TCG Storage Application Note: Encrypting Storage Devices Compliant with Enterprise SSC

Specification Version 1.00 Final
Revision 1.00

December 21, 2009

.

Contacts:

admin@trustedcomputinggroup.org

TCG

Version 1.00 Revision 1.00 Final

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1 Introduction

This section summarizes the purpose, scope, and intended audience for this document. The contents of this document are informative.

1.1 Purpose and Scope

The purpose of this document is to provide examples of the communication between a host and a storage device implementing the TCG Enterprise SSC [2] and TCG Storage Architecture Core Specification (Core Spec) [1] to perform the use scenarios listed in section 2.

1.2 Intended Audience

The intended audience for this document is implementors of storage subsystems using TCG Enterprise SSC storage devices.

1.3 Normative References

[1] Trusted Computing Group (TCG), 2007, “TCG Storage Architecture Core Specification”, Version 1.0, Revision 0.9 – Draft
[2] Trusted Computing Group (TCG), “TCG Storage Security Subsystem Class: Enterprise”, Version 1.00
[3] Trusted Computing Group (TCG), “TCG Storage Storage Interface Interactions Specification“, Version 1.00

2 Use Scenario: Enterprise Disk Encryption using Locking SP

This document provides example communications with a device that supports the use scenarios as defined in [2]. These scenarios are:

- Deploy Storage Device and Take Ownership
- Activate or Enroll the Device
- Lock and Unlock the Device
- Repurpose and End of Life

3 Recommended Implementation

This section describes an example of the communications utilized in implementation of the use scenario, using commands described by the TCG Storage Architecture Core Specification [1] and the Enterprise SSC [2].

3.1 Brief Description of the Sessions and Commands

3.1.1 Discovery

3.1.1.1 Discovering whether a device supports Enterprise SSC

This includes the sequence of operations that a host application should go through to ascertain whether a device supports the TCG Enterprise SSC [2].

3.1.1.1.1 Level 0 Discovery Request

IF_RECV with Protocol 01: Level 0 discovery (ComID 0x0001)

- TPer, Locking, and Enterprise SSC features are returned
- A device compliant with the Enterprise SSC has LockingSupported and MediaEncryption set to TRUE.

3.1.1.2 Retrieving Device Communications Capabiliites

This section introduces the steps the host follows to retrieve communications information from the TPer. The host:

1. Invokes the Properties method
    a. Properties
    b. Properties Response

3.1.2 Taking Ownership of the SD

This section introduces the steps the host follows in order to take ownership of the SD (see 3.2.3). The host:

1. Opens a session to the Admin SP.
    a. StartSession
    b. SyncSession
2. Invokes the Get method to retrieve the Storage Device's MSID.
    a. Get
    b. Get Result
3. Authenticates as the SID authority using the MSID.
    a. Authenticate
    b. Authenticate Result
4. Set the SID authority's password to a new value.

a. Set
b. Set Result

5. Close the Session
    a. End of Session
    b. End of Session Response

3.1.3 Activate or Enroll the SD

This section introduces the steps the host follows in order to take ownership of the Locking SP and enroll the device into the system.

3.1.3.1 Authority Setup

In order to set up the authorities necessary to manage the LBA ranges' locking states and other configurations (see 3.2.4), the host:

1. Opens a session to the Locking SP.
    a. StartSession
    b. SyncSession
2. Authenticates as the BandMaster0 authority using the MSID.
    a. Authenticate
    b. Authenticate Result
3. Set the BandMaster0 authority's password to a new value.
    a. Set
    b. Set Result
4. Optionally authenticates as additional BandMaster authorities using the MSID.
    a. Authenticate
    b. Authenticate Result
5. Optionally sets the additional BandMaster authorities' passwords to new values.
    a. Set
    b. Set Result
6. Authenticates as the EraseMaster authority using the MSID.
    a. Authenticate
    b. Authenticate Result
7. Sets the EraseMaster authority's password to a new value.
    a. Set
    b. Set Result
8. Close the Session
    a. End of Session
    b. End of Session Response

3.1.3.2 Locking Range Setup

Each LBA range is configured by the host after authentication of the associated authority (see 3.2.5)). In order to configure LBA Ranges, the host:

1. Opens a session to the Locking SP
    a. StartSession
    b. SyncSession
2. Authenticates as the BandMaster0 authority, which enables management of the Global Range.
    a. Authenticate
    b. Authenticate Result
3. Optionally retrieves the current Global Range settings
    a. Get
    b. Get Result
4. Enables and Locks the Global Range
    a. Set
    b. Set Result
5. Optionally retrieves the new Global Range settings
    a. Get
    b. Get Result
6. Authenticates as the BandMaster1 authority, which enables management of Band1
    a. Authenticate
    b. Authenticate Result
7. Sets the configurations for Band1
    a. Set
    b. Set Result
8. Closes the Session
    a. End of Session
    b. End of Session Response

3.1.4 Locking and Unlocking the Device

This section introduces the steps the host follows to manage the locking state of the SD's LBA Ranges (see 3.2.6). The host:

1. Opens a session to the Locking SP
    a. StartSession
    b. SyncSession
2. Authenticates as the BandMaster authority associated with the LBA Range to be managed
    a. Authenticate

   b. Authenticate Result

3. Optionally retrieves the LBA Range's current settings
   a. Get
   b. Get Result
4. Sets the LBA Range's locking state
   a. Set
   b. Set Result
5. Closes the Session
   a. End of Session
   b. End of Session Response

3.1.5 Repurposing and End of Life

This section introduces the steps necessary to securely erase encrypted LBA ranges (see 3.2.7). The host:

1. Opens a session to the Locking SP
   a. StartSession
   b. SyncSession
2. Authenticates as the EraseMaster authority
   a. Authenticate
   b. Authenticate Result
3. Invokes Erase on each LBA Range to be securely erased
   a. Erase
   b. Erase Result
4. Closes the Session
   a. End of Session
   b. End of Session Response

3.1.6 Additional Capabilities

The Enterprise SSC provides additional capabilities, including a host-writable raw data storage table, and the ability to retrieve device-generated random numbers. The operations necessary to utilize these capabilities are introduced in this section.

3.1.6.1 Using the DataStore Table

The DataStore table provides a place for the host to store raw bytes within the Locking SP (see 3.2.8). In order to use the DataStore table, the host:

1. Opens a session to the Locking SP
   a. StartSession
   b. SyncSession

2. Retrieves the contents of the DataStore table (authentication is not required to perform this operation)
    a. Get
    b. Get Result
3. Modifies the content of the DataStore table by first authenticating any of the BandMaster authorities
    a. Authenticate
    b. Authenticate Result
4. Changes the content of the DataStore table
    a. Set
    b. Set Result
5. Optionally retrieves the table content to verify the modifications
    a. Get
    b. Get Result
6. Closes the Session
    a. End of Session
    b. End of Session Response

3.1.6.2 Retrieving a Random Number

This section introduces the steps the host follows to retrieve a random number from the SD (see 3.2.9). The host:

1. Opens a session to the Locking SP or the Admin SP
    a. StartSession
    b. SyncSession
2. Invokes the Random method
    a. Random
    b. Random Result

3.2 Command Tokenization

This section provides the additional details regarding the commands described in section 3.1, as well as the tokenization of each command and the packaging of those commands in Subpackets, Packets and ComPackets.

The following details are common to all relevant commands as defined in this document, but may vary between implementations. In this document:

1. All commands use a reserved Extended ComID value of `0x07FF0000`
2. The host always uses the HSN `0x00012E13`.
3. The TPer always uses the TSN `0xFFFFFDE0`.
4. Communications sent from the host to the TPer have a Packet.SeqNumber of 0's.

5. Communications sent from the TPer to the Host have a Packet.SeqNumber of 0's.

All transfers between the host and storage device are in 512 byte blocks. If the ComPacket does not end at a 512-byte boundary, bytes of `0x00` are appended after the ComPacket as pad up to the end of the block.

3.2.1 Discovery

3.2.1.1 Level 0 Discovery

The values in the Level 0 Discovery Response reported in this section are examples and vary between implementations and LBA Range locking states.

3.2.1.1.1 Response

```
0000 00 00 00 60 00 00 00 01 00 00 00 00 00 00 00 00
0010 VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU
0020 VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU
0030 00 01 10 0C 51 00 00 00 00 00 00 00 00 00 00 00
0040 00 02 10 0C 0B 00 00 00 00 00 00 00 00 00 00 00
0050 01 00 10 10 07 FE 00 02 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                             ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 01 Level 0 Discovery Response

Bytes	Purpose	Value	Notes
Header			
00 00 00 60	Length of Parameter Data	96	
00 00 00 01	Data Structure Revision	1	
00 00 00 00 00 00 00 00	Reserved	0's	
VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU VU	Vendor Specific	0's	
TPer Feature			
00 01	Feature Code	1	
10	Version + Reserved		
0C	Length	12	
51	Features	0101 0001	Reserved=0, ComID Mgmnt=Yes, Reserved=0, Streaming Supported = No, Buffer Mgmt=No, ACK/NAK=No, Asynch=No, Sync=Yes
00 00 00 00 00 00 00 00 00 00 00	Reserved	0's	

Locking Feature			
00 02	Feature Code		
10	Version + Reserved		
0C	Length	12	
0B	Features	0000 1011	Reserved=0, Reserved=0, MBRDone=No, MBREnabled=No, MediaEncryption=Yes, Locked=No, LockingEnabled=Yes, LockingSupported=Yes
00 00 00 00 00 00 00 00 00 00	Reserved	0's	
Enterprise SSC Feature			
01 00	Feature Code	0100	
10	Version + Reserved		
10	Length		
07 FE	Base ComID		
00 02	Number of ComIDs		
00	Reserved + Range Crossing		Range Crossing = VU
00 00 00 00 00 00 00 00 00 00	Reserved	0's	

3.2.1.2 Retrieving TPer Properties

3.2.1.2.1 Properties

