PWG,

Harry Lewis and I would like to re-raise the question of trapping on the trailing edge of binary change events and recording the time of trailing edge events. We believe that the experience of implementors of management software (as opposed to agents) in our respective companies have found the need for trapping on the trailing edge of binary change events and recording the time of trailing edge events.

At the December meeting, the PWG agreed to add the alert alert for the purpose of generating a trailing edge event. At the January meeting, this was rejected as alternative 1. At the same January meeting, Harry was asked to generate a proposal to record the time of the trailing edge events, but that vote was later overturned because there wasn't a place to record the time in the original binary change event entry, since the trailing edge event removes the entry. The time of a trailing edge alert alert unary change event provides the time that the binary change event trailing edge occurred without adding a new time object. Therefore, Harry and I would like the two alternatives reconsidered, since they both solve the problems:

Alternative 1: Optional trap on trailing edge alert using new unary change alert alert event

Alterntaive 2: Optional trap on trailing edge alert using a new notification-type (new trap OID).

10. Allow traps to be implemented on the trailing events of binary change events as well as the leading edge. Two alternatives are proposed (the PWG should pick one):

    - Alternative 1 - The first alternative is the one that we agreed to at the December PWG meeting: add the prtAlertGroup code **alert(18)** that is used by agents to add a unary change event at the end of the alert table at the same time that the agent removes the binary change event row from the (middle of the) table. This unary change event is an "alert alert".

      If we don't agree to alternative 1, we should probably *not* allocate alert group code 18 to another subunit, so that there is a one-to-one correspondence between subunit codes and the OID arc assigned off of **printmib**. See top of page 89 in RFC 1759 for such a policy statement.

    - Alternative 2 - The second alternative is to add an *optional* new trap NOTIFICATION-TYPE: **printerV2TrailingEdgeAlert** (like **printerV2Alert**), instead of using a unary change event entry in the alert table on the trailing edge of a binary change event. On the trailing edge event, the agent just removes the binary change event entry from the alert table (as in RFC 1759), but unlike **printerV2Alert**, the new **printerV2TrailingEdgeAlert** trap does not add an entry to the **prtAlertTable**. However, the trap information in **printerV2TrailingEdgeAlert** indicates which row was removed from the alert table, so we don't need to have a new unary change event to indicate removal of a binary change event from the alert table. Also the trap parameters include

hrDeviceIndex for the new **printerV2TrailingEdgeAlert** trap, so that the NMS can more easily determine which printer caused the trap without having to parse the trap OID.

