**Problem statement**

**MSU existing solution will may not be able to handle upgrade process on thousand device simultaneously. Do to bandwidth and packet losses it could became less efficient. To achieve good performance need to divide small group of devices ~254 and upgrade one by one group. Taking one by one group is time consuming . total time taken would be noOfGroup \*T1( Time take for 1 group).**

**Suppose we 10000 device on the network**

**Total no group = 40 group of 250 device. Then total time for upgrade would be**

**40\*T1 = 40\*10=400 Minutes = ~7hr ->assume T1=10 Minutes**

**~7 hr upgrade time is too high for solar plant .**

**Solution:**

**As our assumption is, to get better performance of MSU solution do not exceed no of device more then 254. Now take same example as above 10000 device.**

**Total no of group is 40, now pick on device from each group and upgrade them first, after that let these device to take responsibility to upgrade the left out device in there group.**

**Time take**

**Step 1-> upgrade one device from each group = 10Minutes**

**Step-> upgrade left out device of each group = 10 Minutes**

**Total time = Step1+ Step2 = 10+10=20 Minutes**

1. **Server lists Slave devices Information.**
   * Master will have prior information of the devices connected on same network
   * In case information is not available on Master then, it can scan local subnet and provide the information to server
   * Server will send “**Who-Is**” command to Master with “**DeviceType = Slave**”.
   * Master response “**I-Am”** to serveron behalf of individual device
   * Master club slave device information and send together to server with **“DeviceType = Slave”**
   * Incase devices info is bigger than UDP Packet size then break it in multiple packet
   * Master will inform server by setting flag in the Packet **“isDataAvailable”**
   * Server will go and read master until **“isDataAvailable”** Flag set to 0
2. **Server lists MSU Master(Proxy Server) device on the network**
   * Server sends “**Who-Is**” command with field mentioned “**DeviceType = Master”**
   * All master on the network respond **“I-Am”** with field mentioned “**DeviceType = Master”**
3. **Server lists MSU Client on the network**
   * As define in old solution
4. Upgrade process
   * Server upgrade Master
   * Master upgrade all slave connected in network locally
5. File transfer status
   * Master need to send file transfer update @every define interval to server
   * Server will show the file transfer status on its window
6. Upgrade process status
   * Master collect upgrade status from individual slave @ end of the process and send all together to server