

SNMP MIB for TPM-based Attestation

Version 1.00
Revision 7
January 6, 2022

Contact: admin@trustedcomputinggroup.org

PUBLISHED

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1 SCOPE

This specification defines an SNMP MIB for TPM-based attestation of a device.

1.1 Key Words

The key words “MUST,” “MUST NOT,” “REQUIRED,” “SHALL,” “SHALL NOT,” “SHOULD,” “SHOULD NOT,” “RECOMMENDED,” “MAY,” and “OPTIONAL” in this document normative statements are to be interpreted as described in RFC-2119, Key words for use in RFCs to Indicate Requirement Levels.

1.2 Statement Type

Please note a very important distinction between different sections of text throughout this document. There are two distinctive kinds of text: informative comment and normative statements. Because most of the text in this specification will be of the kind normative statements, the authors have informally defined it as the default and, as such, have specifically called out text of the kind informative comment. They have done this by flagging the beginning and end of each informative comment and highlighting its text in gray. This means that unless text is specifically marked as of the kind informative comment, it can be considered a kind of normative statements.

EXAMPLE: Start of informative comment

This is the first paragraph of 1–n paragraphs containing text of the kind *informative comment* ...

This is the second paragraph of text of the kind *informative comment* ...

This is the nth paragraph of text of the kind *informative comment* ...

To understand the TCG specification the user must read the specification. (This use of MUST does not require any action).

End of informative comment

2 References

Start of informative comment

The following referenced documents are indispensable for the application of this document.

IETF Standard 58 (STD58)

RFC-2578, Structure of Management Information, v2 (SMIv2)

RFC-2579, Textual Conventions for SMIv2

RFC-2580, Conformance Statements for SMIv2

IETF RFC-6933, Entity MIB, Version 4

IEEE Standard for Local and metropolitan area networks, 802.1AR: *Secure Device Identity, aka "DevID"*.

TPM Main Specification Revision 1.2, Part 1: Design Principles

TPM Main Specification Revision 1.2, Part 2: TPM Structures

TPM Main Specification Revision 1.2, Part 3: Commands

TCG Trusted Platform Module Library, Family 2.0, Part 1: Architecture.

TCG Trusted Platform Module Library, Family 2.0, Part 2: Structures.

TCG Trusted Platform Module Library, Family 2.0, Part 3: Commands.

End of informative comment

3 Acronyms

Table 1 explains the acronyms used in this specification.

Acronym	Description
SNMP	Simple Network Management Protocol
MIB	Management Information Base, the standard data object and behavior description for SNMP
DevID	Device Identity, an IEEE 802.1AR Secure Device Identifier.
IDevID	An Initial DevID, assigned to the device by the original equipment manufacturer (OEM) during production
LDevID	A Local DevID, assigned to the device by the user or administrator

Table 1 - Acronyms

4 Conformance

4.1 Introduction

Start of informative comment

SNMP is an established network management protocol and method. While new methods and protocols are becoming more widely adopted, many networking equipment manufacturers and their customers have SNMP based management implemented. SNMP is therefore a good protocol for enabling the manufacturer, integrator, developer and customer community to gain experience with attestation as part of managing networking infrastructure.

End of informative comment

4.2 SNMP Management

The SNMP Management Framework is described in IETF RFC documents, particularly Standard 58 (STD58).

Managed objects are described via a Management Information Base or MIB, with MIB objects accessed through the Simple Network Management Protocol (SNMP) using the Object Identifiers defined in the MIB. Objects in the MIB are defined using the mechanisms defined in the RFC 2578, Structure of Management Information, version 2 (SMIv2).

This specification specifies a MIB module compliant with IETF standards as described in RFC 2578 and RFC 2579.

This specification is intended to interoperate with RFC 6933 (the Entity MIB) to allow attestation of devices, known as Composite Devices, that enclose multiple TPMs or multiple sub-devices, each with their own TPM. Such a composite device is not described explicitly in this specification. The MIB and operations specified here are structured to allow forms of composition as described in the entity MIB. Composite devices MUST implement the Entity MIB as described in RFC 6933 or later.

4.3 Security Considerations

4.3.1 Reconnaissance

Start of informative comment

The MIB provides for sending an SNMP notification when an attestation sequence is started. This is useful for identifying attestation performed with the intent of reconnaissance and should therefore be enabled in most deployments. The agent receiving the notification should monitor for use of attestation by unauthorized managers.

End of informative comment

4.3.2 SNMP

Start of informative comment

SNMP by its nature is susceptible to several attacks. Mitigating SNMP attacks is outside the scope of this specification. For privacy and to provide authentication, use of SNMPv3 with AES encryption or SNMP over TLS are recommended.

The nature of TPM-based attestation data described here mitigates the risk of network spoofing or replays of SNMP data to a management entity or verifier.

The MIB defined in section 6 is a read-only MIB and therefore doesn't cause any persistent change to the attested platform.

End of informative comment

4.3.3 Key Properties

Keys and certificates are specified elsewhere and are outside the scope of this specification. The user should be aware that attacks exist that use signing operations to break use of the same key for decryption. Further, a key that can be used for both signing and decryption cannot be a TPM restricted key—so it cannot be used to sign TPM2 internal data. For these reasons, a combined signing and decryption key is strongly discouraged.

To perform attestation with a TPM, an attestation key is required. An attestation key can sign certain data held internally by the TPM.

4.3.4 Legacy Compatibility

SHA-1 is obsolete and is included in this specification only for compatibility with existing TPM 1.2 implementations that do not have SHA-2 capability. This specification provides a SHA-1 option for `tcgTpmQuoteDigestSelector`, which is to be used only by those systems that have no stronger hash algorithm available.

5 SNMP MIB Operation

5.1 TPM-Based Attestation MIB structure

Start of informative comment

The MIB tree diagram shown in Figure 1 provides a graphical overview of the MIB.



Figure 1 - MIB Tree

Figure 2 shows the SNMP Textual Conventions created by this MIB.

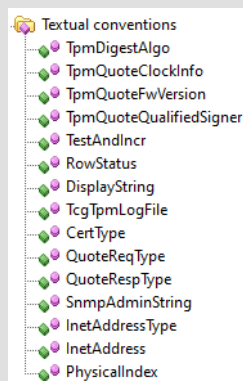


Figure 2 - Textual Conventions Created

End of informative comment

5.2 Textual Conventions

Start of informative comment

SNMP uses Textual Conventions (macros) to define modular elements that may be used repeatedly. Textual conventions include definitions of enumerated values and limit values that are not otherwise described where used in a MIB, so these textual conventions are part of the normative text of the MIB in section 6.

