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Swales

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(54) **AUTOMATIC DETERMINATION OF CORRECT IP ADDRESS FOR NETWORK-CONNECTED DEVICES**

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(51) **Int. Cl.**
H04J 1/16 (2006.01)

(52) **U.S. Cl.** **370/218**; 709/220; 709/221; 370/245; 370/216

(58) **Field of Classification Search** 709/203, 709/206, 208, 217, 226, 227, 228, 245, 225, 709/220, 221; 370/254, 218, 245, 216, 217, 370/466; 364/131; 714/25, 48
See application file for complete search history.

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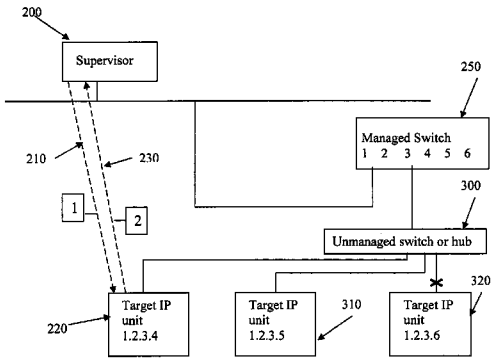
(57) **ABSTRACT**

The present invention is for automatic reconfiguration of industrial networked devices. More particularly, the system described herein facilitates use of TCP/IP networks, such as Ethernet, as an alternative for industrial fieldbus or device buses by removing the need to perform significant reconfiguration of devices such as I/O modules, sensors, or transducers under field replacement situations. The present invention uses a monitor agent to track the IP and MAC addresses of networked devices as well as port information. If a device fails, maintenance personnel make an in-field replacement of the failed device and the monitor agent automatically reassigns the IP address to the replacement device.

24 Claims, 8 Drawing Sheets



1. ARP Request - inquire MAC address of selected IP address 1.2.3.6 (unicast)
2. ARP response - MAC address of requested IP address is xxx
If no response is received, signify that the target IP unit is 'down'
If 1.2.3.6 is the ONLY unit on port 3 of the switch which is down, then it is a candidate for automatic reallocation. If any of the other units found on this port are

