All-Duck Industries has sites across the country and provides datacenter resources to subsidiaries. They are in the process of replacing sites with up to date networking equipment and has hired you to design and maintain their sites and main headquarters.

One site in particular is complex. The site contains 4 buildings: Mill Warehouse, Plastics, Main Office, Shipping. Below are details regarding their needs:

- Shipping has 8 computers, 6 phones, 1 wireless access point and 2 printers. The building connects by 2 fiber connections to the Main Office
- Plastics has 14 computers, 10 phones, 2 wireless access points and 4 printers. The building connects by 2 ethernet copper connections to the Mill Warehouse.
- Mill Warehouse has 20 computers, 10 phones, 3 wireless access points and 4 printers. Of the 20 computers, 10 are on an assembly line and connect only by wireless. The building connects by 2 fiber connections to the Main Office.
- Main Office has 8 vlans: MGMT, HR, SALES, FINANCE, SHIPPING COMPUTER/PRINTERS, PLASTICS COMPUTERS/PRINTERS, MILL COMPUTERS/PRINTERS, AND VOICE. Each department should have separate network communication from each other. Wireless is not allowed in the building. There are 15 computers and 15 phones with 3 printers. The Main Office connects to the internet through a router connected by fiber provided by All Duck Industries
- All Duck Industries has a main datacenter that everyone connects through internally by a set of routers at each site. The main datacenter has 3 routers and 2 switches that span its operation and All Duck Industries wants upgraded routers to use dynamic routing with no static routes with redundancy into their datacenter Layer 3 switches. Their datacenter switches consist of 5 vlans and has a layer 3 etherchannel between them. (A server/loopback address with IP address of 4.2.2.2 and 8.8.8.8 should be used to illustrate connectivity to Internet)

Your tasks for this assignment are to create an infrastructure in Packet Tracer and configure all aspects of the network needed to accomplish their needs. Once complete, submit the .pkt file along with all appropriate configurations from devices where possible for grading. Also, an executive summary of 1-3 pages must be submitted outlining your design.

To receive a 100% grade, the following must be in the final submission:

- Main office must connect to router by router-on-a-stick
- Offices must use IPv4 addresses for its equipment
- Proper trunking must be configured between switches
- Proper subnetting must be used for each building
- Proper switch ports must be configured for phones and workstations
- Proper vlans must be created for all sites
- OSPF must be used at HeadQuarter site
- All locations must be properly labeled and described in its entirety
- Assume all connections are Ethernet based either over copper or fiber

- A datacenter must exist that provides DHCP, DNS, email, ftp, web, and syslog services at minimum.
- The network then must be secured using concepts discussed in the class. Both types of access control lists, Dynamic ARP Inspection, form or forms of Network Address Translation (Static/Dynamic/Overload), device password security, switch port security, Syslog, NTP, CDP/LLDP, and SNMP should be implemented at various points in the network. For example, one site may be allowed to access web services but not ftp. Another example, certain workstations should be plugged into certain switch ports and ports should be shut down should another workstation be plugged into it.

Checkpoints & Final Deliverables:

- Week 5 – Should have LANs and devices placed with VLANs assigned
- Week 8 – IPv4 address and subnetting designed for LAN/WAN and implemented on endpoints/routers. Routers should be configured with static routes
- Week 11 – Routers configured with IPv4 and IPv6 and OSPF setup. Should be fully functional at this time
- Week 16 – Final deliverable with security elements added