Only page 91 and 92 of RFC 1759 is different for alternatives 1 and 2 above, so you will find two copies of page 91 attached with a line in brackets above each one indicating alternative 1 and 2. Also the page numbers are 91-1/92-1 and 91-2/92-2, respectively, are used at the bottom of each page.

```
[Alternative 1: - optional trapping on trailing edge using alert alert code

            -- Alert Group
        alertRemovalOfBinaryChangeEntry(1801), -- unary change event -
                                               -- a binary change event entry
                                               -- has been removed from the
                                               -- alert table and this unary
                                               -- change alert table entry
                                               -- (and trap) is added to the
                                               -- end of the alert table (as
                                               -- usual indicating such
                                               -- removal.
                }
    MAX-ACCESS read-only
    STATUS     current
    DESCRIPTION
        "The code that describes the type of alert for this entry in
        the table.  Binary change event alerts describe states of the
        subunit, while unary change event alerts describe a single
        event.  The same alert code can be used for a binary change event
        or a unary change event, depending on implementation.  Also the
        same alert code can be used to indicate a critical alert or a
        non-critical (warning) alert, depending on implementation.  The
        value of prtAlertSeverityLevel specifies binary vs. unary and
        critical vs. non-critical for each event for the implementation.

        While there are some specific codes specified for many
        subunits, the common codes should be used for most subunit
        alerts.  The network management station can then query the
        subunit specified by prtAlertGroup to determine further
        subunit status and other subunit information.

        Implementation of the unary change event
        alertRemovalOfBinaryChangeEntry(1801) is optional.  When
        implemented, this alert code shall indicate to network
        management stations that the trailing edge of a binary change
        event has occurred and the corresponding alert entry has been
        removed from the alert table.  As with all events, the
        alertRemovalOfBinaryChangeEntry(1801) alert shall be placed at
        the end of the alert table.  Such an alert table entry shall
        specify the following information:

            prtAlertSeverityLevel   warningUnaryChangeEvent(4)
            prtAlertTrainingLevel   noHumanInterventionRequired(7)
            prtAlertGroup           alert(18)
            prtAlertGroupIndex      the index of the row in the alert
                                    table of the binary change event
                                    that this event removed
            prtAlertLocation        -2
            prtAlertCode            alertRemovalOfBinaryChangeEntry(1801)
            prtAlertDescription     <description or null string>
            prtAlertTime            time in ticks of alert (optional)"
    ::= { prtAlertEntry 7}
```

```
prtAlertDescription OBJECT-TYPE
    SYNTAX     OCTET STRING (SIZE(0..255))
    MAX-ACCESS read-only
    STATUS     current
    DESCRIPTION
        "A description of this alert entry in the localization
        specified by prtGeneralCurrentLocalization.  The description is
        provided by the printer to further elaborate on the enumerated
        alert or provide information in the case where the code is
        classified as `other' or `unknown'.  The printer is required
        to return a description string but the string may be a null
        string."
    ::= { prtAlertEntry 8 }

printerV1Alert OBJECT-IDENTITY
    STATUS  current
    DESCRIPTION
        "The value of the enterprise-specific oid in an SNMPv1 trap sent
        signaling a critical event in the prtAlertTable."
    ::= { prtAlert 2 }

printerV2AlertPrefix OBJECT IDENTIFIER ::= { printerV1Alert 0 }

printerV2Alert NOTIFICATION-TYPE
    OBJECTS { prtAlertIndex, prtAlertSeverityLevel, prtAlertGroup,
              prtAlertGroupIndex, prtAlertLocation, prtAlertCode }
    STATUS  current
    DESCRIPTION
        "This trap is sent whenever a critical event is added to the
        prtAlertTable."
    ::= { printerV2AlertPrefix 1 }

-- Note that the SNMPv2 to SNMPv1 translation rules dictate that the
-- preceding structure will result in SNMPv1 traps of the following
-- form:
--
```

```
[Alternative 2: - optional traps on trailing edge using new notification

prtAlertDescription OBJECT-TYPE
    SYNTAX     OCTET STRING (SIZE(0..255))
    MAX-ACCESS read-only
    STATUS     current
    DESCRIPTION
        "A description of this alert entry in the localization
        specified by prtGeneralCurrentLocalization.  The description is
        provided by the printer to further elaborate on the enumerated
        alert or provide information in the case where the code is
        classified as `other' or `unknown'.  The printer is required
        to return a description string but the string may be a null
        string."
    ::= { prtAlertEntry 8 }

printerV1Alert OBJECT-IDENTITY
    STATUS  current
    DESCRIPTION
        "The value of the enterprise-specific oid in an SNMPv1 trap sent
        signaling a critical event in the prtAlertTable."
    ::= { prtAlert 2 }

printerV1TrailingEdgeAlert OBJECT-IDENTIFY
    STATUS  current
    DESCRIPTION
        "The value of the enterprise-specific oid in an SNMPv1 trap sent
        signaling the removal of a binary change event from the
        prtAlertTable."
    ::= { prtAlert 3 }

printerV2AlertPrefix OBJECT IDENTIFIER ::= { printerV1Alert 0 }
printerV2TrailingEdgeAlertPrefix OBJECT IDENTIFIER ::= { printerV1Alert 1 }

printerV2Alert NOTIFICATION-TYPE
    OBJECTS { prtAlertIndex, prtAlertSeverityLevel, prtAlertGroup,
              prtAlertGroupIndex, prtAlertLocation, prtAlertCode }
    STATUS  current
    DESCRIPTION
        "This trap is sent whenever a critical event is added to the
        prtAlertTable."
    ::= { printerV2AlertPrefix 1 }

-- Note that the SNMPv2 to SNMPv1 translation rules dictate that the
-- preceding structure will result in SNMPv1 traps of the following
-- form:
--
```

