



San Diego State University

Founded in 1897, San Diego State University is the one of the largest universities in California with an enrollment of approximately 33,000 students. Visible evidence of this continuing growth is a recent flurry of campus construction for new facilities including the Bio Science Center, the College of Arts and Letters Building, Student Health Services, and the Aztec Aquaplex.

SDSU is unique in that it currently houses multiple traditional cell sites that serve 4 wireless operators. Even with this arrangement, the infrastructure on campus is insufficient and the operators cannot serve existing subscribers well until they receive additional coverage and capacity.

Facts

- Total student, faculty and administration population; approximately 40,000
- Campus includes 176 buildings on 231 acres
- The oldest and largest higher education institution in the San Diego region
- Saturated with multiple cell sites
- 7 residence halls with 4,000 students
- 9 of 10 people on campus carry a wireless device

"NextG's DAS solution compliments the existing macro cell sites at SDSU. Operators with multiple sites still have coverage/capacity holes in key areas. NextG fills those holes through minimal additional space upgrades in current sites and also brings regional operators to the campus that otherwise could not afford to install their own multiple macro sites. The DAS technology provides larger coverage with less capital investment for operators, and the NextG revenue sharing program is beneficial for SDSU."



Riny Ledgerwood,
Director Communications and Computing Services
San Diego State University

Challenges

The current wireless infrastructure covering SDSU is maxed out—with more demand than capacity and new facilities being built where no coverage exists. Though the campus already houses a great many macro cell sites with multiple sites for each of the 4 national wireless operators, the university is looking for coverage to be expanded to key locations and capacity to be added to support the campus community.

SDSU wireless coverage also needs to support spikes in coverage. The current towers, which cover a relatively small area and are intended to support almost 40,000 students, faculty and administration, are compromised when the university hosts community activities such as sporting events. Also, nearby highways and the surrounding residential and commercial areas demand wireless coverage that consume campus connectivity.

SDSU's goal is to have ubiquitous coverage in the public areas of campus, with enough capacity to support usage spikes, but without enabling the RF signals to penetrate every building on campus - protecting classrooms from distraction. The university wanted to find a single provider that could extend the coverage and capacity for the existing operators and provide a full network for operators currently not on campus.

- Student and faculty heavily depend on mobile phones
- Campus network also supports community and large numbers of visitors
- Demand for reliable wireless coverage for emergency and safety use
- Campus wants to control coverage areas

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NextG Solution

NextG Networks' DAS-Network solution was chosen to provide improved cellular coverage and capacity for San Diego State University. Instead of using additional cell towers, NextG is using unobtrusive equipment using a distributed antenna system to meet the needs of the University and cellular operators. NextG strategically places small, low power antennas on approved buildings and lampposts in such a manner as to make them virtually unnoticeable.

NextG will design, implement and manage the new multi-operator network, which can scale as needed to support a range of wireless technologies and frequencies including GSM, GPRS, CDMA, Wi-Fi as well as public safety network protocols. NextG's managed network uses available fiber optics to transport voice, data, image and other RF signals for wireless operators, and other wireless service providers. Unlike traditional cell sites, fiber-fed DAS-Networks bring wireless coverage to key locations such as all the residential halls and buildings on campus. In addition, SDSU can add the capability to implement public safety services because its wireless network is connected to a redundant fiber optic network.

San Diego State benefits from better wireless coverage and capacity to support all aspects of college life. The NextG Network also improves public safety services, supports visitors and patrons of SDSU sports teams and generates revenue for the University.

Predicted coverage (blue circles) from three new DAS nodes, provide enhanced coverage and capacity to campus and surrounding area.



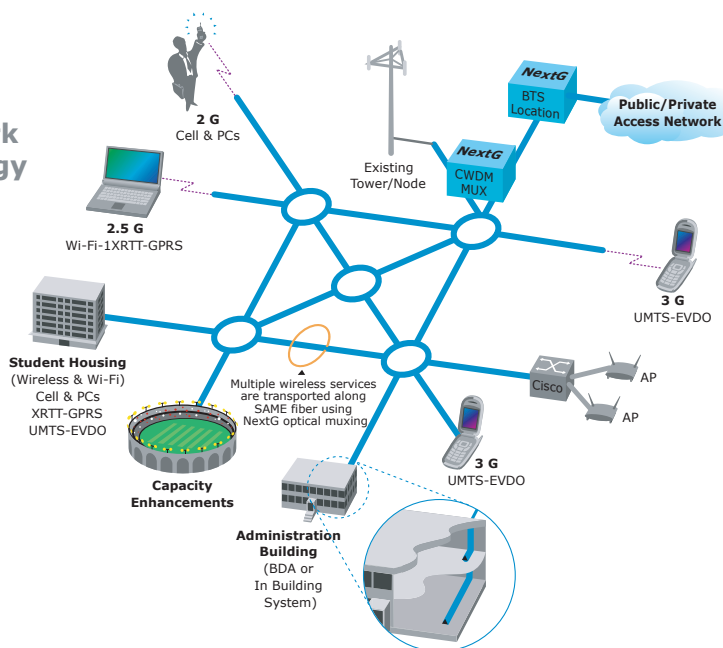
Benefits

- Future-proof network can scale to add coverage, capacity and services as needed
- Distributed architecture provides maximum coverage in targeted areas
- Small, low power equipment
- No capital cost to SDSU because NextG and wireless operators pay for the network
- SDSU gets single point of contact for all wireless carriers and any future needs
- SDSU has the option of transitioning any/all current macro cell sites onto the NextG Network at any time
- Improved public safety
- SDSU receives revenue from NextG
- NextG architecture allows for the consolidation of operator BTS equipment, enabling a more efficient use of campus real estate

Specifications

Number of Nodes	3-7 nodes for new operators and to supplement coverage for existing operators
Population covered	50,000 peak subscribers
Frequencies operational	800 MHz, 1900 MHz
Networks operational	CDMA, 1xRTT, EV-DO

Typical Network Topology



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