Introducing

CONNECTED NATION INTERNET EXCHANGE POINTS

A Connected Nation / Newby Ventures Initiative

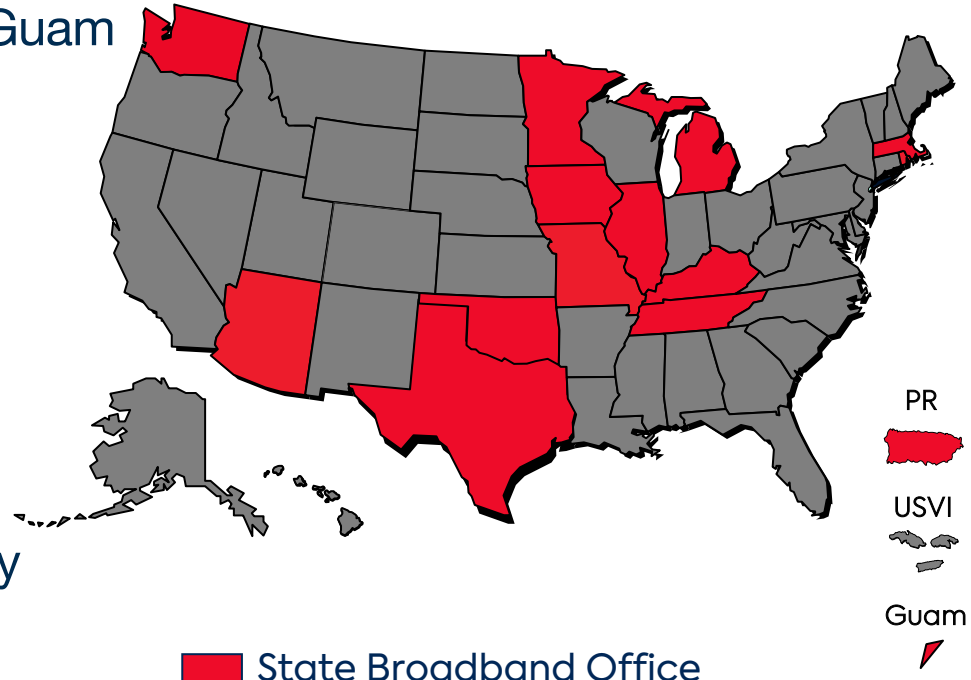
Democratizing Network Interconnection Across America

J. Brent Legg
Executive Vice President, CN
blegg@connectednation.org
M: (202) 340-6446

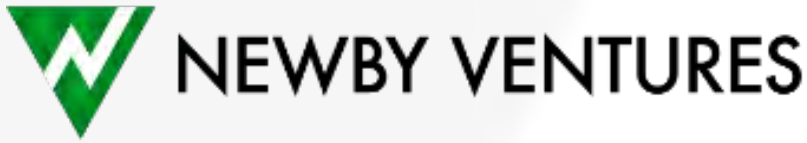
CONNECTED NATION®
Internet Exchange Points

ABOUT CONNECTED NATION

- Founded in Kentucky in 2001; expanded to other states in 2007
- 501(c)(3) Non-Profit Organization
- Programmatic work in 30+ states throughout our history; active broadband office support projects in 13 states, Puerto Rico, & Guam
- 75+ full-time staff
- Mission – Closing the “Digital Divide”
- Key Focus Areas:
  - Grant Administration Support
  - GIS Broadband Mapping, Data Validation, Challenges
  - State & Local Broadband Strategic Planning
  - School Technology Assessments & E-rate Program Strategy
  - Digital Literacy & Skills Training
  - Carrier-Neutral Interconnection Infrastructure



ABOUT NEWBY VENTURES



- Newby Ventures – A 25+ year history developing & operating the most significant carrier hotels across North America:
  - The Telx Group, Inc. (60 Hudson St, New York City)
  - 56 Marietta St (Atlanta)
  - Netrality Properties
    - 1102 Grand Blvd (Kansas City)
    - 401 North Broad St (Philadelphia)
    - 1301 Fannin (Houston)
    - 717 South Wells (Chicago)
  - 325 Hudson St (New York City)
  - ColoATL (Atlanta)
  - Fibre Centre (Moncton, New Brunswick, Canada)
  - NJFX (Wall Township, New Jersey)
  - DataVerge (Brooklyn, New York City)
- 50/50 Joint Venture with Connected Nation: CNIXP, LLC – partnership to build 125 new IXP facilities in 44 states

HISTORY IS THE FUTURE

WHAT THE EARLY DAYS OF THE TELEGRAPH & TELEPHONE CAN TEACH US ABOUT THE INTERNET'S ONGOING EVOLUTION

Dots and Dashes

In monthly installments this publication pays tribute to Professor Samuel Finley Breese Morse and his invention of the telegraph—a powerful force in the Political, Social and Economic Progress of America

VOLUME IV. AUGUST, 1928 NUMBER EIGHT

World's Largest Telegraph Building to Alter New York's Skyline

Covering an entire block, and rising to a height of 24 stories, or about 400 feet, the new Western Union building in downtown New York will be the largest telegraph building in the world, while from an architectural point of view it will be one of the handsomest in the metropolis.

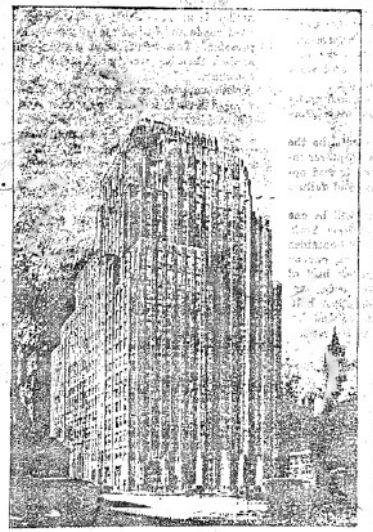
The structure, including land and equipment, will cost $13,500,000.

