

**Oracle StorageTek T10000A/B/C
Tape Drive Product Security Guide**

E28826-01

2012

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

Primary Author: Dave Hostetter

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this software or related documentation is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS Programs, software, databases, and related documentation and technical data delivered to U.S. Government customers are "commercial computer software" or "commercial technical data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, duplication, disclosure, modification, and adaptation shall be subject to the restrictions and license terms set forth in the applicable Government contract, and, to the extent applicable by the terms of the Government contract, the additional rights set forth in FAR 52.227-19, Commercial Computer Software

License (2011). Oracle USA, Inc., 500 Oracle Parkway, Redwood City, CA 94065.

This software is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications which may create a risk of personal injury. If you use this software in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure the safe use of this software. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software in dangerous applications. Oracle is a registered trademark of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

This software and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services

Contents

Contents.....	3
Part 1: Overview.....	4
Product Overview.....	4
T10000A.....	4
T10000B.....	4
T10000C.....	4
Security.....	4
General Security Principles.....	5
Keep Software Up To Date.....	5
Restrict Network Access.....	5
Keep Up To Date on Latest Security Information.....	5
Part 2: Secure Installation.....	6
Installation Overview.....	6
Understand Your Environment.....	6
Securing the Tape Drive.....	7
Installing Virtual Operator Panel (VOP) application.....	8
Post Installation Configuration.....	9
Part 3: Security Features.....	10
Part 5: Appendices.....	11
Appendix A: Secure Deployment Checklist.....	11
References.....	12

Part 1: Overview

This section gives an overview of the T10000A/B/C Tape Drive and explains the general principles of tape drive security. This security guide covers the T10000A, T10000B and T10000C.

Product Overview

The T10000A/B/C family of Enterprise tape drives attach to both open systems SCSI over Fibre Channel protocol and to mainframe over FICON protocol. The T10000 tape drives transfer data to and from a host and stores it on a removable magnetic media. The T10000 family of tape drives intend primarily to provide high reliability, high capacity back up, archive, and data processing capabilities for enterprise customers that demand high duty cycle and reliability. Each product in the family provides optional data encryption. The customer has the option to enable the encryption feature. All products meet the minimum Federal Information Processing Standard (FIPS 140-2 Level 1). Each tape drive product was enhanced for capacity and native tape speed. In addition, data management features were also added along the way. The following describes the capacity and performance migration from one generation to the next.

T10000A

500 GB capacity and 120 MB per second native tape speed.

T10000B

1TB capacity and 120 MB per second native tape speed.

T10000C

5TB capacity and 240 MB per second native tape speed.

Security

All tape drive products are designed and documented for use within a controlled hardware environment. Tape Drives are always located inside a controlled data center and they are typically located inside of a Tape Library. In some cases the customer will use a rack mount version but that is rare. The controlled data center is also inside a fire wall that is protected by the customer's own security policies. This will give the best functionality and protection from compromise, both from the internet in general and from the internal entity operating the tape drive.

General Security Principles

The following principles are fundamental to using any product securely.

Keep Software Up To Date

One of the principles of good security practice is to keep all software versions and patches up to date. Throughout this document, we assume software levels of:

- T10000A 148.105 – released November 2011
- T10000B 148.205 – released November 2011
- T10000C 153.311 – released October 2011
- T10000C 153.315 – released March 15, 2012

Restrict Network Access

Keep the tape drive behind a data center firewall. The firewall provides assurance that access to these systems is restricted to a known network route, which can be monitored and restricted, if necessary. As an alternative, a firewall router substitutes for multiple, independent firewalls. It is recommended that you identify the hosts allowed to attach to the Tape Drive and block all other hosts if possible.

Keep Up To Date on Latest Security Information

Oracle continually improves its software and documentation. Check this document every release for revisions.

Part 2: Secure Installation

Installation Overview

This section outlines the planning process for a secure installation and describes several recommended deployment topologies for the systems.

Understand Your Environment

To better understand security needs, the following questions must be asked:

Question: Which resources need to be protected?

Answer: Many resources in the production environment can be protected. Consider the resources needing protection when deciding the level of security that must be provided.

