

Expires March 2001

6 September 2000

Management Information Base for the PINT Services Architecture

<[draft-ietf-pint-mib-04.txt](#)>

Abstract

This memo describes a proposed MIB for the PINT Services Architecture.

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1. Introduction

PINT services are an emerging set of new Internet based applications where voice (and fax) requests to the PSTN (Public Switched Telephone

Network) are carried over the Internet. [RFC 2458](#) [1] gives a good introduction to the (pre-standard) PINT architecture and services. It also has examples of some of the early implementations of pre-PINT.

This document defines a MIB which contains the elements for monitoring the performance of a PINT based service. The MIB consists of details of the four basic PINT services and their performance statistics measured under various criteria.

It is not the purpose of this MIB to enable management of the PINT networking elements. We are concerned only with the PINT specific performance parameters. While it is understood that PINT service performance is closely related to host and network performance, they are not addressed here.

2. The SNMP Management Framework

The SNMP Management Framework presently consists of five major components:

- o An overall architecture, described in [RFC 2571](#) [2].
- o Mechanisms for describing and naming objects and events for the purpose of management. The first version of this Structure of Management Information (SMI) is called SMIV1 and described in [RFC 1155](#) [3], [RFC 1212](#) [4] and [RFC 1215](#) [5]. The second version, called SMIV2, is described in [RFC 2578](#) [6], [RFC 2579](#) [7] and [RFC 2580](#) [8].
- o Message protocols for transferring management information. The first version of the SNMP message protocol is called SNMPv1 and described in [RFC 1157](#) [9]. A second version of the SNMP message protocol, which is not an Internet standards track protocol, is called SNMPv2c and described in [RFC 1901](#) [10] and [RFC 1906](#) [11]. The third version of the message protocol is called SNMPv3 and described in [RFC 1906](#) [11], [RFC 2572](#) [12] and [RFC 2574](#) [13].
- o Protocol operations for accessing management information. The first set of protocol operations and associated PDU formats is described in [RFC 1157](#) [9]. A second set of protocol operations and associated PDU formats is described in [RFC 1905](#) [14].
- o A set of fundamental applications described in [RFC 2573](#) [15] and the view-based access control mechanism described in [RFC 2575](#)

[[16](#)].

A more detailed introduction to the current SNMP Management Framework can be found in [RFC 2570](#) [[17](#)].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. Objects in the MIB are defined using the mechanisms defined in the SMI.

This memo specifies a MIB module that is compliant to the SMIV2. A MIB conforming to the SMIV1 can be produced through the appropriate translations. The resulting translated MIB must be semantically equivalent, except where objects or events are omitted because no translation is possible (use of Counter64). Some machine-readable information in SMIV2 will be converted into textual descriptions in SMIV1 during the translation process. However, this loss of machine readable information is not considered to change the semantics of the MIB.

[3.](#) The need for PINT services monitoring MIB

Traditionally voice (and fax) requests originate and terminate inside a PSTN network. This network is well known for robust handling of the requests, in terms of availability and security. However when the requests originate from the Internet there is a concern both on the part of the user as well as the provider about issues like reliable forwarding of the call requests to the PINT gateway under various network conditions, user/host authentication, secure handling of the user information etc. Performance and security management becomes all the more important where PINT services cross multiple administrative domains (or providers).

This MIB is an attempt to list the parameters that need to be monitored on an user, PINT client, PINT server and PINT gateway basis.

(PINT services, their invocation methods/protocols and security issues associated with the PINT architecture are discussed in detail in [[18](#)]).

[4.](#) PINT MIB - Overview

Following is a list of some explanations on the MIB definitions that

we have chosen to construct.

- o The basic purpose of this MIB is to monitor the access to PINT services both from the performance and security point of view. Information may pertain to a certain user or his/her system (PINT client) or the system providing the PINT services (PINT server) or the PINT gateway that forwards the call to the PSTN network.
- o We propose to build the configuration table as an extension of the Application MIB - [RFC 2287](#) [19] using the augments clause. Server location and contact might be retrieved from the standard MIB-II sysLocation and sysContact objects. There is no need to replicate this information in the PINT MIB. However, the PINT administrator may be a different person than the sysadmin with global responsibilities, thus a pintSysContact object is defined.
- o We chose to monitor the gateway connections from the PINT server. While the agent runs in the PINT servers, the links to the gateways might need to be monitored in order to understand what goes on. We placed them in a separate MIB group, and by using MODULE-COMPLIANCE clauses, agents that cannot implement this stuff will not be mandated to do it.
- o There is no traps definition in this preliminary proposal. Note that thresholding on counters is always possible by using a standard mechanism defined by the Remote Monitoring MIB, that can be referenced here. Some events that may be defined by using this mechanisms:
 - * continuous login/authentication failure or refusal from a particular client or user
 - * nuisance call - repeated calls (within a specified period) to a number originating from the same user
- o The client performance and user performance tables may be rather resource demanding for an agent implementation. In some MIBs, like the Remote Monitoring (RMON) MIBs, control mechanisms were built in order to activate those statistics on demand. If needed, a sorting ('topN') mechanism can be designed, so that a sorted view of clients or users is presented for the high level

