

# New Products: Peregrine and Bighorn

Antelope Users Group Meeting

October, 2012

Reno, Nevada

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# Peregrine

- Antelope Base System + Web Infrastructure
  - New program *rtwebserver*
  - New program *rtcachel*
  - Host of supporting python libraries

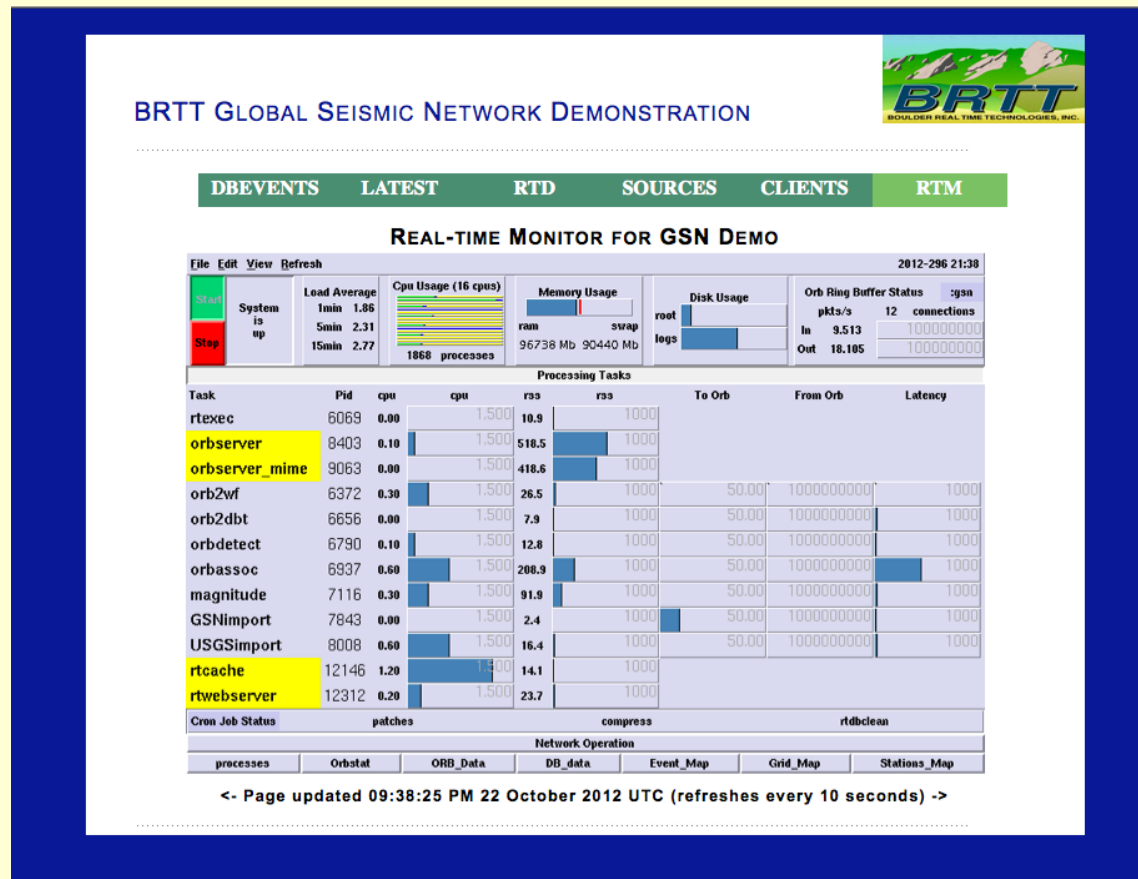
# Peregrine

- Web-based Monitoring
- Web-based Information distribution
- Web-based Interaction



# Peregrine Example: RTM on the Web

For  
Operators



# Peregrine Goals

- Robust Web Presence for users and operators
- Capitalize on informative power of real-time system
- Platform for revealing more about RT system to operators
- Clean integration with real-time system
- Familiar configuration patterns for operators
- Low user-maintenance cost and complexity
- Flexible and Extensible
- Self-contained
- Maintainable software base

# What We Did

- Wrote our own web server
- Made it run under a real-time system (rtexec)
- Made it look and feel like our existing programs
- Made it connect easily to Antelope
- Wrote a caching daemon to generate products for it

# Why not Existing Technologies?

- E.g. operator-managed Apache?
- And open-source PHP?
- And hand-linked Python?
- And user-compiled ImageMagick?
- And consultant-developed custom apps?



# Why not Existing Technologies?

- One Simple Reason:
  - It hasn't worked in commercial context
    - (works for a few places with advanced development staff and strong sysadmin resources)
  - Hasn't provided generally accessible platform
- Apache installations are highly variable
- Linking in buzzword technologies is complex
- Configurable elements are heterogeneous
- Underlying open-source is constantly changing
- High cost of ownership, high cost of development

# Why not distribute an existing stack?

- Lots of work; worth doing right
- We can create something better tuned for our users
- Ours is fully self-contained
- Ours is maintainable by us
- Actually we did start with an existing stack:
  - Python
  - Twisted Web Platform

# Summary --

- Hard to maintain what we don't control
- Hard to support what we haven't built
- Hard to come up with strategies to integrate our apps with organic free-for-all code base
  - Much less explain those strategies...
- ( “Hard” => “Very Expensive” )



# Peregrine: What's the difference?

- No ImageMagick! (whew)
- No Installation sysadmin of open-source code
- No Configuration sysadmin of 3<sup>rd</sup> party code
- Little or no custom development
- Much more plug-n-play
- Generalized Platform, Streamlined Tools
  - Custom development still possible!

# Peregrine: What's the difference?

- Single command-lines to launch programs
- Entirely contained within rtextec system
- Parameter-file configured
- Python modules included to provide capabilities

