DECnet Phase IV MIB Extensions

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DECnet Phase IV MIB Working Group

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Status of this Memo

This draft document will be submitted to the RFC editor as a proposed extension to the SNMP MIB. Distribution of this document is unlimited. Please send comments or corrections to the editor.

Abstract

This memo defines a set of DECnet Phase IV extensions that have been created for the Internet MIB. When used in conjunction with the structure of management information (RFC 1155), the management information base for network management of TCP/IP-based internets (RFC 1213) and the Simple Network Management Protocol (RFC 1157), it will be possible to provide integrated network management of combined TCP/IP and DECnet Phase IV based internets. This document was produced by the DECnet Phase IV MIB working group.

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CONTENTS

1 Introduction

With the adoption of The Simple Network Management Protocol (RFC 1157), the management information base for network management of TCP/IP-based internets (RFC 1213), and the structure of management information (RFC 1155), by the Internet, and a large number of vendor implementations of these standards in commercially available products, it became possible to provide a higher level of effective network management in TCP/IP-based internets than previously available. With the growth in the use of these standards, network managers desired to use this environment as a base for providing integrated network management of multi-protocol networks.

DECnet Phase IV is one widely used protocol which often coexists in IP-based internets. This memo provides the mechanisms by which IP-based management stations can effectively manage DECnet Phase IV based systems (especially router products) in an integrated fashion through the use of the standard Internet SMI, MIB and Simple Network Management Protocol.

DECnet Phase IV objects have been defined to be used in conjunction with the Internet MIB to allow access and control of these new objects by the Internet community. Additional support for other DECnet-based protocols such as RBMS (remote bridge management software) or other Digital Equipment Corporation Specific Hardware platforms is not included in this document.

2 Selected Objects

The objects included in this memo have been created from the DIGITAL Network Architecture Network Management Functional Specification Version 4.0.0 Dated July 1983. An attempt has been made to provide a reasonable ordering of these variables into groups. These groups are:

- System Group
- Network Management Group
- Session Group
- End Group
- Routing Group
- Circuit Group
- DDCMP Group
- DDCMP Multipoint Control Group
- Ethernet Group
- Counters Group
- Adjacency Group
- Line Group
- Non Broadcast Line Group
- Area Group

An effort has also been made to preserve the original syntax of the object wherever possible, for example, a DECnet Phase IV object is Executor State. This was originally coded as a NICE (Network Information and Control Exchange) data type which is a Coded single field object of 1 byte in length. When converted for inclusion into the Internet MIB using the Internet SMI, it became an enumerated integer.

3 Objects

All objects in this memo are described using the standard Internet SMI and BER of RFC 1155. A complete description of an object will include the name, syntax and encoding. Just as with objects supported in the MIB (RFC 1156), an object name is identified with an object identifier which has been administratively assigned. This identifies an Object Type. When an object type is combined with a specific instance, the particular object is uniquely identified. The use of Object Descriptors in this memo is consistent with that of RFC 1156 - they are text strings meant to be read by humans. The descriptors have been taken from the original DIGITAL Network Architecture Network Management Functional Specification Version 4.0.0 Dated July 1983 which defined DECnet Phase IV objects. These names were then massaged to put them in a form as consistent as possible with object type names listed in the standard Internet MIB. Object defintion information is also taken directly from the Network Architecture Network Managment Functional Specification cited above wherever possible. In this document, EXECUTOR is intended to reference only the DECnet software and is not intended to effect any other protocols which may be running on the system.

3.1 Format of Definitions

An object in this memo is specified by five fields of information: Object, Syntax, Definition, Access, and Status.

The OBJECT is a textual name (OBJECT DESCRIPTOR) for that object type combined with an administratively obtained OBJECT IDENTIFIER.

SYNTAX: For each object type, its abstract syntax is presented using the ASN.1 specified in RFC 1155.

DEFINITION: A general description of the object type. Its original purpose in the DECnet Phase IV environment is given so that all implementers and users will consistently interpret the information contained in each object type. Changes in format to make the object consistent with RFC 1155 are also noted.

ACCESS: The standard access keywords supported in RFC 1156 are used. The keywords used in this MIB are: read-only, read-write, and, not-accessible.

STATUS: The status field is used to describe with a single keyword whether the object type is mandatory or optional. Status keywords of obsolete and deprecated are not used in this memo since this is the first version of the DECnet Phase IV MIB.

3.2 Textual Conventions

New datatypes have been introduced as a textual conventions in this DECnet Phase IV MIB document. The purpose of these additions is to facilitate understanding of new objects in this MIB. No changes to the SMI or the SNMP are necessary to support these conventions which are described in 4.0 (Object Definitions).

