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# **Peering Arrangements**

## **NASA Integrated Services Network**

### **NISN**

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# Peering Classification



## Private:

- Inter center data flows
- Internal peering with Agency space partners
- Domestic peering with corporation partners

## Public:

- Peering at commercial peering points of presence
- Public consumer content driven information
- Access to public science information

## Research:

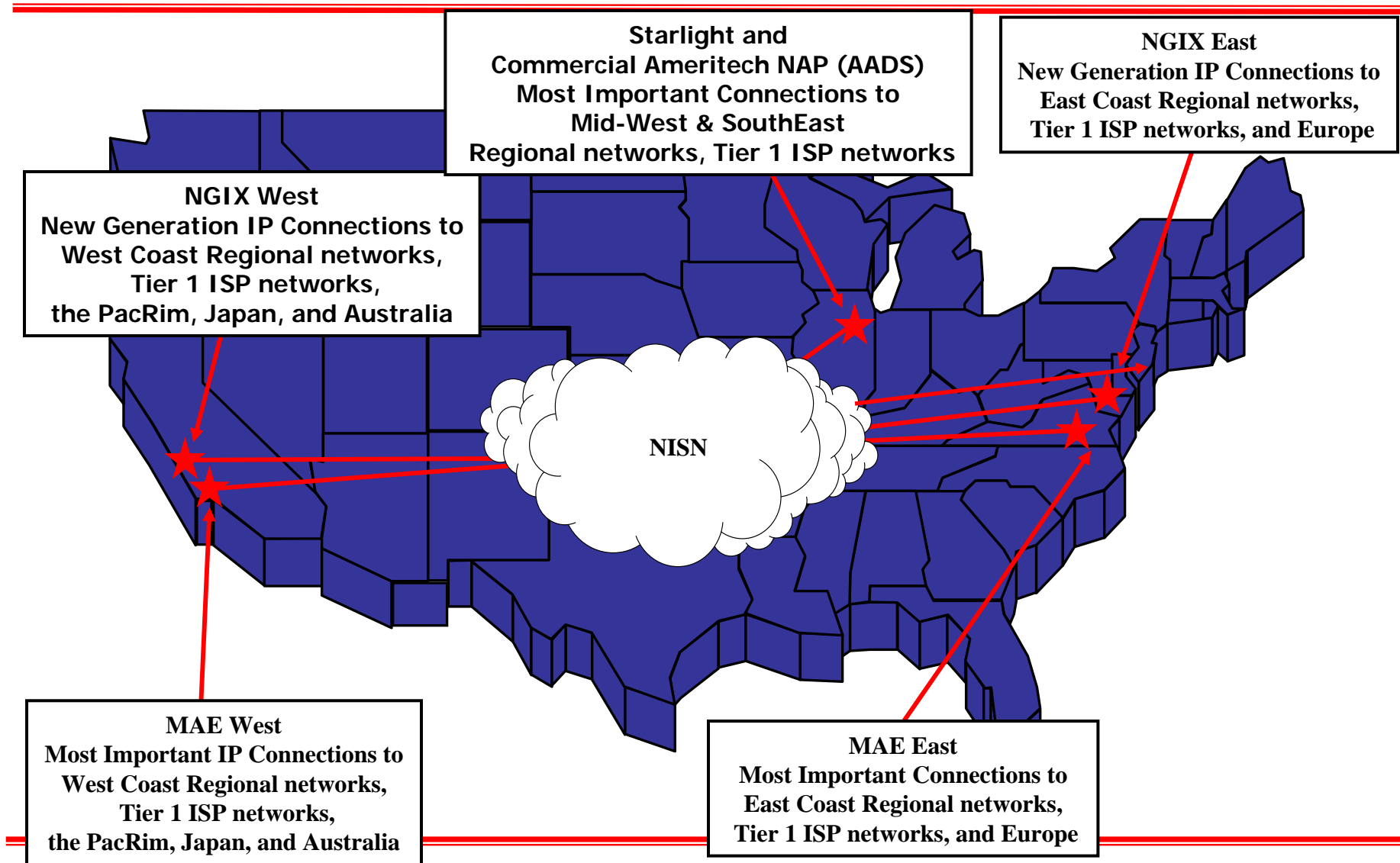
- Peering established with universities to support Agency science initiatives
- Also groups located at international research centers and universities
- Traffic may typically transit interface to Research and Development networks.



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## Significance of each Peering Point





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# Peering Overview



- All NISN Internet peers connect to one of five peering routers
- ARC1 peering router
  - MAE West ATM
  - MAE West Ames
  - FIX
  - NGIX West
- ARC2 peering router
  - AIX peers
    - PAIX
    - MIX
    - IPv6
    - NGIX West (Next Generation)
- MSFC-CHI peering router
  - AADS
  - StarLight
- GSFC1 peering router
  - MAE East ATM
- GSFC2 peering router
  - NGIX East



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# Peering Agreements



- Most peering agreements are informal and consist of a mutual agreement to exchange routes and traffic at a peering location.
- A limited number of formal agreements have been established
  - UUNET
  - Qwest
  - Level(3)
- Peering agreements are mostly no cost agreements.



