Bridge Manager Selection During Net Configuration

Proposal for March 19 and 20 P1394.1 working group

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Agenda

-Introduction

   Bridge Manager Selection Problem

   What we need...

-Solution

   How we solve the problem

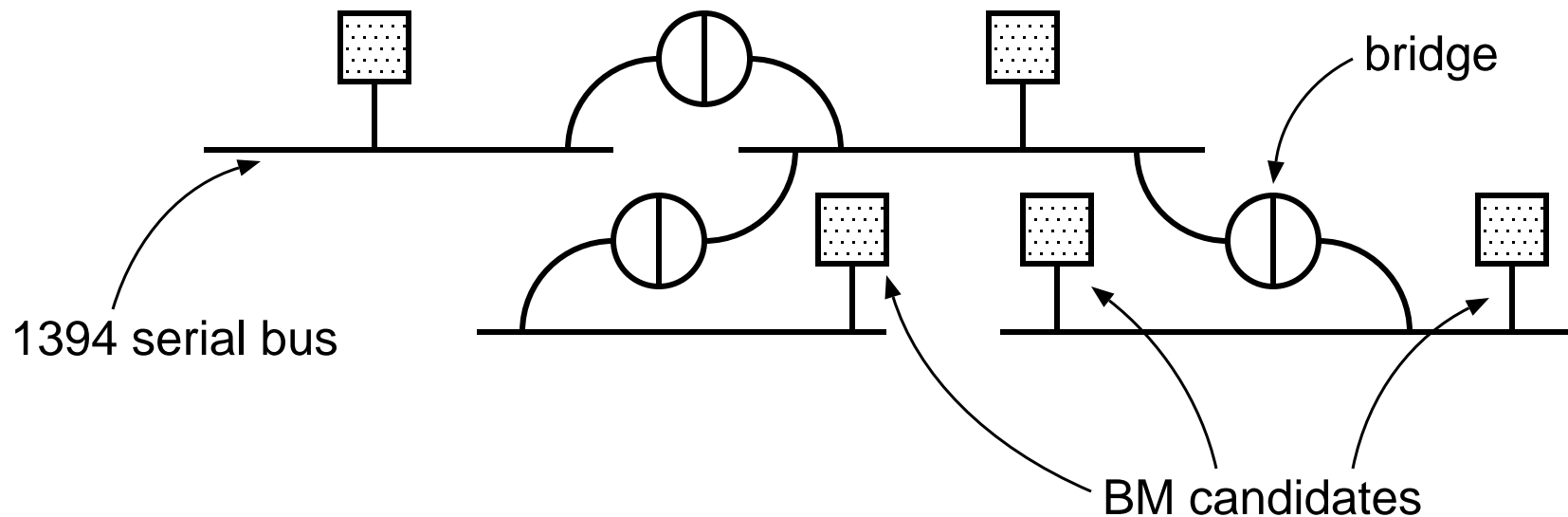   -Selection during configuration

      -Which of candidates should win?

      -Portal busy flag

-Conclusion

Bridge Manager Selection Problem

There might be two or more bridge manager candidates in a 1394 bus net, but selection algorithm is not presented.

In this presentation, we propose some ideas to solve the problem.

1394 serial bus

bridge

BM candidates

What we need.....

Bridge manager should be selected automatically.

We expect that the most functional or the smartest candidate
will be selected as a bridge manager through selection algorithm.

How we solve the problem

We put a selection algorithm into current configuration procedure.

We suggest that each portal have a new "OWNER_LEVEL" register.

We introduce "busy_flag" field in "PORTAL_CONTROL" register to avoid invalid writing to some registers.

Selection during configuration

In the configuration procedure, when programming a portal, we must write appropriate value to some registers.

We especially pay attention following registers to detect a contention between other candidates:

OWNER_LEVEL register,

OWNER_EUI register.

If these registers are already written by another candidate, we execute a certain procedure for resolving the contention.
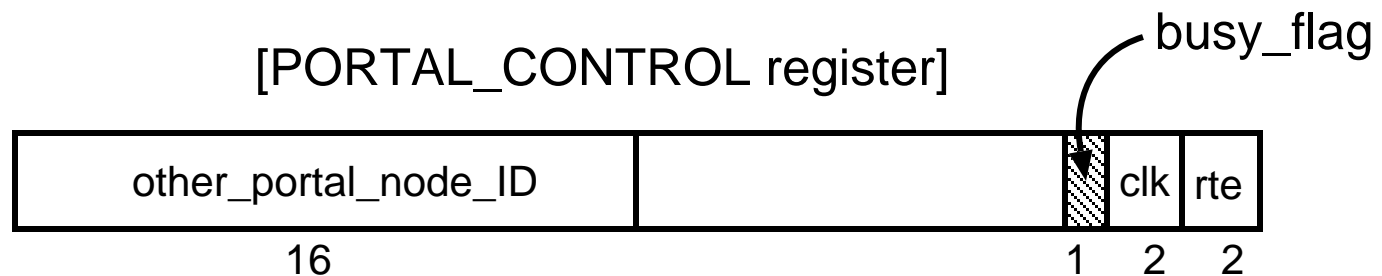
Which of candidates should win?

