



**TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
PULCHOWK CAMPUS**

Mini Project Proposal

Computer Networks



Submitted By:

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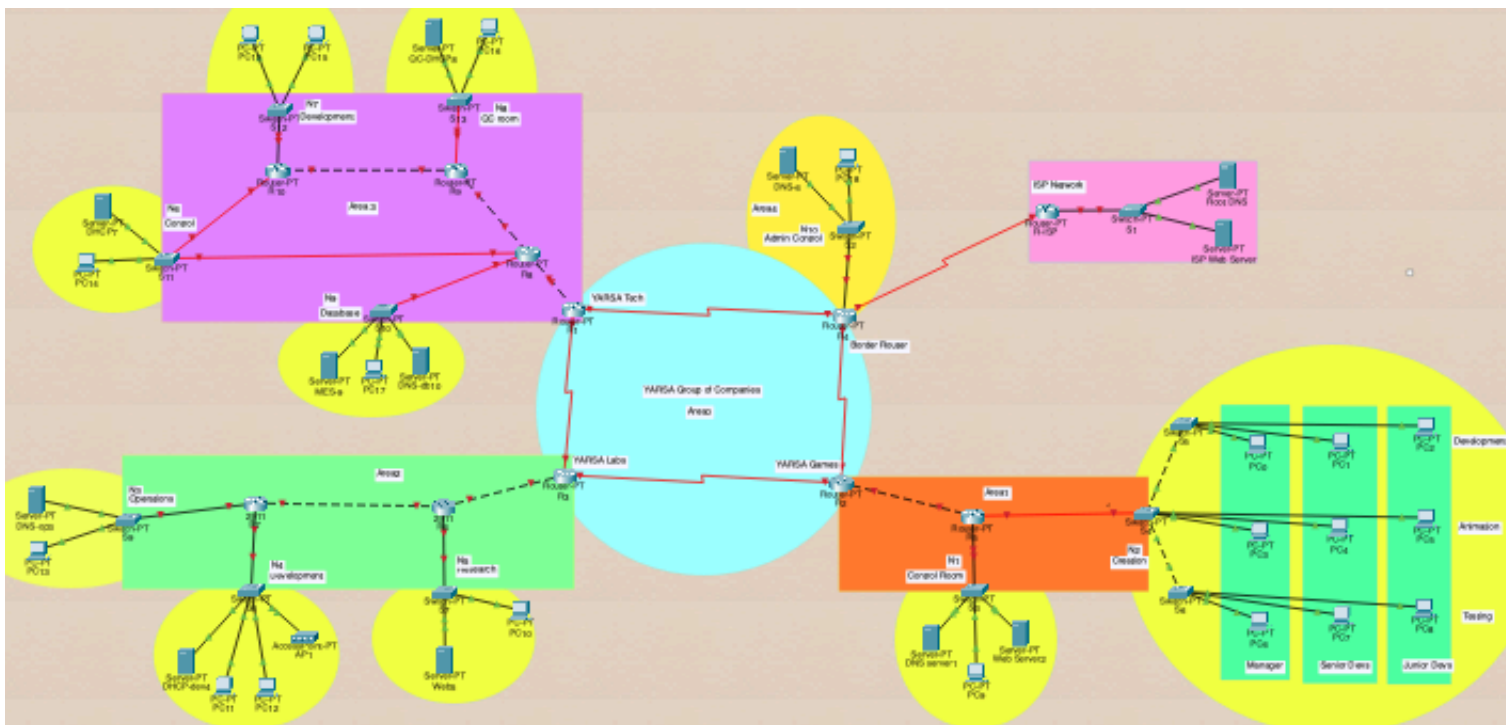
Department of Electronics and
Computer Engineering

