इरिसेट
नेटवर्क प्रयोगशाला
प्रयोग नं: एन डब्लू एल - 09

IRISET
NETWORK LABORATORY
EXPERIMENT No: NWL - 09

नाम
Name : ----------

अनुक्रमांक
Roll No : ----------

पाठ्यक्रम
Course : ----------

दिनांक
Date : ----------

प्राप्त अंक
Marks Awarded :

अनुदेशक का हस्ताक्षर
Instructor Initial :

Name of Experiment: **Study of typical PRS / UTS network setup**

Object:

Study of typical PRS / UTS network Architecture

Introduction:

PRS (Passenger Reservation System):

PRS network is setup in Indian Railways for facilitating booking of reserved tickets in advance. PRS network works on host based network technology (i.e. connected through dumb terminals). Main frame Servers are placed at 5 locations and these locations are connected to PRS centers using un-intelligent dumb terminals. With the interconnection of these Main frame Servers using redundant Mesh Topology Network the reserved tickets can be issued from anywhere to anywhere.

UTS (Un-reserved Ticketing System):

UTS network is setup in Indian Railways for facilitating booking of un reserved tickets. UTS network works on both client – server network technology & host based network technology (i.e. Dumb terminals). Main frame Servers are placed at Zonal Head Quarters and these are further connected to Ticket booking offices using either thin clients or dumb terminals. With the interconnection of these Main frame Servers using 4 tier architecture, un-reserved tickets can be issued in advance. Usually in way side stations where PRS network is not available the UTS network is provided using Thin Clients. Stations where both PRS & UTS networks are available, these networks are provided using dumb terminals.

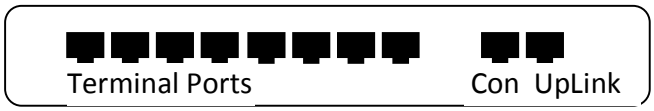
Unification of PRS-UTS system:

PRS-UTS unified network is a cost effective solution for better reliability & efficient use of already available network resources. A single terminal runs PRS & UTS application in two separate sessions; hot keys are used for switching the sessions. Unified PRS-UTS network is 4 tier architecture.

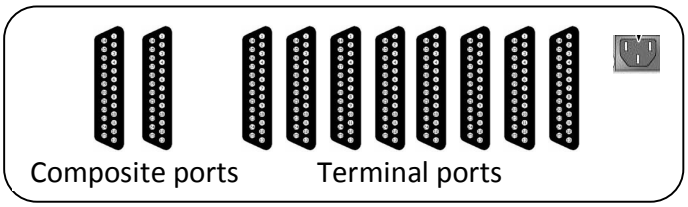
Apparatus Required:

- Server with NIC card
- Terminal with COM port - (2nos.)
- Terminal Server (TS)
- Patch cord - (2 nos.)
- RJ45 to DB25 male connector (1 no.)
- V.35 Modem (2pairs)
- PC / Thin client with NIC card (1no.)
- Network Terminal Server (NeTS) - (2nos.)
- Stat Mux (2nos.)
- DB25 male to DB9 female connector (2 nos.)
- RJ45 to DB9 female connector (2nos.)

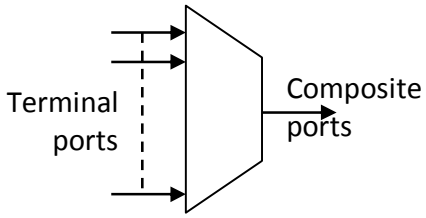
Terminal Server (TS):
Terminal server allows asynchronous serial terminals and printers to access host systems using TCP/IP over 10/100 Mbps Ethernet



Statistical time division multiplexer (Stat Mux)
Multiplexes traffic from several asynchronous RS232 data terminals into a single composite stream. May be with eight or sixteen terminal ports. Typically used in pairs across a leased communication line.



Rear side

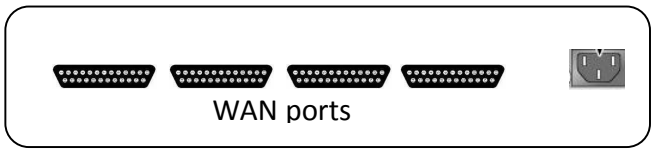


Schematic diagram

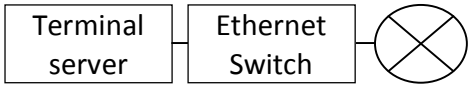
Network Terminal Server (NeTS):
Single box solution for connecting dumb terminals and PCs/thin clients at a remote station to central PRS/UTS servers over a TCP/IP WAN. Built in features for facilitating PRS-UTS integration

