OPEN WINDOW

Research & Analysis

By Bladen Lehnberg
221146

```php
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session_start();

include 'db.php';

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  $password = $_POST['passwor

  // Perform input validation

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      // Password is correct
      $_SESSION['user_id'] =
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      // Redirect to the dash
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      exit;
    } else {
      // Invalid password
      echo "Invalid password
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  } else {
    // Invalid email
    echo "Invalid

  }

  $stmt->close();
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?>
```

TABLE OF CONTENT

```css
body{
    font-family: 'Poppins', san
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    font-size: 15px;
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    color: #c4c3ca;
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    transition: all 200ms linea
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.link {
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}
.link:hover {
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h4 {
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}
h6 span{
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}
.section{
    position: relative;
    width: 100%;
    display: block;
}
.full-height{
    min-height: 100vh;
}
[type="checkbox"]:checked,
[type="checkbox"]:not(:checke
    position: absolute;
    left: -9999px;
}
.checkbox:checked + label,
.checkbox:not(:checked) + lab
    position: relative;
    display: block;
    text-align: center;
    width: 60px;
```

INTRODUCTION

This research report aims to provide a comprehensive analysis and recommendations for Glen Hub, an emerging business in the ideation phase, as they start developing their video streaming website. With the goal to assist Glen Hub establish its offices and effectively launch its website and services, the report focuses on important factors such as the internal network topologies, hosting plan, threat analysis, and an implementation budget.

```javascript
// ////////////////////////////////
$("#signUpBtn").click(function (e) {
  e.preventDefault();
  console.log("Button was clicked");

  // Get entered values
  let nameSignUp = document.getElementById
  let emailSignUp = document.getElementBy
  let passwSignUp = document.getElementBy

  // Get localStorage users (convert into
  var userData = JSON.parse(window.localS

  // Registered User Checker
  var userExists = false;

  // If any field is empty
  if (nameSignUp == "" || emailSignUp ==
    alert("Please enter all the fields.")
  } else {
    // Check if Email is correctly format
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      alert(
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          alert("Welcome to FlickerFilms!

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// Check if email
function isEmail(email) {
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  return regex.test(email);
}
```

INTERNAL NETWORK PLAN

The internal network plan is essential to ensure consistent communication and data flow within the company. It covers the network's equipment, the various topologies, and the transmission media utilized.

Devices in the Network:

1. **Reception Office:**
   - 2 Computers for administrative tasks
   - 2 Network printer
   - Wireless access points for guest network
   - Network switch

2. **Developer Workspace:**
   - 15 developer workstations
   - Local server for development and testing
   - Network switch

3. **Director's Office:**
   - 1 Director's workstation
   - Conference room equipment
     - Camera
     - TV
     - Microphone

DIFFERENT TOPOLOGIES IMPLEMENTED:
- Reception Office: Star topology
- Developer Workspace: Star topology
- Director's Office: Point-to-point (p2p) topology

TRANSMISSION MEDIA USED:
- Reception Office:
  - Ethernet cables for wired connections
  - Wi-Fi for wireless connections
- Developer Workspace:
  - Ethernet cables
- Director's Office:
  - Ethernet cables

by Bladen Lehnberg
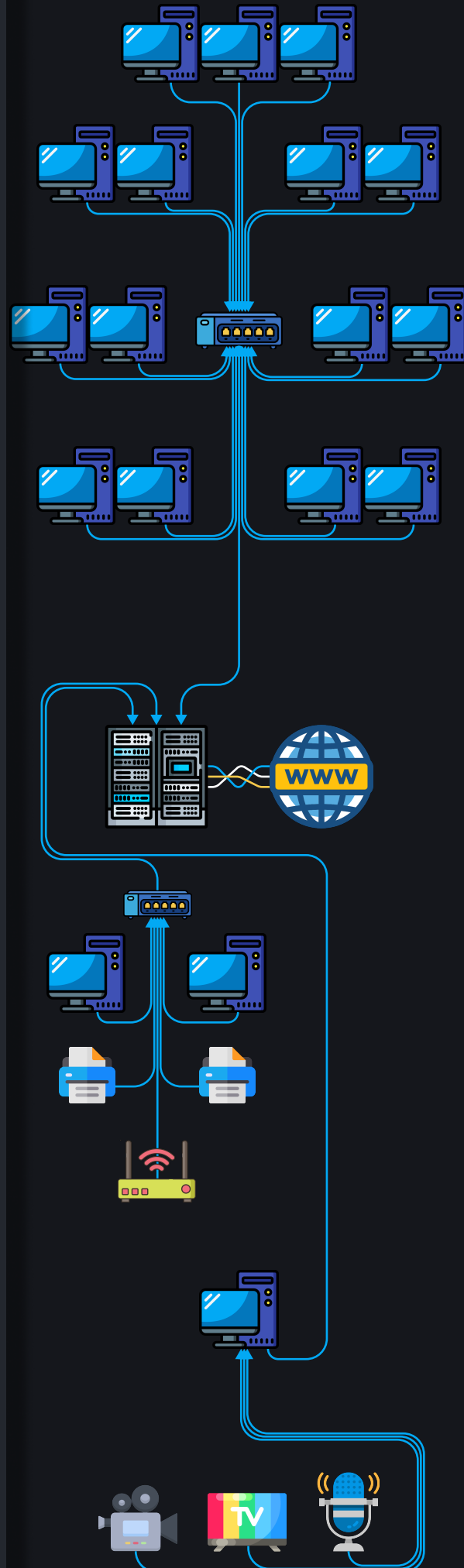
HOSTING PLAN

Glen Hub seeks to cater to an extensive user base and provides a wide selection of streaming videos. The projected user base and the volume of videos that will be made available must be taken into account in the hosting plan.

