



BLACKSTONE NETWORKS INC.

1 Apple Park Way, Cupertino, CA 95014

**Pixel Forge Game Studio Network Design
and Implementation Proposal**

Pixel Forge Game Studio Network Design and Implementation Proposal

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I. Introduction

Pixel Forge Game Studio, a thriving game development company, is relocating to a larger facility to accommodate its growing workforce. The new office will house the following key departments:

- **Developer Department** – Focused on coding and game development.
- **Marketing and Finance Department** – Manages advertising campaigns, financial operations, and client engagement.
- **Creative Department** – Responsible for graphic design, story creation, and visual assets.
- **IT Department** – Handles technical support, server maintenance, and network operations.

The company, Blackstone Networks Inc., objectives are to design a scalable and secure network that meets the studio's requirements. The network must include:

- **A static or dynamic IP addressing, with subnetting** based on the needs of the department, and **Routing Information Protocol (RIP)** for dynamic routing and construction of routing tables.
- **Analysis of the office blueprint** to determine optimal device positioning and resource allocation.
- **Provision for both wired and wireless connectivity.**
- **Hostname allocation** for all devices for easier identification and management.
- **Implementation of network security measures and troubleshooting mechanisms.**



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- A list of **salaries and wages** (good for 3 months) and **billing of materials, devices and equipment** (other devices and peripherals were existing - refer to the blueprint), and **UTP cable measurements**.

As a team of network designers, the company is tasked with ensuring that the design supports efficiency, security, and collaboration across departments while adhering to best practices.

II. Network Company Background

Company Name: Blackstone Networks, Inc.

Brief Description: Blackstone Networks, Inc. is a Silicon Valley-based tech firm with a decade of experience in cybersecurity and network solutions. The company specializes in providing privacy-focused services, including server-wide systems integration, AI-driven cloud computing training, and advanced network topology design. Blackstone offers high-performance technologies, such as secure server systems and multi-rack Nvidia H100 setups for AI tasks, while also supporting general applications like gaming servers. A key differentiator is its commitment to sustainable networking through liquid cooling, which reduces operational costs and enhances environmental efficiency compared to competitors.

Mission: “Blackstone is committed in assuring a limitless networking connection by providing cost-effective and transmission-efficient server systems and technologies that will embed an unforgettable experience”.



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Vision: “Our company envisions becoming one of the global leaders in networking solutions recognized for innovations, sustainability and trustworthy services. We aspire to create a secure and high-speed data connected connections globally by creating seamless and sustainable networks”

III. Summary of Network Planning and Design

The company implemented a scalable and secure network to support Pixel Forge Game Studio’s relocation. Key decisions included:

- **IP Addressing & Routing:** Utilize the **dynamic** and **static IP addressing** with subnetting and **Routing Information Protocol(RIP)** for dynamic routing to optimize network performance.
- **Device Placement:** An analysis of the office blueprint ensured the optimal placement of devices, considering connectivity needs and minimizing cable lengths.
- **Connectivity:** A hybrid of **wired** and **wireless** solutions was designed to ensure reliable connections for fixed workstations and flexibility for mobile devices.
- **Security Measures:** Deploy **firewalls, VLANs, encryption, and Intrusion Detection Systems (IDS)** to safeguard data and prevent intrusions.
- **Network Management:** Assigned **unique hostnames** and used **centralized management tools** for streamlined **monitoring and troubleshooting**.
- **Budgeting & Resources:** Optimized costs with a detailed inventory of devices, cabling, and a three-month salary budget.

