T10/07-094 revision 1

Date: April 26, 2007

To: T10 Committee (SCSI)

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Subject: SAS-2:UML changes for logical phys

1 Overview

When logical phys where added as a result of the multiplexing proposal the phy UML diagrams for the new logical phy class and logical expander phy class were not updated. This proposal recommends changes to the phy UML diagram that for those new classes.

2 SAS-2 Modifications

4.1.3 Physical links and phys

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Figure 1 defines the phy classes, showing the relationships between the following classes:

a) phy;
b) SAS phy;
c) logical phy;
d) expander phy;
e) logical SAS phy;
f) logical expander phy;
g) SAS initiator phy;
h) SAS target phy;
i) SSP phy;
j) STP phy; and
k) SMP phy.

SATA phys are also referenced in this standard but are defined by SATA (see ATA/ATAPI-7 V3).
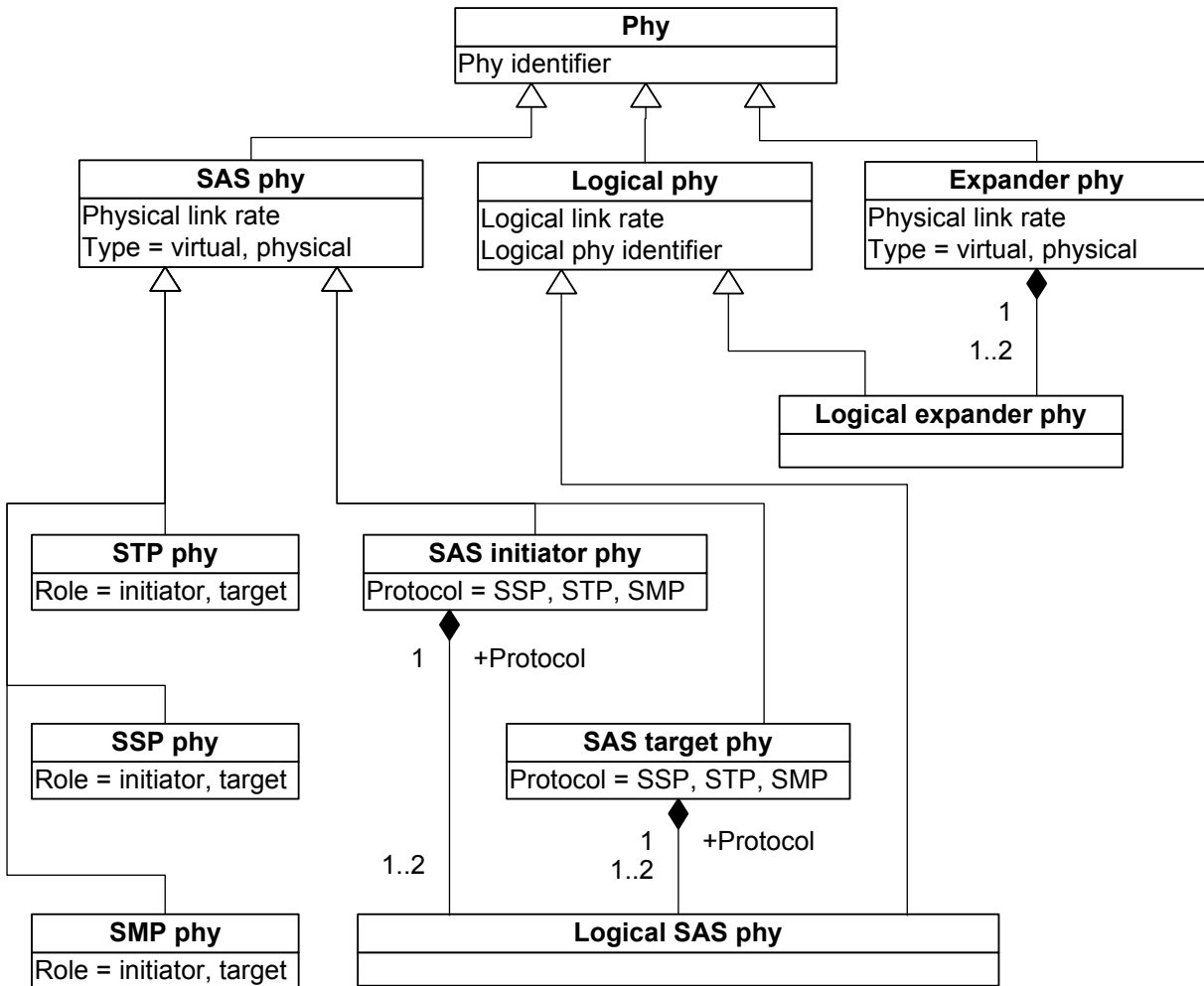
Figure 1 — Phy class diagram