```
SMUID.Properties [ ]
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 40 00 00 00 00 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 28 00 00 00 00
0030 00 00 00 00 00 00 00 1B F8 A8 00 00 00 00 00 00
0040 00 FF A8 00 00 00 00 00 FF 01 F0 F1 F9 F0 00
0050 00 00 F1 00 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 02 Properties

Bytes	**Purpose**	**Value**	**Notes**
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4

00 00 00 40	Length	64	uinteger_4
Packet			
00 00 00 00 00 00 00 00	Session	0's	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 28	Length	40	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 1B	Length	27	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 FF	Invoking UID	Session Manager Reserved UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 FF 01	Method UID	Properties Method UID	
F0	Start List Token		Begins parameter list
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Method Status List		
00			Pad

3.2.1.2.2 Properties Response

```
SMUID.Properties [ [ "MaxPacketSize" = 2028, "MaxComPacketSize" = 2048,
"MaxResponseComPacketSize" = 2048, "MaxSessions" = 1, "MaxIndTokenSize” =
1024, "MaxAuthentications" = 20, "MaxTransactionLimit" =  1 ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 E0 00 00 00 00 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 C8 00 00 00 00
0030 00 00 00 00 00 00 00 B9 F8 A8 00 00 00 00 00 00
0040 00 FF A8 00 00 00 00 00 00 FF 01 F0 F0 F2 AD 4D
0050 61 78 50 61 63 6B 65 74 53 69 7A 65 82 07 EC F3
0060 F2 D0 10 4D 61 78 43 6F 6D 50 61 63 6B 65 74 53
0070 69 7A 65 82 08 00 F3 F2 D0 18 4D 61 78 52 65 73
0080 70 6F 6E 73 65 43 6F 6D 50 61 63 6B 65 74 53 69
0090 7A 65 82 08 00 F3 F2 AB 4D 61 78 53 65 73 73 69
00A0 6F 6E 73 01 F3 F2 AF 4D 61 78 49 6E 64 54 6F 6B
00B0 65 6E 53 69 7A 65 82 04 00 F3 F2 D0 12 4D 61 78
00C0 41 75 74 68 65 6E 74 69 63 61 74 69 6F 6E 73 14
00D0 F3 F2 D0 13 4D 61 78 54 72 61 6E 73 61 63 74 69
00E0 6F 6E 4C 69 6D 69 74 01 F3 F1 F1 F9 F0 00 00 00
00F0 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0100 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
0110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0130 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 03 Properties Response

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 E0	Length	224	uinteger_4
Packet			
00 00 00 00 00 00 00 00	Session	0's	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 C8	Length	200	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 B9	Length	185	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 FF	Invoking UID	Session Manager Reserved UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 FF 01	Method UID	Properties Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		
F2	Start Name Token		
AD	Short Atom Token Header	Byte Sequence, Length = 13	
4D 61 78 50 61 63 6B 65 74 53 69 7A 65		MaxPacketSize	
82		Uinteger, Length = 2	
07 EC		2028	
F3	End Name Token		
F2	Start Name Token		
D0 10	Medium Atom Token Header	Byte Sequence, Length = 16	
4D 61 78 43 6F 6D 50 61 63 6B 65 74 53 69 7A 65		MaxComPacketSize	
82		Uinteger, Length = 2	
08 00		2048	

F3	End Name Token		
F2	Start Name Token		
D0 18	Medium Atom Token Header	Byte Sequence, Length = 24	
4D 61 78 52 65 73 70 6F 6E 73 65 43 6F 6D 50 61 63 6B 65 74 53 69 7A 65		MaxResponseComPacketSize	
82		Uinteger, Length = 2	
08 00		2048	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte Sequence, Length = 11	
4D 61 78 53 65 73 73 69 6F 6E 73		MaxSessions	
01		1	
F3	End Name Token		
F2	Start Name Token		
AF	Short Atom Token Header	Byte Sequence, Length = 15	
4D 61 78 49 6E 64 54 6F 6B 65 6E 53 69 7A 65		MaxIndTokenSize	
82		Uinteger, Length = 2	
04 00		1024	
F3	End Name Token		
F2	Start Name Token		
D0 12	Medium Atom Token Header	Byte Sequence, Length = 18	
4D 61 78 41 75 74 68 65 6E 74 69 63 61 74 69 6F 6E 73		MaxAuthentications	
14		20	
F3	End Name Token		
F2	Start Name Token		
D0 13	Medium Atom Token Header	Byte Sequence, Length = 19	
4D 61 78 54 72 61 6E 73 61 63 74 69 6F 6E 4C 69 6D 69 74		MaxTransactionLimit	
01		1	
F3	End Name Token		
F1	End List Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Method Status List		
00 00 00			Pad

3.2.2 Common Commands and Responses

The commands and responses defined in this section are commonly used, and occur in most communications between the host and the TPer. The commands and responses defined here are referenced from relevant sections, rather than repeated in each instance. The ability to reference a

single source for these commands and responses are based on the common elements described in 3.2.

3.2.2.1 Open a Session to the Admin SP

3.2.2.1.1 StartSession - Admin SP

```
SMUID.StartSession [ 12E13, AdminSP_UID, 1 ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 50 00 00 00 00 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 38 00 00 00 00
0030 00 00 00 00 00 00 00 29 F8 A8 00 00 00 00 00 00
0040 00 FF A8 00 00 00 00 00 00 FF 02 F0 83 01 2E 13
0050 A8 00 00 02 05 00 00 00 01 01 F1 F9 F0 00 00 00
0060 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 04 Start Session – Admin SP

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 50	Length	80	uinteger_4
Packet			
00 00 00 00 00 00 00 00	Session	0's	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 38	Length	56	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 29	Length	41	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 FF	Invoking UID	Session Manager Reserved UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 FF 02	Method UID	StartSession Method UID	
F0	Start List Token		Begins parameter list

83	Short Atom Token Header	Uinteger, length = 3	
01 2E 13	Required Parameter: HostSessionID	<12E13>	Host Supplied Number
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 02 05 00 00 00 01	Required Parameter: SPID	<Admin SP UID>	UID of SP to which session is being opened
01	Tiny Atom Token, Required Parameter: Write	<1>	Read/Write Session
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Method Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.2.1.2 SyncSession – Admin SP

```
SMUID.SyncSession [ 12E13, FFFFFDE0 ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 48 00 00 00 00 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 30 00 00 00 00
0030 00 00 00 00 00 00 00 24 F8 A8 00 00 00 00 00 00
0040 00 FF A8 00 00 00 00 00 00 FF 03 F0 83 01 2E 13
0050 84 FF FF FD E0 F1 F9 F0 00 00 00 F1 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 05 SyncSession – Admin SP

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 48	Length	72	uinteger_4
Packet			
00 00 00 00 00 00 00 00	Session	0's	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 30	Length	48	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 24	Length	36	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 FF	Invoking UID	Session Manager Reserved UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 FF 03	Method UID	SyncSession Method UID	
F0	Start List Token		Begins parameter list
83	Short Atom Token Header	Uinteger, length = 3	

01 2E 13	Required Parameter: HostSessionID	<12E13>	Echo Host Number
84	Short Atom Token Header	Uinteger, length = 4	
FF FF FD E0	Required Parameter: SPSessionID	<FFFFFDE0>	Number assigned by storage device
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Method Status List		
			No Pad

3.2.2.2 Open a Session to the Locking SP

3.2.2.2.1 StartSession to Locking SP

```
SMUID.StartSession [12E13, LockingSP_UID, 1]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 50 00 00 00 00 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 38 00 00 00 00
0030 00 00 00 00 00 00 00 29 F8 A8 00 00 00 00 00 00
0040 00 FF A8 00 00 00 00 00 00 FF 02 F0 83 01 2E 13
0050 A8 00 00 02 05 00 01 00 01 01 F1 F9 F0 00 00 00
0060 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 06 Start Session – Locking SP

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 50	Length	80	uinteger_4
Packet			
00 00 00 00 00 00 00 00	Session	0's	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 38	Length	56	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6

00 00	Kind	0's	uinteger_2
00 00 00 29	Length	41	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 FF	Invoking UID	Session Manager Reserved UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 FF 02	Method UID	StartSession Method UID	
F0	Start List Token		Begins parameter list
83	Short Atom Token Header	Uinteger, length = 3	
01 2E 13	Required Parameter: HostSessionID	<012E13>	Host supplied Session Number
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 02 05 00 01 00 01	Required Parameter: SPID	<Locking SP_UID>	UID of SP to which session is being opened
01	Tiny Atom Token, Required Parameter: Write	<True>	Write Session
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.2.2.2 SyncSession from Locking SP

```
SMUID.SyncSession [ 12E13, FFFFFDE0 ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 48 00 00 00 00 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 30 00 00 00 00
0030 00 00 00 00 00 00 00 24 F8 A8 00 00 00 00 00 00
0040 00 FF A8 00 00 00 00 00 00 FF 03 F0 83 01 2E 13
0050 84 FF FF FD E0 F1 F9 F0 00 00 00 F1 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 07 SyncSession – Locking SP

Bytes	**Purpose**	**Value**	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 48	Length	72	uinteger_4
Packet			
00 00 00 00 00 00 00 00	Session	0's	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 30	Length	48	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 24	Length	36	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 FF	Invoking UID	Session Manager Reserved UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 FF 03	Method UID	SyncSession Method UID	
F0	Start List Token		Begins parameter list
83	Short Atom Token Header	Uinteger, length = 3	
01 2E 13	Required Parameter: HostSessionID	<12E13>	EchoHost Session Number

84	Short Atom Token Header	Uinteger, length = 4	
FF FF FD E0	Required Parameter: SPSessionID	<FFFFFDE0>	SP Session Number assigned by storage device
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
			No Pad

3.2.2.3 Authentication Results

3.2.2.3.1 Authenticate Method Result

