

ANEXO C

DEFINICIÓN DE LAS MIBs DE OSIMIS EN FORMATO GDMO.

Este anexo nos permite ver la definición de las MIBs genéricas y específicas que son utilizadas en OSIMIS, estas MIBs fueron presentadas y estudiadas en el Capítulo V de esta monografía, y aquí veremos la completa definición que se hace de estas en OSIMIS.

Como las MIBs ya han sido explicadas anteriormente, aquí simplemente las reproduciremos tal como pueden ser encontradas en los archivos MIB.gdmo que se encuentran en las siguientes rutas:

```
"/tesis/osimis/agent/gms"  
"/tesis/osimis/agent/isode_mib"  
"/tesis/osimis/agent/monmet_mib"  
"/tesis/osimis/examples/odp"  
"/tesis/osimis/agent/ux_mib"  
"/tesis/osimis/proxy/iqa/proxy"
```

El hecho de reproducir estas MIBs en este anexo de la monografía tiene el fin que el lector pueda aclarar rápidamente cualquier duda que se le presente sobre los diferentes atributos, herencia, acciones, notificaciones, paquetes, etc que se definen para cada clase en la MIB correspondiente.

C.1 MIBs GENÉRICAS.

C.1.1 MIBgms.

El archivo gdmo de la MIB "MIBgms" (Ver Figura #C1) se encuentra en el directorio "/agent" ubicado dentro del directorio donde OSIMIS ha sido instalado para este proyecto, este directorio corresponde a "/tesis/osimis/agent/gms".

```
-- ##### Class Templates #####  
  
System MANAGED OBJECT CLASS  
  DERIVED FROM    top;  
  CHARACTERIZED BY systemPackage;  
  REGISTERED AS   { smi2ManagedObjectClass 13 };  
  
managedElement MANAGED OBJECT CLASS  
  DERIVED FROM    top;  
  CHARACTERIZED BY managedElementPackage;  
  REGISTERED AS   { m3100ObjectClass 3 };  
  
discriminator MANAGED OBJECT CLASS  
  DERIVED FROM    top;  
  CHARACTERIZED BY discriminatorPackage;  
  REGISTERED AS   { smi2ManagedObjectClass 3 };
```

```

eventForwardingDiscriminator MANAGED OBJECT CLASS
  DERIVED FROM    discriminator;
  CHARACTERIZED BY efdPackage;
  REGISTERED AS   { smi2ManagedObjectClass 4 };

Log MANAGED OBJECT CLASS
  DERIVED FROM    top;
  CHARACTERIZED BY logPackage;
  REGISTERED AS   { smi2ManagedObjectClass 6 };

logRecord MANAGED OBJECT CLASS
  DERIVED FROM    top;
  CHARACTERIZED BY logRecordPackage;
  REGISTERED AS   { smi2ManagedObjectClass 7 };

eventLogRecord MANAGED OBJECT CLASS
  DERIVED FROM    logRecord;
  CHARACTERIZED BY eventLogRecordPackage;
  REGISTERED AS   { smi2ManagedObjectClass 8 };

-- ##### Name Binding Templates #####

system-top NAME BINDING
  SUBORDINATE OBJECT CLASS  System AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    top;
  WITH ATTRIBUTE           systemId;
  REGISTERED AS            { uclNameBinding 1 };

managedElement-top NAME BINDING
  SUBORDINATE OBJECT CLASS  managedElement AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    top;
  WITH ATTRIBUTE           managedElementId;
  REGISTERED AS            { uclNameBinding 2 };

discriminator-system NAME BINDING
  SUBORDINATE OBJECT CLASS  discriminator AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    system AND SUBCLASSES;
  WITH ATTRIBUTE           discriminatorId;
  CREATE                   WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE                   ONLY-IF-NO-CONTAINED-OBJECTS;
  REGISTERED AS            { smi2NameBinding 1 };

eventForwardingDiscriminator-managedElement NAME BINDING
  SUBORDINATE OBJECT CLASS  eventForwardingDiscriminator;
  NAMED BY
  SUPERIOR OBJECT CLASS    managedElement AND SUBCLASSES;
  WITH ATTRIBUTE           discriminatorId;
  CREATE                   WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE                   ONLY-IF-NO-CONTAINED-OBJECTS;
  REGISTERED AS            { m3100NameBinding 11 };

log-system NAME BINDING
  SUBORDINATE OBJECT CLASS  Log AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    system AND SUBCLASSES;
  WITH ATTRIBUTE           logId;
  CREATE                   WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE                   ONLY-IF-NO-CONTAINED-OBJECTS;
  REGISTERED AS            { smi2NameBinding 2 };

log-managedElement NAME BINDING
  SUBORDINATE OBJECT CLASS  Log;
  NAMED BY