4 Object Definitions

```
     RFCxxxx-phivMIB

     DEFINITIONS ::= BEGIN

     IMPORTS
         mgmt, OBJECT-TYPE, NetworkAddress, IpAddress,
         Counter, Gauge, TimeTicks
           FROM RFC1155-SMI
         DisplayString
           FROM RFC1213;

-- DECNet Phase-IV MIB

     phiv             OBJECT IDENTIFIER ::= { experimental 5 }

-- textual conventions

PhivAddr ::= OCTET STRING (SIZE (2))
-- This data type is intended as a short word representation of
-- standard DECnet Phase IV addresses. DECnet addresses are
-- hierarchically structured numbers assigned to a particular DECnet
-- node. The address is structured so that the area number is
-- contained in the most significant 6 bits of the first octet.  The
-- next 2 bits of the first octet contain the first two bits of the
-- host address.  The remainder of the host address is contained in
-- the second octet.

PhivCounter ::= INTEGER
-- This data type has been created for DECnet  counters.  These
-- counters latch at their maximum specified value until either
-- the system is restared, or they are reset to zero by the user
-- or management software.

-- groups in the decnetiv mib

      phivSystem             OBJECT IDENTIFIER ::= { phiv 1 }
      phivManagement         OBJECT IDENTIFIER ::= { phiv 2 }
      session                OBJECT IDENTIFIER ::= { phiv 3 }
      end                    OBJECT IDENTIFIER ::= { phiv 4 }
      routing                OBJECT IDENTIFIER ::= { phiv 5 }
      circuit                OBJECT IDENTIFIER ::= { phiv 6 }
      ddcmp                  OBJECT IDENTIFIER ::= { phiv 7 }
      control                OBJECT IDENTIFIER ::= { phiv 8 }
      ethernet               OBJECT IDENTIFIER ::= { phiv 9 }
      counters               OBJECT IDENTIFIER ::= { phiv 10 }
      adjacency              OBJECT IDENTIFIER ::= { phiv 11 }
      line                   OBJECT IDENTIFIER ::= { phiv 12 }
      nonBroadcastLine       OBJECT IDENTIFIER ::= { phiv 14 }
      area                   OBJECT IDENTIFIER ::= { phiv 15 }

-- System Group

-- The implementation of the System Group is mandatory for
-- all systems.

phivSystemState OBJECT-TYPE
     SYNTAX INTEGER {
         on (1),
         off (2),
         shut (3),
         restricted (4)
     }
     ACCESS read-write
     STATUS mandatory
     DESCRIPTION
         "This represents the operational state of the executor node.
         The possible states are:
```

```
         ON          Allows logical links.
         OFF         Allows no new links, terminates existing
                     links, and stops routing traffic through.
         SHUT        Allows no new logical links, does not
                     destroy existing logical links, and goes
                     to the OFF state when all logical links are
                     gone.
         RESTRICTED  Allows no new incoming logical links from
                     other nodes.

         NOTE: These values are incremented by one compared to the
         standard DECnet values in order to maintain compliance with
         RFC 1155)."
     ::= { phivSystem 1 }

phivExecIdent OBJECT-TYPE
    SYNTAX DisplayString ( SIZE (0..32) )
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This is a text string that describes the executor node
        (for example, 'Research Lab').  The string is up to 32
        characters of any type."
    ::= { phivSystem 2 }

-- Network Management Group

-- The implementation of the Network Management Group is mandatory
-- for all systems which contain a DECnet style management version.

phivMgmtMgmtVers OBJECT-TYPE
     SYNTAX DisplayString (SIZE (0..255) )
     ACCESS read-only
     STATUS mandatory
     DESCRIPTION
         "This is the read-only Network Management Version, consisting
         of the version number, the Engineering Change Order (ECO)
         number, and the user ECO number (for example, 3.0.0). This
         parameter applies to the executor node only."
     ::= { phivManagement 1 }

-- Session Layer Group

-- The implementation of the Session Layer Group is mandatory for
-- all systems that implement session layer communications.

phivSessionSystemName OBJECT-TYPE
    SYNTAX DisplayString ( SIZE (0..6) )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Name to be associated with the node identification.
        Only one name can be assigned to a node address or a
        circuit identification. No name should be used more than
        once in a DECnet network. Node-name is one to six upper
        case alphanumeric characters with at least one alpha
        character. A length of 0 indicates no name."
    ::= { session 1 }
```

```
phivSessionInTimer OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum duration between the time a
        connect is received for a process at the executor node and the
        time that process accepts or rejects it. If the connect is not
        accepted or rejected by the user within the number of seconds
        specified, Session Control rejects it for the user.  A 0
        indicates no timer is running."
    ::= { session 2 }

phivSessionOutTimer OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the duration between the time the
        executor requests a connect and the time that connect is
        acknowledged by the destination node. If the connect is not
        acknowledged within the number of seconds specified, Session
        Control returns an error.  A 0 indicates no timer is running."
    ::= { session 3 }

-- End Communication Layer Group

-- The implementation of the End Communication Layer Group is
-- mandatory for all systems that implement end layer
-- communications.

-- Remote State Table

phivEndRemoteTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivEndRemoteEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about the state of sessions between the node under
        study and the nodes found in the table."
    ::= { end 1 }

phivEndRemoteEntry OBJECT-TYPE
    SYNTAX PhivEndRemoteEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about a particular remote node as seen from the end
         communication layer."
    INDEX  { phivEndRemoteHostNodeID }
    ::= { phivEndRemoteTable 1 }

PhivEndRemoteEntry ::=
    SEQUENCE {
        phivEndRemoteHostNodeID
            PhivAddr,
        phivEndRemoteState
            INTEGER,
        phivEndCircuitIndex
            INTEGER,
        phivEndActiveLinks
            INTEGER,
        phivEndDelay
            INTEGER (0..65535)
     }
```

```
phivEndRemoteHostNodeID OBJECT-TYPE
    SYNTAX PhivAddr -- OCTET STRING (SIZE (2))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value is the address of the remote node to be
        evaluated."
    ::= { phivEndRemoteEntry 1 }

phivEndRemoteState OBJECT-TYPE
    SYNTAX INTEGER {
        on (1),
        off (2),
        shut (3),
        restricted (4)
    }
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This represents the operational state of the remote node
        being evaluated.
        The possible states are:

        ON          Allows logical links.
        OFF         Allows no new links, terminates existing
                    links, and stops routing traffic through.
        SHUT        Allows no new logical links, does not
                    destroy existing logical links, and goes
                    to the OFF state when all logical links are
                    gone.
        RESTRICTED  Allows no new incoming logical links from other
                    nodes.

        NOTE: These values are incremented by one compared to the
        standard DECnet values in order to maintain compliance with
        RFC 1155."
    ::= { phivEndRemoteEntry 2 }

phivEndCircuitIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "A unique index value for each known circuit used to communicate
        with the remote node.  This is the same value as phivCircuitIndex."
    ::= { phivEndRemoteEntry 3 }

phivEndActiveLinks OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only parameter represents the number of active
        logical links from the executor to the destination node."
    ::= { phivEndRemoteEntry 4 }

phivEndDelay OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only parameter is the average round trip delay in
        seconds to the destination node. This parameter is kept on a
        remote node basis."
    ::= { phivEndRemoteEntry 5 }

-- End System Counter Table
```

```
phivEndCountTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivEndCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about the counters associated with each end
        system that is known to the entity. These counters reflect
        totals from the perspective of the executor node."
    ::= { end 2 }

phivEndCountEntry OBJECT-TYPE
    SYNTAX PhivEndCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about a particular session between two end
        systems."
    INDEX  { phivEndCountHostNodeID }
    ::= { phivEndCountTable 1 }

PhivEndCountEntry ::=
    SEQUENCE {
        phivEndCountHostNodeID
            PhivAddr,
        phivEndCountSecsLastZeroed
            PhivCounter (0..65535),
        phivEndCountUsrBytesRec
            PhivCounter,
        phivEndCountUsrBytesSent
            PhivCounter,
        phivEndUCountUsrMessRec
            PhivCounter,
        phivEndCountUsrMessSent
            PhivCounter,
        phivEndCountTotalBytesRec
            PhivCounter,
        phivEndCountTotalBytesSent
            PhivCounter,
        phivEndCountTotalMessRec
            PhivCounter,
        phivEndCountTotalMessSent
            PhivCounter,
        phivEndCountConnectsRecd
            PhivCounter (0..65535),
        phivEndCountConnectsSent
            PhivCounter (0..65535),
        phivEndCountReponseTimeouts
            PhivCounter (0..65535),
        phivEndCountRecdConnectResErrs
            PhivCounter (0..65535)
    }
phivEndCountHostNodeID OBJECT-TYPE
    SYNTAX PhivAddr -- OCTET STRING (SIZE (2))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value is the address of the remote node to be
        evaluated."
    ::= { phivEndCountEntry 1 }
```

```
phivEndCountSecsLastZeroed OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value is the number of seconds that have elapsed since
        the counters for the node in this table row were last set to
