Operations and Management of Large Environmental Monitoring Networks
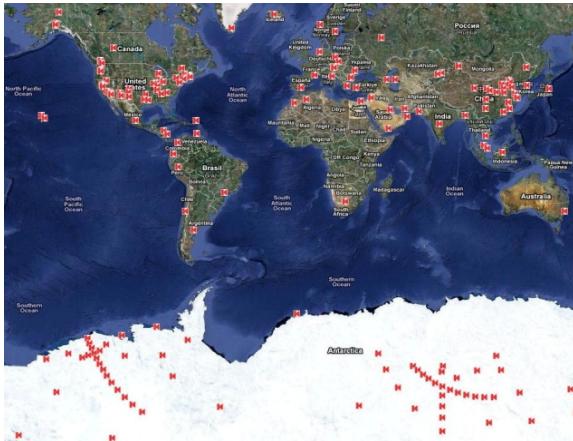
Danny Harvey
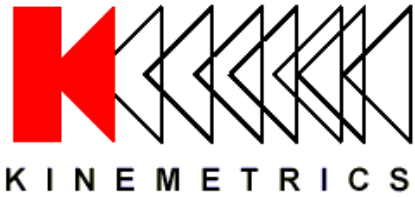
Boulder Real Time technologies

Kinemetrics, Inc.

- Founded in 1969
- OYO Corp owned in 1991
- ISO9001 since 1999
- $35M FY2012 revenue (mostly international)

HQ's in Pasadena CA with Sales and Project offices in Switzerland & Abu Dhabi

Designs and manufactures sensors and digitizers – Provides complete systems design, installation and operations

KINEMETRICS

QUANTERRA®

Designs High-End Digitizers

metrozet

Designs High-End Sensors
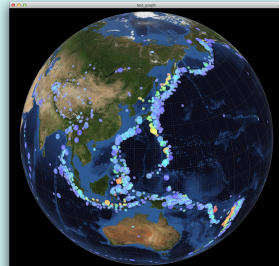
BRTT

Antelope Software
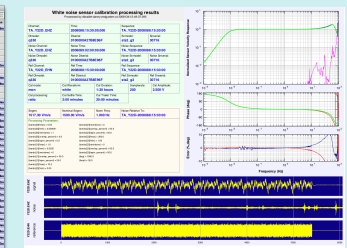
Environmental Monitoring Networks

- Seismic (ground vibration)
- Meteorological
- High resolution atmospheric pressure
- Infrasound
- GPS
- Hydroacoustic
- Radionuclide
- Chemical
- Image
- Etc.

Environmental Monitoring (EM) Network O&M Requirements

- Operational requirements (end user):
  - Acquire data from remote sensors
  - Provide data to downstream users using appropriate formats and protocols
  - High data completeness
  - Minimum data latencies
  - High data quality
  - High reliability and resilience to single system component failures (HA)

- Maintenance requirements (operator):
  - Real-time comprehensive view of total system state of health (SOH)
    - Must extend to remote sensors
    - Must encompass telemetry
    - Supports rapid resolution of any and all problems
  - Ability to securely command remote sensors
    - Modify configurations
    - Mass recenters (seismic)
    - In-situ sensor calibrations (seismic)
  - Note range and scope of SOH/C&C (largely OOB)

SOH Parameters

data_gps	data_clk_drift	q330_drate_tot
data_gps_cs	data_clk_lcq	q330_throttle
data_cnp_err_port	data_m0	q330_comm_eff
data_cnp_err_code	data_m1	q330_data_gaps
data_slavep_err_code	data_m2	q330_run_time
data_dig_phase	data_m3	q330_data_ltc
data_dig_phase_why	data_m4	q330_pkts_proc
data_backup	data_m5	q330_pkts_badsz
data_record	data_seis0_temp	q330_pkts_chksm
data_leap	data_seis1_temp	q330_byts_rd24
data_pow_phase	data_seis0_curr	q330_byts_wr24
data_anl_fault	data_seis1_curr	q330_data_gp24
data_cal_error	data_cal_abort	q330_data_gp1
data_pll_drift	data_cal_status	q330_data_nl24
data_por_drift	data_suppl_pos	q330_data_nr24
data_sys_volt	data_suppl_neg	q330_data_np24
data_sys_temp	data_masterfe_vco	q330_data_ni24
data_sys_curr	data_masterfe_offset	q330_data_tput
data_ant_curr	data_slavefe_qual	q330_data_bufr
data_spare_anl	data_slavefe_vco	
data_status_port	data_slavefe_offset	
data_opto_input	data_batt_temp	
data_vco	data_batt_cap	
data_pkt_buf	data_batt_dd	
data_clk_qual	data_batt_chg	
data_clk_pll	data_batt_volt	
data_clk_ltc	data_bati_volt	
	data_batt_curr	

- 76 parameters for each station (64 being used by ANF for USArray)
- Waveforms as well as flags, states and alarms
- Produced at remote datalogger as well as at data acquisition center