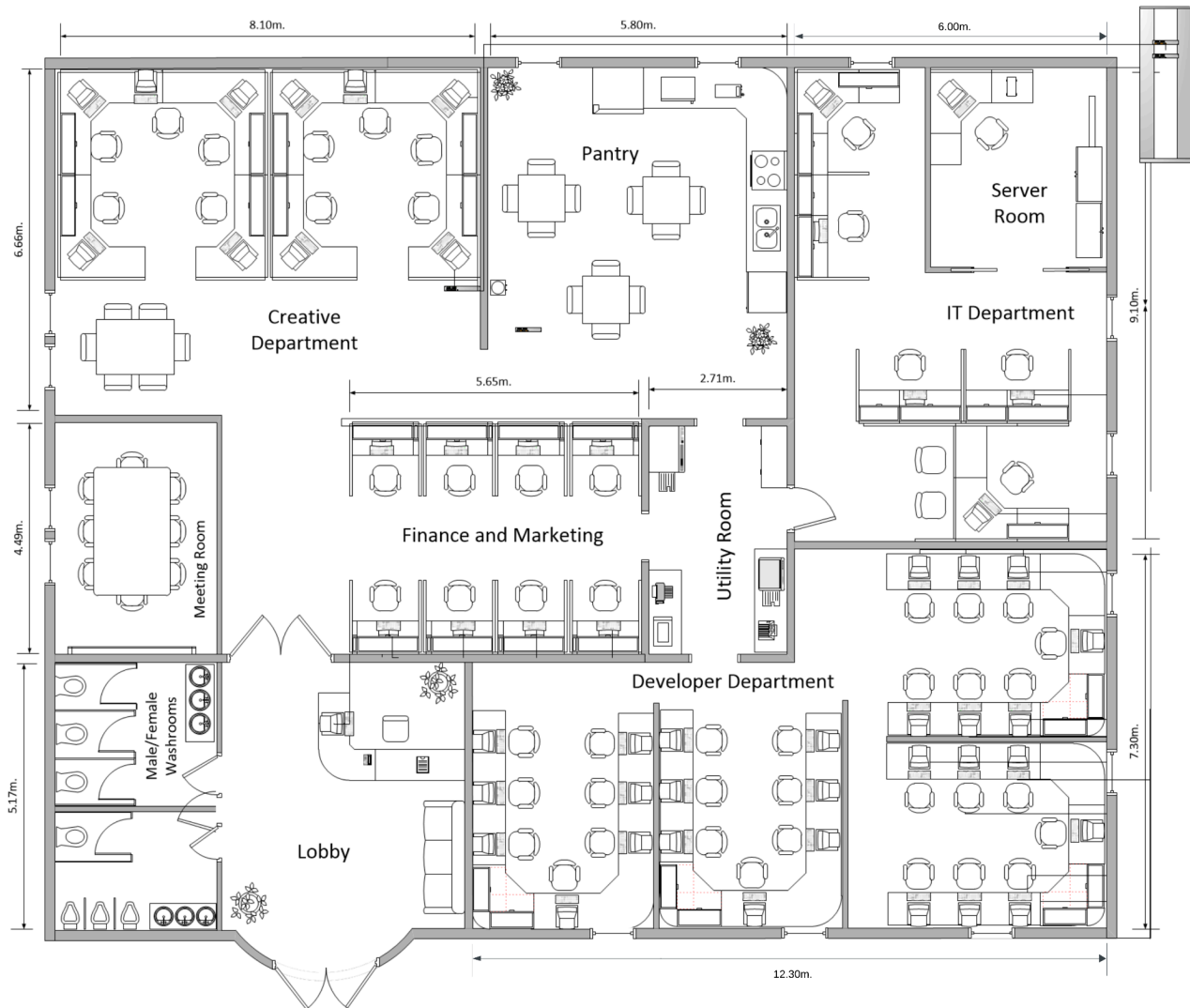


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The planning emphasized scalability to accommodate future growth, ensuring the network's adaptability to evolving requirements while maintaining cost-effectiveness.

IV. Physical Topology

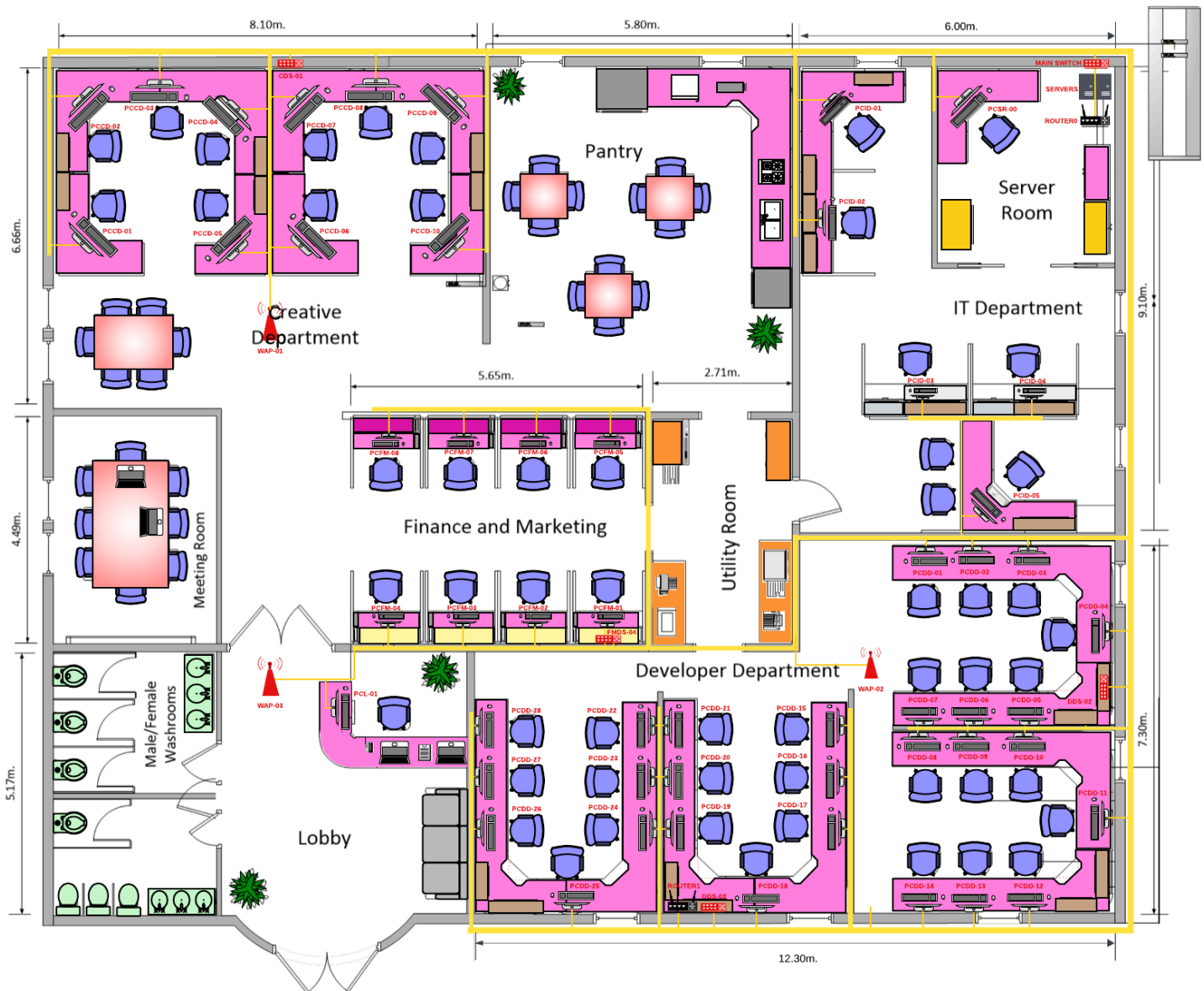
- **Blueprint of Pixel Forge Game Studio**





