CENIC

CENIC connects California to the world – advancing education and research statewide by providing a world-class network essential for innovation, collaboration, and economic growth.

116
California Community College campuses

2.1M+
Students

87K+
Faculty & Staff

California's Community Colleges and CENIC

The network that helps California Community Colleges provide life-changing opportunities and a path toward future goals for over two million students.

CENIC is a nonprofit organization created in 1996 by California's research and education community to provide themselves with the most advanced networking and support designed to meet their unique needs. We connect California's research and education institutions to one another and to resources and colleagues around the globe, with an estimated 20 million Californians using our services.

CENIC is governed by our Charter Associates, which include California's Community Colleges, the University of California system, the California State University system, the California K–12 system, California Public Libraries, and independent universities Caltech, Stanford University, the University of Southern California, and the Naval Postgraduate School. Other members include scientific and cultural institutions, hospitals and specialized medical institutions, space and environmental research organizations, and Tribal nations.

California's Community Colleges in Action with CENIC

California's Community Colleges are uniquely and deeply integrated with every other segment. Many of their students arrive from the state's K–12 system, while 51% of California State University graduates and 29% of University of California graduates began their academic career at a community college. They also welcome many returning, working, and other nontraditional students, and prepare them for a wide variety of careers. For example, in California, seven out of 10 nurses and eight out of 10 firefighters, police officers, and EMTs received their training at a California Community College.

Together, California's Community Colleges and CENIC have built a profound partnership to ensure that the country's largest higher education system meets its mission of putting students first. Thanks to that partnership, all 116 community colleges, along with their off-campus sites, enjoy future-facing networking and services via CENIC's California Research and Education Network (CalREN), specially designed by and for the state's research and education community.

These benefits include substantial cost savings since 80% of data traffic on CalREN does not transit the commercial Internet but travels directly between member institutions and other network destinations. This traffic uses settlement-free peering connections that incur no usage fees.

An excellent example that illustrates how CENIC membership enables the community colleges to fulfill their central role in research and education is the connection of the San Diego Community College District to the CENIC AI Resource (CENIC AIR), a distributed compute and storage infrastructure interconnected by CalREN and designed for AI and machine learning research and instruction, and to which CENIC members contribute resources voluntarily. As the California portion of the National Research Platform, CENIC AIR provides California's research and education communities a means to

Did you know?
Network Solutions Designed for Your Needs

CENIC's Engineering team thoroughly understands the requirements of campus networking and works together with California's Community Colleges to craft the most cost- and time-efficient solutions (networking and services) that support your mission now and in the future.
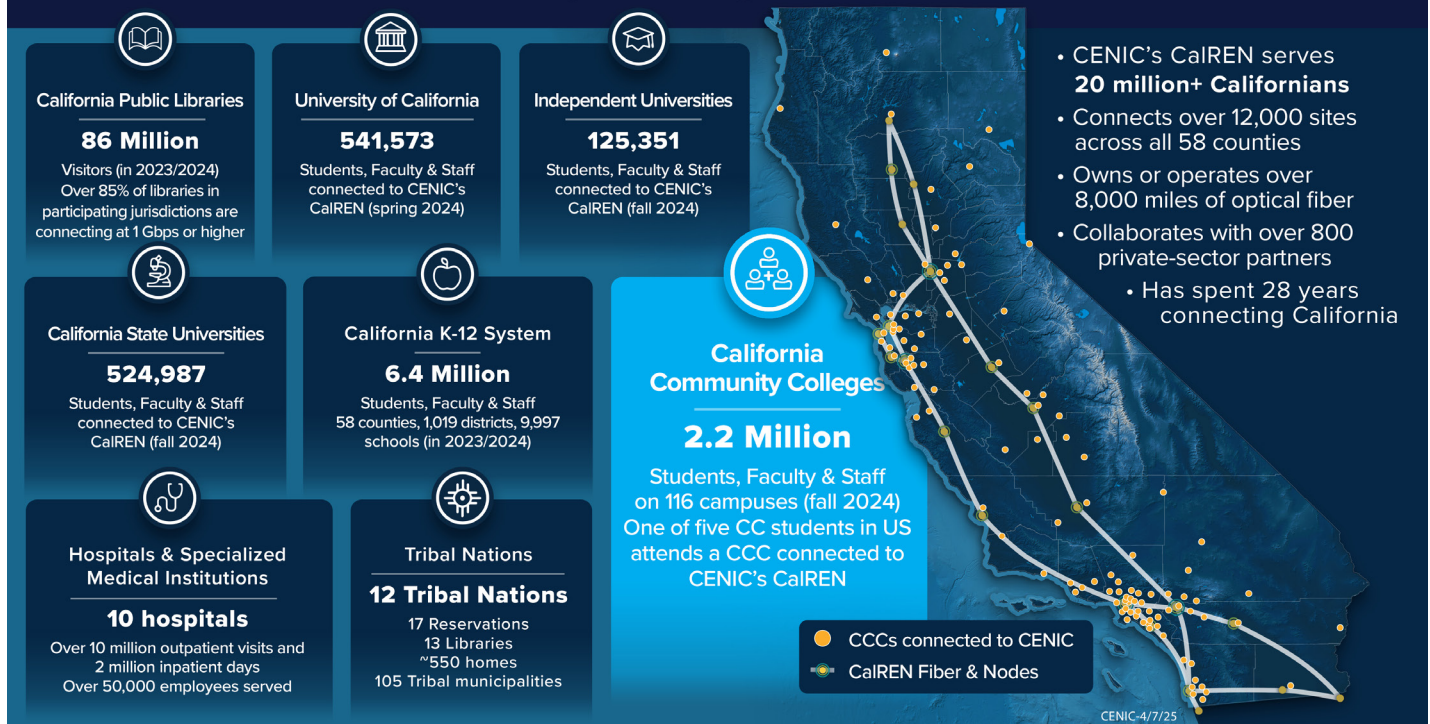
enable their faculty and students to collaborate nationwide on the transformations promised by AI and machine learning.