Saudi Arabia National Seismic Network 1997
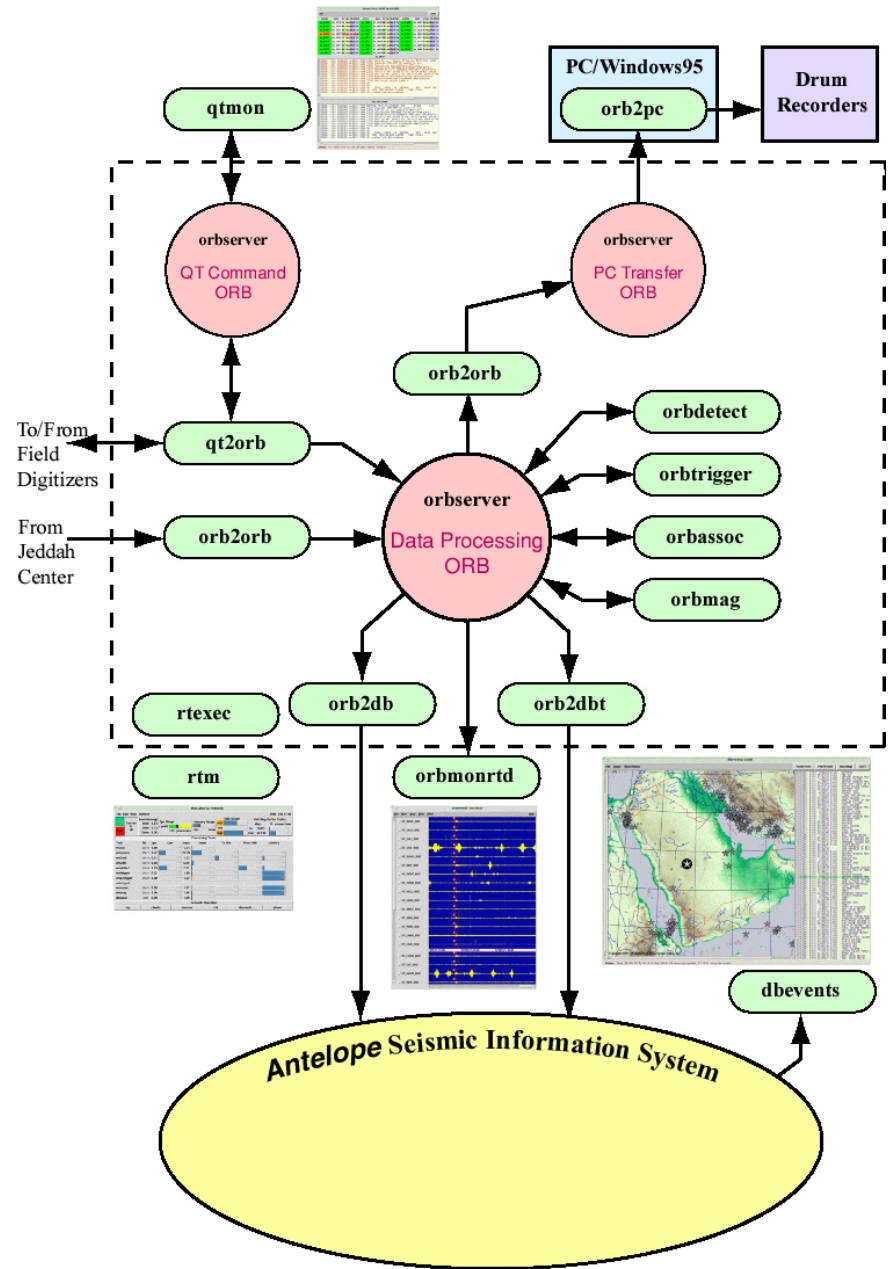
SANSN SOH System

- Developed SOH data to encompass:
  – Time sampled waveform channels
  – Parametric time "snapshots"
  – Free form ASCII log messages
- Developed SOH GUIs
  – "Traffic light" displays
  – Log message displays
  – Waveform displays
  – Interaction for C&C

qtmon: localhost:cd1s localhost:cd1s

File

wsta	ESS weather info
ESS	00 10/17/1999 17:30:20 21.6 0993.176 001.9 292 47 00.0160 00.0127 00.0160 00.0146

netsta	runtm	bps	cZ	cN	cE	iZ	iN	iE	volt	temp	WI	CI	AI	DI	lat	lon	elev	gps	cldrf	clck	vco	cltncy	dltncy
SD_ARBB32	2d	1.9k	Idle	Idle	Idle	S	S	S	23.8 V	40 C	ok	ok	na	ok	34.149	-118.103	208m	3D	-3 usec	L	2041	45s	13s
SD_ARLP31	23m	5.8k	Idle	Idle	Idle	S	S	S	23.8 V	40 C	ok	ok	na	ok	34.149	-118.103	209m	3D	0 usec	L	2102	45s	11s
SD_ARSP01	20m	1.6k	Idle			S			23.7 V	37 C	ok	ok	na	ok	34.149	-118.103	209m	3D	-1 usec	L	2124	45s	11s
SD_ARSP02	22m	1.4k	Idle			S			23.8 V	41 C	ok	ok	na	ok	34.149	-118.103	206m	3D	-1 usec	L	2280	45s	11s
SD_ARSP03	21m	1.8k	Idle			S			23.6 V	40 C	ok	ok	na	ok	34.149	-118.103	214m	3D	-2 usec	L	2039	45s	11s