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- **Proposed Network Cabling Plan**
 - **Cable layout and equipment placement.**





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- Device list with descriptions, hostnames, and locations.

DEVICE NAME	HOSTNAME	LOCATION
Personal Computer	PCSR-00	Server Room
	PCID-01	IT Department
	PCID-02	
	PCID-03	
	PCID-04	
	PCID-05	
	PCCD-01	Creative Department
	PCCD-02	
	PCCD-03	
	PCCD-04	
	PCCD-05	
	PCCD-06	
	PCCD-07	
	PCCD-08	
	PCCD-09	
	PCCD-10	
	PCFM-01	Finance and Marketing Department
	PCFM-02	
	PCFM-03	



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	PCFM-04	
	PCFM-05	
	PCFM-06	
	PCFM-07	
	PCFM-08	
	PCL-01	Lobby
	PCDD-01	Developer Department
	PCDD-02	
	PCDD-03	
	PCDD-04	
	PCDD-05	
	PCDD-06	
	PCDD-07	
	PCDD-08	
	PCDD-09	
	PCDD-10	
	PCDD-11	
	PCDD-12	
	PCDD-13	
	PCDD-14	
	PCDD-15	
	PCDD-16	



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	PCDD-17	
	PCDD-18	
	PCDD-19	
	PCDD-20	
	PCDD-21	
	PCDD-22	
	PCDD-23	
	PCDD-24	
	PCDD-25	
	PCDD-26	
	PCDD-27	
	PCDD-28	

DEVICE NAME	HOSTNAME	LOCATION
Laptop	LMR-01	Meeting Room
	LMR-02	
	LL-01	Lobby
	LL-02	
	LDD-01	Developer Department
	LDD-02	



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DEVICE NAME	HOSTNAME	LOCATION
Router	ROUTER0	Server Room
	ROUTER1	Developer Department

DEVICE NAME	HOSTNAME	LOCATION
Switch	MAIN SWITCH	Server Room
	CDS-01	Creative Department
	DDS-02	Developer Department
	DDS-03	Developer Department
	FMDS-04	Finance and Marketing Department

DEVICE NAME	HOSTNAME	LOCATION
Access Point	WAP-01	Creative Department
	WAP-02	Developer Department
	WAP-03	Lobby



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○ UTP cable measurements

DEVICE NAME	MEASUREMENT (M)	ALLOWANCE (M)(10%	SUBTOTAL (M)
Server Room			
PCSR-00	5.23	0.52	5.75
ROUTER0	1.65	0.17	1.82
Server01	0.65	0.07	0.72
Server02	0.65	0.07	0.72
MAIN SWITCH	Reference point	0.00	0.00
IT Department			
PCID-01	6.75	0.68	7.43
PCID-02	9.02	0.90	9.92
PCID-03	13.59	1.36	14.95
PCID-04	14.59	1.46	16.05
PCID-05	12.94	1.29	14.23
Creative Department			
CDS-01	15.85	1.59	17.44
WAP01	5.54	0.55	6.09
PCCD-01	8.69	0.87	9.56
PCCD-02	5.45	0.55	6.00
PCCD-03	4.15	0.42	4.57
PCCD-04	1.30	0.13	1.43

