

# NETWORK CONNECTIVITY UNAM-JINR

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# BACKGROUND – ICN

PARTICIPATION ON EELA E-INFRASTRUCTURE EGEE (2006)

FIRST GRID NODE FOR ALICE IN LATIN AMERICA (2007)

FOUNDING MEMBER OF ROC-LA (MX,BR,CO)

-VO EELA HOST

AUGER RC (UPDATING)

LOCAL GRID:

GRID-UNAM

IN PROGRESS:

NICA

OTHER HEP EXPERIMENTS:

HAWC (ENDING) - 10 PB (LUSTRE)

SWGGO (STARING)

PLANNING:

GRIDMEX

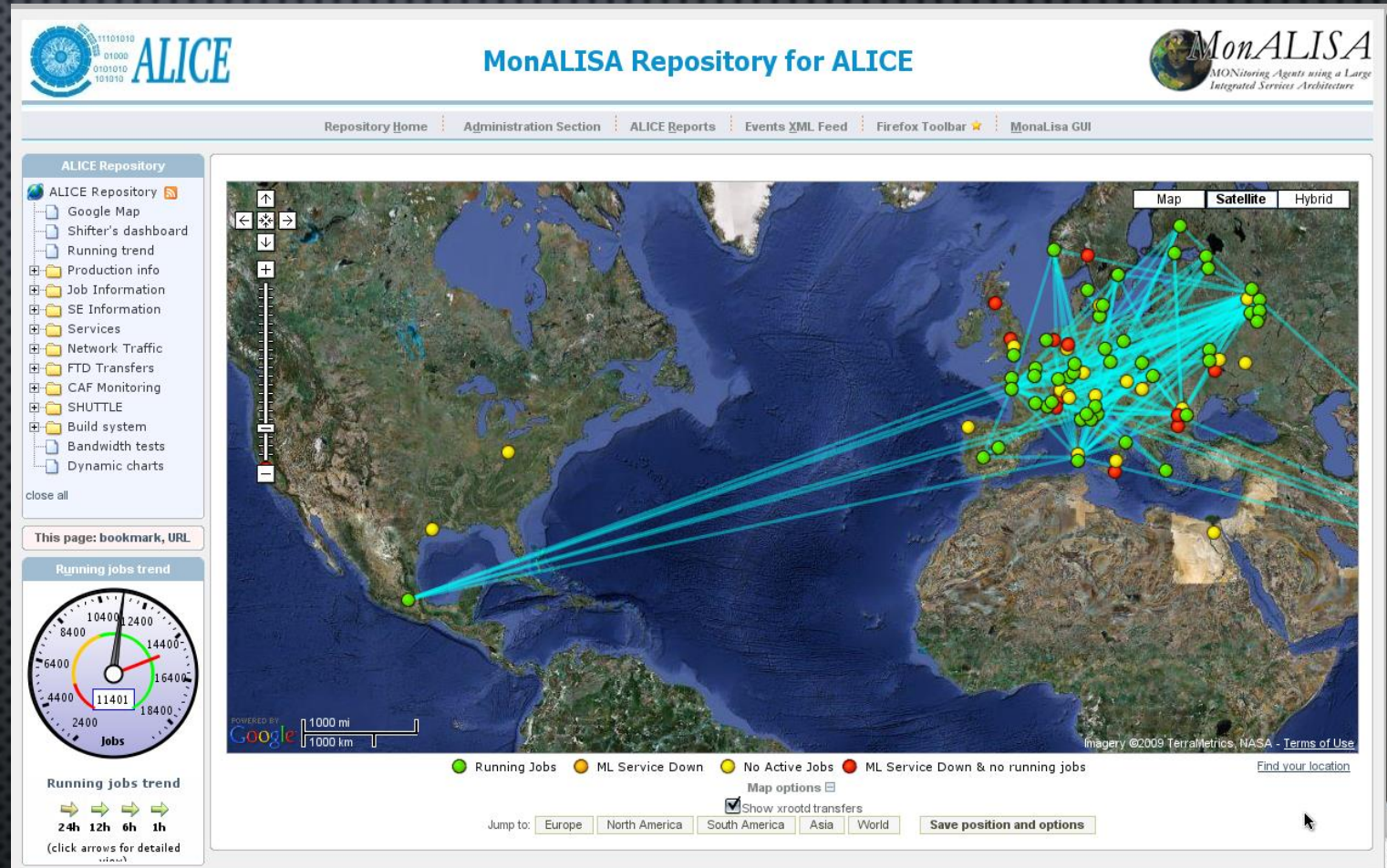




# HEP MOTIVATION

HEP EXPERIMENTS / COLLABORATION ONE  
OF THE MAIN USERS OF HTC AND  
DEMAND HIGH BW FOR DATA TRANSFERS

THANKS TO ALICE AND HAWC ,  
UNAM (MX) INCREASED THE BW FROM  
35 MBPS -> 1 GPBS -> 10 GBPS  
(CURRENT)