SD_ARBB32

```
1999290(10/17) 16:16:06: SD_ARBB32: FROM LR:   -0.000119 -0.000001    -8 L    -8.  0.000000  0.000000            0
1999290(10/17) 16:17:06: SD_ARBB32: FROM LR:   -0.000119  0.000000    -7 L    -7.  0.000000  0.000000            1
1999290(10/17) 16:42:44: SD_ARBB32: FROM SYSMON: Station=BB31 GoodClock= TRUE Deviation=5
1999290(10/17) 16:56:51: SD_ARBB32: FROM CLOCK: LAT=3408.915N LONG=11806.154W HEIGHT=206M DOP=1.0
1999290(10/17) 16:56:51: SD_ARBB32: FROM CLOCK: DOPTYPE=2D Ant OK VISIBLE=10 TRACKING=8 STATUS=2D Fix
1999290(10/17) 16:56:51: SD_ARBB32: FROM CLOCK: SAT=15 52 $0A  SAT=3 46 $0A  SAT=21 52 $0A  SAT=29 53 $0A
1999290(10/17) 16:56:51: SD_ARBB32: FROM CLOCK: SAT=25 54 $0A  SAT=23 42 $02  SAT=31 47 $0A  SAT=1 44 $0A
1999290(10/17) 16:56:54: SD_ARBB32: FROM CLOCK: GPS3 Driver Version number 0
1999290(10/17) 16:57:01: SD_ARBB32: FROM CLOCK: LAT=3408.914N LONG=11806.155W HEIGHT=208M DOP=2.3
1999290(10/17) 16:57:01: SD_ARBB32: FROM CLOCK: DOPTYPE=3D Ant OK VISIBLE=10 TRACKING=8 STATUS=3D Fix
1999290(10/17) 16:57:01: SD_ARBB32: FROM CLOCK: SAT=15 51 $0A  SAT=3 46 $0A  SAT=21 52 $0A  SAT=29 52 $0A
1999290(10/17) 16:57:01: SD_ARBB32: FROM CLOCK: SAT=25 54 $0A  SAT=23 43 $0A  SAT=31 48 $0A  SAT=1 45 $0A
1999290(10/17) 16:57:04: SD_ARBB32: FROM CLOCK: DATE=1999/10/17 TIME=16:57:00 STATUS=3D Fix
1999290(10/17) 17:00:07: SD_ARBB32: FROM AQSAMPLE: Clock drift from -2 to 1usecs during past hour
1999290(10/17) 17:20:06: SD_ARBB32: FROM LR:   -0.000113  0.000005    -6 L    -6.  0.000000  0.000000            1
1999290(10/17) 17:23:06: SD_ARBB32: FROM LR:   -0.000113  0.000003    -7 L    -7.  0.000000  0.000000            1
1999290(10/17) 17:24:06: SD_ARBB32: FROM LR:   -0.000112  0.000004    -6 L    -6.  0.000000  0.000000            0
1999290(10/17) 17:25:06: SD_ARBB32: FROM LR:   -0.000112  0.000003    -7 L    -7.  0.000000  0.000000            0
```

ALL STATIONS

```
1999290(10/17) 17:17:09: SD_ARSP02: FROM LR:    0.003724  0.000002   233 L   233.  0.000000  0.000000            4
1999290(10/17) 17:17:59: SD_ARSP03: FROM LR:   -0.000143  0.000003    -9 L    -9.  0.000000  0.000000            2
1999290(10/17) 17:19:05: SD_ARSP02: FROM LR:    0.003724  0.000001   232 L   232.  0.000000  0.000000            0
1999290(10/17) 17:20:05: SD_ARSP02: FROM LR:    0.003724  0.000002   233 L   233.  0.000000  0.000000            0
1999290(10/17) 17:20:06: SD_ARBB32: FROM LR:   -0.000113  0.000005    -6 L    -6.  0.000000  0.000000            1
1999290(10/17) 17:20:01: SD_ARLP31: FROM LR:    0.000858 -0.000001    53 L    53.  0.000000  0.000000            3
1999290(10/17) 17:20:45: SD_ARSP02: FROM SYSMON: Station=SD02 GoodClock= TRUE Deviation=18
1999290(10/17) 17:21:00: SD_ARSP03: FROM LR:   -0.000143  0.000003    -8 L    -8.  0.000000  0.000000            2
1999290(10/17) 17:21:01: SD_ARLP31: FROM LR:    0.000858  0.000000    54 L    54.  0.000000  0.000000            3
1999290(10/17) 17:22:00: SD_ARSP03: FROM LR:   -0.000143  0.000002    -9 L    -9.  0.000000  0.000000            3
1999290(10/17) 17:23:05: SD_ARSP02: FROM LR:    0.003724  0.000001   232 L   232.  0.000000  0.000000            0
1999290(10/17) 17:23:06: SD_ARBB32: FROM LR:   -0.000113  0.000003    -7 L    -7.  0.000000  0.000000            1
1999290(10/17) 17:23:00: SD_ARSP03: FROM LR:   -0.000143  0.000003    -8 L    -8.  0.000000  0.000000            3
1999290(10/17) 17:24:06: SD_ARBB32: FROM LR:   -0.000112  0.000004    -6 L    -6.  0.000000  0.000000            0
1999290(10/17) 17:24:06: SD_ARSP02: FROM LR:    0.003724  0.000002   233 L   233.  0.000000  0.000000            0
1999290(10/17) 17:24:01: SD_ARSP03: FROM LR:   -0.000143  0.000002    -9 L    -9.  0.000000  0.000000            3
1999290(10/17) 17:25:06: SD_ARBB32: FROM LR:   -0.000112  0.000003    -7 L    -7.  0.000000  0.000000            0
1999290(10/17) 17:25:05: SD_ARSP02: FROM LR:    0.003724  0.000001   232 L   232.  0.000000  0.000000            0
```