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PCCD-05	5.19	0.52	5.71
PCCD-06	5.19	0.52	5.71
PCCD-07	0.65	0.07	0.72
PCCD-08	1.65	0.17	1.82
PCCD-09	4.80	0.48	5.28
PCCD-10	8.04	0.80	8.84
Finance and Marketing Department			
FMDS-04	20.81	2.08	22.89
WAP-03	6.65	0.67	7.32
PCFM-01	0.65	0.07	0.72
PCFM-02	2.19	0.22	2.41
PCFM-03	3.73	0.37	4.10
PCFM-04	5.26	0.53	5.79
PCFM-05	5.94	0.59	6.53
PCFM-06	7.48	0.75	8.23
PCFM-07	9.78	0.98	10.76
PCFM-08	11.32	1.13	12.45
Lobby			
PCL-01	7.96	0.80	8.76
Developer Department			
ROUTER1	25.43	2.54	27.97
WAP-02	13.10	1.31	14.41
DDS-02	13.05	1.31	14.36



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DDS-03	1.65	0.17	1.82
PCDD-01	8.03	0.80	8.83
PCDD-02	7.43	0.74	8.17
PCDD-03	6.41	0.64	7.05
PCDD-04	1.83	0.18	2.01
PCDD-05	3.38	0.34	3.72
PCDD-06	4.40	0.44	4.84
PCDD-07	5.00	0.50	5.50
PCDD-08	5.00	0.50	5.50
PCDD-09	4.40	0.44	4.84
PCDD-10	3.38	0.34	3.72
PCDD-11	3.57	0.36	3.92
PCDD-12	7.11	0.71	7.82
PCDD-13	8.13	0.81	8.94
PCDD-14	9.03	0.90	9.93
PCDD-15	7.32	0.73	8.05
PCDD-16	6.55	0.66	7.21
PCDD-17	5.90	0.59	6.49
PCDD-18	1.80	0.18	1.97
PCDD-19	2.96	0.30	3.26
PCDD-20	3.96	0.40	4.36
PCDD-21	5.38	0.54	5.92
PCDD-22	5.38	0.54	5.92



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PCDD-23	3.96	0.40	4.36
PCDD-24	2.96	0.30	3.26
PCDD-25	3.42	0.34	3.76
PCDD-26	6.85	0.69	7.54
PCDD-27	7.50	0.75	8.25
PCDD-28	8.92	0.89	9.81
GRAND TOTAL			458.17 Meters

V. *Billing of Materials and Salaries*

- Detailed cost breakdown for materials, equipment, installation, and personnel.

CATEGORY	ITEMS	QUANTITY	UNIT PRICE	TOTAL
Router	Cisco RV160 VPN Router / Firewall (RV160-K9-G5)	1	₱13,375	₱13,375.00
	Cisco RV260W Wireless-AC VPN Router (RV260W-E-K9-G5)	1	₱25,000	₱25,000.00
Switch	Ubiquiti Networks UniFi Switch PRO 24 Gen 2 (USW-Pro-24) I Redundant Power Capable I SFP+ 10Gbps Uplink I 1.3"	4	₱27,500	₱110,000.00



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	Smart Display			
	Ubiquiti Networks USW-48-POE UniFi 48 Port Gigabit Switch with PoE and 4SFP (USW-48-PoE)	1	₱47,250	₱47,250.00
Access Point	HPE Aruba Instant On AP22 Dual-Band Access Point 802.11ax	3	₱12,200	₱36,600.00
Cable	Belden 7814A, CAT6 UTPUnshielded (305 meters)	2	₱8,300	₱16,600.00
Cable Cover Raceway	Cord Cover Raceway Kit Wall Type 8M 1 Set Cable Concealer Wall Cord Cover Complete Raceway Kit Wire Cables Hide Organizer	5 (17 Width)	₱454.82	₱2,274.1
		8 (29 Length)	₱454.82	₱3,638.56
		9 (72 meters server and IT)	₱820.25	₱7,382.25
		10 (73.17 meters creative department)		₱8,202.5
		11 (81.20 meters finance and marketing)		₱9,022.75



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		1 (8.76 meters lobby)		₱820.25
		30 (234.67 meters developer department)		₱24,607.5
	Spiral Cable Management Organizer	100 (1 per meter)	₱47.92	₱4,792.00
RJ45	HardRack HR-6086 Pass Through Connectors 100 pcs	1	₱650	₱650.00
TOTAL:				₱310,214.91

Personnel Cost/Salaries

The showcased projected personnel earnings primarily rely on the basis of the average base salary in the Philippines. These figures are essentially covers for a 3 month period, wherein its been currently sourced with utmost importance until the year of 2025. However, there are certain scope factors such as limited salary reports that affect the ranges.