debugging.

- o We built a time-distribution trying to cover both short-lived, as well as longer sessions (1-10 secs, 10 secs - 1 min., 1-15 min., 15 mins-24 hours, longer).
- o PintServerClientAddress is defined as a SnmpAdminString. It may include an IPAddress and/or name, but we preferred to minimize the number of indices at this stage, and keep a human-readable format at the same time.
- o We define pintServerUserIdName as the UserId. This UserId needs to be unique across multiple PINT servers and gateways depending on the architecture, and is mapped to the SessionId. One way to achieve this uniqueness is by appending clientId to the UserId string before sending to the PINT server. The SessionId could then be a combination of this new UserId and a timestamp.

5. Definitions

PINT-MIB DEFINITIONS ::= BEGIN

```
IMPORTS
    OBJECT-TYPE, Counter32, MODULE-IDENTITY, mib-2
    FROM      SNMPv2-SMI
    TEXTUAL-CONVENTION
    FROM      SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP
    FROM      SNMPv2-CONF
    sysApplInstallPkgEntry
    FROM      SYSAPPL-MIB
    SnmpAdminString
    FROM      SNMP-FRAMEWORK-MIB;  -- RFC 2271 [20]

    pintMib MODULE-IDENTITY
        LAST-UPDATED "0009061900Z"
        ORGANIZATION "IETF PINT Working Group"
        CONTACT-INFO "
            Chairs:
            Steve Bellovin
            E-mail: smb@research.att.com
```


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"

DESCRIPTION

"Revised version - editorial and MIB corrections"

REVISION "0009061900Z"

DESCRIPTION

"This MIB defines the objects necessary to monitor
PINT Services"

REVISION "0007241525Z"

DESCRIPTION

"Initial version, published as RFC xxxx."

::= { mib-2 99999 } -- Not an IANA number

PintServiceType ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This TC describes the type of a PINT service."

SYNTAX INTEGER {

r2C(1), -- Request-to-Talk
r2F(2), -- Request-to-Fax
r2FB(3), -- Request-to-Fax-Back
r2HC(4) -- Request-to-Hear-Content
}

PintPerfStatPeriod ::= TEXTUAL-CONVENTION

STATUS current

DESCRIPTION

"This TC describes the statistics period of time."

Note that the values of the counters indexed with a value SinceReboot(4) can be potentially affected by a counter rollover. It is the responsibility of the application using this object to take into account that the counter has been zeroed each time it reached a value of (2**32-1)."

```
SYNTAX  INTEGER {
last30sec(1),  -- Performance Statics for the last 30 sec
last15min(2),  --      15 min
last24Hr(3),   --      24 Hour
sinceReboot(4) --      Since the time the pint server was
--      last rebooted
}
```

```
pintServerConfig      OBJECT IDENTIFIER ::= { pintMib 1 }
pintServerMonitor     OBJECT IDENTIFIER ::= { pintMib 2 }
pintMibConformance    OBJECT IDENTIFIER ::= { pintMib 3 }
```

-- pintServerConfig - PINT configuration MIB variables

```
pintReleaseNumber OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
        "An indication of version of the PINT protocol supported
        by this agent."
    ::= { pintServerConfig 1 }
```

```
pintSysContact      OBJECT-TYPE
    SYNTAX      SnmpAdminString
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
        "Contact information related to the administration of the PINT
        services."
    ::= { pintServerConfig 2 }
```

```
pintApplInstallPkgTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF PintApplInstallPkgEntry
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
        "Table describing the PINT applications that are installed."
    ::= { pintServerConfig 3 }
```

```
pintApplInstallPkgEntry OBJECT-TYPE
    SYNTAX      PintApplInstallPkgEntry
    MAX-ACCESS  not-accessible
```


STATUS current

DESCRIPTION

"Entries per PINT Application."