```
[ True ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 30 FF FF FD DF 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 18 00 00 00 00
0030 00 00 00 00 00 00 00 09 F0 01 F1 F9 F0 00 00 00
0040 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 08 Authenticate Method Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 30	Length	48	uinteger_4
Packet			
FF FF FD DF 00 01 2E 12	Session	FFFFFDDF 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 18	Length	24	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 09	Length	9	uinteger_4
Data Payload			

F0	Start List Token		
01	Tiny Atom Token, Status	<True>	
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.2.4 Set Results

3.2.2.4.1 Set Method Result

```
[ True ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 30 FF FF FD DF 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 18 00 00 00 00
0030 00 00 00 00 00 00 00 09 F0 01 F1 F9 F0 00 00 00
0040 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 09 Set Method Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 30	Length	48	uinteger_4
Packet			
FFFFFDDF 00012E12	Session	FFFFFDDF 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 18	Length	24	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 09	Length	9	uinteger_4

Data Payload			
F0	Start List Token		
01	Tiny Atom Token, Set Response	<True>	
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.2.5 Ending the Session

3.2.2.5.1 Send End of Session Token

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 28 FF FF FD DF 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 10 00 00 00 00
0030 00 00 00 00 00 00 00 01 FA 00 00 00 00 00 00 00
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              . . .
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 10 End of Session

Bytes	**Purpose**	**Value**	**Notes**
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 28	Length	40	uinteger_4
Packet			
FF FF FD DF 00 01 2E 12	Session	FFFFFDDF 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 10	Length	16	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 01	Length	1	uinteger_4
Data Payload			
FA	End of Session Token		Signals TPer has ended session
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.2.5.2 End of Session Response

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 28 FF FF FD DF 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 10 00 00 00 00
0030 00 00 00 00 00 00 00 01 FA 00 00 00 00 00 00 00
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 11 End of Session Reponse

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 28	Length	40	uinteger_4
Packet			
FF FF FD DF 00 01 2E 12	Session	FFFFFDDF 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 10	Length	16	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 01	Length	1	uinteger_4
Data Payload			
FA	End of Session Token		Signals TPer has ended session
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.3 Taking Ownership of the SD

3.2.3.1 Open a Session to Admin SP

3.2.3.1.1 StartSession - Admin SP

See 3.2.2.1.1.

3.2.3.1.2 SyncSession – Admin SP

See 3.2.2.1.2.

3.2.3.2 Retrieve MSID PIN Value

The host retrieves the value of the MSID PIN from the Admin SP.

3.2.3.2.1 Get MSID PIN Value

```
MSID C_Pin UID.Get [ [ "startColumn" = "PIN", "endColumn" = "PIN" ]]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 64 FF FF FD DF 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 4C 00 00 00 00
0030 00 00 00 00 00 00 00 3F F8 A8 00 00 00 0B 00 00
0040 84 02 A8 00 00 00 06 00 00 00 06 F0 F0 F2 AB 73
0050 74 61 72 74 43 6F 6C 75 6D 6E A3 50 49 4E F3 F2
0060 A9 65 6E 64 43 6F 6C 75 6D 6E A3 50 49 4E F3 F1
0070 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 12 Get MSID PIN

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 64	Length	100	uinteger_4
Packet			
FF FF FD DF 00 01 2E 12	Session	FFFFFDDF 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 4C	Length	76	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 3F	Length	63	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 0B 00 00 84 02	Invoking UID	MSID C_Pin UID	

A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 06	Method UID	Get Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F2	Start Name Token		
AB	Short Atom Token Header	Byte Sequence, Length = 8	
73 74 61 72 74 43 6F 6C 75 6D 6E		"startColumn"	
A3	Short Atom Token Header	Byte Sequence, Length = 3	
50 49 4E		"PIN"	
F3	End Name Token		
F2	Start Name Token		
A9	Short Atom Token Header	Byte Sequence, length = 9	
65 6E 64 43 6F 6C 75 6D 6E		"endColumn"	
A3	Short Atom Token Header	Byte Sequence, Length = 3	
50 49 4E		"PIN"	
F3	End Name Token		
F1	End List Token		Ends cell block for Where parameter
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00	Pad		Included in Packet and ComPacket lengths

3.2.3.2.2 Get MSID PIN Results

```
[[[“PIN”= MSID_Value]]]
```

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 58 FF FF FD DF 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 40 00 00 00 00
0030 00 00 00 00 00 00 00 34 F0 F0 F0 F2 A3 50 49 4E
0040 D0 20 30 31 32 33 34 35 36 37 38 39 41 42 43 44
0050 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54
0060 55 56 F3 F1 F1 F1 F9 F0 00 00 00 F1 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 13 Get MSID PIN Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 58	Length	88	uinteger_4
Packet			
FF FF FD DF 00 01 2E 12	Session	FFFFFDDF 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 40	Length	64	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 34	Length	52	uinteger_4
Data Payload			
F0	Start List token		Start of results list
F0	Start List token		Start list of row results
F0	Start List token		Start of first row of results
F2	Start Name Token		
A3	Short Atom Token Header	Byte sequence, length = 3	
50 49 4E		"PIN"	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	

30 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56		<MSID_Value>	
F3	End Name Token		
F1	End List token		End of first row of results
F1	End List token		End of row results
F1	End List token		End of results list
F9			
F0 00 00 00 F1			
			No Pad

3.2.3.3 Authenticate SID Authority

The host authenticates with the SP as the SID authority using the default PIN value, MSID_PIN value.

3.2.3.3.1 SID Authentication

```
ThisSP.Authenticate [SID_Authority_object _UID, "Challenge"="MSID_PIN_Value"]


0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD DF 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 00 06 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 30 31 32 33 34 35 36 37 38 39 41 42 43 44
0070 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54
0080 55 56 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 14 Authenticate as SID

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD DF 00 01 2E 12	Session	FFFFFDDF 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	SP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	

00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		Begins Method Parameters
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 09 00 00 00 06		SID_Authority_object_UID	
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
43 68 61 6C 6C 65 6E 67 65		“Challenge”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
30 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56		<Current PIN (MSID)>	
F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.3.3.2 Authenticate as SID Results

See 3.2.2.3.

3.2.3.4 Set New SID PIN Value

The host enters a custom PIN value for SID authority.

3.2.3.4.1 Set New SID PIN Value

```
SID_PIN_UID.Set [ [ ], [ [ “PIN” = < Custom PIN > ] ] ]
```

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 70 FF FF FD DF 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 58 00 00 00 00
0030 00 00 00 00 00 00 00 49 F8 A8 00 00 00 0B 00 00
0040 00 01 A8 00 00 00 06 00 00 00 07 F0 F0 F1 F0 F0
0050 F2 A3 50 49 4E D0 20 6E 52 77 36 FB 8C 13 F3 B3
0060 A9 FB BF 90 DA D2 6C 59 E7 3C 2D 68 26 05 8E C1
0070 9B 93 6E 22 7A 27 69 F3 F1 F1 F1 F9 F0 00 00 00
0080 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 15 Set New SID PIN

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 70	Length	112	uinteger_4
Packet			
FF FF FD DF 00 01 2E 12	Session	FFFFFDDF 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 58	Length	88	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 49	Length	73	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 0B 00 00 00 01	Invoking UID	SID_PIN_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 07	Method UID	Set Method UID	
F0	Start List Token		
F0	Start List Token		Start cell block for Where parameter Begin Where parameter
F1	End List Token		Ends cell block for Where parameter
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
A3	Short Atom Token Header	Byte sequence, length = 3	
50 49 4E		“PIN”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
6E 52 77 36 FB 8C 13 F3 B3 A9 FB BF 90 DA D2 6C 59 E7 3C 2D 68 26 05 8E C1 9B 93 6E 22 7A 27 69		<Custom PIN>	This PIN value is specified by the host. The host may use the Random method to obtain a random nuber from the storage device.
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		

F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		None

3.2.3.4.2 Set New SID PIN Results

See 3.2.2.4.

3.2.3.5 Ending the Session

3.2.3.5.1 Send End of Session Token

See 3.2.2.5.1.

3.2.3.5.2 End of Session Response

See 3.2.2.5.2.

3.2.4 Activate and Enroll the SD

3.2.4.1 Open a Session to the Locking SP

The host starts a session with the Locking SP in order to set custom PIN values.

3.2.4.1.1 StartSession to Locking SP

See 3.2.2.2.1.

3.2.4.1.2 SyncSession from Locking SP

See 3.2.2.2.2.

3.2.4.2 BandMaster0 Authentication

The host authenticates with the SP as the BandMaster0 authority using the default PIN value, MSID_PIN value.

3.2.4.2.1 Authenticate BandMaster0

```
ThisSP.Authenticate [ BandMaster0_Authority_object _UID, "Challenge" =
"MSID_PIN_Value" ]


0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 80 01 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 30 31 32 33 34 35 36 37 38 39 41 42 43 44
0070 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54
0080 55 56 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              . . .
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 16 Authenticate as BandMaster0

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	SP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		Begins Method Parameters
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 09 00 00 80 01		Authority object – Bandmaster0_UID	
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
43 68 61 6C 6C 65 6E 67 65		“Challenge”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
30 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56		<MSID_PIN_Value>	Current MSID_PIN

F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.4.2.2 Authenticate BandMaster0 Results

See 3.2.2.3.

3.2.4.3 Set New BandMaster0 PIN Value

The host enters a custom PIN value for BandMaster0 authority.

