UNITED STATES MILITARY ACADEMY

FINAL PROJECT

CY350: NETWORK ENGINEERING AND MANAGEMENT

SECTION N9

COL SANDERS

By

CADET WILLIAM BORN, ’19 CO H2

CADET KAYLEIGH STALLINGS, ’19 CO C1

WEST POINT, NEW YORK

14 DECEMBER 2018

|  |  |
| --- | --- |
|  | MY DOCUMENTATION IDENTIFIES ALL SOURCES USED AND ASSISTANCE RECEIVED IN COMPLETING THIS ASSIGNMENT. |

|  |  |
| --- | --- |
|  | I DID NOT USE ANY SOURCES OR ASSISTANCE REQUIRING  DOCUMENTATION IN COMPLETING THIS ASSIGNMENT. |

|  |  |
| --- | --- |
| SIGNATURE: |  |

**1. Project Description**

Our team was given a basic layout of an existing, disconnected network and was asked to create a comprehensive, fully functioning and efficient network. The proper VLAN’s, subnetworks, routing protocols, security measures, and device configuration must be implemented for a successful network.

**2. Results**

**2.a. Network Diagram**

**FOB BLISS**

**ROUTER:**

**Fa0/0: 10.64.62.2/24**

**Fa1/0: 10.64.62.6/24**

**Fa1/1: 192.168.74.139/31**

**Fa0/1.200:192.168.74.127/25**

**Fa0/1.500:192.168.74.126/25**

**SWITCH:**

**MGMT USERS:**

**DATA USERS:**

**VoIP USERS:**

**FOB HOOD**

**ROUTER:**

**Fa0/0: 10.64.62.1/24**

**Fa0/0: 10.64.62.7/24**

**Fa0/1.100:192.168.64.251/24**

**Fa0/1.500:192.168.64.252/24**

**SWITCH:**

**SERVERS:**

**IP1:192.168.64.3/24**

**IP2:192.168.64.4/24**

**IP3:192.168.64.5/24**

**IP1:10.64.62.13/24**

**IP2:10.64.62.14/24**

**IP3:10.64.62.15/24**

**Default Gateway:**

**192.168.64.251**

**MGMT USERS:**

**DATA USERS:**

**VoIP USERS**

**COP CARSON**

**ROUTER:**

**IP:192.168.74.132/29**

**Default Gateway:**

**192.168.74.133**

**BTD TAC:**

**WAP:**

**WIRELESS BTD TAC:**

**PIRSHINGVILLE**

**SWITCH:**

**IP:10.64.62.4/24**

**METROPOLIS**

**ROUTER:**

**Fa0/0.100: 10.64.62.10**

**Fa0/0.200: 10.64.62.20**

**Fa0/0.300: 10.64.62.30**

**Fa0/0.500: 10.64.62.50**

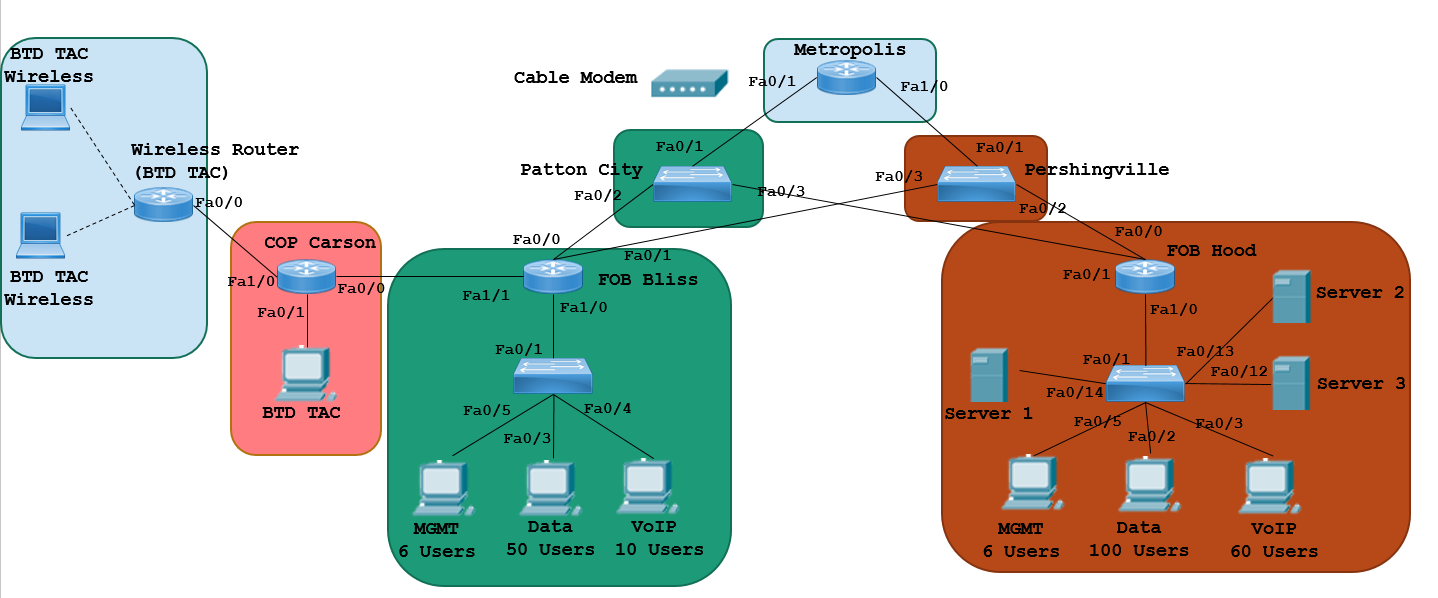
**Fa0/1 10.64.0.62**

**Default Gateway: 10.64.0.64**

**PATTON CITY**

**SWITCH:**

**IP:10.64.62.4/24**

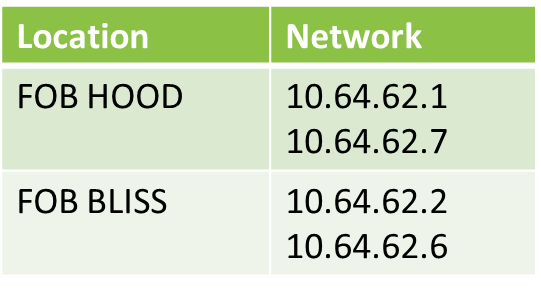
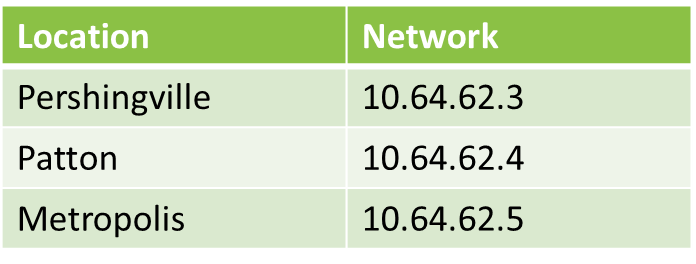
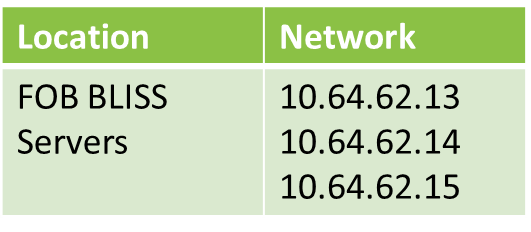
****

**2.b. Subnetting**

**Private**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Location** | **Network** | **Subnet Mask** | **Usable Range** | **Broadcast** |
| **FOB HOOD** | **192.168.64.0** | **255.255.255.0** | **192.168.64.1-.255** | **192.168.64.256** |
| **FOB BLISS** | **192.168.74.0** | **255.255.255.128** | **192.168.74.1-.126** | **192.168.74.127** |