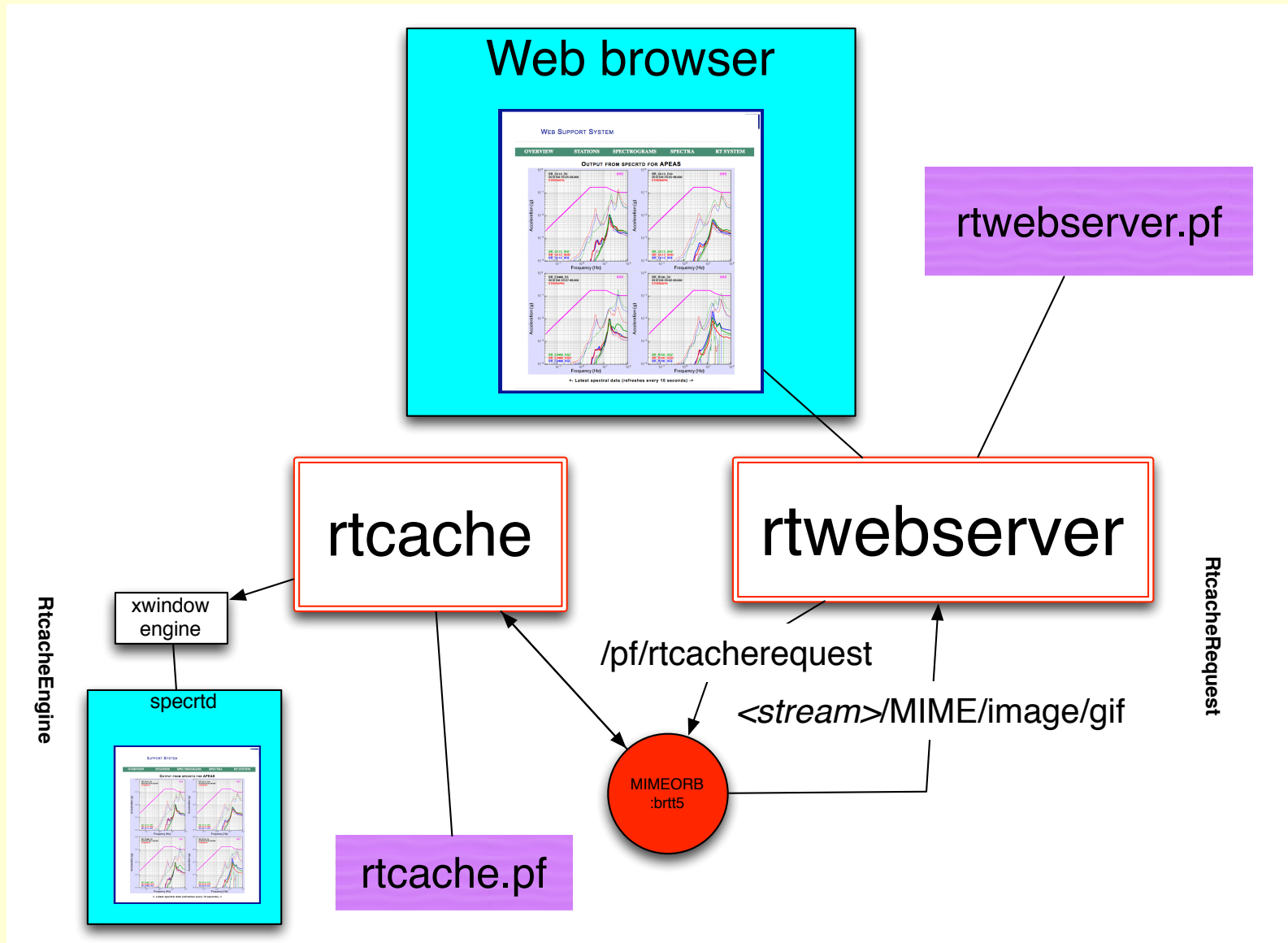
# rtwebserver

- Self-contained web-server
  - `% rtwebserver -v -P 8000`
- Runs under rtextec
- Parameter-file configures entire site
  - *– rtwebserver.pf*
- Logs connections to database
- Python and Twisted (*<http://twistedmatrix.com>*)

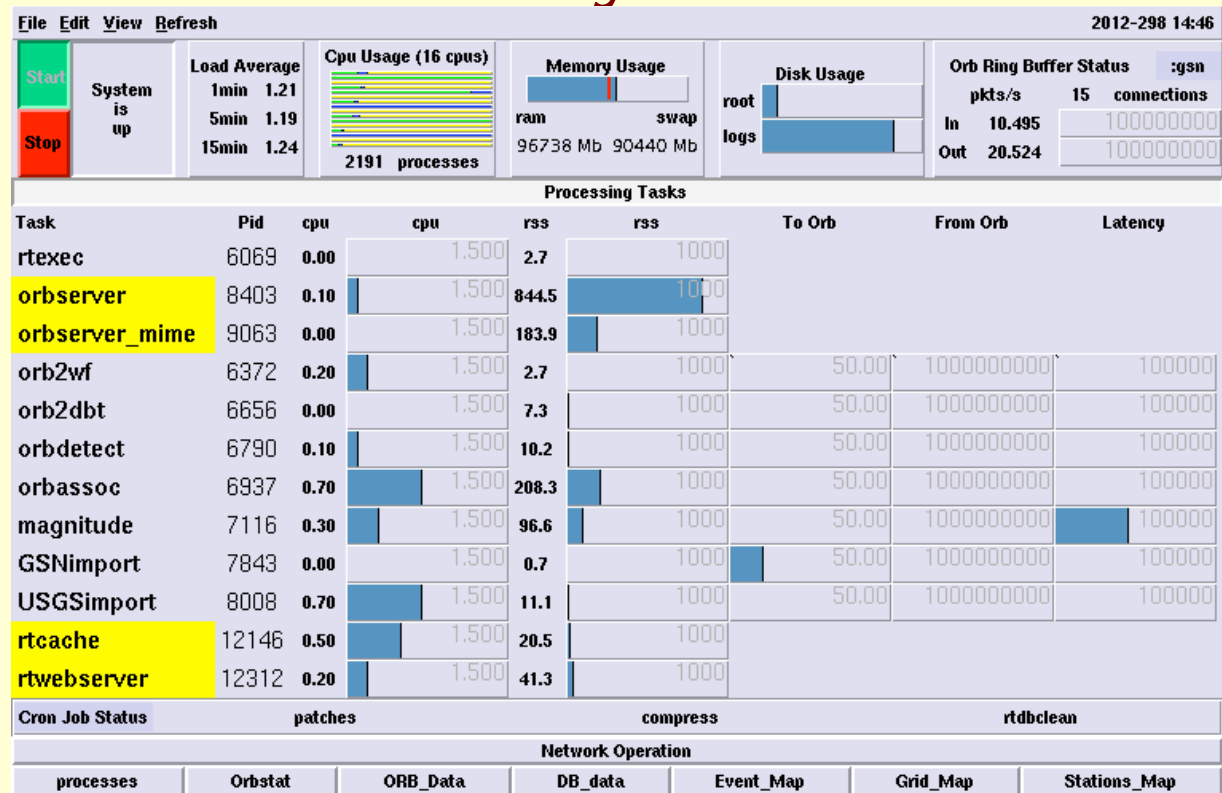
# rtcache

- Generalized Caching Daemon
- Pre-builds products for the web server
- E.g.:
  - Dynamic X-window screen-shots
  - Strong-motion alarm reports
  - Anything you can code into Python
- Exchanges request/response via orbserver
- Can show on the web any GUI you can run as X-client





# Rtwebserver / rtcache in real-time system



# rtwebserver.pf

```
site &Arr{
  pages &Arr{
    index          rpy:webitems/index.rpy  index
    latest         rpy:webitems/latest.rpy
    rtm            rpy:webitems/rtm.rpy
    orbmonrtd     rpy:webitems/orbmonrtd.rpy
    sources       rpy:webitems/sources.rpy
    clients       rpy:webitems/clients.rpy
    dynamic &Arr{
      ximage      rtcache:ximage
    }
    images &Arr{
      brtt_logo.gif  file:webitems/images/brtt_logo.gif
      dots.gif       file:webitems/images/dots.gif
    }
    css &Arr{
      style.css     pf:stylesheet  text/css
    }
  }
}
```

# rtwebserver page types

- file
- pf
- rpy
- rtcache
- (revproxy)

# rtwebserver.pf

```
site &Arr{
  siteconfig &Arr{
    time_format          %I:%M:%S %p %d %B %Y %Z
    centerimage_width    640
    refresh_sec          10
  }
  ximage &Arr{
    orbname               :gsn2
    diagnostics           1
    maxwait_sec           5.0
    rtcache_targetname
  }
  phrases &Arr{
    header &Literal{
      <div id="header">
      <span class="private"></span>
      <p id="banner">BRTT Global Seismic Network Demonstration</p>
      </div>
      
    }
  }
}
```

# rtwebserver.pf

```
site &Arr{
  stylesheet &Literal{

    html, body {
      background: #0c2093 ;
      margin: 0px ;
      padding: 0px ;
    }

    h1 {
      color: #000 ;
      font-family: arial, helvetica, geneva, sans-serif ;
      font-size: 1.3em ;
      margin: 2px ;
      margin-top: 20px ;
      font-variant: small-caps ;
      letter-spacing: 1px ;
      text-align: center ;
    }
  }
}
```

# rtcache.pf

```

caches &Arr{
  defaults &Arr{
    enginetype xwindow
    command_env &Arr{
      PATH      &env(PATH)
      ANTELOPE   &env(ANTELOPE)
      PFPATH     &env(PFPATH)
    }
    image_format GIF
    window_name
    virtual_display auto
    virtual_screen_geometry 1280x1024
    startup_sleep_sec 0.2
    xwindow_restart_sec 86400
  }
  rtm &Arr{
    command rtm
  }
  dbevents &Arr{
    command dbevents db/gsn
  }
  orbmonrtd &Arr{
    command orbmonrtd :gsn -wmax 1200 -hmax 1000
  }
}

```

# Peregrine Development Successes

- Easy display of generic X clients
- rtdemo\_gsn web display
- Bighorn Web interaction platform



# Easy display of generic X clients

**BRTT GLOBAL SEISMIC NETWORK DEMONSTRATION**

**DBEVENTS LATEST RTD SOURCES CLIENTS RTM**

### GNS Demo ORB CLIENTS

thr	Exec	pkt/s	kb/s	command
47	0.0	0.000	0.000	osbdetect -v --onlypicks -out :gsm@ :gsm@
43	0.1	0.039	0.013	/Dataget
14	34.2	10.660	5.184	osb2ob bbarry:gsm@ :gsm@ == @pf/genList