POSITION	PERIOD	UNIT PRICE	TOTAL
Project Manager	3 months	₱63,000	₱189,000.00
Network Architect	3 months	₱59,972	₱179,916.00

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Network Engineer	3 months	₱55,000	₱165,000
Network Administrator/Technician (4 Personnel)	3 months	₱34,000	₱136,000.00
Network Security Engineer	3 months	₱42,965	₱128,895.00
GRAND TOTAL			₱798,811.00

Blueprint Devices Amount

A. Developer Department	28 pcs
B. Marketing and Finance Department	8 pcs
C. Utility Room	Printer, Fax, Phones
D. Creative Department	5 pcs each, total 10 pcs; tablet
E. IT Department a. Server Room	7 pcs -1 servers, 1 pc
F. Lobby	1 pc

VI. IP Addressing Scheme Summary

Subnet Name	IT Department	Creative Department	Finance and Marketing Department	Developer Department 1	Developer Department 2
Needed Size	6	11	10	13	12



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Allocated Size	254	254	254	254	254
Network Address	192.168.10.0	192.168.0.0	192.168.1.0	192.168.2.0	192.168.3.0
Prefix	/24	/24	/24	/24	/24
Subnet Mask	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0
Assignable Range	192.168.10.1 - 192.168.10.254	192.168.0.1 - 192.168.0.254	192.168.1.1 - 192.168.1.254	192.168.2.1 - 192.168.2.254	192.168.3.1 - 192.168.3.254
Broadcast Address	192.168.10.255	192.168.0.255	192.168.1.255	192.168.2.255	192.168.3.255

VII. IP Addressing Scheme Departments

HOSTNAME	IP ADDRESS	SUBNET MASK	DEFAULT GATEWAY
IT DEPARTMENT AND SERVER ROOM			
PCSR-00	192.168.10.12	255.255.255.0	192.168.10.1
PCID-01	192.168.10.13	255.255.255.0	192.168.10.1
PCID-02	192.168.10.14	255.255.255.0	192.168.10.1
PCID-03	192.168.10.15	255.255.255.0	192.168.10.1
PCID-04	192.168.10.16	255.255.255.0	192.168.10.1
PCID-05	192.168.10.17	255.255.255.0	192.168.10.1
CREATIVE DEPARTMENT			
PCCD-01	192.168.0.2	255.255.255.0	192.168.0.1

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PCCD-02	192.168.0.3	255.255.255.0	192.168.0.1
PCCD-03	192.168.0.4	255.255.255.0	192.168.0.1
PCCD-04	192.168.0.5	255.255.255.0	192.168.0.1
PCCD-05	192.168.0.6	255.255.255.0	192.168.0.1
PCCD-06	192.168.0.7	255.255.255.0	192.168.0.1
PCCD-07	192.168.0.8	255.255.255.0	192.168.0.1
PCCD-08	192.168.0.9	255.255.255.0	192.168.0.1
PCCD-09	192.168.0.10	255.255.255.0	192.168.0.1
PCCD-10	192.168.0.11	255.255.255.0	192.168.0.1
LMR-01	192.168.0.12	255.255.255.0	192.168.0.1
LMR-02	192.168.0.13	255.255.255.0	192.168.0.1
FINANCE AND MARKETING DEPARTMENT			
PCFM-01	192.168.1.2	255.255.255.0	192.168.1.1
PCFM-02	192.168.1.3	255.255.255.0	192.168.1.1
PCFM-03	192.168.1.4	255.255.255.0	192.168.1.1
PCFM-04	192.168.1.5	255.255.255.0	192.168.1.1
PCFM-05	192.168.1.6	255.255.255.0	192.168.1.1
PCFM-06	192.168.1.7	255.255.255.0	192.168.1.1
PCFM-07	192.168.1.8	255.255.255.0	192.168.1.1
PCFM-08	192.168.1.9	255.255.255.0	192.168.1.1
LOBBY			
PCL-01	192.168.1.10	255.255.255.0	192.168.1.1
LL-01	192.168.1.11	255.255.255.0	192.168.1.1