End of informative comment

5.3 Example of Attestation with SNMP

Start of informative comment

SNMP operates on conceptual rows and columns, much like a row of a spreadsheet. More than one SNMP operation may be required to retrieve or form one conceptual row. Section 6 describes the row and column elements and their operations.

Devices with more than one TPM, known as Composite Devices, require multiple attestations in order to assess the complete state of the device. It is expected that composite devices will implement the Entity MIB (RFC 6933) as needed to determine which TPM is to be selected for attestation.

The general attestation method is to first attest the main or current management interface and then use that interface for access to other devices within the system. As the internal interconnection topology is device specific, a detailed description of using of the Entity MIB is out of scope.

A remote management entity may use this specification to perform attestation using the following procedure:

1. Using the `tcgTpmSelector` value, read the `tcgTpmSelectorEntry`. This provides information about the TPM that is required to interpret some of the responses to follow.
2. Check the local certificate cache to determine whether retrieving device certificates from the managed device is required. If certificate retrieval is required, use the `tcgTpmQuoteCertTable`. Use the columns `tcgTpmQuoteCertTpmSelector`, `tcgTpmQuoteCertChainIndex`, `tcgTpmQuoteCertType` and `tcgTpmQuoteCertFragmentIndex` to read certificates from the remote device.
 - a. The `tcgTpmQuoteCertTpmSelector` is the same value as the `tcgTpmSelector`.
 - b. The `tcgTpmQuoteCertType` selects which certificate chain is of interest. Permitted values are specified by the `CertType` textual convention.
 - c. `tcgTpmQuoteCertChainIndex` selects the certificate of interest within a chain of certificates.

- d. `tcgTpmQuoteCertFragmentIndex` selects a fragment index (or “window” index) into the certificate to permit retrieval of certificates larger than the transport buffer (window) size.

Iterate through the retrieval commands until all required certificates have been retrieved. Note that full retrieval normally needs to be performed only if the device is new on the network.

3. Before retrieving a signed quote from the TPM, a mutual exclusion lock must first be obtained. To get the mutual exclusion lock, perform a GET of the `tcgTpmQuoteLockTable`, specifying the TPM to be locked with the `tcgTpmQuoteLockTpmSelector`. The value returned in `tcgTpmQuoteTpmLockVal` provides a period of exclusion to perform a Quote operation.

This lock will expire at the earlier of 1) timer expiration or 2) quote read completion.

4. To perform the TPM Quote, read the `tcgTpmQuoteEntry`. Each read request includes more index (selector) values to fill in the conceptual table row. Columns to be filled are the read-write data in the MIB row:

- `tcgTpmQuoteTpmSelector`
- `tcgTpmQuoteLockValue`
- `tcgTpmQuoteCertSelector`
- `tcgTpmQuoteReqType`
- `tcgTpmQuoteNonce`
- `tcgTpmQuoteDigestSelector`
- `tcgTpmQuotePcrSelector`
- `tcgTpmQuotePCRDigestAlg`

The first read operation may include as many of the read-write (“Index”) column data values as will fit in a single PDU and must provide a RowStatus of Create-And-Wait. The SNMP agent will reply with RowStatus set to Not-ready. Once all read-write column data has been provided to the row, the agent will return the read-only data with a RowStatus of Active. If the read-only data will not fit into one PDU, subsets of the columns may be iteratively read until all columns have been retrieved.

After successfully reading the read-only column data, the SNMP manager writes a row-status of Not-in-service. This cancels the mutex lock and allows the SNMP agent to recover resources. If the quote operation does not complete within the timeout period, the SNMP agent will likewise set the RowStatus to Not-in-service and recover resources.

The following conceptual column values are used to perform a TPM Quote:

- a. The `tcgTpmQuoteTpmSelector` is as in 2a, above.
- b. The `tcgTpmQuoteLockValue` was retrieved in step 3.
- c. The `tcgTpmQuoteCertSelector` is used to select a key to sign the Quote. Use the value corresponding to the `tcgTpmQuoteCertType` desired.
- d. The `tcgTpmQuoteReqType` is described in the MIB comment.
- e. The `tcgTpmQuoteNonce` is a random value selected by the requestor and included in the signature as determined by the TPM specification. This nonce proves freshness of the response so care must be exercised in preventing nonce re-use or nonce predictability.
- f. `tcgTpmQuoteDigestSelector` is the signature digest to be used. The permitted values differ by TPM version and described in the `TpmDigestAlgo` textual convention description.
- g. The `tcgTpmQuotePcrSelector` tells the TPM which PCRs to include in the quote. The permitted values are described in the MIB comment.

- h. `RowStatus`, which is used as described above step 4a.
- i. `tcgTpmQuoteRespType` is returned to inform the SNMP manager how to interpret the response.
- j. `tcgTpmQuoteQualifiedSigner` is empty for TPM 1.2. For TPM 2, it's the `TPMU_NAME` qualified name of the key used for the quote signature.
- k. `tcgTpmQuoteClockInfo` is empty for TPM 1.2. For TPM 2, the current `TPMS_CLOCK_INFO` structure is returned.
- l. `tcgTpmQuoteFirmwareVersion` is the TPM firmware version.
- m. `tcgTpmQuote` is the signed quote response for Quote (and Quote2) responses. `tcgTpmQuote` is empty for `AuditSessionQuote` types.
- n. `tcgTpmQuoteLogFileLines` returns the number of lines (entries) in an `AuditSessionQuote` log. For Quote and Quote2 responses, the value is 0.
- o. `tcgTpmQuotePCRDigest` is an untrusted digest, included for diagnostic purposes.

5. Retrieve the event log by using the following `tcgTpmQuoteLogTable` columns to iterate through the desired range of the quote log.

Note that by caching the log from one query to the next, the attestation verifier (SNMP Manager) can start with the previous `tcgTpmQuoteLogLineNumber+1` to check for whether there are new entries in the log to be retrieved.

- a. The `tcgTpmQuoteCertTpmSelector` is the same value as in step 3, above.
- b. The `tctTpmQuoteLogSelector` selects from the logs that may be available on the remote device.
- c. The `tcgTpmQuoteLogLineNumber` is the line of the log file to be retrieved.
- d. The `tcgTpmQuoteLogFragmentIndex` selects a fragment index (or "window" index) into the selected log line. Note that the first item has index 1.
- e. `tcgTpmQuoteLogLineBuf` is the log entry payload.
- f. `tcgTpmQuoteLogStatus` is `RowStatus` for the current row (line) entry.

