**Building: Harper**

**First Floor:**

* Reception Area
* Waiting Room
* Coffee Shop
* Gym
* Restrooms

**Second Floor:**

* Director's Room
* Administration Department
* Finance Department
* CTO Room
* Security
* Sales & Marketing Departments

**Building: Cacis**

**First Floor:**

* Reception Area
* Waiting Room
* Coffee Shop
* Gym
* Restrooms

**Second Floor:**

* R&D Department
* Development and Testing Center
* Business Analyst Office
* Server Room
* Technical Assistant Departments
* Staff’s Rest Area
* Conference Rooms

Now, you can use Word to create a visual representation of this layout. Follow these steps:

1. Open a new Word document.

2. Go to the "Insert" tab.

3. Choose "Shapes" and select the appropriate shapes for rooms and other areas.

4. Draw rectangles for each room, labeling them appropriately.

5. Use lines to represent corridors and other connections between rooms.

6. Add text boxes to label each area with its corresponding department or purpose.

7. You can use different colors to differentiate between departments or sections.

To make it more detailed, you can add icons or symbols to represent different devices, such as PCs, printers, and phones. The Word drawing tools will help you create a simple yet informative floor plan.

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Assigning suitable IP addresses by Subnetting:

• Since there are two buildings (Harper and Cacis), you can use separate subnets for each building.

• Subnetting allows efficient use of IP addresses and helps in better network management.

Building: Harper

**First Floor:**

* Reception Area: 192.168.1.0/24
* Waiting Room: 192.168.1.1 - 192.168.1.10
* Coffee Shop: 192.168.1.11 - 192.168.1.20
* Gym: 192.168.1.21 - 192.168.1.30
* Restrooms: 192.168.1.31 - 192.168.1.40

**Second Floor:**

* Director's Room: 192.168.1.41 - 192.168.1.50
* Administration Department: 192.168.1.51 - 192.168.1.100
* Finance Department: 192.168.1.101 - 192.168.1.150
* CTO Room: 192.168.1.151 - 192.168.1.200
* Security: 192.168.1.201 - 192.168.1.250
* Sales & Marketing Departments: 192.168.1.251 - 192.168.1.254

Building: Cacis

**First Floor:**

* Reception Area: 192.168.2.0/24
* Waiting Room: 192.168.2.1 - 192.168.2.10
* Coffee Shop: 192.168.2.11 - 192.168.2.20
* Gym: 192.168.2.21 - 192.168.2.30
* Restrooms: 192.168.2.31 - 192.168.2.40

**Second Floor:**

* R&D Department: 192.168.2.41 - 192.168.2.100
* Development and Testing Center: 192.168.2.101 - 192.168.2.150
* Business Analyst Office: 192.168.2.151 - 192.168.2.200
* Server Room: 192.168.2.201 - 192.168.2.250
* Technical Assistant Departments: 192.168.2.251 - 192.168.2.254

Justification:

• Sub netting by building allows for efficient addressing and management.

• Using a /24 subnet for each floor provides enough addresses for devices in each area.

• The last few addresses in each subnet are reserved for future expansion or special devices.

• Each department has a specific IP range for easy identification.

Remember that this is just a suggested IP addressing scheme. Actual requirements and size of the ne

twork may require adjustments. It's also important to consider scalability for future growth.

**Building Harper**

**First Floor (Aayushka Magar)**

* Reception Area, Waiting Room, Coffee Shop, Gym, Restrooms: Shared/common space

**Second Floor (Hemant Dahal):**

* Director's Room
* Administration Department
* Finance Department
* CTO Room
* Security
* Sales & Marketing Departments

Building: Cacis

**First Floor (Khusi Kumari Das):**

* Reception Area
* Waiting Room
* Coffee Shop
* Gym
* Restrooms

**Second Floor (Atul Dhital):**

* R&D Department
* Development and Testing Center
* Business Analyst Office
* Server Room
* Technical Assistant Departments
* Staff’s Rest Area
* Conference Rooms

Summirized Assignment

Network 2nd floor justifaction

**R&D:**

Router (Cisco ISR 4000 Series): R&D Selected for its robust security features, scalability, and support for advanced routing protocols, critical to meeting the diverse needs of networks.

Switch (Cisco Catalyst 3000 Series): The is known for its reliability, high performance, and advanced features such as VLAN support, making it suitable for the diverse networking needs of research and development environments.

Workstations (Dell Precision 5000 Series): These workstations offer powerful processing capabilities, high-end graphics, and extensive storage to meet the demanding requirements of research and development tasks.

Server (HP ProLiant DL300 Series): The HP ProLiant server is known for its performance, reliability, and scalability, making it suitable for hosting experimental applications and services in research and development environments.

Network Printer (HP LaserJet Enterprise 400 Series): The HP LaserJet Enterprise Series is known for its fast, high-quality printing, ensuring efficient document processing in dynamic research and development environments.