# HEP & ASTROPHYSICS

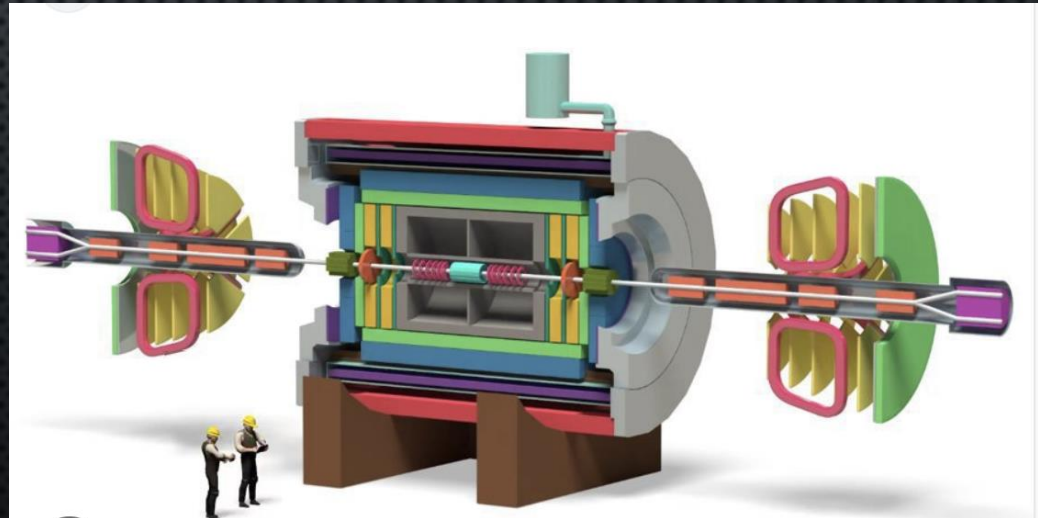
JOINING EFFORTS TO REQUEST MORE BW AND  
COMPUTING RESOURCES (CPU & STORAGE)

CURRENT HIGH BW DEMAND:

