COMPUTER SCIENCE AND ENGINEERING
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Networking The Cloud

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Swarm at the Edge of the Cloud

Extending IPv6 to City-Wide Sensor Networks

6LoWPAN enables "native" IPv6 to work with low-power sensor networks. However, with new sensor types (such as energy-harvesting, millimeter-scale, and transmit only nodes), and larger deployments, new challenges concerning routing, addressing and networking arise.

1 Routing to Nodes with Changing Addresses

- As nodes move they could switch border routers
- That would give them a new IPv6 address
- How are routes maintained?

Transport Layer Protocols Expect Full Addressing 2

- Imagine the case of transmit only nodes (as an energy-harvesting node might be)
- No way to learn its own prefix. But does it matter?
- Maybe swarm nodes only need 64 bit IDs

3 Routing to Embedded Networks

- Border routers need to advertise the prefix of the sensor network
- However, existing networks may not accept the router advertisements
- How do we integrate new border routers?