Question: From whom are the resources being protected?

Answer: The Tape Drive must be protected from everyone on the Internet. But should the Tape Drive be protected from the employees on the intranet in your enterprise?

Question: What will happen if the protections on strategic resources fail?

Answer: In some cases, a fault in a security scheme are easily detected and considered nothing more than an inconvenience. In other cases, a fault might cause great damage to companies or individual clients that use the Tape Drive. Understanding the security ramifications of each resource will help protect it properly.

Securing the Tape Drive

This section describes how to secure the Tape Drive.

By default, the Tape Drive uses ports listed in the following table. The firewall should be configured to allow traffic to use these ports and that any unused ports are blocked. The Tape Drives support IPv6 and IPv4.

Table 1: Network ports used

Port	T10000A	T10000B	T10000C
22 tcp - SSH VOP			
22 tcp - SFTP			
161 udp - SNMPV1 Tape Drive agent requests - inbound stateful	X	X	X
162 udp - SNMPV1 Tape Drive traps and inform notifications - outbound stateless for traps, outbound stateful for inform	X	X	X
23 tcp - TELNET	X	X	X
21 tcp - FTP	X	X	X
9842 tcp - EPT	X	X	X
3331 OKM - challenge and root CA service.	X	X	X
3332 OKM – Enrollment. Cyber strength is AES256	X	X	X
3334 OKM – Encryption key exchange. Cyber strength is AES256	X	X	X
3335 OKM – Cluster discovery. Cyber strength is AES256	X	X	X

Installing Virtual Operator Panel (VOP) application

VOP should only be installed on systems that are within the same protected network infrastructure as the Tape Drive. Customer access controls should be enforced on the systems where VOP is installed to assure restricted access to the Tape Drive. See [Table 1](#) for ports used by VOP.

Refer to the following VOP user guide for web launch VOP install instructions.

- VOP User Guide included in the [T10000 documentation library](#)

Post Installation Configuration

This section documents security configuration changes that must be made after installation.

Assign the user (admin) password.

The customer admin account password should be changed by the customer at the site and is owned by the customer. The password security meets Oracle standards. There are infinite number of passwords available for use over the life of the Tape Drive. If the admin password is forgotten it can be reset. The first Password is a default password sent with the Tape Drive.

Enforce password management.

Basic password management rules, such as password length, and complexity must be applied to the administrator password.

The password management rules require at least one of each of the following rules.

- Must be between 8 and 16 characters long.
- Lower case (a-z)
- Upper case (A-Z)
- Decimal digit (0-9)
- Punctuation (.?;:"{}[]()!@#\$%&, ...)

Part 3: Security Features

In this section outline the specific security mechanisms offered by the product.

Currently, all products in the T10000 family communicate on a secure channel to the Oracle Key Management System. Eventually, all products in the T10000 family will adhere to the SSH and SFTP security requirement. These should not be the only line of security to protect the Tape Drive. Ideally, the Tape Drives should be in a physically secured data center that also has a secured network that only allows access from the servers utilizing its functionality. These servers and applications running on them should also be secured. In addition, the customer has the option to elevate the security of the tape drive to yet another level. That level would be either to Encrypt their data and/or enable the FIPS (Federal Information Processing Standard) mode. The T10000 family of tape drives are FIPS compliant. See table below for supported levels. The link to the FIPS home page is <http://www.itl.nist.gov/fipspubs/>

T10000A	FIPS 140-2 Level 1
T10000B	FIPS 140-2 Level 2
T10000C	FIPS 140-2 Level 1

Part 5: Appendices

Appendix A: Secure Deployment Checklist

The following security checklist includes guidelines that help secure the Tape Drive:

1. Enforce password management.
2. Enforce access controls.
3. Restrict network access.
 - i. A firewall should be implemented.
 - ii. The firewall must not be compromised.
 - iii. System access should be monitored.
 - iv. Network IP addresses should be checked.
4. Contact Oracle Security Products if you come across vulnerability in Oracle Tape Libraries.

References

VOP User Guide included in the [T10000 documentation library](#)