-manager key key-table show

Key ID
Key Type Encryption      Creation Time
-----
-----
00000000000000000200000000000500e9ccf3f08e7533d9cd0298e1ebe6c100000000000
000000 SVM-KEK AES-256      1/1/2022 01:01:59
1 entry was displayed.
```

security key-manager key key-table delete

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description

This command removes an entry from the key table.

Parameters

-key-id <Hex String> - Key ID

Use this parameter to specify the key ID of the entry that you want to remove from the key table.

Examples

The following example deletes an entry from the key table:

```
cluster-1::> security key-manager key key-table show
```

```
Key ID
```

```
Key Type Encryption      Creation Time
```

```
-----
```

```
-----
```

```
00000000000000000000200000000000100239c17902e7515ed397892f75f52e38e0000000000
```

```
000000 NSE-AK    AES-256      2/8/2022 10:54:46
```

```
00000000000000000000200000000000a00a7af571b8397e7df297128fdeb83f4ba0000000000
```

```
000000 SVM-KEK  AES-256      1/1/2022 01:01:59
```

```
2 entries were displayed.
```

```
cluster-1::*> security key-manager key key-table delete -key-id
```

```
00000000000000000000200000000000100239c17902e7515ed397892f75f52e38e0000000000
```

```
000000
```

```
cluster-1::> security key-manager key key-table show
```

```
Key ID
```

```
Key Type Encryption      Creation Time
```

```
-----
```

```
-----
```

```
00000000000000000000200000000000a00a7af571b8397e7df297128fdeb83f4ba0000000000
```

```
000000 SVM-KEK  AES-256      1/1/2022 01:01:59
```

```
1 entry was displayed.
```

security key-manager key key-table modify

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description

This command modifies an entry in the key table. Changes made using this command do not affect the key; only the table entry is modified, not the key itself.

Parameters

-key-id <Hex String> - Key ID

This parameter specifies the key ID of the entry to be modified.

[-key-type <Key Usage Type>] - Key Usage Type

If this optional parameter is specified, the key type field is modified accordingly.

[-encryption-algorithm <text>] - Encryption Algorithm For The Key

If this optional parameter is specified, the encryption algorithm field is modified accordingly.

[-creation-time <MM/DD/YYYY HH:MM:SS>] - Key Creation Time

If this optional parameter is specified, the creation time field is modified accordingly.

Examples

The following example shows the key table before and after the modify command:

```
cluster-1::> security key-manager key key-table show
```

```
Key ID
```

```
Key Type Encryption      Creation Time
```

```
-----  
-----  
0000000000000000000200000000000500e9ccf3f08e7533d9cd0298e1ebe6c1190000000000  
000000 VEK          XTS-AES-256  1/1/2022 10:00:00
```

```
cluster-1::> security key-manager key key-table modify -key-id
```

```
0000000000000000000200000000000500e9ccf3f08e7533d9cd0298e1ebe6c1190000000000  
000000 -creation-time "12/25/2022 00:00:00"
```

```
cluster-1::> security key-manager key key-table show
```

```
Key ID
```

```
Key Type Encryption      Creation Time
```

```
-----  
-----  
0000000000000000000200000000000500e9ccf3f08e7533d9cd0298e1ebe6c1190000000000  
000000 VEK          XTS-AES-256  12/25/2022 00:00:00
```

security key-manager key key-table show

Display details of a specific key ID.

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description

This command displays date and time information for all keys.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>`, ... parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-key-id <Hex String>] - Key ID

If this parameter is specified, the command displays the key that has the specified key ID.

[-key-type <Key Usage Type>] - Key Usage Type

If this parameter is specified, the command only displays information about keys with the specified key type.

[-encryption-algorithm <text>] - Encryption Algorithm For The Key

If this parameter is specified, the command only displays information about keys with the specified encryption algorithm.

[-creation-time <MM/DD/YYYY HH:MM:SS>] - Key Creation Time

If this parameter is specified, the command displays only information about keys with the specified creation time.

Examples

The following example shows all date and time information for all keys:

```
cluster-1::> security key-manager key key-table show
```

```
Key ID
```

```
Key Type Encryption    Creation Time
```

```
-----  
-----  
000000000000000000002000000000001000f3ee496cd5820cfb76dd2ce3fa7661b0000000000  
000000 NSE-AK    AES-256      1/30/2022 04:21:40  
00000000000000000000200000000000100658779529aa57ddfef953f305b16c7b20000000000  
000000 NSE-AK    AES-256      1/30/2022 04:21:40  
000000000000000000002000000000005004100a4355062ea078fdc2fc16b2018d70000000000  
000000 VEK      XTS-AES-256  1/30/2022 04:23:14  
00000000000000000000200000000000a0059f8f7f92612e85664630eed8fb855170000000000  
000000 SVM-KEK  AES-256      1/30/2022 04:23:14  
4 entries were displayed.
```

security key-manager onboard disable

Disable the Onboard Key Manager

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description

This command disables the Onboard Key Manager associated with the admin Vserver and permanently deletes the Onboard Key Manager configuration associated with the admin Vserver.

Examples

The following example disables the Onboard Key Manager for the admin Vserver:

```
cluster-1::*> security key-manager onboard disable
```

```
Warning: This command will permanently delete all keys from Onboard Key  
Manager.
```

