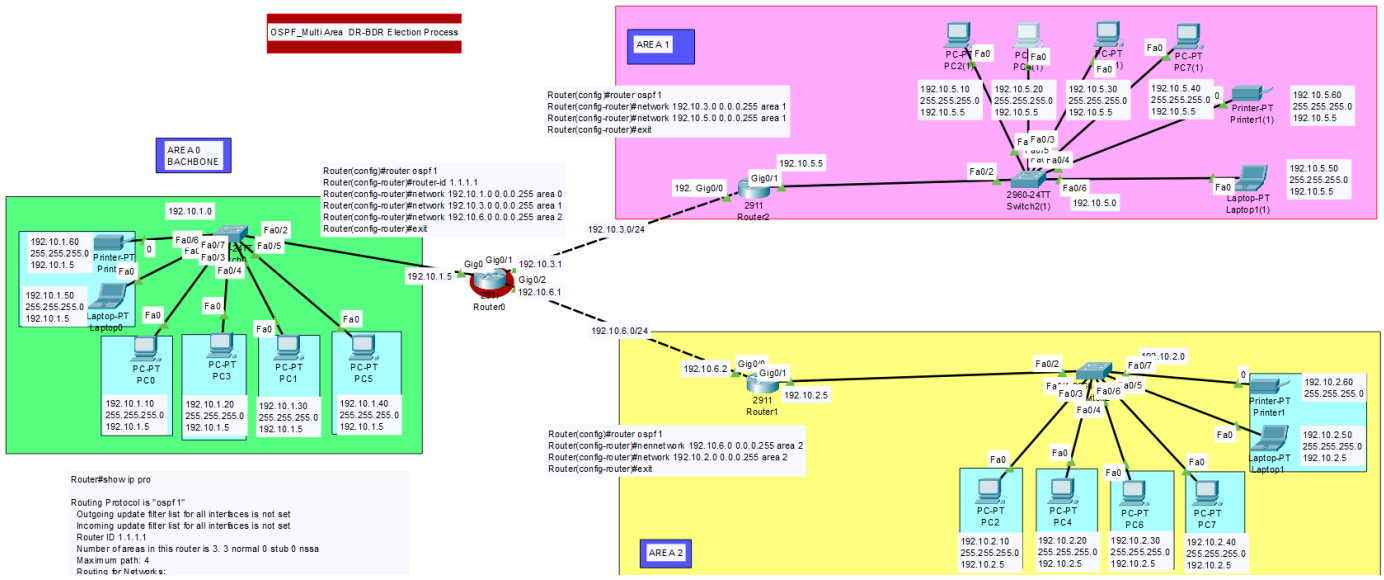

OSPF Multi-Area Network Topology with DR/BDR Election

Area 0 (Backbone)

Router0 Configuration:

```
Router(config)#router ospf 1
Router(config-router)#router-id 1.1.1.1
Router(config-router)#network 192.10.1.0 0.0.0.255 area 0
Router(config-router)#network 192.10.3.0 0.0.0.255 area 1
Router(config-router)#network 192.10.6.0 0.0.0.255 area 2
Router(config-router)#exit
```

- **Devices and IP Addresses:**
  - Printer0: 192.10.1.60 / 255.255.255.0 / 192.10.1.5
  - Laptop0: 192.10.1.50 / 255.255.255.0 / 192.10.1.5
  - PC0: 192.10.1.10 / 255.255.255.0 / 192.10.1.5
  - PC3: 192.10.1.20 / 255.255.255.0 / 192.10.1.5
  - PC5: 192.10.1.30 / 255.255.255.0 / 192.10.1.5

Area 1

Router2 Configuration:

```
Router(config)#router ospf 1
Router(config-router)#network 192.10.3.0 0.0.0.255 area 1
Router(config-router)#network 192.10.5.0 0.0.0.255 area 1
Router(config-router)#exit
```

- **Devices and IP Addresses:**
  - PC2: 192.10.5.10 / 255.255.255.0 / 192.10.5.5
  - PC4: 192.10.5.20 / 255.255.255.0 / 192.10.5.5
  - PC7: 192.10.5.40 / 255.255.255.0 / 192.10.5.5
  - Printer1: 192.10.5.60 / 255.255.255.0 / 192.10.5.5
  - Laptop1: 192.10.5.50 / 255.255.255.0 / 192.10.5.5

Area 2

Router1 Configuration:

```
Router(config)#router ospf 1
Router(config-router)#network 192.10.6.0 0.0.0.255 area 2
Router(config-router)#network 192.10.2.0 0.0.0.255 area 2
Router(config-router)#exit
```

- **Devices and IP Addresses:**
  - PC2: 192.10.2.10 / 255.255.255.0 / 192.10.2.5
  - PC4: 192.10.2.20 / 255.255.255.0 / 192.10.2.5
  - PC6: 192.10.2.30 / 255.255.255.0 / 192.10.2.5
  - PC7: 192.10.2.40 / 255.255.255.0 / 192.10.2.5
  - Printer2: 192.10.2.60 / 255.255.255.0 / 192.10.2.5
  - Laptop2: 192.10.2.50 / 255.255.255.0 / 192.10.2.5

DR and BDR Election Process

- **Purpose**: The DR and BDR are elected to reduce the amount of OSPF traffic on multi-access networks (e.g., Ethernet). They manage the exchange of routing information between routers in the same area.
- **Election Criteria**:
  - **OSPF Priority**: Each router on a multi-access network has an OSPF priority value. The router with the highest priority becomes the DR. If there's a tie, the router with the highest Router ID (RID) wins.
  - **Default Priority**: By default, all routers have a priority of 1. You can change this using the ip ospf priority command.
  - **BDR Election**: The router with the second highest priority becomes the BDR. If there's a tie, the router with the second highest RID becomes the BDR.
- **Election Process**:
  - **BDR First**: The BDR is elected first. If no other router declares itself as the DR, the BDR becomes the DR.
  - **DR Election**: If a router declares itself as the DR, the BDR compares its priority/RID to the DR's attributes. If the BDR has a higher priority/RID, it becomes the DR.