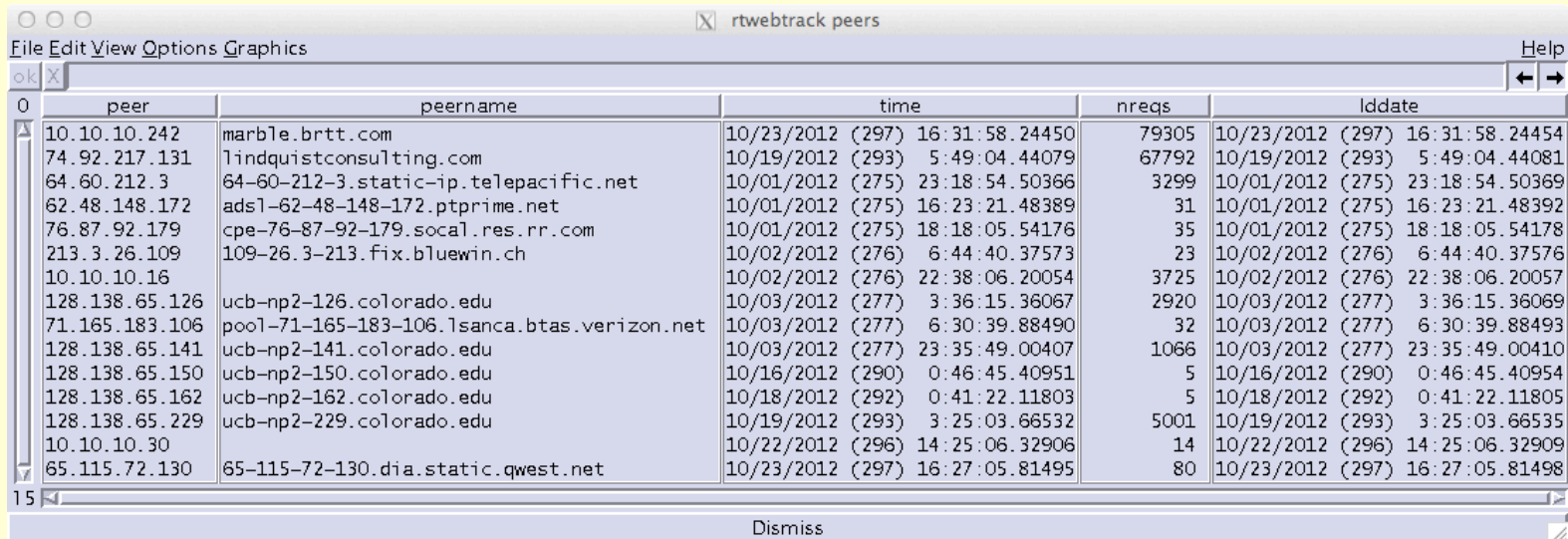
**BRTT GLOBAL SEISMIC NETWORK DEMONSTRATION**

**DBEVENTS LATEST RTD SOURCES CLIENTS RTM**

### GNS Demo ORB SOURCES

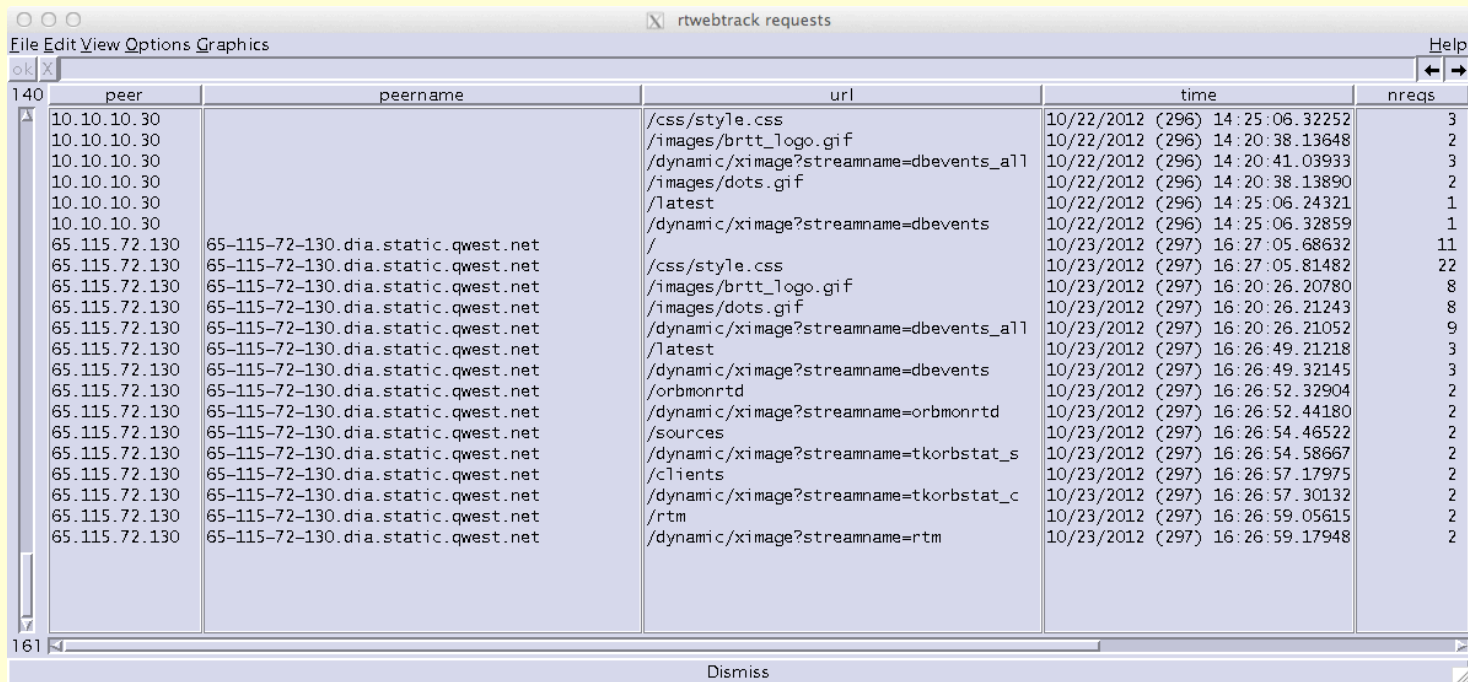
stname	kpkt	Mbytes	oldest	newest	latency
II_KAPI_LAR_00/GENC	1.178	0.445	274-17:29	277-23:57	18 days 21.6 hours
II_PMO_LAR_00/LISS	1.241	0.720	274-17:28	288-05:35	10 days 15.7 hours
II_AMO_LAR_00/GENC	19.284	10.409	274-17:32	286-05:57	10 days 15.6 hours
II_PMO_LAR_00/GENC	1.545	0.595	274-17:30	291-02:12	5 days 19.4 hours
II_AMO_LAR_00/GENC	27.132	6.853	274-17:32	291-02:18	5 days 19.3 hours
II_PMO_LAR_00/LISS	0.165	0.089	289-20:17	291-02:59	5 days 18.6 hours
II_PMO_LAR_00/LISS	2.196	1.179	289-05:08	291-03:09	5 days 18.4 hours
II_TSMO_LAR_00/LISS	6.136	3.295	274-17:29	292-00:36	4 days 21.0 hours
II_AMFO_LAR_00/LISS	3.257	1.749	274-17:31	296-11:45	9:53 hours
II_PMO_LAR_00/LISS	46.133	24.773	274-17:32	296-11:51	9:46 hours
/pf/evhmag	0.181	0.105	274-17:33	296-13:11	8:26 hours
CU_LARTR_LAR_00/SEED	95.746	50.362	274-17:31	296-13:40	7:57 hours
CU_GNOR_LAR_00/SEED	26.938	14.149	274-17:32	296-16:55	4:43 hours
II_TMOA_LAR_00/LISS	4.265	2.290	274-17:29	296-17:12	4:25 hours
II_TMOA_LAR_00/LISS	45.410	24.385	274-17:32	296-17:17	4:20 hours
II_TLV_LAR_00/GENC	3.417	1.276	272-21:42	296-18:24	3:13 hours
II_TLV_LAR_00/GENC	69.622	14.784	272-21:44	296-18:30	3:08 hours
II_KWKK_LAR_00/GENC	3.924	1.475	274-17:31	296-20:23	1:14 hours
II_KWKK_LAR_00/GENC	78.486	23.595	274-17:32	296-20:29	1:08 hours
IC_BPT_LAR_00/LISS	4.967	2.452	274-17:01	296-21:01	36:16 minutes
IC_HIA_LAR_00/LISS	4.539	2.437	274-17:00	296-21:01	36:13 minutes
IC_HMA_LAR_00/LISS	4.941	2.439	274-17:00	296-21:01	36:03 minutes
IC_MAJ_LAR_00/LISS	4.564	2.451	274-17:01	296-21:02	35:47 minutes
IC_QIE_LAR_00/LISS	4.639	2.491	274-17:02	296-21:03	34:41 minutes
IC_LSA_LAR_00/LISS	4.355	2.339	274-17:00	296-21:04	33:17 minutes
IC_HIA_LAR_00/LISS	52.187	28.024	274-17:04	296-21:08	29:11 minutes
IC_LAR_LAR_00/LISS	52.001	27.925	274-17:04	296-21:08	29:07 minutes
IC_HMA_LAR_00/LISS	49.956	26.826	274-17:04	296-21:08	29:03 minutes
IC_MAJ_LAR_00/LISS	50.121	26.935	274-17:04	296-21:08	29:01 minutes
IC_BPT_LAR_00/LISS	45.795	24.592	274-17:04	296-21:09	28:57 minutes
IC_QIE_LAR_00/LISS	89.087	47.840	274-17:04	296-21:09	28:52 minutes
II_HMR_LAR_00/LISS	1.317	0.707	274-17:29	296-21:13	24:04 minutes
II_HLS_LAR_00/LISS	4.754	2.553	274-10:10	296-21:23	14:46 minutes
II_HMO_LAR_00/LISS	1.418	0.741	274-17:27	296-21:28	12:15 minutes
II_SMG_LAR_00/LISS	3.025	1.624	274-16:28	296-21:27	10:11 minutes