        zero. This counter is located  in the network management layer,
        but is returned with the end system information which follows."
    ::= { phivEndCountEntry 2 }

phivEndCountUsrBytesRec OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of user bytes received from the target host."
    ::= { phivEndCountEntry 3 }

phivEndCountUsrBytesSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of user bytes sent to the target host."
    ::= { phivEndCountEntry 4 }

phivEndUCountUsrMessRec OBJECT-TYPE
     SYNTAX PhivCounter
     ACCESS read-only
     STATUS mandatory
     DESCRIPTION
         "Number of user messages received from the target host."
     ::= { phivEndCountEntry 5 }

phivEndCountUsrMessSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of user messages sent to the target host."
    ::= { phivEndCountEntry 6 }

phivEndCountTotalBytesRec OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of bytes received from the target host."
    ::= { phivEndCountEntry 7 }

phivEndCountTotalBytesSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of bytes sent to the target host."
    ::= { phivEndCountEntry 8 }

phivEndCountTotalMessRec OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of messages received from the target host."
    ::= { phivEndCountEntry 9 }
```

```
phivEndCountTotalMessSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of messages sent to the target host."
    ::= { phivEndCountEntry 10 }

phivEndCountConnectsRecd OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of connects received from the target host."
    ::= { phivEndCountEntry 11 }

phivEndCountConnectsSent OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of connects sent to the target host."
    ::= {phivEndCountEntry 12 }

phivEndCountReponseTimeouts OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of response timeouts."
    ::= { phivEndCountEntry 13 }

phivEndCountRecdConnectResErrs OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of received connect resource errors."
    ::= {phivEndCountEntry 14 }

-- additional End System objects

phivEndMaxLinks OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum active logical link count
        allowed for the executor."
    ::= { end 3 }

phivEndNSPVers OBJECT-TYPE
    SYNTAX DisplayString (SIZE (0..255) )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only parameter represents the version number of
         the node End Communication S/W. The format is version number,
         ECO, and user ECO, e.g., 4.1.0"
    ::= { end 4 }
```

```
phivEndRetransmitFactor OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum number of times the
        source End Communication at the executor node will
        restart the retransmission timer when it expires. If
        the number is exceeded, Session Control disconnects the
        logical link for the user."
    ::= { end 5 }

phivEndDelayFact OBJECT-TYPE
    SYNTAX INTEGER (1..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This is the number by which to multiply one sixteenth of the
        estimated round trip delay to a node to set the retransmission
        timer to that node."
    ::= { end 6 }

phivEndDelayWeight OBJECT-TYPE
    SYNTAX INTEGER (1..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This number represents the weight to apply to a current round
        trip delay estimate to a remote node when updating the
        estimated round trip delay to a node. On some systems the
        number must be 1 less than a power of 2 for computational
        efficiency."
    ::= { end 7 }

phivEndInactivityTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum duration of inactivity
        (no data in either direction) on a logical link before the
        node checks to see if the logical link still works. If no
        activity occurs within the minimum number of seconds, End
        Communication generates artificial traffic to test the link
        (End Communication specification)."
    ::= { end 8 }

phivEndCountZeroCount OBJECT-TYPE
    SYNTAX INTEGER {
      other (1),
      reset (2)
    }
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "When this value is set to 2, all of the counters in the End
        System Counter Table are set to zero."
    ::= { end 9 }

phivEndMaxLinksActive OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the high water mark for the number of links
         that were active at any one time."
    ::= { end 10 }
```

```
-- Routing Layer Group

-- The implementation of the Routing Layer Group is mandatory for
-- all systems that implement level 1 routing layer communications.

phivRouteBroadcastRouteTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value determines the maximum time in seconds allowed
         between Routing updates on Ethernet circuits. When this timer
         expired before a routing update occurs, a routing update is
         forced.  With a standard calculation, Routing also uses this
         timer to enforce a minimum delay between routing updates."
    ::= { routing 1 }

phivRouteBuffSize OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This parameter value determines the maximum size of
         a Routing message. It therefore determines the maximum
         size message that can be forwarded.  This size includes
         protocol overhead down to and including the End Communication
         layer, plus a constant value of 6. (This value of 6 is
         included to provide compatibility with the parameter definition
         in Phase III, which included the Routing overhead.) It does not
         include Routing or Data link overhead (except for the constant
         value of 6). There is one buffer size for all circuits.

         NOTE: The BUFFER SIZE defines the maximum size messages
         that the Routing layer can forward. The SEGMENT BUFFER SIZE
         (defined below) defines the maximum size messages that the End
         Communication layer can transmit or receive. The SEGMENT
         BUFFER SIZE is always less than or equal to the BUFFER SIZE.
         Normally the two parameters will be equal. They may be
         different to allow the network manager to alter buffer sizes
         on all nodes without interruption of service. They both
         include an extra 6 bytes for compatibility with Phase
         III."
    ::= { routing 2 }

phivRouteRoutingVers OBJECT-TYPE
    SYNTAX DisplayString ( SIZE (0..255) )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only parameter identifies the executor node's
        Routing version number.  The format is version number,
        ECO, and user ECO, e.g., 4.1.0"
    ::= { routing 3 }

phivRouteMaxAddr OBJECT-TYPE
    SYNTAX INTEGER (1..1023)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the largest node number and,
        therefore, number of nodes that can be known about
        by the executor node's home area."
    ::= { routing 4 }
```

```
phivRouteMaxBdcastNonRouters OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum total number of nonrouters
        the executor node can have on its Ethernet circuits."
    ::= { routing 5 }

phivRouteMaxBdcastRouters OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum total number of routers the
        executor node can have on its Ethernet circuits."
    ::= { routing 6 }

phivRouteMaxBuffs OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum number of transmit buffers
        that Routing may use for all circuits."
    ::= { routing 7 }

phivRouteMaxCircuits OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum number of Routing circuits
        that the executor node can know about."
    ::= { routing 8 }

phivRouteMaxCost OBJECT-TYPE
    SYNTAX INTEGER (1..1022)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum total path cost allowed
        from the executor to any node within an area. The path cost is
        the sum of the circuit costs along a path between two nodes.
        This parameter defines the point where the executor node's
        Routing routing decision algorithm declares another node
        unreachable because the cost of the least costly path to the
        other node is excessive. For correct operation, this parameter
        must not be less than the maximum path cost of the network."
    ::= { routing 9 }

phivRouteMaxHops OBJECT-TYPE
    SYNTAX INTEGER (1..30)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum number of routing hops
        allowable from the executor to any other reachable node within
        an area. (A hop is the logical distance over a circuit between
        two adjacent nodes.) This parameter defines the point where
        the executor node's Routing routing decision algorithm
        declares another node unreachable because the length of the
        shortest path between the two nodes is too long. For correct
        operation, this parameter must not be less than the network
        diameter. (The network diameter is the reachability distance
        between the two nodes of the network having the greatest
        reachability distance, where reachability distance is the
```

```
        length the shortest path between a given pair of nodes.)"
    ::= { routing 10 }

phivRouteMaxVisits OBJECT-TYPE
    SYNTAX INTEGER (1..63)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum number of nodes a message
        coming into the executor node can have visited. If the message
        is not for this node and the MAXIMUM VISITS number is exceeded,
        the message is discarded. The MAXIMUM VISITS parameter defines
        the point where the packet lifetime control algorithm discards
        a packet that has traversed too many nodes. For correct
        operation, this parameter must not be less than the maximum
        path length of the network. (The maximum path length is the
        routing distance between the two nodes of the network having
        the greatest routing distance, where routing distance is the
        length of the least costly path between a given pair of
        nodes.)"
    ::= { routing 11 }

phivRouteRoutingTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value determines the maximum time in seconds allowed
        between Routing updates on non-Ethernet circuits. When this
        timer expires before a routing update occurs, a routing update
        is forced."
    ::= { routing 12 }