6. Parse the log file and check recalculated PCR values against the returned Quote.

End of informative comment

6 Definition of TPM-Based Attestation MIB

This section specifies the TPM attestation MIB. To comply with this specification, the MIB shall be implemented exactly as specified.

6.1 Text of TPM based attestation MIB

```
--
-- TCGTPMQUOTE-MIB
--
TCGTPMQUOTE-MIB DEFINITIONS ::= BEGIN

    IMPORTS
        InetAddressType, InetAddress
            FROM INET-ADDRESS-MIB
        SnmpAdminString
            FROM SNMP-FRAMEWORK-MIB
        OBJECT-GROUP, NOTIFICATION-GROUP
            FROM SNMPv2-CONF
        internet, Integer32, Unsigned32, Counter32, BITS,
        OBJECT-TYPE, MODULE-IDENTITY, NOTIFICATION-TYPE
            FROM SNMPv2-SMI
        RowStatus, DisplayString, TEXTUAL-CONVENTION
            FROM SNMPv2-TC;

-- 1.3.6.1.4.1.21911.1.1
tcgTpmQuoteMIB MODULE-IDENTITY
    LAST-UPDATED "202010090000Z"          -- October 09, 2020 at 00:00 GMT
    ORGANIZATION
        "Trusted Computing Group,
        Network Equipment Workgroup"
    CONTACT-INFO
        "Admin@trustedcomputinggroup.org
        neteq-chair@trustedcomputinggroup.org"
    DESCRIPTION
        "The MIB module for retrieving attestation information from
        a device, including the boot integrity measurement log
        and a TPM quote."
    ::= { tcgMibs 1 }

--
-- Textual conventions
--

TpmDigestAlgo ::= TEXTUAL-CONVENTION
    STATUS current
    DESCRIPTION
        "The tcgTpmQuotePCRDigest algorithm.

        Note that SHA-1 is obsolete and is included here only for
        compatibility with existing TPM 1.2 implementations that
        do not have SHA-2 capability.
```

Implementations that have SHA-2 capability MUST NOT support SHA-1.

Digests and values listed match the TPM Algorithm registry and are current as of January 18, 2018."

SYNTAX INTEGER

```
{
  noDigest(1),
  tpmDigestSHA1(2),
  tpmDigestSHA2256(3),
  tpmDigestSHA2384(4),
  tpmDigestSHA2512(5),
  tpmDigestSM3256(6),
  tpmDigestSHA3256(7),
  tpmDigestSHA3384(8),
  tpmDigestSHA3512(9)
}
```

TpmQuoteClockInfo ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Syntax for ClockInfo in a TPM Quote.
TPM 1.2 will have size 0.
TPM 2 will have size 17."

SYNTAX INTEGER (0 | 17)

TpmQuoteFwVersion ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"TPM firmware version field."

SYNTAX INTEGER (0 | 8)

TpmQuoteQualifiedSigner ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Syntax for tcgTpmQuoteQualifiedSigner."

SYNTAX INTEGER (0 | 66)

TcgTpmLogFile ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Limit log file lines to positive Integer32 value."

SYNTAX Integer32 (0..2147483647)

CertType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"Key and certificate creation is outside the scope of this MIB. Refer to the Security Considerations for this MIB and to TCG TPM Keys specifications for further information.

CertType encodes the way in which a configured certificate will be used.

A leaf (end-entity) certificate does not have the intermediate or root bits set.

Non-leaf certificates should indicate only intermediate or root status.

The CertType for leaf certificate may have multiple bits set in cases where the same certificate will be used in multiple cases or situations.

Certificate chains are to be verified using authority/subject key identifiers only. Refer to RFC-5280 for required certificate path validation algorithms.

A self-signed certificate cannot convey identity, so may not have any other bit set."

SYNTAX BITS

```
{
selfSigned(0),
tpmEndorsement(1),
initialDevID(2),
initialAttestation(3),
initialEncrypting(4),
initialCombinedEncryptingSign(5),
localDevID(6),
localAttestation(7),
localEncrypting(8),
localCombinedEncryptingSign(9),
localSpecific(10),
intermediate(11),
root(12)
}
```

QuoteReqType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"The type of attestation requested.

TPM 1.2 always uses TpmQuoteReq (1). Response tctTpmQuoteRespType will be either TpmQuote or TpmQuote2 depending on system capability.

For TPM 2, either TpmQuoteReq or TpmAuditSessionQuoteReq(2) may be used. QuoteReq requests a TPM2_Quote operation, while AuditSessionQuoteReq requests an audit session to be used as a quote. "

SYNTAX INTEGER

```
{
tpmQuoteReq(1),
tpmAuditSessionQuoteReq(2)
}
```

QuoteRespType ::= TEXTUAL-CONVENTION

STATUS current

```

DESCRIPTION
    "This indicates the quote type returned by quote/attestation
    request."
SYNTAX INTEGER
    {
        tpm12QuoteResp(1),
        tpm12Quote2Resp(2),
        tpm20QuoteResp(3),
        tpm2AuditSessionQuoteResp(4)
    }

```

```

PhysicalIndex ::= TEXTUAL-CONVENTION
DISPLAY-HINT
    "d"
STATUS current
DESCRIPTION
    "An arbitrary value that uniquely identifies the physical
    entity. The value should be a small positive integer.
    Index values for different physical entities are not
    necessarily contiguous."
SYNTAX Integer32 (1..2147483647)

```

```

--
-- Node definitions
--

-- 1.3.6.1.4
private OBJECT IDENTIFIER ::= { internet 4 }

-- 1.3.6.1.4.1
enterprise OBJECT IDENTIFIER ::= { private 1 }

-- 1.3.6.1.4.1.21911
tcg OBJECT IDENTIFIER ::= { enterprise 21911 }

-- 1.3.6.1.4.1.21911.1
tcgMibs OBJECT IDENTIFIER ::= { tcg 1 }

-- 1.3.6.1.4.1.21911.1.1.1
tcgQuoteMibVersions OBJECT IDENTIFIER ::= { tcgTpmQuoteMIB 1 }

-- 1.3.6.1.4.1.21911.1.1.1.1
tcgTpmQuoteMibVerBase OBJECT-TYPE
    SYNTAX Counter32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Number base (radix) for version reporting.

