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**DATA COMMUNICATIONS AND NETWORKS**

**PROJECT REPORT**

**LOCAL AREA NETWORK OF A GAMING CAFE**

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Introduction

The project involves designing and implementing a Local Area Network (LAN) for a gaming café using Cisco Packet Tracer. The LAN architecture ensures efficient communication, management, and monitoring across various zones of the café while maintaining secure and streamlined operations.

Network Zones

1. **Admin Zone/IT Monitoring Station**
   * Centralized control and monitoring of the entire network.
   * Equipped with tools to manage static routes and DHCP services.
2. **Gaming Zones**
   * Three dedicated gaming areas for customers.
   * Each zone is connected to the core router and assigned IPs via DHCP.
3. **Kitchen**
   * Connected to the dining area via static routing for order management and communication.
4. **Dining/Lounge Area**
   * Provides access for customers to browse menus or gaming café services.
   * Connected to the kitchen through static routing.
5. **Reception**
   * Facilitates customer check-ins, billing, and inquiries.
   * Connected to the admin zone for administrative tasks.
6. **Esports Room**
   * Dedicated space for esports tournaments and events.
   * Equipped with high-performance PCs connected to the core router for seamless gaming experience.

Implementation Details

1. **IP Address Allocation**
   * Implemented **Dynamic Host Configuration Protocol (DHCP)**to assign IP addresses dynamically to devices across all zones.
2. **Static Routing**
   * Configured static routes on the **core router** located in the Admin Zone to enable communication between the Admin Zone and all other zones.
   * Established static routing between the kitchen and dining/lounge area for specific inter-zone communication.
3. **Web Server Integration**
   * Deployed a web server accessible by all PCs within the LAN.
   * Enables:
     + Game downloads.
     + Access to the gaming café’s website for announcements, updates, and online services.

Security Measures

* Admin Zone controls access and traffic flow within the network.
* Static routing minimizes dependency on dynamic protocols, ensuring predictable and secure routing paths.
* Web server secured with proper configurations to prevent unauthorized access.
* No zone can communicate with any other zone/rooms except for kitchen and dining rooms.

Results

The implemented LAN ensures:

* **Centralized Management:**Admin Zone can monitor and control traffic efficiently.
* **Seamless Communication:**All zones communicate effectively, facilitating smooth operations.
* **Customer Experience:**Gaming zones and esports room deliver high-speed, low-latency connectivity for a superior gaming experience.
* **Operational Efficiency:**Kitchen and dining/lounge area integration streamlines service delivery.
* **Accessibility:**All devices have reliable access to the web server for gaming-related services.

Conclusion

The gaming café’s LAN, designed on Cisco Packet Tracer, meets the requirements for a robust, scalable, and efficient network. With features like DHCP, static routing, and web server integration, the network ensures smooth operations and an enhanced customer experience.