```

```

SUPERIOR OBJECT CLASS    managedElement AND SUBCLASSES;
WITH ATTRIBUTE          logId;
CREATE                  WITH-AUTOMATIC-INSTANCE-NAMING;
DELETE                  ONLY-IF-NO-CONTAINED-OBJECTS;
REGISTERED AS          { m3100NameBinding 14 };

logRecord-log NAME BINDING
SUBORDINATE OBJECT CLASS  logRecord AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS    Log AND SUBCLASSES;
WITH ATTRIBUTE          logRecordId;
DELETE                  ONLY-IF-NO-CONTAINED-OBJECTS;
REGISTERED AS          { smi2NameBinding 3 };

-- ##### Package Templates #####

systemPackage PACKAGE
ATTRIBUTES
    systemId            GET,
    systemTitle         GET,
    operationalState    GET,
    usageState          GET;
REGISTERED AS          { uclPackage 1 };

managedElementPackage PACKAGE
ATTRIBUTES
    managedElementId    GET,
    systemTitle         GET,
    alarmStatus         GET,
    administrativeState GET-REPLACE,
    operationalState    GET,
    usageState          GET;
REGISTERED AS          { uclPackage 2 };

discriminatorPackage PACKAGE
ATTRIBUTES
    discriminatorId     GET,
    discriminatorConstruct REPLACE-WITH-DEFAULT
        DEFAULT VALUE
            Attribute-ASN1Module.defaultDiscriminatorConstruct
        GET-REPLACE,
    administrativeState GET-REPLACE,
    operationalState    GET;
NOTIFICATIONS
    stateChange,
    attributeValueChange,
    objectCreation,
    objectDeletion;
REGISTERED AS          { uclPackage 4 };

efdPackage PACKAGE
ATTRIBUTES
    destination         GET-REPLACE;
REGISTERED AS          { uclPackage 5 };

logPackage PACKAGE
ATTRIBUTES
    logId              GET,
    discriminatorConstruct REPLACE-WITH-DEFAULT
        DEFAULT VALUE
            Attribute-ASN1Module.defaultDiscriminatorConstruct
        GET-REPLACE,
    administrativeState GET-REPLACE,
    operationalState    GET,
    availabilityStatus  GET,
    logFullAction       GET-REPLACE,

```

```

-- the following are from the conditional finiteLogSizePackage
maxLogSize          GET-REPLACE,
currentLogSize      GET,
numberOfRecords     GET;

NOTIFICATIONS
stateChange,
attributeValueChange,
objectCreation,
objectDeletion;
REGISTERED AS      { uclPackage 6 };

logRecordPackage PACKAGE
ATTRIBUTES
logRecordId        GET,
loggingTime        GET;
REGISTERED AS      { uclPackage 7 };

eventLogRecordPackage PACKAGE
ATTRIBUTES
managedObjectClass GET,
managedObjectInstance GET,
eventType          GET,

-- from the conditional eventTimePackage
eventTime          GET,

-- from the conditional additionalTextPackage
additionalText     GET;

REGISTERED AS      { uclPackage 8 };

-- ##### Attribute Templates #####

systemId ATTRIBUTE
WITH ATTRIBUTE SYNTAX
UCLAttribute-ASN1Module.SimpleNameType;
MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
REGISTERED AS      { smi2AttributeID 4 };

managedElementId ATTRIBUTE
WITH ATTRIBUTE SYNTAX
UCLAttribute-ASN1Module.SimpleNameType;
MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
REGISTERED AS      { m3100Attribute 28 };

systemTitle ATTRIBUTE
WITH ATTRIBUTE SYNTAX
Attribute-ASN1Module.DistinguishedName;
MATCHES FOR EQUALITY;
REGISTERED AS      { smi2AttributeID 5 };

administrativeState ATTRIBUTE
WITH ATTRIBUTE SYNTAX
UCLAttribute-ASN1Module.AdministrativeState;
MATCHES FOR EQUALITY;
REGISTERED AS { smi2AttributeID 31 };

operationalState ATTRIBUTE
WITH ATTRIBUTE SYNTAX
UCLAttribute-ASN1Module.OperationalState;
MATCHES FOR EQUALITY;
REGISTERED AS { smi2AttributeID 35 };

usageState ATTRIBUTE
WITH ATTRIBUTE SYNTAX
UCLAttribute-ASN1Module.UsageState;

```

```

MATCHES FOR EQUALITY;
REGISTERED AS { smi2AttributeID 39 };

alarmStatus ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.AlarmStatus;
MATCHES FOR EQUALITY;
REGISTERED AS { m3100Attribute 6 };

discriminatorId ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.SimpleNameType;
MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
REGISTERED AS { smi2AttributeID 1 };

discriminatorConstruct ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    Attribute-ASN1Module.DiscriminatorConstruct;
REGISTERED AS { smi2AttributeID 56 };

destination ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.Destination;
MATCHES FOR EQUALITY;
REGISTERED AS { smi2AttributeID 55 };

logId ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.Integer;
MATCHES FOR EQUALITY;
REGISTERED AS { smi2AttributeID 2 };

availabilityStatus ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.AvailabilityStatus;
MATCHES FOR EQUALITY, SET-COMPARISON, SET-INTERSECTION;
REGISTERED AS { smi2AttributeID 33 };

logFullAction ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.LogFullAction;
MATCHES FOR EQUALITY;
REGISTERED AS { smi2AttributeID 58 };

maxLogSize ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.MaxLogSize;
MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS { smi2AttributeID 62 };

currentLogSize ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.CurrentLogSize;
MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS { smi2AttributeID 54 };

numberOfRecords ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.NumberOfRecords;
MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS { smi2AttributeID 64 };

logRecordId ATTRIBUTE
WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.LogRecordId;
MATCHES FOR EQUALITY, ORDERING;
REGISTERED AS { smi2AttributeID 3 };

