

# GREEN BOF Update: Moving Toward Energy Efficiency Network Management

Qin Wu ([bill.wu@huawei.com](mailto:bill.wu@huawei.com))

# Background and Motivation

- Power management widely adopted in the past for enterprise networks
  - E.g., Monitor power consumption of HVAC in the smart building automation
  - Monitor power consumption of IT device such as personal computers, wireless access points, network switches in the campus network
- With the rapid development of network technology such as 5G, AI computing, high speed ethernet, etc and explosive growth of network traffic,
  - The network capacity and sites are continuing to increase which also drive tremendous growth in equipment energy consumption costs.
    - 85% (Network ) 5% (Terminal) 10% (Office)
    - Data Center (20~25%), Mobile Wireless (45~60%)
  - In the meanwhile, a large proportion of the vast amounts of energy consumed is unnecessarily wasted.

# Challenges and Goal

- Network operators are seeking for automation tools and solutions to better assess and control the energy consumption of networks, devices, and devices/components across their networks.
  - The focus of targeted devices are the ones consuming most of energy
    - E.g., pure network element in mobile network or fixed network
    - Hybrid scenario such as Power supply(e.g., PDU)+ network elements in data center Network
  - Use cases such as
    - Network visibility to energy consumption per device, per component, energy efficiency per device, per component,
    - Power usage effectiveness measurement on the whole data center network, etc
- Power Consumption monitoring on devices is not sufficient since
  - Monitoring only tell you how much power are consumed at specific device.
  - But doesn't tell you when where to consume such power, why consume so much power and how to save the power.
- Technology trend is moving from power consumption monitoring toward energy efficiency observability and management
  - Global visibility to network topology data, capability inventory data, power data, energy data since
    - Mapping or correlation between data at component level, device level and network level modelled data are visible
  - Allow optimizing energy use on network devices based on capability while improving the overall network utilization

# The GREEN BOF Introduction

- The GREEN BOF is WG forming BOF
  - Aim at creating a new WG
  - Tackle complexity of energy management world and address these challenges faced by today's network operators
  - Explore the information to be exposed in the YANG model and the requirements for energy efficiency management
- GREEN BOF Charter Proposal:
  - <https://datatracker.ietf.org/group/green/about/>
- BOF Meeting Time and Location:
  - Wednesday afternoon, 1<sup>st</sup> session
  - Location: Regency C/D
- The mailing list: [green-bof@ietf.org](mailto:green-bof@ietf.org)
- Your input on AD's question in chairs slides are welcome!