phivRouteSegBuffSize OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This parameter value determines the maximum size of an
        end-to-end segment. The size is a decimal integer in the range
        1-65535. This size is in bytes. This size includes protocol
        overhead down to and including the End Communication layer,
        plus a constant value of 6.  (This value of 6 is included to
        provide compatibility with the BUFFER SIZE parameter
        definition.) It does not include Routing or Data link overhead
        (except for the constant value of 6)."
    ::= { routing 13 }

phivRouteType OBJECT-TYPE
    SYNTAX INTEGER {
        routing-III (1),
        nonrouting-III (2),
        area (3),
        routing-IV (4),
        nonrouting-IV (5)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This parameter indicates the type of the executor node. The
        node-type is one of the following:

        routing-III
        nonrouting-III
        routing-IV
        ronrouting-IV
        area
```

```
        A routing node has full routing capability. A nonrouting node
        contains a subset of the Routing routing modules. The III and
        IV indicate the DNA phase of the node. Nonrouting nodes can
        deliver and receive packets to and from any node, but cannot
        route packets from other nodes through to other nodes. An
        area node routes between areas. Refer to the Routing
        specification for details.

        For adjacent nodes, this is a read-only parameter that
        indicates the type of the reachable adjacent node.
        NOTE: The ROUTING-III and NONROUTING-III values are
        incremented by one compared to the standard DECnet values in
        order to maintain compliance with RFC 1155)"
    ::= { routing 14 }

phivRouteCountAgedPktLoss OBJECT-TYPE
    SYNTAX PhivCounter (0..127)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of aged packet losses."
    ::= { routing 15 }

phivRouteCountNodeUnrPktLoss OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of node unreachable packet losses."
    ::= { routing 16 }

phivRouteCountOutRngePktLoss OBJECT-TYPE
    SYNTAX PhivCounter (0..127)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of node out-of-range packet losses."
    ::= { routing 17 }

phivRouteCountOverSzePktLoss OBJECT-TYPE
    SYNTAX PhivCounter (0..127)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of Oversized packet losses."
    ::= { routing 18 }

phivRouteCountPacketFmtErr OBJECT-TYPE
    SYNTAX PhivCounter (0..127)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of packet format errors."
    ::= { routing 19 }

phivRouteCountPtlRteUpdtLoss OBJECT-TYPE
    SYNTAX PhivCounter (0..127)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of partial routing update losses."
    ::= { routing 20 }
```

```
phivRouteCountVerifReject OBJECT-TYPE
    SYNTAX PhivCounter (0..127)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of verification rejects."
    ::= { routing 21 }

-- Level 1 Routing Table

phivLevel1RouteTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivLevel1RouteEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about the currently known DECnet Phase IV Routes."
    ::= { routing 22 }

phivLevel1RouteEntry OBJECT-TYPE
    SYNTAX PhivLevel1RouteEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about the currently known DECnet Phase IV Routes."
    INDEX  { phivLevel1RouteNodeAddr }
    ::= { phivLevel1RouteTable 1 }

PhivLevel1RouteEntry ::=
    SEQUENCE {
        phivLevel1RouteNodeAddr
            PhivAddr,
        phivLevel1RouteCircuitIndex
            INTEGER,
        phivLevel1RouteCost
            INTEGER (0..65535),
        phivLevel1RouteHops
            INTEGER (0..127),
        phivLevel1RouteNextNode
            PhivAddr
         }

phivLevel1RouteNodeAddr OBJECT-TYPE
    SYNTAX PhivAddr -- OCTET STRING (SIZE (2))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value is the address of the node about which routing
        information is contained in this level 1 routing table."
    ::= { phivLevel1RouteEntry 1 }

phivLevel1RouteCircuitIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "A unique index value for each known circuit. This is the index to
        the circuit state table and is the same value as phivCircuitIndex."
    ::= { phivLevel1RouteEntry 2 }
```

```
phivLevel1RouteCost OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only parameter represents the total cost over the
        current path to the destination node. Cost is a positive
        integer value associated with using a circuit. Routing routes
        messages (data) along the path between two nodes with the
        smallest cost. COST is kept on a remote node basis."
    ::= { phivLevel1RouteEntry 3 }

phivLevel1RouteHops OBJECT-TYPE
    SYNTAX INTEGER (0..127)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only parameter represents the number of hops over
        to a destination node. A hop is Routing value representing
        the logical distance between two nodes in a network. HOPS is
        kept on a remote node basis."
    ::= { phivLevel1RouteEntry 4 }

phivLevel1RouteNextNode OBJECT-TYPE
    SYNTAX PhivAddr -- OCTET STRING (SIZE (2))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only value indicates the next node on the circuit
        used to get to the node under scrutiny (next hop)."
    ::= { phivLevel1RouteEntry 5 }

-- Additional routing parameters

phivRouteCountZeroCount OBJECT-TYPE
    SYNTAX INTEGER {
      other (1),
      reset (2)
    }
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "When this value is set to 2, the following objects are set
         to Zero: phivRouteCountAgedPktLoss, phivRouteCountNodeUnrPktLoss,
         phivRouteCountOutRngePktLoss, phivRouteCountOverSzePktLoss,
         phivRouteCountPacketFmtErr, phivRouteCountPtlRteUpdtLoss, and
         phivRouteCountVerifReject."
    ::= { routing 23 }

phivRouteSystemAddr OBJECT-TYPE
    SYNTAX PhivAddr
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "DECnet Phase IV node address."
    ::= { routing 24 }

-- Circuit Group

-- The implementation of the Circuit Group is mandatory for all systems.

-- Circuit Parameters Table
```

```
phivCircuitParametersTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivCircuitParametersEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about the parameters associated with all circuits
         currently known."
    ::= {circuit 1 }

phivCircuitParametersEntry OBJECT-TYPE
    SYNTAX PhivCircuitParametersEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Parameters information about all circuits currently known."
     INDEX  { phivCircuitIndex }
     ::= { phivCircuitParametersTable 1 }

PhivCircuitParametersEntry ::=
    SEQUENCE {
        phivCircuitIndex
            INTEGER,
        phivCircuitLineIndex
            INTEGER,
        phivCircuitCommonState
            INTEGER,
        phivCircuitCommonSubState
            INTEGER,
        phivCircuitCommonName
            DisplayString,
        phivCircuitExecRecallTimer
            INTEGER (0..65535),
        phivCircuitCommonType
            INTEGER,
        phivCircuitService
            INTEGER,
        phivCircuitExecCost
            INTEGER (1..25),
        phivCircuitExecHelloTimer
            INTEGER (1..8191)
    }

phivCircuitIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "A unique index value for each known circuit."
    ::= { phivCircuitParametersEntry 1 }

phivCircuitLineIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The line on which this circuit is active.  This is
        the same as the IfIndex."
    ::= { phivCircuitParametersEntry 2 }
```

```
phivCircuitCommonState OBJECT-TYPE
    SYNTAX INTEGER {
        on (1),
        off (2),
        service (3),
        cleared (4)
    }
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the circuit's Network Management
        operational state. NOTE: These values are incremented by one
        compared to the standard DECnet values in order to maintain
        compliance with RFC 1155."
    ::= { phivCircuitParametersEntry 3 }

phivCircuitCommonSubState OBJECT-TYPE
    SYNTAX INTEGER {
        starting (1),
        reflecting (2),
        looping (3),
        loading (4),
        dumping (5),
        triggering (6),
        autoservice (7),
        autoloading (8),
        autodumping (9),
        autotriggering (10),
        synchronizing (11),
        failed (12),
        running (13)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the circuit's Network Management
        operational and service substate. NOTE: These values are
        incremented by one compared to the standard DECnet values
        in order to maintain compliance with RFC 1155."
    ::= { phivCircuitParametersEntry 4 }

phivCircuitCommonName OBJECT-TYPE
    SYNTAX DisplayString ( SIZE (0..16) )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The name of the circuit entry in the table, for example,
        SVA-0 or in a level 2 router ASYNC-8 or ETHER-1)."
    ::= { phivCircuitParametersEntry 5 }

phivCircuitExecRecallTimer OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This parameter represents the minimum number of seconds to
        wait before restarting the circuit.  A value of 0 indicates
        not timer is running."
    ::= { phivCircuitParametersEntry 6 }
```

```
phivCircuitCommonType OBJECT-TYPE
    SYNTAX INTEGER {
        ddcmp-point (1),
        ddcmp-control (2),
        ddcmp-tributary (3),
        x25 (4),
        ddcmp-dmc (5),
        ethernet (6),
        ci (7),
        qp2-dte20 (8),
        bisync (9),
        other (14),
        fddi (15)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Represents the type of the circuit. For X.25 circuits, the
        value must be set to X25. For DDCMP and Ethernet circuits it
        is read only and is the same value as the protocol of
        the associated line.
        NOTE: Values 1 - 5 are incremented by one compared to the
        standard DECnet values in order to maintain compliance with
        RFC 1155."
    ::= { phivCircuitParametersEntry 7 }

phivCircuitService  OBJECT-TYPE
    SYNTAX INTEGER {
        enabled (1),
        disabled (2)
    }
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value indicates whether or not Network Management allows