# rtwebserver connection logging



peer	peername	time	nreqs	lddate
10.10.10.242	marble.brtt.com	10/23/2012 (297) 16:31:58.24450	79305	10/23/2012 (297) 16:31:58.24454
74.92.217.131	lindquistconsulting.com	10/19/2012 (293) 5:49:04.44079	67792	10/19/2012 (293) 5:49:04.44081
64.60.212.3	64-60-212-3.static-ip.telepacific.net	10/01/2012 (275) 23:18:54.50366	3299	10/01/2012 (275) 23:18:54.50369
62.48.148.172	ads1-62-48-148-172.ptprime.net	10/01/2012 (275) 16:23:21.48389	31	10/01/2012 (275) 16:23:21.48392
76.87.92.179	cpe-76-87-92-179.socal.res.rr.com	10/01/2012 (275) 18:18:05.54176	35	10/01/2012 (275) 18:18:05.54178
213.3.26.109	109-26.3-213.fix.bluewin.ch	10/02/2012 (276) 6:44:40.37573	23	10/02/2012 (276) 6:44:40.37576
10.10.10.16		10/02/2012 (276) 22:38:06.20054	3725	10/02/2012 (276) 22:38:06.20057
128.138.65.126	ucb-np2-126.colorado.edu	10/03/2012 (277) 3:36:15.36067	2920	10/03/2012 (277) 3:36:15.36069
71.165.183.106	pool-71-165-183-106.lsanca.btas.verizon.net	10/03/2012 (277) 6:30:39.88490	32	10/03/2012 (277) 6:30:39.88493
128.138.65.141	ucb-np2-141.colorado.edu	10/03/2012 (277) 23:35:49.00407	1066	10/03/2012 (277) 23:35:49.00410
128.138.65.150	ucb-np2-150.colorado.edu	10/16/2012 (290) 0:46:45.40951	5	10/16/2012 (290) 0:46:45.40954
128.138.65.162	ucb-np2-162.colorado.edu	10/18/2012 (292) 0:41:22.11803	5	10/18/2012 (292) 0:41:22.11805
128.138.65.229	ucb-np2-229.colorado.edu	10/19/2012 (293) 3:25:03.66532	5001	10/19/2012 (293) 3:25:03.66535
10.10.10.30		10/22/2012 (296) 14:25:06.32906	14	10/22/2012 (296) 14:25:06.32909
65.115.72.130	65-115-72-130.dia.static.qwest.net	10/23/2012 (297) 16:27:05.81495	80	10/23/2012 (297) 16:27:05.81498

# rtwebservice connection logging



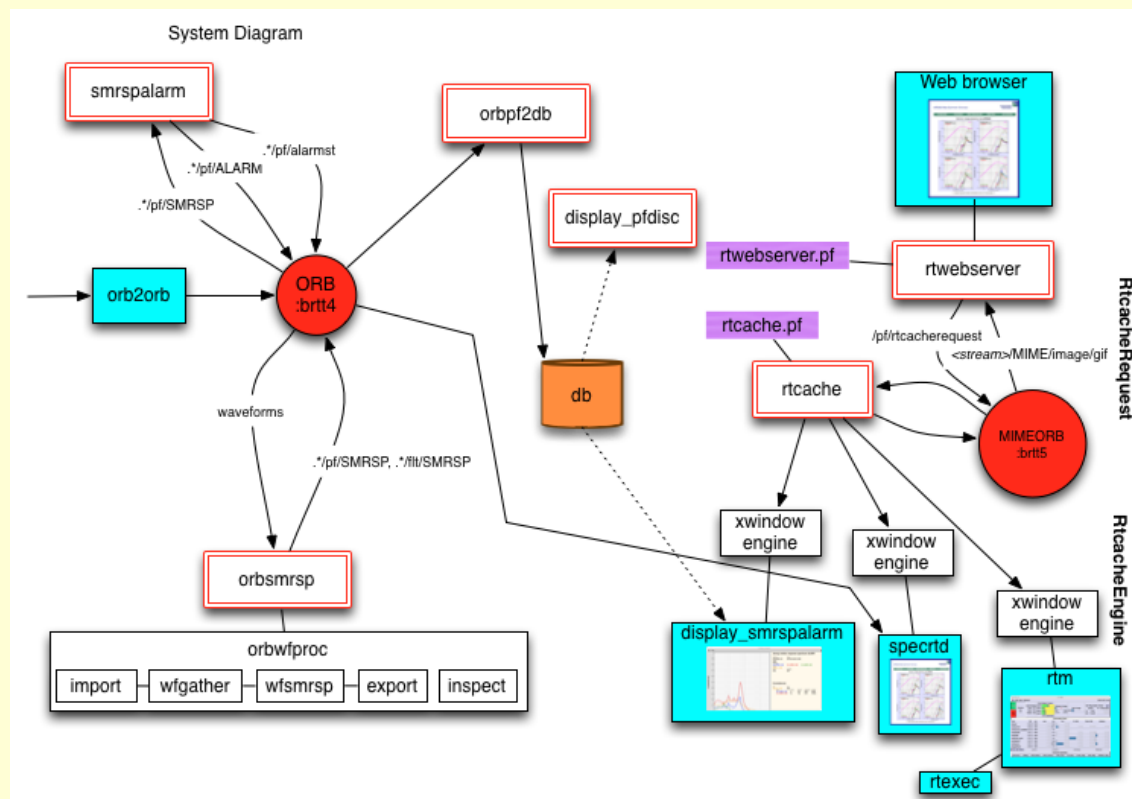
The screenshot shows a web browser window titled "rtwebservice requests" with a table of connection logs. The table has five columns: peer, peername, url, time, and nreqs. The data is organized into two groups: one for peer 10.10.10.30 and another for peer 65.115.72.130. The time column shows requests from 10/22/2012 and 10/23/2012. The nreqs column indicates the number of requests for each entry.

