

CALL FOR PAPERS – IEEE GLOBECOM 2012

Selected Areas in Communications Symposium

Track on Green Communication Systems and Networks

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Scope and Motivation

There is a growing emphasis on energy efficiency in communications and computing, with attention being paid to ecological and, even more so, economic drivers. The predicted explosive growth in the number of connected devices and the Internet bandwidth necessitates “green solutions” such as smart grids, green logistics, smart buildings, and green telecommunications hardware. This track seeks to capture the current trends and cutting edge research in system and network performance that incorporates “green” constraints in networks and clouds. By promoting innovation in this critical area, substantial advances can be achieved in new architectures, protocols, systems, and algorithms, which, in turn, will allow significant reductions in energy consumption.

Prospective authors are invited to submit their original work addressing new and emerging issues in communications and networking on the above themes. Submissions are welcome from academia, industry, and government organizations. Submissions are welcome from academia, industry, and government organizations. Topics of interest include, but are not limited to:

Topics of Interest

1. Power consumption trends and reduction for communications (wireless, wireline, Internet, core, metro, access, and home)
 - Pricing and billing for green communication devices and services
 - Home-area energy automation networks
2. Energy-efficient optimizations for communications and computing
 - Cross-layer optimizations of green communications and computing
 - Coordinated power and GHG emission control for network-wide optimization
 - Optimization road traffic for green transport and logistics
3. Hierarchical, distributed communication techniques
4. Context-based power management & energy awareness
5. Energy-sustainable cloud computing
6. Power-aware algorithms and protocols
7. Power-efficient cooling and air-conditioning systems for communications and computing
8. Novel network concepts and architectures lowering the overall footprint of ICT (e.g., compressed sensing, network coding and interference alignment)
9. Energy minimization in core, metro, access, and local area networks
 - MAC, routing and transport protocols for energy minimization
 - Wireline network architecture design for low power operation
 - Traffic shaping and policy implementation for energy minimization in networks.
 - Network monitoring for energy consumption minimization.
 - Energy efficient architectures for wireless networks
 - Uncooled switching and routing components.
 - Planning and management of energy-aware wireline or wireless networks

- Self-organizing wireless networks for energy-efficiency
10. Energy efficient optical communications and networking
 - Electronic routing versus photonic switching for energy minimization.
 - Low cost, low energy large photonic switching fabrics
 - Energy efficient routing for optical communications and networking
 - Energy efficient optical communications devices
 11. New energy-efficient transmission technologies
 - Visible light communications
 12. Physical layer approaches for green communications and computing
 - Signal processing for green communications and computing
 - Power efficient modulation and coding strategies
 - Peak-to-average-power-ratio reduction for communication signals
 - Low cost, energy efficient antenna and RF designs
 13. Theory, modeling, and analysis for green communications and computing
 - End-to-end modeling and performance of green communication networks
 - Modeling, performance and design of green clouds
 - Cooperative theory, game theory and causal reasoning for green communication networks
 - Characterization, metrics, and modeling for energy efficient communications
 14. Virtualization techniques for energy efficiency
 15. Electromagnetic pollution mitigation
 16. Energy-efficiency in enterprise networks, data centers, storage, content distribution networks
 17. Use of cognitive principles to reduce energy consumption in wireline or wireless networks
 - Opportunistic spectrum sharing without causing harmful interference pollution
 18. Interdisciplinary research issues for green communications and computing
 19. Green communication designs for smart grids
 20. Security strategies for green communication networks
 - Light-weight security
 21. Energy-efficiency in sensor and ad-hoc networks
 22. Energy-efficiency in vehicular networks
 23. Energy harvesting, storage, and recycling
 24. Energy-efficient scheduling for communications and computing
 25. Energy saving in wireless communication on the terminal side
 26. Measurement & profiling of energy consumption
 27. Energy efficient designs of software, hardware, and devices for communications and computing
 - Intelligent low power router circuits
 - Hardware power consumption models and transmission energy savings
 - Design of green base stations
 - Energy-efficient technology for network equipment (such as sleep mode, passive network elements)

- Energy-efficient chip designs for communications and computing (FPGA, System-on-chip, etc)
- 28. Standardization, policy and regulation for green communications and computing
 - Possible avenues for standards and intervention
 - New standardization progresses for green communications and computing
- 29. Experimental test-beds and results for green communications and computing
- 30. Green communications under delay or QoS constraints

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