Mini Project Proposal

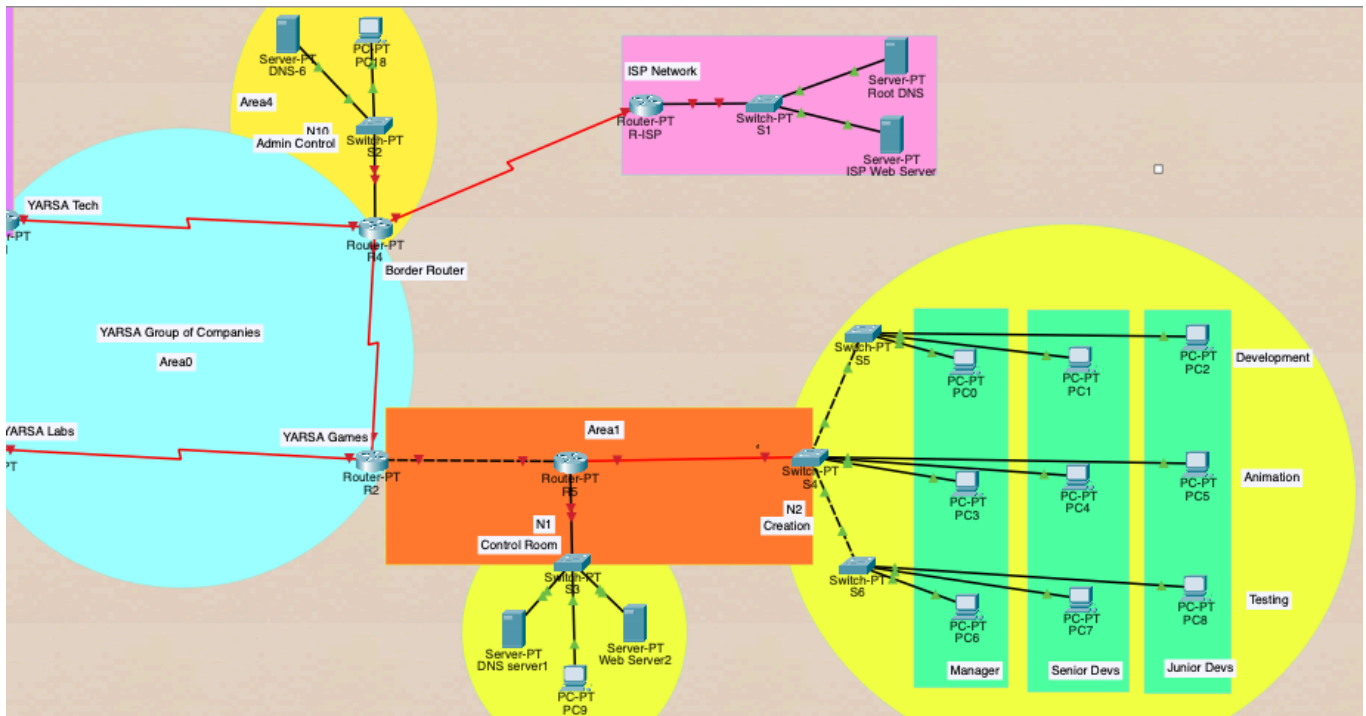
The assumed network for this proposal is a network of a group of companies, Yarsa. 3 Companies, Yarsa Games, Yarsa Tech and Yarsa Labs are shown in the network, imagined to be each in a floor of a building. 3 different areas are divided for each company, having their own subnets. A control room for admin is connected to the Border router for overall control. Isp router has a Root server to it, and other DNS, DHCP and Web servers are as shown. Area 0 is the backbone of the entire network through which the inter area communication occurs as well as the connection with the ISP happens through this area. Area 1 is the area consisting of the Yarsa Tech. Area 2 consists of Yarsa Labs while Area 3 consists of Yarsa Games. The ISP is connected via a border router and the other areas are connected via their corresponding area border routers. The assumed IP is 10.0.0.0/ 21 supporting (at maximum) a total of 2046 hosts, but since we require several subnet divisions, the actual host count is much lower.

