

# Auto Restoration System For Un-Managed Switches In Wired Linear Network

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**ABSTRACT:** Many organizations have installed wired linear networks as a part of communication within the organization and have always faced some kind of technical faults and these faults are needed to be detected easily. If any network fails or fault occurs in linear network, it causes to fail whole network system. To identify the fault occurred in linear network we need to check each network individually from the main server or backbone network to each network until we identify the fault or error. In the process of identification of fault or error all system remains in unused states. To check each network and solve the error in network is time consuming process as well as headache to the networking professionals. Our project will make it easier to notify the problems at the specific location and also will restore the whole network.

**Keywords:** Switches, Server, Wired Linear, Network Auto Restoration.

## 1 INTRODUCTION

In large computer firms or organization the network associated is vast and in a single network, many computers are inter-linked through a branch or network. All the departments are connected via CAT-6 cable, each containing switch or in it. These switches are in series and if a single router fails then fault arises. It becomes very difficult to locate or identify the fault from such vast network. To avoid this problem which is time consuming in fault detection of each section or department, the main router is connected with sensor, wireless transmitter and receiver which come into play when a particular switch fails. The error is directly shown in the main server room with the help of buzzer which reduces time and enhancing efficiency of work by restoring the connection bypassing the faulty switch. The same principle can be applied to the routers working in series.

## 2. LITERATURE SURVEY

Although the concept of automatic network fault finder has not been used till date, Ethernet switches are used for identifying the working condition of PC networks in almost all organizations or sectors. When a network fails then for detecting the fault it takes some time, to avoid the time loss and make the correcting capabilities more efficient, the concept of network fault finder is introduced where main server room gets the signal of fault occurred wirelessly through RF transmitter and receiver. All the networks are connected to switches through CAT-6 cable and patch cords. When a single network fails then the signal is directly sent to the server section. Here in our project, the whole operation is implemented on a kit creating a small topology. With two base boards one is representing the server room and the other one representing a small wired linear network. The connection is made with the switches with transmitter circuit. The circuit is designed in such a way that as soon as fault occurs. Signal is sent to server room section where a master receiver circuit is present that detects the fault which is represented by corresponding LED. When the LED corresponding to a network stops glowing it means the network has failed or fault has been aroused.

### 2.1 Existing System

In present system with networks/switches in linear manner if fails, we have to manually go through every network and check each network for fault in it. We need to restore it manually. In the

process of fault detection and network restoration other networks remain in passive state making the system down.

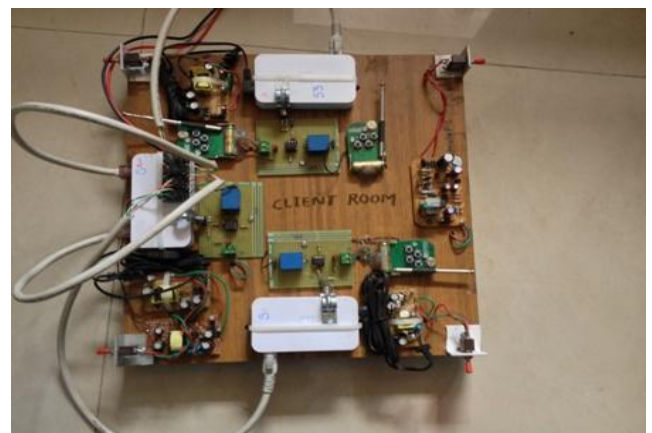
### 2.2 Proposed System

As earlier discussed, our system detects the fault in linear wired network and alerts the server administrator about the failure. Not only this but the faulty system is bypassed and the network can continue its working leading to automatic restoration of the whole network saving the time and headache of server administrator.

## 3. WORKING

### 3.1 Client Room Module

Client room consists of switches connected with CAT-6 cables, LDR's, Relays and Encoder circuit. Client room takes input of 5V to operate as shown in fig 3.1.

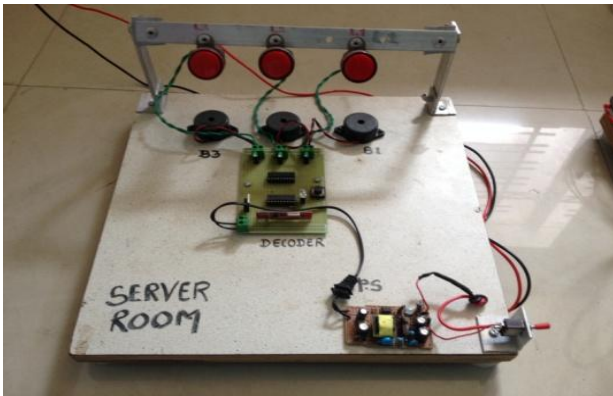


**Fig 3.1:** Client Room Module

Whenever one of the switches fail, the LDR which is placed in front of the pilot lamp of switch sensing it continuously, gives the signal that the corresponding switch is not working. Not glowing the pilot lamp is an indication of faulty switch. LDR sends the signal the microcontroller attached to LDR sensor. Microcontroller gets the signal of LDR and sends it to encoder to start encoding. Encoding signals are decoded at server

room module. Simultaneously, relay module gets activated attached to faulty switch which actually performs the auto restoration part and bypasses the faulty switch.