ALICE, **NICA**, SWGO AND **LSST** , TAOS II

SHORT TIME 40 OR 100 GBPS

LONG TIME 400 GBPS

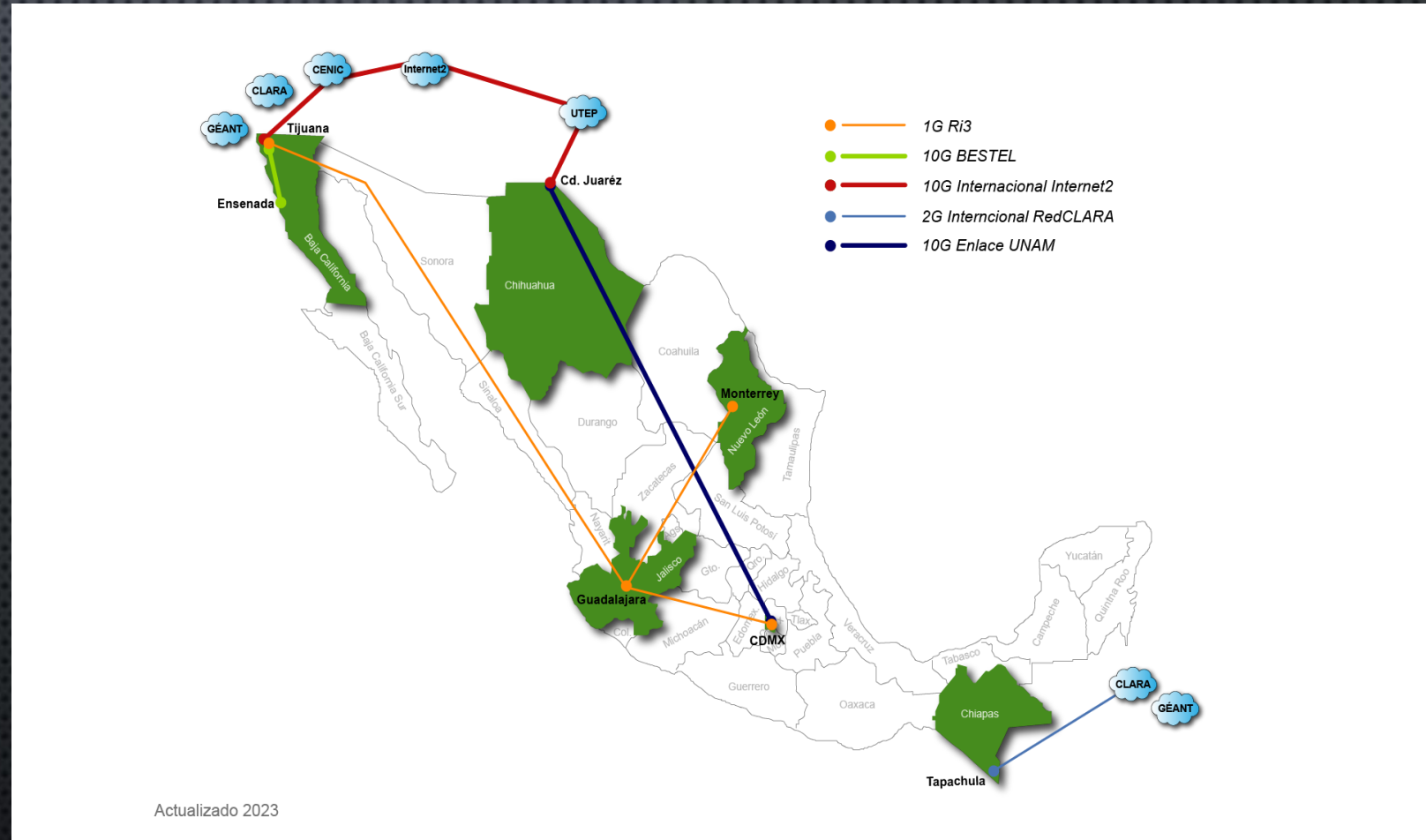


# NATIONAL RESEARCH AND EDUCATION NETWORK – NREN - CUDI

NREN – CUDI WITH 2 MAIN  
ENDPOINTS@ 10GBPS:

TIJUANA (UNAM-CICESE)

CD JUAREZ (UNAM-CU -> ICN)





## NREN - CUDI

CUDI- CENIC (SIGNED AGREEMENT)

CENIC UPGRADE IN PROGRESS:

CENIC- MIGRATION 800 GBPS

CUDI MUST UPGRDE TO 100 GBPS

The logo for CENIC, featuring the word "CENIC" in a bold, dark blue, sans-serif font. The letters "E", "N", and "I" are stylized with colorful, multi-colored lines (blue, green, yellow, orange) that appear to be flowing or connecting, suggesting a network or data flow.The logo for CUDI, featuring a stylized circular icon on the left composed of red, orange, and green segments, resembling a network or data flow. To the right of the icon is the word "CUDI" in a bold, dark blue, sans-serif font.

# FROM OUR ALICE EXPERIENCE

## BEFORE ADD COMPUTER RESOURCES

WE NEED A NETWORK TUNNING

A) CURRENT PATH (MX-US-EU-RU)