The architects are Voorhees, Gmelin & Walker. The builders are Marc Eidlitz & Son, who also constructed the Telephone and Telegraph building at 195 Broadway.

The Western Union building will be in the modern American style of architecture, of steel and brick construction. The architectural front will be on Hudson street.

The site is roughly rectangular, and this general shape will be maintained in the upper reaches of the structure, though the rectangle diminishes gradually in conformity with the set-back regulations of the Building Code. The total floor space is nearly 1,900,000 square feet, or enough, it is calculated, to take care of the company's future needs.

The present general offices of the Company at 195 Broadway will be retained, the new building being devoted primarily to operating activities which now are conducted at 24 Walker Street. Through the new operating rooms will pass over one hundred million messages annually.



Twenty-four stories; costing $13,500,000, this new building will be in the modern American style of architecture.

Since the new site is only about four blocks distant from the Walker street office, the task of diverting the cables and pneumatic tube lines will be reduced to a minimum. Through tubes, wires, and the most modern telegraphic devices, the location is convenient to the Stock Exchange, Cotton Exchange, Produce Exchange, and the Wall Street ticker service, in the handling of traffic for which seconds are matters of vital importance.

With the beginning of occupancy there will be about 4,000 Western Union employes in the new building.

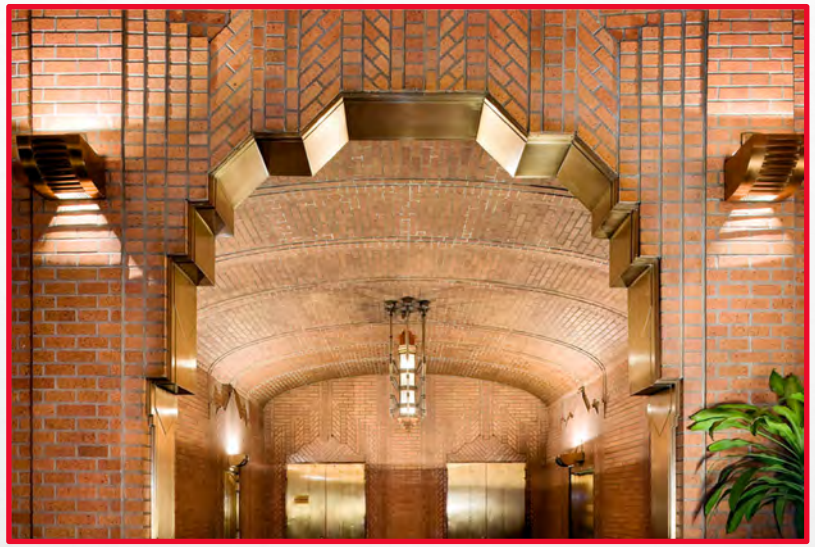
To support the weight of the great structure — approximately 131,000 tons dead load —foundations will extend some 60 feet below the street level. As soundings already taken to a depth of nearly 90 feet show a foundation of sand and clay, concrete piling will be used.

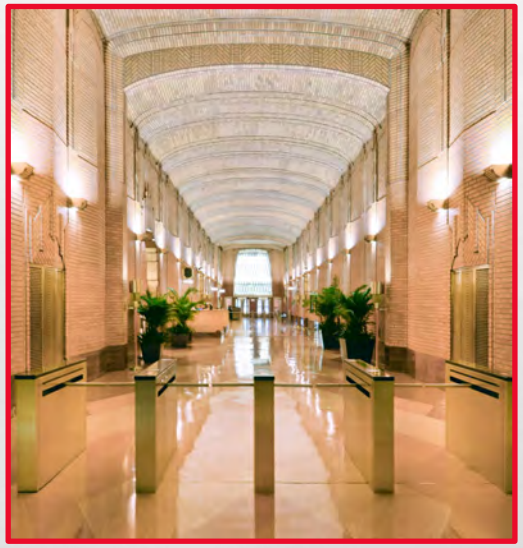
Twenty-five pneumatic tube lines, the longest extending to 41st street, will connect the building with branch offices in the area between the Battery and Times Square.

At the outset five floors will be utilized for operating rooms —multiplex, simplex, ticker, Morse and telephone—and four additional floors will become available as need requires. Other floors will be utilized for testing and regulating, training schools for operators, classrooms, rest rooms, locker rooms, reading rooms, and offices.

On the main floor there will be a private auditorium capable of seating 1,000. This will be used for lectures to company personnel, conferences of officials and of committees of employes, commencement exercises for messengers, plays to be given by employes, and for moving pictures of an educational or technical nature.