AUGMENTS { sysApplInstallPkgEntry }

::= { pintApplInstallPkgTable 1 }

PintApplInstallPkgEntry ::= SEQUENCE {
pintApplInstallPkgDescription SnmpAdminString
}

pintApplInstallPkgDescription OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Textual description of the installed PINT application."

::= { pintApplInstallPkgEntry 1 }

pintRegisteredGatewayTable OBJECT-TYPE

SYNTAX SEQUENCE OF PintRegisteredGatewayEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table describing the registered gateway applications."

::= { pintServerConfig 4 }

pintRegisteredGatewayEntry OBJECT-TYPE

SYNTAX PintRegisteredGatewayEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Entries per Registered Gateway Application."

AUGMENTS { sysApplInstallPkgEntry }

::= { pintRegisteredGatewayTable 1 }

PintRegisteredGatewayEntry ::= SEQUENCE {
pintRegisteredGatewayName SnmpAdminString,
pintRegisteredGatewayDescription SnmpAdminString
}

pintRegisteredGatewayName OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Name of the registered gateway."

::= { pintRegisteredGatewayEntry 1 }

pintRegisteredGatewayDescription OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Textual description of the registered gateway."

::= { pintRegisteredGatewayEntry 2 }

-- pintServerMonitor - PINT monitoring statistics MIB variables

pintServerGlobalPerf OBJECT IDENTIFIER ::= {pintServerMonitor 1 }

pintServerClientPerf OBJECT IDENTIFIER ::= {pintServerMonitor 2 }

pintServerUserIdPerf OBJECT IDENTIFIER ::= {pintServerMonitor 3 }

pintServerGatewayPerf OBJECT IDENTIFIER ::= {pintServerMonitor 4 }

pintServerGlobalStatsTable OBJECT-TYPE

SYNTAX SEQUENCE OF PintServerGlobalStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table displaying the monitored global server statistics."

::= { pintServerGlobalPerf 1 }

pintServerGlobalStatsEntry OBJECT-TYPE

SYNTAX PintServerGlobalStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Entries in the global statistics table."

One entry is defined for each monitored service type and performance statistics collection period."

INDEX {pintServerServiceTypeIndex, pintServerPerfStatPeriodIndex}

::= { pintServerGlobalStatsTable 1 }

PintServerGlobalStatsEntry ::= SEQUENCE {

pintServerServiceTypeIndex PintServiceType,

pintServerPerfStatPeriodIndex PintPerfStatPeriod,

pintServerGlobalCallsReceived Counter32,

pintServerGlobalSuccessfulCalls Counter32,

pintServerGlobalDisconnectedCalls Counter32,

pintServerGlobalDisconnectedClientUserAuthorizationFailureCalls

Counter32,

pintServerGlobalDisconnectedServerProblemCalls Counter32,

pintServerGlobalDisconnectedGatewayProblemCalls Counter32

}

pintServerServiceTypeIndex OBJECT-TYPE

SYNTAX PintServiceType

MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"The unique identifier of the monitored service."
::= { pintServerGlobalStatsEntry 1 }

pintServerPerfStatPeriodIndex OBJECT-TYPE

SYNTAX PintPerfStatPeriod
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Time period for which the performance statistics are requested
from the pint server."
::= { pintServerGlobalStatsEntry 2 }

pintServerGlobalCallsReceived OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of received global calls."
::= { pintServerGlobalStatsEntry 3 }

pintServerGlobalSuccessfulCalls OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of global successful calls."
::= { pintServerGlobalStatsEntry 4 }

pintServerGlobalDisconnectedCalls OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of global disconnected (failed) calls."
::= { pintServerGlobalStatsEntry 5 }

pintServerGlobalDisconnectedClientUserAuthorizationFailureCalls
OBJECT-TYPE

SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of global calls that were disconnected because of client
or user authorization failure."
::= { pintServerGlobalStatsEntry 6 }

pintServerGlobalDisconnectedServerProblemCalls OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of global calls that were disconnected because of server problems."

::= { pintServerGlobalStatsEntry 7 }

pintServerGlobalDisconnectedGatewayProblemCalls OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of global calls that were disconnected because of gateway problems."

::= { pintServerGlobalStatsEntry 8 }

pintServerClientStatsTable OBJECT-TYPE

SYNTAX SEQUENCE OF PintServerClientStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table displaying the monitored server client statistics."

