



## MIBs

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## BROADHOP-MIB.mib

```
BROADHOP-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY,
    OBJECT-TYPE,
    NOTIFICATION-TYPE,
    enterprises,
    Integer32                FROM SNMPv2-SMI
    DisplayString            FROM SNMPv2-TC;

broadhop MODULE-IDENTITY
    LAST-UPDATED "201201270000Z"
    ORGANIZATION "Broadhop, Inc."
    CONTACT-INFO "Technical Support
                 Web: www.broadhop.com
                 E-mail: support@broadhop.com
                 "
    DESCRIPTION "Top Level MIB-II for BroadHop Enterprise and Common Elements"
    REVISION "201207050000Z"
    DESCRIPTION
        "Add notification clear value to broadhopNotificationSeverity
         to support extended notifications.
        "
    REVISION "201201270000Z"
    DESCRIPTION
        "Smilint validation and cleanup.  Preparation for expansion.
         Break out BroadHop enterprise.  Redo categories.
        "
    REVISION "200906210000Z"
    DESCRIPTION
        "Initial version of this MIB module."
    ::= { enterprises 26878 }

broadhopCommon OBJECT IDENTIFIER ::= { broadhop 100 }

broadhopProducts OBJECT IDENTIFIER ::= { broadhop 200 }
```

```

broadhopCommonNotificationsGroup OBJECT IDENTIFIER ::= { broadhopCommon 1 }

broadhopNotificationParameters OBJECT IDENTIFIER ::= { broadhopCommonNotificationsGroup 1
}

broadhopAlarmDeviceName OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The broadhopAlarmDeviceName object is used to provide the
        name of the device being trapped and may represent the
        Network Element as a whole or may represent a subsystem
        contained in the Network Element.

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 1 }

broadhopAlarmErrorNumber OBJECT-TYPE
    SYNTAX Integer32 (1..32767)
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The broadhopAlarmErrorNumber object is used to provide the
        error number associated with the problem being trapped.

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 2 }

broadhopAlarmErrorText OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The broadhopAlarmErrorText object is used to provide the
        error text associated with the problem being trapped.

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 3 }

broadhopAlarmDateAndTime OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The broadhopAlarmDateAndTime object is used to provide the
        date and time associated with the occurrence of the problem
        being trapped. Format for this field is:
        YYYY-MM-DD at HH:MM:SS GMT-Offset

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 4 }

```

```
broadhopAlarmProbableCause OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The broadhopAlarmProbableCause object is used to provide a
        cause for the problem being trapped.

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 5 }

broadhopAlarmAdditionalInfo OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS deprecated
    DESCRIPTION
        "The broadhopAlarmAdditionalInfo object is used to provide
        any additional information about the problem being trapped
        that can be determined at run time.

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 6 }

broadhopComponentName OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The broadhopComponentName object is used to provide the
        name of the individual system device being trapped.
        Example of value from field mimics HOST-RESOURCE-MIB sysName.

        sessionmgr01

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."
    ::= { broadhopNotificationParameters 7 }

broadhopComponentTime OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The broadhopComponentTime object is used to provide the
        date and time associated with the occurrence of the problem
        being trapped from the system component perspective.
        Example of value from this field mimics hrSystemDate like:

        2012-2-10,13:9:41.0,-7:0

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 8 }
```

```

broadhopComponentNotificationName OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The broadhopComponentNotificatoinName object is used to provide
        the name of the notification. These names are outlined in the
        BroadHop QNS Monitoring and Alert Notification Guide.

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 9 }

broadhopComponentAdditionalInfo OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION
        "The broadhopAdditionalInfo object is used to provide
        any additional information about the problem being trapped
        that can be determined at run time.

        Please note, this value is used for trapping purposes only.
        If you try to read this value, the results are undefined
        and can not be relied upon."

    ::= { broadhopNotificationParameters 10 }

broadhopNotificationPrefix OBJECT IDENTIFIER ::= { broadhopCommonNotificationsGroup 2 }
broadhopNotifications OBJECT IDENTIFIER ::= { broadhopNotificationPrefix 0 }

broadhopCriticalAlarm NOTIFICATION-TYPE
    OBJECTS
    {
        broadhopAlarmDeviceName,
        broadhopAlarmErrorNumber,
        broadhopAlarmErrorText,
        broadhopAlarmDateAndTime,
        broadhopAlarmProbableCause,
        broadhopAlarmAdditionalInfo
    }
    STATUS deprecated
    DESCRIPTION
        "This object is used to report all Critical severity problems
        that may occur with in the system."

    ::= { broadhopNotifications 1 }

broadhopMajorAlarm NOTIFICATION-TYPE
    OBJECTS
    {
        broadhopAlarmDeviceName,
        broadhopAlarmErrorNumber,
        broadhopAlarmErrorText,
        broadhopAlarmDateAndTime,
        broadhopAlarmProbableCause,
        broadhopAlarmAdditionalInfo
    }
    STATUS deprecated
    DESCRIPTION
        "This object is used to report all Major severity problems
        that may occur with in the system."