```

```

loggingTime ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.LoggingTime;
  MATCHES FOR EQUALITY, ORDERING;
  REGISTERED AS    { smi2AttributeID 59 };

managedObjectClass ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.ObjectClass;
  MATCHES FOR EQUALITY;
  REGISTERED AS    { smi2AttributeID 60 };

managedObjectInstance ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.ManagedObjectInstance;      -- special extension
  MATCHES FOR EQUALITY;
  REGISTERED AS    { smi2AttributeID 61 };

eventType ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.EventTypeId;
  MATCHES FOR EQUALITY;
  REGISTERED AS    { smi2AttributeID 14 };

eventTime ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.EventTime;
  MATCHES FOR EQUALITY, ORDERING;
  REGISTERED AS    { smi2AttributeID 13 };

additionalText ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.AdditionalText;
  MATCHES FOR EQUALITY, ORDERING;
  REGISTERED AS    { smi2AttributeID 7 };

-- ##### Notification Templates #####

objectCreation NOTIFICATION
  BEHAVIOUR          objectCreationBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.ObjectInfo
  AND ATTRIBUTE IDS
    sourceIndicator    sourceIndicator,
    attributeList      attributeList;
  REGISTERED AS        { smi2Notification 6 };

objectDeletion NOTIFICATION
  BEHAVIOUR          objectDeletionBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.ObjectInfo
  AND ATTRIBUTE IDS
    sourceIndicator    sourceIndicator,
    attributeList      attributeList;
  REGISTERED AS        { smi2Notification 7 };

attributeValueChange NOTIFICATION
  BEHAVIOUR          attributeValueChangeBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.AttrValChangeInfo
  AND ATTRIBUTE IDS
    sourceIndicator    sourceIndicator,
    attrValChangeDefinition attrValChangeDefinition;
  REGISTERED AS        { smi2Notification 1 };

stateChange NOTIFICATION
  BEHAVIOUR          stateChangeBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.AttrValChangeInfo
  AND ATTRIBUTE IDS

```

```

sourceIndicator          sourceIndicator,
stateChangeDefinition  stateChangeDefinition;
REGISTERED AS          { smi2Notification 14 };

```

Figura #C1 MIBgms.

C.1.2 MIBmonmet.

El archivo gdmo de la MIB “MIBmonmet” (Ver Figura #C2) se encuentra en el directorio “/agent” ubicado dentro del directorio donde OSIMIS ha sido instalado para este proyecto, este directorio corresponde a “/tesis/osimis/agent/ monmet_mib”.

```

-- #####
-- # ISO10164-11 Monitor Objects
-- #####

-- ##### Managed Object Class Templates #####

scanner MANAGED OBJECT CLASS
DERIVED FROM top;
CHARACTERIZED BY scannerPackage PACKAGE
BEHAVIOUR scannerBehaviour
BEHAVIOUR DEFINED AS "See 8.1.1.3." ;;
ATTRIBUTES
  scannerId          GET,
  administrativeState  GET-REPLACE ,
  granularityPeriod   GET-REPLACE ,
  operationalState    GET ;

NOTIFICATIONS
  objectCreation      -- from createDeleteNotificationsPackage
  objectDeletion,     -- ..
  attributeValueChange, -- from attributeValueChangeNotificationsPackage
  stateChange         -- from stateChangeNotificationsPackage
  ;;

REGISTERED AS {fn11ManagedObjectClass 7} ;

monitorMetric MANAGED OBJECT CLASS
DERIVED FROM scanner;
CHARACTERIZED BY monitorMetricPackage PACKAGE
BEHAVIOUR monitorMetricBehaviour
BEHAVIOUR DEFINED AS "See 8.1.2.3." ;;
ATTRIBUTES
  observedObjectInstance  GET
  observedAttributeId     SET BY CREATE,
                          GET
  derivedGauge            SET BY CREATE,
                          GET , --*;;;*--

  severityIndicatingGaugeThreshold  GET-REPLACE
                                     ADD-REMOVE,
                                     -- from derivedGaugeThresholdPackage
  severityIndicatingTideMarkMax     REPLACE-WITH-DEFAULT
                                     GET,
  severityIndicatingTideMarkMin     REPLACE-WITH-DEFAULT
                                     GET,
                                     -- non-standard useful add-ons
  previousScanCounterValue          GET , -- from counterDifferencePackage
  previousScanGaugeValue            GET , -- from gaugeDifferencePackage
  counterOrGaugeDifference          GET
                                     SET BY CREATE;

```

```

-- non-standard add-on as packages
-- are not yet supported

NOTIFICATIONS
  qualityofServiceAlarm          -- for severityIndicatingGaugeThreshold
                                -- from derivedGaugeThresholdPackage
  ;;

REGISTERED AS {fn11ManagedObjectClass 5} ;

movingAverageMeanMonitor MANAGED OBJECT CLASS
DERIVED FROM monitorMetric;
CHARACTERIZED BY movingAverageMeanMonitorPackage PACKAGE
BEHAVIOUR movingAverageMeanMonitorBehaviour
BEHAVIOUR DEFINED AS "See 8.1.5.3." ;;
ATTRIBUTES
  estimateOfMean                GET-REPLACE,
  movingTimePeriod              GET-REPLACE,

  estimateOfMeanSeverityIndicatingGaugeThreshold
                                GET-REPLACE
                                ADD-REMOVE,
                                -- from estimateOfMeanThresholdPackage
  estimateOfMeanSeverityIndicatingTideMarkMax
                                GET-REPLACE
                                ADD-REMOVE,
  estimateOfMeanSeverityIndicatingTideMarkMin
                                GET-REPLACE
                                ADD-REMOVE
                                -- non-standard useful add-ons
  ;;
REGISTERED AS {fnManagedObjectClass 6} ;

-- ##### Attribute Templates #####

derivedGauge ATTRIBUTE
  DERIVED FROM gauge;
  BEHAVIOUR derivedGaugeBehaviour
  BEHAVIOUR DEFINED AS "See Clause 8.1.1.2.";;
REGISTERED AS {fn11Attribute 2} ;

observedAttributeId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX CMIP-1.AttributeId;
  MATCHES FOR EQUALITY;
  BEHAVIOUR observedAttributeIdBehaviour
  BEHAVIOUR DEFINED AS "See Clause 8.1.2.2.";;
REGISTERED AS {fn11Attribute 15} ;

observedObjectInstance ATTRIBUTE
  WITH ATTRIBUTE SYNTAX CMIP-1.ObjectInstance;
  MATCHES FOR EQUALITY;
  BEHAVIOUR observedObjectInstanceIdBehaviour
  BEHAVIOUR DEFINED AS "See Clause 8.1.2.2.";;
REGISTERED AS {fn11Attribute 16} ;

severityIndicatingGaugeThreshold ATTRIBUTE
  --* WITH ATTRIBUTE SYNTAX MetricModule.SeverityIndicatingGaugeThreshold*--
  DERIVED FROM gauge-Threshold ;
REGISTERED AS {fn11Attribute 18} ;

severityIndicatingTideMarkMax ATTRIBUTE
  DERIVED FROM tide-Mark ;
REGISTERED AS {fn11Attribute 28} ;

severityIndicatingTideMarkMin ATTRIBUTE
  DERIVED FROM tide-Mark ;
REGISTERED AS {fn11Attribute 29} ;