IMPROVE ROUTING

ASSIMETRIC

HIGH LATENCY

BW LIMITED TO 100 MBPS / CONNECTION

SUM < 1 GBPS



ldg@spin:~\$ tracepath [ssh-gate.jinr.ru](#)

```
1?: [LOCALHOST] pmtu 1500
1: _gateway 0.353ms
1: _gateway 0.322ms
2: 132.247.251.10 4.498ms
3: 1010-dgtic.redunam.unam.mx 12.388ms
4: 132.248.133.1 0.255ms
5: 132.248.254.254 0.639ms
6: static-201-163-17-218.alestra.net.mx 2.595ms
7: 200-188-60-46.static.axtel.net 3.120ms asymm 9
8: 200-188-82-73.static.axtel.net 3.015ms
9: mex-b1-link.ip.twelve99.net 3.148ms
10: gro-b3-link.ip.twelve99.net 4.924ms (This broken router returned corrupted payload) asymm 1
11: gro-b4-link.ip.twelve99.net 7.571ms
12: mny-b4-link.ip.twelve99.net 14.910ms
13: mdc-b2-link.ip.twelve99.net 18.784ms asymm 16
14: hou-b3-link.ip.twelve99.net 24.857ms
15: atl-b24-link.ip.twelve99.net 40.387ms asymm 18
16: atl-bb2-link.ip.twelve99.net 38.720ms asymm 18
17: rest-bb1-link.ip.twelve99.net 55.581ms asymm 19
18: ewr-bb2-link.ip.twelve99.net 59.937ms asymm 23
19: nyk-b17-link.ip.twelve99.net 56.872ms asymm 22
20: retn-ic-356855.ip.twelve99-cust.net 59.372ms asymm 16
21: 87-245-232-54.retn.net 181.882ms asymm 20
22: 139.45.229.113 179.419ms asymm 20
23: 144.206.254.151 184.441ms asymm 20
24: jinr-gw-1.jinr.ru 181.737ms asymm 20
25: ssh-gate.jinr.ru 179.804ms reached
```

[ecuaotle@ncx101 ~]\$ tracepath [piotl.lamod.unam.mx](#)

```
1?: [LOCALHOST] pmtu 1500
1: gateway 0.570ms asymm 2
1: gateway 0.472ms asymm 2
2: 10.4.22.129 0.296ms asymm 3
3: no reply
4: 144.206.254.151 0.451ms
5: 139.45.229.112 4.712ms asymm 4
6: ae1-5.rt.irx.fkt.de.retn.net 36.744ms asymm 8
7: no reply
8: ae1.3502.edge2.mex1.ciriontechnologies.net 174.028ms asymm 16
9: 64-76-42-10.dynamic.impsat.net.ar 174.479ms asymm 16
10: fixed-186-96-10-170.totalplay.net 174.412ms asymm 16
11: 132.247.254.29 173.387ms asymm 10
12: 132.248.133.34 186.671ms asymm 18
13: 1010-iimas-d.redunam.unam.mx.237.247.132.in-addr.arpa 188.877ms asymm 19
14: 132.247.251.13 177.742ms asymm 24
15: piotl.lamod.unam.mx 182.872ms !H
Resume: pmtu 1500
```



## Data download from EOS NICA

	191Mb	381Mb	572Mb	763Mb	954Mb		
piotl.lamod.unam.mx		=> ncx101.jinr.ru		11.9Mb	11.4Mb	11.5Mb	
		<=		649Mb	621Mb	634Mb	
piotl.lamod.unam.mx		=> 2806-106e-0018-3863-2ce0-ee51-73d8-8cb3.ipv6.infinitem.net.mx		1.92Kb	1.87Kb	2.05Kb	
49607.pts-16.ncx101]		<=		288b	288b	387b	
255.255.255.255-500-req32]\$ screen		=> 0.0.0.0		0b	0b	0b	
49756.pts-16.ncx101]		<=		1.19Kb	498b	370b	
piotl2.nucleares.unam.mx\$2]\$ screen -ls		=> 218.92.0.153		0b	211b	158b	
creens on:		<=		0b	144b	108b	
piotl2.nucleares.unam.mx\$hed)		=> ip-58-194.4vendeta.com		0b	58b	29b	
pts-16.ncx101 (Detached)		<=		0b	37b	18b	
piotl.lamod.unam.mx (Detached)		=> 147.185.133.161		0b	58b	14b	
pts-16.ncx101 (Detached)		<=		0b	37b	9b	
pts-16.ncx101 (Detached)							
TX: s-16.ncx101 cum: 994MB peak: 12.6Mb				rates:	11.9Mb	11.4Mb	11.5Mb
RX: 51.9GB 690Mb					649Mb	621Mb	634Mb
TOTAL: s.ncx101 (Det 52.9GB 703Mb					661Mb	632Mb	645Mb



