

THREADS OF LIGHT

Data Centers #7 • Teens 10-15

with Dess, the Infrastructure Guard and Lena Ashgrove of Channel 5



CREDITS

Threads of Light · Data Centers #7 · Teen edition (ages 10–15)

Story and production: GOTB Consulting, Chicago

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Channel 5

AI-GENERATED ART, FICTIONAL CHARACTERS

All characters, the town of Prairie Bend and Channel 5 are fictional. Any resemblance to real people is a coincidence. No real logos are shown. Real institutions are described by role. Every number in this book was checked against public sources before printing; see 'Sources' near the end.

Shore safety: never touch, dig near or anchor over marked cable routes; leave buoys and beach vaults alone.

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THE CREW



DESS

Our lead. Follows the light under the sea.



UNDERTOW

Walks the sea floor beside the line.



COMMONS

Hero of crews. Lantern up.



THE AUDITOR

Sees and reports. Cannot stop anything.

ROOFTOP · NIGHT



DESS

EVERYONE THINKS THE INTERNET IS IN THE SKY. IT'S MOSTLY UNDER
OUR FEET AND UNDER THE SEA.

WHERE NETWORKS MEET



THE AUDITOR

YOUR PHONE GOES WIRELESS ONLY TO THE NEAREST TOWER. AFTER THAT IT RIDES FIBER, ON LAND AND UNDER THE OCEAN.

FACT FILE

A phone's signal travels wirelessly only to the nearest cell tower; from there it rides terrestrial and subsea fiber.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"



PHONE TO TOWER

THE AUDITOR

REPORTED

SATELLITES CARRY JUST 0.37% OF U.S. INTERNATIONAL CAPACITY. THE REST RUNS THROUGH CABLE.

FACT FILE

Satellites carry just 0.37% of all U.S. international capacity.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"



SKY OR SEA?

LENA (ON SCREEN)

TELEGEOGRAPHY TRACKS MORE THAN 600 ACTIVE AND PLANNED UNDERSEA CABLES. OVER 1.5 MILLION KILOMETERS IN SERVICE.

FACT FILE

As of 2026, TeleGeography tracks more than 600 active and planned submarine cables. As of early 2026, over 1.5 million km of submarine cable is in service globally.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"



CHANNEL 5 · THE MAP

UNDERTOW

GARDEN-HOSE WIDE. INSIDE, GLASS FIBERS THE WIDTH OF A HAIR.
LASERS FIRE LIGHT THROUGH THEM.

FACT FILE

For most of its ocean journey a cable is about as wide as a garden hose; the light-carrying fibers are roughly the diameter of a human hair.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"

THE DEEP



UNDERTOW

ONE MODERN CABLE, MAREA, CAN CARRY 224 TERABITS PER SECOND.
SILENT, DARK, AND ALWAYS ON.

FACT FILE

The MAREA cable can carry 224 terabits per second.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"

LANDFALL



UNDERTOW

NEAR SHORE THEY'RE BURIED UNDER THE SEABED. YOU'VE WALKED OVER ONE AND NEVER KNOWN.

FACT FILE

Near shore, cables are buried under the seabed for protection; they go all the way down to the ocean floor.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"

THE REPAIR SHIP



COMMONS

ABOUT 200 FAULTS A YEAR. REPAIR CREWS GO OUT IN ANY WEATHER.

FACT FILE

Roughly 200 cable faults a year.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"

MYTH CHECK



DESS

THE CAUSE? MOSTLY FISHING GEAR AND DRAGGED ANCHORS, TWO-THIRDS OF FAULTS. SHARK BITES: BASICALLY ZERO.

FACT FILE

Fishing vessels and dragged anchors cause two-thirds of all faults; deliberate sabotage and shark bites are exceedingly rare; fish bites (including sharks) caused zero faults 2007–2014.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"

THE REROUTE



LENA (ON SCREEN)

REPORTED

INLAND, THE FIBER MEETS IN BUILDINGS LIKE 350 E. CERMAK: EIGHT STORIES, OVER 70 NETWORK PROVIDERS.