60 HUDSON

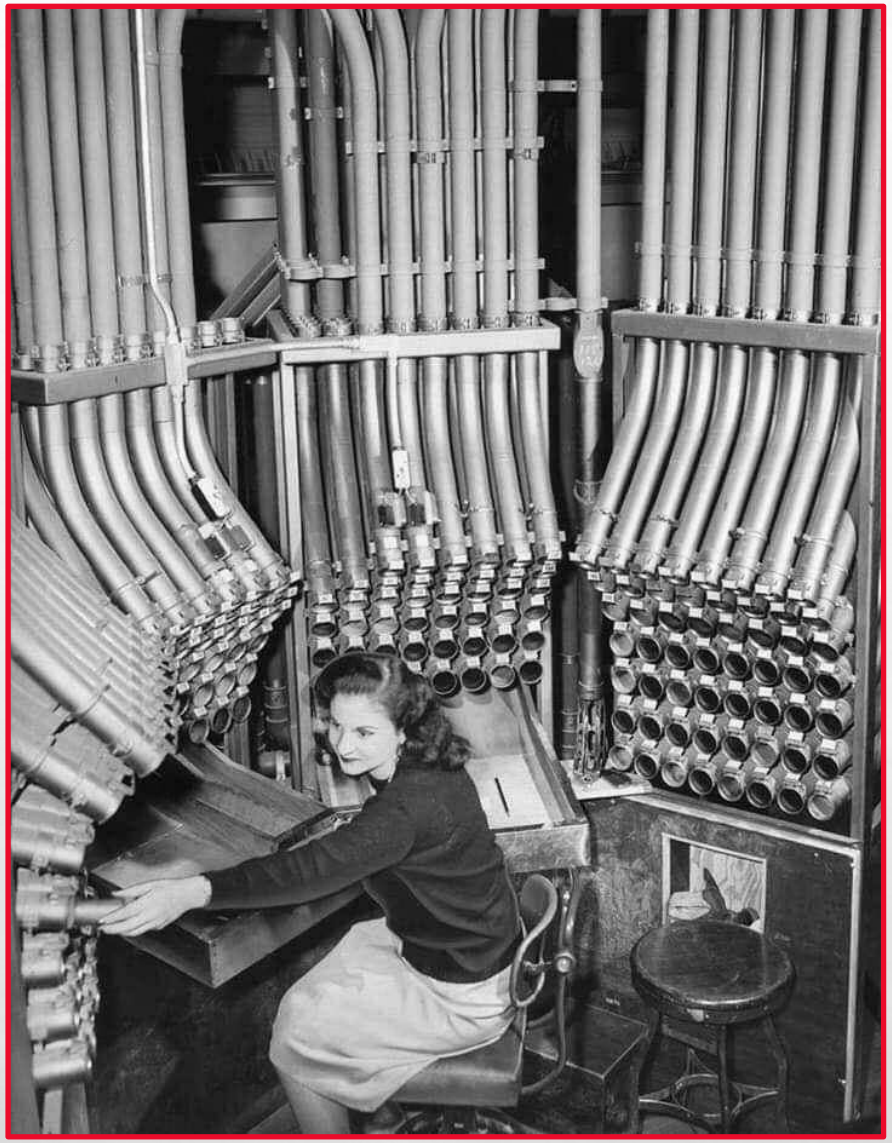




AT&T Long Lines Building
32 Ave. of the Americas
Built 1932
Western Union Building
60 Hudson Street
Built 1930