        service operations on a circuit. The values for
        service-control are as follows:

        ENABLED     SERVICE state and/or service functions are
                    allowed.

        DISABLED    SERVICE state and/or service functions are not
                    allowed.

        NOTE: These values are incremented by one compared to the
        standard DECnet values in order to maintain compliance with
        RFC 1155."
    ::= { phivCircuitParametersEntry 8 }

phivCircuitExecCost OBJECT-TYPE
    SYNTAX INTEGER (1..25)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the routing cost of the circuit.  Routing
        sends messages along the path between two nodes having the
        smallest cost."
    ::= { phivCircuitParametersEntry 9 }

phivCircuitExecHelloTimer OBJECT-TYPE
    SYNTAX INTEGER (1..8191)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value determines the frequency of Routing Hello messages
        sent to the adjacent node on the circuit."
    ::= { phivCircuitParametersEntry 10 }
```

```
-- Circuit Counters Table

phivCircuitCountTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivCircuitCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about the counters associated with all circuits
        currently known."
    ::= { circuit 2 }

phivCircuitCountEntry OBJECT-TYPE
    SYNTAX PhivCircuitCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Counter information about all circuits currently known"
    INDEX     { phivCircuitIndex }
    ::= { phivCircuitCountTable 1 }

PhivCircuitCountEntry ::=
    SEQUENCE {
        phivCircuitCountSecLastZeroed
            PhivCounter (0..65535),
        phivCircuitCountTermPacketsRecd
            PhivCounter,
        phivCircuitCountOriginPackSent
            PhivCounter,
        phivCircuitCountTermCongLoss
            PhivCounter (0..65535),
        phivCircuitCountCorruptLoss
            PhivCounter (0..255),
        phivCircuitCountTransitPksRecd
            PhivCounter,
        phivCircuitCountTransitPkSent
            PhivCounter,
        phivCircuitCountTransitCongestLoss
            PhivCounter (0..65535),
        phivCircuitCountCircuitDown
            PhivCounter (0..255),
        phivCircuitCountInitFailure
            PhivCounter (0..255),
        phivCircuitCountAdjDown
            PhivCounter,
        phivCircuitCountPeakAdj
            PhivCounter,
        phivCircuitCountBytesRecd
            PhivCounter,
        phivCircuitCountBytesSent
            PhivCounter,
        phivCircuitCountDataBlocksRecd
            PhivCounter (0..65535),
        phivCircuitCountDataBlocksSent
            PhivCounter,
        phivCircuitCountUsrBuffUnav
            PhivCounter (0..65535)
    }
phivCircuitCountSecLastZeroed  OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of seconds since the circuit counters for this
        circuit were last zeroed."
    ::= { phivCircuitCountEntry 1 }
```

```
phivCircuitCountTermPacketsRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of terminating packets received on this circuit."
    ::= { phivCircuitCountEntry 2 }

phivCircuitCountOriginPackSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of originating packets sent on this circuit."
    ::= { phivCircuitCountEntry 3 }

phivCircuitCountTermCongLoss OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of terminating congestion losses on this circuit."
    ::= { phivCircuitCountEntry 4 }

phivCircuitCountCorruptLoss OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of corruption losses on this circuit."
    ::= { phivCircuitCountEntry 5 }

phivCircuitCountTransitPksRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of Transit packets received on this circuit."
    ::= { phivCircuitCountEntry 6 }

phivCircuitCountTransitPkSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of transit packets sent on this circuit."
    ::= { phivCircuitCountEntry 7 }

phivCircuitCountTransitCongestLoss OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of transit congestion losses on this circuit."
    ::= { phivCircuitCountEntry 8 }

phivCircuitCountCircuitDown OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of circuit downs on this circuit."
    ::= { phivCircuitCountEntry 9 }
```

```
phivCircuitCountInitFailure OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of Initialization failures on this circuit."
    ::= { phivCircuitCountEntry 10 }

phivCircuitCountAdjDown OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This counter indicates the number of adjacency losses that
        result from any of the following:

             Node listener timeout
             Invalid data received at node listener
             Unexpected control (initialization or verification)
                 message received
             Routing message received with a checksum error
             Node identification from a routing message or a
             Hello message that is not the one expected Hello
             message received indicating that connectivity
             became one-way
             Adjacency idled."
    ::= { phivCircuitCountEntry 11 }

phivCircuitCountPeakAdj OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This counter indicates the maximum number of nodes that are
        up on the circuit."
    ::= { phivCircuitCountEntry 12 }

phivCircuitCountBytesRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of bytes received on this circuit."
    ::= { phivCircuitCountEntry 13 }

phivCircuitCountBytesSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of bytes sent on this circuit."
    ::= { phivCircuitCountEntry 14 }

phivCircuitCountDataBlocksRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of data blocks received on this circuit."
    ::= { phivCircuitCountEntry 15 }
```

```
phivCircuitCountDataBlocksSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of data blocks sent on this circuit."
    ::= { phivCircuitCountEntry 16 }

phivCircuitCountUsrBuffUnav OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of user buffer unavailable errors."
    ::= { phivCircuitCountEntry 17 }

-- Additional Circuit Parameters

phivCircuitOrigQueueLimit OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This parameter indicates the maximum number of originating
        packets that may be outstanding on this circuit. This does not
        include route-thru traffic."
    ::= { circuit 3 }

phivCircuitCountZeroCount OBJECT-TYPE
    SYNTAX INTEGER {
      other (1),
      reset (2)
    }
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "When this value is set to 2, all of the counters in the
        Circuit Counter Table are set to zero."
    ::= { circuit 4 }


-- DDCMP Circuit Group

-- The implementation of the DDCMP Circuit Group is mandatory for
-- all systems which support DDCMP circuits.

-- DDCMP Parameters Table

phivDDCMPCircuitParametersTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivDDCMPCircuitParametersEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about DDCMP circuit parameters."
    ::= { ddcmp 1}

phivDDCMPCircuitParametersEntry OBJECT-TYPE
    SYNTAX PhivDDCMPCircuitParametersEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Parameters information about DDCMP circuits currently known."
    INDEX     { phivDDCMPCircuitIndex }
    ::= { phivDDCMPCircuitParametersTable 1 }
```

```
PhivDDCMPCircuitParametersEntry ::=
    SEQUENCE {
        phivDDCMPCircuitIndex
            INTEGER,
        phivDDCMPCircuitAdjNodeAddr
            INTEGER (0..65535),
        phivDDCMPCircuitTributary
            INTEGER (0..255)
    }
phivDDCMPCircuitIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "A unique index value for each known DDCMP circuit.  This is
         the same value as phivCircuitIndex."
    ::= { phivDDCMPCircuitParametersEntry 1 }

phivDDCMPCircuitAdjNodeAddr OBJECT-TYPE
    SYNTAX PhivAddr -- OCTET STRING (SIZE (2))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The address of the adjacent node."
    ::= { phivDDCMPCircuitParametersEntry 2 }

phivDDCMPCircuitTributary OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the Data Link physical tributary address
        of the circuit."
    ::= { phivDDCMPCircuitParametersEntry 3 }

-- DDCMP Circuit Counter Table

phivDDCMPCircuitCountTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivDDCMPCircuitCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about the DDCMP counters associated with all
        circuits currently known."
    ::= { ddcmp 2 }

phivDDCMPCircuitCountEntry OBJECT-TYPE
    SYNTAX PhivDDCMPCircuitCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Counter information about DDCMP circuits now known"
    INDEX     { phivCircuitIndex }
    ::= { phivDDCMPCircuitCountTable 1 }
```

```
PhivDDCMPCircuitCountEntry ::=
    SEQUENCE {
        phivDDCMPCircuitErrorsInbd
            PhivCounter (0..255),
        phivDDCMPCircuitErrorsOutbd
            PhivCounter (0..255),
        phivDDCMPCircuitRmteReplyTimeouts
            PhivCounter (0..255),
        phivDDCMPCircuitLocalReplyTimeouts
            PhivCounter (0..255),
        phivDDCMPCircuitRmteBuffErrors
            PhivCounter (0..255),
        phivDDCMPCircuitLocalBuffErrors
            PhivCounter (0..255),
        phivDDCMPCircuitSelectIntervalsElap
            PhivCounter (0..65535),
        phivDDCMPCircuitSelectTimeouts
            PhivCounter (0..255)
    }
phivDDCMPCircuitErrorsInbd OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of Data errors inbound."
    ::= { phivDDCMPCircuitCountEntry 1 }

phivDDCMPCircuitErrorsOutbd OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of outbound data errors."
    ::= { phivDDCMPCircuitCountEntry 2 }

phivDDCMPCircuitRmteReplyTimeouts OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of remote reply timeouts."
    ::= { phivDDCMPCircuitCountEntry 3 }

phivDDCMPCircuitLocalReplyTimeouts OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of local Reply timeouts."
    ::= { phivDDCMPCircuitCountEntry 4 }

phivDDCMPCircuitRmteBuffErrors OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of remote reply time out errors."
    ::= { phivDDCMPCircuitCountEntry 5 }

phivDDCMPCircuitLocalBuffErrors  OBJECT-TYPE
    SYNTAX PhivCounter (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of local buffer errors."
    ::= { phivDDCMPCircuitCountEntry 6 }
```

```