**Development and Test Center:**

Development Server (Dell PowerEdge R700 Series): For high performance, reliability, and scalability, critical to handling the resource-intensive tasks associated with software development.

Test Server (Lenovo Think System SR250 Series): The is known for its compact design and versatility, making it ideal for creating diverse test environments in development and test centers.

Switch (Aruba 2930M Series): The Aruba Switch is selected for its flexibility, security features, and support for high-performance networking to meet development and test needs.

Workstation (Lenovo ThinkPad P50 Series): The Lenovo ThinkPad Series strikes the balance of performance, portability, and durability essential for developers and testers who need a versatile and reliable machine.

Printer (Brother HL-L5000 Series): The is chosen for its fast print speeds, high-quality output, and cost-effective operability, essential for handling document requirements during development and testing processes.

**Business Analyst Office:**

Router (Cisco Nexus 7000 Series): Juniper routers are chosen for their security features and reliability to provide a stable and secure network infrastructure for your business analysis tasks.

Switch (HPE office Connect 1920 Series): The HPE Office Connect Switch balances affordability and performance to meet the networking needs of business analytics offices.

Workstation (HP Elite Desk 800 Series): The HP Elite Desk Series provides powerful performance and security features to meet the processing and data security needs of business analysts.

Printer (Epson Eco Tank ET-4000 Series): The Epson Eco Tank Series was chosen for its cost-effective and environmentally friendly features that align with the Business Analyst's Office's sustainability goals.

**Server Room:**

Core Router (Cisco ASR 1000 Series): The Cisco ASR Router provides high performance and scalability important to meet core routing needs in the server room.

Core Switch (Cisco Nexus 9000 Series): The Cisco Nexus Switch was chosen for its high-speed data processing, low latency, and advanced features essential for managing server room traffic.

Application Server (Dell EMC PowerEdge R8000 Series): The Dell EMC PowerEdge server is known for its performance, reliability, and scalability, making it suitable for hosting critical applications in your server room.

Database Server (Oracle Exadata X8 Series): The Oracle Exadata server is optimized for database performance and is ideal for handling large amounts of data processing in server rooms.

NAS Device (Synology RackStation RS18000 Series): The Synology NAS device is selected for its storage capacity, reliability, and advanced features to meet your server room data storage needs.

UPS (APC Smart-UPS X Series): APC Smart-UPS Technical Support Department: The printer is chosen for its compact design, cost efficiency, and reliable printing, which is essential for technical support documentation.

**Technical Assistant Department:**

Router (Cisco 2000 Series): The Cisco Router offers a low-cost solution with a variety of functions to meet the Technical Assistant Department's networking requirements.

Switch (NETGEAR ProSAFE GS300 Series): The NETGEAR switch combines price and performance to suit the connection requirements of technical support positions.

Workstation (ASUS VivoBook Series): The ASUS VivoBook Series combines performance and affordability to suit the computing requirements of technical assistants.

Printer (Canon imageCLASS LBP6000 Series): The Canon imageCLASS printer was chosen because of its small design, low cost, and dependable printing, all of which are required for technical support documents.

**Other devices**

R&D Department:

* Hotspot Device: Ubiquiti UniFi UAP-AC-Pro for reliable wireless connectivity.
* CCTV: A network of cameras such as Hikvision or Dahua, strategically placed to monitor the R&D workspace.

Development and Testing Center:

* Hotspot Device: NETGEAR Orbi Pro AC3000 Tri-band WiFi System (SRR60) for optimal performance.
* CCTV: Use reputable brands like AXIS or Bosch for surveillance cameras in development and testing areas.

Business Analyst Office:

* Hotspot Device: Aruba Instant On AP22 for reliable and scalable Wi-Fi.
* CCTV: Deploy cameras from brands like Vivotek or Avigilon for effective surveillance.
* Biometric System: Deploy a sophisticated biometric access control system with multi-factor authentication (fingerprint, card, PIN) for enhanced security in the server room.

Server Room:

* Hotspot Device: Cisco Meraki MR33 for cloud-managed wireless access.
* CCTV: Implement high-quality cameras from brands like Axis or Sony for monitoring server racks and entry points.
* Biometric Access: Install a robust biometric system (fingerprint, iris scan, or facial recognition) to secure access to the server room.

Technical Assistant Departments:

* Hotspot Device: TP-Link EAP225 V3 for dual-band Wi-Fi connectivity.
* CCTV: Use cameras from reputable brands like Panasonic or Samsung to monitor technical support areas.
* Biometric Access: Integrate a biometric access control system for secure entry.

Staff’s Rest Area:

* Hotspot Device: Provide a reliable Wi-Fi connection using devices like Cisco-Valet Plus.
* CCTV: Install cameras for security in common areas, selecting models suitable for indoor use.