THE ORIGINAL "MEET ME" ROOM: THE TUBE CENTER

CROSS CONNECTS IN THE EARLY 1900s

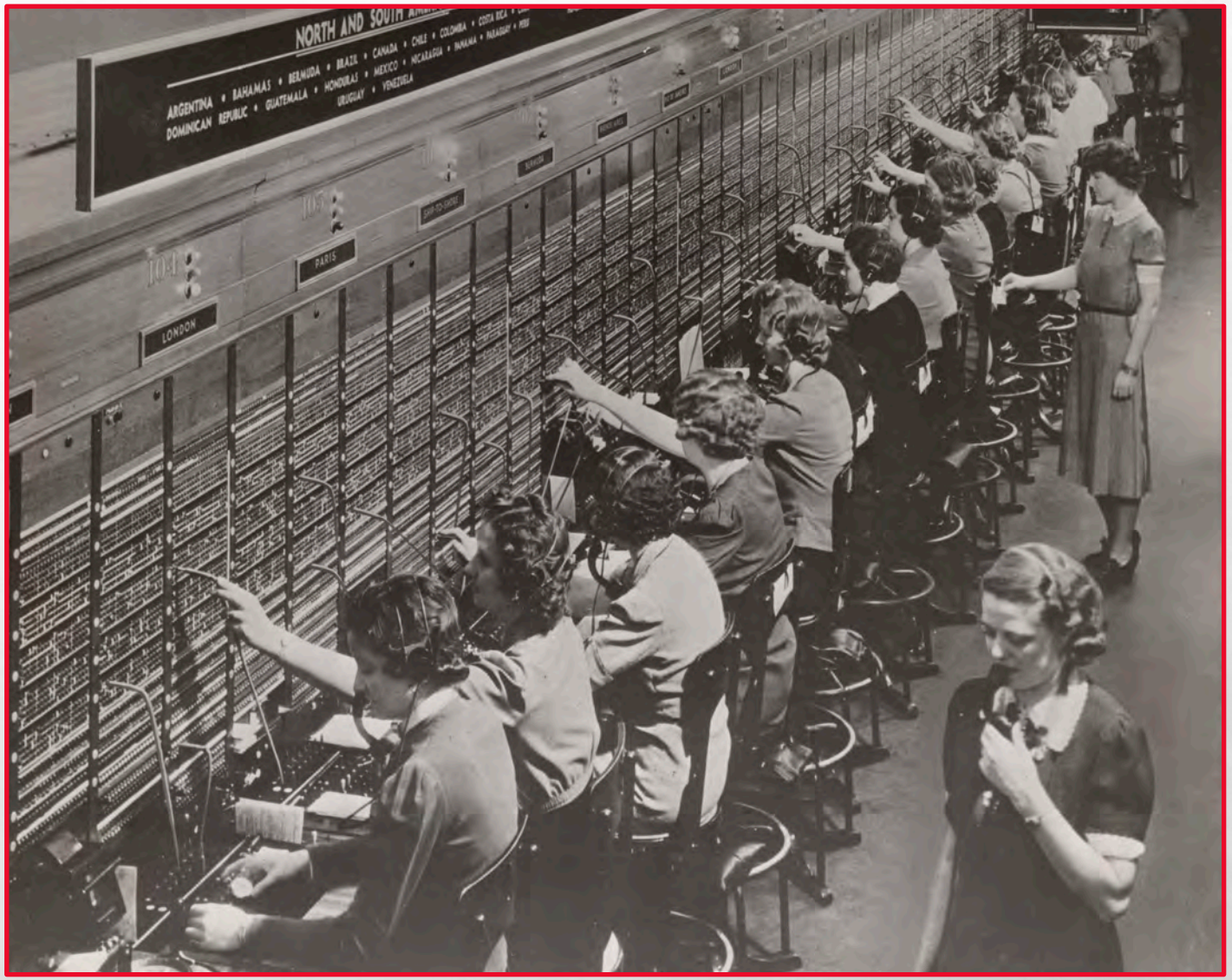


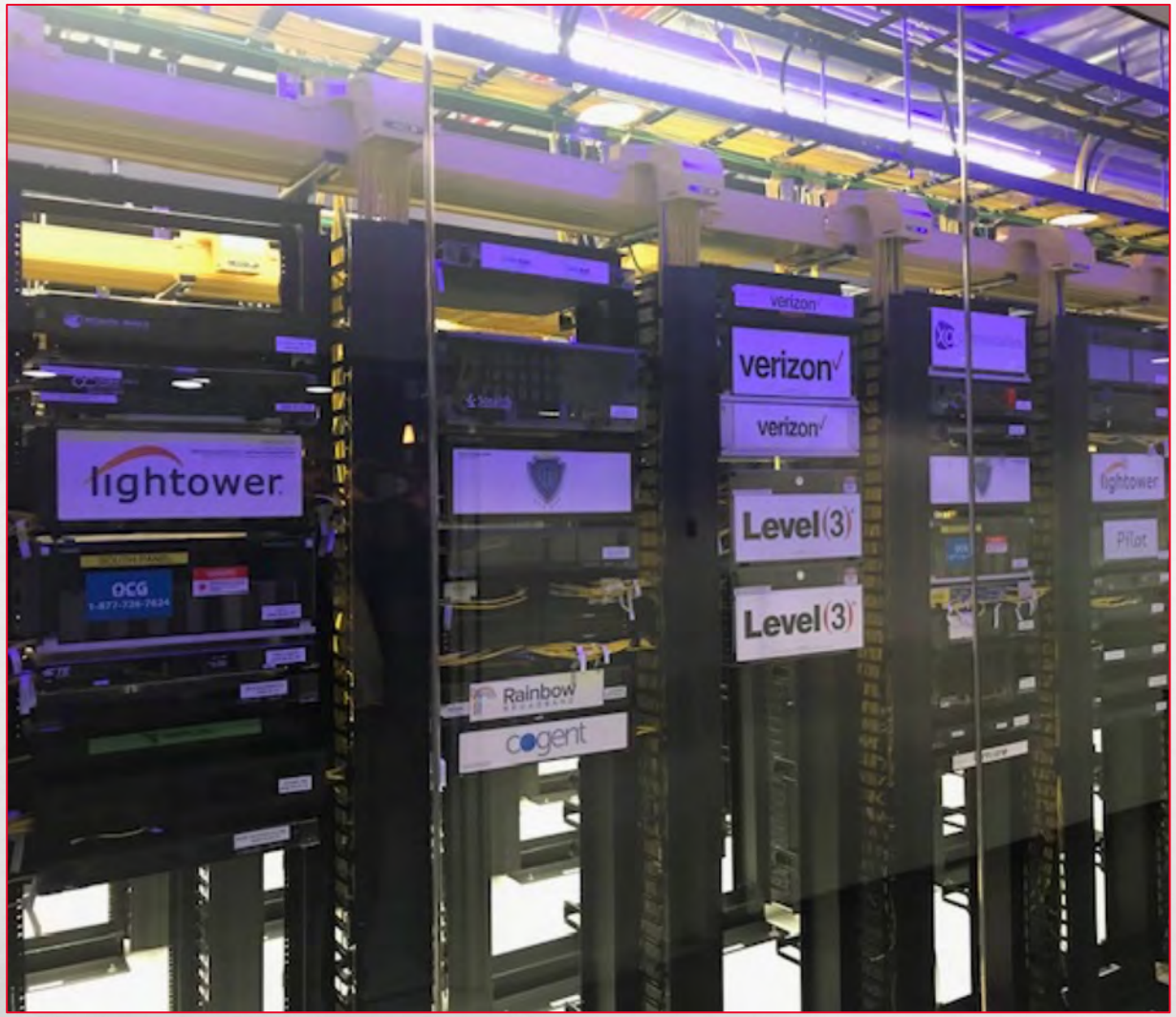
RECHARGING BATTERIES: WORKER DORMITORY AT 60 HUDSON

CONNECTED NATION INTERNET EXCHANGE POINTS

TELEPHONE CROSS CONNECTS:

CALL SWITCHBOARDS

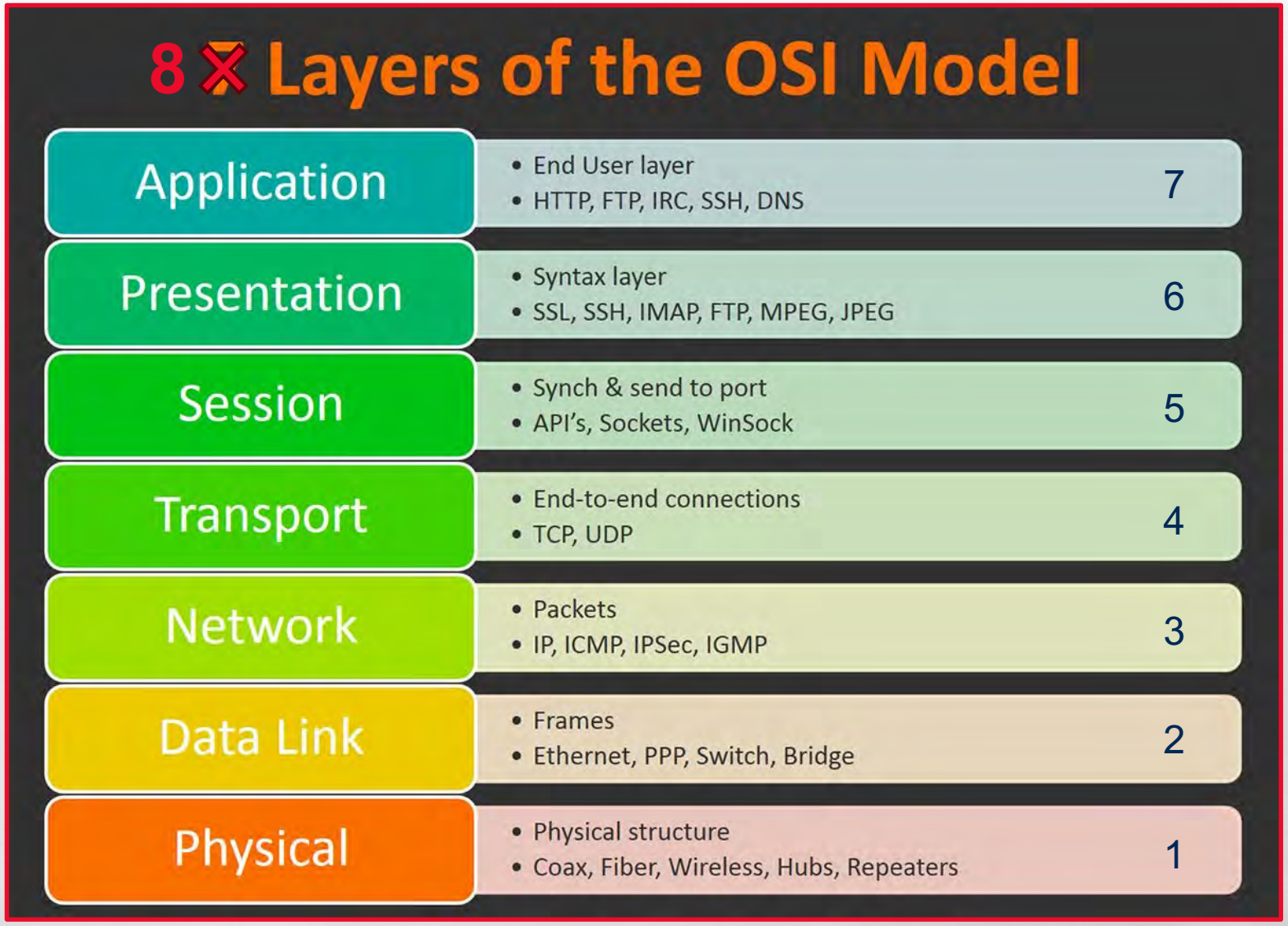



lightower
verizon
verizon
Level(3)
Level(3)
Rainbow
cogent

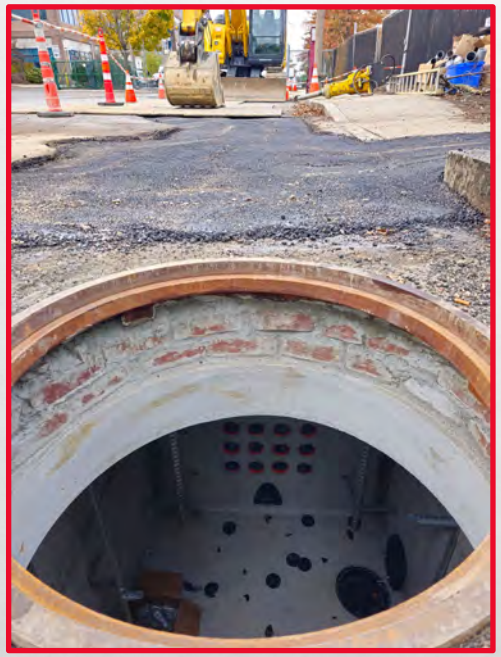
East

LAYER 0: "REAL ESTATE"

- IXP FACILITIES
- CONDUIT
- MANHOLES
- HANDHOLES



ARE THESE IN YOUR PLAN?



Manholes

Duct Banks

Neutral Colocation

IX Switch Fabric

ARE THESE IN YOUR PLAN?

Meet Me Room & Cross Connects

Cloud & Content Peering

Wholesale IP Transit

CONNECTED NATION INTERNET EXCHANGE POINTS

DEMOCRATIZING NETWORK INTERCONNECTION ACROSS AMERICA

WHAT ARE IXPs?

- **Internet Exchange Points (IXPs) are Internet hubs.**
  They allow local networks of all types (Internet service providers, transport providers, Tier 1 carriers, mobile networks, education networks, and cloud and content providers—such as Netflix and Amazon)--to "meet," or directly connect with one another locally to exchange data traffic. This is called "peering."

- **IXPs literally make the Internet work better.**
  The closer you are to an IXP, the better your Internet performance will be. This happens by reducing what's called "latency," or lag time. IXPs also keep data traffic local that needs to stay local, making the routing of internet traffic more efficient and freeing up long-haul capacity for other uses.