::= { pintServerClientPerf 1 }

pintServerClientStatsEntry OBJECT-TYPE

SYNTAX PintServerClientStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Entries in the client server statistics table.

One entry is defined for each client identified by name, monitored service type and performance statistics collection period."

INDEX {pintServerClientAddress, pintServerServiceTypeIndex, pintServerPerfStatPeriodIndex}

::= { pintServerClientStatsTable 1 }

PintServerClientStatsEntry ::= SEQUENCE {

pintServerClientAddress SnmpAdminString,

pintServerClientCallsReceived Counter32,

pintServerClientSuccessfulCalls Counter32,

pintServerClientDisconnectedCalls Counter32,

pintServerClientDisconnectedClientAuthorizationFailureCalls

Counter32,

pintServerClientDisconnectedEgressFacilityProblemCalls Counter32

}

pintServerClientAddress OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The unique identifier of the monitored client
identified by its address represented as a string."

::= { pintServerClientStatsEntry 1 }

pintServerClientCallsReceived OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of calls received from the specific client."

::= { pintServerClientStatsEntry 2 }

pintServerClientSuccessfulCalls OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of calls from the client successfully completed."

::= { pintServerClientStatsEntry 3 }

pintServerClientDisconnectedCalls OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of calls received from the client, and that were
disconnected (failed)."

::= { pintServerClientStatsEntry 4 }

**pintServerClientDisconnectedClientAuthorizationFailureCalls
OBJECT-TYPE**

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of calls from the client that were disconnected because of
client authorization failure."

::= { pintServerClientStatsEntry 5 }

pintServerClientDisconnectedEgressFacilityProblemCalls OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of calls from the client that were disconnected because of egress facility problems."

::= { pintServerClientStatsEntry 6 }

pintServerUserIdStatsTable OBJECT-TYPE

SYNTAX SEQUENCE OF PintServerUserIdStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Table displaying the monitored Pint service user statistics."

::= { pintServerUserIdPerf 1 }

pintServerUserIdStatsEntry OBJECT-TYPE

SYNTAX PintServerUserIdStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Entries in the user statistics table.

One entry is defined for each user identified by name, each monitored service type and performance statistics collection period."

INDEX {pintServerUserIdName, pintServerServiceTypeIndex, pintServerPerfStatPeriodIndex}

::= { pintServerUserIdStatsTable 1 }

PintServerUserIdStatsEntry ::= SEQUENCE {

pintServerUserIdName SnmpAdminString,

pintServerUserIdCallsReceived Counter32,

pintServerUserIdSuccessfulCalls Counter32,

pintServerUserIdDisconnectedCalls Counter32,

pintServerUserIdDisconnectedUserIdAuthorizationFailureCalls

Counter32,

pintServerUserIdDisconnectedEgressFacilityProblemCalls Counter32

}

pintServerUserIdName OBJECT-TYPE

SYNTAX SnmpAdminString

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"The unique identifier of the monitored user identified by its name."

::= { pintServerUserIdStatsEntry 1 }

pintServerUserIdCallsReceived OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current
DESCRIPTION
"Number of calls received from the specific user."
::= { pintServerUserIdStatsEntry 2 }

pintServerUserIdSuccessfulCalls OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of calls from the user successfully completed."
::= { pintServerUserIdStatsEntry 3 }

pintServerUserIdDisconnectedCalls OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of calls received from the user that were
disconnected (failed)."
::= { pintServerUserIdStatsEntry 4 }

pintServerUserIdDisconnectedUserIdAuthorizationFailureCalls
OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of calls from the user that were disconnected because of user
authorization failure."
::= { pintServerUserIdStatsEntry 5 }

pintServerUserIdDisconnectedEgressFacilityProblemCalls OBJECT-TYPE
SYNTAX Counter32
MAX-ACCESS read-only
STATUS current
DESCRIPTION
"Number of calls from the user that were disconnected because of
egress facility problems."
::= { pintServerUserIdStatsEntry 6 }

pintServerGatewayStatsTable OBJECT-TYPE
SYNTAX SEQUENCE OF PintServerGatewayStatsEntry
MAX-ACCESS not-accessible
STATUS current
DESCRIPTION
"Table displaying the monitored gateway statistics."
::= { pintServerGatewayPerf 1 }

pintServerGatewayStatsEntry OBJECT-TYPE

SYNTAX PintServerGatewayStatsEntry

MAX-ACCESS not-accessible

STATUS current

DESCRIPTION

"Entries in the gateway table.