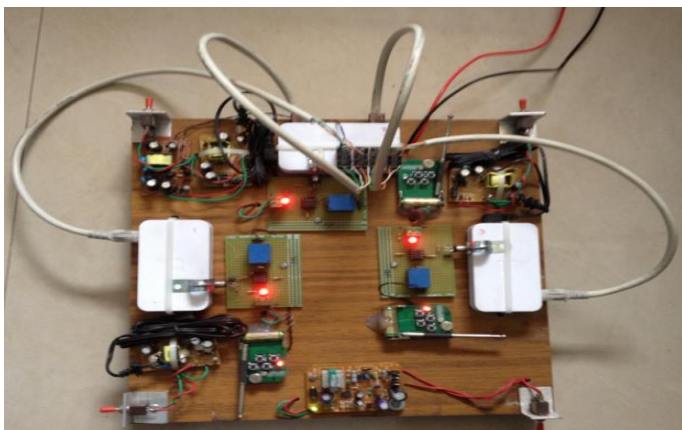
### 3.2 Server Room Module



**Fig 3.2:** Server Room Module

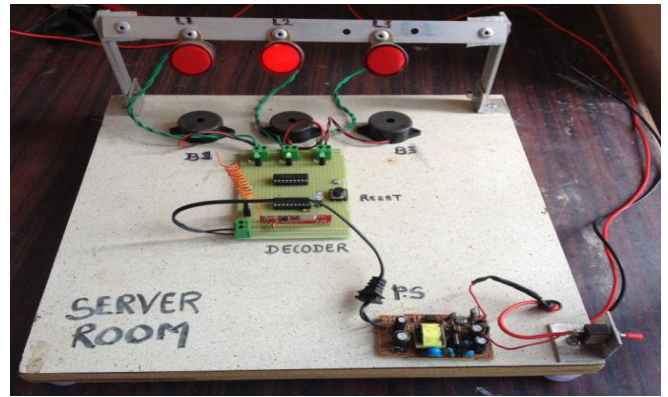
Server room consists of LED's and Buzzers working as indicators. The decoding circuit consists of RF module, PIC, power supply of 12V. The PIC and the decoder are set with the addresses of the encoders in the client room. Whenever the switch in the client room fails the respective encoder of the failed switch sends the signal to the server room and in the server room the decoder decodes the signal received wirelessly and then the signal is forwarded to the PIC. PIC then activates the respective LED indicator and the buzzer for the corresponding switch. This way the Network Administrator is easily notified about the faulty switch in the network.

### 5. RESULTS



**Fig 5.1:** Client Room Module with power supply

Client module looks as shown in above figure 5.1. After providing the power supply and simultaneously turning on the toggle switch fixed just beside the switch2(S2), which makes the switch faulty. As soon as the switch fails the microcontroller placed along with the switch S2 activates the encoder attached to it and it spontaneously encodes the message and keeps sending it to the server room module wirelessly.



**Fig 5.2:** Server Room Module fault detected

The server room module is as shown in figure 5.2. It automatically detects the fault as the fault has occurred in client room for the switch 2(S2), the same is detected at the server room module due to the RF module which detects the signals sent wirelessly by the encoder in client room. As the signals are detected the same are decoded by the decoder placed on the server room module which then forwards those decoded signals to the PIC, which in turn activates the respective LED indicator as well as the Buzzer placed for the switch( Here L2 and B2 will get activated as shown in figure 5.2 ).

### 6. CONCLUSION

According to the proposed model we conclude that till date there is no genuine device for detecting the fault in un-managed switches in linear wired network. So, our project is designed using RF technology which is capable of detecting and restoring the faulty network in a very simple manner. Though in case of small networks like that of cyber cafe, this concept is not effective, when it comes to the large network with many switches the concept can be very useful and effective. We have proposed a low cost solution resulting remote monitoring capability of existing network system. Uninterrupted network connectivity is provided with the concept of auto restoration system.

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