```

```
 ::= { broadhopNotifications 2 }

broadhopMinorAlarm NOTIFICATION-TYPE
OBJECTS
{
    broadhopAlarmDeviceName,
    broadhopAlarmErrorNumber,
    broadhopAlarmErrorText,
    broadhopAlarmDateAndTime,
    broadhopAlarmProbableCause,
    broadhopAlarmAdditionalInfo
}
STATUS deprecated
DESCRIPTION
    "This object is used to report all Minor severity problems
    that may occur with in the system."

 ::= { broadhopNotifications 3 }

broadhopWarningAlarm NOTIFICATION-TYPE
OBJECTS
{
    broadhopAlarmDeviceName,
    broadhopAlarmErrorNumber,
    broadhopAlarmErrorText,
    broadhopAlarmDateAndTime,
    broadhopAlarmProbableCause,
    broadhopAlarmAdditionalInfo
}
STATUS deprecated
DESCRIPTION
    "This object is used to report all Warning severity problems
    that may occur with in the system."

 ::= { broadhopNotifications 4 }

broadhopIndeterminateAlarm NOTIFICATION-TYPE
OBJECTS
{
    broadhopAlarmDeviceName,
    broadhopAlarmErrorNumber,
    broadhopAlarmErrorText,
    broadhopAlarmDateAndTime,
    broadhopAlarmProbableCause,
    broadhopAlarmAdditionalInfo
}
STATUS deprecated
DESCRIPTION
    "This object is used to report all Indeterminate severity problems
    that may occur with in the system."

 ::= { broadhopNotifications 5 }

broadhopNormalAlarm NOTIFICATION-TYPE
OBJECTS
{
    broadhopAlarmDeviceName,
    broadhopAlarmErrorNumber,
    broadhopAlarmErrorText,
    broadhopAlarmDateAndTime,
    broadhopAlarmProbableCause,
    broadhopAlarmAdditionalInfo
}
```

```

STATUS deprecated
DESCRIPTION
    "This object is used to report all Normal severity problems
    that may occur with in the system."

 ::= { broadhopNotifications 6 }

broadhopClearAlarm NOTIFICATION-TYPE
OBJECTS
{
    broadhopAlarmDeviceName,
    broadhopAlarmErrorNumber,
    broadhopAlarmErrorText,
    broadhopAlarmDateAndTime,
    broadhopAlarmProbableCause,
    broadhopAlarmAdditionalInfo
}
STATUS deprecated
DESCRIPTION
    "This object is used to report all alarm clearing problems
    that may occur with in the system."

 ::= { broadhopNotifications 7 }

broadhopNotificationFacility OBJECT-TYPE
SYNTAX      INTEGER {
                hardware(0),
                network(1),
                virtualization(2),
                operatingsystem(3),
                application(4),
                process(5),
                none(6)
            }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This object determines the facility or layer which
    notifications are sourced.  Except for none, all
    facilities are sourced by size - hardware is a bigger
    size than process.  This roughly mimics the Unix
    syslog facility.  Used with severity, facility
    fully categorizes an alert notification.
    "
DEFVAL { none }
 ::= { broadhopCommonNotificationsGroup 3 }

broadhopNotificationSeverity OBJECT-TYPE
SYNTAX      INTEGER {
                emergency(0),
                alert(1),
                critical(2),
                error(3),
                warning(4),
                notice(5),
                info(6),
                debug(7),
                none(8),
                clear(9)
            }
MAX-ACCESS  read-only
STATUS      current
DESCRIPTION
    "This object determines the severity or level of sourced