peer	peername	url	time	nreqs
10.10.10.30		/css/style.css	10/22/2012 (296) 14:25:06.32252	3
10.10.10.30		/images/brtt_logo.gif	10/22/2012 (296) 14:20:38.13648	2
10.10.10.30		/dynamic/ximage?streamname=dbevents_all	10/22/2012 (296) 14:20:41.03933	3
10.10.10.30		/images/dots.gif	10/22/2012 (296) 14:20:38.13890	2
10.10.10.30		/latest	10/22/2012 (296) 14:25:06.24321	1
10.10.10.30		/dynamic/ximage?streamname=dbevents	10/22/2012 (296) 14:25:06.32859	1
65.115.72.130	65-115-72-130.dia.static.qwest.net	/	10/23/2012 (297) 16:27:05.68632	11
65.115.72.130	65-115-72-130.dia.static.qwest.net	/css/style.css	10/23/2012 (297) 16:27:05.81482	22
65.115.72.130	65-115-72-130.dia.static.qwest.net	/images/brtt_logo.gif	10/23/2012 (297) 16:20:26.20780	8
65.115.72.130	65-115-72-130.dia.static.qwest.net	/images/dots.gif	10/23/2012 (297) 16:20:26.21243	8
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=dbevents_all	10/23/2012 (297) 16:20:26.21052	9
65.115.72.130	65-115-72-130.dia.static.qwest.net	/latest	10/23/2012 (297) 16:26:49.21218	3
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=dbevents	10/23/2012 (297) 16:26:49.32145	3
65.115.72.130	65-115-72-130.dia.static.qwest.net	/orbmonrtd	10/23/2012 (297) 16:26:52.32904	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=orbmonrtd	10/23/2012 (297) 16:26:52.44180	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/sources	10/23/2012 (297) 16:26:54.46522	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=tkorbstat_s	10/23/2012 (297) 16:26:54.58667	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/clients	10/23/2012 (297) 16:26:57.17975	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=tkorbstat_c	10/23/2012 (297) 16:26:57.30132	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/rtm	10/23/2012 (297) 16:26:59.05615	2
65.115.72.130	65-115-72-130.dia.static.qwest.net	/dynamic/ximage?streamname=rtm	10/23/2012 (297) 16:26:59.17948	2

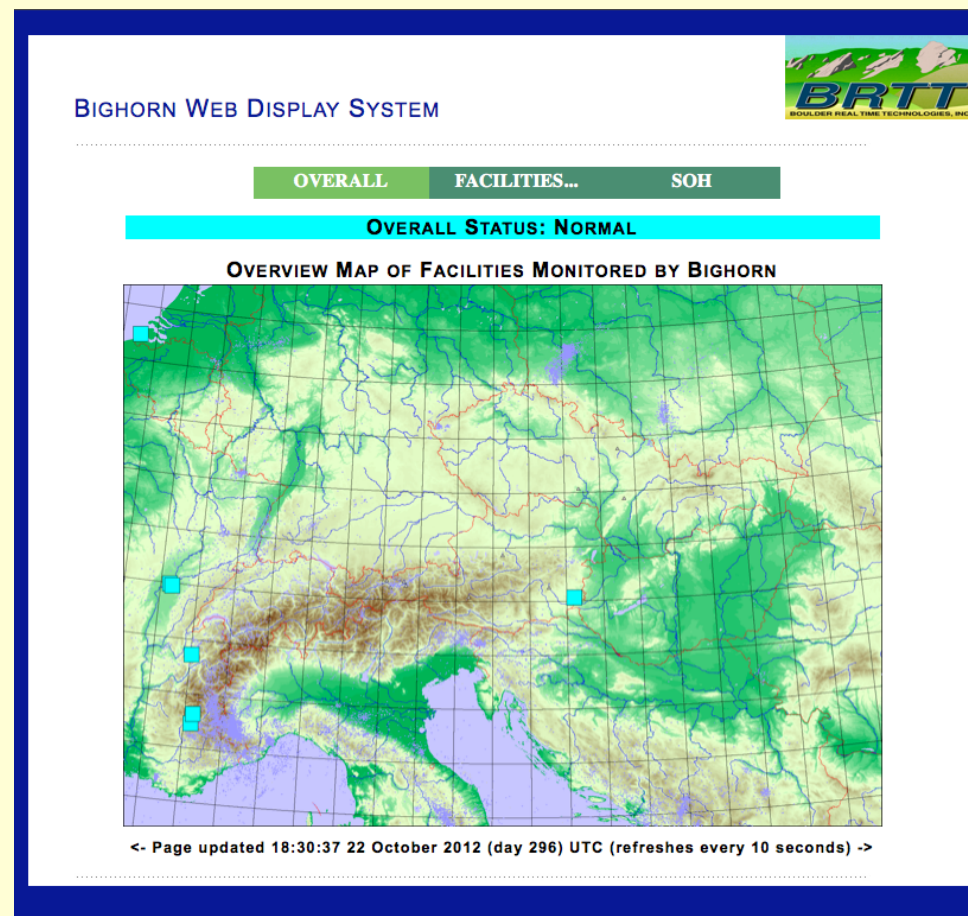
# Bighorn

- Peregrine plus engineering analysis tools
- Antelope + rtwebservice + real-time spectral monitoring and alarm capabilities
- Monitor, study, and react to the spectral content of your data


# Example Bighorn RT System



# Bighorn Example: Network Overview Center



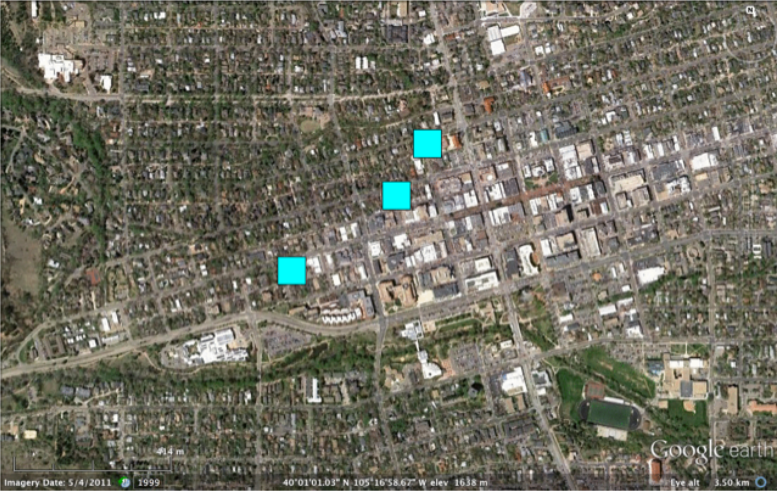
# Bighorn Example: Facility Map

BIGHORN WEB DISPLAY SYSTEM 

OVERALL FACILITY MAP SPECTRA FACILITY SOH

**SMDEMOO FACILITY STATUS: NORMAL**


MAP OF MONITORED FACILITY: SMDEMOO FACILITY



Imagery Date: 5/4/2011 1999 40°01'01.03" N 105°16'58.62" W elev. 1638 m Google earth eye alt 1.50 km

<- Page updated 18:31:01 22 October 2012 (day 296) UTC (refreshes every 10 seconds) ->

# Bighorn Example: Stations *dlmon* for Facility

BIGHORN WEB DISPLAY SYSTEM 

OVERALL FACILITY MAP SPECTRA FACILITY SOH

**SMDemo0 FACILITY STATUS: NORMAL**

**OUTPUT FROM DLMON FOR FACILITY: SMDemo0 FACILITY**

File	Views	Windows														
dname	gp24	gp1	nr24	SLT	dtncy	runtm	ctncy	lq	ckfr	temp	volt	amp	pll	lat	lon	elev
ZZ_SMD01	0s	0s	0	07s	01s	13d21h08m11s	00s	100%	0us	26C	15.6V	152mA	L	40.019	-105.281	1612m
ZZ_SMD02	0s	0s	0	07s	01s	13d21h08m11s	00s	100%	0us	26C	15.6V	152mA	L	40.019	-105.281	1612m
ZZ_SMD03	0s	0s	0	07s	01s	13d21h08m11s	00s	100%	0us	26C	15.6V	152mA	L	40.019	-105.281	1612m

<- Page updated 18:32:14 22 October 2012 (day 296) UTC (refreshes every 10 seconds) ->