```


granularityPeriod ATTRIBUTE
WITH ATTRIBUTE SYNTAX MetricModule.TimePeriod;
--* TimePeriod currently implemented as Integer (seconds) *--
MATCHES FOR EQUALITY, ORDERING;
BEHAVIOUR granularityPeriodBehaviour
BEHAVIOUR DEFINED AS "Time between 2 successive scans, see Clause 8.1.1.3.";;
REGISTERED AS {fn11Attribute 23} ;

previousScanCounterValue ATTRIBUTE
DERIVED FROM Counter --* *-- ;
REGISTERED AS {fn11Attribute 24} ;

previousScanGaugeValue ATTRIBUTE
DERIVED FROM Gauge --* *-- ;
REGISTERED AS {fn11Attribute 26} ;

scannerId ATTRIBUTE
WITH ATTRIBUTE SYNTAX MetricModule.SimpleNameType;
MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
BEHAVIOUR scannerIdBehaviour
BEHAVIOUR DEFINED AS "See Clause 8.1.1.2.";;
REGISTERED AS {fn11Attribute 25} ;

counterOrGaugeDifference ATTRIBUTE
WITH ATTRIBUTE SYNTAX MetricModule.Boolean;
MATCHES FOR EQUALITY;
BEHAVIOUR gaugeDifferenceBehaviour
BEHAVIOUR DEFINED AS
 "If its value is supplied to True at initialisation,
 the derived gauge contains the difference of the observed
 counter or gauge, else it is the same as the observed value -
 default initialisation value is FALSE i.e. no difference";
REGISTERED AS {fn11Attribute 27} ;

administrativeState ATTRIBUTE
WITH ATTRIBUTE SYNTAX UCLAttribute-ASN1Module.AdministrativeState;
MATCHES FOR EQUALITY;
REGISTERED AS { smi2AttributeID 31 } ;

operationalState ATTRIBUTE
WITH ATTRIBUTE SYNTAX UCLAttribute-ASN1Module.OperationalState;
MATCHES FOR EQUALITY;
REGISTERED AS { smi2AttributeID 35 } ;

estimateOfMean ATTRIBUTE
DERIVED FROM Gauge;
BEHAVIOUR estimateOfMeanBehaviour
BEHAVIOUR DEFINED AS "See Clause 8.1.3.2.";;
REGISTERED AS {fnAttribute 5} ;

movingTimePeriod ATTRIBUTE
WITH ATTRIBUTE SYNTAX MetricModule.TimePeriod;
MATCHES FOR EQUALITY, ORDERING;
BEHAVIOUR movingTimePeriodBehaviour
BEHAVIOUR DEFINED AS "See Clause 8.1.3.2.";;
REGISTERED AS {fnAttribute 13} ;

estimateOfMeanSeverityIndicatingGaugeThreshold ATTRIBUTE
DERIVED FROM gauge-Threshold;
BEHAVIOUR estimateOfMeanSeverityIndicatingGaugeThresholdBehaviour
BEHAVIOUR DEFINED AS "See Clause 8.1.9.5.2.";;
REGISTERED AS {fn11Attribute 6} ;

estimateOfMeanSeverityIndicatingTideMarkMax ATTRIBUTE
DERIVED FROM tide-Mark;
BEHAVIOUR estimateOfMeanSeverityIndicatingTideMarkMaxBehaviour;

```

REGISTERED AS {fn11Attribute 30} ;

estimateOfMeanSeverityIndicatingTideMarkMin ATTRIBUTE
  DERIVED FROM tide-Mark;
  BEHAVIOUR estimateOfMeanSeverityIndicatingTideMarkMinBehaviour;
REGISTERED AS {fn11Attribute 31} ;

-- ##### Name Binding Templates #####

scanner-system NAME BINDING
SUBORDINATE OBJECT CLASS scanner AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS system AND SUBCLASSES;
WITH ATTRIBUTE scannerId;
CREATE
  WITH-REFERENCE-OBJECT,
  WITH-AUTOMATIC-INSTANCE-NAMING;
DELETE
  ONLY-IF-N0-CONTAINED-OBJECTS;
REGISTERED AS {fn11NameBinding 0};

-- ##### Notification Templates #####

objectCreation NOTIFICATION
  BEHAVIOUR      objectCreationBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.ObjectInfo
  AND ATTRIBUTE IDS
    sourceIndicator      sourceIndicator,
    attributeList        attributeList;
  REGISTERED AS      { smi2Notification 6 };

objectDeletion NOTIFICATION
  BEHAVIOUR      objectDeletionBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.ObjectInfo
  AND ATTRIBUTE IDS
    sourceIndicator      sourceIndicator,
    attributeList        attributeList;
  REGISTERED AS      { smi2Notification 7 };

attributeValueChange NOTIFICATION
  BEHAVIOUR      attributeValueChangeBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.AttrValChangeInfo
  AND ATTRIBUTE IDS
    sourceIndicator      sourceIndicator,
    attrValChangeDefinition attrValChangeDefinition;
  REGISTERED AS      { smi2Notification 1 };

stateChange NOTIFICATION
  BEHAVIOUR      stateChangeBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.AttrValChangeInfo
  AND ATTRIBUTE IDS
    sourceIndicator      sourceIndicator,
    stateChangeDefinition stateChangeDefinition;
  REGISTERED AS      { smi2Notification 14 };

qualityofServiceAlarm NOTIFICATION
  BEHAVIOUR      qualityofServiceAlarmBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.AlarmInfo
  AND ATTRIBUTE IDS
    probableCause      probableCause,
    perceivedSeverity    perceivedSeverity,
    thresholdInfo        thresholdInfo;
  REGISTERED AS      { smi2Notification 11 };

```

Figura #C2 MIBmonmet.