Expected User Base:
- Southern Africa: 1,200,000 users
- Midwest Region, United States: 500,000 users

Number of Videos:
- 500,000 to 1,000,000 videos

Glen Hub should think about cloud hosting solutions to accommodate the anticipated number of users and video library. Oracle and AWS are two potential vendors for this.

AWS is the preferred choice for Glen Hub's cloud hosting requirements. AWS provides the scalability, dependability, and flexibility necessary to support a sizable user base and video library thanks to its extensive and developed service portfolio, global infrastructure, thriving ecosystem, and market dominance. AWS is the industry standard for cloud hosting thanks to its broad choice of services, robust infrastructure, and well-established reputation. As a result, Glen Hub has access to the tools and support it needs to create a reliable and effective video streaming platform.

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  }

  $stmt->close();
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?>
```

THREAT ANALYSIS

A comprehensive threat analysis is crucial for detecting and minimizing potential risks to the network and infrastructure.

1. DDoS Attacks:

- Implement DDoS mitigation services offered by the hosting company, such as Oracle Cloud Infrastructure Web Application Firewall (WAF) or AWS Shield.

2. Data Breach:

- Implement secure encryption protocols for data in transit and at rest. Software systems should be patched and updated often to address vulnerabilities. Conduct regular inspections and security audits.

3. Insider Threats:

- Implement strict systems for controlling access, such as user authentication and role-based access restrictions. Conduct background checks on employees. Keep track of user activity and log any unusual activity.

4. Malware Infections:

- Ensure that all network devices have strong antivirus and anti-malware software installed. Update programs and operating systems frequently to address vulnerabilities in security.

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```

IMPLEMENTATION BUDGET

Hardware:

- **Workstations (18 Units):** R31 338.00 each
  Total: 18 x R31 338.00 = **R564 084.00**

- **Server & Storage (1 Unit):** R85 640.99 & 12 x R3 529.01
  Total: R85 640.99 + (12 x R3 529.01) = **R127 989.11**

- **Switches (2 Units):** R2119.00 & R369.00
  Total: R2119.00 + R369.00 = **R2 488.00**

- **Printers (2 Units):** R6 999.00 each
  Total: 2 x R6 999.00 = **R13 998.00**

- **Ethernet Cable(500m) & Connectors:** R5 938.00 & R839.00
  Total: R5 938.00 + R839.00 = **R6 777.00**

- **Wi-Fi Router:** **R1 499.00**

- **Conference Equipment & TV:** R17 662.12 & R12 999.00
  Total: R17 662.12 + R12 999.00 = **R30 661.12**

Total: R747 496.23

Internet Service Provider:

- **1Gbps Uncapped Internet:** R1 249.00/Month

Total: R1 249.00/Month

Amazon Web Services:

1. **Infrastructure:**
   - **Amazon S3 (Storage): R1 134 210.13/Month**
2. **CDN:**
   - **Amazon CloudFront: R1 391 560.05/Month**

Total: R2 525 770.18/Month

Hardware: **R747 496.23**

ISP: **R1 249.00/Month**

AWS: **R2 525 770.18/Month**

Grand Total:

- **R3 274 515.41 First Month**

- **R2 527 019.18/Month**

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CONCLUSION

In conclusion, Glen Hub needs to take into consideration its internal network structure, hosting plan, threat analysis, and implementation budget before starting to build its video streaming website. The devices, topologies, and transmission media required to maintain smooth communication and data flow within the organization are listed in the internal network plan. It guarantees smooth operations in the director's office, developer workstation, and reception area.

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REFERENCES

AWS. *AWS pricing calculator.* https://calculator.aws/#/
addService?nc2=h_ql_pr_calc (Accessed 10 June 2023)

MetroFibre. *Uncapped Packages available.* https://
metrofibre.co.za/business/ (Accessed 10 June 2023)

OCI. *OCI Pricing.* https://www.oracle.com/za/cloud/
pricing/ (Accessed 10 June 2023)

Server Warehouse. *Server Warehouse.* https://
www.server-warehouse.co.za/ (Accessed 10 June 2023)

STL Tech. 2021. *Network Topologies: What, Why, and
Where?.* https://stl.tech/blog/network-topology-a-
central-pillar-for-networks-operations/
#:~:text=The%20point%2Dto%2Dpoint%20topology,can%2
0use%20the%20entire%20bandwidth. (Accessed 10 June
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