# Bighorn Example:

## Stations *dlmon* for whole net

BIGHORN WEB DISPLAY SYSTEM

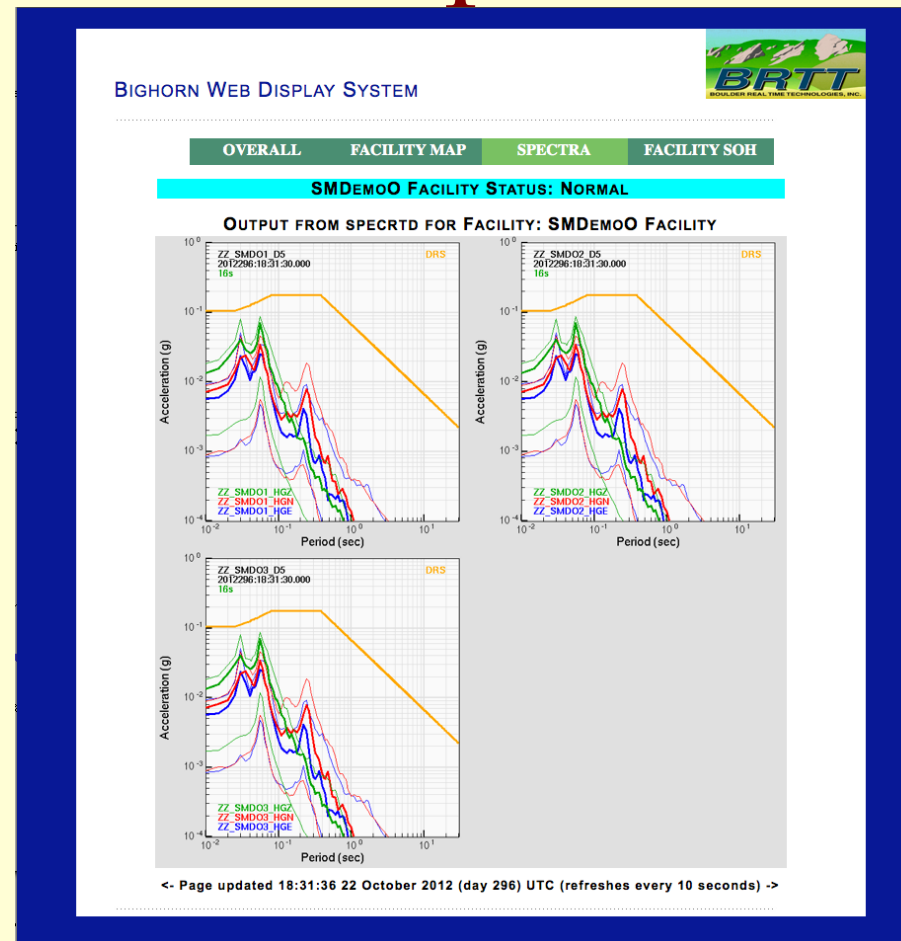
OVERALL FACILITIES... SOH

**OVERALL STATUS: DATA PROBLEMS AT SMDemoP, SMDemoQ, SMDemoR, SMDemoD, SMDemoE, SMDemoG, SMDemoA, SMDemoB, SMDemoC, SMDemoO, SMDemoH, SMDemoI, SMDemoJ**

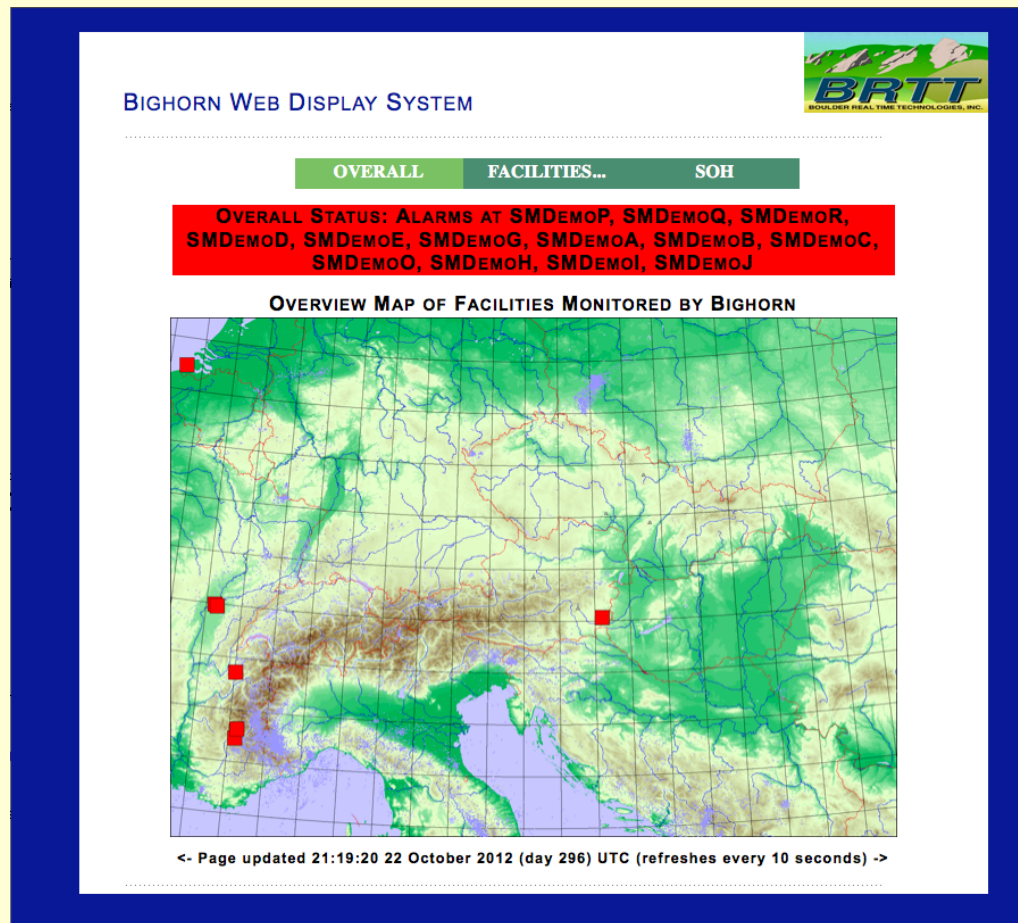
OUTPUT FROM DLMON FOR BIGHORN SYSTEM

dName	gp14	gp1	gp24	SLT	dtncy	rntm	ctncy	lcq	ctst	temp	volt	amp	pll	lat	lon	elev
SMDemo1	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo2	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo3	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo4	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo5	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo6	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo7	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo8	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo9	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo10	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo11	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo12	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo13	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo14	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo15	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo16	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo17	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo18	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo19	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo20	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo21	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo22	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo23	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo24	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo25	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo26	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo27	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo28	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo29	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo30	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo31	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo32	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo33	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo34	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo35	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo36	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo37	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo38	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo39	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	
SMDemo40	0s	0s	0	02s	01s	14000331m40s	00s	100%	0us	23C 18.6V	159mA	L	40.019	-105.281	1620ft	