[Alternative 2: - *optional* traps on trailing edge using new notification]


```
-- printerAlert TRAP-TYPE
--     ENTERPRISE printerV1Alert
--     VARIABLES { prtAlertIndex, prtAlertSeverityLevel, prtAlertGroup,
--                 prtAlertGroupIndex, prtAlertLocation, prtAlertCode }
--     DESCRIPTION
--        "This trap is sent whenever a critical event is added to the
--        prtAlertTable."
--     ::= 1

--
-- The Trailing Edge Alert group
--
-- The trailing edge alert group is an optional group.  However, to
-- claim conformance to this group, it is neceaary to implement every
-- object in this group.
--
-- This group permits an implementation to trap on trailing edge of
-- binary events, so that management stations do not need to increase
-- their polling rate in order to become aware of the occurrence of
-- the trailing edge of a binary event (removal of the binary event
-- from the alerts table).

printerV2TrailingEdgeAlert NOTIFICATION-TYPE
    OBJECTS { hrDeviceIndex, prtAlertIndex, prtAlertSeverityLevel,
              prtAlertGroup, prtAlertGroupIndex, prtAlertLocation,
              prtAlertCode }
    STATUS  current
    DESCRIPTION
        "This trap is optional for conformance and, when implemented, is
        sent to signal the trailing edge of a binary change event and the
        simultaneous removal of the row representing the binary change event
        from the prtAlertTable.  The trap parameters shall be filled with the
        values that the binary change event had, not values that represent
        this trap.  For example, the prtAlertIndex is the index of the row
        representing the binary change event that was removed and the
        prtAlertCode parameter contains the alert code of the binary change
        event whose row was removed from the prtAlertTable.

        Unlike the printerV2Alert, the printerV2TrailingEdgeAlert does not
        add an entry to the prtAlertTable."
    ::= { printerV2TrailingEdgeAlertPrefix 1 }



-- The Alert Time Group
--
-- This group is optional.  However, to claim conformance to this
-- group, it is necessary to implement every object in the group.

prtAlertTime OBJECT-TYPE
```

```
    SYNTAX     TimeTicks
    MAX-ACCESS read-only
    STATUS     current
    DESCRIPTION
        "The value of sysUpTime at the time that this alert was
        generated."
    ::= { prtAlertEntry 9 }


-- Conformance Information

prtMIBConformance OBJECT IDENTIFIER ::= { printmib 2 }

-- compliance statements
prtMIBCompliance MODULE-COMPLIANCE
    STATUS  current
    DESCRIPTION
        "The compliance statement for agents that implement the
        printer MIB."
    MODULE -- this module
    MANDATORY-GROUPS { prtGeneralGroup, prtInputGroup, prtOutputGroup,
                       prtMarkerGroup, prtMediaPathGroup,
                       prtChannelGroup, prtInterpreterGroup,
                       prtConsoleGroup, prtAlertTableGroup }

        OBJECT      prtGeneralReset
        SYNTAX      INTEGER {
                        notResetting(3),
                        resetToNVRAM(5)
                    }
        DESCRIPTION
```

Add **prtAlertTrailingEdgeGroup** to the list of optional groups on page 93:

```
    -- the prtResponsiblePartyGroup, prtExtendedInputGroup,
    -- prtInputMediaGroup, prtExtendedOutputGroup,
    -- prtOutputDimensionsGroup, prtOutputFeaturesGroup,
    -- prtMarkerSuppliesGroup, prtMarkerColorantGroup,
    -- and the prtAlertTimeGroup, prtAuxiliarySheetGroup, and
    -- the prtInputSwitchingGroup, and the prtAlertTrailingEdgeGroup
    -- are completely optional.
    ::= { prtMIBConformance 1 }
```

Add the specification of the new prtAlertTrailingEdgeGroup to page 97 where it becomes the new last group to have its conformance specified:

```
prtAlertTimeGroup OBJECT-GROUP
    OBJECTS { prtAlertTime }
    STATUS  current
    DESCRIPTION
        "The alert time group."
    ::= { prtMIBGroups 18 }

prtAuxiliarySheetGroup OBJECT-GROUP
    OBJECTS { prtGeneralStartupPage, prtGeneralBannerPage }
    STATUS  current
    DESCRIPTION
        "The auxiliary sheet group."
    ::= { prtMIBGroups 19 }

prtInputSwitchingGroup OBJECT-GROUP
    OBJECTS { prtInputManualFeedTimeout, prtInputAutoSwitch,
              and prtInputNextIndex }
    STATUS  current
    DESCRIPTION
        "The input switching group."
    ::= { prtMIBGroups 20 }

prtAlertTrailingEdgeGroup OBJECT-GROUP
    OBJECTS {  }
    STATUS  current
    DESCRIPTION
        "The trailing edge alert group."
    ::= { prtMIBGroups 21 }


END
```