

Requirements for Remote Monitoring and Control

FRONT: Requirements for Remote System Monitoring and Control

We need the ability to remotely monitor and control both S-Pol and CHILL, since we will want to remotely operate both radars. Since S-Pol is likely to be located at least 1 hour away from Foothills Lab, we need the ability to fix problems without minimum 2 hour round trip.

This document captures the requirements for remote monitoring and control.

Remote control of computers

We need the ability to cycle power on key servers in each radar. For S-Pol, this would include:

Name	Function	circuits
gate	Gateway, web server	2
mgen	moment generation	2
pgen	product generation and raid	4
raid1	data storage	3
raid2	data storage	2
rpv8	digitizer	2
dxmit	digital transmitter	1

In addition to power cycling to restart a stuck computer, we need the ability to turn off computers because

1. the ambient air temperature is too high, or
2. Commercial and generator power have failed, and the UPS batteries are low.

Other Power Control and Monitoring

1. Transmitter
2. Remote monitoring/control of UPS (via USB). Eventually, we should be able to monitor the load (and battery condition, if available) of the 3 UPSs in the transmitter van.
3. Generator and transfer switch control and monitoring.

Console Access

In addition to controlling power, we also need the ability to have remote console access to the remote computers, in case we need to debug booting issues (and can not remote login).

Environmental Monitoring

We need the ability to monitor key temperatures, voltages, and currents throughout each radar. We need an auto-dialer that can notify a list of people of the following conditions:

(Please fill in this table).

Location	Item	Range
Transmitter	Klystron Temperature	20-80C
Transmitter Shelter	Ambient Temperature	
Antenna	Antenna stops moving	
Transmitter	Faults	
Site	Power Failure	
Site	Fire/smoke detection	

If the new site has a landline, we can probably use our existing auto-dialer. If we don't have a land-line, there are new dialers that use cell phones. The autodialer needs to dial a list of numbers, which should be easily modified. The autodialer does not have to give precise status for all conditions - it would be ok to require someone to access a web site at S-Pol to get more details.

Dialers

<http://www.racom.com/>

<http://www.autodialer-alarm.com/>

Possible solutions:

- CHILL currently uses APC Switched Rack Power Distribution Units (PDUs).
- CP-2 uses a WAGO Ethernet controller, part # 750-841, to control power and monitor CP-2. This system provides both local control via a Windows Application and web based control. WAGO offers lots of flexibility in choice of modules, but programming their controller requires learning a proprietary language. Mike Dixon may know more about CP-2's capabilities.
- Labview based, possibly extending the S-Pol's current ATE.
- use Nagios (which we used for TiMREX).
- the Power PMAC motion controller could send a message and/or close a contact if the antenna stops when it should be moving.

Web Monitoring

- Transmitter power values should be available on a web display.
- We should have a web-accessible camera that shows S-Pol's antenna.