3.2.4.3.1 Set BandMaster0 PIN

```
BandMaster0_PIN_UID.Set [ [ ], [ [ "PIN" = "Custom PIN Value" ] ] ]


0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 70 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 58 00 00 00 00
0030 00 00 00 00 00 00 00 49 F8 A8 00 00 00 0B 00 00
0040 80 01 A8 00 00 00 06 00 00 00 07 F0 F0 F1 F0 F0
0050 F2 A3 50 49 4E D0 20 48 86 AB 86 FF D3 D8 AA B5
0060 B8 D7 F0 B5 14 50 15 98 13 82 EF 80 30 8E 8F 3F
0070 05 39 B6 2C 73 76 98 F3 F1 F1 F1 F9 F0 00 00 00
0080 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 17 Set New BandMaster0 PIN

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 70	Length	112	uinteger_4
Packet			
FF FF FD DF 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 58	Length	88	uinteger_4
Data SubPacket			

00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 49	Length	73	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 0B 00 00 80 01	Invoking UID	BandMaster0_PIN_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 07	Method UID	Set Method UID	
F0	Start List Token		
F0	Start List Token		Starts cell block for Where parameter
F1	End List Token		Ends cell block for Where parameter
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
A3	Short Atom Token Header	Byte sequence, length = 3	
50 49 4E		“PIN”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
48 86 AB 86 FF D3 D8 AA B5 B8 D7 F0 B5 14 50 15 98 13 82 EF 80 30 8E 8F 3F 05 39 B6 2C 73 76 98		<Custom PIN>	This PIN value is specified by the host. The host may use the Random method to obtain a random number from the storage device.
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		

3.2.4.3.2 Set new BandMaster0 PIN Results

See 3.2.2.4.

3.2.4.4 BandMaster1 Authentication

The host authenticates with the SP as the BandMaster1 authority using the default PIN value, MSID_PIN value.

3.2.4.4.1 Authenticate as BandMaster1

```
ThisSP.Authenticate [ BandMaster1_Authority_object _UID, "Challenge" =
"MSID_PIN_Value" ]
```

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 80 02 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 30 31 32 33 34 35 36 37 38 39 41 42 43 44
0070 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54
0080 55 56 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 18 Authenticate as BandMaster1

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	SP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	A8
00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		Begins Parameters
A8	Short Atom Token Header	Byte sequence, length = 8	

00 00 00 09 00 00 80 02		Authority object – Bandmaster1_UID	
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
43 68 61 6C 6C 65 6E 67 65		"Challenge"	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
30 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56		<MSID_PIN_Value >	Current MSID_PIN
F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.4.4.2 Authenticate as BandMaster1 Results

See 3.2.2.3.

3.2.4.5 Set New BandMaster1 PIN Value

The host enters a custom PIN value for BandMaster1 authority's credential.

3.2.4.5.1 Set BandMaster1 PIN

```
BandMaster1_PIN_UID.Set [ [ ], [ [ “PIN” = ”Custom PIN Value” ] ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 70 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 58 00 00 00 00
0030 00 00 00 00 00 00 00 49 F8 A8 00 00 00 0B 00 00
0040 80 02 A8 00 00 00 06 00 00 00 07 F0 F0 F1 F0 F0
0050 F2 A3 50 49 4E D0 20 4F 64 AC 3D 8A 66 5D F1 F4
0060 69 B5 CC 2A 39 AA 68 4D 3D DE E8 C8 81 16 9F 6F
0070 4B 51 54 9F 67 2B 98 F3 F1 F1 F1 F9 F0 00 00 00
0080 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 19 Set New BandMaster1 PIN

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4

07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 70	Length	112	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 58	Length	88	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 49	Length	73	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 0B 00 00 80 02	Invoking UID	BandMaster1_PIN_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 07	Method UID	Set Method UID	
F0	Start List Token		Begins Parameters
F0	Start List Token		Starts cell block for Where parameter
F1	End List Token		Ends cell block for Where parameter
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
A3	Short Atom Token Header	Byte sequence, length = 3	
A3 50 49 4E		“PIN”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
4F 64 AC 3D 8A 66 5D F1 F4 69 B5 CC 2A 39 AA 68 4D 3D DE E8 C8 81 16 9F 6F 4B 51 54 9F 67 2B 98		<Custom PIN>	This PIN value is specified by the host. The host may use the Random method to obtain a random number from the storage device.
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		Ends Method Parameters
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.4.5.2 Set new BandMaster1 PIN Results

See 3.2.2.4.

3.2.4.6 EraseMaster Authentication

The host authenticates with the SP as the EraseMaster authority using its default credential, the MSID_PIN value.

3.2.4.6.1 Authenticate as EraseMaster

```
ThisSP.Authenticate [ EraseMaster_Authority_object_UID, "Challenge" =
"MSID_PIN_Value" ]


0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 84 01 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 30 31 32 33 34 35 36 37 38 39 41 42 43 44
0070 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54
0080 55 56 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 20 Authenticate as EraseMaster

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			

F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	ThisSP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		Begins Parameter list
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 09 00 00 84 01		Authority object – EraseMaster_UID	
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
43 68 61 6C 6C 65 6E 67 65		“Challenge”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
30 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56		<MSID_PIN_Value>	Current MSID_ PIN
F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.4.6.2 Authenticate as EraseMaster Results

See 3.2.2.3.

3.2.4.7 Set New EraseMaster PIN

The host enters a custom PIN value for EraseMaster authority's credential.

3.2.4.7.1 Set EraseMaster PIN

```
EraseMaster_PIN_UID.Set [ [ ], [ [ “PIN” = ”Custom_PIN_Value” ] ] ]
```

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 70 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 58 00 00 00 00
0030 00 00 00 00 00 00 00 49 F8 A8 00 00 00 0B 00 00
0040 84 01 A8 00 00 00 06 00 00 00 07 F0 F0 F1 F0 F0
0050 F2 A3 50 49 4E D0 20 D5 3C 18 4F AC 3F 3E 49 05
0060 53 BA 97 59 CB C0 6B 22 5C 2B A3 7F DB FF 90 1C
0070 CF EB 54 F2 9C F9 53 F3 F1 F1 F1 F9 F0 00 00 00
0080 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          . . .
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 21 Set New EraseMaster PIN

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 70	Length	112	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 58	Length	88	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 49	Length	73	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 0B 00 00 84 01	Invoking UID	EraseMaster_PIN_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 07	Method UID	Set Method UID	
F0	Start List Token		Starts parameter list
F0	Start List Token		Starts cell block for Where parameter
F1	End List Token		Ends cell block for Where parameter
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
A3	Short Atom Token Header	Byte sequence, length = 3	
50 49 4E		“PIN”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	

D5 3C 18 4F AC 3F 3E 49 05 53 BA 97 59 CB C0 6B 22 5C 2B A3 7F DB FF 90 1C CF EB 54 F2 9C F9 53		<Custom PIN Value>	This PIN value is specified by the host. The host may use the Random method to obtain a random nuber from the storage device.
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		None

3.2.4.7.2 Set new EraseMaster PIN Results

See 3.2.2.4.

3.2.4.8 Ending the Session

3.2.4.8.1 Send End of Session Token

See 3.2.2.5.1.

3.2.4.8.2 End of Session Response

See 3.2.2.5.2.

3.2.5 Configure the Locking Ranges

The operations in this section customize the locking range settings to host assigned values. These operations could have been completed in the previous session, but are in a new session to illustrate the new passwords required for authentication.

3.2.5.1 Open a Session to the Locking SP

3.2.5.1.1 StartSession to Locking SP

See 3.2.2.2.1.

3.2.5.1.2 SyncSession from Locking SP

See 3.2.2.2.2.

3.2.5.2 BandMaster0 Authentication

The host authenticates with the SP as the BandMaster0 authority using the newly set PIN value.

3.2.5.2.1 Authenticate BandMaster0

```
ThisSP.Authenticate [BandMaster0_Authority_object _UID, "Challenge" =
"Custom_PIN_Value" ]


0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 80 01 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 48 86 AB 86 FF D3 D8 AA B5 B8 D7 F0 B5 14
0070 50 15 98 13 82 EF 80 30 8E 8F 3F 05 39 B6 2C 73
0080 76 98 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 22 Authenticate as BandMaster0

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			

F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	SP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 09 00 00 80 01		Authority object – Bandmaster0_UID	
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
43 68 61 6C 6C 65 6E 67 65		“Challenge”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
48 86 AB 86 FF D3 D8 AA B5 B8 D7 F0 B5 14 50 15 98 13 82 EF 80 30 8E 8F 3F 05 39 B6 2C 73 76 98		<Custom PIN value>	PIN set in 3.2.4.3
F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.5.2.2 Authenticate BandMaster0 Results

See 3.2.2.3.

3.2.5.3 Get Current Global_Range settings

The host retrieves the current Global_Range locking object settings. This is an optional operation. The host may proceed directly to setting the locking object settings.

3.2.5.3.1 Get Global_Range

```
Global_Range locking object UID.Get [ [ ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 44 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 2C 00 00 00 00
0030 00 00 00 00 00 00 00 1D F8 A8 00 00 08 02 00 00
0040 00 01 A8 00 00 00 06 00 00 00 06 F0 F0 F1 F1 F9
0050 F0 00 00 00 F1 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
                                    . . .
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 23 Get Global_Range Settings

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 44	Length	68	uinteger_4
Packet			
FF FF FD DF 00 01 2E 13	Session	FFFFFDDF 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 2C	Length	44	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 1D	Length	29	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 01	Invoking UID	Global_Range locking object UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 06	Method UID	Get Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F1	End List Token		Ends cell block for Where parameter
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.5.3.2 Get current Global_Range settings Results

Depending on implementation, the “ActiveKey” column value could be a uidref to a K_AES_256 object.

