









# ViaSat Individual Intern Project

Project Name: GBBF Simulator

## Project Description:

The ground-based beam forming (GBBF) technology was developed at Viasat for a new mobile communication platform covering North America. The ground-based beam forming system creates hundreds of small, flexible, adaptive "spot" beams on the earth that allow mobile handsets to communicate directly with the satellite with smaller antennas, higher speeds, and better performance than ever before. The simulator will be developed and used at Viasat to simulate, model, and reproduce behavior noticed in the field. The platform is based on C and needs to support fault management, configuration management, and performance data collection and forwarding to the Network Management System. Intern will learn insight into the forward and return Beamforming operations along with the various ground based technologies to calibrate, equalize, and perform various signal shaping operations. The engineer will also gain depth into the network management systems that detect system faults and allow operations personnel to respond and mitigate faults in the field. They will also gain in-depth knowledge of XML, SOAP-RPC, scripting, and embedded software.

## Resource Description:

Engineer 1    Discipline: CS/CE    Citizenship Requirement:  US Citizen     Permanent Resident/F1  
 None

Role: Individual intern

Special Skills:    1 embedded software, C, XML, SOAP-RPC

2 Networking course; network management

3 \_\_\_\_\_





# ViaSat Team Intern Project

Project Name: ArcLight Test Automation System

The ArcLight product provides broadband network access to users while roaming around the globe in airplanes, trains, vehicles, business jets and other means. It is also popular for government missions. This is possible with Code Reuse Multiple Access (CRMA), a form of the spread spectrum Code Division Multiple Access (CDMA) embedded in the satellite Airborne, Vehicular and Maritime Terminals to connect to the Internet. The automation system will be developed to support the acceptance test phase of software releases for the ArcLight Super Network (ASN), the Network Operations Center (NOC) and multiple Network Management Systems (NMS). The software test interns will develop solutions and interact with various software test tools.

## Resource Description:

Engineer 1    Discipline: CS    Citizenship Requirement:  US Citizen     Permanent Resident/F1  
 None

Role: Software Engineer

Special Skills: 1 JAVA, STAF, Python, CLI

2 Tcl/Tk scripting, SQL, SNMP

3 IP traffic generator

Engineer 2    Discipline: CS    Citizenship Requirement:  US Citizen     Permanent Resident/F1  
 None

Role: Software Engineer

Special Skills: 1 JAVA, STAF, Python, CLI

2 Tcl/Tk scripting, SQL, SNMP

3 IP traffic generator



# ViaSat Team Intern Project

Project Name: Tactical Router Upgrade

## Project Description:

ViaSat's data controllers allow secure packet communication over narrow band radio channels. This enables soldiers in the field to employ TCP/IP services over existing radios, creating network-centric connections that link them to the Global Information Grid (GIG). Interns will work with existing data controllers to enhance the range of waveforms that they support and upgrade FEC function. C, C++ expertise required.

## Resource Description:

Engineer 1      Discipline: EE      Citizenship Requirement:  US Citizen    Permanent Resident/F1  
 None

Role: Low Level HW Design - take Trade Study artifact and create board design

Engineer 2      Discipline: CS      Citizenship Requirement:  US Citizen    Permanent Resident/F1  
 None

Role: Implement RS FEC

Special Skills: 1 C, C++

2 Understanding of Ethernet, TCP, UDP, IP protocols

3 Linux networking basics: ifconfig, ping, tcpdump/wireshark

Engineer 3      Discipline: CS      Citizenship Requirement:  US Citizen    Permanent Resident/F1  
 None

Role: Implement Concurrent Legacy/IP

Special Skills: 1 C, C++

2 Understanding of Ethernet, TCP, UDP, IP protocols

3 Linux networking basics: ifconfig, ping, tcpdump/wireshark

# ViaSat Team Intern Project

**Project Name:** Wireless Extension to Portable Satellite Transceiver

## Project Description:

The task is to conduct a comparison stress test of representative commercial and military wireless Line of Sight (LOS) waveforms to enable an extension of Command and Control Situational Awareness (C2SA) traffic from a comm-on-the-move manpack unit. This intern effort extends the reach of the manpack satellite transceiver to a local LOS network surrounding the manpack. The comparison testing will be conducted with controlled repeatable environmental conditions to stress each waveform in terms of communications and achievable size, weight, and power performance considerations.

## Resource Description:

- |            |   |  |
|------------|---|--|
| Engineer 1 | Discipline: <u>CE</u>   | Citizenship Requirement: <input checked="" type="checkbox"/> US Citizen <input type="checkbox"/> US Person <input type="checkbox"/> None |
|            | Role: <u>Port GFE app SW to an Android smart phone for both WiFi and Cell demos.</u>  |  |
| Engineer 2 | Discipline: <u>EE</u>   | Citizenship Requirement: <input checked="" type="checkbox"/> US Citizen <input type="checkbox"/> US Person <input type="checkbox"/> None |
|            | Role: <u>Integrate WiFi Router and PicoCell with Transceiver</u>                      |  |
| Engineer 3 | Discipline: <u>EE</u>   | Citizenship Requirement: <input checked="" type="checkbox"/> US Citizen <input type="checkbox"/> US Person <input type="checkbox"/> None |
|            | Role: <u>Integrate Top-X and SRW radios with Transceiver</u>                          |  |
| Engineer 4 | Discipline: <u>EE</u>   | Citizenship Requirement: <input checked="" type="checkbox"/> US Citizen <input type="checkbox"/> US Person <input type="checkbox"/> None |
|            | Role: <u>Develop and execute comparative test between 4 LOS waveform technologies</u> |  |





# ViaSat Team Intern Project

**Project Name:** Computer Penetration Test and Defense

## Project Description:

With the increasing number of attacks on networks, the world has come to demand better security solutions by which to protect this information. This internship will use penetration testing techniques to identify weaknesses and vulnerabilities in a computing platform and develop defensive techniques to thwart these vulnerabilities.

## Resource Description:

Engineer 1    Discipline: EE/CE    Citizenship Requirement:  US Citizen     US Person     None  
Role: Focus on satellite network environment

Special Skills:    1 Strong OS Background, C/C++ in an embedded setting.  
                          2 Familiarity with Linux kernel and device driver development, Networking  
                          3 Strong interest in computer security

Engineer 2    Discipline: CS    Citizenship Requirement:  US Citizen     US Person     None  
Role: \_\_\_\_\_

Special Skills:    1 Strong OS Background, C/C++ in an embedded setting.  
                          2 Familiarity with Linux kernel and device driver development, Networking  
                          3 Strong interest in computer security

Engineer 3    Discipline: CS    Citizenship Requirement:  US Citizen     US Person     None  
Role: \_\_\_\_\_

Special Skills:    1 Strong OS Background, C/C++ in an embedded setting.  
                          2 Familiarity with Linux kernel and device driver development, Networking  
                          3 Strong interest in computer security