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LL-02	192.168.1.12	255.255.255.0	192.168.1.1
DEVELOPER DEPARTMENT			
PCDD-01	192.168.2.2	255.255.255.0	192.168.2.1
PCDD-02	192.168.2.3	255.255.255.0	192.168.2.1
PCDD-03	192.168.2.4	255.255.255.0	192.168.2.1
PCDD-04	192.168.2.5	255.255.255.0	192.168.2.1
PCDD-05	192.168.2.6	255.255.255.0	192.168.2.1
PCDD-06	192.168.2.7	255.255.255.0	192.168.2.1
PCDD-07	192.168.2.8	255.255.255.0	192.168.2.1
PCDD-08	192.168.2.9	255.255.255.0	192.168.2.1
PCDD-09	192.168.2.10	255.255.255.0	192.168.2.1
PCDD-10	192.168.2.11	255.255.255.0	192.168.2.1
PCDD-11	192.168.2.12	255.255.255.0	192.168.2.1
PCDD-12	192.168.2.13	255.255.255.0	192.168.2.1
PCDD-13	192.168.2.14	255.255.255.0	192.168.2.1
PCDD-14	192.168.2.15	255.255.255.0	192.168.2.1
PCDD-15	192.168.3.2	255.255.255.0	192.168.3.1
PCDD-16	192.168.3.3	255.255.255.0	192.168.3.1
PCDD-17	192.168.3.4	255.255.255.0	192.168.3.1
PCDD-18	192.168.3.5	255.255.255.0	192.168.3.1
PCDD-19	192.168.3.6	255.255.255.0	192.168.3.1
PCDD-20	192.168.3.7	255.255.255.0	192.168.3.1
PCDD-21	192.168.3.8	255.255.255.0	192.168.3.1



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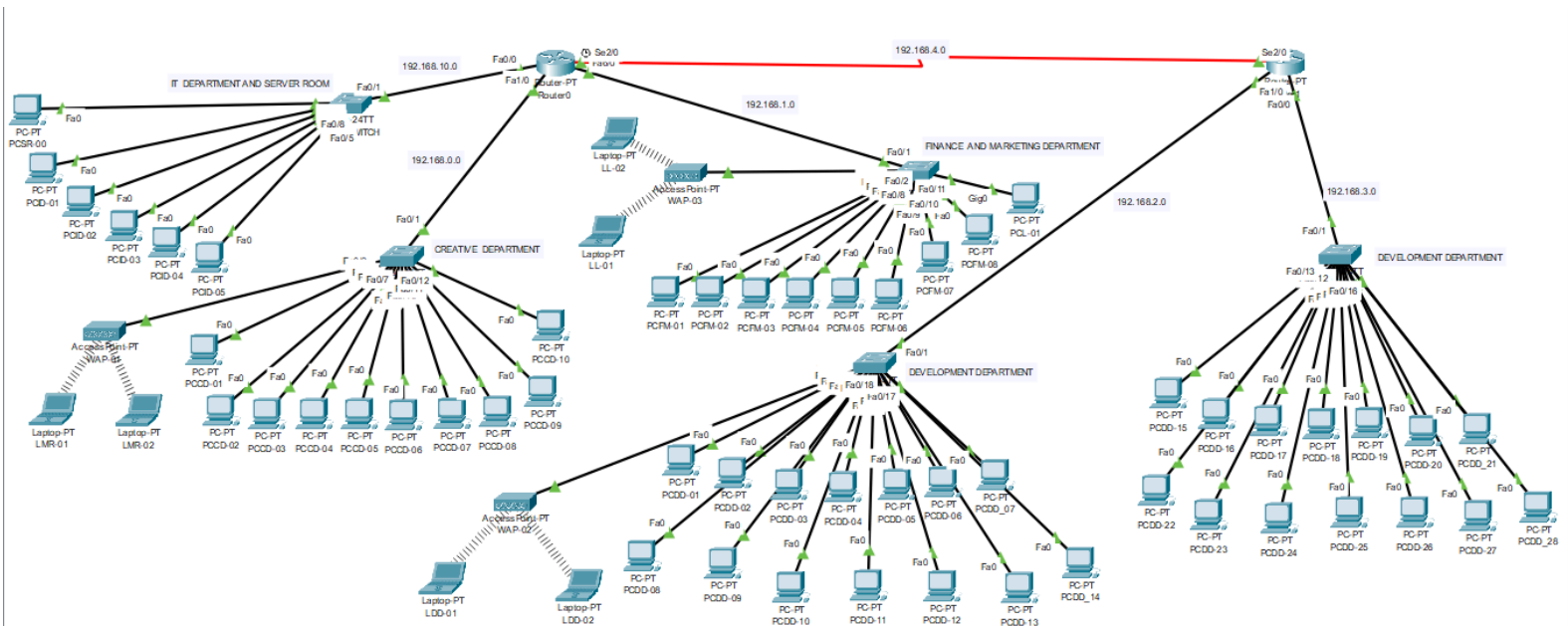
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PCDD-22	192.168.3.9	255.255.255.0	192.168.3.1
PCDD-23	192.168.3.10	255.255.255.0	192.168.3.1
PCDD-24	192.168.3.11	255.255.255.0	192.168.3.1
PCDD-25	192.168.3.12	255.255.255.0	192.168.3.1
PCDD-26	192.168.3.13	255.255.255.0	192.168.3.1
PCDD-27	192.168.3.14	255.255.255.0	192.168.3.1
PCDD-28	192.168.3.15	255.255.255.0	192.168.3.1
LDD-01	192.168.2.16	255.255.255.0	192.168.2.1
LDD-02	192.168.2.17	255.255.255.0	192.168.2.1

VIII. Device Interconnection Documentation

- Packet Tracer Layout / Logical topology with hostnames, IPs, and interconnection details.