Figure 2 shows the examples objects instantiated from the SAS phy class and the logical phy class, including:

    a) SSP initiator phy;
    b) SSP target phy,
    c) virtual SMP initiator phy;
    d) virtual SMP target phy; and
    e) logical SAS phy.

A SAS phy and logical SAS phy is represented by one of these objects during each connection. A SAS phy and a logical SAS phy may be represented by different SAS phy objects and logical SAS phy objects in different connections.

SSP initiator phy : SAS phy

Physical link rate
Phy identifier = x
Type = physical
Role = initiator
Protocol = SSP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 0
Logical link rate
Protocol = SSP

SSP initiator phy : SAS phy

Physical link rate
Phy identifier = x
Type = physical
Role = initiator
Protocol = SSP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 0
Logical link rate
Protocol = SSP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 1
Logical link rate
Protocol = SSP

SSP target phy : SAS phy

Physical link rate
Phy identifier = x
Type = physical
Role = target
Protocol = SSP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 0
Logical link rate
Protocol = SSP

SSP target phy : SAS phy

Physical link rate
Phy identifier = x
Type = physical
Role = target
Protocol = SSP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 0
Logical link rate
Protocol = SSP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 1
Logical link rate
Protocol = SSP

Virtual SMP initiator phy : SAS phy

Physical link rate
Phy identifier = x
Type = virtual
Role = initiator
Protocol = SMP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 0
Logical link rate
Protocol = SMP

Virtual SMP initiator phy : SAS phy

Physical link rate
Phy identifier = x
Type = virtual
Role = initiator
Protocol = SMP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 0
Logical link rate
Protocol = SMP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 1
Logical link rate
Protocol = SMP

Virtual SMP target phy : SAS phy

Physical link rate
Phy identifier = x
Type = virtual
Role = target
Protocol = SMP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 0
Logical link rate
Protocol = SMP

Virtual SMP target phy : SAS phy

Physical link rate
Phy identifier = x
Type = virtual
Role = target
Protocol = SMP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 0
Logical link rate
Protocol = SMP