Front panel

Rear panel



Block schematic



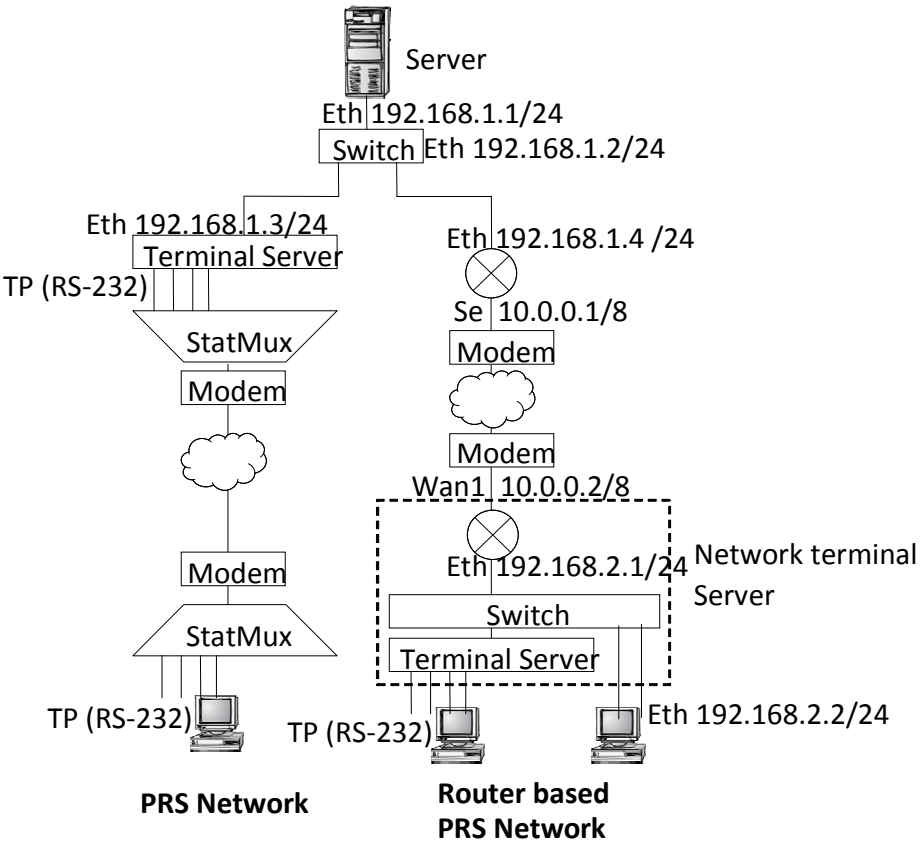
Router

Conventional PRS Network Architecture:
Multiple asynchronous RS232 data terminals (dumb terminals) traffic is multiplexed into a single composite stream and carried to PRS server location through leased lines & de-multiplexed to asynchronous RS232 data. Terminal server allows asynchronous serial terminals and printers to access PRS server systems using TCP/IP over 10/100 Mbps Ethernet as show in the simulated lab setup diagram.

Unified PRS / UTS Network Architecture:
The object of network is designed in such a way so that the PRS application & UTS application can be benefited from each other in terms of reliability and recurring cost optimization through efficient use of network resources.

It is a TCP/IP based network forming individual zone as single autonomous system (AS) of OSPF routing domain. It's a 4 tier architecture.Tier-1 is the zonal server, Tier-2 is the divisional hub center, Tier-3 is the Location & Tier-4 are the Terminals. At the remote locations Terminal server allows asynchronous serial terminals and printers to access PRS/UTS server systems using TCP/IP over 10/100 Mbps Ethernet as show in the simulated lab setup diagram.

Simulated lab setup of PRS & UTS network



Procedure:
Connect the devices as per the above shown simulated lab setup

Verification:
Go to Hyper terminal

START>Programs >Accessories>Communications>Hyper terminal <Enter>

Configure Hyper Terminal with default settings

Wait for **local>** prompt **(**this indicates that you have successfully connected to the terminal server**)**

Type at the prompt **connect 192.168.1.1 (***IP address of PRS / UTS server***)**

Enter login name & password of the PRS / UTS server, it displays

"WELCOME TO NETWORK LAB PRS - UTS UNIFIED SERVER"

Indicates that you are connected to the PRS / UTS server

To break session with server Press **Ctrl+C**

To exit, type **exit** at **local>** prompt and Press **<ENTER>**

Exercise:

1. How Network Terminal Server (NeTS) is different from Terminal Server (TS)?

2. Mention the different ports available on NeTS & TS?

3. Write the Basic function of Stat Mux?

4. State two differences between the Conventional & Unified setup of PRS / UTS network?