```

```

        notifications. All severities are facilities are sourced
        by size - emergency is a worse than debug. This roughly
        mimics the Unix syslog facility. Used with facility,
        severity categorizes an alert notification.
    "
    DEFVAL { none }
    ::= { broadhopCommonNotificationsGroup 4 }

END

```

## BROADHOP-NOTIFICATION-MIB.mib

```

BROADHOP-NOTIFICATION-MIB DEFINITIONS ::=BEGIN

IMPORTS
    MODULE-IDENTITY,
    NOTIFICATION-TYPE                               FROM SNMPv2-SMI
    broadhopComponentName,
    broadhopComponentTime,
    broadhopComponentNotificationName,
    broadhopComponentAdditionalInfo,
    broadhopNotificationFacility,
    broadhopNotificationSeverity                     FROM BROADHOP-MIB
    broadhopProductsQNS                             FROM BROADHOP-QNS-MIB;

broadhopProductsQNSNotification MODULE-IDENTITY
    LAST-UPDATED "201202100000Z"
    ORGANIZATION "Broadhop, Inc."
    CONTACT-INFO
        "Technical Support
        Web: www.broadhop.com
        E-mail: support@broadhop.com
        "
    DESCRIPTION "Top Level MIB-II Definitions for BroadHop QNS
        Notifications and Traps
        "
    REVISION "201202100000Z"
    DESCRIPTION "Top Level MIB-II Definitions for BroadHop QNS Product"
    ::= { broadhopProductsQNS 2 }

--
-- Ensure SMIV1 and SMIV2 convertability with reverse mappability (ie.
broadhopProductQNSNotifications(0))
--
broadhopProductsQNSNotifications OBJECT IDENTIFIER ::= { broadhopProductsQNS 0 }

broadhopQNSComponentNotification NOTIFICATION-TYPE
    OBJECTS { broadhopComponentName,
        broadhopComponentTime,
        broadhopComponentNotificationName,
        broadhopNotificationFacility,
        broadhopNotificationSeverity,
        broadhopComponentAdditionalInfo }
    STATUS current
    DESCRIPTION "
        Trap from any QNS component - ie. device.
        "
    ::= { broadhopProductsQNSNotifications 1 }

broadhopQNSApplicationNotification NOTIFICATION-TYPE

```

```

OBJECTS { broadhopComponentName,
          broadhopComponentTime,
          broadhopComponentNotificationName,
          broadhopNotificationFacility,
          broadhopNotificationSeverity,
          broadhopComponentAdditionalInfo }
STATUS current
DESCRIPTION "
    Notification Trap from any QNS application - ie. runtime.
    "
::= { broadhopProductsQNSNotifications 2 }

END

```

## Sample Alert Rule Configuration



**Note** The following alert rule configuration is for reference only. You should configure your alert rules as per your requirement.

```

alert rule DISK_FULL
  expression "node_filesystem_free{job='node_exporter',filesystem!~\"^/(|$)\"}
/node_filesystem_size{job='node_exporter'} < 0.90"
  event-host-label instance
  message "Disk Filesystem/usage is more than 90%"
  snmp-facility hardware
  snmp-severity critical
  snmp-clear-message "Disk filesystem/usage is greater than 10%"
!

alert rule HIGH_LOAD
  expression "load_value5 > 3"
  event-host-label instance
  message "load average value for 5 minutes is greater than 3 current value is
{{ $value }}"
  snmp-facility hardware
  snmp-severity major
  snmp-clear-message "load average value for 5 minutes is lower than 3"
!

alert rule LOW_MEMORY
  expression "round((node_memory_MemFree
+node_memory_Buffers+node_memory_Cached)/node_memory_MemTotal *100) < 80"
  event-host-label instance
  message "Available RAM is less than 80% current value is {{ $value }}"
  snmp-facility hardware
  snmp-severity critical
  snmp-clear-message "Available RAM is more than 80%"
!

alert rule PROCESS_STATE
  expression "docker_service_up==3"
  event-host-label container_name
  message "{{ $labels.service_name }} instance {{ $labels.module_instance }} of
module {{ $labels.module }} is in Aborted state"
  snmp-facility application
  snmp-severity critical