C.1.3 MIBiqa.

El archivo gdmo de la MIB “MIBiqa” (Ver Figura #C3) se encuentra en el directorio “/proxy” ubicado dentro del directorio donde OSIMIS ha sido instalado para este proyecto, este directorio corresponde a “/tesis/osimis/proxy/iqa/proxy”.

```
-- ##### Class Templates #####

cmipsnmpProxyAgent MANAGED OBJECT CLASS
  DERIVED FROM      top;
  CHARACTERIZED BY
    cmipsnmpProxyAgentPkg PACKAGE
  BEHAVIOUR
  cmipsnmpProxyAgentPkgBehaviour BEHAVIOUR
  DEFINED AS ! TEXT REMOVED !;;
  ATTRIBUTES
    cmipsnmpProxyAgentId      GET,
    transportAddresses         GET-REPLACE ADD-REMOVE,
    managementProtocol         REPLACE-WITH-DEFAULT GET,
    supportedMIBs              GET-REPLACE ADD-REMOVE,
    accessControlMechanism
      DEFAULT VALUE iimcProxyASN1.agentOnlyAccessControl GET-REPLACE,
    administrativeState       GET-REPLACE,

    snmpMsgRetryLimit          GET-REPLACE,
    snmpMsgTimeout             GET-REPLACE;;;

  REGISTERED AS      { iimcObjectClass 2 };

cmipsnmpProxy MANAGED OBJECT CLASS
  DERIVED FROM      top;
  CHARACTERIZED BY
    cmipsnmpProxyPkg PACKAGE
  BEHAVIOUR
  cmipsnmpProxyPkgBehaviour BEHAVIOUR
  DEFINED AS ! TEXT REMOVED !;;
  ATTRIBUTES
    cmipsnmpProxyId          GET,

    snmpMsgRetryLimit          GET-REPLACE,
    snmpMsgTimeout             GET-REPLACE;;;

  REGISTERED AS      { iimcObjectClass 3 };

snmpSecurityParameter MANAGED OBJECT CLASS
  DERIVED FROM      top;
  CHARACTERIZED BY
    defaultSecurityParameterPkg PACKAGE
  BEHAVIOUR
  defaultSecurityParameterPkgBehaviour BEHAVIOUR
  DEFINED AS ! TEXT REMOVED !;;
  ATTRIBUTES
    snmpSecurityParameterId    GET,
    snmpSecurity                GET-REPLACE ADD-REMOVE ;;;
  REGISTERED AS      { iimcObjectClass 4 };

proxySystem MANAGED OBJECT CLASS
  DERIVED FROM      top;
  CHARACTERIZED BY  systemPackage;
  REGISTERED AS      { iimcObjectClass 98 };

-- ##### Name Binding Templates #####
```

```

cmipsnmpProxy-systemNB NAME BINDING
  SUBORDINATE OBJECT CLASS  cmipsnmpProxy AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    proxySystem AND SUBCLASSES;
  WITH ATTRIBUTE           cmipsnmpProxyId;
  REGISTERED AS           { iimcNameBinding 1 };

cmipsnmpProxyAgent-cmipsnmpProxyNB NAME BINDING
  SUBORDINATE OBJECT CLASS  cmipsnmpProxyAgent AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    cmipsnmpProxy AND SUBCLASSES;
  WITH ATTRIBUTE           cmipsnmpProxyAgentId;
  CREATE                   WITH-REFERENCE-OBJECT;
  DELETE                   ;
  REGISTERED AS           { iimcNameBinding 2 };

snmpSecurityParameter-cmipsnmpProxyNB NAME BINDING
  SUBORDINATE OBJECT CLASS  snmpSecurityParameter AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    cmipsnmpProxy AND SUBCLASSES;
  WITH ATTRIBUTE           snmpSecurityParameterId;
  REGISTERED AS           { iimcNameBinding 3 };

proxySystem-systemNB NAME BINDING
  SUBORDINATE OBJECT CLASS  proxySystem AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    system AND SUBCLASSES;
  WITH ATTRIBUTE           systemId ;
  REGISTERED AS           { iimcNameBinding 98 };

-- ##### Package Templates #####

retransmissionPackage PACKAGE
  ATTRIBUTES
    snmpMsgRetryLimit      GET-REPLACE,
    snmpMsgTimeout         GET-REPLACE;
  REGISTERED AS           { iimcPackage 10 };

pollingPackage PACKAGE
  ATTRIBUTES
    pollPeriod             GET-REPLACE;
  REGISTERED AS           { iimcPackage 11 };

systemPackage PACKAGE
  ATTRIBUTES
    systemId              GET,
    systemTitle           GET,
    operationalState      GET,
    usageState            GET;
  REGISTERED AS           { smi2Package 10001 };

-- ##### Attribute Templates #####

accessControlMechanism ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    IimcProxyASN1.AccessControlEnforcement;
  MATCHES FOR           EQUALITY, ORDERING;
  REGISTERED AS           { iimcAttribute 7 };

-- IimcProxyASN1.CmipsnmpProxyAgentId;
cmipsnmpProxyAgentId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.SimpleNameType;
  MATCHES FOR           EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS           { iimcAttribute 8 };