# Bighorn Example: Real-time Spectral Display



# Bighorn Example: Spectral Exceedence Alarm



# Bighorn Example: Facility Exceedence Alarm

BIGHORN WEB DISPLAY SYSTEM 

**OVERALL** **FACILITY MAP** SPECTRA FACILITY SOH


**SMDemoO FACILITY STATUS: ALARMS AT ZZ\_SMD01, ZZ\_SMD02, ZZ\_SMD03**

**MAP OF MONITORED FACILITY: SMDemoO FACILITY**



**<- Page updated 21:19:45 22 October 2012 (day 296) UTC (refreshes every 10 seconds) ->**

# Bighorn Example: Station Alarms Page

BIGHORN WEB DISPLAY SYSTEM 

OVERALL FACILITY MAP SPECTRA FACILITY SOH

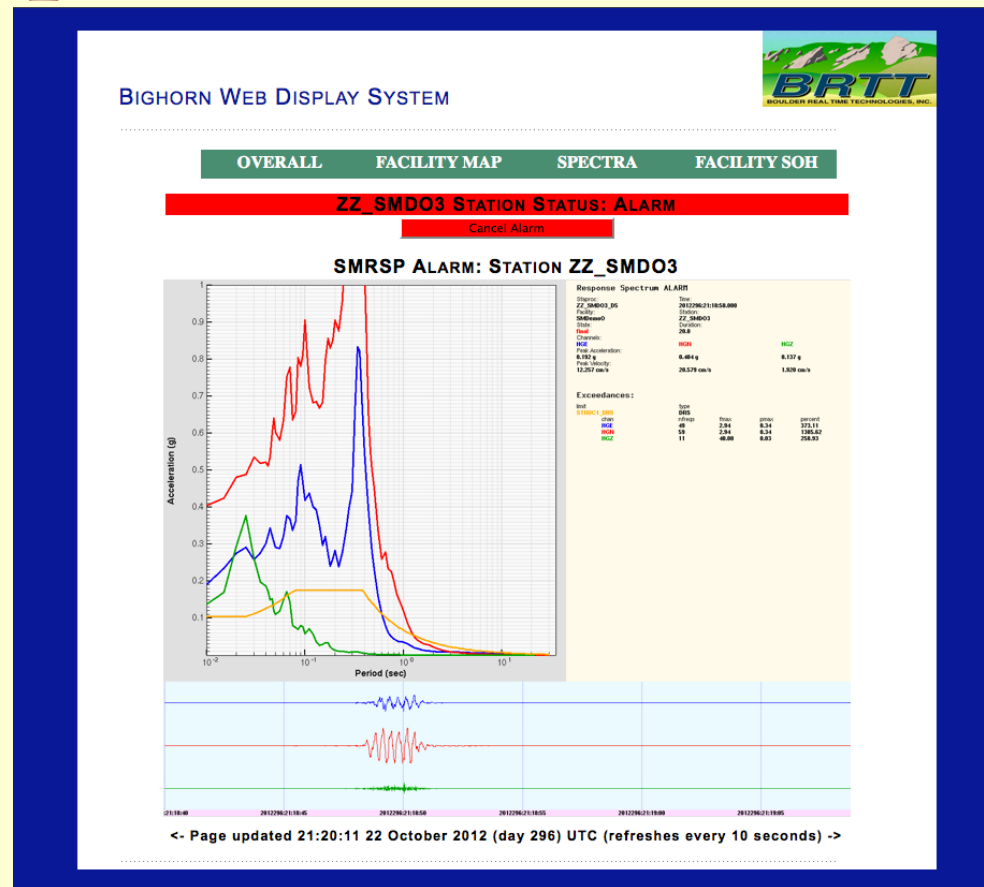
**ZZ\_SMDO3 STATION STATUS: ALARM**

*Alarms for station ZZ\_SMDO3*

Alarm Time	Alarm State
21:18:50 22 October 2012 (day 296) UTC	final
18:34:20 19 October 2012 (day 293) UTC	final-ack
18:32:20 19 October 2012 (day 293) UTC	final-ack
18:25:40 19 October 2012 (day 293) UTC	final-ack
18:10:50 19 October 2012 (day 293) UTC	final-ack
18:10:50 19 October 2012 (day 293) UTC	final-ack
22:37:10 18 October 2012 (day 292) UTC	final-ack
06:27:10 17 October 2012 (day 291) UTC	final-ack
16:18:30 15 October 2012 (day 289) UTC	final-ack
14:28:00 15 October 2012 (day 289) UTC	final-ack

<- Page updated 21:19:59 22 October 2012 (day 296) UTC (refreshes every 10 seconds) ->

# Bighorn Example: Alarm Report and Acknowledgment



# Bighorn Example: Alarm Details

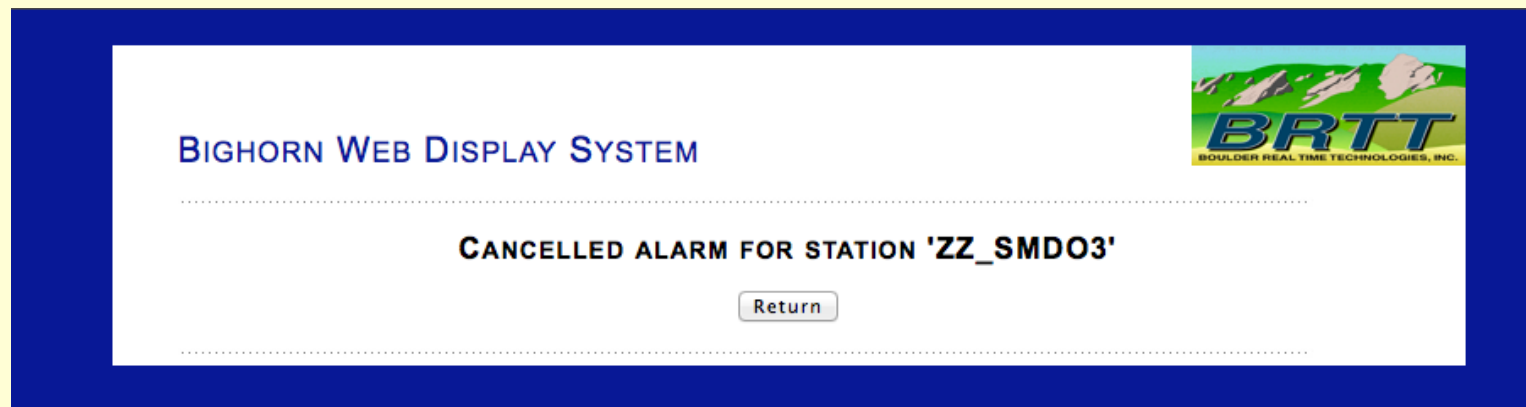
## Response Spectrum ALARM

Staproc:	ZZ_SMD03_D5	Time:	2012296:21:18:50.000
Facility:	SMDemo0	Station:	ZZ_SMD03
State:	final	Duration:	20.0
Channels:	HGE	HGN	HGZ
Peak Acceleration:	0.192 g	0.404 g	0.137 g
Peak Velocity:	12.257 cm/s	20.579 cm/s	1.920 cm/s

## Exceedances:

limit	type			
STRUC1_DRS	DRS			
chan	nfreqs	fmax	pmax	percent
HGE	49	2.94	0.34	373.11
HGN	59	2.94	0.34	1385.62
HGZ	11	40.00	0.03	258.93

# Bighorn Example: Confirmed Alarm Cancellation



The screenshot displays the Bighorn Web Display System interface. At the top left, the text "BIGHORN WEB DISPLAY SYSTEM" is shown in blue. To the right is the BRTT logo, which includes the text "BRTT" in large blue letters and "BOULDER REAL TIME TECHNOLOGIES, INC." in smaller black letters below it, set against a background of green hills and a blue sky. The main content area is white and contains the text "CANCELLED ALARM FOR STATION 'ZZ\_SMDO3'" in black, centered. Below this text is a small, light gray button with the word "Return" in black. The entire interface is framed by a thick blue border.



# Bighorn Example: Dynamic updates from database


BIGHORN WEB DISPLAY SYSTEM

**BRTT**  
BOULDER REAL TIME TECHNOLOGIES, INC.

OVERALL FACILITY MAP SPECTRA FACILITY SOH

**SMDemo0 FACILITY STATUS: ALARMS AT ZZ\_SMD01, ZZ\_SMD02**

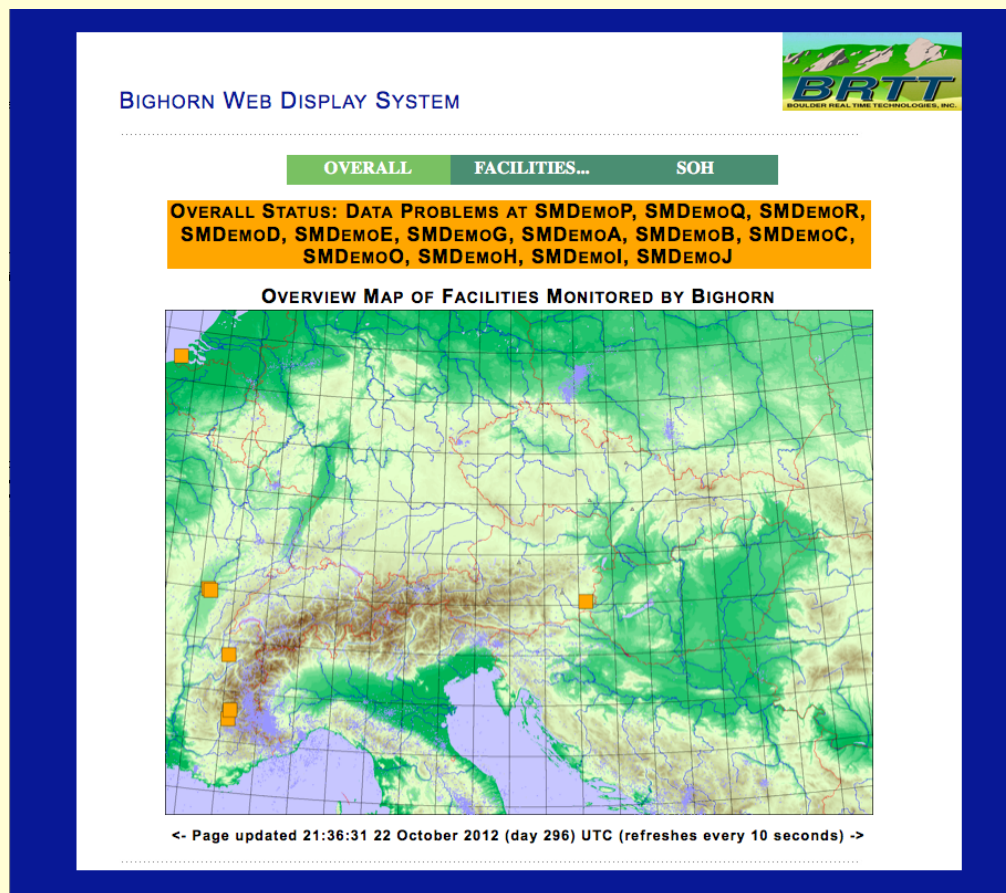
MAP OF MONITORED FACILITY: SMDemo0 FACILITY