FACT FILE

350 E. Cermak (ORD10), Chicago: 8 stories, 1,005,500 sq ft, over 70 network providers; the operator calls it "the most interconnected multi-tenant data center in the Midwest."

Source: Digital Realty, "ORD10 Data Center | 350 East Cermak" (operator page)

THE SERVER HALL



THE AUDITOR

NETWORKS SPREAD TRAFFIC OVER SEVERAL CABLES. ONE BREAKS, TRAFFIC REROUTES.

FACT FILE

Networks spread capacity across multiple cables so that if one breaks, traffic keeps running.

Source: TeleGeography, "Submarine Cable Frequently Asked Questions"

WHO PAYS



GRIDLINE

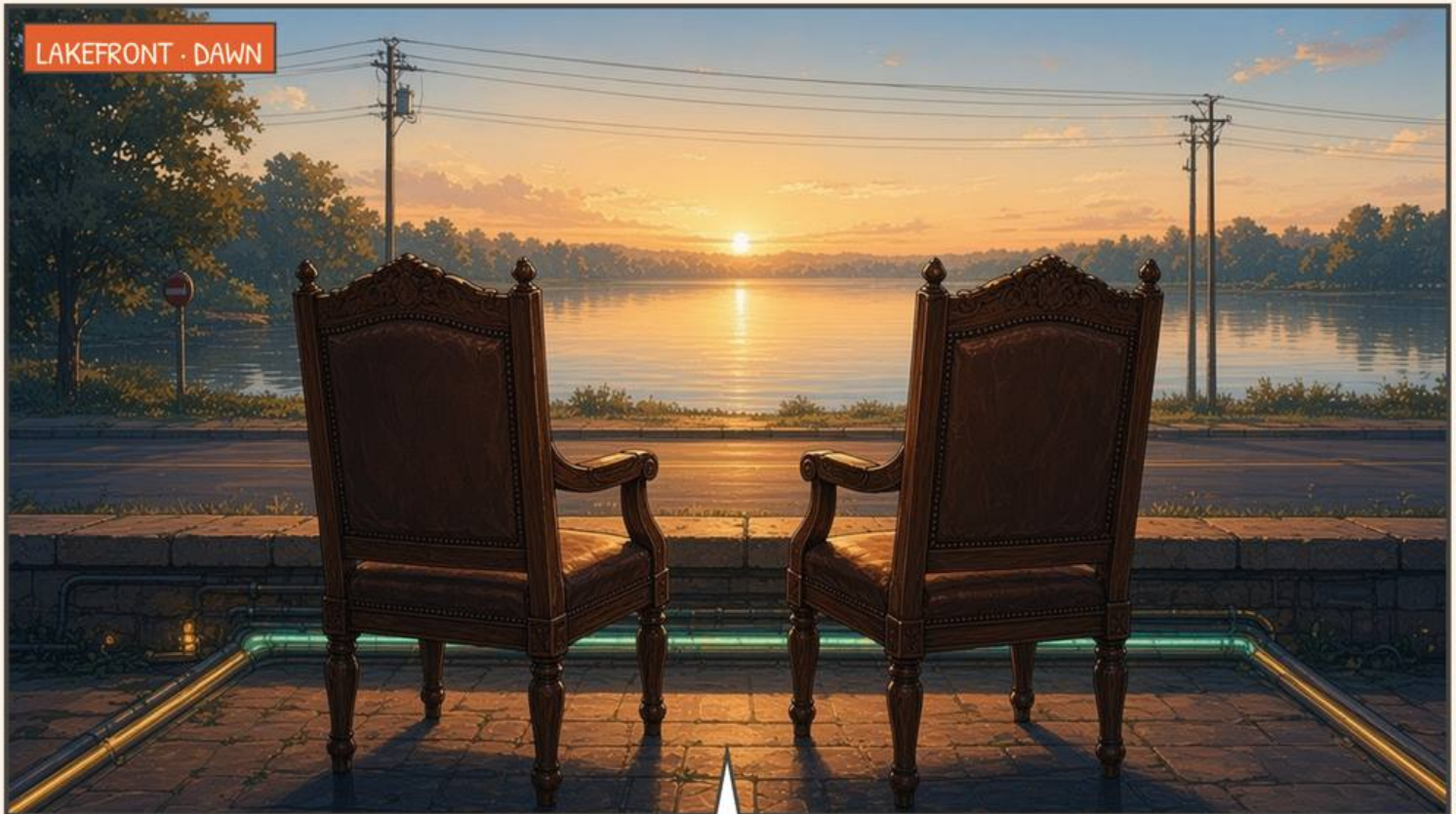
THE LIGHT GETS THERE IN A BLINK. THE SERVERS AT EACH END RUN
ON THE GRID.