```

```

--      IimcProxyASN1.CmipsnmpProxyId;
cmipsnmpProxyId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    PrxIIMCSntx.NullIRDN;
MATCHES FOR      EQUALITY;
REGISTERED AS    { iimcAttribute 9 };

--      IimcProxyASN1.ObjId;
managementProtocol ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.ObjectIdentifier;
MATCHES FOR      EQUALITY;
REGISTERED AS    { iimcAttribute 10 };

pollPeriod ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    IimcProxyASN1.PollPeriod;
MATCHES FOR      EQUALITY, ORDERING;
REGISTERED AS    { iimcAttribute 11 };

supportedMIBs ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    IimcProxyASN1.SupportedMIBs;
MATCHES FOR      EQUALITY, SET-COMPARISON, SET-INTERSECTION;
REGISTERED AS    { iimcAttribute 12 };

snmpMsgRetryLimit ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    IimcProxyASN1.RetryLimit;
MATCHES FOR      EQUALITY, ORDERING;
REGISTERED AS    { iimcAttribute 13 };

snmpMsgTimeout ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    IimcProxyASN1.TimeoutInterval;
MATCHES FOR      EQUALITY, ORDERING;
REGISTERED AS    { iimcAttribute 14 };

snmpSecurity ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    IimcProxyASN1.SnmpSecurity;
MATCHES FOR      EQUALITY, SET-COMPARISON, SET-INTERSECTION;
REGISTERED AS    { iimcAttribute 15 };

--      IimcProxyASN1.SnmpSecurityParameterId;
snmpSecurityParameterId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    PrxIIMCSntx.NullIRDN;
MATCHES FOR      EQUALITY;
REGISTERED AS    { iimcAttribute 16 };

transportAddresses ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    IimcProxyASN1.TransportAddresses;
MATCHES FOR      EQUALITY, SET-COMPARISON, SET-INTERSECTION;
REGISTERED AS    { iimcAttribute 17 };

systemId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.SimpleNameType;
MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
REGISTERED AS    { smi2AttributeID 4 };

systemTitle ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    Attribute-ASN1Module.DistinguishedName;

```

```
MATCHES FOR EQUALITY;
REGISTERED AS      { smi2AttributeID 5 };
```

Figura #C3 MIBiqa.

C.2 MIBs ESPECIFICAS.

C.2.1 MIBisode.

El archivo gdmo de la MIB “MIBisode” (Ver Figura ·#C4) se encuentra en el directorio “/agent” ubicado dentro del directorio donde OSIMIS ha sido instalado para este proyecto, este directorio corresponde a “/tesis/osimis/agent/isode_mib”.

```
-- ##### Class Templates #####
subsystem MANAGED OBJECT CLASS
  DERIVED FROM    top;
  CHARACTERIZED BY subsystemPackage;
  REGISTERED AS   { uclManagedObjectClass 2 };

entity MANAGED OBJECT CLASS
  DERIVED FROM    top;
  CHARACTERIZED BY entityPackage;
  REGISTERED AS   { uclManagedObjectClass 3 };

connection MANAGED OBJECT CLASS
  DERIVED FROM    top;
  CHARACTERIZED BY connectionPackage;
  REGISTERED AS   { uclManagedObjectClass 4 };

transportEntity MANAGED OBJECT CLASS
  DERIVED FROM    entity;
  CHARACTERIZED BY transportEntityPackage;
  REGISTERED AS   { uclManagedObjectClass 5 };

transportConnection MANAGED OBJECT CLASS
  DERIVED FROM    connection;
  CHARACTERIZED BY transportConnectionPackage;
  REGISTERED AS   { uclManagedObjectClass 6 };

-- ##### Name Binding Templates #####
subsystem-system NAME BINDING
  SUBORDINATE OBJECT CLASS  subsystem AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    system AND SUBCLASSES;
  WITH ATTRIBUTE           subsystemId;
  REGISTERED AS            { uclNameBinding 2 };

entity-subsystem NAME BINDING
  SUBORDINATE OBJECT CLASS  entity AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    subsystem AND SUBCLASSES;
  WITH ATTRIBUTE           entityId;
  CREATE                   ;
  DELETE                   DELETES-CONTAINED-OBJECTS;
  REGISTERED AS            { uclNameBinding 3 };

connection-entity NAME BINDING
  SUBORDINATE OBJECT CLASS  connection AND SUBCLASSES;
```

```

NAMED BY
SUPERIOR OBJECT CLASS    entity AND SUBCLASSES;
WITH ATTRIBUTE           connectionId;
REGISTERED AS           { uclNameBinding 4 };

-- ##### Package Templates #####

subsystemPackage PACKAGE
  ATTRIBUTES
    subsystemId          GET;
  REGISTERED AS         { uclPackage 101 };

entityPackage PACKAGE
  ATTRIBUTES
    entityId             GET,
    operationalState     GET,
    localSapName         GET;
  NOTIFICATIONS
    objectCreation,
    objectDeletion;
  REGISTERED AS         { uclPackage 102 };

connectionPackage PACKAGE
  ATTRIBUTES
    connectionId         GET,
    localSapAddress      GET,
    remoteSapAddress     GET,
    creationTime         GET;
  NOTIFICATIONS
    objectCreation,
    objectDeletion;
  REGISTERED AS         { uclPackage 103 };

transportEntityPackage PACKAGE
  ATTRIBUTES
    openConnections      GET,
    previousConnections  GET,
    localSuccessfulConnections  GET,
    remoteSuccessfulConnections  GET,
    localUnsuccessfulConnections  GET,
    remoteUnsuccessfulConnections  GET,
    localCongestionErrors  GET,
    localConfigurationErrors  GET,
    localChecksumErrors    GET,
    totalNumberTpduSent    GET,
    totalNumberTpduReceived  GET,
    totalNumberTpduResent  GET;
  REGISTERED AS         { uclPackage 104 };

transportConnectionPackage PACKAGE
  ATTRIBUTES
    protocolClass        GET,
    octetsSent           GET,
    octetsReceived       GET,
    octetsResent         GET,
    pdusSent            GET,
    pdusReceived         GET,
    pdusResent          GET;
  REGISTERED AS         { uclPackage 105 };

-- ##### Attribute Templates #####

subsystemId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.SimpleNameType;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS         { uclAttributeID 3 };