Logical SAS phy : Logical phy

Phy identifier = x
Logical phy identifier = 1
Logical link rate
Protocol = SMP

Figure 2 — SAS phy object and logical SAS phy object diagram
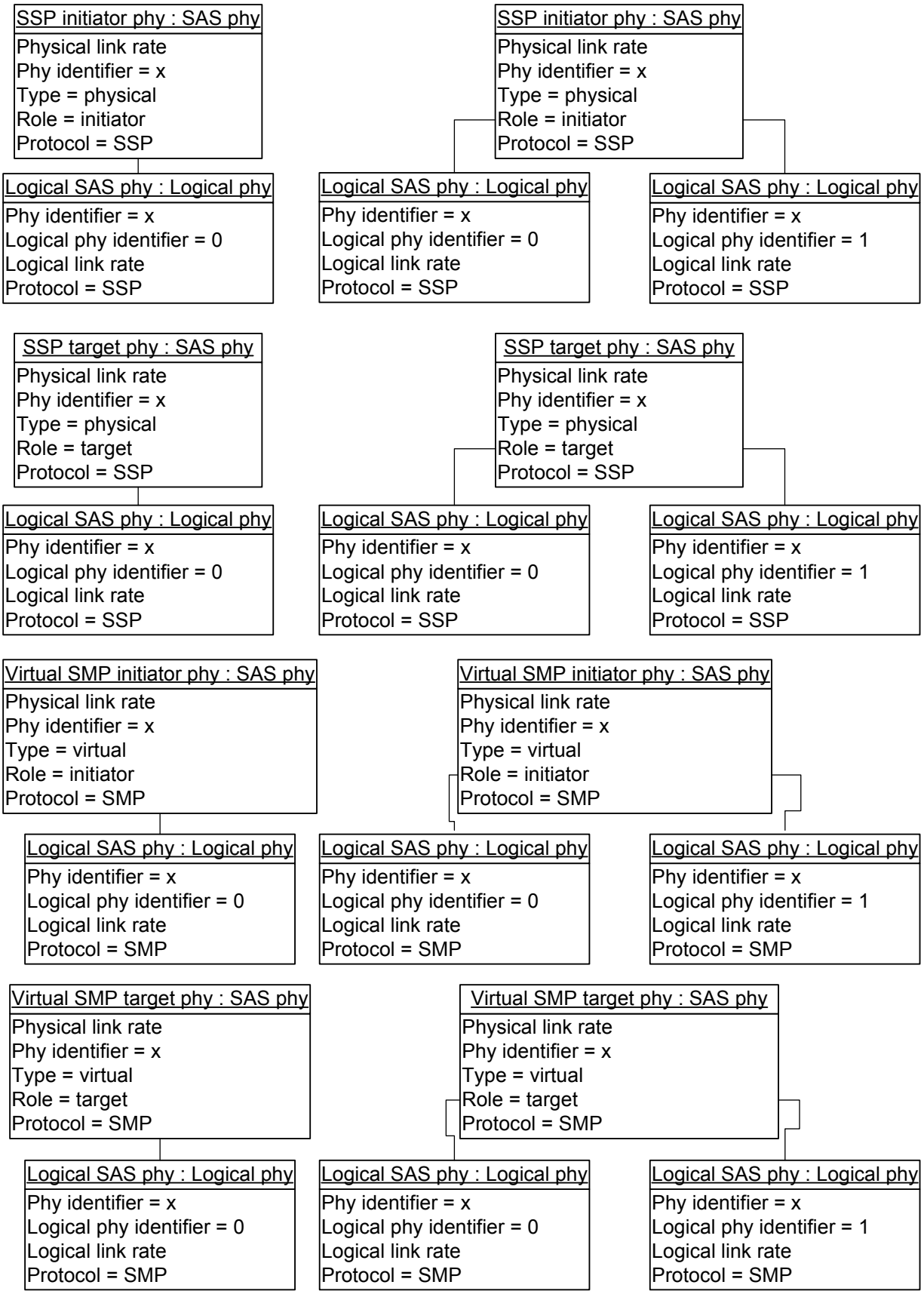
Figure 3 shows the objects instantiated from the expander phy class and the logical phy class, including:

a) expander phy;
b) virtual expander phy; and
c) logical expander phy.