```
[ [ [ "UID" = 00 00 08 02 00 00 00 01, “Name” = "Global_Range", ”CommonName ”=
"Locking", ”RangeStart” = <0x00>, "RangeLength" = <0x00>, ”ReadLockEnabled” =
<False>, "WriteLockEnabled" = <False>, ”ReadLocked” = <False>, ”WriteLocked” =
<False>, ”LockOnReset” = [ <Power Cycle> ], “ActiveKey” = <Global_Range-
_AES_128_UID> ] ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 F0 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 D8 00 00 00 00
0030 00 00 00 00 00 00 00 CC F0 F0 F0 F2 A3 55 49 44
0040 A8 00 00 08 02 00 00 00 01 F3 F2 A4 4E 61 6D 65
0050 AC 47 6C 6F 62 61 6C 5F 52 61 6E 67 65 F3 F2 AA
0060 43 6F 6D 6D 6F 6E 4E 61 6D 65 A7 4C 6F 63 6B 69
0070 6E 67 F3 F2 AA 52 61 6E 67 65 53 74 61 72 74 00
0080 F3 F2 AB 52 61 6E 67 65 4C 65 6E 67 74 68 00 F3
0090 F2 AF 52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65
00A0 64 00 F3 F2 D0 10 57 72 69 74 65 4C 6F 63 6B 45
00B0 6E 61 62 6C 65 64 00 F3 F2 AA 52 65 61 64 4C 6F
00C0 63 6B 65 64 00 F3 F2 AB 57 72 69 74 65 4C 6F 63
00D0 6B 65 64 00 F3 F2 AB 4C 6F 63 6B 4F 6E 52 65 73
00E0 65 74 F0 00 F1 F3 F2 A9 41 63 74 69 76 65 4B 65
00F0 79 A8 00 00 08 05 00 00 00 01 F3 F1 F1 F1 F9 F0
0100 00 00 00 F1 00 00 00 00 00 00 00 00 00 00 00 00
0110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 24 Get Global_Range Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	Outstanding Data	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 F0	Length	240	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 D8	Length	216	uinteger_4
Data SubPacket			

00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 CC	Length	204	uinteger_4
Data Payload			
F0	Start List Token		Begins results
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
A3	Short Atom Token Header	Byte sequence, length = 3	
55 49 44	Name	"UID"	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 01	Value	<Global_Range_UID>	
F3	End Name Token		
F2	Start Name Token		
A4	Short Atom Token Header	Byte sequence, length = 4	
4E 61 6D 65	Name	"Name"	
AC	Short Atom Token Header	Byte sequence, length = 12	
47 6C 6F 62 61 6C 5F 52 61 6E 67 65	Value	"Global_Range"	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
43 6F 6D 6D 6F 6E 4E 61 6D 65		"CommonName"	
A7	Short Atom Token Header	Byte sequence, length = 7	
4C 6F 63 6B 69 6E 67		"Locking"	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 61 6E 67 65 53 74 61 72 74		"RangeStart"	
00	Tiny Atom Token, Value	<0x00>	

F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	
52 61 6E 67 65 4C 65 6E 67 74 68		"RangeLength"	
00	Tiny Atom Token, Value	<0x00>	
F3	End Name Token		
F2	Start Name Token		
AF	Short Atom Token Header	Byte sequence, length = 15	
52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65 64		“ReadLockEnabled”	
00	Tiny Atom Token, Value	<False>	
F3	End Name Token		
F2	Start Name Token		
D0 10	Medium Atom Token Header	Byte sequence, Length 16	
57 72 69 74 65 4C 6F 63 6B 45 6E 61 62 6C 65 64		"WriteLockEnabled"	
00	Tiny Atom Token, Value	<False>	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 65 61 64 4C 6F 63 6B 65 64	Name	“ReadLocked”	
00	Tiny Atom Token, Value	<False>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 12	
57 72 69 74 65 4C 6F 63 6B 65 64	Name	“WriteLocked”	
00	Tiny Atom Token, Value	<False>	
F3	End Name Token		

F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 12	
4C 6F 63 6B 4F 6E 52 65 73 65 74		“LockOnReset”	
F0	Start List Token		
00	Tiny Atom Token, Value	<Power Cycle>	
F1	End List Token		
F3	End Name Token		
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
41 63 74 69 76 65 4B 65 79		“ActiveKey”	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 05 00 00 00 01	Value	<Global_Range-_AES_128_UID>	
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		
F9	End of Data Token		Ends results
F0 00 00 00 F1	Status List		

3.2.5.4 Modify Global_Range Locks

The host modifies the Global_Range lock settings.

3.2.5.4.1 Set Global_Range

```
Global_Range_locking_object_UID.Set[ [ ], [ [ ”ReadLockEnabled” = <True>,
"WriteLockEnabled" = <True>, ”ReadLocked” = <True>, ”WriteLocked” = <True>” ] ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 8C FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 74 00 00 00 00
0030 00 00 00 00 00 00 00 66 F8 A8 00 00 08 02 00 00
0040 00 01 A8 00 00 00 06 00 00 00 07 F0 F0 F1 F0 F0
0050 F2 AF 52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65
0060 64 01 F3 F2 D0 10 57 72 69 74 65 4C 6F 63 6B 45
0070 6E 61 62 6C 65 64 01 F3 F2 AA 52 65 61 64 4C 6F
0080 63 6B 65 64 01 F3 F2 AB 57 72 69 74 65 4C 6F 63
0090 6B 65 64 01 F3 F1 F1 F1 F9 F0 00 00 00 F1 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 25 Set Global_Range Locks

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 8C	Length	140	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 74	Length	116	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 66	Length	102	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 01	Invoking UID	Global_Range_ locking_object_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	

00 00 00 06 00 00 00 07	Method UID	Set Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F1	End List Token		Ends cell block
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		F2
AF	Short Atom Token Header	Byte sequence, length = 15	
52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65 64		“ReadLockEnabled”	
01	Tiny Atom Token, Value	<True>	
F3	End Name Token		F3
F2	Start Name Token		
D0 10	Medium Atom Token	Byte sequence, length = 16	
57 72 69 74 65 4C 6F 63 6B 45 6E 61 62 6C 65 64		"WriteLockEnabled"	
01	Tiny Atom Token, value	<True>	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 65 61 64 4C 6F 63 6B 65 64	Name	“ReadLocked”	
01	Tiny Atom Token, Value	<True>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	
57 72 69 74 65 4C 6F 63.6B 65 64	Name	‘WriteLocked”	
01	Tiny Atom Token, Value	<True>	
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		
F9	End of Data Token		Ends results
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.5.4.2 Set Global_Range Locks Results

See 3.2.2.4.

3.2.5.5 Get Global_Range settings

The host retrieves the current Global_Range locking object settings. This operation is optional and is included to illustrate that changes were made. The success status to the Set Global_Range locks operation indicates the requested changes were made and committed.

3.2.5.5.1 Get Global_Range

```
Global_Range locking object UID.Get [ [ ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 44 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 2C 00 00 00 00
0030 00 00 00 00 00 00 00 1D F8 A8 00 00 08 02 00 00
0040 00 01 A8 00 00 00 06 00 00 00 06 F0 F0 F1 F1 F9
0050 F0 00 00 00 F1 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 26 Get Global_Range Settings

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 44	Length	68	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 2C	Length	44	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 1D	Length	29	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	

00 00 08 02 00 00 00 01	Invoking UID	Global_Range_ locking_ object_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 06	Method UID	Get Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F1	End List Token		Ends cell block
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.5.5.2 Get Global_Range settings results

Depending on implementation, the “ActiveKey” column value could be a uidref to a K_AES_256 object.

```
[ [ [ "UID" = 00 00 08 02 00 00 00 01, “Name” = "Global_Range", ”CommonName ”=
"Locking", ”RangeStart” = <0x00>, "RangeLength" = <0x00>, ”ReadLockEnabled” =
<True>, "WriteLockEnabled" = <True>, ”ReadLocked” = <True>, ”WriteLocked” = <True>,
”LockOnReset” = [ <Power Cycle> ], “ActiveKey” = <Global_Range-_AES_128_UID> ] ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 F0 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 D8 00 00 00 00
0030 00 00 00 00 00 00 00 CC F0 F0 F0 F2 A3 55 49 44
0040 A8 00 00 08 02 00 00 00 01 F3 F2 A4 4E 61 6D 65
0050 AC 47 6C 6F 62 61 6C 5F 52 61 6E 67 65 F3 F2 AA
0060 43 6F 6D 6D 6F 6E 4E 61 6D 65 A7 4C 6F 63 6B 69
0070 6E 67 F3 F2 AA 52 61 6E 67 65 53 74 61 72 74 00
0080 F3 F2 AB 52 61 6E 67 65 4C 65 6E 67 74 68 00 F3
0090 F2 AF 52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65
00A0 64 01 F3 F2 D0 10 57 72 69 74 65 4C 6F 63 6B 45
00B0 6E 61 62 6C 65 64 01 F3 F2 AA 52 65 61 64 4C 6F
00C0 63 6B 65 64 01 F3 F2 AB 57 72 69 74 65 4C 6F 63
00D0 6B 65 64 01 F3 F2 AB 4C 6F 63 6B 4F 6E 52 65 73
00E0 65 74 F0 00 F1 F3 F2 A9 41 63 74 69 76 65 4B 65
00F0 79 A8 00 00 08 05 00 00 00 01 F3 F1 F1 F1 F9 F0
0100 00 00 00 F1 00 00 00 00 00 00 00 00 00 00 00 00
0110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 27 Get Global_Range Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 F0	Length	240	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 D8	Length	216	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2

00 00 00 CC	Length	204	uinteger_4
Data Payload			
F0	Start List Token		Begins results
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
A3	Short Atom Token Header	Byte sequence, length = 3	
55 49 44	Name	UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 01	Value		
F3	End Name Token		
F2	Start Name Token		
A4	Short Atom Token Header	Byte sequence, length = 4	
4E 61 6D 65	Name	“Name”	
AC	Short Atom Token Header	Byte sequence, length = 12	
47 6C 6F 62 61 6C 5F 52 61 6E 67 65	Value	”Global_Range”	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
43 6F 6D 6D 6F 6E 4E 61 6D 65		“CommonName”	
A7	Short Atom Token Header	Byte sequence, length = 7	
4C 6F 63 6B 69 6E 67		“Locking”	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 61 6E 67 65 53 74 61 72 74		“RangeStart”	
00	Tiny Atom Token, Value	<0x00>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 12	
52 61 6E 67 65 4C 65 6E 67 74 68		"RangeLength"	

00	Tiny Atom Token, Value	<0x00>	
F3	End Name Token		
F2	Start Name Token		
AF	Short Atom Token Header	Byte sequence, length = 15	
52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65 64		“ReadLockEnabled”	
01	Tiny Atom Token, Value	<True>	
F3	End Name Token		
F2	Start Name Token		
D0 10	Medium Atom Token Header	Byte sequence, length = 16	
57 72 69 74 65 4C 6F 63 6B 45 6E 61 62 6C 65 64		"WriteLockEnabled"	
01		<True>	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 65 61 64 4C 6F 63 6B 65 64	Name	“ReadLocked”	
01	Value	<True>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	
57 72 69 74 65 4C 6F 63 6B 65 64	Name	“WriteLocked”	
01	Value	<True>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	
4C 6F 63 6B 4F 6E 52 65 73 65 74		“LockOnReset”	
F0	Start List Token		
00		<Power Cycle>	
F1	End List Token		
F3	End Name Token		

F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
41 63 74 69 76 65 4B 65 79		“ActiveKey”	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 05 00 00 00 01	Value	<Global_Range-_AES_128_UID>	
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		
F9	End of Data Token		Ends results
F0 00 00 00 F1	Status List		
			No Pad

3.2.5.6 BandMaster1 Authentication

The host authenticates with the SP as the BandMaster1 authority using the custom PIN value set in 3.2.4.5.

3.2.5.6.1 Authenticate BandMaster1