| **COP CARSON** | **192.168.74.128** | **255.255.255.248** | **192.168.74.129-.135** | **192.168.74.136** |
| **Router to Router** | **192.168.74.137** | **255.255.255.252** | **192.168.74.138-.139** | **192.168.74.140** |
|  |  |  |  |  |

**Public**

**2.c. Configurations**

Metropolis Router

Pershingville Router

Patton City Router

FOB Hood Router

FOB Hood Switch

FOB Bliss Router

FOB Bliss Switch

COP Carson Router

COP Carson WAP

**VLAN Database from switches**

FOB Hood Switch

FOB Bliss Switch

**2.d Routing Tables**

Metropolis Router

Pershingville Router

Patton City Router

FOB Hood Router

FOB Bliss Router

COP Carson Router

**3. Lessons Learned**

This project reinforced everything we learned throughout the course. We had to not only configure all deceives, but create an entire network. It was interesting to play with different configurations while attempting to optimize the functionality of the network. We learned that there are many right answers to solve this problem, but not all answers that work are optimal. This was a great final project that accumulated everything we learned this semester into one final submission.

**4. Difficulties**

Our original difficulty was attempting to simultaneously work on packet tracer and update all devices while working on different PC’s. We solved this by using GitHub, and coordinating who was going to do what, and when the updated packet tracer was uploaded to the server. With the network, our biggest difficulty was trying to get around the packet tracer set up of the wireless routers not passing ICMP packets through to the connected devices. However, with the help of our instructor we were able to work around this issue.

**5. Recommendations for Improvement**

One recommendation we had to improve the effectiveness of the project would be in the initial IPR/Final brief, either require an IPR and not a brief, or just require the brief. As shown in our class, the IPR opportunity was not utilized and many people did not learn what they should have out of just the presentation. The network problem itself was very well set up, easy to understand and difficult enough to solve.

**6. Conclusion**

In conclusion, we both learned a lot about networks, the big army as a cyber system, and intermediate technology (GitHub) that will be useful throughout our army and (probably) civilian careers. We both really enjoyed this class and Major Yim as an instructor.

**7. Resources**

None.