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## Other Peering Related Information

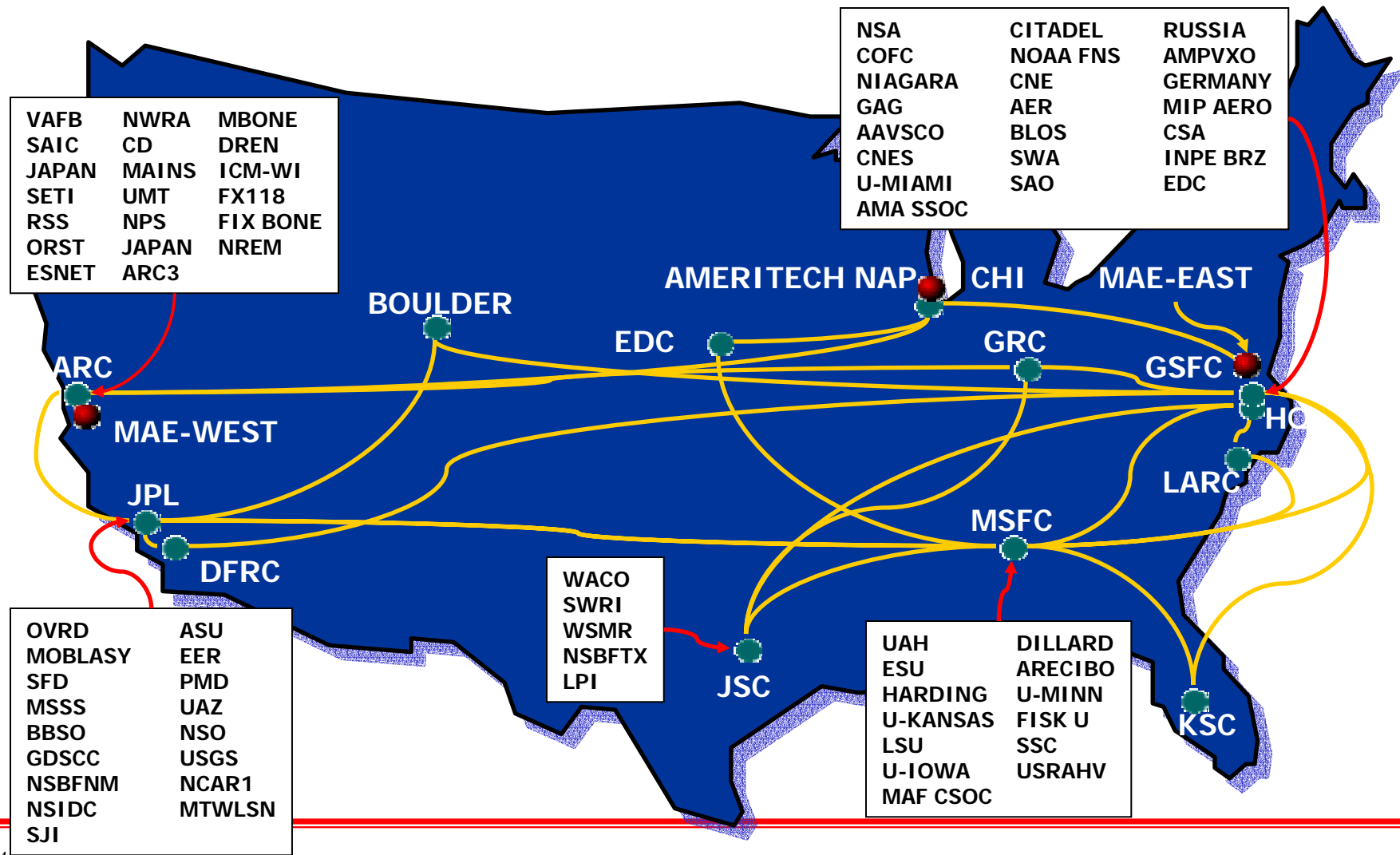


- Some Peering locations require a port charge or equipment co-location fee
  - NGIX East is located at University of Maryland at College Park (UMCP).
  - StartLight is located at Northwestern University
  - AADS is located at Ameritech
  - No fees currently exist for peering connections from Ames due to the efforts of the Ames External Gateway
- Circuits to the peering locations
- A small number of networks have chosen not to peer directly with NISN. To reach these networks an IP transit agreement is in place with Level 3 Communications



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# NISN MISSION SUPPORT STANDARD IP NETWORK





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# International Peers



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AS	ID	Name	Area
288	ESA	European Space Agency	Europe
566	CSA	Canadian Space Agency	Canada
2497	IJJ	Internet Initiative Japan	Japan
2516	KDDI	KDDI Corporation	Japan
3303	SWISSCOM	Swisscom Enterprise Solutions	Switzerland
3257	TISCALI-BACKBONE	Tiscalli Intl Network	Germany
5400	CIPCORE	BT Ignite European Backbone	Netherlands
5511	OPENTRANSIT	France Telecom	France
7539	TANET2-TW	Taiwan Research Network	Taiwan
7660	APAN-JP	Asia Pacific Advanced Network-Japan	Japan
9156	BBC-US	BBC Internet Services, America Network	England
9680	HINETUSA	HINET Service Center USA	Taiwan
12654	RIPE-NCC-RIS-A	RIPE NCC RIS Project	Europe
12819	RSVG	NASA Russian Extension	Russia





# Network to Project Association Examples



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Telenor	Norway	Earth Orbiting System
JAXA	Japan	Earth Orbiting System
ERSDAC	JAPAN	Earth Orbiting System
Qwest	Guam	Deep Space Network
MCI	Spain	Deep Space Network
AT&T	South Africa	Earth Science/Space Science
Tiscalli	Germany	International Space Station
Opentransit	France	International Space Station
RSVG	Russia	International Space Station



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