TOWN HALL · LANTERN UP



DESS

POWER, WATER, ROADS, RAILS, RUNWAYS, GLASS. EVERY TAP ON MY
SCREEN USES ALL OF IT.



DESS

NEXT: THE PEOPLE WHO BUILD IT.

GOTB Consulting works on the infrastructure and procurement behind projects like these.

BY THE NUMBERS

600+

Active and planned undersea cables tracked as of 2026. (TeleGeography, Reported)

1.5 MILLION KM

Submarine cable in service worldwide, early 2026.

~200

Cable faults a year worldwide. (ICPC)

TWO-THIRDS

Share of faults from fishing gear and dragged anchors. Fish bites 2007–2014: zero.

0.37%

Share of U.S. international capacity carried by satellite. (FCC)

224 TBPS

What the MAREA cable can carry, in terabits per second.

TWO SIDES

The strongest case on each side, labeled. Nonpartisan.

BUILD MORE

Where networks meet, jobs and investment follow. More fiber and more data centers mean a better-connected city.

COUNT THE COSTS

Every new building draws power, land and water. Ask who pays and who decides.

BUILD IN SPARES

Resilience is redundancy: several cables, several paths, so one break never takes a city down.

WHAT BOTH SHARE

A connected city, public planning, decisions made in the open.

YOUR TURN

What would you ask before a new hub is built? _____

CABLE WORDS

SUBMARINE CABLE

A fiber cable laid across the sea floor.

LANDING STATION

Where an ocean cable comes ashore.

FAULT

A break or failure in a cable.

REDUNDANCY

Spare paths so traffic keeps moving.

INTERCONNECTION

Networks linking to each other in one building.

TERABIT

A trillion bits of data.

QUICK QUIZ

1. UNDERSEA CABLES BUILT OR PLANNED?

a) About 6 b) More than 600

2. MAIN CAUSE OF CABLE FAULTS?

a) Sharks b) Fishing gear and anchors

3. SATELLITE SHARE OF U.S. INTERNATIONAL CAPACITY?

a) 0.37% b) 37%

4. DEEP-SEA CABLE WIDTH?

a) A garden hose b) A tunnel

ANSWERS

1 b · 2 b · 3 a · 4 a

SOURCES

Full list with fact IDs: FACT_BASE.md and NUMBER_CHECK.md (GOTB internal).

TELEGEOGRAPHY

TeleGeography, "Submarine Cable Frequently Asked Questions"

DIGITAL REALTY

Digital Realty, "ORD10 Data Center | 350 East Cermak" (operator page)

ABOUT GOTB CONSULTING

WHO WE ARE

A Chicago firm working on infrastructure and procurement for the systems communities depend on.

DATA CENTERS

Siting, delivery and community questions.

POWER

Grid connections, substations and lines.

WATER

Supply, treatment and cooling.

PUBLIC WORKS

Roads, pipes and public spaces.

THE END



THREADS OF LIGHT, HELD BY HUMAN HANDS.

Next time: more from the Infrastructure Guard.

GOTB CONSULTING • CHICAGO

Data centers • Power • Water • Public works

AI-generated art, fictional characters