Status: Time: 1999290(10/17) 17:25:46 Gmt: Status latency = 00:00:02

qtmon time history: bd

Dismiss | twin 36000 | ymin -1000.0 | ymax 20000.0

ARBB32 bps
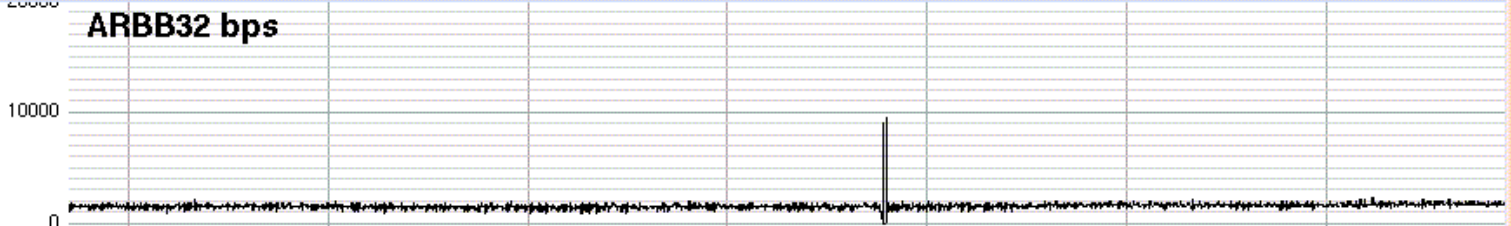
ARLP31 bps
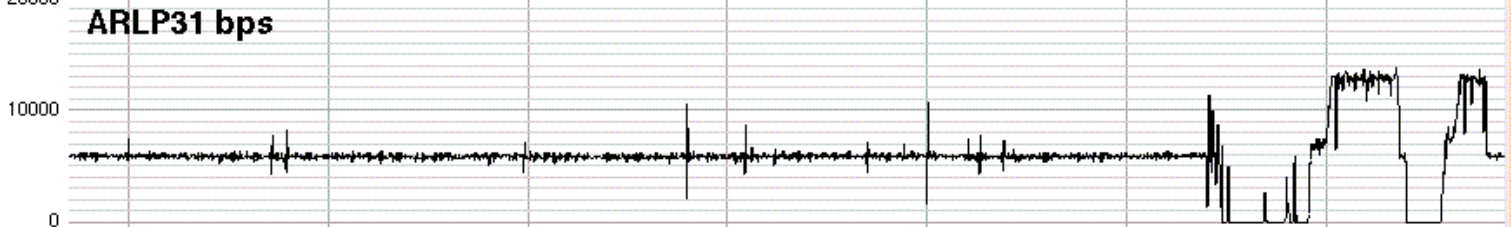
ARSP01 bps
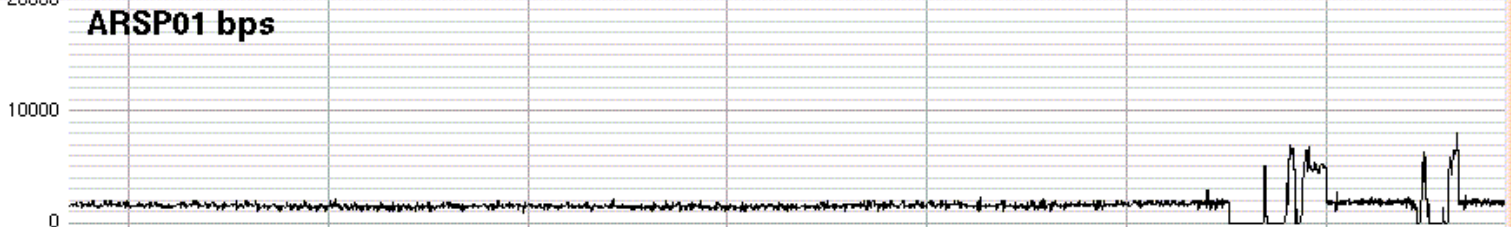
ARSP02 bps
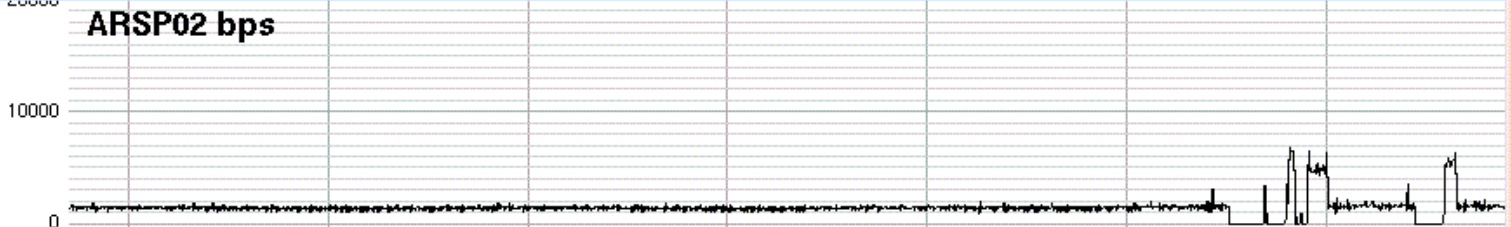
ARSP03 bps
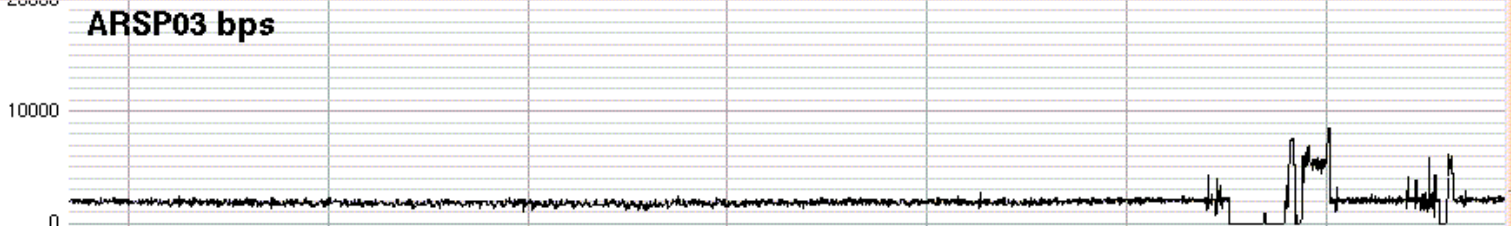
SANSN – Lessons Learned