```
ThisSP.Authenticate [ BandMaster1_Authority_object _UID, "Challenge" =
"Custom_PIN_Value" ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 80 02 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 4F 64 AC 3D 8A 66 5D F1 F4 69 B5 CC 2A 39
0070 AA 68 4D 3D DE E8 C8 81 16 9F 6F 4B 51 54 9F 67
0080 2B 98 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 28 Authenticate as BandMaster1

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4

00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	SP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 09 00 00 80 02		Authority object – Bandmaster1_UID	
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
43 68 61 6C 6C 65 6E 67 65		“Challenge”	
D0 20		Bute sequence, length = 32	
4F 64 AC 3D 8A 66 5D F1 F4 69 B5 CC 2A 39 AA 68 4D 3D DE E8 C8 81 16 9F 6F 4B 51 54 9F 67 2B 98		<Current BandMaster1_PIN>	
F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.5.6.2 Authenticate as BandMaster1 Results

See 3.2.2.3.

3.2.5.7 Set Band1 Start and Size

The host configures Band1.

3.2.5.7.1 Set Band1

```
Band1_locking_object_UID.Set [ [ ] , [ [ ”RangeStart” = <0xBAAD>, "RangeLength" =
<0xBEEF>, ”ReadLockEnabled” = <True>, "WriteLockEnabled" = <True> ] ] ]


0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 90 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 78 00 00 00 00
0030 00 00 00 00 00 00 00 6A F8 A8 00 00 08 02 00 00
0040 00 02 A8 00 00 00 06 00 00 00 07 F0 F0 F1 F0 F0
0050 F2 AA 52 61 6E 67 65 53 74 61 72 74 82 BA AD F3
0060 F2 AB 52 61 6E 67 65 4C 65 6E 67 74 68 82 BE EF
0070 F3 F2 AF 52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C
0080 65 64 01 F3 F2 D0 10 57 72 69 74 65 4C 6F 63 6B
0090 45 6E 61 62 6C 65 64 01 F3 F1 F1 F1 F9 F0 00 00
00A0 00 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00C0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 29 Set Band1 Range

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 90	Length	144	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 6A	Length	106	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 02	Invoking UID	Band1_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 07	Method UID	Set Method UID	
F0	Start List Token		Begins Parameters
F0	Start List Token		Begins Where Parameter
F1	End List Token		Ends Where Parameter
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 61 6E 67 65 53 74 61 72 74		“RangeStart”	
82	Short Atom Token Header	Uinteger, length = 2	
BA AD		<0xBAAD>	
F3	End Name Token		
F2	Start name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	

52 61 6E 67 65 4C 65 6E 67 74 68		"RangeLength"	
82		Uinteger, length = 2	
BE EF		<0xBEEF>	
F3	End Name Token		
F2	Start Name Token		
AF	Short Atom Token Header	Byte sequence, length = 15	
52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65 64		"ReadLockEnabled"	
01		<True>	
F3	End Name Token		
F2	Start Name Token		
D0 10	Medium Atom Token Header	Byte Sequence, length = 16	
57 72 69 74 65 4C 6F 63 6B 45 6E 61 62 6C 65 64		"WriteLockEnabled"	
01		<True>	
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		

3.2.5.7.2 Set Band1 range Results

See 3.2.2.4.

3.2.5.8 Ending the Session

3.2.5.8.1 Send End of Session Token

See 3.2.2.5.1.

3.2.5.8.2 End of Session Response

See 3.2.2.5.2.

3.2.6 Lock and Unlock the Device

This section contains an example of the operations required to change an LBA range's locking state.

3.2.6.1 Open a Session to the Locking SP

3.2.6.1.1 StartSession with Locking SP

See 3.2.2.2.1.

3.2.6.1.2 SyncSession from Locking SP

See 3.2.2.2.2.

3.2.6.2 BandMaster1 Authentication

3.2.6.2.1 Authenticate BandMaster1

The host authenticates with the SP as the BandMaster1 authority using the custom PIN value set in 3.2.4.5.

3.2.6.2.2 Authenticate BandMaster1

```
ThisSP.Authenticate [ BandMaster1_Authority_object _UID, "Challenge" =
"Custom_PIN_Value" ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 80 02 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 4F 64 AC 3D 8A 66 5D F1 F4 69 B5 CC 2A 39
0070 AA 68 4D 3D DE E8 C8 81 16 9F 6F 4B 51 54 9F 67
0080 2B 98 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 30 Authenticate as BandMaster1

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4

Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	SP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 09 00 00 80 02		Authority object – Bandmaster1_UID	
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
43 68 61 6C 6C 65 6E 67 65		“Challenge”	
D0 20		Bute sequence, length = 32	
4F 64 AC 3D 8A 66 5D F1 F4 69 B5 CC 2A 39 AA 68 4D 3D DE E8 C8 81 16 9F 6F 4B 51 54 9F 67 2B 98		<Current BandMaster1_PIN>	
F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.6.2.3 Authenticate BandMaster1 Results

See 3.2.2.3.

3.2.6.3 Retrieve Band1 Settings

3.2.6.3.1 Get Band1

```
Band1_UID.Get [ [ ] ]
```

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 44 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 2C 00 00 00 00
0030 00 00 00 00 00 00 00 1D F8 A8 00 00 08 02 00 00
```

```
0040 00 02 A8 00 00 00 06 00 00 00 06 F0 F0 F1 F1 F9
0050 F0 00 00 00 F1 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 31 Get Band1 Settings

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 44	Length	68	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 2C	Length	44	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 1D	Length	29	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 02	Invoking UID	Band1_ locking_ object_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 06	Method UID	Get Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F1	End List Token		Ends cell block
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.6.3.2 Get Band1 Results

Depending on implementation, the “ActiveKey” column value could be a uidref to a K_AES_256 object.

```
[ [ [ "UID" = 00 00 08 02 00 00 00 02, “Name” = "Band1", ”CommonName” = "Locking",
”RangeStart” = <0xBAAD>, "RangeLength" = <0xBEEF>, ”ReadLockEnabled” = <True>,
"WriteLockEnabled" = <True>, ”ReadLocked” = <False>, ”WriteLocked” = <False>,
”LockOnReset” = [ <Power Cycle> ], “ActiveKey” = <Band1-_AES_128_UID> ] ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 F0 FF FF FD 4E 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 D8 00 00 00 00
0030 00 00 00 00 00 00 00 C9 F0 F0 F0 F2 A3 55 49 44
0040 A8 00 00 08 02 00 00 00 02 F3 F2 A4 4E 61 6D 65
0050 A5 42 61 6E 64 31 F3 F2 AA 43 6F 6D 6D 6F 6E 4E
0060 61 6D 65 A7 4C 6F 63 6B 69 6E 67 F3 F2 AA 52 61
0070 6E 67 65 53 74 61 72 74 82 BA AD F3 F2 AB 52 61
0080 6E 67 65 4C 65 6E 67 74 68 82 BE EF F3 F2 AF 52
0090 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65 64 01 F3
00A0 F2 D0 10 57 72 69 74 65 4C 6F 63 6B 45 6E 61 62
00B0 6C 65 64 01 F3 F2 AA 52 65 61 64 4C 6F 63 6B 65
00C0 64 00 F3 F2 AB 57 72 69 74 65 4C 6F 63 6B 65 64
00D0 00 F3 F2 AB 4C 6F 63 6B 4F 6E 52 65 73 65 74 F0
00E0 00 F1 F3 F2 A9 41 63 74 69 76 65 4B 65 79 A8 00
00F0 00 08 05 00 00 00 02 F3 F1 F1 F1 F9 F0 00 00 00
0100 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 32 Get Band1 Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 F0	Length	240	uinteger_4
Packet			
FF FF FD E0 00 012E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 D8	Length	216	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6

00 00	Kind	0's	uinteger_2
00 00 00 C9	Length	201	uinteger_4
Data Payload			
F0	Start List Token		Begins results
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
A3	Short Atom Token Header	Byte sequence, length = 3	
55 49 44	Name	“UID”	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 02	Value		
F3	End Name Token		
F2	Start Name Token		
A4	Short Atom Token Header	Byte sequence, length = 4	
4E 61 6D 65	Name	“Name”	
A5	Short Atom Token Header	Byte sequence, length = 5	
42 61 6E 64 31	Value	“Band1”	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
43 6F 6D 6D 6F 6E 4E 61 6D 65		“CommonName”	
A7	Short Atom Token Header	Byte sequence, length = 7	
4C 6F 63 6B 69 6E 67		”Locking”	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 61 6E 67 65 53 74 61 72 74		“RangeStart”	
82		Uinteger, length = 2	
BA AD		0xBAAD	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 12	

52 61 6E 67 65 4C 65 6E 67 74 68		"RangeLength"	
82		Uinteger, length = 2	
BE EF		0xBEEF	
F3	End Name Token		
F2	Start Name Token		
AF	Short Atom Token Header	Byte sequence, length = 15	
52 65 61 64 4C 6F 63 6B 45 6E 61 62 6C 65 64		“ReadLockEnabled”	
01	Tiny Atom Token, Value	<True>	
F3	End Name Token		
F2	Start Name Token		
D0 10	Medium Atom Token Header	Byte sequence, length = 16	
57 72 69 74 65 4C 6F 63 6B 45 6E 61 62 6C 65 64		"WriteLockEnabled"	
01		<True>	
F3	End Name Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 65 61 64 4C 6F 63 6B 65 64	Name	“ReadLocked”	
00	Value	<False>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	
57 72 69 74 65 4C 6F 63 6B 65 64	Name	“WriteLocked”	
00	Value	<False>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	
4C 6F 63 6B 4F 6E 52 65 73 65 74		“LockOnReset”	
F0	Start List Token		
00		<Power Cycle>	
F1	End List Token		

F3	End Name Token		
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
41 63 74 69 76 65 4B 65 79		“ActiveKey”	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 05 00 00 00 02	Value	<Band1-_AES_128_UID>	
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		
F9	End of Data Token		Ends results
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.6.4 Lock Band1

3.2.6.4.1 Set Band1