Network Plan

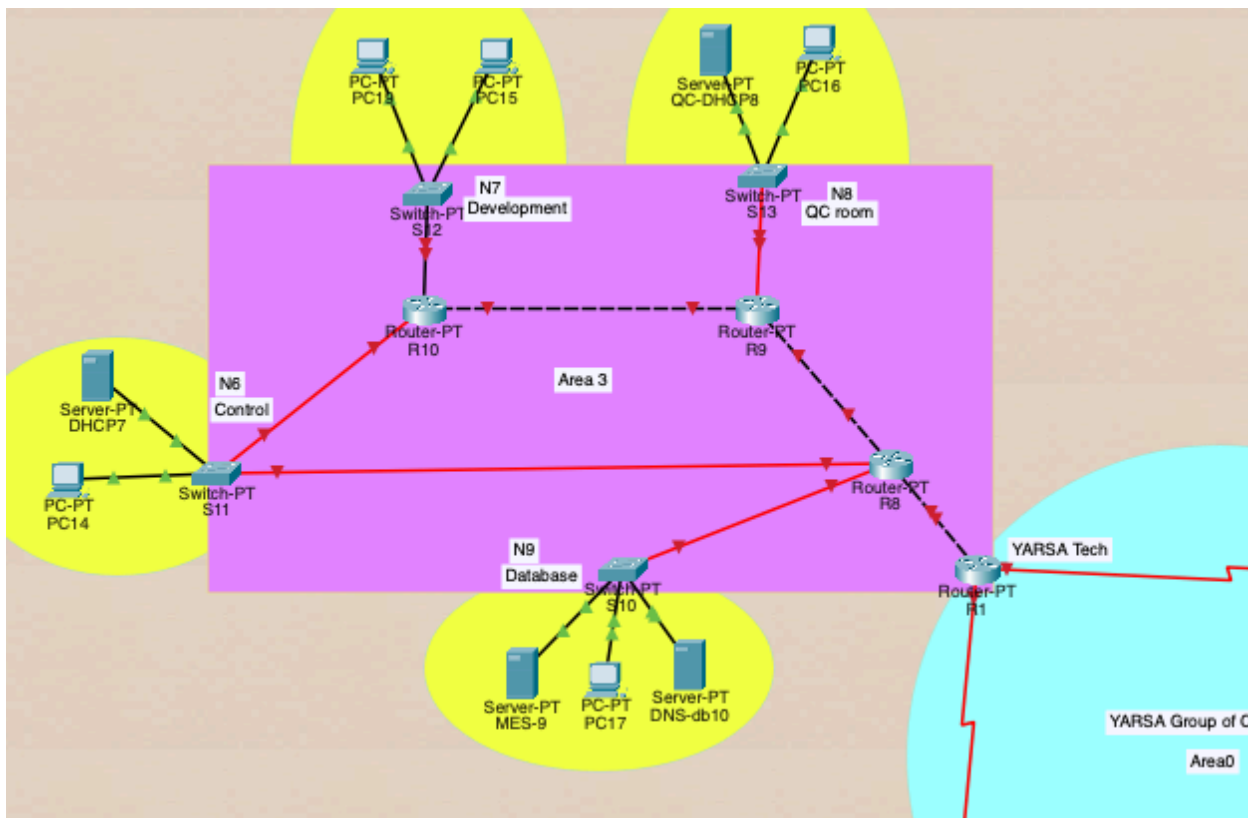
Proposed Network Topology of the company, Yarsa:



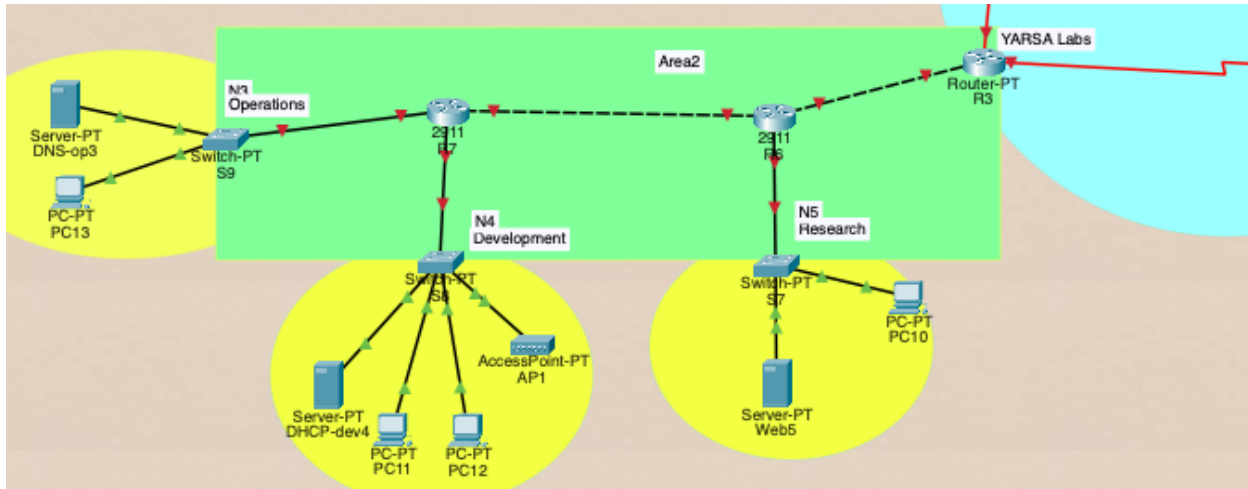
Area 1(Yarsa Games) and Area 0(backbone area):



Area 3 (Yarsa Tech):



Area 2 (Yarsa Labs):



Subnet Division:

Subnet	Hosts Required	Subnet Mask	Total IPs	Network Address	Broadcast Address	Usable IP Range	Wildcard Mask
N2	350	/23	512	10.0.0.0	10.0.1.255	10.0.0.1 - 10.0.1.254	0.0.1.255
N7	240	/24	256	10.0.2.0	10.0.2.255	10.0.2.1 - 10.0.2.254	0.0.0.255
N8	120	/25	128	10.0.3.0	10.0.3.127	10.0.3.1 - 10.0.3.126	0.0.0.127
N5	60	/26	64	10.0.3.128	10.0.3.191	10.0.3.129 - 10.0.3.190	0.0.0.63
N3	28	/27	32	10.0.3.192	10.0.3.223	10.0.3.193 - 10.0.3.222	0.0.0.31
N4	13	/28	16	10.0.3.224	10.0.3.239	10.0.3.225 - 10.0.3.238	0.0.0.15
N9	10	/28	16	10.0.3.240	10.0.3.255	10.0.3.241 - 10.0.3.254	0.0.0.15
N1	6	/29	8	10.0.4.0	10.0.4.7	10.0.4.1 - 10.0.4.6	0.0.0.7
N6	6	/29	8	10.0.4.8	10.0.4.15	10.0.4.9 - 10.0.4.14	0.0.0.7
N10	5	/29	8	10.0.4.16	10.0.4.23	10.0.4.17 - 10.0.4.22	0.0.0.7
Net-ISP	2	/30	2	192.168.1.0	192.168.1.3	192.168.1.1 - 192.168.1.2	0.0.0.3

Point to point connections:

2 hosts Connection	CIDR Prefix	Subnet Mask	Total IPs	Network Address	Broadcast Address	Usable IP Range	Wildcard Mask
R1 - R4	10.0.4.0/30	255.255.255.252	4	10.0.4.0	10.0.4.3	10.0.4.1 - 10.0.4.2	0.0.0.3
R2 - R4	10.0.4.4/30	255.255.255.252	4	10.0.4.4	10.0.4.7	10.0.4.5 - 10.0.4.6	0.0.0.3

R2 - R5	10.0.4.8/30	255.255.255.252	4	10.0.4.8	10.0.4.11	10.0.4.9 - 10.0.4.10	0.0.0.3
R3 - R2	10.0.4.12/30	255.255.255.252	4	10.0.4.12	10.0.4.15	10.0.4.13 - 10.0.4.14	0.0.0.3
R1 - R3	10.0.4.16/30	255.255.255.252	4	10.0.4.16	10.0.4.19	10.0.4.17 - 10.0.4.18	0.0.0.3
R3 - R6	10.0.4.24/30	255.255.255.252	4	10.0.4.24	10.0.4.27	10.0.4.25 - 10.0.4.26	0.0.0.3
R6 - R7	10.0.4.28/30	255.255.255.252	4	10.0.4.28	10.0.4.31	10.0.4.29 - 10.0.4.30	0.0.0.3
R1 - R8	10.0.4.32/30	255.255.255.252	4	10.0.4.32	10.0.4.35	10.0.4.33 - 10.0.4.34	0.0.0.3
R8 - R9	10.0.4.36/30	255.255.255.252	4	10.0.4.36	10.0.4.39	10.0.4.37 - 10.0.4.38	0.0.0.3
R9 - R10	10.0.4.40/30	255.255.255.252	4	10.0.4.40	10.0.4.43	10.0.4.41 - 10.0.4.42	0.0.0.3
R4 - RISP	10.0.4.20/30	255.255.255.252	4	10.0.4.20	10.0.4.23	10.0.4.21 - 10.0.4.22	0.0.0.3

Additional Specification:

IP address of each server:

Server Name	Network Name	Network Address	Server IP	Description
DNS Server1	N1	10.0.4.0/29	10.0.4.2	Located in the control network of Yarsa Games, managing DNS services for domain resolution.
Web Server2	N1	10.0.4.0/29	10.0.4.3	Located in the Control network of Yarsa Games, hosting its web services.
DNS Server3	N3	10.0.3.192/27	10.0.3.194	Located in the Operations network of Yarsa Labs, managing DNS services for domain resolution.
DHCP Server4	N4	10.0.3.224/28		Located in the Development network of Yarsa Labs, issuing IP addresses to devices in the network.
Web Server5	N5	10.0.3.128/26	10.0.3.130	Located in the Research network of Yarsa Labs, hosting its web services.
DNS Server6	N10	10.0.4.16/29	10.0.4.18	Located in the Admin Control network, managing DNS services.
DHCP Server7	N6	10.0.4.8/29	10.0.4.10	Located in the Control network of Yarsa Tech, issuing IP addresses to devices.
DHCP Server8	N8	10.0.3.0/25	10.0.3.2	Located in the Quality control network of Yarsa Tech, issuing IP addresses to devices.
MES Server9	N9	10.0.3.240/28	10.0.3.143	Located in the Database network, hosting MES services.
DNS Server 10	N9	10.0.3.240/28	10.0.3.144	Located in the Database network, handling DNS services.