```

```

entityId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.SimpleNameType;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS { uclAttributeID 4 };

localSapName ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.GraphicString;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS { uclAttributeID 5 };

connectionId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.SimpleNameType;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS { uclAttributeID 6 };

localSapAddress ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.GraphicString;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS { uclAttributeID 7 };

remoteSapAddress ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.GraphicString;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS { uclAttributeID 8 };

creationTime ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.Time;
  MATCHES FOR EQUALITY, ORDERING;
  REGISTERED AS { uclAttributeID 9 };

openConnections ATTRIBUTE
  DERIVED FROM gauge;
  REGISTERED AS { uclAttributeID 10 };

previousConnections ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS { uclAttributeID 11 };

localSuccessfulConnections ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS { uclAttributeID 12 };

remoteSuccessfulConnections ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS { uclAttributeID 13 };

localUnsuccessfulConnections ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS { uclAttributeID 14 };

remoteUnsuccessfulConnections ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS { uclAttributeID 15 };

localCongestionErrors ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS { uclAttributeID 16 };

localConfigurationErrors ATTRIBUTE
  DERIVED FROM counter;

```



```

REGISTERED AS    { uclAttributeID 17 };

localChecksumErrors ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 18 };

totalNumberTpduSent ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 19 };

totalNumberTpduReceived ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 20 };

totalNumberTpduResent ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 21 };

protocolClass ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.TProtocolClass;
  MATCHES FOR EQUALITY, ORDERING;
  REGISTERED AS    { uclAttributeID 27 };

octetsSent ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 28 };

octetsReceived ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 29 };

octetsResent ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 30 };

pdusSent ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 31 };

pdusReceived ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 32 };

pdusResent ATTRIBUTE
  DERIVED FROM counter;
  REGISTERED AS    { uclAttributeID 33 };

-- ##### Notification Templates #####

objectCreation NOTIFICATION
  BEHAVIOUR      objectCreationBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.ObjectInfo
  AND ATTRIBUTE IDS
    sourceIndicator    sourceIndicator,
    attributeList      attributeList;
  REGISTERED AS    { smi2Notification 6 };

objectDeletion NOTIFICATION
  BEHAVIOUR      objectDeletionBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.ObjectInfo
  AND ATTRIBUTE IDS
    sourceIndicator    sourceIndicator,
    attributeList      attributeList;
  REGISTERED AS    { smi2Notification 7 };

```

```

attributeValueChange NOTIFICATION
  BEHAVIOUR          attributeValueChangeBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.AttrValChangeInfo
  AND ATTRIBUTE IDS
    sourceIndicator    sourceIndicator,
    attrValChangeDefinition attrValChangeDefinition;
  REGISTERED AS      { smi2Notification 1 };

qualityofServiceAlarm NOTIFICATION
  BEHAVIOUR          qualityofServiceAlarmBehaviour;
  WITH INFORMATION SYNTAX  Notification-ASN1Module.AlarmInfo
  AND ATTRIBUTE IDS
    probableCause      probableCause,
    perceivedSeverity   perceivedSeverity,
    thresholdInfo      thresholdInfo;
  REGISTERED AS      { smi2Notification 11 };

```

Figura #C4 MIBisode.

C.2.1 MIBodp.

El archivo gdmo de la MIB “MIBodp” (Ver Figura ·#C5) se encuentra en el directorio “/examples” ubicado dentro del directorio donde OSIMIS ha sido instalado para este proyecto, este directorio corresponde a “/tesis/osimis/examples/odp”.

```

-- ##### Class Templates #####

simpleStats MANAGED OBJECT CLASS
  DERIVED FROM    top;
  CHARACTERIZED BY  simpleStatsPackage;
  REGISTERED AS    { uclManagedObjectClass 70 };

-- ##### Name Binding Templates #####

simpleStats-system      NAME BINDING
  SUBORDINATE OBJECT CLASS  simpleStats AND SUBCLASSES;
  NAMED BY
  SUPERIOR OBJECT CLASS    system AND SUBCLASSES;
  WITH ATTRIBUTE            simpleStatsId;
  CREATE                    WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE;
  REGISTERED AS            { uclNameBinding 70 };

-- ##### Package Templates #####

simpleStatsPackage PACKAGE
  ATTRIBUTES
    -- every instance needs a naming attribute
    simpleStatsId      GET;

  ACTIONS
    calcSqrt,
    calcMeanStdDev;

  REGISTERED AS    { uclPackage 70 };

-- ##### Attribute Templates #####

simpleStatsId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.SimpleNameType;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;

```

```

REGISTERED AS      { uclAttributeID 701 };

-- ##### Action Templates #####

calcSqrt ACTION
MODE CONFIRMED;
WITH INFORMATION SYNTAX
    UCLAttribute-ASN1Module.Real;
WITH REPLY SYNTAX
    UCLAttribute-ASN1Module.Real;
REGISTERED AS      { uclAction 701 };

calcMeanStdDev ACTION
MODE CONFIRMED;
WITH INFORMATION SYNTAX
    UCLAttribute-ASN1Module.RealList;
WITH REPLY SYNTAX
    ODPAction-ASN1Module.MeanStdDev;
REGISTERED AS      { uclAction 702 };

```

Figura #C5 MIBodp.