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- **Routing table showing RIP configurations**

ROUTER 0

Network Address	INTERFACE	HOPS
192.168.10.0	Fa 0/0	0
192.168.0.0	Fa 1/0	0
192.168.1.0	Fa 6/0	0
192.168.4.0	Se 2/0	0
192.168.2.0	Se 2/0	1
192.168.3.0	Se 2/0	1

Router 1

Network Address	INTERFACE	HOPS
192.168.10.0	Se 2/0	1
192.168.0.0	Se 2/0	1
192.168.1.0	Se 2/0	1
192.168.4.0	Se 2/0	0
192.168.2.0	Fa 1/0	0
192.168.3.0	Fa 0/0	0



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IX. Basic Network Security Measures and Troubleshooting Plan

A. Network Troubleshooting – Failures, Solution, and Best Practices

Basic Network Security Measures

1. Firewall Protection

- Deploy firewalls to monitor and control incoming and outgoing network traffic based on predetermined security rules. This acts as the first line of defense against unauthorized access.

2. Intrusion Detection and Prevention Systems (IDPS)

- Implement IDPS to identify and respond to any threats in real time, enhancing overall network security and integrity.

3. Regular Software and Firmware Updates

- Ensure that all network devices, including routers, switches, and servers, are regularly updated to protect against vulnerabilities that attackers might exploit.

4. Strong Authentication Protocols

- Utilize multi-factor authentication (MFA) and strong, unique passwords for network access to reduce the risk of unauthorized access to sensitive data.



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5. Regular Audits and Security Assessments

- Conduct routine audits of network configurations and security settings to identify potential weaknesses and ensure compliance with security policies.

6. Network Segmentation

- Implement network segmentation to isolate critical systems and sensitive data, thereby minimizing the potential impact of a security breach.

7. Data Encryption

- Use encryption protocols for data transmitted over the network to protect sensitive information from interception during transmission.

Troubleshooting Plan Steps

1. Define the Problem and Check Physical Connections

- Gather detailed information about the reported issue. Physically inspect network devices, cables, and connections to identify any visible faults or disconnections.

2. Check for Duplicate IP Addresses

- Use the “ipconfig” command (for Windows) or “ifconfig” (for Linux) to verify valid IP address allocation in the network. Identify and resolve any conflicts.

3. Run a DNS Check

- Utilize tools such as “nslookup” to diagnose DNS-related issues. Analyze the responses to confirm whether there are server misconfigurations or connectivity problems.



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4. Examine Logs

- Review logs from devices and applications to identify patterns and potential causes of performance disruptions. This is crucial in pinpointing the exact source of issues.

5. Security Checks

- Verify that all security solutions are functioning correctly. Ensure that antivirus software and firewall configurations are actively monitoring for threats.

6. Diagnose Hardware Issues

- Identify and repair faulty hardware components (routers, switches, etc.) that may be causing connectivity or performance problems.

7. Analyze Bandwidth and Configuration

- Assess network traffic to identify congestion and ensure that device configurations comply with best practices. Implement Quality of Service (QoS) policies to prioritize critical traffic.

8. Documentation Maintenance

- Maintain comprehensive documentation of network configurations, changes made, and previous troubleshooting efforts to facilitate faster resolution of future issues.

9. Utilize Monitoring Tools

- Implement network monitoring tools to gain real-time visibility into network performance. This empowers IT



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teams to address potential issues proactively before they escalate.

10. Training and Skill Development

- Regularly train IT staff on emerging technologies and advanced troubleshooting techniques. This enhances overall efficiency and effectiveness in managing network health.

B. Troubleshooting Network: Basic Steps, Tips, and Tools

Basic Network Security Measures

1. Firewalls

- Implement hardware and software firewalls to monitor and control incoming and outgoing network traffic based on predetermined security rules. This helps block unauthorized access and threats.

2. Antivirus and Antimalware Software

- Use reputable antivirus and antimalware software to protect devices from malicious software. Regular updates and scans are critical to ensure ongoing protection against the latest threats.



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3. Network Segmentation

- Divide the network into segments to limit access to sensitive data. This reduces the risk of breaches affecting the entire network.