Imagery Date: 5/4/2011 1999 40°01'01.03" N 105°16'58.67" W elev 1638 m Eye alt 4.50 km

<- Page updated 21:20:49 22 October 2012 (day 296) UTC (refreshes every 10 seconds) ->

# Bighorn Example: Data Problem Detection

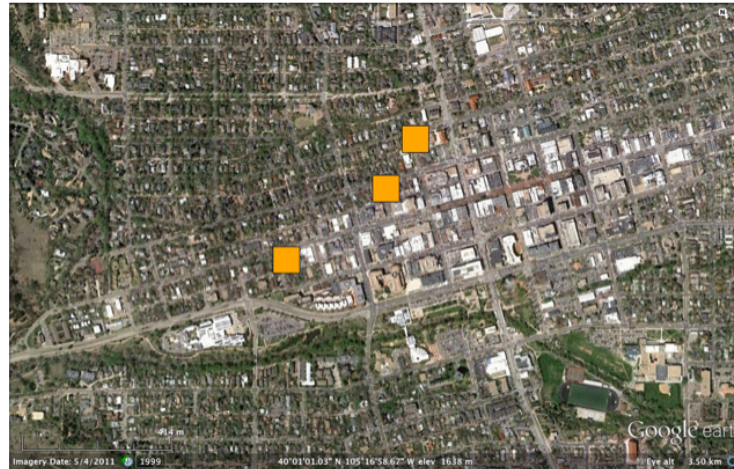




OVERALL FACILITY MAP SPECTRA FACILITY SOH

**SMDemo0 FACILITY STATUS: DATA PROBLEMS AT ZZ\_SMD01,  
ZZ\_SMD02, ZZ\_SMD03**

MAP OF MONITORED FACILITY: SMDemo0 FACILITY



<- Page updated 21:36:15 22 October 2012 (day 296) UTC (refreshes every 10 seconds) ->


# Bighorn Example: Data Problem Analysis

The screenshot shows a web browser window displaying the Bighorn Web Display System. The page title is "BIGHORN WEB DISPLAY SYSTEM" and the BRTT logo is visible in the top right. The main content area has a navigation bar with tabs for "OVERALL", "FACILITY MAP", "SPECTRA", and "FACILITY SOH". Below the navigation bar, a cyan banner displays "SMDemo FACILITY STATUS: NORMAL". Underneath, the text "OUTPUT FROM DLMON FOR FACILITY: SMDemo FACILITY" is shown. A data table with columns for "File", "Views", "Windows", and various parameters is displayed. The table contains three rows of data, each with a green highlight. At the bottom of the table, a refresh message indicates the page was updated at 18:32:04 on October 22, 2012, and refreshes every 10 seconds.

File	Views	Windows	ctacy	rustn	ctacy	kq	ctst	temp	vol	amp	ph	bt	ks	ewr		
ctacy	0s	0s	0	28s	01s	13521907m0s	00s	100%	0us	28C	15.6V	157mA	L	40.018	-105.281	1612m
ctacy	0s	0s	0	28s	01s	13521907m0s	00s	100%	0us	28C	15.6V	157mA	L	40.018	-105.281	1612m
ctacy	0s	0s	0	28s	01s	13521907m0s	00s	100%	0us	28C	15.6V	157mA	L	40.018	-105.281	1612m

<- Page updated 18:32:04 22 October 2012 (day 296) UTC (refreshes every 10 seconds) ->

# Bighorn Example: Historic Report Exploration

BIGHORN WEB DISPLAY SYSTEM 

OVERALL FACILITY MAP SPECTRA FACILITY SOH

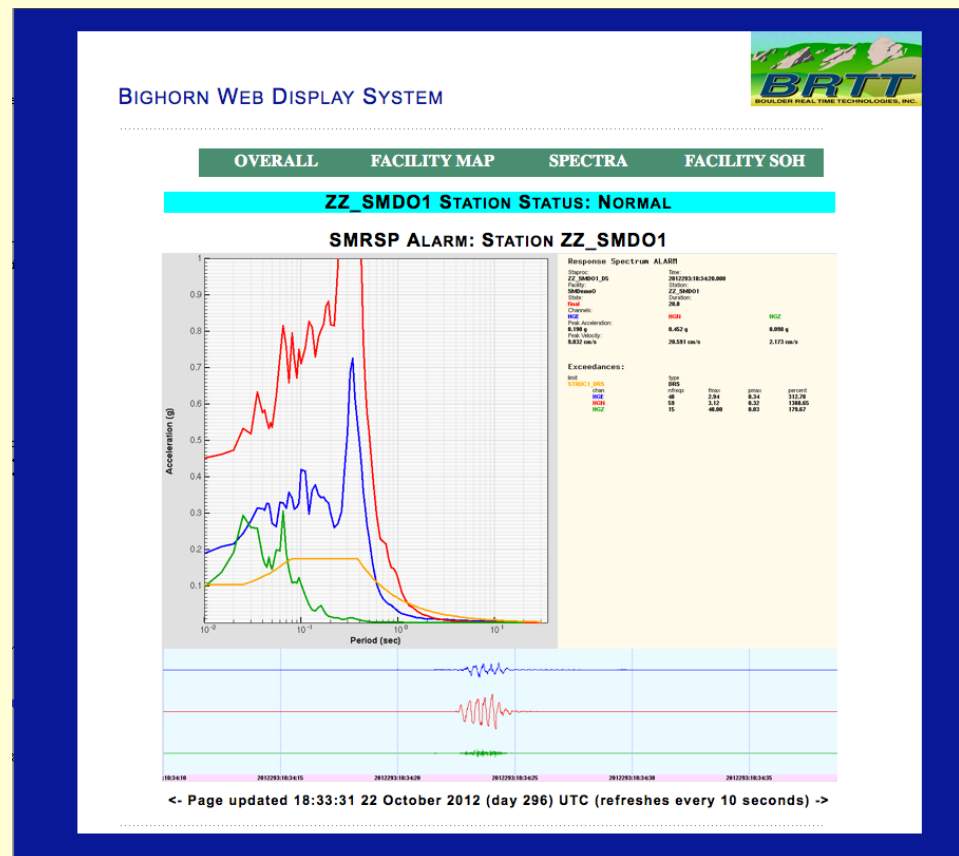
**ZZ\_SMDO1 STATION STATUS: NORMAL**

*Alarms for station ZZ\_SMDO1*

Alarm Time	Alarm State
<a href="#">18:34:20 19 October 2012 (day 293) UTC</a>	<a href="#">final-ack</a>
<a href="#">18:32:20 19 October 2012 (day 293) UTC</a>	<a href="#">final-ack</a>
<a href="#">18:25:40 19 October 2012 (day 293) UTC</a>	<a href="#">final-ack</a>
<a href="#">18:10:50 19 October 2012 (day 293) UTC</a>	<a href="#">final-ack</a>
<a href="#">18:10:50 19 October 2012 (day 293) UTC</a>	<a href="#">final-ack</a>
<a href="#">22:37:10 18 October 2012 (day 292) UTC</a>	<a href="#">final-ack</a>
<a href="#">06:27:10 17 October 2012 (day 291) UTC</a>	<a href="#">final-ack</a>
<a href="#">16:18:30 15 October 2012 (day 289) UTC</a>	<a href="#">final-ack</a>
<a href="#">14:28:00 15 October 2012 (day 289) UTC</a>	<a href="#">final-ack</a>
<a href="#">14:24:20 15 October 2012 (day 289) UTC</a>	<a href="#">final-ack</a>

<- Page updated 18:32:32 22 October 2012 (day 296) UTC (refreshes every 10 seconds) ->

# Bighorn Example: Historic Report Display



# Concluding ---

- Exciting new products!
- Future:
  - Password authentication
  - Investigate Google Maps incorporation
  - Investigate X-client interactivity
  - More sophisticated plug-and-play web modules
- Questions ?