```



```

        This object must remain the first object
        in this OID tree."
 ::= { tcgQuoteMibVersions 1 }

-- 1.3.6.1.4.1.21911.1.1.1.2
tcgTpmQuoteMibVersion OBJECT-TYPE
    SYNTAX Integer32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The MIB version supported by the device.
        The version is to be updated when items are added or
        deprecated in this MIB. This object must remain the
        second object in this OID tree."
 ::= { tcgQuoteMibVersions 2 }

-- MIB version reported in the base specified by tctTpmQuoteMibVerBase.
-- Version 1 of this MIB corresponds to TCG SNMP MIB for TPM-based Attestation,
-- Version 1.00 Revision 7.

-- 1.3.6.1.4.1.21911.1.1.1.3
tcgTpmQuoteMibGeneralVersionInfo OBJECT-TYPE
    SYNTAX SnmpAdminString (SIZE (0..160))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "A text string identifying the device, including
        model and software version."
 ::= { tcgQuoteMibVersions 3 }

-- 1.3.6.1.4.1.21911.1.1.2
tcgTpmQuoteNotify OBJECT IDENTIFIER ::= { tcgTpmQuoteMIB 2 }

-- Notifications are an optional feature of this MIB.
-- Control of notifications is not provided by this MIB.

-- 1.3.6.1.4.1.21911.1.1.2.1
tcgTpmQuoteNotificationData OBJECT IDENTIFIER ::= { tcgTpmQuoteNotify 1 }

-- 1.3.6.1.4.1.21911.1.1.2.1.1
tcgTpmQuoteLockHolderIpAddrType OBJECT-TYPE
    SYNTAX InetAddressType
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The Inet address type of an entity requesting a
        TpmQuoteTable lock."
 ::= { tcgTpmQuoteNotificationData 1 }

```

```

-- 1.3.6.1.4.1.21911.1.1.2.1.2
tcgTpmQuoteLockHolderIpAddress OBJECT-TYPE
    SYNTAX InetAddress
    MAX-ACCESS accessible-for-notify
    STATUS current
    DESCRIPTION
        "The Inet Address of an entity requesting a TpmQuoteTable
        lock."
    ::= { tcgTpmQuoteNotificationData 2 }

-- 1.3.6.1.4.1.21911.1.1.2.2
tcgTpmQuoteNotifications OBJECT IDENTIFIER ::= { tcgTpmQuoteNotify 2 }

-- 1.3.6.1.4.1.21911.1.1.2.2.1
tcgTpmQuoteLockNotification NOTIFICATION-TYPE
    OBJECTS { tcgTpmQuoteLockHolderIpAddrType,
tcgTpmQuoteLockHolderIpAddress }
    STATUS current
    DESCRIPTION
        "Notification sent when a new TPM quote lock row is created."
    ::= { tcgTpmQuoteNotifications 1 }

-- 1.3.6.1.4.1.21911.1.1.3
tcgTpmSelectors OBJECT IDENTIFIER ::= { tcgTpmQuoteMIB 3 }

-- 1.3.6.1.4.1.21911.1.1.3.1
tcgTpmSelectorTable OBJECT-TYPE
    SYNTAX SEQUENCE OF TcgTpmSelectorEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "This table lists all TPMs reachable by the SNMP agent.

        On composite platforms (where the entity MIB is implemented)
        the tcgTpmSelector index returned will match entries in
        entPhysicalIndex. This allows correlation of the attestations
        provided by this interface to the physical devices
        described in the entity MIB.

        The reported selectorIndex on each row is used when
        accessing the tcgTpmQuoteCertTable, the tctTpmQuoteTable
        and the tcgTpmQuoteLogTable.

        As stated in the Entity MIB (RFC 6933), physicalIndex
        values are not necessarily contiguous.

        When the entity MIB is not implemented on the platform,
        the first selector returned will always be the active
        management CPU/TPM instance. "
    ::= { tcgTpmSelectors 1 }

```

```

-- 1.3.6.1.4.1.21911.1.1.3.1.1
tcgTpmSelectorEntry OBJECT-TYPE
    SYNTAX TcgTpmSelectorEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "The details pertaining to a specific TPM."
    INDEX { tcgTpmSelector }
    ::= { tcgTpmSelectorTable 1 }

TcgTpmSelectorEntry ::=
    SEQUENCE {
        tcgTpmSelector
            PhysicalIndex,
        tcgTpmClass
            INTEGER,
        tcgTpmSpecRev
            Integer32,
        tcgTpmSelectorDescription
            SnmpAdminString,
        tcgTpmFirmwareVersion
            OCTET STRING
    }

-- 1.3.6.1.4.1.21911.1.1.3.1.1.1
tcgTpmSelector OBJECT-TYPE
    SYNTAX PhysicalIndex
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This table lists all TPMs reachable by the SNMP agent.

        On platforms where the entity MIB is implemented, the
        tcgTpmSelector index returned will match entries in
        entPhysicalIndex. This allows correlation of the
        attestations provided by this interface to the
        physical devices described in the entity MIB.

        The reported selectorIndex on each row is used when
        accessing the tcgTpmQuoteCertTable, the
        tcgTpmQuoteTable and the tcgTpmQuoteLogTable.

        When the entity MIB is not implemented on the platform,
        the first selector returned must always be the active
        management CPU/TPM instance. "
    REFERENCE
        "Refer to entPhysicalIndex in the entity MIB (RFC-6933)."
```

```

::= { tcgTpmSelectorEntry 1 }

-- 1.3.6.1.4.1.21911.1.1.3.1.1.2
```

```

tcgTpmClass OBJECT-TYPE
    SYNTAX INTEGER
        {
            tpm12(1),
            tpm20(2)
        }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "TPM generation (i.e., family)"
    ::= { tcgTpmSelectorEntry 2 }

-- 1.3.6.1.4.1.21911.1.1.3.1.1.3
tcgTpmSpecRev OBJECT-TYPE
    SYNTAX Integer32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "When not available, a value of 0 must be returned."
    ::= { tcgTpmSelectorEntry 3 }

-- 1.3.6.1.4.1.21911.1.1.3.1.1.4
tcgTpmSelectorDescription OBJECT-TYPE
    SYNTAX SnmpAdminString (SIZE (0..128))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Printable ASCII string describing the module or device
        with the TPM. This string must begin with a
        manufacturer-specific model number of the device
        containing the TPM. Use of IDevID identity is
        recommended."
    ::= { tcgTpmSelectorEntry 4 }

-- 1.3.6.1.4.1.21911.1.1.3.1.1.5
tcgTpmFirmwareVersion OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE (8))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The firmwareVersion object is a 64 bit integer encoded in
        network order specifying the TPM-vendor specific version
        number.

        For a TPM 1.2 this field is the value reported by the TPM,
        or 0 if there is no accessible value."
    ::= { tcgTpmSelectorEntry 5 }

-- 1.3.6.1.4.1.21911.1.1.4
tcgTpmQuoteLocks OBJECT IDENTIFIER ::= { tcgTpmQuoteMIB 4 }