Conference Rooms:

* Hotspot Device: D-Link DAP-2610 for dual-band Wi-Fi coverage.
* CCTV: Cameras from reputable brands like Lorex or Nest to monitor conference room entrances.

Other devices

Badge Readers: Badge readers may be used to regulate access by allowing employees to use badges in addition to or instead of biometrics. Also for employee attendance .

Badge Readers: Badge readers may be used to regulate access by allowing employees to use badges in addition to or instead of biometrics.

R&D Department:

Router (Cisco ISR 4000 Series):Selected for its robust security features, scalability, and support for advanced routing protocols.

Switch (Cisco Catalyst 3000 Series):Known for its reliability, high performance, and advanced features such as VLAN support.

Workstations (Dell Precision 5000 Series):Powerful processing capabilities, high-end graphics, and extensive storage.

Server (HP ProLiant DL300 Series):Known for performance, reliability, and scalability.

Network Printer (HP LaserJet Enterprise 400 Series):Known for fast, high-quality printing.

Hotspot Device (Ubiquiti UniFi UAP-AC-Pro):Provides reliable wireless connectivity.

CCTV (Hikvision or Dahua):Strategically placed cameras to monitor the R&D workspace.

Development and Testing Center:

Development Server (Dell PowerEdge R700 Series):High performance, reliability, and scalability for resource-intensive tasks.

Test Server (Lenovo Think System SR250 Series):Compact design and versatility for diverse test environments.

Switch (Aruba 2930M Series):Selected for flexibility, security features, and high-performance networking.

Workstation (Lenovo ThinkPad P50 Series):Balances performance, portability, and durability.

Printer (Brother HL-L5000 Series):Chosen for fast print speeds and cost-effective operability.

Hotspot Device (NETGEAR Orbi Pro AC3000):Provides optimal performance.

CCTV (AXIS or Bosch):Surveillance cameras in development and testing areas.

Business Analyst Office:

Router (Cisco Nexus 7000 Series):Chosen for security features and reliability.

Switch (HPE Office Connect 1920 Series):Balances affordability and performance.

Workstation (HP Elite Desk 800 Series):Provides powerful performance and security features.

Printer (Epson Eco Tank ET-4000 Series):Chosen for cost-effectiveness and environmental friendliness.

Hotspot Device (Aruba Instant On AP22):Provides reliable and scalable Wi-Fi.

CCTV (Vivotek or Avigilon):Effective surveillance cameras.

Server Room:

Core Router (Cisco ASR 1000 Series):Provides high performance and scalability for core routing needs.

Core Switch (Cisco Nexus 9000 Series):Chosen for high-speed data processing, low latency, and advanced features.

Application Server (Dell EMC PowerEdge R8000 Series):Known for performance, reliability, and scalability.

Database Server (Oracle Exadata X8 Series):Optimized for database performance.

NAS Device (Synology RackStation RS18000 Series):Selected for storage capacity, reliability, and advanced features.

UPS (APC Smart-UPS X Series):Chosen for reliable power backup.

Hotspot Device (Cisco Meraki MR33):Cloud-managed wireless access.

CCTV :High-quality cameras for monitoring server racks and entry points.

Biometric Access (Cisco Biometric Access Control):Robust biometric system for secure access.

Technical Assistant Department:

Router (Cisco 2000 Series):Offers a low-cost solution with various functions.

Switch (NETGEAR ProSAFE GS300 Series):Combines price and performance.

Workstation (ASUS VivoBook Series):Combines performance and affordability.

Printer (Canon imageCLASS LBP6000 Series):Chosen for small design, low cost, and dependable printing.

Hotspot Device (TP-Link EAP225 V3):Provides dual-band Wi-Fi connectivity.

CCTV (Panasonic or Samsung):Cameras for monitoring technical support areas.

Biometric Access (Cisco Biometric Access Control):Integrated for secure entry.

Staff’s Rest Area:

Hotspot Device (Cisco-Valet Plus):Provides reliable Wi-Fi connection.

CCTV:Install cameras for security in common areas.

Conference Rooms:Hotspot Device (D-Link DAP-2610):Provides dual-band Wi-Fi coverage.

Other devices:

Badge Readers (Cisco Badge Readers):

Used to regulate access, allowing employees to use badges instead of or in addition to biometrics.

R&D Department: Router (Cisco ISR 4000 Series): Selected for its strong security features, scalability, and support for advanced routing protocols.

Switch (Cisco Catalyst 3000 Series): Known for its reliability, high performance, and advanced features such as VLAN support.

Workstation (Dell Precision 5000 Series): Powerful processing capabilities, high-end graphics and expanded storage capacity.

Server (HP ProLiant DL300 Series): Known for performance, reliability, and scalability.

Network Printer (HP LaserJet Enterprise 400 Series): Known for its fast, high-quality printing capabilities.

