

**Creating a large scale
wireless network with**



SCIFI

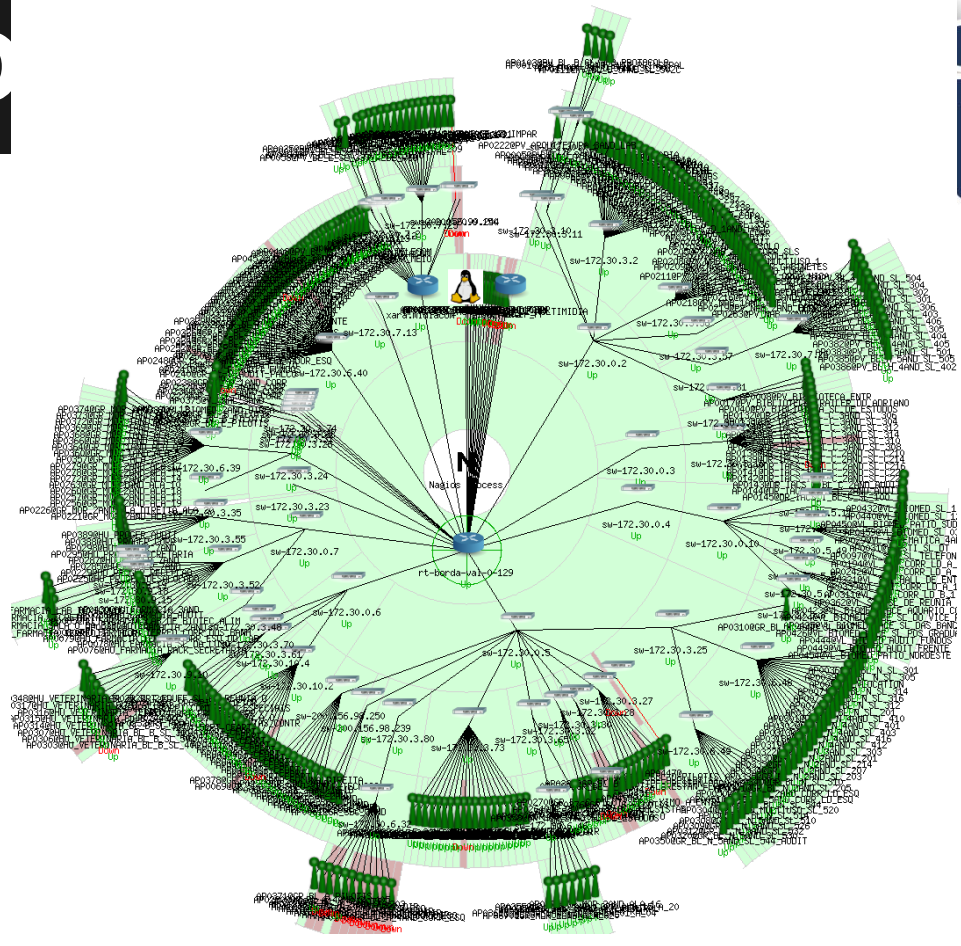
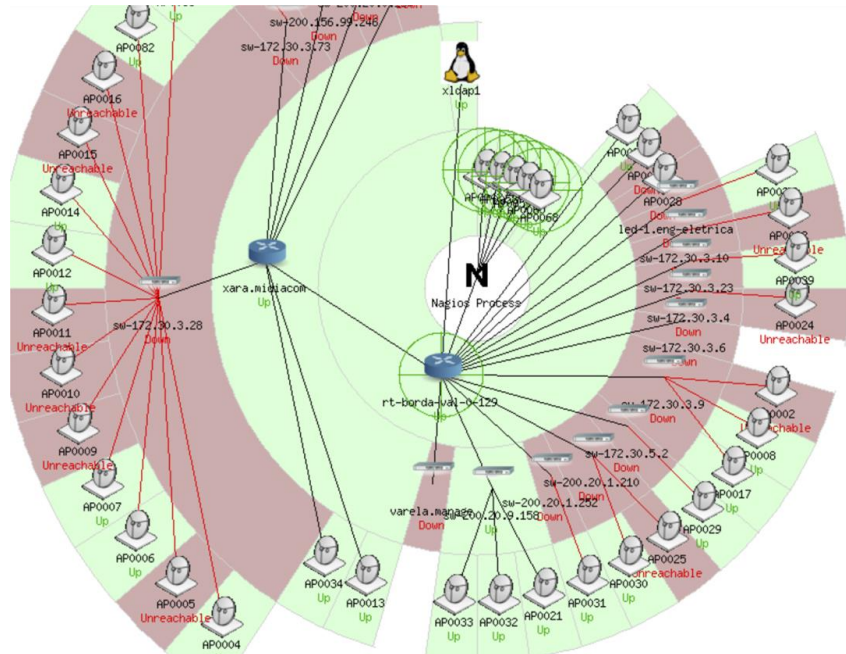


SCIFI is an open-source software controller for building enterprise scale wireless networks using inexpensive hardware.