phivDDCMPCircuitSelectIntervalsElap OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Selection intervals that have elapsed."
    ::= {phivDDCMPCircuitCountEntry 7 }

phivDDCMPCircuitSelectTimeouts OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of selection timeouts."
    ::= {phivDDCMPCircuitCountEntry 8 }

-- DDCMP Line Count Table

phivDDCMPLineCountTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivDDCMPLineCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "The DDCMP Line Count Table."
    ::= { ddcmp 3 }

phivDDCMPLineCountEntry OBJECT-TYPE
    SYNTAX PhivDDCMPLineCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "There is one entry in the table for each line."
    INDEX  { phivDDCMPLineCountIndex }
    ::= { phivDDCMPLineCountTable 1 }

PhivDDCMPLineCountEntry ::=
    SEQUENCE {
        phivDDCMPLineCountIndex
            INTEGER,
        phivDDCMPLineCountDataErrsIn
            PhivCounter (0..255),
        phivDDCMPLineCountRmteStationErrs
            PhivCounter (0..255),
        phivDDCMPLineCountLocalStationErrs
            PhivCounter (0..255)
    }
phivDDCMPLineCountIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The line on which this entry's equivalence is effective. The
        interface identified by a particular value of this index is
        the same interface as identified by the same value of
        phivLineIndex. This value is the IfIndex."
    ::= { phivDDCMPLineCountEntry 1 }

phivDDCMPLineCountDataErrsIn OBJECT-TYPE
    SYNTAX PhivCounter ( 0..255 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of data errors inbound."
    ::= { phivDDCMPLineCountEntry 2 }
```

```
phivDDCMPLineCountRmteStationErrs OBJECT-TYPE
    SYNTAX PhivCounter ( 0..255 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of remote station errors."
    ::= { phivDDCMPLineCountEntry 3 }

phivDDCMPLineCountLocalStationErrs OBJECT-TYPE
    SYNTAX PhivCounter ( 0..255 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
         "Number of local station errors."
    ::= { phivDDCMPLineCountEntry 4 }


-- DDCMP Multipoint Circuit Control Group

-- The implementation of the DDCMP Multipoint Circuit Control Group is
-- mandatory for all systems which support DDCMP multipoint control circuits.

phivControlSchedTimer OBJECT-TYPE
    SYNTAX INTEGER (50..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of milliseconds
        between recalculation of tributary polling priorities."
    DEFVAL { 200 }
    ::= { control 1 }

phivControlDeadTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of milliseconds
        between polls of one of the set of dead
        tributaries."
    DEFVAL { 10000 }
    ::= { control 2 }

phivControlDelayTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the minimum number of
        milliseconds to delay between polls. The delay timer
        limits the effect of a very fast control station on
        slow tributaries."
    ::= { control 3 }

phivControlStreamTimer OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of milliseconds a
        tributary or a half duplex remote station is
        allowed to hold the line.

        NOTE: This parameter can also be applied to
        half-duplex lines of type DDCMP POINT."
    DEFVAL { 6000 }
    ::= { control 4 }

-- DDCMP Multipoint Circuit Control Parameters Table
```

```
phivControlParametersTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivControlParametersEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about control circuit parameters."
    ::= { control 5 }

phivControlParametersEntry OBJECT-TYPE
    SYNTAX PhivControlParametersEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Parameters information about control circuits currently known."
    INDEX  { phivControlCircuitIndex }
    ::= { phivControlParametersTable 1 }

PhivControlParametersEntry ::=
    SEQUENCE {
        phivControlCircuitIndex
            INTEGER,
        phivControlBabbleTimer
            INTEGER (1..65535),
        phivControlMaxBuffs
            INTEGER (0..254),
        phivControlMaxTransmits
            INTEGER (1..255),
        phivControlDyingBase
            INTEGER (0..255),
        phivControlDyingIncrement
            INTEGER (0..255),
        phivControlDeadThreshold
            INTEGER (0..255),
        phivControlDyingThreshold
            INTEGER (0..255),
        phivControlInactTreshold
            INTEGER (0..255),
        phivControlPollingState
            INTEGER,
        phivControlPollingSubState
            INTEGER,
        phivControlTransTimer
            INTEGER (0..65535)
    }
phivControlCircuitIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "A unique index value for each known multirpoint control circuit.
         This is the same value as phivCircuitIndex."
    ::= { phivControlParametersEntry 1 }

phivControlBabbleTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of milliseconds that a
        selected tributary or remote half-duplex station is allowed to
        transmit."
    DEFVAL { 6000 }
    ::= { phivControlParametersEntry 2 }
```

```
phivControlMaxBuffs  OBJECT-TYPE
    SYNTAX INTEGER (0..254)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum number of buffers the
        tributary can use from a common buffer pool. If not set, there
        is no common buffer pool and buffers are explicitly supplied
        by the higher level. Count is a decimal integer in the range
        1-254."
    ::= { phivControlParametersEntry 3 }

phivControlMaxTransmits  OBJECT-TYPE
    SYNTAX INTEGER (1..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the maximum number of data messages
        that can be transmitted at one time. Count is a decimal
        integer in the range 1-255."
    DEFVAL { 4 }
    ::= { phivControlParametersEntry 4 }

phivControlDyingBase OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the base priority to which a tributary
        is reset each time it has been polled. A separate base can be
        set for each of the indicated polling states. Base is a
        decimal integer in the range 0-255.  If not set, the defaults
        are: active, 255; inactive, 0; and dying, 0."
    ::= { phivControlParametersEntry 5 }

phivControlDyingIncrement OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the increment added to the tributary
        priority each time the scheduling timer expires.  If not set,
        the defaults are: active, 0; inactive, 64; and dying, 16."
    ::= { phivControlParametersEntry 6 }

phivControlDeadThreshold OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of times to poll the active,
        inactive, or dying tributary before changing its polling state
        to dead because of receive timeouts. Count is a decimal
        integer in the range 0-255."
    DEFVAL { 8 }
    ::= { phivControlParametersEntry 7 }
```

```
phivControlDyingThreshold OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of times to poll the active
        or inactive tributary before changing its polling state to
        dying because of receive timeouts. Count is a decimal integer
        in the range 0-255."
    DEFVAL { 2 }
    ::= { phivControlParametersEntry 8 }

phivControlInactTreshold OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of times to poll the active
        tributary before changing its polling state to inactive because
        of no data response. Count is a decimal integer in the range
        0-255."
    DEFVAL { 8 }
    ::= { phivControlParametersEntry 9 }

phivControlPollingState OBJECT-TYPE
    SYNTAX INTEGER {
        automatic (1),
        active (2),
        inactive (3),
        dying (4),
        dead (5)
    }
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the state of the tributary relative to
        the multipoint polling algorithm.  If not set the default is
        AUTOMATIC. The possible states are:

        AUTOMATIC

          The tributary's state is allowed to vary according to
          the operation of the polling algorithm.

        ACTIVE/INACTIVE/DYING/DEAD

          The tributary is locked in the specified state.

         NOTE: These values are incremented by one compared to the
         standard DECnet values in order to maintain compliance with
         RFC 1155."
    ::= { phivControlParametersEntry 10 }

phivControlPollingSubState OBJECT-TYPE
    SYNTAX INTEGER {
        active (1),
        inactive (2),
        dying (3),
        dead (4)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the tributary's state as determined by
        the polling algorithm.  This applies only when the polling
        state is AUTOMATIC and is read-only to Network Management.
        Polling-substate is one of ACTIVE, INACTIVE, DYING, or DEAD.
        It is displayed as a tag on the polling state, for example:
```

```
        AUTOMATIC-INACTIVE."
    ::= { phivControlParametersEntry 11 }

phivControlTransTimer OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of milliseconds to delay
        between data message transmits. Milliseconds is a decimal
        integer in the range 0-65535."
    DEFVAL { 0 }
    ::= { phivControlParametersEntry 12 }

-- Ethernet Group

-- The implementation of the Ethernet Group is mandatory
-- for all systems which support ethernet links.

-- Ethernet Parameters Table

phivEthLinkParametersTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivEthLinkParametersEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about ethernet link parameters."
    ::= { ethernet 1}

phivEthLinkParametersEntry OBJECT-TYPE
    SYNTAX PhivEthLinkParametersEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Parameter information about ethernet links currently known."
    INDEX     { phivEthLinkIndex }
    ::= { phivEthLinkParametersTable 1 }

PhivEthLinkParametersEntry ::=
    SEQUENCE {
        phivEthLinkIndex
            INTEGER,
        phivEthDesigRouterNodeAddr
            PhivAddr,
        phivEthMaxRouters
            INTEGER (0..255),
        phivEthRouterPri
            INTEGER (0..127),
        phivEthHardwareAddr
            OCTET STRING
     }
phivEthLinkIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The circuit over which this links information is collected.  This
         is the same as phivCircuitIndex."
    ::= { phivEthLinkParametersEntry 1 }

phivEthDesigRouterNodeAddr OBJECT-TYPE
    SYNTAX PhivAddr -- OCTET STRING (SIZE (2))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value is the address of the designated router."