- SOH encompasses a wide range of information types
- Proper displays can greatly increase operator effectiveness
- Comprehensive SOH information comes from both the remote sensors as well as the central acquisition software
- SOH information is not important for the end user or ultimate network mission

AFTAC/ SDAS/ Phase II 2000
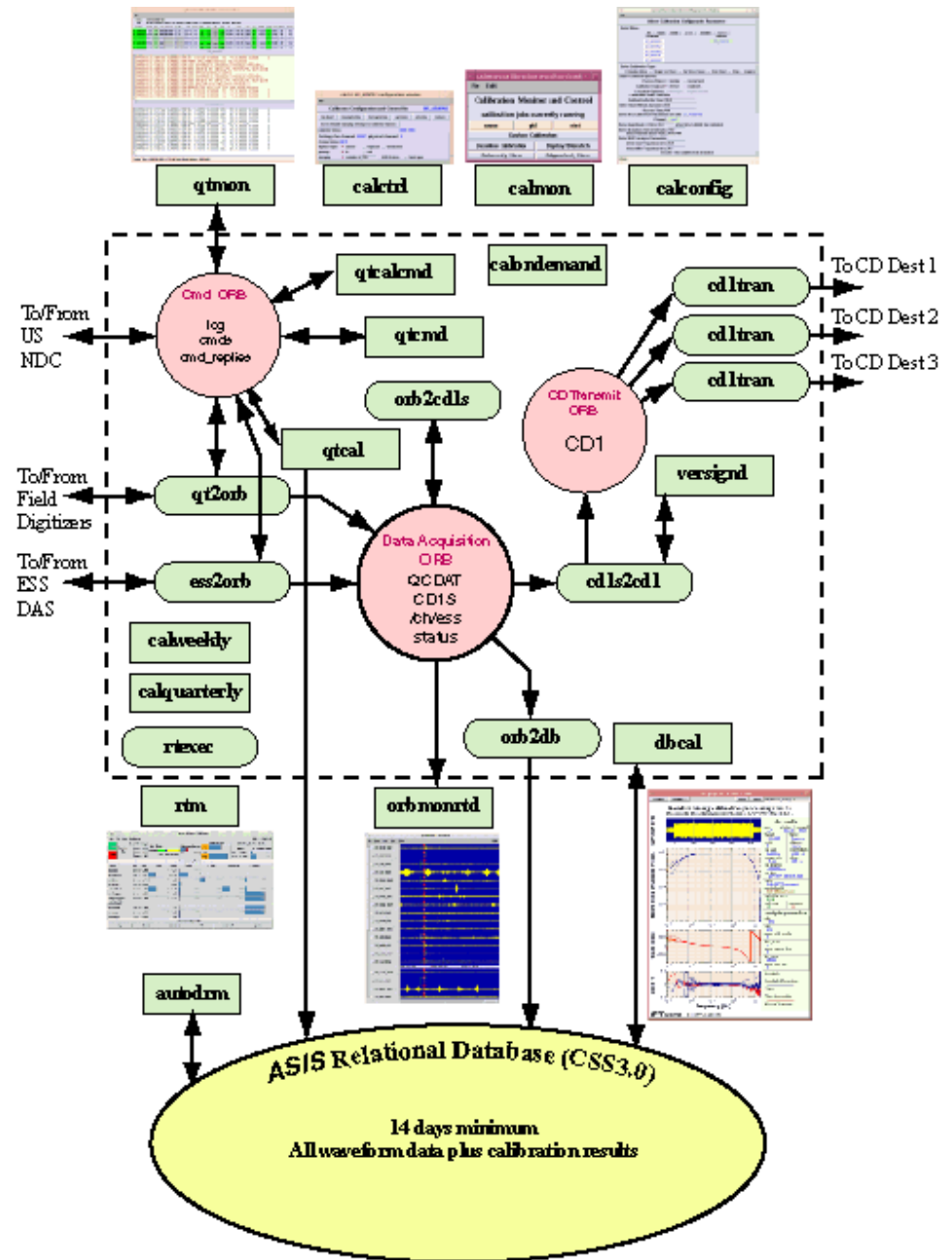
SDAS Prototype Configuration
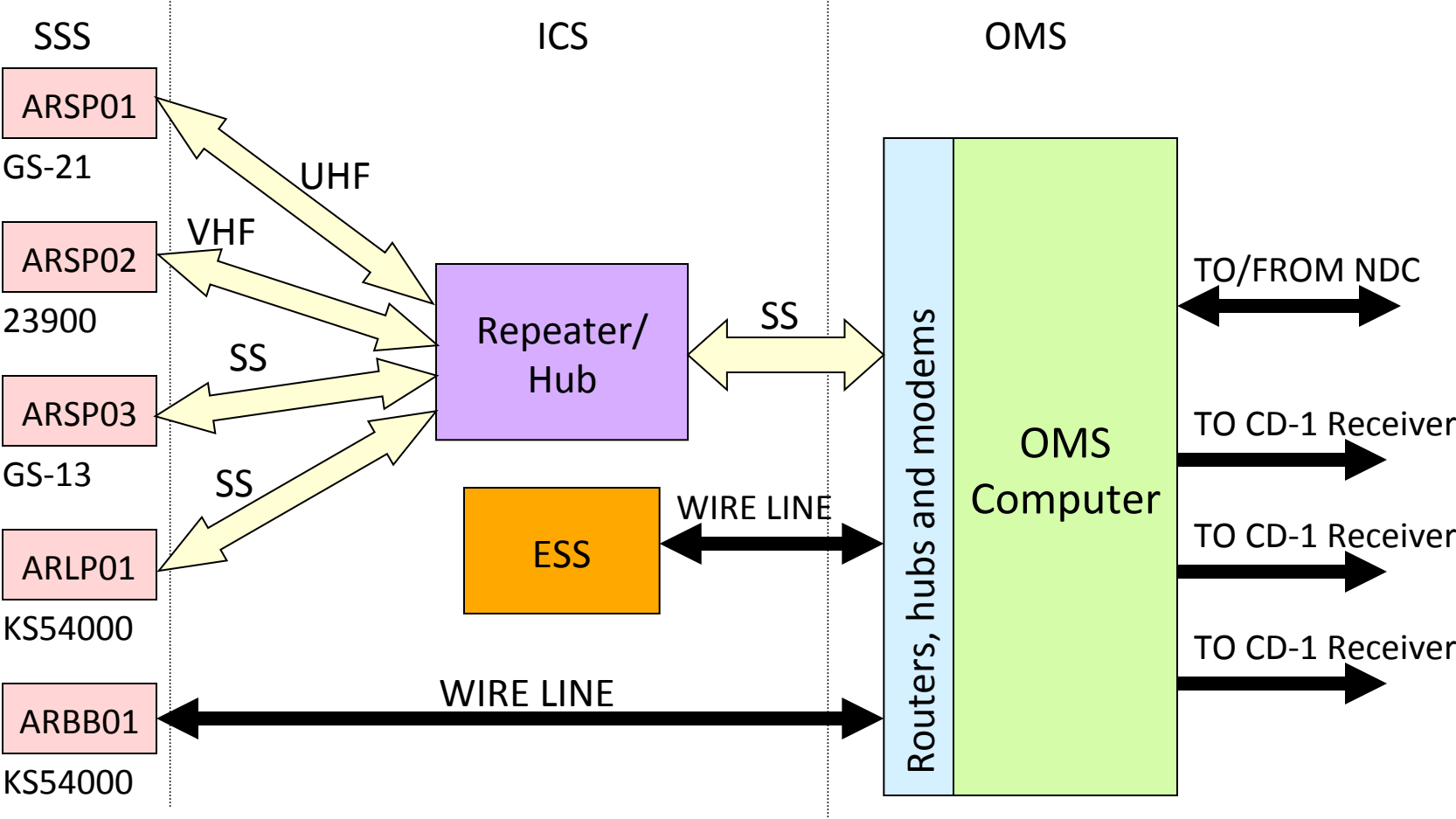
calconfig: calibration configuration window

