



# NetApp HCI security

## HCI

Michael Wallis, Ann-Marie Grissino  
April 10, 2020

This PDF was generated from [https://docs.netapp.com/us-en/hci/docs/concept\\_cg\\_hci\\_security.html](https://docs.netapp.com/us-en/hci/docs/concept_cg_hci_security.html) on June 25, 2020. Always check docs.netapp.com for the latest.

# Table of Contents

NetApp HCI security .....	1
Encryption at Rest for storage nodes .....	1
External key management .....	1
Multi-factor authentication .....	2

# NetApp HCI security

When you use NetApp HCI, your data is protected by industry-standard security protocols.

## Encryption at Rest for storage nodes

NetApp HCI enables you to encrypt all data stored on the storage cluster.

All drives in storage nodes that are capable of encryption use AES 256-bit encryption at the drive level. Each drive has its own encryption key, which is created when the drive is first initialized. When you enable the encryption feature, a storage-cluster-wide password is created, and chunks of the password are then distributed to all nodes in the cluster. No single node stores the entire password. The password is then used to password-protect all access to the drives. You need the password to unlock the drive, and since the drive is encrypting all data, your data is secure at all times.

When you enable Encryption at Rest, performance and efficiency of the storage cluster are unaffected. Additionally, if you remove an encryption-enabled drive or node from the storage cluster with the Element API or Element UI, Encryption at Rest is disabled on the drives and the drives are securely erased, protecting the data that was previously stored on those drives. After you remove the drive, you can securely erase the drive with the `SecureEraseDrives` API method. If you forcibly remove a drive or node from the storage cluster, the data remains protected by the cluster-wide password and the drive's individual encryption keys.

For information on enabling and disabling Encryption at Rest, see [Enabling and disabling encryption for a cluster](#) in the SolidFire and Element Documentation Center.

## External key management

You can configure Element software to use a third-party KMIP-compliant key management service (KMS) to manage storage cluster encryption keys. When you enable this feature, the storage cluster's cluster-wide drive access password encryption key is managed by a KMS that you specify.

Element can use the following key management services:

- Gemalto SafeNet KeySecure
- SafeNet AT KeySecure
- HyTrust KeyControl
- Vormetric Data Security Manager
- IBM Security Key Lifecycle Manager

For more information on configuring External Key Management, see [Getting started with External Key Management](#) in the SolidFire and Element Documentation Center.

# Multi-factor authentication

Multi-factor authentication (MFA) enables you to require users to present multiple types of evidence to authenticate with the NetApp Element web UI or storage node UI upon login. You can configure Element to accept only multi-factor authentication for logins integrating with your existing user management system and identity provider.

You can configure Element to integrate with an existing SAML 2.0 identity provider which can enforce multiple authentication schemes, such as password and text message, password and email message, or other methods.

You can pair multi-factor authentication with common SAML 2.0 compatible identity providers (IdPs), such as Microsoft Active Directory Federation Services (ADFS) and Shibboleth.

To configure MFA, see [Enabling multi-factor authentication](#) in the SolidFire and Element Documentation Center.

## Copyright Information

Copyright © 2020 NetApp, Inc. All rights reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means-graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system-without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

## Trademark Information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.