```

```

-- 1.3.6.1.4.1.21911.1.1.4.1
tcgTpmQuoteLockTable OBJECT-TYPE
    SYNTAX SEQUENCE OF TcgTpmQuoteLockEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "This one row table creates a simple mutex for attestation."
    ::= { tcgTpmQuoteLocks 1 }

-- 1.3.6.1.4.1.21911.1.1.4.1.1
tcgTpmQuoteLockEntry OBJECT-TYPE
    SYNTAX TcgTpmQuoteLockEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "This table may have at most one active row at a time. The
        row is created on read and exists until expiration of
        the timeout value or completion of a tcgTpmQuoteTable
        read sequence.

        A subsequent read while the lock is active must not return
        the tcgTpmQuoteTpmLockVal currently in use. In such a
        case, the operation may fail or return zero for the lock
        value.
        "
    INDEX { tcgTpmQuoteLockTpmSelector }
    ::= { tcgTpmQuoteLockTable 1 }

TcgTpmQuoteLockEntry ::=
    SEQUENCE {
        tcgTpmQuoteLockTpmSelector
            PhysicalIndex,
        tcgTpmQuoteTpmLockVal
            Integer32,
        tcgTpmQuoteLockTimeout
            Integer32
    }

-- 1.3.6.1.4.1.21911.1.1.4.1.1.1
tcgTpmQuoteLockTpmSelector OBJECT-TYPE
    SYNTAX PhysicalIndex
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The TPM to access for Quote operation.
        Refer to tcgTpmSelectorTable for TpmSelector usage."
    ::= { tcgTpmQuoteLockEntry 1 }

-- 1.3.6.1.4.1.21911.1.1.4.1.1.2

```

```

tcgTpmQuoteTpmLockVal OBJECT-TYPE
    SYNTAX Integer32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Reading this value returns a random number (a non-negative
        INTEGER32) to use when reading the tcgTpmQuoteTable and
        also sets and starts a timer. The starting value of this
        timer (in seconds) is returned in tcgTpmQuoteLockTimeout.
        The caller will be allowed to use the random value as a
        key to read the tcgTpmQuoteTable table until the read
        has been completed or the timer expires.

        tcgTpmQuoteLockNotification may optionally be sent in
        response to reading this object."
    ::= { tcgTpmQuoteLockEntry 2 }

-- 1.3.6.1.4.1.21911.1.1.4.1.1.3
tcgTpmQuoteLockTimeout OBJECT-TYPE
    SYNTAX Integer32
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This is the length of time, in seconds, before the
        tcgTpmQuoteLockVal mutex expires. The value of the
        timer is set by device firmware and is not
        writable via SNMP."
    ::= { tcgTpmQuoteLockEntry 3 }

-- 1.3.6.1.4.1.21911.1.1.5
tcgTpmQuoteObjects OBJECT IDENTIFIER ::= { tcgTpmQuoteMIB 5 }

-- 1.3.6.1.4.1.21911.1.1.5.1
tcgTpmQuoteCertTable OBJECT-TYPE
    SYNTAX SEQUENCE OF TcgTpmQuoteCertEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "A table containing certificates. Certificates must be
        capable of being parsed by the attestation verifier.
        All certificates are transferred in DER (wire) format."
    ::= { tcgTpmQuoteObjects 1 }

-- 1.3.6.1.4.1.21911.1.1.5.1.1
tcgTpmQuoteCertEntry OBJECT-TYPE
    SYNTAX TcgTpmQuoteCertEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "A table for reading certificates from the managed device.

```

```

        All certificates are transferred in DER format."
INDEX { tcgTpmQuoteCertTpmSelector,
        tcgTpmQuoteCertChainIndex,
        tcgTpmQuoteCertType,
        tcgTpmQuoteCertFragmentIndex }
 ::= { tcgTpmQuoteCertTable 1 }

```

```

TcgTpmQuoteCertEntry ::=
SEQUENCE {
    tcgTpmQuoteCertTpmSelector
        PhysicalIndex,
    tcgTpmQuoteCertChainIndex
        Integer32,
    tcgTpmQuoteCertType
        CertType,
    tcgTpmQuoteCertFragmentIndex
        Integer32,
    tcgTpmQuoteCertBuf
        OCTET STRING,
    tcgTpmQuoteCertStatus
        RowStatus
}

```

```

-- 1.3.6.1.4.1.21911.1.1.5.1.1.1
tcgTpmQuoteCertTpmSelector OBJECT-TYPE
SYNTAX PhysicalIndex
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "The value used is determined from reading the
    tcgTpmSelectorTable."
 ::= { tcgTpmQuoteCertEntry 1 }

```

```

-- 1.3.6.1.4.1.21911.1.1.5.1.1.2
tcgTpmQuoteCertChainIndex OBJECT-TYPE
SYNTAX Integer32 (1..16)
MAX-ACCESS read-only
STATUS current
DESCRIPTION
    "A device may have multiple certificates associated with each
    TPM. This index selects from among configured certificate
    chains. The CertType response indicates the application of
    the certificate chain returned. Chain indices are an
    uninterrupted sequence. For each TPM and Chain Index, there
    may be zero or more certificates available.

    A value of 1 specifies the leaf certificate, with the value
    increasing in the chain toward the root."
 ::= { tcgTpmQuoteCertEntry 2 }

```

```

-- The number of accessible elements is determined by the value of the related
CertChainCount value.