```
Band1.Set[ [ ], [ [ ”ReadLocked” = <True>, ”WriteLocked” = <True>” ] ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 64 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 4C 00 00 00 00
0030 00 00 00 00 00 00 00 3E F8 A8 00 00 08 02 00 00
0040 00 01 A8 00 00 00 06 00 00 00 07 F0 F0 F1 F0 F0
0050 F2 AA 52 65 61 64 4C 6F 63 6B 65 64 01 F3 F2 AB
0060 57 72 69 74 65 4C 6F 63 6B 65 64 01 F3 F1 F1 F1
0070 F9 F0 00 00 00 F1 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 33 Set Band1 Locks

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4

07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 64	Length	100	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 4C	Length	76	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 3E	Length	62	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 02	Invoking UID	Band1_ locking_object_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 07	Method UID	Set Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F1	End List Token		Ends cell block
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 65 61 64 4C 6F 63 6B 65 64	Name	“ReadLocked”	
01	Tiny Atom Token, Value	<True>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	
57 72 69 74 65 4C 6F 63.6B 65 64	Name	‘WriteLocked”	
01	Tiny Atom Token, Value	<True>	
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		

F9	End of Data Token		Ends results
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.6.4.2 Set Band1 Results

See 3.2.2.4.

3.2.6.5 Unlock Band1

3.2.6.5.1 Set Band1

```
Band1.Set[ [ ], [ [ ”ReadLocked” = <False>, ”WriteLocked” = <False>” ] ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 64 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 4C 00 00 00 00
0030 00 00 00 00 00 00 00 3E F8 A8 00 00 08 02 00 00
0040 00 01 A8 00 00 00 06 00 00 00 07 F0 F0 F1 F0 F0
0050 F2 AA 52 65 61 64 4C 6F 63 6B 65 64 00 F3 F2 AB
0060 57 72 69 74 65 4C 6F 63 6B 65 64 00 F3 F1 F1 F1
0070 F9 F0 00 00 00 F1 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                          ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 34 Set Band1 Locks

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 64	Length	100	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 4C	Length	76	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6

00 00	Kind	0's	uinteger_2
00 00 00 3E	Length	62	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 02	Invoking UID	Band1_ locking_object_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 07	Method UID	Set Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F1	End List Token		Ends cell block
F0	Start List Token		
F0	Start List Token		
F2	Start Name Token		
AA	Short Atom Token Header	Byte sequence, length = 10	
52 65 61 64 4C 6F 63 6B 65 64	Name	“ReadLocked”	
00	Tiny Atom Token, Value	<False>	
F3	End Name Token		
F2	Start Name Token		
AB	Short Atom Token Header	Byte sequence, length = 11	
57 72 69 74 65 4C 6F 63.6B 65 64	Name	‘WriteLocked”	
00	Tiny Atom Token, Value	<False>	
F3	End Name Token		
F1	End List Token		
F1	End List Token		
F1	End List Token		
F9	End of Data Token		Ends results
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.6.5.2 Set Band1 Results

See 3.2.2.4.

3.2.6.6 Ending the Session

3.2.6.6.1 Send End of Session Token

See 3.2.2.5.1.

3.2.6.6.2 End of Session Response

See 3.2.2.5.2.

3.2.7 Repurpose and End of Life

This section contains an example of the operations to erase a LBA range.

3.2.7.1 Open a Session to the Locking SP

3.2.7.1.1 StartSession to Locking SP

See 3.2.2.2.1.

3.2.7.1.2 SyncSession from Locking SP

See 3.2.2.2.2.

3.2.7.2 EraseMaster Authentication

3.2.7.2.1 Authenticate as EraseMaster

```
 ThisSP.Authenticate [ EraseMaster_Authority_object_UID, "Challenge" =
"Custom_PIN_Value" ]


0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 84 01 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 D5 3C 18 4F AC 3F 3E 49 05 53 BA 97 59 CB
0070 C0 6B 22 5C 2B A3 7F DB FF 90 1C CF EB 54 F2 9C
0080 F9 53 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 35 Authenticate as EraseMaster

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8

00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	ThisSP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		Begins Parameter list
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 09 00 00 84 01		Authority object – EraseMaster_UID	
F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
4368 616C 6C65 6E67 65		“Challenge”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
D5 3C 18 4F AC 3F 3E 49 05 53 BA 97 59 CB C0 6B 22 5C 2B A3 7F DB FF 90 1C CF EB 54 F2 9C F9 53		<Custom_PIN_Value>	
F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.7.2.2 Authenticate as EraseMaster Results

See 3.2.2.3.

3.2.7.3 Erasing an LBA Range

3.2.7.3.1 Erase Band1

```
Band1_UID.Erase []
```

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 40 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 28 00 00 00 00
0030 00 00 00 00 00 00 00 1B F8 A8 00 00 08 02 00 00
0040 00 02 A8 00 00 00 06 00 00 08 03 F0 F1 F9 F0 00
0050 00 00 F1 00 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 36 Erase Band1

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 40	Length	64	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 28	Length	40	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_2
00 00	Kind	0's	uinteger_6
00 00 00 1B	Length	27	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 08 02 00 00 00 02	Invoking UID	Band1_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 08 03	Method UID	Erase Method UID	
F0	Start List Token		Starts parameter list
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00	Pad		Included in Packet and ComPacket lengths

3.2.7.3.2 Erase Band1 Results

[ ]

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 2C FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 14 00 00 00 00
0030 00 00 00 00 00 00 00 08 F0 F1 F9 F0 00 00 00 F1
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 37 Erase Band1 Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 2C	Length	44	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 14	Length	20	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_2
00 00	Kind	0's	uinteger_6
00 00 00 08	Length	8	uinteger_4
Data Payload			
F0	Start List Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
			No Pad

3.2.7.4 Ending the Session

3.2.7.4.1 Send End of Session Token

See 3.2.2.5.1.

3.2.7.4.2 End of Session Response

See 3.2.2.5.2.

3.2.8 Using the DataStore table

3.2.8.1 Open a Session to the Locking SP

3.2.8.1.1 StartSession – Locking SP

See 3.2.2.2.1.

3.2.8.1.2 SyncSession - Locking SP

See 3.2.2.2.2.

3.2.8.2 Retrieve DataStore Table Contents

The host retrieves the contents of the DataStore table.

3.2.8.2.1 Get DataStore

```
DataStore_table_UID.Get [ [ ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 44 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 2C 00 00 00 00
0030 00 00 00 00 00 00 00 1D F8 A8 00 00 80 01 00 00
0040 00 00 A8 00 00 00 06 00 00 00 06 F0 F0 F1 F1 F9
0050 F0 00 00 00 F1 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 38 Get DataStore Table Contents

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 44	Length	68	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2

00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 2C	Length	44	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 1D	Length	29	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 80 01 00 00 00 00	Invoking UID	DataStore table_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 06	Method UID	Get Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F1	End List Token		Ends cell block for Where parameter
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00 00	Pad		Included in Packet and ComPacket lengths

3.2.8.2.2 Get DataStore table contents Results

```
[0x00 - - - 1024 bytes of 0x00]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 04 30 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 04 18 00 00 00 00
0030 00 00 00 00 00 00 04 0A F0 D4 00 00 00 00 00 00
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
0410 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0420 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0430 00 00 00 00 00 00 00 00 00 00 00 F1 F9 F0 00 00
0440 00 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0450 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0460 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 39 Get DataStore Table Contents Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 04 30	Length	1072	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 04 18	Length	1048	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_2
00 00	Kind	0's	uinteger_6
00 00 04 0A	Length	1034	uinteger_4
Data Payload			
F0	Start List Token		Begins results
D4 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 . . . 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00		<0x400 (1024 bytes) of 0x00>	Default value
F1	End List Token		
F9	End of Data Token		Ends results
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.8.3 BandMaster Authentication

The host authenticates to the SP as the BandMaster0 authority using the custom PIN value set in 3.2.4.5. Authentication of any of the BandMaster authorities provides authorization to modify the DataStore table.