File

Select Calibration Configuration Parameters

Select Sites:

| All | None | 23900 | GS-21 | KS54000 | GS-13 |

Available — Selected

SD_ARSP01

SD_ARSP02   SD_ARSP03

SD_ARSP03

SD_ARLP31

SD_ARBB32

Select Calibration Type:

◆ Random Binary ◇ Single Sine Wave ◇ Sine Wave Sweep ◇ Free Period ◇ Step

Select Common Options:

Process Sites: ◆ Serially ◇ Concurrently
Calibrator Output: ◆ Sensor ◇ Loopback
Loopback Options: ☐ Preamp in ☐ Loopback loaded
Calibration Start Time: now
Calibration Settle Time: 130.0
Settle Time Without Autozero: 30.0
Recover Time: 10.0

Select rbc Calibration Parameters for Site SD_ARSP03

Channel: SHZ

Select Amplitude in Volts: 5.0   actual volts=5.00000   dac=0x6666,0
Select Duration Time in Minutes: 10.0
Select Random Seed Value: 0x123456
Select RBC Analysis Parameters:
Select Low Frequency in Hz: 0.01
Select Mid Frequency in Hz: 0.2

EXECUTE THE CALIBRATION SEQUENCE

Status:

---

displaycal0 SDAR04 SHZ

Dismiss   Options...   print   save   displaycal_2269_0.ps

Random binary calibration processing results
Processed by dbcal:danny:ruper.brtt.com at 8/17/1999 20:27:52.751

SDAR04 SHZ

Norm. Cts per Ground Accel.

Phase (deg)

Error (%)

Frequency (Hz)

rbc results

net: station: channel:
AF   SDAR04   SHZ

model: manu:
KS54000   Geotech

serial: cal input:
0   sensor

cal seed: cal amplitude:
0x123456   10.00 volt

sample rate: calper:
40 sps   1.00 sec

cal duration:
4100.000 sec

cal time:
8/17/1999 18:53:00.000

calib:
0.00411799 nm/count

nominal calib:
0.004026 nm/count

calib difference:
2.3%

calib cmp: resp cmp:
ok   oor

analysis parameters

mlo:
4096

mhi:
256

force_total_stacks:
0

dec_factor:
4

apply_hipass_filter:
0

nhi_twins:
20000

apply_bias_cor:
0

Amplitude:

Amplitude Uncertainty:

Phase:

Phase Uncertainty:

Nominal Response:

BRTT Antelope   8/17/1999 20:28:07.000

SDAS – Lessons Learned

- CD1 is not a suitable format for support of comprehensive SOH monitoring systems

- Even if we had been required to produce CD1 format out of the remote sites, we would have used different formats for SOH information and transmitted that information OOB with CD1 to implement a comprehensive SOH monitoring system

- The end users was not interested in most of the SOH information. The little bit of SOH information of interest to the end user was inserted into the CD1 data streams in special data blocks.