```

```

snmp-clear-message "{{ $labels.service_name }}" instance {{ $labels.module_instance }} of
module {{ $labels.module }} is moved from Aborted state"
!

alert rule LINK_STATE
expression      "link_state == 0"
event-host-label instance
message        "{{ $labels.interface }}" is down on {{ $labels.instance }}"
snmp-facility  hardware
snmp-severity  critical
snmp-clear-message "{{ $labels.interface }}" is up on {{ $labels.instance }}"
!

alert rule HIGH_CPU_USAGE
expression      "rate(node_cpu{mode='system'} [10s])*100 > 30"
event-host-label instance
message        "CPU usage in last 10 sec is more than 30% current value {{ $value }}"
snmp-facility  hardware
snmp-severity  critical
snmp-clear-message "CPU usage in last 10 sec is lower than 30%"
!

alert rule QNS_JAVA_STARTED
expression      "docker_service_up==1"
event-host-label container_name
message        "{{ $labels.service_name }}" instance {{ $labels.module_instance }} of
module {{ $labels.module }} is in Started state."
snmp-facility  application
snmp-severity  error
snmp-clear-message "{{ $labels.service_name }}" instance {{ $labels.module_instance }} of
module {{ $labels.module }} is moved from started state"
!

alert rule IP_NOT_REACHABLE
expression      "probe_success==0"
event-host-label instance
message        "VM/VIP IP {{ $labels.instance }} is not reachable."
snmp-facility  networking
snmp-severity  critical
snmp-clear-message "VM/VIP IP {{ $labels.instance }} is reachable"
!

alert rule DIAMETER_PEER_DOWN
expression      "peer_status==0"
event-host-label remote_peer
message        "Diameter peer is down."
snmp-facility  application
snmp-severity  error
snmp-clear-message "VM/Diameter peer is up."
!

alert rule DRA_PROCESS_UNHEALTHY
expression      "docker_service_up!=2"
event-host-label container_name
message        "{{ $labels.service_name }}" instance {{ $labels.module_instance }} of
module {{ $labels.module }} is not healthy"
snmp-facility  application
snmp-severity  critical
snmp-clear-message "{{ $labels.service_name }}" instance {{ $labels.module_instance }} of
module {{ $labels.module }} is healthy"
!

# REPEAT for each shard - replace shard-1 with the shard that is configured
alert rule DB_SHARD_DOWN

```

```

expression      "absent(mongodb_mongod_replset_member_state{shard_name="shard-1"})==1"
event-host-label shard_name
message         "All DB Members of a replica set {{ $labels.shard_name }} are down"
snmp-facility   application
snmp-severity   critical
snmp-clear-message "All DB Members of a replica set {{ $labels.shard_name }} are not down"
!

# REPEAT for each shard - replace shard-1 with the shard that is configured
alert rule NO_PRIMARY_DB
expression      "absent(mongodb_mongod_replset_member_health
{shard_name="shard-1",state="PRIMARY"})==1"
event-host-label shard_name
message         "Primary DB member not found for replica set {{ $labels.shard_name }}"
snmp-facility   application
snmp-severity   critical
snmp-clear-message "Primary DB member found for replica set {{ $labels.shard_name }}"
!

alert rule SECONDARY_DB_DOWN
expression      "(mongodb_mongod_replset_member_state != 2) and
((mongodb_mongod_replset_member_state==8) or (mongodb_mongod_replset_member_state==6))"
event-host-label shard_name
message         "Secondary Member {{ $labels.name }} of replica set {{ $labels.shard_name
}} is down"
snmp-facility   application
snmp-severity   critical
snmp-clear-message "Secondary Member {{ $labels.name }} of replica set {{ $labels.shard_name
}} is up"
!
```