Its development was funded by RNP, and it is being used at several places, including UFF, one of the largest Universities in Brazil, where the network will eventually reach 4,000 APs.

SCIFI has grown

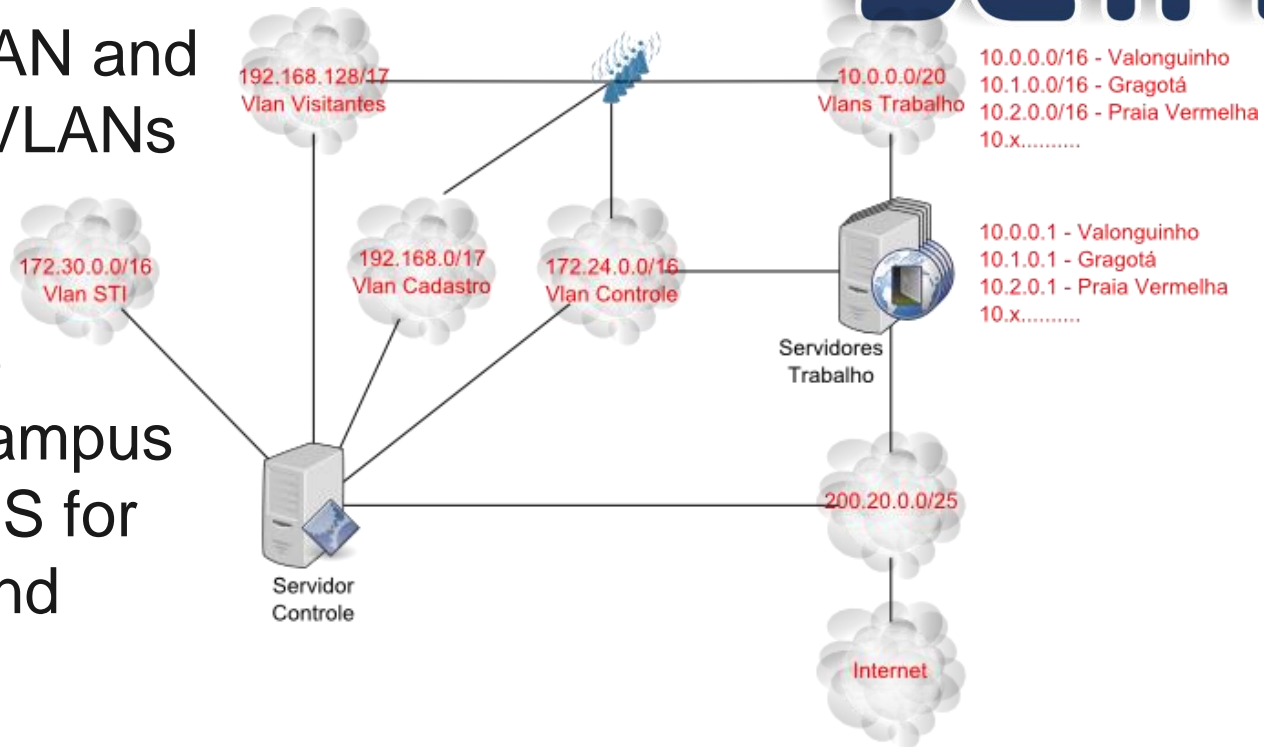
From 40 to 320 APs



New Architecture



From a single VLAN and SSID to multiple VLANs and SSIDs, with separate Data/Control, one Data VLAN per campus and VLANs/SSIDs for self registration and Visitors Data



Statistics Oct 19 to 26



SSID	Number of association requests	Number of unique MACs
EDUROAM	1,255,471	12,443
CADASTRO	260,886	8,856
VISITANTES	69,217	1,254
APXXX	15,260	526
total	1,600,834	18,111