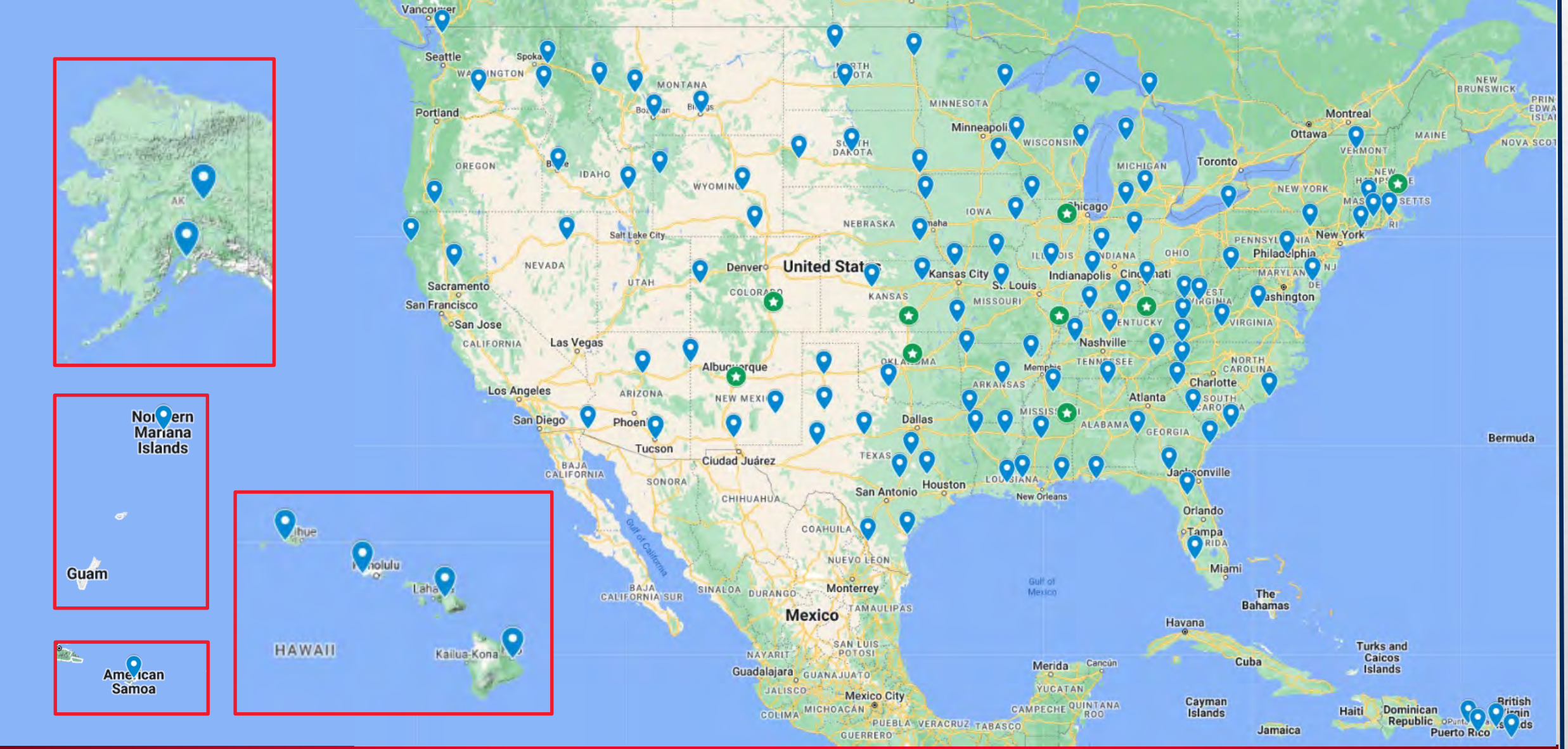
- **IXPs exist in 57 metro areas across the U.S.**
  But 14 states and 3 U.S. territories have no IXP at all. An additional 3 states have failing or functionally limited facilities.

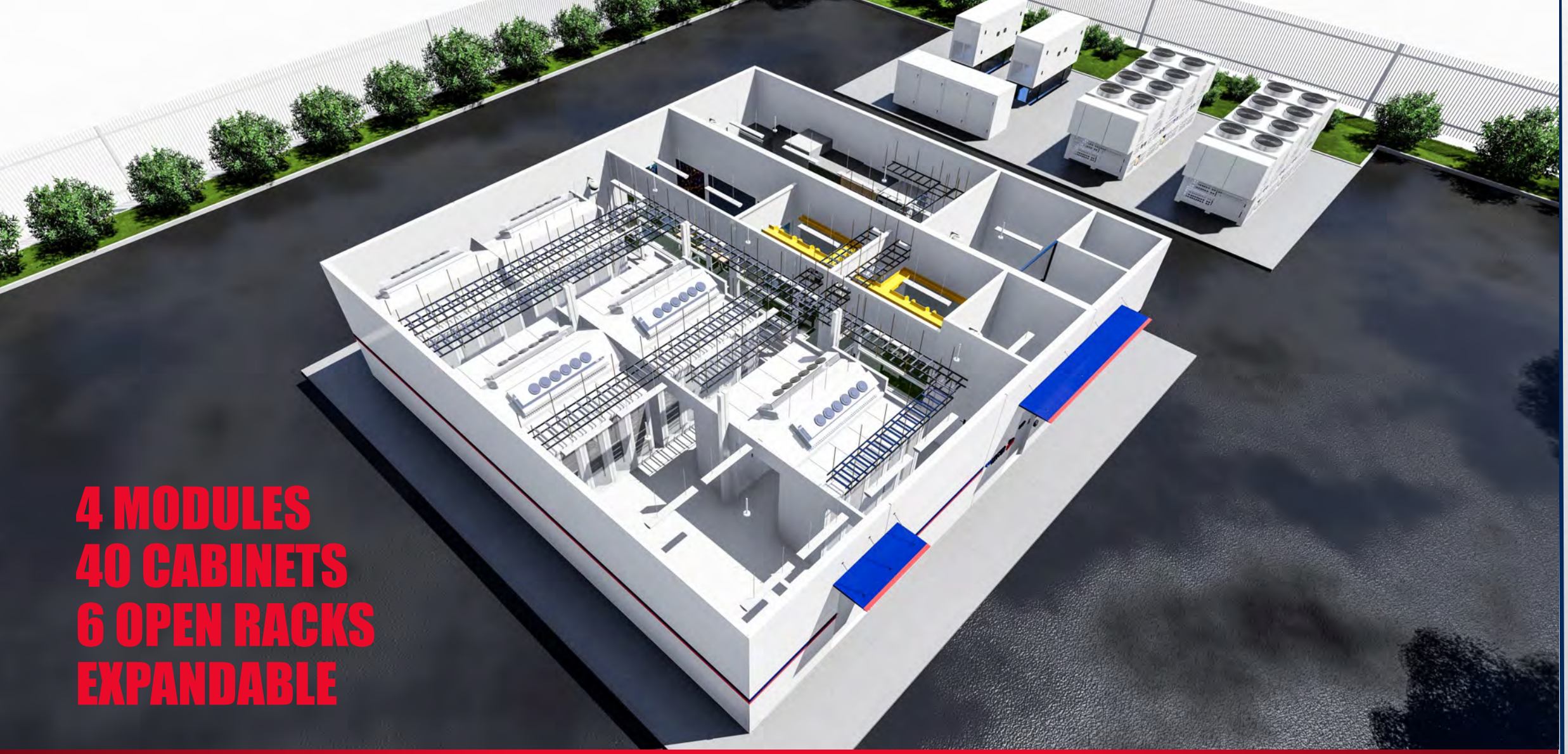
WHAT ARE IXPs?