# PLAN B

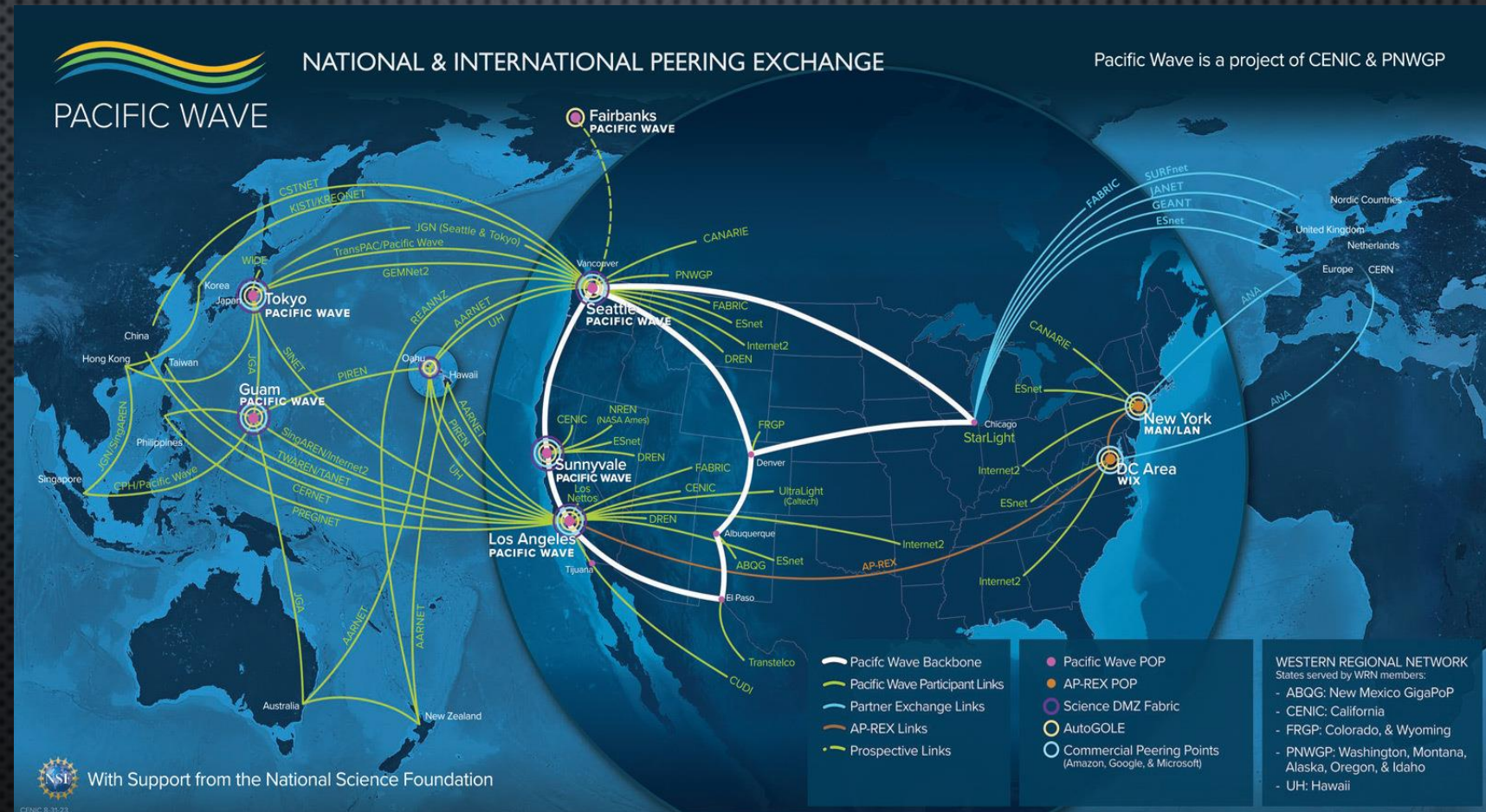
B) EXPLORE CONNECTIONS FROM PACIFIC SIDE THROUGH PACIFIC WAVE

(CHINA ?)

(TAIWAN?)

(JAPAN?)

TO RUSSIA





# PLANNED RESOURCES FROM MX TO NICA

ONCE THE NETWORK ROUTING IS  
(ALMOST) SYMMETRICAL

- UNAM-ICN RESOURCES
- UAMI (SOON)

MEXICO CITY FIBER RING IS BEING  
REPAIRED AND ADDING ROUTING TO US  
THROUGH UNAM





# CONCLUSION

- NOC UNAM SUPPORT READY
- NREN CUDI SUPPORT READY
- CUDI-CENIC -AGREEMENT
- 2 PERFSONAR INSTANCES READY FOR TESTING
- WE NEED SUPPORT FROM JINR/NICA TO ADJUST NETWORK CONFIGURATION