Statistics Oct 19 to 26

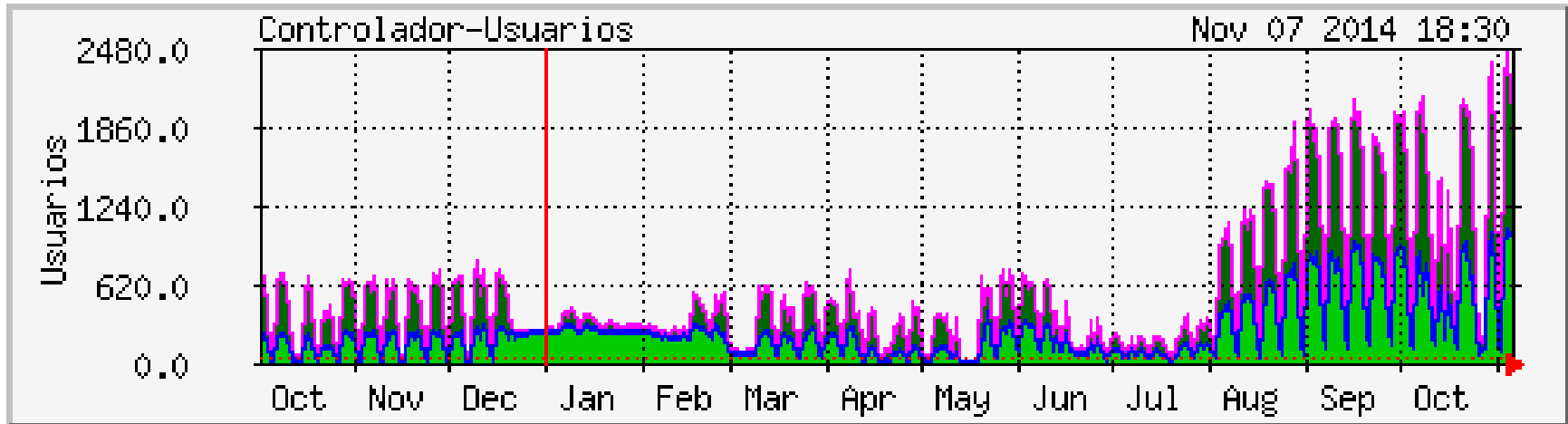


SSID	Number of DHCP requests	Number of unique MACs
EDUROAM (Praia Vermelha)	161,344	4,288
EDUROAM (Gragoatá)	195,998	4,396
EDUROAM (non-segmented)	105,035	4,833
CADASTRO	177,735	7,764
VISITANTES	23,031	459

Growth & Challenges



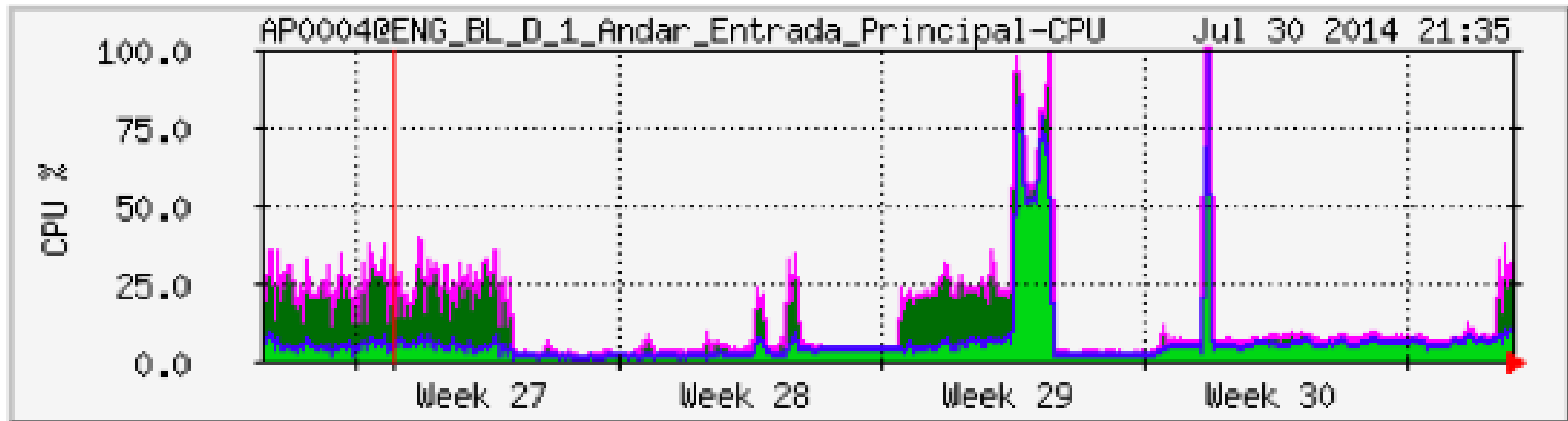
From 100 APs - 600 simultaneous users peak
to 320 APs - 2500 simultaneous users peak



Installation Problems



Faulty installation can lead to unexpected network problems. Gratuitous ARP flood.



Solutions



- Unconnected APs do not advertise the SSID associated with the missing VLAN.
 - We continuously monitor the VLANs and switch off and on the associated SSIDs according to their state
- We isolated the data VLAN for different campi.
- We made a new installation image that collects the data that used to be written on the installation sheet on a web form, and sends this info to the installation server.
 - This diminished the time it takes to percolate the information, and prevents users to associate with an unconnected and unconfigured AP.

Conclusions



- SCIFI will continue to evolve
 - to adapt to challenges of scale
- More monitoring
 - many choices, possible more integration
 - active monitoring
- New changes to network architecture
 - remote campi
 - control VLAN segmentation

Thank you

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Thank You