Hotspot Device (Ubiquiti UniFi UAP-AC-Pro): Provides reliable wireless connectivity.

CCTV (Hikvision or Dahua): Cameras are strategically placed to monitor the R&D workspace.

Development and Test Center: Development Server (Dell PowerEdge R700 Series): High performance, reliability, and scalability for resource-intensive tasks.

Test Server (Lenovo ThinkSystem SR250 Series): Compact and flexible design for a variety of test environments.

Switch (Aruba 2930M Series): Chosen for its flexibility, security features, and high-performance networking.

Workstation (Lenovo ThinkPad P50 Series): The balances performance, portability, and durability.

Printer (Brother HL-L5000 Series): The was chosen for its fast printing speed and cost-effective operation.

Hotspot Device (NETGEAR Orbi Pro AC3000): Provides optimal performance.

CCTV (AXIS or Bosch): Surveillance cameras in development and testing areas.

Business Analysis Office: Router (Cisco Nexus 7000 Series): Chosen for its security and reliability features.

Switch (HPE Office Connect 1920 Series): The balances affordability and performance.

Workstation (HP Elite Desk 800 Series): Provides strong performance and security features.

Printer (Epson Eco Tank ET-4000 Series): Chosen for its profitability and respect for the environment.

Hotspot Device (Aruba Instant On AP22): Provides reliable and scalable Wi-Fi.

CCTV (Vivotek or Avigilon): Effective surveillance cameras.

Server Room: Primary Router (Cisco ASR 1000 Series): Provides high performance and scalability for primary routing needs.

Core Switch (Cisco Nexus 9000 Series): The was chosen for its high-speed data processing, low latency, and advanced features.

Application Server (Dell EMC PowerEdge R8000 Series): Known for performance, reliability, and scalability.

Database Server (Oracle Exadata X8 Series): Optimized for database performance.

NAS Device (Synology RackStation RS18000 Series): Chosen for its storage capacity, reliability, and advanced features.

UPS (APC Smart-UPS X Series): is chosen for reliable backup power.

Hotspot Appliance (Cisco Meraki MR33): Cloud-managed wireless access.

CCTV: High quality cameras to monitor server racks and entry points.

Biometric Access (Cisco Biometric Access Control): Powerful biometric system for secure access.

Technical Support Department: Router (Cisco 2000 Series): Provides a low-cost solution with a variety of functions.

Switch (NETGEAR ProSAFE GS300 Series): The combines price and performance.

Workstation (ASUS VivoBook Series): The combines performance and affordability.

Printer (Canon imageCLASS LBP6000 Series): Chosen for its compact design, low cost, and printing reliability.

Hotspot device (TP-Link EAP225 V3): Provides dual-band Wi-Fi connection.

CCTV (Panasonic or Samsung): cameras monitor technical support areas.

Biometric Access (Cisco Biometric Access Control): Integrated for secure access.

Employee Rest Area: Hotspot Device (Cisco-Valet Plus): Provides reliable Wi-Fi.

CCTV: Install security cameras in common areas.

Conference room: Hotspot device (D-Link DAP-2610): Provides dual-band Wi-Fi coverage.

Other devices: Cisco Badge Reader: Used for access management, allowing employees to use badges instead of or in addition to biometrics.

|  |  |  |  |
| --- | --- | --- | --- |
| Room Name | Gateway | DNS | IP Range |
| R&D Department | 192.168.2.1/21 | 192.168.1.10/24 | 192.168.2.1 to 192.168.7.254 |
| Development and Testing  VLAN 1 | 192.168.3.33/27 | 192.168.1.10/24 | 192.168.3.33 to 192.168.3.62 |
| Development and Testing  VLAN 2 | 192.168.3.1 /27 | 192.168.1.10/24 | 192.168.3.1 to 192.168.3.30 |
| Business Analyst Office | 192.168.2.1/21 | 192.168.1.10/24 | 192.168.2.1 to 192.168.7.254 |
| Technical Assistant Departments | 192.168.2.33/27 | 192.168.1.10/24 | 192.168.2.33 to 192.168.2.62 |
| Conference Room VLAN 1 | 192.168.1.10/24 | 192.168.1.10/24 | 192.168.1.1 to 192.168.1.254 |
| Conference Room VLAN 2 | 192.168.1.10/24 | 192.168.1.10/24 | 192.168.1.1 to 192.168.1.254 |
| Staff Rest Area 1 | 192.168.3.97/27 | 192.168.1.10/24 | 192.168.3.97 to 192.168.3.126 |
| Staff Rest Area 2: | 192.168.3.129/27 | 192.168.1.10/24 | 192.168.3.129 to 192.168.3.158 |
| Server | 192.168.3.65/27 | 192.168.1.10/24 | 192.168.3.65 to 192.168.3.94 |