NSF/Earthscope/USArray

USArray – Lessons Learned

- Comprehensive SOH monitoring is the key to producing high quality data for large networks at a minimum cost
    - Over 2 years - 1166 dataloggers, 10,292 physical data channels at multiple sample rates, about 40,000 channels of SOH waveform data, 8760 instance-days of software running, 16 Terasamples of end user data (not including SOH)
    - 0 downtime, 0 lost data due to acquisition software failures over 2 years
    - 99.5% data completeness
    - 1 FTE to manage data center O&M

(c) 2004 – 2015 Array Network Facility http://anf.ucsd.edu

km
0   500

km
0   500

2015 06

Network Legend

▲ AK [51]
▲ AT [8]
▲ AV [7]
▲ AZ (UC San Diego) [2]
▲ BK (UC Berkeley) [0]
▲ CI (CalTech) [39]
▲ CN [2]
▲ GSN [1]
◆ IU GSN [10]
▲ LCSN [1]
▲ NN (UN Reno) [0]
▲ POLARIS [33]

dlmon

File   Views   Windows

dlname	comt	comp	gp24	gp1	nr24	pmp	SLT	dltncy	runtm	tp	cme	bufr	nl24	np24	ni24	dr	br24	bw24	meme	ade	cals	cltncy	lcq	cldrf	m0-2	m3-5	temp	volt	amp	gpss	gps	pll	lat	lon	elev
AK_CAPN			0s	0s	0	I	32s	08s	11h20m24s	0.94	100%	0.0%	3	0	0	3.8k	44m	429k	0			01h01m00s	54%	0us	20	-1	17C	11.2V	68mA	offp	lf	H	60.768	-151.154	84m
AK_CHUM			0s	0s	0	I	32s	21s	23m00s	0.94	100%	0.0%	64	0	0	3.1k	43m	458k	0			00s	100%	0us	21	-4	23C	12.8V	76mA		3D	L	63.883	-152.315	250m
AK_COLD			0s	0s	0		32s		06h10m33s	0.00			57	0	0	9.8k	59k																		
AK_CUT			0s	0s	0	I	32s	03s	04h07m55s	1.00	100%	0.0%	2	0	0	3.5k	48m	733k	0			00s	100%	0us		-4	19C	12.6V	56mA		3D	L	62.406	-150.262	194m
AK_GCSA			0s	0s	0		32s		3d19h59m22s	0.00			0	0	0	0	0k	47k																	
AK_HDA			0s	0s	0	I	32s	03s	16h26m28s	0.94	100%	0.0%	2	0	0	3.4k	40m	471k	0			00s	100%	0us	-2	20	32C	11.2V	68mA		3D	L	64.409	-146.948	456m
AK_HOM			0s	0s	0	I	32s	05s	20h57m55s	1.02	100%	0.0%	1	0	0	4.8k	61m	787k	0			00s	100%	0us	21	-43	30C	12.3V	74mA		3D	L	59.657	-151.652	254m
AK_KNK			0s	0s	0	I	32s	13s	01h17m07s	0.96	100%	0.0%	8	0	0	5.2k	57m	807k	0			00s	100%	0us	34	7	17C	12.3V	90mA		3D	L	61.412	-148.458	630m
AK_MCK			0s	0s	0	I	32s	03s	20h57m58s	1.00	100%	0.0%	1	0	0	3.0k	34m	477k	0			00s	100%	1us	20	-2	23C	13.3V	84mA		3D	L	63.732	-148.937	669m
AK_MLV			0s	0s	0	I	32s	11s	13h27m11s	0.94	99%	0.0%	8	0	0	4.6k	51m	511k	0			00s	100%	-2us	20	72	23C	12.3V	88mA		3D	L	65.030	-150.744	842m
AK_NEA2			0s	0s	0		32s		20h57m59s	1.00	100%	0.0%	1	0	0	3.7k	38m	724k	0			00s	100%	0us	3		25C	13.2V	62mA		3D	L	64.593	-149.070	501m
AK_RC01			0s	0s	0	I	32s		20h57m58s	1.00	100%	0.0%	1	0	0	4.8k	57m	1.2m	0			00s	100%	0us	20	-2	18C	11.4V	78mA		3D	L	61.089	-149.739	413m
AK_RIDG			0s	0s	0	I	32s	15s	01h56m48s	0.99	100%	0.0%	5	0	0	3.0k	34m	409k	0			00s	100%	1us	33	-7	16C	12.2V	90mA		3D	L	63.740	-144.846	909m
AK_SAW			0s	0s	0	I	32s	03s	05h56m05s	1.00	100%	0.0%	2	0	0	4.0k	35m	6.4m	0			00s	100%	0us	33	22	31C	11.7V	92mA		3D	L	61.807	-148.332	812m
AK_SCRK			0s	0s	0	I	32s	13s	01h56m55s	1.08	100%	0.0%	5	0	0	4.0k	42m	408k	0			48m00s	55%	1us	20	9	14C	12.8V	61mA	offp	lf	H	63.976	-143.990	1396m
AK_TNA			0s	0s	0	I	32s	20s	20h57m56s	0.99	100%	0.0%	1	0	0	3.3k	36m	434k	0			00s	100%	0us	34	5	10C	11.6V	92mA		3D	L	65.560	-167.927	101m
AK_UNV			0s	0s	0		32s		3d19h59m23s	0.00			0	0	0	0	0k	47k																	
TA_109C			0s	0s	0	I	28s	03s	11h00m32s	1.00	100%	0.0%	2	1	0	2.8k	29m	731k	0			00s	100%	0us	24	20	31C	11.8V	72mA		3D	L	32.889	-117.105	170m
TA_121A			0s	0s	0	I	28s	03s	06h02m11s	1.00	100%	0.0%	3	0	0	3.4k	37m	730k	0			00s	100%	0us			30C	12.3V	61mA		3D	L	32.532	-107.785	1645m
TA_214A			0s	0s	0	I	28s	03s	34m35s	1.00	100%	0.0%	6	4	0	6.6k	66m	1.2m	0			00s	100%	0us	7	20	42C	11.8V	232mA		3D	L	31.956	-112.812	526m
TA_435B			0s	0s	0	I	34s	03s	10h39m42s	1.00	100%	0.0%	3	8	0	2.6k	28m	751k	0			00s	100%	0us	10	20	34C	13.3V	58mA		3D	L	30.783	-97.585	252m
TA_833A			0s	0s	0	I	28s	03s	02h56m55s	1.00	100%	0.0%	4	29	0	2.3k	25m	733k	0			00s	100%	0us	39		36C	12.8V	64mA		3D	L	28.324	-99.394	185m
TA_A21K			0s	0s	0	I	44s	03s	15h38m37s	0.99	100%	0.0%	1	2	0	2.4k	26m	716k	0			00s	100%	-2us	-11		13C	13.9V	54mA		3D	L	71.322	-156.618	60m
TA_A36M			0s	0s	0		44s		10h24m15s-22	0.99						0k																			
TA_ABTX			0s	0s	0	I	28s																												500m
TA_BGNE			0s	0s	0	I	28s																												571m
TA_C36M			0s	0s	0	I	44s																												24m
TA_D57A			0s	0s	0		16s																												
TA_D58A			0s	0s	0	I	16s																												381m
TA_D59A			0s	0s	0	I	16s																												185m
TA_D60A			0s	0s	0	I	16s																												33m
TA_D61A			0s	0s	0	I	16s																												131m
TA_D62A			0s	0s	0	I	16s																												180m
TA_D63A			0s	0s	0	I	16s																												233m
TA_E59A			0s	0s	0	I	16s																												32m
TA_E60A			0s	0s	0	I	16s																												158m
TA_E61A			0s	0s	0	I	16s																												517m
TA_E62A			0s	0s	0	I	16s																												345m
TA_E63A			0s	0s	0	I	16s																												228m
TA_E64A			0s	0s	0	I	16s																												185m
TA_EPYK			0s	0s	0	I	44s																												734m