```

```

-- 1.3.6.1.4.1.21911.1.1.5.1.1.3
tcgTpmQuoteCertType OBJECT-TYPE
    SYNTAX CertType
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "An index for the type of certificate to be read.
        Refer to the CertType textual convention in this MIB."
    ::= { tcgTpmQuoteCertEntry 3 }

-- 1.3.6.1.4.1.21911.1.1.5.1.1.4
tcgTpmQuoteCertFragmentIndex OBJECT-TYPE
    SYNTAX Integer32 (1..32)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Certificates may be larger in size than can be carried by
        a single UDP packet. This interface divides each
        certificate into a sequence of max 484-byte buffers. The
        index (in 484 byte increments) of the certificate
        fragment is specified in tcgQuoteCertFragmentIndex."
    ::= { tcgTpmQuoteCertEntry 4 }

-- 1.3.6.1.4.1.21911.1.1.5.1.1.5
tcgTpmQuoteCertBuf OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE (1..484))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "A buffer containing (a portion of) a certificate."
    ::= { tcgTpmQuoteCertEntry 5 }

-- 1.3.6.1.4.1.21911.1.1.5.1.1.6
tcgTpmQuoteCertStatus OBJECT-TYPE
    SYNTAX RowStatus
    MAX-ACCESS read-write
    STATUS current
    DESCRIPTION
        "The row status for the certificate row. To perform a
        certificate read operation:
        - write the tctTpmQuoteCertTpmSelector value, setting row
          status to 'createAndWait'
        - write each of the read-write column variables to select the
          desired certificate window parameters.
        - once writable columns are configured, set row status to
          'active'.
        - read the row to get the read-only buffer value
        - iterate through the chain indices, certificate type and
          Fragment indices as needed until required certificates
          have been retrieved."

```



```

        - when complete, set row status to 'notInService'."
 ::= { tcgTpmQuoteCertEntry 6 }

-- 1.3.6.1.4.1.21911.1.1.5.2
tcgTpmQuoteTable OBJECT-TYPE
    SYNTAX SEQUENCE OF TcgTpmQuoteEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "A table for attestation."
    ::= { tcgTpmQuoteObjects 2 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1
tcgTpmQuoteEntry OBJECT-TYPE
    SYNTAX TcgTpmQuoteEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "An entry of the quote Table."
    INDEX { tcgTpmQuoteTpmSelector, tcgTpmQuoteLockValue,
            tcgTpmQuoteCertSelector, tcgTpmQuoteReqType,
            tcgTpmQuoteNonce, tcgTpmQuoteDigestSelector,
            tcgTpmQuotePcrSelector, tcgTpmQuotePCRDigestAlg }
    ::= { tcgTpmQuoteTable 1 }

TcgTpmQuoteEntry ::=
    SEQUENCE {
        tcgTpmQuoteTpmSelector
            PhysicalIndex,
        tcgTpmQuoteLockValue
            Integer32,
        tcgTpmQuoteCertSelector
            Integer32,
        tcgTpmQuoteReqType
            QuoteReqType,
        tcgTpmQuoteNonce
            OCTET STRING,
        tcgTpmQuoteDigestSelector
            TpmDigestAlgo,
        tcgTpmQuotePcrSelector
            OCTET STRING,
        tcgTpmQuotePCRDigestAlg
            Unsigned32,
        tcgTpmQuoteRespType
            QuoteRespType,
        tcgTpmQuoteQualifiedSigner
            TpmQuoteQualifiedSigner,
        tcgTpmQuoteClockInfo
            TpmQuoteClockInfo,
        tcgTpmQuoteFirmwareVersion
            TpmQuoteFwVersion,

```

```

        tcgTpmQuote
            OCTET STRING,
        tcgTpmQuoteLogFileLines
            TcgTpmLogFile,
        tcgTpmQuotePCRDigest
            OCTET STRING,
        tcgTpmQuoteRowStatus
            RowStatus
    }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.1
tcgTpmQuoteTpmSelector OBJECT-TYPE
    SYNTAX PhysicalIndex
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The TPM to access for Quote operation.
        A value of one (1) selects the TPM associated with the local
        CPU. Any other selector value is determined by the management
        entity after retrieving the tcgTpmSelectorTable."
    ::= { tcgTpmQuoteEntry 1 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.2
tcgTpmQuoteLockValue OBJECT-TYPE
    SYNTAX Integer32 (1..2147483647)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The value read from tcgTpmQuoteTableLock is used as a key
        to allow access to the QuoteEntry row. The value read
        from tcgTpmQuoteTableLock may be used once to read
        tcgTpmQuoteEntry, which must occur before the
        tcgTpmQuoteTableLock timeout expires.

        If the SNMP agent receives data with an incorrect
        tcgTpmQuoteLockValue, the data is to be discarded
        without any effect on the current row."
    ::= { tcgTpmQuoteEntry 2 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.3
tcgTpmQuoteCertSelector OBJECT-TYPE
    SYNTAX Integer32 (1..16)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This is the cert chain (as reported by
        tcgTpmQuoteCertChainIndex) for use in performing
        the TPM quote operation. This selection must
        include a certificate with
        InitialAttestation, LocalAttestation or
        LocalSpecific CertType."
    ::= { tcgTpmQuoteEntry 3 }

```

```

-- 1.3.6.1.4.1.21911.1.1.5.2.1.4
tcgTpmQuoteReqType OBJECT-TYPE
    SYNTAX QuoteReqType
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Type of attestation requested. Refer to QuoteReqType
        textual convention description."
    ::= { tcgTpmQuoteEntry 4 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.5
tcgTpmQuoteNonce OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE (20..64))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The nonce to use when requesting a Quote from the selected
        TPM.
        - For TPM 1.2, the nonce size is 160 bits.
        - For TPM 2.0, the nonce size matches the size of the
        digest to be used."
    ::= { tcgTpmQuoteEntry 5 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.6
tcgTpmQuoteDigestSelector OBJECT-TYPE
    SYNTAX TpmDigestAlgo
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "A selector for the tcgTpmQuotePCRDigest algorithm."
    ::= { tcgTpmQuoteEntry 6 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.7
tcgTpmQuotePcrSelector OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE (4))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This is a bitmask to select PCR registers in the TPM for
        inclusion in the Quote response. Size is always 4 octets.
        These 4 octets are right-aligned to the bitmask supplied
        to a TPM, with PCR 0 represented with the right-most
        (lowest order) bit. "
    REFERENCE
        "TPM class is returned in the tcgTpmSelectorEntry table.

        TPM 1.2 PCRs are selected as defined in TCG TPM 1.2 Part 2,
        Section 8.1 (TPM_PCR_SELECTION)