One entry is defined for each gateway identified by name,
each monitored service type and performance statistics collection
period."

INDEX { pintRegisteredGatewayName, pintServerServiceTypeIndex,
pintServerPerfStatPeriodIndex }

::= { pintServerGatewayStatsTable 1 }

PintServerGatewayStatsEntry ::= SEQUENCE {

pintServerGatewayCallsReceived Counter32,

pintServerGatewaySuccessfulCalls Counter32,

pintServerGatewayDisconnectedCalls Counter32

}

pintServerGatewayCallsReceived OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of calls received at the specified gateway."

::= { pintServerGatewayStatsEntry 1 }

pintServerGatewaySuccessfulCalls OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of calls successfully completed at the specified gateway."

::= { pintServerGatewayStatsEntry 2 }

pintServerGatewayDisconnectedCalls OBJECT-TYPE

SYNTAX Counter32

MAX-ACCESS read-only

STATUS current

DESCRIPTION

"Number of calls that were disconnected (failed) at the specified
gateway."

::= { pintServerGatewayStatsEntry 3 }

--

-- Notifications Section

-- (none defined)

--

--

-- Conformance Section

--

```
pintMibCompliances OBJECT IDENTIFIER ::= { pintMibConformance 1 }
pintMibGroups      OBJECT IDENTIFIER ::= { pintMibConformance 2 }
```

pintMibCompliance MODULE-COMPLIANCE

STATUS current

DESCRIPTION

"Describes the requirements for conformance to the
PINT MIB."

MODULE -- this module

```
MANDATORY-GROUPS { pintMibConfigGroup, pintMibMonitorGroup }
::= { pintMibCompliances 1 }
```

pintMibConfigGroup OBJECT-GROUP

OBJECTS {

pintReleaseNumber,

pintSysContact,

pintApplInstallPkgDescription,

pintRegisteredGatewayName,

pintRegisteredGatewayDescription

}

STATUS current

DESCRIPTION

"A collection of objects providing configuration
information
for a PINT Server."

```
::= { pintMibGroups 1 }
```

pintMibMonitorGroup OBJECT-GROUP

OBJECTS {

pintServerGlobalCallsReceived,

pintServerGlobalSuccessfulCalls,

pintServerGlobalDisconnectedCalls,

pintServerGlobalDisconnectedClientUserAuthorizationFailureCalls,

pintServerGlobalDisconnectedServerProblemCalls,

pintServerGlobalDisconnectedGatewayProblemCalls,

pintServerClientCallsReceived,

pintServerClientSuccessfulCalls,

pintServerClientDisconnectedCalls,

pintServerClientDisconnectedClientAuthorizationFailureCalls,

pintServerClientDisconnectedEgressFacilityProblemCalls,

--pintServerUserIdName,

pintServerUserIdCallsReceived,


```
pintServerUserIdSuccessfulCalls,
pintServerUserIdDisconnectedCalls,
pintServerUserIdDisconnectedUserIdAuthorizationFailureCalls,
pintServerUserIdDisconnectedEgressFacilityProblemCalls,
pintServerGatewayCallsReceived,
pintServerGatewaySuccessfulCalls,
pintServerGatewayDisconnectedCalls
}
STATUS    current
DESCRIPTION
    "A collection of objects providing monitoring
    information
    for a PINT Server."
 ::= { pintMibGroups 2 }

END
```

6. Acknowledgements

The authors would like to thank Igor Faynberg for his encouragement to produce this work.

7. Security Considerations

There is only one management object defined in this MIB that has a MAX-ACCESS clause of read-write (pintSysContact). There are no read-create objects. This read-write object may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

There are a number of managed objects in this MIB that may contain information that may be sensitive from a business perspective. One could be the customer identification (UserIdName). Also information on PINT services performance might itself be need to be guarded. It is thus important to control even GET access to these objects and possibly to even encrypt the values of these object when sending them over the network via SNMP. Not all versions of SNMP provide features for such a secure environment.

SNMPv1 by itself is not a secure environment. Even if the network itself is secure (for example by using IPSec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB.

It is recommended that the implementers consider the security

features as provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model [RFC 2574](#) [13] and the View-based Access Control Model [RFC 2575](#) [16] is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

8. IANA Considerations

All extensions to the values listed in this MIB must be done through Standards Action processes as defined in [RFC 2434](#) [21].

9. References

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