    ::= { phivEthLinkParametersEntry 2 }
```

```
phivEthMaxRouters OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This parameter is the maximum number of routers (other than
         the executor itself) allowed on the circuit by Routing for
         circuits that are owned by the executor node."
    ::= { phivEthLinkParametersEntry 3 }

phivEthRouterPri OBJECT-TYPE
    SYNTAX INTEGER (0..127)
    ACCESS read-write
    STATUS mandatory
    DESCRIPTION
        "This parameter is the priority that this router is to have in
         the selection of designated router for the circuit on circuits
         that are owned by the executor node."
    DEFVAL { 64 }
    ::= { phivEthLinkParametersEntry 4 }

phivEthHardwareAddr OBJECT-TYPE
    SYNTAX OCTET STRING ( SIZE (6) )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only parameter is the address that is associated
        with the line device hardware as seen by the DECnet Software.
        This value is not the same as ifPhysAddress."
    ::= { phivEthLinkParametersEntry 5 }


-- Counters Group

-- The implementation of the Counters Group is mandatory for
-- systems which only support DECnet style locking counters.

-- Counters Table

phivCountersCountTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivCountersCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Information about ethernet link counters."
    ::= { counters 1 }

phivCountersCountEntry OBJECT-TYPE
    SYNTAX PhivCountersCountEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "Counter information about ethernet links currently known.."
    INDEX     { phivCountersIndex }
    ::= { phivCountersCountTable 1 }
```

```
PhivCountersCountEntry ::=
    SEQUENCE {
        phivCountersIndex
            INTEGER,
        phivCountersCountBytesRecd
            PhivCounter,
        phivCountersCountBytesSent
            PhivCounter,
        phivCountersCountDataBlocksRecd
            PhivCounter,
        phivCountersCountDataBlocksSent
            PhivCounter,
        phivCountersCountEthUsrBuffUnav
            PhivCounter (0..65535),
        phivCountersCountMcastBytesRecd
            PhivCounter,
        phivCountersCountDataBlksRecd
            PhivCounter,
        phivCountersCountDataBlksSent
            PhivCounter,
        phivCountersCountMcastBlksRecd
            PhivCounter,
        phivCountersCountBlksSentDef
            PhivCounter,
        phivCountersCountBlksSentSingleCol
            PhivCounter,
        phivCountersCountBlksSentMultCol
            PhivCounter,
        phivCountersCountSendFailure
            PhivCounter,
        phivCountersCountCollDetectFailure
            PhivCounter (0..65535),
        phivCountersCountReceiveFailure
            PhivCounter (0..65535),
        phivCountersCountUnrecFrameDest
            PhivCounter (0..65535),
        phivCountersCountDataOver
            PhivCounter (0..65535),
        phivCountersCountSysBuffUnav
            PhivCounter (0..65535),
        phivCountersCountUsrBuffUnav
            PhivCounter (0..65535)
     }
phivCountersIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The interface to which these counters apply.  This is
        the same interface as identified by the same value of
        phivLineIndex. This value is the IfIndex."
    ::= { phivCountersCountEntry 1 }

phivCountersCountBytesRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of bytes received over this link."
    ::= { phivCountersCountEntry 2 }
```

```
phivCountersCountBytesSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of bytes sent over this link."
    ::= { phivCountersCountEntry 3 }

phivCountersCountDataBlocksRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of data blocks received over this link."
    ::= { phivCountersCountEntry 4 }

phivCountersCountDataBlocksSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of data blocks sent over this link."
    ::= { phivCountersCountEntry 5 }

phivCountersCountEthUsrBuffUnav OBJECT-TYPE
    SYNTAX PhivCounter (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of user buffer unavailable errors over this link."
    ::= { phivCountersCountEntry 6 }

phivCountersCountMcastBytesRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of multicast bytes received over this link."
    ::= { phivCountersCountEntry 7 }

phivCountersCountDataBlksRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of data blocks received over this link."
    ::= { phivCountersCountEntry 8 }

phivCountersCountDataBlksSent OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of data blocks sent over this link."
    ::= { phivCountersCountEntry 9 }

phivCountersCountMcastBlksRecd OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of multicast blocks received over this link."
    ::= { phivCountersCountEntry 10 }
```

```
phivCountersCountBlksSentDef OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of blocks sent, initially deferred over this link."
    ::= { phivCountersCountEntry 11 }

phivCountersCountBlksSentSingleCol OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of blocks sent, single collision over this link."
    ::= { phivCountersCountEntry 12 }

phivCountersCountBlksSentMultCol OBJECT-TYPE
    SYNTAX PhivCounter
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of blocks sent, multiple collisions over this link."
    ::= { phivCountersCountEntry 13 }

phivCountersCountSendFailure OBJECT-TYPE
    SYNTAX INTEGER ( 0..65535 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of send failures over this link."
    ::= { phivCountersCountEntry 14 }

phivCountersCountCollDetectFailure OBJECT-TYPE
    SYNTAX INTEGER ( 0..65535 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of collision detect check failures over this link."
    ::= { phivCountersCountEntry 15 }

phivCountersCountReceiveFailure OBJECT-TYPE
    SYNTAX INTEGER ( 0..65535 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of receive failures over this link."
    ::= { phivCountersCountEntry 16 }

phivCountersCountUnrecFrameDest OBJECT-TYPE
    SYNTAX INTEGER ( 0..65535 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of unrecognized frame destinations over this link."
    ::= { phivCountersCountEntry 17 }

phivCountersCountDataOver OBJECT-TYPE
    SYNTAX INTEGER ( 0..65535 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of data overruns over this link."
    ::= { phivCountersCountEntry 18 }
```

```
phivCountersCountSysBuffUnav OBJECT-TYPE
    SYNTAX INTEGER ( 0..65535 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of system buffer unavailables over this link."
    ::= { phivCountersCountEntry 19 }

phivCountersCountUsrBuffUnav OBJECT-TYPE
    SYNTAX INTEGER ( 0..65535 )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Number of user buffer unavailables."
    ::= { phivCountersCountEntry 20 }


-- Adjacency Group

-- The implementation of the Adjacency Group is mandatory for all
-- conformant implementations of this memo.

phivAdjTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivAdjEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "The Adjacency Table."
    ::= { adjacency 1 }

phivAdjEntry OBJECT-TYPE
    SYNTAX PhivAdjEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "There is one entry in the table for each adjacency."
    INDEX  { phivAdjCircuitIndex }
    ::= { phivAdjTable 1 }

PhivAdjEntry ::=
    SEQUENCE {
        phivAdjCircuitIndex
            INTEGER,
        phivAdjNodeAddr
            PhivAddr,
        phivAdjBlockSize
            INTEGER,
        phivAdjListenTimer
            INTEGER (1..65535),
        phivAdjCircuitEtherServPhysAddr
            OCTET STRING,
        phivAdjType
            INTEGER,
        phivAdjState
            INTEGER,
        phivAdjPriority
            INTEGER,
        phivAdjExecListenTimer
            INTEGER (1..65535)
     }
phivAdjCircuitIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "A unique index value for each known circuit."
    ::= { phivAdjEntry 1 }
```

```
phivAdjNodeAddr OBJECT-TYPE
    SYNTAX PhivAddr -- OCTET STRING (SIZE (2))
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The address of the adjacent node."
    ::= { phivAdjEntry 2 }

phivAdjBlockSize OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only parameter is the block size that was
        negotiated with the adjacent Routing layer during Routing
        initialization over a particular circuit. It includes the
        routing header, but excludes the data link header. This
        parameter is qualified by ADJACENT NODE."
    ::= { phivAdjEntry 3 }

phivAdjListenTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value determines the maximum number of seconds allowed
        to elapse before Routing receives some message (either a Hello
        message or a user message) from the adjacent node on the
        circuit. It was agreed during Routing initialization with the
        adjacent Routing layer.  This parameter is qualified by
        ADJACENT NODE."
    ::= { phivAdjEntry 4 }

phivAdjCircuitEtherServPhysAddr OBJECT-TYPE
    SYNTAX OCTET STRING ( SIZE (6) )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This parameter indicates the Ethernet physical address of an
        adjacent node that is being serviced on this circuit. This
        parameter is a qualifier for SERVICE SUBSTATE."
    ::= { phivAdjEntry 5 }

phivAdjType OBJECT-TYPE
    SYNTAX INTEGER {
        routing-III (1),
        nonrouting-III (2),
        area (3),
        routing-IV (4),
        nonrouting-IV (5)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This parameter indicates the type of adjacency.

        For adjacent nodes, this is a read-only parameter that
        indicates the type of the reachable adjacent node.
        NOTE: The routing-III and nonrouting-III values are
        incremented by one compared to the standard DECnet values in
        order to maintain compliance with RFC 1155)"
    ::= { phivAdjEntry 6 }
```

```
phivAdjState OBJECT-TYPE
    SYNTAX INTEGER {
        initializing (1),          -- Ethernet one-way
        up (2),                    -- Ethernet two-way
        run (3),                   -- The eight DDCMP/X.25 states
        circuit-rejected (4),
        data-link-start (5),
        routing-layer-initialize (6),
        routing-layer-verify (7),
        routing-layer-complete (8),