3.2.8.3.1 Authenticate as BandMaster0

```
ThisSP.Authenticate [BandMaster0_Authority_object _UID, "Challenge" =
"Custom_PIN_Value" ]
```

```
0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 78 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 60 00 00 00 00
0030 00 00 00 00 00 00 00 52 F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 00 0C F0 A8 00 00 00
0050 09 00 00 80 01 F2 A9 43 68 61 6C 6C 65 6E 67 65
0060 D0 20 48 86 AB 86 FF D3 D8 AA B5 B8 D7 F0 B5 14
0070 50 15 98 13 82 EF 80 30 8E 8F 3F 05 39 B6 2C 73
0080 76 98 F3 F1 F9 F0 00 00 00 F1 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                           ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 40 Authenticate as BandMaster0

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 78	Length	120	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 52	Length	82	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	SP UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 0C	Method UID	Authenticate Method UID	
F0	Start List Token		
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 09 00 00 80 01		Authority object – Bandmaster0_UID	

F2	Start Name Token		
A9	Short Atom Token Header	Byte sequence, length = 9	
43 68 61 6C 6C 65 6E 67 65		“Challenge”	
D0 20	Medium Atom Token Header	Byte sequence, length = 32	
48 86 AB 86 FF D3 D8 AA B5 B8 D7 F0B5 14 50 15 98 13 82 EF 80 30 8E 8F 3F 05 39 B6 2C 73 76 98		<Custom PIN value>	PIN set in 3.2.4.3
F3	End Name Token		
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.8.3.2 Authenticate as BandMaster1 Results

See 3.2.2.3.

3.2.8.4 Modify DataStore Table Contents

3.2.8.4.1 Set DataStore Table

```
DataStore_table_UID.Set [ [ “startRow” = 0x10 ] 0x41 0x6E 0xD9 0xF3 0x0E 0xE6 0x83
0x93 0xBB 0xD6 0x52 0xE6 0xEA 0x5D 0x68 0xEE ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 60 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 48 00 00 00 00
0030 00 00 00 00 00 00 00 3B F8 A8 00 00 80 01 00 00
0040 00 00 A8 00 00 00 06 00 00 00 07 F0 F0 F2 A8 73
0050 74 61 72 74 52 6F 77 10 F3 F1 D0 10 41 6E D9 F3
0060 0E E6 83 93 BB D6 52 E6 EA 5D 68 EE F1 F9 F0 00
0070 00 00 F1 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0090 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 41 Set Values in DataStore table

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 60	Length	96	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 48	Length	72	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 3B	Length	59	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 80 01 00 00 00 00	Invoking UID	DataStore table_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 07	Method UID	Set Method UID	

F0	Start List Token		
F0	Start List Token		Start cell block for Where parameter Begin Where parameter
F2	Start Name Token		
A8	Short Atom Token Header	Byte sequence, length = 8	
73 74 61 72 74 52 6F 77		“startRow”	
10		<16>	
F3	End Name Token		
F1	End List Token		Ends cell block for Where parameter
D0 10	Medium Token Header	Byte Sequence, Length = 16	
41 6E D9 F3 0E E6 83 93 BB D6 52 E6 EA 5D 68 EE			
F1	End List Token		
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
00	Pad		Included in Packet and ComPacket lengths

3.2.8.4.2 Set DataStore Table Results

See 3.2.2.4.

3.2.8.5 Retrieve DataStore Table Contents

3.2.8.5.1 Get DataStore Table

```
DataStore_table_UID.Get [ [ “startRow” = 0x10, ”endRow” = 0x1F ] ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 58 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 40 00 00 00 00
0030 00 00 00 00 00 00 00 33 F8 A8 00 00 80 01 00 00
0040 00 00 A8 00 00 00 06 00 00 00 06 F0 F0 F2 A8 73
0050 74 61 72 74 52 6F 77 00 F3 F2 A6 65 6E 64 52 6F
0060 77 0F F3 F1 F1 F9 F0 00 00 00 F1 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                        ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 42 Get DataStore Table Contents

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 58	Length	88	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 40	Length	64	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 33	Length	51	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 80 01 00 00 00 00	Invoking UID	DataStore_table_UID	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 00 06	Method UID	Get Method UID	
F0	Start List Token		Begins parameter list
F0	Start List Token		Begins cell block for Where parameter
F2	Start Name Token		
A8	Short Atom Token Header	Byte sequence, length = 8	
73 74 61 72 74 52 6F 77	Name	“startRow”	
10	Value	<16>	
F3	End Name Token		
F2	Start Name Token		
A6	Short Atom Token Header	Byte sequence, length = 6	
65 6E 64 52 6F 77	Name	“endRow”	
1F	Value	<31>	
F3	End Name Token		
F1	End List Token		Ends cell block for Where parameter
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		

00	Pad		Included in Packet and ComPacket lengths

3.2.8.5.2 Get DataStore Table Results

```
[ 0x41 0x6E 0xD9 0xF3 0x0E 0xE6 0x83 0x93 0xBB 0xD6 0x52 0xE6 0xEA 0x5D 0x68 0xEE ]

0000 00 00 00 00 07 FE 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 40 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 28 00 00 00 00
0030 00 00 00 00 00 00 00 1A F0 D0 10 41 6E D9 F3 0E
0040 E6 83 93 BB D6 52 E6 EA 5D 68 EE F1 F9 F0 00 00
0050 00 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                        ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 43 Get DataStore Table Contents Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FE 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 40	Length	64	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFDE0 00012E13	uinteger_8
00 00 00 00	SeqNumber	00	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 28	Length	40	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_2
00 00	Kind	0's	uinteger_6
00 00 00 1A	Length	26	uinteger_4
Data Payload			
F0	Start List Token		Begins results
D0 10	Medium Token Header	Byte Sequence, Length = 16	
41 6E D9 F3 0E E6 83 93 BB D6 52 E6 EA 5D 68 EE			
F1	End List Token		
F9	End of Data Token		Ends results

F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths

3.2.8.6 Ending the Session

3.2.8.6.1 Send End of Session Token

See 3.2.2.5.1.

3.2.8.6.2 End of Session Response

See 3.2.2.5.2.

3.2.9 Random method

The host invokes the Random method in an open session to an SP that supports the method, in order to obtain a random number of the specified length. Only the Anybody authority is required.

The host starts a session to an SP prior to invocation of the method (see 3.2.2.1 and 3.2.2.2).

3.2.9.1 Request a Random Number

3.2.9.1.1 Random

```
SPUID.Random[ 0x20 ]

0000 00 00 00 00 07 FF 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 40 FF FF FD E0 00 01 2E 13 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 28 00 00 00 00
0030 00 00 00 00 00 00 00 1C F8 A8 00 00 00 00 00 00
0040 00 01 A8 00 00 00 06 00 00 06 01 F0 20 F1 F9 F0
0050 00 00 00 F1 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                              ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 44 Random

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4
07 FF 00 00	Extended ComID	07FF 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 40	Length	64	uinteger_4
Packet			

FF FF FD E0 00 01 2E 13	Session	FFFFFE28 00012E12	uinteger_8
00 00 00 00	SeqNumber	0	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 28	Length	40	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 1C	Length	28	uinteger_4
Data Payload			
F8	Call Token		Begins method
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 00 00 00 00 01	Invoking UID	ThisSP	
A8	Short Atom Token Header	Byte sequence, length = 8	
00 00 00 06 00 00 06 01	Method UID	Random Method UID	
F0	Start List Token		
20	Required Parameter: Count	<0x20>	
F1	End List Token		Ends parameter list
F9	End of Data Token		Ends method
F0 00 00 00 F1	Status List		
			No Pad

3.2.9.1.2 Random – Results

```
[0x0E 0x2C 0x7B 0x0C 0x44 0x6A 0x50 0xB7 0xC9 0xE6 0xA9 0x83 0x36 0xD0 0x98 0xB9
0x92 0x7B 0x56 0xA6 0x4F 0x5D 0xE7 0x1C 0xFA 0x70 0x53 0x07 0x56 0xFE 0x20 0x43]

0000 00 00 00 00 07 FE 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 50 FF FF FE 28 00 01 2E 12 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 38 00 00 00 00
0030 00 00 00 00 00 00 00 2A F0 D0 20 0E 2C 7B 0C 44
0040 6A 50 B7 C9 E6 A9 83 36 D0 98 B9 92 7B 56 A6 4F
0050 5D E7 1C FA 70 53 07 56 FE 20 43 F1 F9 F0 00 00
0060 00 F1 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0080 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
                     ...
01E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Table 45 Random Results

Bytes	Purpose	Value	Notes
ComPacket			
00 00 00 00	Reserved	0's	uinteger_4

07 FF 00 00	Extended ComID	07FE 0000	uinteger_4
00 00 00 00	OutstandingData	0's	uinteger_4
00 00 00 00	MinTransfer	0's	uinteger_4
00 00 00 50	Length	80	uinteger_4
Packet			
FF FF FD E0 00 01 2E 13	Session	FFFFFE28 00012E12	uinteger_8
00 00 00 00	SeqNumber	00	uinteger_4
00 00	Reserved	0's	uinteger_2
00 00	AckType	0's	uinteger_2
00 00 00 00	Acknowledgement	0's	uinteger_4
00 00 00 38	Length	56	uinteger_4
Data SubPacket			
00 00 00 00 00 00	Reserved	0's	uinteger_6
00 00	Kind	0's	uinteger_2
00 00 00 2A	Length	42	uinteger_4
Data Payload			
F0	Start List Token		Begins results
D0 20	Medium Token Header	Byte Sequence, Length = 32	
0E 2C 7B 0C 44 6A 50 B7 C9 E6 A9 83 36 D0 98 B9 92 7B 56 A6 4F 5D E7 1C FA 70 53 07 56 FE 20 43	random number		This value is only an example. The storage device supplies the random number.
F1	End List Token		
F9	End of Data Token		Ends results
F0 00 00 00 F1	Status List		
00 00	Pad		Included in Packet and ComPacket lengths