- **In communities without an IXP, Internet traffic is "backhauled" to cities that may be hundreds of miles away.**
  Smaller cities, towns, and rural areas are fully dependent on remote cities for Internet performance. If a natural disaster or terrorist event were to impact those cities, connectivity to the global Internet could go down or be significantly impaired.
- **Future Internet performance is at risk without a local IXP.**
  As the Internet continues to evolve, reducing latency will be incredibly important. Autonomous vehicles, drones, artificial intelligence, video streaming, virtual reality, and precision agriculture will require ultra-low-latency connections—latency values that aren't achievable in regions without an IXP.
- **IXPs lower wholesale costs for everyone.**
  Because IXPs are a hub for multiple networks, they naturally become a marketplace for wholesale Internet access (called "IP transit").

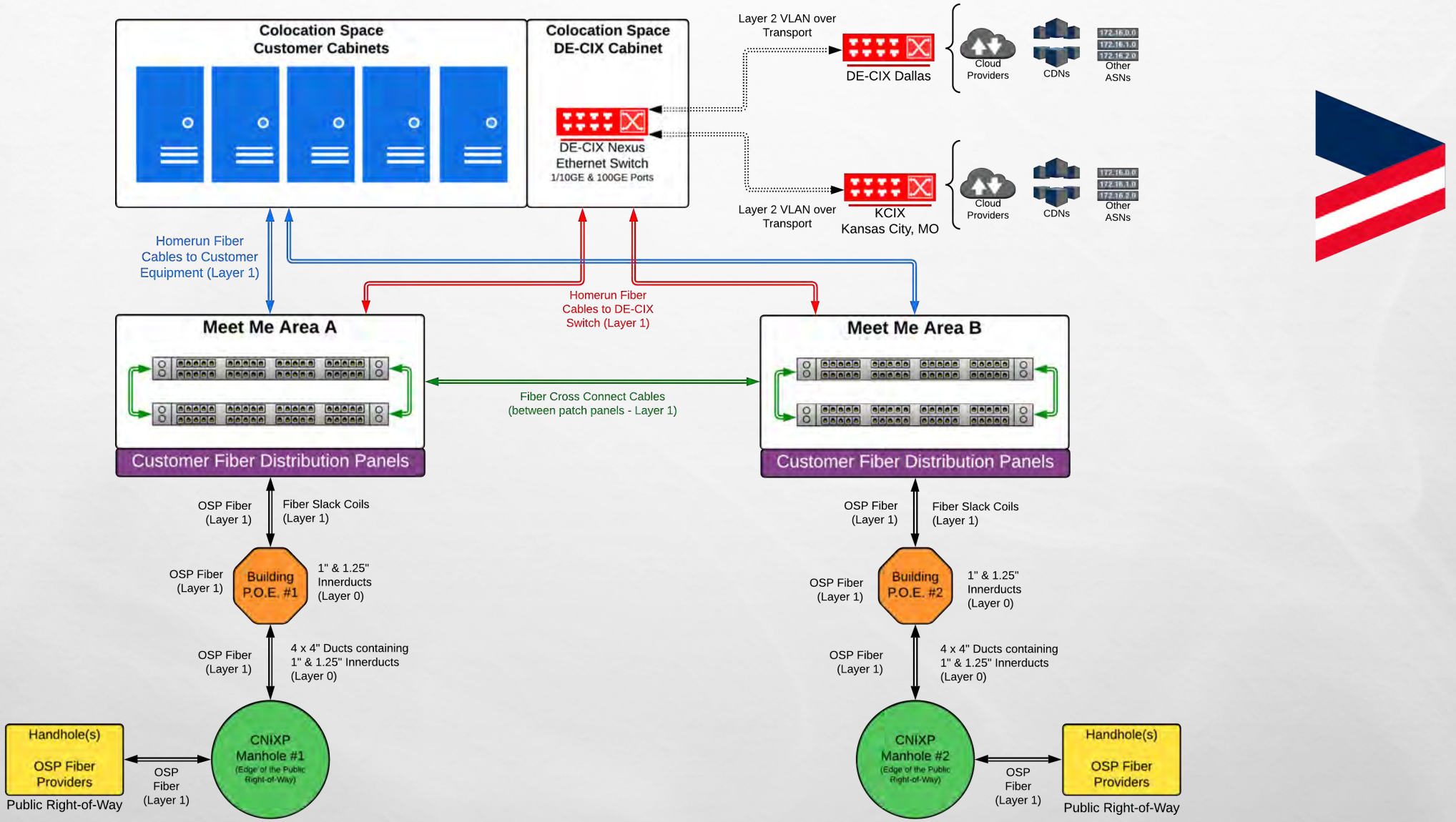
THREE PRIMARY BENEFITS

1. **Latency Reduction**
   By keeping local traffic local and enabling Layer 2 peering to cloud & content networks
2. **Cost Reduction**
   By fostering a marketplace for transport and wholesale IP transit competition – 90%+ reduction in wholesale costs
3. **Improved Network Resiliency**
   Naturally creating new network paths into and out of regions


