

# Required path properties for applying path aware networking in integrated space-terrestrial networks

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S. Zheng, China Mobile

P. Liu, China Mobile

C. Danyang, China Mobile

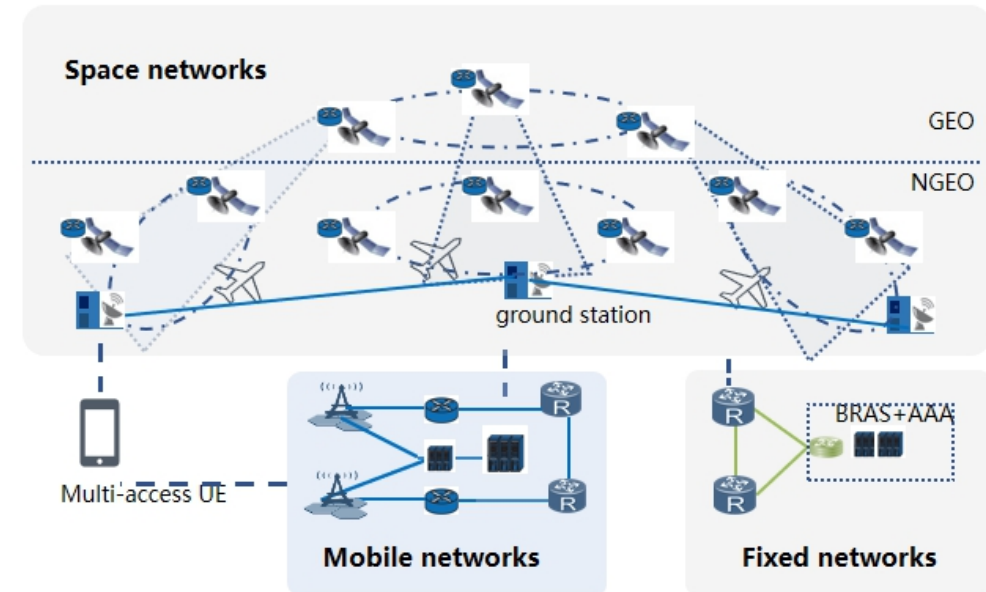
# Relationship between ISTN(integrated space-terrestrial networks) and PAN

- ISTN characteristics

- **Limited resource (space)**
- **Cross administrative domain**
- **Cross layer**
- **Multipath** with various link characteristics
- **Mobility** which is predictable and periodic(space)

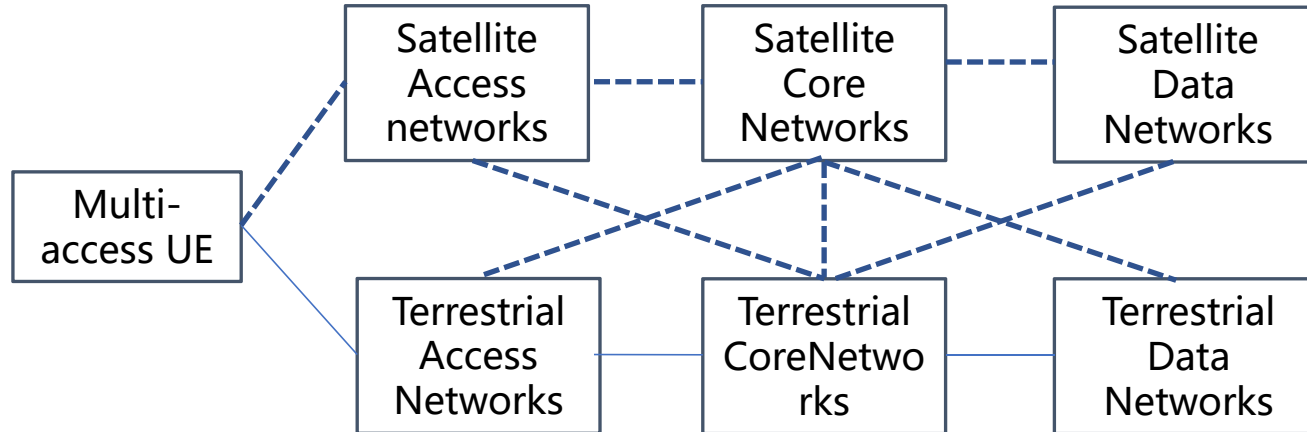
- PAN characteristics.

- **endpoints** have the ability to select or influence the path through the network used by any given packet or flow
- suitable for **cross administrative domain**
- can leverage **multipath connectivity** across disjoint paths through the Internet, **even over a single physical interface.**



The Path-Aware Network is suitable for ISTN, and may help to cope with the challenges of ISTN.

# Use cases & Challenges



Satellite can be integrated as router or server in access networks, core networks, and/or data networks

Addressing, authentication, advertising and routing mechanisms need to be enhanced;  
Predictability can be used to help solve the above problems

## Challenges

- **mobility**
  - deal with satellites mobility to guarantee the Reliability and robustness
- **resource limitation**
  - adapt to limited resource including power and computing resource and storage resource
- **Various link characteristics**
  - adapt to various link characteristics especially the space link which may have unpredictable link failure due to complicated space environment

# Requirements on path properties

- Path properties
  - **Available time**(space only)
- Fine granular properties
  - Node properties
    - Node computing resources
    - Node storage resources
    - Node **power**(space only)
    - **Available interfaces of the node**(space only)
    - **Future available interfaces of the node**(space only)
  - Link properties
    - Delay
    - **Link media**
    - Quality of link
    - **Available time**(space only)
    - **Link status**(space only)

# Summary

- Integrated space-terrestrial Networks can take advantage of the PAN and thereby can be seen as a typical use cases.
- When PAN is introduced into ISTN, additional path properties may be required.

Thank you!