CENIC AIR participants can also access cloud offerings, such as AWS, Oracle, Google Cloud Platform, and Microsoft Azure, as well as NSF HPC centers, should they need to scale beyond NRP resources and have the means to use these services. The San Diego Community College District is only the first district to connect to CENIC AIR, and other districts are discussing participation.

To forestall network-based volumetric cyberattacks and other threats, CENIC Charter Associates can access Radware's on-demand, cloud-based DDoS Mitigation Service (DMS). Thanks to our partnership with Internet2, CENIC obtains for its members an extremely attractive "bulk" pricing for this service that would not otherwise be available, along with high-capacity direct connections through Internet2 to Radware.

Thus, many of California's Community Colleges contract with CENIC to obtain DDoS attack detection and mitigation services that are far more responsive and cost-effective than any currently available from commercial providers.

California Community Colleges Connected to CalREN

California Public Libraries
86 Million
Visitors (in 2023/2024)
Over 85% of libraries in participating jurisdictions are connecting at 1 Gbps or higher

University of California
541,573
Students, Faculty & Staff connected to CENIC's CalREN (spring 2024)

Independent Universities
125,351
Students, Faculty & Staff connected to CENIC's CalREN (fall 2024)

California State Universities
524,987
Students, Faculty & Staff connected to CENIC's CalREN (fall 2024)

California K-12 System
6.4 Million
Students, Faculty & Staff
58 counties, 1,019 districts, 9,997 schools (in 2023/2024)

California Community Colleges
2.2 Million
Students, Faculty & Staff on 116 campuses (fall 2024)
One of five CC students in US attends a CCC connected to CENIC's CalREN

Hospitals & Specialized Medical Institutions
10 hospitals
Over 10 million outpatient visits and 2 million inpatient days
Over 50,000 employees served

Tribal Nations
12 Tribal Nations
17 Reservations
13 Libraries
~550 homes
105 Tribal municipalities

- CENIC's CalREN serves **20 million+ Californians**
- Connects over 12,000 sites across all 58 counties
- Owns or operates over 8,000 miles of optical fiber
- Collaborates with over 800 private-sector partners
  - Has spent 28 years connecting California

- CCCs connected to CENIC
- CalREN Fiber & Nodes

CENIC-4/7/25

CENIC partners with national and international research and educational, governmental, and commercial networks to expand access, working to support broad public access to the educational, research, and cultural assets that position California for a prosperous future.

Positioning California for the Future through Access and Resiliency

California's greatest challenges will enable community colleges to do their greatest work in the coming decades. The California Community Colleges' Vision 2030 Roadmap envisions a higher education system available and accessible to all Californians, which ensures access points for every learner and exit points to transfer, complete a community college baccalaureate, or obtain a job with family-sustaining wages.

A major part of this is the expansion and optimization of educational technologies, both existing and emergent, that will enable the community colleges to engage with and develop the next generation of AI tools and build the next wave of solutions to many of the world's pressing problems.

Did you know?
Around-the-Clock Network Support Tailored for You

California's Community Colleges also enjoy support from CENIC's 24/7 Network Operations Center, staffed by highly trained network engineers with over 25 years of experience working with our segments to create bespoke solutions that address and scale to their unique needs, including campuses and off-campus education centers.

Did you know?
CENIC Peers Directly with Major Cloud Providers

CENIC offers direct connections to AWS Direct Connect and Oracle FastConnect at CalREN's Los Angeles and San Jose backbone node sites. These direct connections offer increased resiliency and performance for access to cloud resources across California. In addition, a 10 Gbps connection to AWS made possible by CENIC's interconnection to Internet2 at San Jose.

To address bandwidth demand for the near future, the CCC Technology Center is working with CENIC to upgrade the majority of circuits connecting community colleges to CalREN to 10 Gbps. In addition, approved college centers will receive 1 Gbps primary and 1 Gbps secondary circuits. These upgrades are expected to be in place by fiscal year 2025–26 and provide sufficient capacity for at least five to ten years.

Other ongoing projects starting in 2024–25 through 2025–26 include replacing end-of-life routers and reviewing college, district, and education centers to improve network resiliency and thus ensure minimal impacts on student learning and daily college business.

CENIC