4. Access Control

- Establish strict access control measures, including user authentication, authorization, and accounting (AAA). Utilize strong passwords and consider multi-factor authentication for additional protection.

5. Regular Software Updates

- Keep all software, including operating systems and applications, updated to protect against vulnerabilities that could be exploited by attackers.

6. Data Encryption

- Implement data encryption for sensitive information both at rest and in transit to protect it from unauthorized access.

7. Employee Training

- Conduct regular training sessions to educate employees about network security best practices and potential threats, enabling them to recognize and respond to security issues promptly.

8. Incident Response Plan

- Develop and maintain an incident response plan that outlines procedures to follow in the event of a security breach.



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Troubleshooting Network: Basic Steps, Tips, and Tools

Basic Steps in Troubleshooting

1. Identify the Problem

- Gather information from users regarding the symptoms and context of the problem. Understand what is not functioning properly.

2. Develop a Hypothesis

- Based on the initial information, develop hypotheses about potential causes of the issue. Consider recent changes in configurations, hardware, or network setups.

3. Test Hypotheses

- Use a systematic approach to test each potential cause. This may involve checking connectivity, testing hardware, or reviewing logs.

4. Implement Solutions

- Once a possible cause is identified, implement the solution and monitor the network to ensure the issue is resolved.

5. Document the Incident

- After resolving the issue, document the symptoms, cause, solution, and steps taken. This documentation can inform future troubleshooting processes.



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Tips for Effective Troubleshooting

- **Stay Calm**
 - Troubleshooting can be stressful, but maintaining a calm demeanor will help you think clearly and approach the problem logically.
- **Use the Right Tools**
 - Utilize network monitoring tools and diagnostic software to help identify problems more efficiently and provide real-time data on network performance.
- **Engage Users**
 - Involve end-users in the troubleshooting process where applicable; their insights may provide valuable context regarding the issues.
- **Keep a Checklist**
 - Develop a troubleshooting checklist to ensure all common issues are considered and nothing is overlooked.

Recommended Tools for Troubleshooting

1. Ping and Traceroute

- Use these command-line tools to test network connectivity and determine the path packets take to reach their destination.



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2. Wireshark

- This powerful packet analysis tool allows you to capture and analyze data packets on your network, helping to identify anomalies.

3. Network Monitoring Software

- Tools like SolarWinds or Nagios provide ongoing network monitoring and alerting to identify performance issues proactively.

4. Network Diagnostic Tools

- Various diagnostic tools can help assess the health and performance of network devices, including routers, switches, and servers.

***C. What are the most effective troubleshooting methods
for network security issues?***

- Use systematic diagnosis techniques.
- Regularly monitor network logs for unusual activity.
- Implement real-time network monitoring solutions.
- Address vulnerabilities promptly by applying software patches.
- Engage skilled professionals for advanced troubleshooting.



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D. Steps for Network Troubleshooting

1. Define the issue.
2. Inspect physical connections.
3. Verify IP configurations.
4. Check DNS functionality.
5. Analyze logs.
6. Test and replace hardware if needed.
7. Optimize configurations and bandwidth.

FAQs (Frequently Asked Questions)

1. What causes most network issues?

- Common causes include hardware failures, misconfigurations, outdated software, and security breaches.

2. What tools can help troubleshoot network issues?

- Tools like Wireshark, Ping, Traceroute, SolarWinds, and Nagios are essential.



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3. How often should network audits be conducted?

- At least quarterly or after significant network changes.

4. How can duplicate IP conflicts be resolved?

- Use tools to detect conflicts and reassign unique IPs as needed.

5. What employee training is necessary for network security?

- Training on identifying phishing, using secure passwords, and adhering to network policies is crucial.

X. Appendices

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- **Team member roles and contributions.**

Team Member	Roles and Contributions
Oliver Labapis	<ol style="list-style-type: none">1. Cisco<ol style="list-style-type: none">a. Static/Dynamic IP Addressingb. Subnettingc. RIP
Edgar Baobaoen Jr. Hal David F. Ferry	<ol style="list-style-type: none">1. Blueprint<ol style="list-style-type: none">a. Cable Layout and Equipment Placementsb. UTP Cable Measurements2. Network security measures and troubleshooting3. Slides Presentation
Robin Jerou Castillo	<ol style="list-style-type: none">1. Billing of Materials, Devices and Equipment2. Salaries and Wages, Installation
Aeon Faith Matuba	<ol style="list-style-type: none">1. Documentation2. IP addressing Scheme3. Network security measures and troubleshooting4. Slides Presentation



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Everyone	1. Presentation
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- **Link to slides presentation**

https://www.canva.com/design/DAGdSGjTZWo/DGUVITiu6VVrPNEurRxVlw/edit?utm_content=DAGdSGjTZWo&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton