

A U S T R A L I A

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 About CSU

AUSTRALIA

- Multi Campus Regional University
- Pocket Stats:
 - 34,000 students;
 - 9,200 on campus students;
 - 4,100 mixed mode (on campus & distance)
 - 7,450 course completions in 2009
 - 670 Academics staff/ 1090 Admin staff
 - \$333m total revenue 2009
 - CSU courses delivered through 26 entities & campuses
- 9 Campus Locations: Dubbo, Orange, Bathurst, North Parramatta, Manly, Goulburn, Canberra, Wagga, Albury/Thurgoona.
- Approx 120 wireless Hotspots in select locations







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 Requirements

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- 100% Coverage:** Access to 11n wireless services across all areas of each campus
- Fast wireless services:** High capacity performance based on a minimum throughput per connection under heavy load conditions
- High Density:** Ability to accommodate in defined areas a large number of simultaneous connections
- Roaming:** Seamless mobile coverage across campus
- Quality of Service:** Ability to manage and monitor traffic to enforce QoS policy
- Ease of Access:** Ability to provide efficient and secure access to a broad range of client devices and user groups
- Monitoring & Management:** Ability to efficiently and effectively monitor and manage the proposed wireless network






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Requirement - Coverage

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- High** – areas where significant numbers of students **congregate**. Seating capacity used to determine the number of concurrent wireless connections expected in these areas with guaranteed throughput of 3 to 5Mbps per active connection.
- Standard** – building and external coverage is 20 concurrent wireless connections at 3 to 5 Mbps.
- Low** – areas of low traffic, transit areas such as car parks, thoroughfares and walkways. A stable, usable connection to the wireless network is always possible.

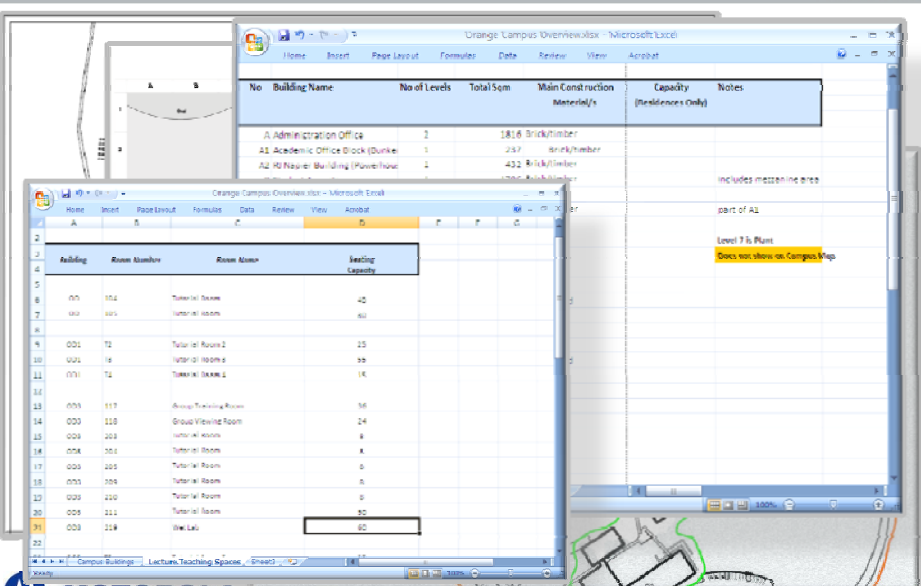





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Requirement - Coverage

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Out of Scope


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- 802.11a,b
- Integration with existing Cisco access points
- Supply of network cabling
- Installation of network data points
- Supply and Installation of power points
- Tier 1 and 2 support


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Funding


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- \$1M from Federal Government's Better Universities Renewal Fund (BURF).
 Department of Education, Employment and Workplace Relations
- \$1M from CSU communications infrastructure fund.
- Back of the envelope:
 - 1000 AP's @\$800 = \$800,000
 - Switching, Management and software = \$200,000
 - 3 years maintenance \$450,000 (15%)
 - Cabling \$250,000
 - Prof Services = \$150,000
 - Total \$1,850,000


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 Procurement

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- We wanted a network that we didn't have the capacity to build. Looking for partners.
- Homework investigating the market and vendors: Caudit surveys, Gartner, Questnet, other industry information, etc.
- Used Gartner: provide an overview of the market, magic quadrants, advise on procurement, review the RFP.
- RFP: included a margin of error. No pre tender site surveys.
- Shortlisted to two: Presentations from each shortlist, and deeper evaluation of their proposals.
- Pilot study of preferred solution. To validate the proposal.





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 Partners

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- High commitment and engagement with the tender process - visited every site
- Excellent O/S references. Confirmed perceived willingness to engage and listen to our requirements
- A clear understanding of the focus being the student network
- Experienced with regional engagement
- Vendor/Integrator/CSU partnership
- Had strong consistent technology across all solution areas
- In particular
 - Management & Security (AirDefence)
 - Outdoor solution




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SSID's

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- AccessCSU
- OpenCSU
- **Eduroam**
- **CSUConnect**
- StartCSU
- ConnectCSU
- CSUCommunity

- CSURoam
- FullCSU
- **InstallCSUConnect**
- SecureConnect
- SecureCSU
- CSUAir
- AirConnect

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Architecture

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- 2 x clusters of N+1 switches (Switches for AP capacity + 1)
- Clustered – load balanced across the N+1 pool
- AirDefence appliance: x2 replicated across campuses.