        off (9),
        halt (10)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value indicates the state of a router adjacency.

        On adjacencies over a circuit of type (phivCircuitCommonType)
        Ethernet, CI, or FDDI, with an adjacent node of type
        (phivAdjType) ROUTING IV or AREA, this variable is the state
        of the Ethernet Initialization Layer for this adjacency, and
        can have values INITIALIZING or UP. (See Section 9.1.1 of
        DECnet Phase IV Routing Layer Functional Specification.)

        On adjacencies over a circuit of type (phivCircuitCommonType)
        Ethernet, CI, or FDDI, with an adjacent node of type
        (phivAdjType) NONROUTING IV, this varaible will always take on
        the value UP.

        On adjacencies over a circuit of type (phivCircuitCommonType)
        DDCMP POINT, DDCMP CONTROL, DDCMP TRIBUTARY, DDCMP DMC, or
        X.25, this variable is the state of the Routing Layer
        Initialization Circuit State. (See section 7.3, ibid.)  It can
        have values between RUN and HALT.

        On adjacencies over a circuit of type (phivCircuitCommonType)
        OTHER, this variable may be used in a manner consistent with
        the Initialization Layer used on that circuit."
    ::= { phivAdjEntry 7 }

phivAdjPriority OBJECT-TYPE
    SYNTAX INTEGER (0..255)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "Priority assigned by the adjacent node for this circuit."
 ::= { phivAdjEntry 8 }

phivAdjExecListenTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This read-only value determines the maximum number of
        seconds allowed to elapse before Routing receives some
        message (either a Hello message or a user message) from
        the adjacent node on the circuit. It was agreed during
        Routing initialization with the adjacent Routing layer."
    ::= { phivAdjEntry 9 }
```

```
-- Line Group

-- The implementation of the Line Group is mandatory for all conformant
-- implementations of this memo.

phivLineTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivLineEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "The Line Table."
    ::= { line 1 }

phivLineEntry OBJECT-TYPE
    SYNTAX PhivLineEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "There is one entry in the table for each line."
    INDEX  { phivLineIndex }
    ::= { phivLineTable 1 }

PhivLineEntry ::=
    SEQUENCE {
        phivLineIndex
            INTEGER,
        phivLineName
            DisplayString,
        phivLineState
            INTEGER,
        phivLineSubstate
            INTEGER,
        phivLineService
            INTEGER,
        phivLineDevice
            DisplayString,
        phivLineReceiveBuffs
            INTEGER (0..65535),
        phivLineProtocol
            INTEGER,
        phivLineServiceTimer
            INTEGER (1..65535),
        phivLineMaxBlock
            INTEGER (1..65535)
    }

phivLineIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The line on which this entry's equivalence is effective.
        This is the same as the IfIndex."
    ::= { phivLineEntry 1 }

phivLineName OBJECT-TYPE
    SYNTAX DisplayString ( SIZE (0..16) )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The name of the line on this row of the table."
    ::= { phivLineEntry 2 }
```

```
phivLineState OBJECT-TYPE
    SYNTAX INTEGER {
             on (1),
             off (2),
             service (3),
             cleared (4)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents Network Management operational
        state.
        NOTE that these values are incremented by one compared to
        the standard DECnet values."
    ::= { phivLineEntry 3 }

phivLineSubstate OBJECT-TYPE
    SYNTAX INTEGER {
            starting (1),
            reflecting (2),
            looping (3),
            loading (4),
            dumping (5),
            triggering (6),
            auto-service (7),
            auto-loading (8),
            auto-dumping (9),
            auto-triggering (10),
            synchronizing (11),
            failed (12),
            running (13)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the line's read-only Network
        Management substate.
        NOTE that these values are incremented by one compared to
        the standard DECnet values."
    ::= { phivLineEntry 4 }

phivLineService OBJECT-TYPE
    SYNTAX INTEGER {
          starting (1),
          reflecting (2),
          looping (3),
          other (4)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the line's read-only Network
        Management service.
        NOTE that these values are incremented by one compared to
        the standard DECnet values and OTHER is a new addition."
    ::= { phivLineEntry 5 }

phivLineDevice OBJECT-TYPE
    SYNTAX DisplayString ( SIZE (0..16) )
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the Physical Link device to be
        used on the line."
    ::= { phivLineEntry 6 }
```

```
phivLineReceiveBuffs OBJECT-TYPE
    SYNTAX INTEGER (0..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the number of receive buffers
        reserved for the line. It is a decimal number in
        the range 0-65535.  0 is supported for those vendors
        that do not reserve buffers on a per line basis and
        use a pool of buffers that can be used by any line."
    ::= { phivLineEntry 7 }

phivLineProtocol OBJECT-TYPE
    SYNTAX INTEGER {
        ddcmp-point (1),
        ddcmp-control (2),
        ddcmp-tributary (3),
        reserved (4),
        ddcmp-dmc (5),
        lapb (6),
        ethernet (7),
        ci (8),
        qp2 (9),
        other (14),
        fddi (15)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the protocol used on the line device.
        Note that these values are incremented by one compared to
        the standard DECnet values."
    ::= { phivLineEntry 8 }

phivLineServiceTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the amount of time in milliseconds
        allowed to elapse before a Data Link receive request
        completes while doing service operations."
    ::= { phivLineEntry 9 }

phivLineMaxBlock OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the Data Link maximum block
        size on the line."
    ::= { phivLineEntry 10 }

-- Non Broadcast Line Group

-- The implementation of the Non Broadcast Line Group is mandatory
-- for all systems which implement non broadcast lines.

phivNonBroadcastTable OBJECT-TYPE
    SYNTAX SEQUENCE OF PhivNonBroadcastEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "The Non Broadcast Table."
    ::= { nonBroadcastLine 1 }
```

```
phivNonBroadcastEntry OBJECT-TYPE
    SYNTAX PhivNonBroadcastEntry
    ACCESS not-accessible
    STATUS mandatory
    DESCRIPTION
        "There is one entry in the table for each Non Broadcast line."
    INDEX  { phivNonBroadcastIndex }
    ::= { phivNonBroadcastTable 1 }

PhivNonBroadcastEntry ::=
    SEQUENCE {
        phivNonBroadcastIndex
            INTEGER,
        phivNonBroadcastController
            INTEGER,
        phivNonBroadcastDuplex
            INTEGER,
        phivNonBroadcastClock
            INTEGER,
        phivNonBroadcastRetransmitTimer
            INTEGER (1..65535)
    }
phivNonBroadcastIndex OBJECT-TYPE
    SYNTAX INTEGER
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "The Non Broadcast line on which this entry's equivalence is.
         effective.  This is the same value as the IfIndex."
    ::= { phivNonBroadcastEntry 1 }

phivNonBroadcastController OBJECT-TYPE
    SYNTAX INTEGER {
          normal (1),
          loopback (2),
          other (3)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the Physical Link hardware
        controller mode for the line device. The values
        for controller-mode are:

        NORMAL  For normal controller operating mode.

        LOOPBACK For software controllable loopback of the
        controller. On those devices that can support this
        mode, it causes all transmitted messages to be looped
        back from within the controller itself. This is
        accomplished without any manual intervention other
        than the setting of this parameter value.

 OTHER indicates function is not supported
        Note that these values are incremented by one compared to
        the standard DECnet values."
    ::= { phivNonBroadcastEntry 2 }
```

```
phivNonBroadcastDuplex OBJECT-TYPE
    SYNTAX INTEGER {
          full (1),
          half (2)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the Physical Link hardware
        duplex mode of the line device. The possible modes
        are:

        FULL   Full-duplex

        HALF   Half-duplex

        Note that these values are incremented by one compared to
        the standard DECnet values."
    ::= { phivNonBroadcastEntry 3 }

phivNonBroadcastClock OBJECT-TYPE
    SYNTAX INTEGER {
           external (1),
           internal (2),
           other (3)
    }
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents the Physical Link hardware clock
        mode for the line device. The values for clock-mode are:

        INTERNAL For software controllable loopback use of
        the clock. On those devices that can support this
        mode, it causes the device to supply a clock signal
        such that a transmitted messages can be looped
        back from outside the device. This may require manual
        intervention other than the setting of this parameter
        value. For example, the operator may have to connect
        a loopback plug in place of the normal line.

        EXTERNAL For normal clock operating mode, where the
        clock signal is supplied externally to the controller.
        Note that these values are incremented by one compared to
        the standard DECnet values."
    ::= { phivNonBroadcastEntry 4 }

phivNonBroadcastRetransmitTimer OBJECT-TYPE
    SYNTAX INTEGER (1..65535)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
        "This value represents number of milliseconds before
        the Data Link retransmits a block on the line. On
        half-duplex lines, this parameter is the select timer."
    DEFVAL { 3000 }
    ::= { phivNonBroadcastEntry 5 }

-- Area Parameters Group

-- The implementation of the Area Parameters Group is mandatory for all
-- systems which implement level 2 routing.
```