```

```

        TPM 2.0 PCRs are selected as defined in TCG TPM 2.0 Library
        Specification, Part 2, Section 10.6.1 (PMS_PCR_SELECT)."
 ::= { tcgTpmQuoteEntry 7 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.8
tcgTpmQuotePCRDigestAlg OBJECT-TYPE
    SYNTAX Unsigned32 (0..2147483647)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object is of TPM 2.0 type TPM_ALG_ID, contained within
        a 32-bit TPM_ALGORITHM_ID, which defines the hash algorithm
        used to compute the PCR digest.

        For TPM 1.2, use the TPM 2 TPM_ALGORITHM_ID for the
        algorithm in use."
    REFERENCE
        "Refer to TPM 2.0 Library Specification, Part 2, Section
        6.3 for the definition of TPM_ALG_ID. TPM_ALGORITHM_ID
        is specified in the TCG Algorithms Registry."
 ::= { tcgTpmQuoteEntry 8 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.9
tcgTpmQuoteRespType OBJECT-TYPE
    SYNTAX QuoteRespType
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The TPM quote type returned.

        When a Tpm2SessionQuote type is returned, the session audit
        log must be read from the tcgTpmQuoteLogEntry table."
    REFERENCE
        "Refer to tcgTpmQuote description."
 ::= { tcgTpmQuoteEntry 9 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.10
tcgTpmQuoteQualifiedSigner OBJECT-TYPE
    SYNTAX TpmQuoteQualifiedSigner
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "For a TPM 1.2 this field is empty.

        The qualifiedSigner object is of TPM 2.0 type TPMU_NAME and
        designates the qualified name of the public key used for
        the quote signature.

        The TPMU_NAME is a digest described in TCG Trusted Platform
        Module Library, Family 2.0, Part 2, section 10.5.2. It
        consists of the 16 bit TPM_ALG_ID encoded in network order

```

```

        of the name hash algorithm used to generate the digest of the
        public key, followed by the public key digest itself."
REFERENCE
    "TPM2B_NAME structure."
 ::= { tcgTpmQuoteEntry 10 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.11
tcgTpmQuoteClockInfo OBJECT-TYPE
    SYNTAX TpmQuoteClockInfo
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "For a TPM 1.2 this field is zero length.

        The clockInfo object is of TPM 2.0 type TPMS_CLOCK_INFO and
        consists of the subfields Clock, ResetCount, RestartCount
        and Safe."
REFERENCE
    "TPMS_CLOCK_INFO is defined in TPM 2.0 Library
    Specification, Part 2, Section 10.11.1."
 ::= { tcgTpmQuoteEntry 11 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.12
tcgTpmQuoteFirmwareVersion OBJECT-TYPE
    SYNTAX TpmQuoteFwVersion
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The firmwareVersion object is a 64 bit integer encoded in
        network order specifying the TPM-vendor specific version
        number.

        For a TPM 1.2 this field is the value reported by the TPM,
        or empty if there is no accessible value.

        This value is the same as that returned by
        tcgTpmFirmwareVersion."
 ::= { tcgTpmQuoteEntry 12 }

-- 1.3.6.1.4.1.21911.1.1.5.2.1.13
tcgTpmQuote OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE (0..484))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "This object is retrieved in response to the requested
        Quote/Attest operation.

        Note: The returned data has a different structure depending
        on the TPM class:

```

For TPM 1.2, the returned value is a TPM_QUOTE_INFO or a TPM_QUOTE2_INFO structure.

For TPM 2, the returned value depends on the TpmQuoteReqType. For a quote, the response is a TPMS_ATTEST structure. Note that a TPM2_Quote does not return the actual TPM PCR values.

For an AuditSessionQuote, this field is empty and the response is retrieved using the TpmQuoteLogTable."

REFERENCE

"TPM 1.2 Quote is defined in TPM 1.2 Main Part 3, Section 16.3. TPM 1.2 Quote2 is defined in TPM 1.2 Main Part 3, Section 16.5.

An overview of TPM 2.0 PCR selection is provided in the TCG Trusted Platform Module Library, Family 2.0, Part 1, Section 17.5. Be aware of the race condition described in section 17.6.2 of the same document.

TPM2 Quote is defined in the TCG Trusted Platform Module Library, Family 2.0, Part 3, Section 18.4."

```
::= { tcgTpmQuoteEntry 13 }
```

```
-- 1.3.6.1.4.1.21911.1.1.5.2.1.14
tcgTpmQuoteLogFileLines OBJECT-TYPE
```

```
SYNTAX TcgTpmLogFile
MAX-ACCESS read-only
STATUS current
DESCRIPTION
```

"This object returns the log file length (in lines) at the time the TPM quote was generated. The returned value may be used in retrieving the tcgTpmQuoteLogEntry table."

```
::= { tcgTpmQuoteEntry 14 }
```

```
-- 1.3.6.1.4.1.21911.1.1.5.2.1.15
tcgTpmQuotePCRDigest OBJECT-TYPE
SYNTAX OCTET STRING (SIZE (0..64))
```

```
MAX-ACCESS read-only
STATUS current
DESCRIPTION
```

"This is an untrusted digest for diagnostic purposes.

The digest is computed by hashing the
tcgTpmNonce,
tcgTpmQuotePcrSelector

All selected PCR registers read from the TPM
using the algorithm selected by tcgTpmQuoteDigestSelector."

```
::= { tcgTpmQuoteEntry 15 }
```

```
-- 1.3.6.1.4.1.21911.1.1.5.2.1.16
tcgTpmQuoteRowStatus OBJECT-TYPE
```

```

SYNTAX RowStatus
MAX-ACCESS read-write
STATUS current
DESCRIPTION
    "The row status for the quote. To perform a quote operation:
    - write the tctTpmQuoteLockValue retrieved from the
      tcgTpmQuoteLockTable and set row status to
      'createAndWait'
    - write each of the read-write column variables to set the
      quote parameters.
    - when writable columns are configured, set row status to
      'active'.
    - read the row to get the read-only values
    - when complete, set row status to 'notInService'."
 ::= { tcgTpmQuoteEntry 16 }

-- 1.3.6.1.4.1.21911.1.1.5.3
tcgTpmQuoteLogTable OBJECT-TYPE
    SYNTAX SEQUENCE OF TcgTpmQuoteLogEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "A table to return boot event log entries."
    ::= { tcgTpmQuoteObjects 3 }

-- 1.3.6.1.4.1.21911.1.1.5.3.1
tcgTpmQuoteLogEntry OBJECT-TYPE
    SYNTAX TcgTpmQuoteLogEntry
    MAX-ACCESS not-accessible
    STATUS current
    DESCRIPTION
        "An entry of the QuoteLog table. Each row in the table
        corresponds to one line of the selected quote event log."
    INDEX { tcgTpmQuoteCertTpmSelector, tcgTpmQuoteLogSelector,
tcgTpmQuoteLogLineNumber, tcgTpmQuoteLogFragmentIndex }
    ::= { tcgTpmQuoteLogTable 1 }

TcgTpmQuoteLogEntry ::=
    SEQUENCE {
        tcgTpmQuoteLogTpmSelector
            PhysicalIndex,
        tcgTpmQuoteLogSelector
            INTEGER,
        tcgTpmQuoteLogLineNumber
            TcgTpmLogFile,
        tcgTpmQuoteLogFragmentIndex
            Integer32,
        tcgTpmQuoteLogLineBuf
            OCTET STRING,
        tcgTpmQuoteLogStatus
            RowStatus
    }