Central NOC with RFS7000 cluster, WIPS and RFIDS providing centralized network services, security monitoring and remote management

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Solution Components

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- RFS7000 Wireless Switch
- AP-7131 Access Points
- AP-7181 Outdoor Access Point
- AirDefence
- Radius /Dot1x authentication

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AirDefence

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- WLAN management
- Centralised Management Console
- Security and Compliance
- Wireless Intrusion Prevention
- Rogue AP identification and management
- Advanced troubleshooting

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Quick Stats

AUSTRALIA

- 450+ buildings
- 600+ building floors
- 1.2 million sqm of coverage
- 1453 AP's (orig), 1285 (current actual)
- 50 External AP's
- 6 Wireless Switches
- 2 AirDefence Appliance

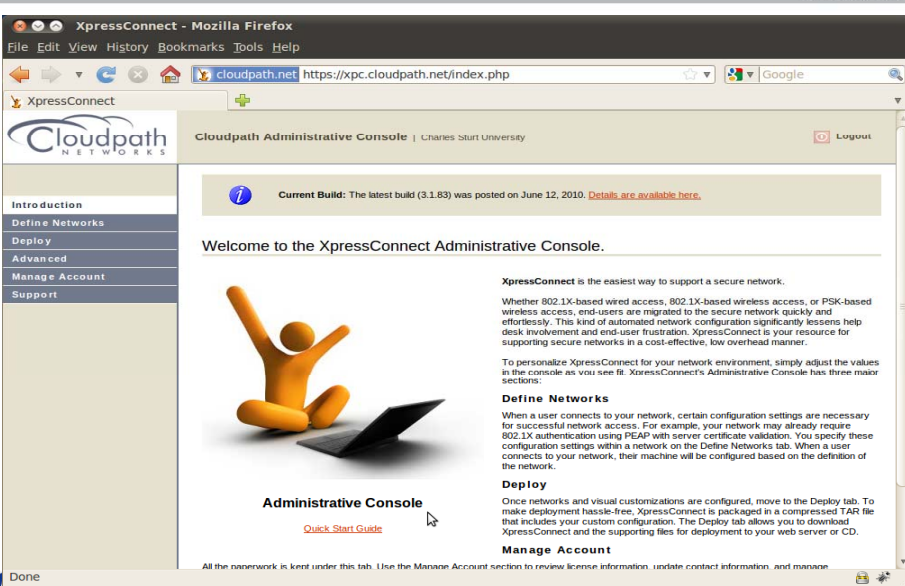

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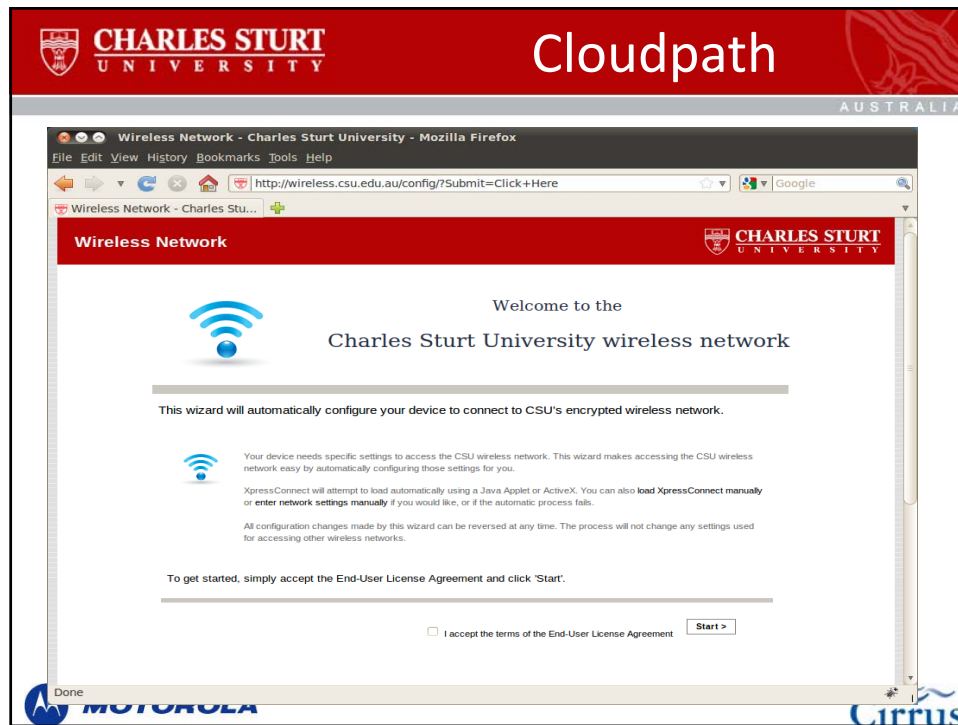
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Cloudpath

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Lessons Learned

- Building plans are critical. The more detail the CAD plans have the better the actual design provided by the tool will be.
- Knowing current switch and power situation is also important
- A newer system introduces a lot more control over the way in which 'rouge' or neighbouring APs are handled.
- Look to implement a utility that will self-configure devices for encrypted access.... Reduces the need for support walking through setups with clients
- Provide Open access albeit with limited functionality. Don't restrict access to encrypted devices only.
- The 11n coverage caveat
- An 11n outdoor. Using outdoor AP's to deliver indoor coverage.
- Don't need POE, but it's useful