```
Do you want to continue? {y|n}: y
```

security key-manager onboard enable

Enable the Onboard Key Manager

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description

This command enables the Onboard Key Manager for the admin Vserver.

Parameters

[*-cc-mode-enabled* {yes|no}] - Enable Common Criteria Mode?

Use this parameter to specify whether the Common Criteria (CC) mode should be enabled or not. When CC mode is enabled, you are required to provide a cluster passphrase that is between 64 and 256 ASCII character long, and you are required to enter that passphrase each time a node reboots. CC mode cannot be enabled in a MetroCluster configuration.

Examples

The following example enables the Onboard Key Manager for the admin Vserver cluster-1:

```
cluster-1::> security key-manager onboard enable
```

Enter the cluster-wide passphrase for the Onboard Key Manager:

Re-enter the cluster-wide passphrase:

After configuring the Onboard Key Manager, save the encrypted configuration data in a safe location so that you can use it if you need to perform a manual recovery operation. To view the data, use the "security key-manager onboard show-backup" command.

security key-manager onboard show-backup

Display the Onboard Key Management backup

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command displays the backup information for the Onboard Key Manager for the admin Vserver, which can be used to recover the cluster in case of catastrophic situations. The information displayed is for the cluster as a whole (not individual nodes).

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

| [-instance] }

If you specify the `-instance` parameter, the command displays detailed information about all fields.

Examples

The following example displays the Onboard Key Manager backup data for the admin Vserver:

[illegible]

security key-manager onboard sync

Sync the Onboard Key Manager keys

Availability: This command is available to *cluster* administrators at the *admin* privilege level.

Description

This command synchronizes missing onboard keys on any node in the cluster. For example, if you add a node to a cluster that has the Onboard Key Manager configured, you should then run this command to synchronize the keys. In a MetroCluster configuration, if the `security key-manager onboard enable` command is used to

enable the Onboard Key Manager on one site, then run the `security key-manager onboard sync` command on the partner site. In a MetroCluster configuration, if the [security key-manager onboard update-passphrase](#) command is used to update the passphrase on one site, then run this command with the new passphrase on the partner site before proceeding with any key management operations.

Parameters

Examples

The following example synchronizes the Onboard Key Manager key database across all nodes in the cluster. In a MetroCluster configuration, this command synchronizes nodes in the local site.

```
cluster-1::> security key-manager onboard sync
```

Related Links

- [security key-manager onboard enable](#)
- [security key-manager onboard update-passphrase](#)

security key-manager onboard update-passphrase

Update the Onboard Key Manager Passphrase

Availability: This command is available to *cluster* administrators at the *advanced* privilege level.

Description

This command provides a way to update the cluster-wide passphrase that is used for the Onboard Key Manager and initially created by running the [security key-manager onboard enable](#) command. This command prompts for the existing passphrase, and if that passphrase is correct then the command prompts for a new passphrase. When the Onboard Key Manager is enabled for the admin Vserver, run the [security key-manager onboard show-backup](#) command after updating the passphrase and save the output for emergency recovery scenarios. When the `security key-manager onboard update-passphrase` command is executed in a MetroCluster configuration, then run the [security key-manager onboard sync](#) command with the new passphrase on the partner site before proceeding with any key-manager operations. This allows the updated passphrase to be replicated to the partner site.

Examples

The following example updates the cluster-wide passphrase used for the Onboard Key Manager:

```
cluster-1::*> security key-manager onboard update-passphrase
```

Warning: This command will reconfigure the cluster passphrase for onboard key management.

Do you want to continue? {y|n}: y

Enter current passphrase:

Enter new passphrase:

Reenter the new passphrase:

Update passphrase has completed. Save the new encrypted configuration data in

a safe location so that you can use it if you need to perform a manual recovery

operation. To view the data, use the "security key-manager onboard show-backup"

command.

Related Links

- [security key-manager onboard enable](#)
- [security key-manager onboard show-backup](#)
- [security key-manager onboard sync](#)

security key-manager onboard verify-backup

Verify the onboard key management backup and its passphrase

Availability: This command is available to *cluster* and *Vserver* administrators at the *admin* privilege level.

Description

This command verifies the backup data and the passphrase of the Onboard Key Manager for the admin Vserver.

Examples

The following example displays the verification of the onboard key management backup data for the admin Vserver:

Description

This command displays the defined key management key policies.

Parameters

{ [-fields <fieldname>,...]

If you specify the `-fields <fieldname>`, ... parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

[[-instance]]

If you specify the `-instance` parameter, the command displays detailed information about all fields.

[-policy <text>] - Policy name

If you specify this parameter, then the command will list the key manager policy with the given name.

[-check-key-on-online {true|false}] - Pull key from key manager during volume online?

If you specify this parameter, then the command displays only the key manager policies with the given `check-key-on-online` value.

[-purge-key-on-offline {true|false}] - Purge key from memory during volume offline?

If you specify this parameter, then the command displays only the key manager policies with the given `purge-key-on-offline` value.

[-support-on-admin-vserver {true|false}] - Support policy on admin Vserver?

If you specify this parameter, then the command displays only the key manager policies with the given `support-on-admin-vserver` value.

[-key-manager-attribute-required {true|false}] - Key manager attribute required for volume?

If you specify this parameter, then the command displays only the key manager policies with the given `key-manager-attribute-required` value.

Examples

The following example lists all configured key management policies:

```
cluster-1::*> security key-manager policy show
```

Policy	Check Key on Online?	Purge Key on Offline?
-----	-----	-----
IBM_Key_Lore	true	true

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