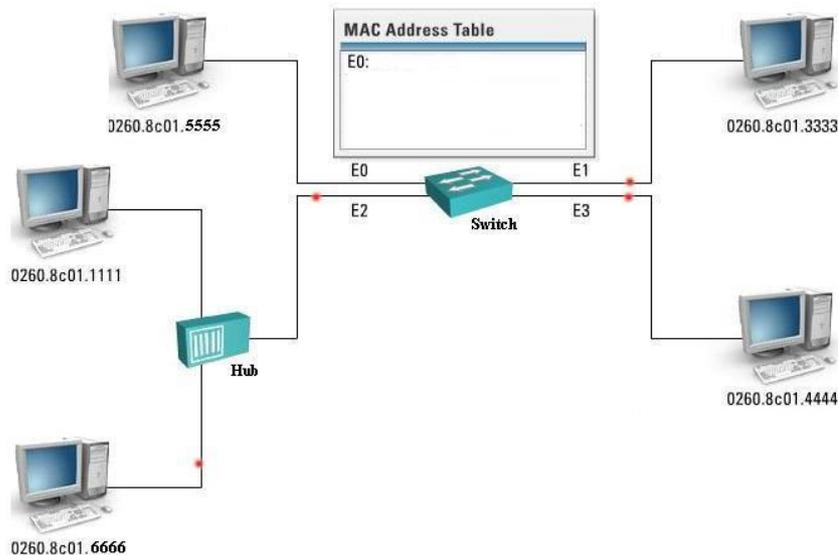


## Tutorial 6: Control Network Elements & Network Management

### Part 2

- (a) Complete the following MAC address table inside the network switch. Number underneath computer is its MAC address.



- (b) The diagram below depicted the following scenario: At start, MAC address of the Router Y has not been learned by either Switches. Host X sends a unicast packet (or frame) to Router Y.
- (i) State one reason in using such a switch topology in a network. (ii) State one expected problem in such topology without implementing any remedy action.



### Part 3

A district heating system in Tsing Yi, Hong Kong serves fan coil units and domestic hot water needs in 5 multi-story apartment buildings from a central plant located 2km from the farthest building. Each building includes 20 apartments and each apartment includes two LONWORKS devices for heating control and temperature monitoring. The central heating plant control system will monitor the hot water usage by each tenant and reset the hot water supply temperature based on usage demand. Existing spare electrical conduits are installed alongside the hot water piping distribution system and to each of the 10 apartment buildings.

Referring to the case above, for both *Backbone Channel* and *Device Channel*,

- specify the channel media
- specify transceiver type
- specify topology
- state whether repeater, router, terminator are needed.
- Start from the central plant, sketch the topology diagram with proper components put in place.

## Solution Guide

### Part 1

Network architecture, maximum packet size, throughput, delays through routers and gateways, monitoring control-event driven update.

### Part 2a

MAC Address Table
E0: 0260.8c01.5555
E1: 0260.8c01.3333
E2: 0260.8c01.1111
E2: 0260.8c01.6666
E3: 0260.8c01.4444

Part 2b (i) To provide redundant topology to eliminate a single point of failure.

(ii) It may cause MAC address table instability problem (some other problems include broadcast storms, multiple frame copies)

### Part 3

Backbone Channel:

Channel Media	Transceiver	Topology	Repeater/Router/terminator
Twisted pair	FT-10	Bus	Router, terminator (x2)

Device Channel:

Channel Media	Transceiver	Topology	Repeater/Route/terminator
Twisted pair	FT-10	Free (64 devices max)	Router, terminator