An expander phy and logical expander phy is represented by one of these objects during each connection. An expander phy and a logical expander phy may be represented by different expander phy objects and logical expander objects in different connections.

```
Expander phy : Expander phy
Physical link rate
Phy identifier = x
Type = physical

    Logical expander phy : Logical phy
    Phy identifier = x
    Logical phy identifier = 0
    Logical link rate


Expander phy : Expander phy
Physical link rate
Phy identifier = x
Type = physical

Logical expander phy : Logical phy        Logical expander phy : Logical phy
Phy identifier = x                        Phy identifier = x
Logical phy identifier = 0                Logical phy identifier = 1
Logical link rate                         Logical link rate


Virtual expander phy : Expander phy
Physical link rate
Phy identifier = x
Type = Virtual

    Logical expander phy : Logical phy
    Phy identifier = x
    Logical phy identifier = 0
    Logical link rate


Virtual expander phy : Expander phy
Physical link rate
Phy identifier = x
Type = Virtual

Logical expander phy : Logical phy        Logical expander phy : Logical phy
Phy identifier = x                        Phy identifier = x
Logical phy identifier = 0                Logical phy identifier = 1
Logical link rate                         Logical link rate
```
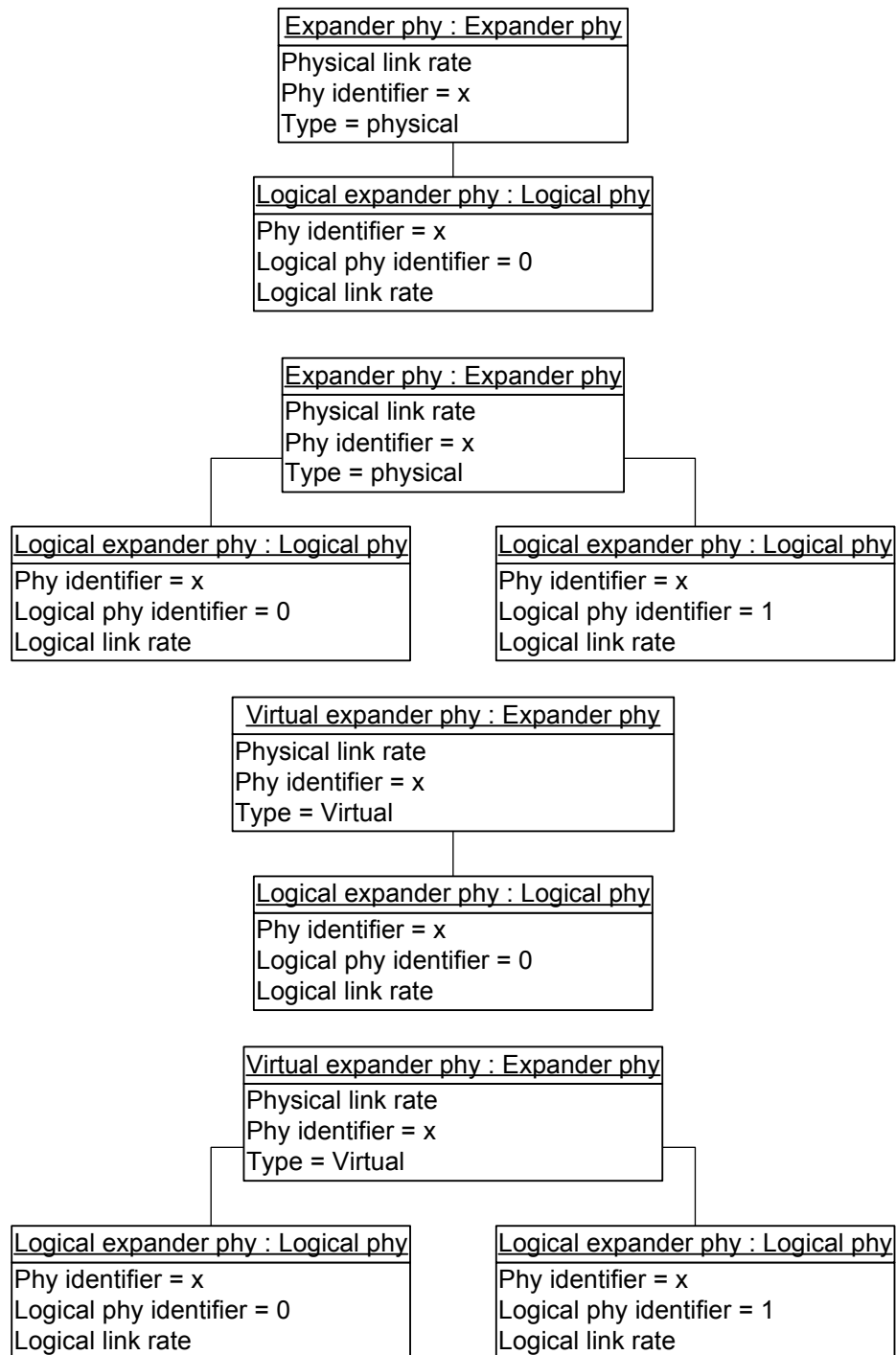
Figure 3 — Expander phy object diagram