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dlmon: TA_O19K logs

Freeze Unfreeze Channels... Massrecenter... Calibrate... Debug... Start Stop Dlcfg Dlstat Antcfg   Done

dlname	comt	comp	gp24	gp1	nr24	pmp	SLT	dltncy	runtm	tp	cme	bufr	nl24	np24	ni24	dr	cldrf	m0-2	temp	volt	amp
TA_O19K			11h	0s	0	I	24s	04h13m30s	25m57s	0.00			73	828	0	160	0us	-2	24C	13.5V	66mA

```
2015195 14:00:01.281: tadataAKCAN: TA_O19K: ERROR: registration server response C1_CERR: Cannot honor your request - Invalid
2015195 14:00:01.281: tadataAKCAN: TA_O19K: Switching authentication code to entry 0
2015195 14:00:23.294: tadataAKCAN: TA_O19K: ERROR: Too many acknowledgment timeouts - registration breakout
2015195 14:00:23.294: tadataAKCAN: TA_O19K: q330_register() error: Breakout to re-register after sleep...
2015195 14:00:29.862: tadataAKCAN: TA_O19K: POC initiated acquisition start.
2015195 14:00:30.295: tadataAKCAN: TA_O19K: Data connection startup.
2015195 14:00:37.076: tadataAKCAN: TA_O19K: Deregister successful
2015195 14:00:37.076: tadataAKCAN: TA_O19K: Registering for ip address 10.242.250.12:5332, serial no. 010000044C1ADC29.
2015195 14:01:58.259: tadataAKCAN: TA_O19K: ERROR: Bad acknowledgment 1539 need 1540 - retrying
2015195 14:01:59.476: tadataAKCAN: TA_O19K: ERROR: Bad acknowledgment 1539 need 1540 - retrying
2015195 14:02:00.476: tadataAKCAN: TA_O19K: ERROR: Bad acknowledgment 1539 need 1540 - retrying
2015195 14:02:01.476: tadataAKCAN: TA_O19K: ERROR: registration server response C1_CERR: Cannot honor your request - Invalid
2015195 14:02:01.476: tadataAKCAN: TA_O19K: ERROR: Too many Q330 packet errors - registration breakout
2015195 14:02:01.476: tadataAKCAN: TA_O19K: q330_register() error: Breakout to re-register after sleep...
2015195 14:02:03.477: tadataAKCAN: TA_O19K: Deregister successful
2015195 14:02:05.009: tadataAKCAN: TA_O19K: POC initiated acquisition start.
2015195 14:02:05.477: tadataAKCAN: TA_O19K: Data connection startup.
2015195 14:02:06.477: tadataAKCAN: TA_O19K: Registering for ip address 10.242.250.12:5332, serial no. 010000044C1ADC29.
2015195 14:02:35.801: tadataAKCAN: TA_O19K: ERROR: registration server response C1_CERR: Cannot honor your request - Invalid
2015195 14:02:35.801: tadataAKCAN: TA_O19K: Switching authentication code to entry 1
2015195 14:02:46.339: tadataAKCAN: TA_O19K: Registration successful.
2015195 14:02:46.339: tadataAKCAN: TA_O19K: Opening data connection.
2015195 14:02:47.339: tadataAKCAN: TA_O19K: Getting configuration...
```