OWNER_LEVEL register reflects capability of a bridge candidate.

Not only the value stored in "OWNER_EUI register",
we make use of "OWNER_LEVEL" register for the smarter one
to be selected.

First, we compare value of "OWNER_LEVEL" registers, and
if they are the same value, then secondly, we compare
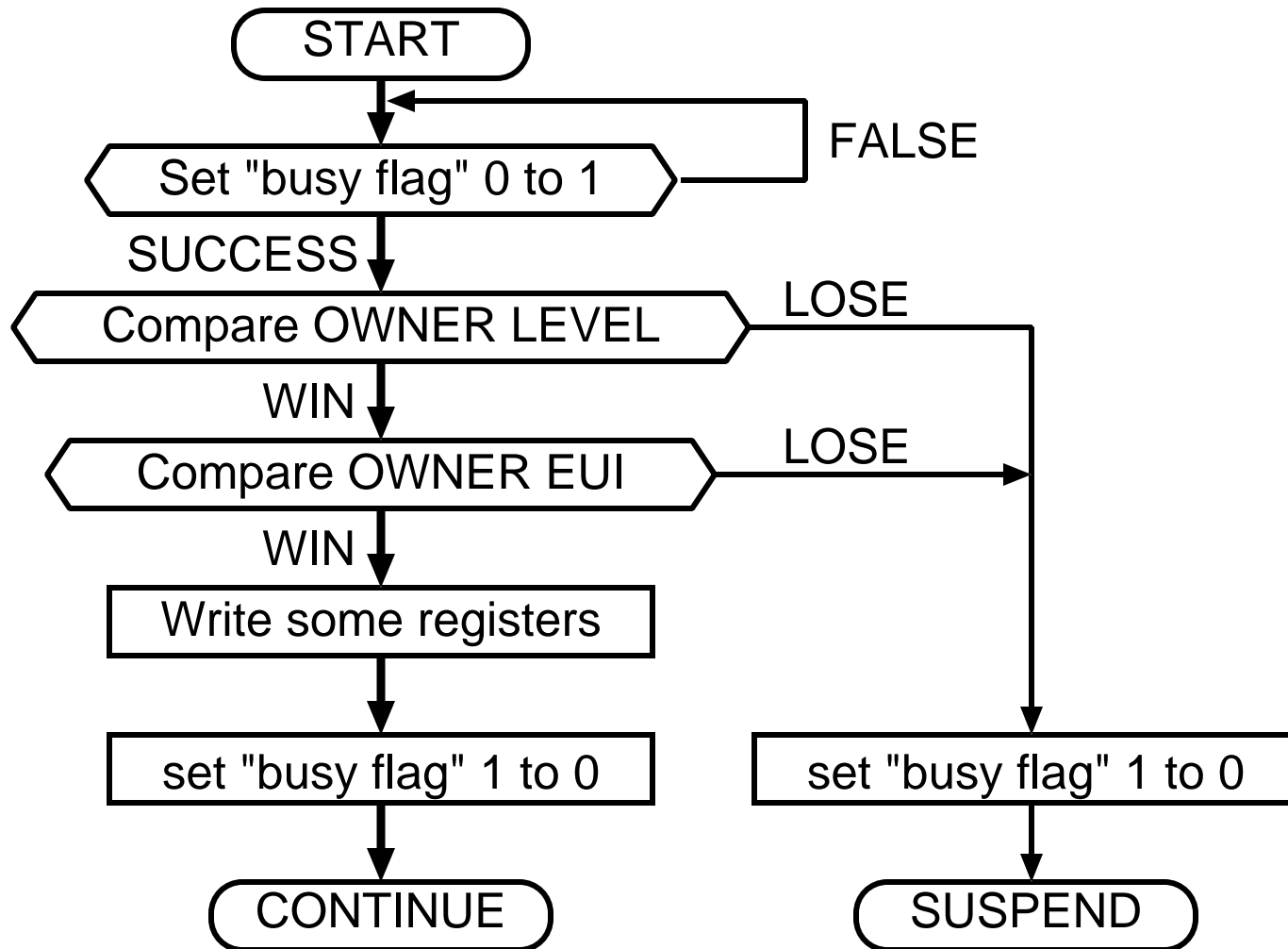"OWNER_EUI" registers to determine which is selected.

Portal busy flag

When we programming , we take a new "busy field" field in "PORTAL_CONTROL" register for the procedure to be more safer.

busy_flag

[PORTAL_CONTROL register]

other_portal_node_ID			clk	rte
16		1	2	2

"Busy flag" indicates prohibition to access the portal's registers concerned with net configuration procedure.

Algorithm Overview

START

Set "busy flag" 0 to 1 — FALSE

SUCCESS

Compare OWNER LEVEL — LOSE

WIN

Compare OWNER EUI — LOSE

WIN

Write some registers

set "busy flag" 1 to 0

set "busy flag" 1 to 0

CONTINUE

SUSPEND

Conclusion

We proposed the bridge manager selection algorithm during current net configuration procedure.

Even if more optimized configuration procedure coexists, one bridge manager will be selected as far as the procedure has this type of algorithm.

Following things remains to be determined:

How to define a bridge manager candidate's level,

How to adapt EUI value.