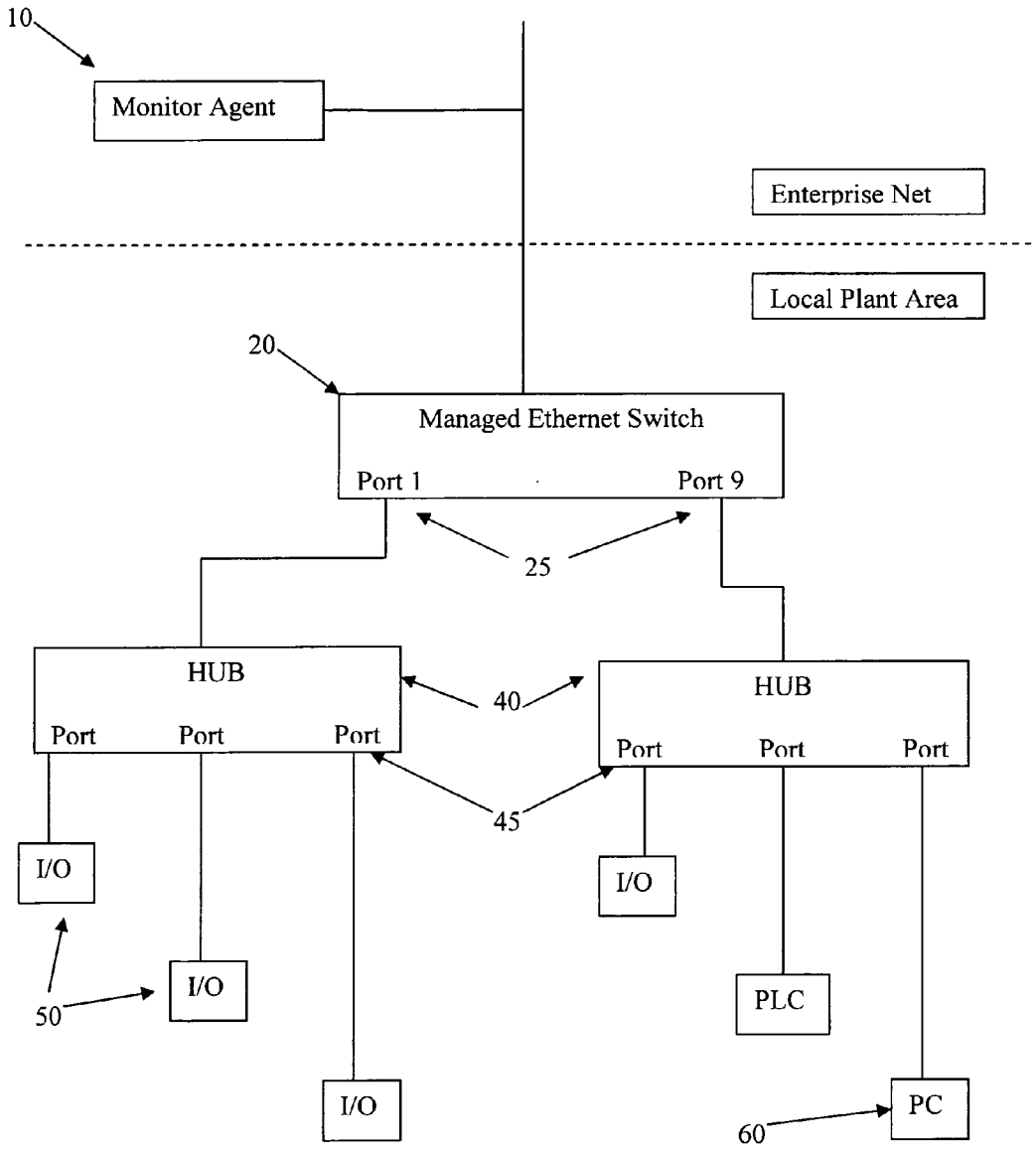


FIG. 1

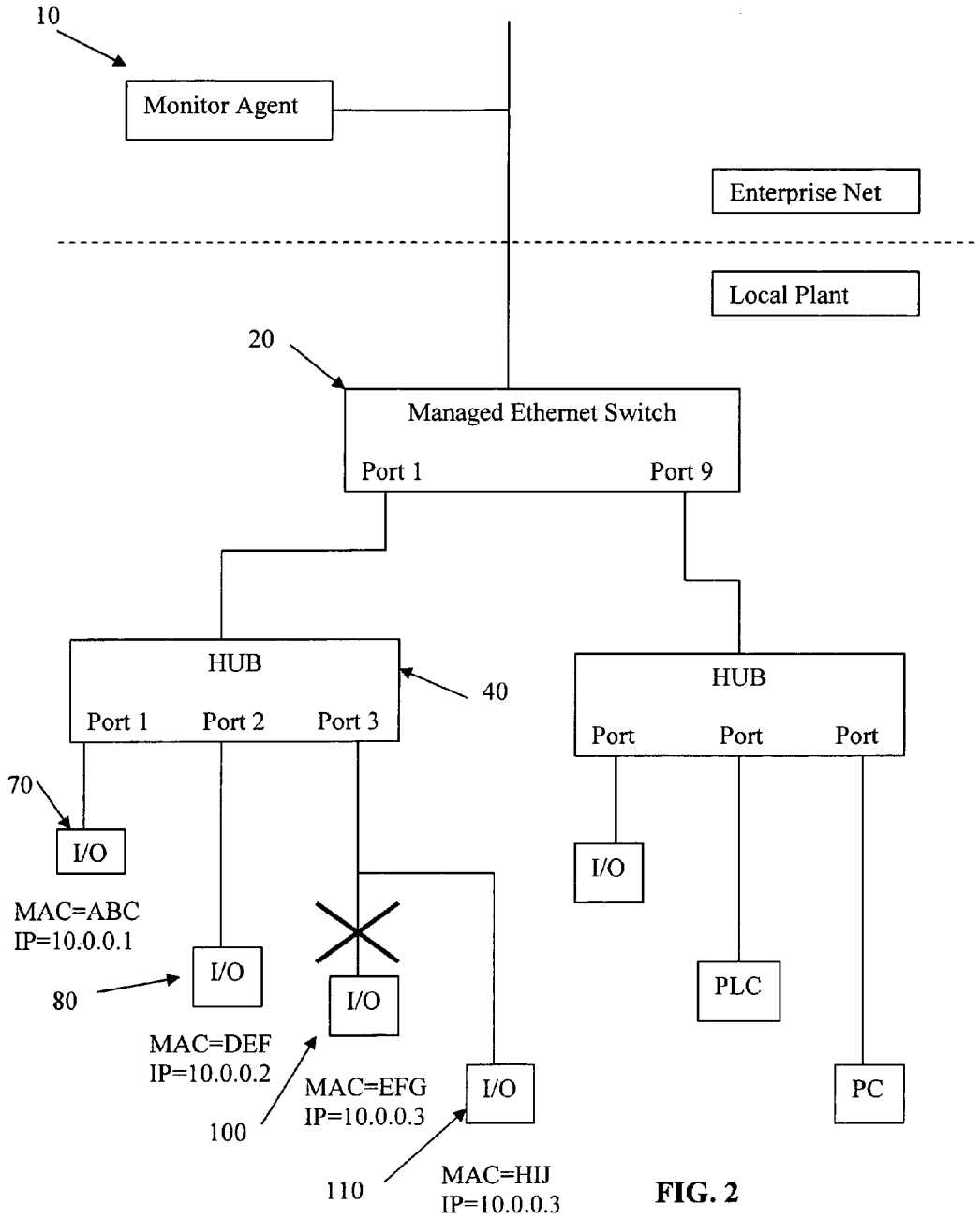
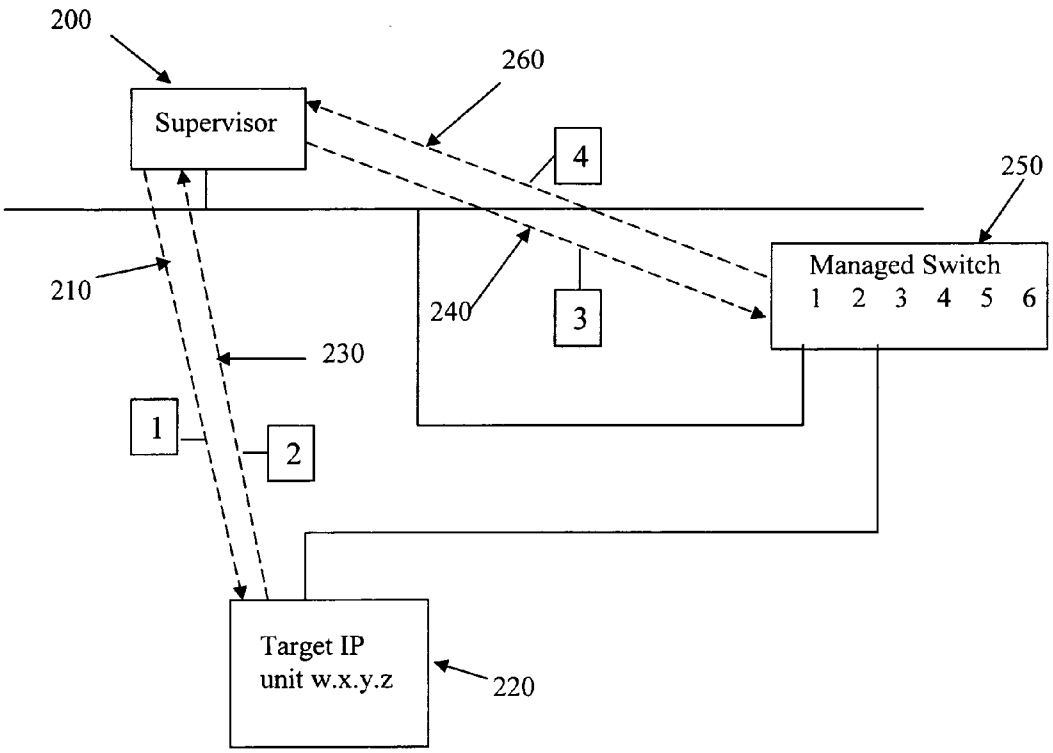
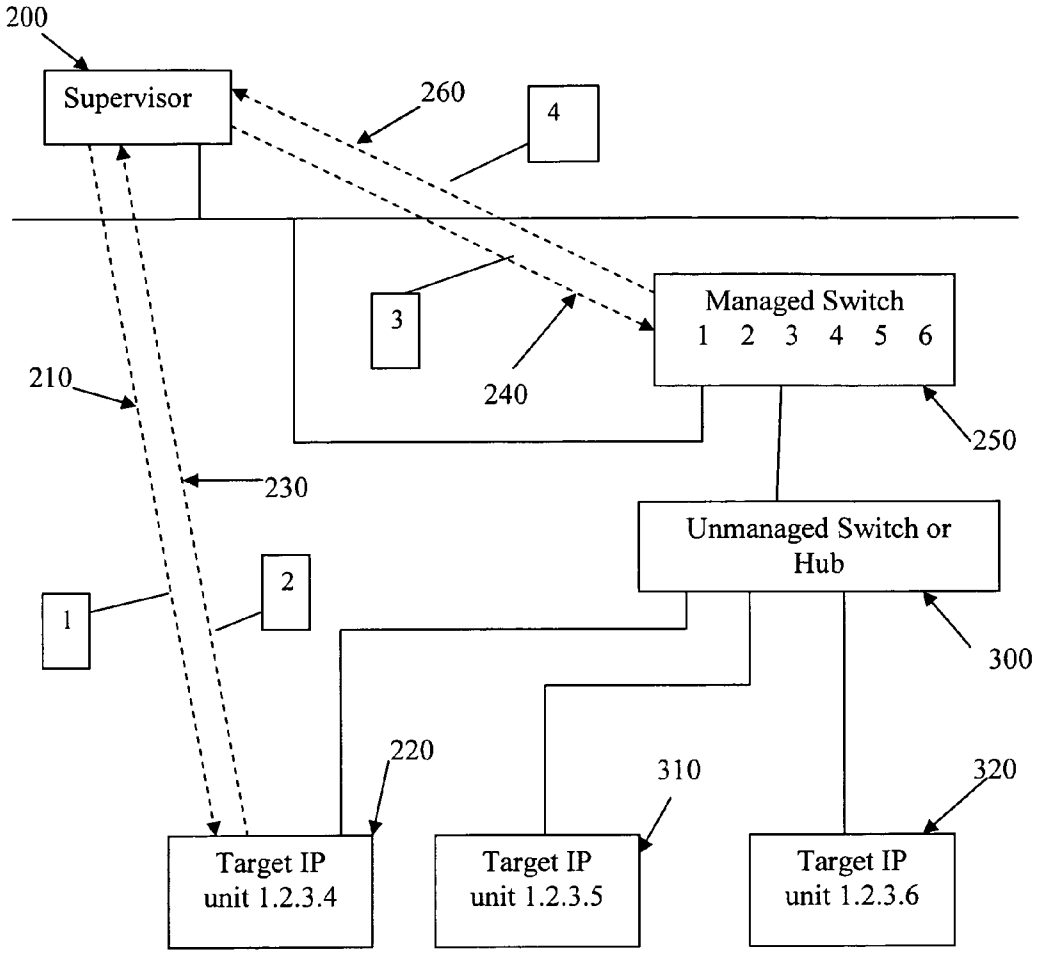


FIG. 2



1. ARP Request - inquire MAC address of IP address w.x.y.z (broadcast)
2. ARP response - MAC address of requested IP address is xxx
3. SNMP Findport request - request port number of MAC xxx
4. SNMP Findport response - port number of MAC xxx was 3

FIG. 3



1. ARP Request - inquire MAC address of selected IP address 1.2.3.4 (broadcast)
2. ARP response - MAC address of requested IP address is xxx
3. SNMP Findport request - request port number of MAC xxx
4. SNMP Findport response - port number of MAC xxx was 3

Targets are automatically determined to be sharing port 3 of the switch.

FIG. 4

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