C.2.1 MIBux.

El archivo gdmo de la MIB “MIBux” (Ver Figura #C6) se encuentra en el directorio “/agent” ubicado dentro del directorio donde OSIMIS ha sido instalado para este proyecto, este directorio corresponde a “/tesis/osimis/agent/ux_mib”.

```

-- ##### Class Templates #####

uxObj1 MANAGED OBJECT CLASS
DERIVED FROM      top;
CHARACTERIZED BY  uxObj1Package;
REGISTERED AS     { uclManagedObjectClass 50 };

uxObj2 MANAGED OBJECT CLASS
DERIVED FROM      uxObj1;
CHARACTERIZED BY  uxObj2Package;
REGISTERED AS     { uclManagedObjectClass 51 };

-- ##### Name Binding Templates #####

uxObj1-system      NAME BINDING
SUBORDINATE OBJECT CLASS  uxObj1 AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS    system AND SUBCLASSES;
WITH ATTRIBUTE           uxObjId;
CREATE                   WITH-AUTOMATIC-INSTANCE-NAMING;
DELETE                   ONLY-IF-NO-CONTAINED-OBJECTS;
REGISTERED AS           { uclNameBinding 50 };

uxObj1-managedElement  NAME BINDING
SUBORDINATE OBJECT CLASS  uxObj1 AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS    managedElement AND SUBCLASSES;
WITH ATTRIBUTE           uxObjId;
CREATE                   WITH-AUTOMATIC-INSTANCE-NAMING;
DELETE                   ONLY-IF-NO-CONTAINED-OBJECTS;
REGISTERED AS           { uclNameBinding 51 };

-- ##### Package Templates #####

```

```

uxObj1Package PACKAGE
  ATTRIBUTES
    uxObjId      GET,
    sysTime      GET,
    wiseSaying    REPLACE-WITH-DEFAULT
                  GET-REPLACE,
    nUsers        GET;

  ACTIONS
    getUserNames;

  NOTIFICATIONS
    objectCreation,
    objectDeletion,
    attributeValueChange;

  REGISTERED AS { uclPackage 50 };

uxObj2Package PACKAGE
  ATTRIBUTES
    nUsersThld    GET-REPLACE,
    nUsersTideMark REPLACE-WITH-DEFAULT
                  GET;

  NOTIFICATIONS
    qualityofServiceAlarm; -- for nUsersThld

  REGISTERED AS { uclPackage 51 };

-- ##### Attribute Templates #####

uxObjId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.SimpleNameType;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS { uclAttributeID 501 };

sysTime ATTRIBUTE
  WITH ATTRIBUTE SYNTAX UCLAttribute-ASN1Module.UxTime;
  MATCHES FOR EQUALITY, ORDERING;
  REGISTERED AS { uclAttributeID 502 };

wiseSaying ATTRIBUTE
  WITH ATTRIBUTE SYNTAX
    UCLAttribute-ASN1Module.GraphicString;
  MATCHES FOR EQUALITY, SUBSTRINGS, ORDERING;
  REGISTERED AS { uclAttributeID 503 };

nUsers ATTRIBUTE
  DERIVED FROM gauge;
  REGISTERED AS { uclAttributeID 504 };

nUsersThld ATTRIBUTE
  DERIVED FROM gauge-Threshold;
  REGISTERED AS { uclAttributeID 505 };

nUsersTideMark ATTRIBUTE
  DERIVED FROM tide-Mark;
  REGISTERED AS { uclAttributeID 506 };

-- ##### Action Templates #####

getUserNames ACTION
  MODE CONFIRMED;
  WITH REPLY SYNTAX
    UCLAttribute-ASN1Module.GraphicStringList;
  REGISTERED AS { uclAction 501 };

```

```

-- ##### Notification Templates #####

objectCreation NOTIFICATION
BEHAVIOUR      objectCreationBehaviour;
WITH INFORMATION SYNTAX  Notification-ASN1Module.ObjectInfo
AND ATTRIBUTE IDS
    sourceIndicator      sourceIndicator,
    attributeList        attributeList;
REGISTERED AS      { smi2Notification 6 };

objectDeletion NOTIFICATION
BEHAVIOUR      objectDeletionBehaviour;
WITH INFORMATION SYNTAX  Notification-ASN1Module.ObjectInfo
AND ATTRIBUTE IDS
    sourceIndicator      sourceIndicator,
    attributeList        attributeList;
REGISTERED AS      { smi2Notification 7 };

attributeValueChange NOTIFICATION
BEHAVIOUR      attributeValueChangeBehaviour;
WITH INFORMATION SYNTAX  Notification-ASN1Module.AttrValChangeInfo
AND ATTRIBUTE IDS
    sourceIndicator      sourceIndicator,
    attrValChangeDefinition attrValChangeDefinition;
REGISTERED AS      { smi2Notification 1 };

qualityofServiceAlarm NOTIFICATION
BEHAVIOUR      qualityofServiceAlarmBehaviour;
WITH INFORMATION SYNTAX  Notification-ASN1Module.AlarmInfo
AND ATTRIBUTE IDS
    probableCause        probableCause,
    perceivedSeverity     perceivedSeverity,
    thresholdInfo         thresholdInfo;
REGISTERED AS      { smi2Notification 11 };

```

Figura #C6 MIBux.