```

```

    }

-- 1.3.6.1.4.1.21911.1.1.5.3.1.1
tcgTpmQuoteLogTpmSelector OBJECT-TYPE
    SYNTAX PhysicalIndex
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "A value of one (1) selects the TPM associated with the local
        CPU. Any other selector value is determined from reading
        the tcgTpmSelectorTable."
    ::= { tcgTpmQuoteLogEntry 1 }

-- 1.3.6.1.4.1.21911.1.1.5.3.1.2
tcgTpmQuoteLogSelector OBJECT-TYPE
    SYNTAX INTEGER
        {
            static(1),
            dynamic(2)
        }
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Selects the static log or an implementation specific dynamic
        log. PCRs related to a static log are reset only at boot.
        PCRs related to a dynamic log may be reset more often, but
        this behavior is platform and application specific."
    ::= { tcgTpmQuoteLogEntry 2 }

-- 1.3.6.1.4.1.21911.1.1.5.3.1.3
tcgTpmQuoteLogLineNumber OBJECT-TYPE
    SYNTAX TcgTpmLogFile
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Each row in the table is one log entry. This object uniquely
        identifies the row to be returned."
    ::= { tcgTpmQuoteLogEntry 3 }

-- 1.3.6.1.4.1.21911.1.1.5.3.1.4
tcgTpmQuoteLogFragmentIndex OBJECT-TYPE
    SYNTAX Integer32 (1..6)
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Log entries may be larger in size than can be carried by a
        single UDP packet. This interface divides each log entry
        into a sequence of max 484-byte buffers. The 1-based
        index of the buffer is specified in
        tcgTpmQuoteLogFragmentIndex."
    ::= { tcgTpmQuoteLogEntry 4 }

```



```

-- 1.3.6.1.4.1.21911.1.1.5.3.1.5
tcgTpmQuoteLogLineBuf OBJECT-TYPE
    SYNTAX OCTET STRING (SIZE (0..484))
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The returned event log entry."
    ::= { tcgTpmQuoteLogEntry 5 }

-- 1.3.6.1.4.1.21911.1.1.5.3.1.6
tcgTpmQuoteLogStatus OBJECT-TYPE
    SYNTAX RowStatus
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "Status of the conceptual row."
    ::= { tcgTpmQuoteLogEntry 6 }

-- 1.3.6.1.4.1.21911.1.1.6
tcgTpmQuoteNotificationGroup NOTIFICATION-GROUP
    NOTIFICATIONS { tcgTpmQuoteLockNotification }
    STATUS current
    DESCRIPTION
        "Notification group."
    ::= { tcgTpmQuoteMIB 6 }

-- 1.3.6.1.4.1.21911.1.1.7
tcgTpmSelectionGroup OBJECT-GROUP
    OBJECTS { tcgTpmSelector,
              tcgTpmSelectorDescription,
              tcgTpmQuoteDigestSelector,
              tcgTpmQuoteLogSelector,
              tcgTpmQuoteQualifiedSigner,
              tcgTpmQuotePCRDigestAlg,
              tcgTpmQuoteTpmLockVal,
              tcgTpmQuoteLockTpmSelector,
              tcgTpmQuoteTpmSelector,
              tcgTpmQuoteCertTpmSelector,
              tcgTpmQuotePcrSelector,
              tcgTpmQuoteLogTpmSelector }
    STATUS current
    DESCRIPTION
        "A group of objects used as table indices."
    ::= { tcgTpmQuoteMIB 7 }

```

```

-- 1.3.6.1.4.1.21911.1.1.8
    tcgTpmQuoteObjectGroup OBJECT-GROUP
        OBJECTS { tcgTpmQuoteMibVersion,
            tcgTpmQuoteNonce, tcgTpmQuote,
            tcgTpmQuoteLogLineNumber, tcgTpmQuoteLogFragmentIndex,
            tcgTpmQuoteCertSelector, tcgTpmQuoteLockValue,
            tcgTpmQuoteCertTpmSelector, tcgTpmQuoteLogTpmSelector,
            tcgTpmQuoteTpmSelector, tcgTpmQuoteRespType, tcgTpmSpecRev,
            tcgTpmClass, tcgTpmQuotePCRDigest, tcgTpmQuoteClockInfo,
            tcgTpmFirmwareVersion, tcgTpmQuoteFirmwareVersion,
            tcgTpmQuoteReqType, tcgTpmQuoteLockTimeout,
            tcgTpmQuoteTpmLockVal, tcgTpmQuoteRowStatus,
            tcgTpmQuoteLockHolderIpAddrType,
            tcgTpmQuoteLockHolderIpAddress, tcgTpmQuoteCertChainIndex,
            tcgTpmQuoteCertType, tcgTpmQuoteLogLineBuf,
            tcgTpmQuoteLogStatus, tcgTpmQuotePcrSelector,
            tcgTpmQuoteCertFragmentIndex, tcgTpmQuoteCertBuf,
            tcgTpmQuoteCertStatus, tcgTpmQuoteLogFileLines }
        STATUS current
        DESCRIPTION
            "The group of objects required to support boot log and TPM
            Quote retrieval."
        ::= { tcgTpmQuoteMIB 8 }

-- 1.3.6.1.4.1.21911.1.1.9
    tcgTpmQuoteMibVersionGroup OBJECT-GROUP
        OBJECTS { tcgTpmQuoteMibVerBase, tcgTpmQuoteMibVersion,
            tcgTpmQuoteMibGeneralVersionInfo }
        STATUS current
        DESCRIPTION
            "Objects to support MIB version."
        ::= { tcgTpmQuoteMIB 9 }

END

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```