Vancouver
Seattle
Spokane
WASHINGTON
Portland
OREGON
MONTANA
IDAHO
WYOMING
NORTH DAKOTA
SOUTH DAKOTA
MINNESOTA
Minneapolis
WISCONSIN
MICHIGAN
Toronto
Montreal
Ottawa
NEW BRUNSWICK
MAINE
VERMONT
NOVA SCOTIA
NEW YORK
Chicago
IOWA
NEBRASKA
Omaha
Salt Lake City
NEVADA
UTAH
Denver
COLORADO
United States
Kansas City
KANSAS
St. Louis
MISSOURI
Indianapolis
OHIO
PENNSYLVANIA
Philadelphia
New York
MARYLAND
DE
NJ
Washington
WEST VIRGINIA
VIRGINIA
KENTUCKY
Nashville
TENNESSEE
Memphis
NORTH CAROLINA
Charlotte
SOUTH CAROLINA
Atlanta
GEORGIA
ALABAMA
MISSISSIPPI
ARKANSAS
Dallas
TEXAS
Houston
San Antonio
New Orleans
LOUISIANA
Jacksonville
Orlando
Tampa
FLORIDA
Miami
Bermuda
The Bahamas
Havana
Cuba
Cayman Islands
Jamaica
Haiti
Dominican Republic
Puerto Rico
Turks and Caicos Islands
British Virgin Islands
Sacramento
San Francisco
San Jose
CALIFORNIA
Las Vegas
Albuquerque
NEW MEXICO
ARIZONA
Los Angeles
San Diego
Phoenix
Tucson
Ciudad Juárez
BAJA CALIFORNIA
SONORA
CHIHUAHUA
COAHUILA
NUEVO LEON
Monterrey
TAMAULIPAS
Mexico
SINALOA
DURANGO
BAJA CALIFORNIA SUR
Gulf of California
Gulf of Mexico
NAYARIT
SAN LUIS POTOSI
Guadalajara
GUANAJUATO
JALISCO
COLIMA
MICHOACAN
Mexico City
PUEBLA
VERACRUZ
TABASCO
GUERRERO
Merida
Cancún
YUCATAN
CAMPECHE
QUINTANA ROO
AK
Northern Mariana Islands
Guam
American Samoa
HAWAII
Kailua-Kona



4 MODULES
40 CABINETS
6 OPEN RACKS
EXPANDABLE


Colocation Space
Customer Cabinets
Colocation Space
DE-CIX Cabinet
DE-CIX Nexus
Ethernet Switch
1/10GE & 100GE Ports
Layer 2 VLAN over
Transport
DE-CIX Dallas
Cloud
Providers
CDNs
Other
ASNs
Layer 2 VLAN over
Transport
KCIX
Kansas City, MO
Cloud
Providers
CDNs
Other
ASNs
Homerun Fiber
Cables to Customer
Equipment (Layer 1)
Homerun Fiber
Cables to DE-CIX
Switch (Layer 1)
Meet Me Area A
Meet Me Area B
Fiber Cross Connect Cables
(between patch panels - Layer 1)
Customer Fiber Distribution Panels
Customer Fiber Distribution Panels
OSP Fiber
(Layer 1)
Fiber Slack Coils
(Layer 1)
OSP Fiber
(Layer 1)
Building
P.O.E. #1
1" & 1.25"
Innerducts
(Layer 0)
OSP Fiber
(Layer 1)
4 x 4" Ducts containing
1" & 1.25" Innerducts
(Layer 0)
OSP Fiber
(Layer 1)
Fiber Slack Coils
(Layer 1)
OSP Fiber
(Layer 1)
Building
P.O.E. #2
1" & 1.25"
Innerducts
(Layer 0)
OSP Fiber
(Layer 1)
4 x 4" Ducts containing
1" & 1.25" Innerducts
(Layer 0)
Handhole(s)
OSP Fiber
Providers
Public Right-of-Way
OSP
Fiber
(Layer 1)
CNIXP
Manhole #1
(Edge of the Public
Right-of-Way)
CNIXP
Manhole #2
(Edge of the Public
Right-of-Way)
OSP
Fiber
(Layer 1)
Handhole(s)
OSP Fiber
Providers
Public Right-of-Way

CNIXP "ALPHA" SITE: WICHITA STATE UNIVERSITY

"A carrier-neutral IXP located in the heart of Kansas at WSU will build bridges of connectivity and access to meet the ever-evolving demands of education and commerce to all Kansans."
– Dr. Rick Muma, WSU President

- On 11/29, Kansas Gov. Laura Kelly announced **$5 million grant award to Connected Nation** to build IXP on Wichita State University's Campus
- Located on 1.3 acres donated by WSU for 40 years
- Adjacent to WSU Innovation Campus, home to Airbus, Textron, Spirit AeroSystems, Boeing, SpaceX, Amazon, Cisco, Deloitte Smart Factory, DoD Digital Twin Program, ATF's 2nd Ballistics Identification Lab
- Modular facility will consist of 3 modules, ~2,000 sq ft, 25 colocation cabinets, 350 kW power, "Meet Me Area," N+1 backup power/cooling, diverse manholes, 200mph wind-resistant
- Groundbreaking in December; RFS in Winter 2025
- iM Data Centers of Fort Lauderdale to act as general contractor and modular building manufacturer

WSU
Wichita State University

Main Corridor (looking into Meet Me Area B)

Main Corridor (opposite perspective)

Work Area / Conference Room (with Meet Me Area B & colo space in the background

Colocation Cabinets (hot aisle side, with chillers above)

Passive Fiber Distribution Panels in Meet Me Area A (with Meet Me Area B in the background)

iM Critical Data Center – Pittsburgh, PA (10 modules, same form factor)

THANK YOU

CONNECTED NATION
Internet Exchange Points

blegg@connectednation.org

ALANOG
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