Dbbuild, NRL, StationXML

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BRTT

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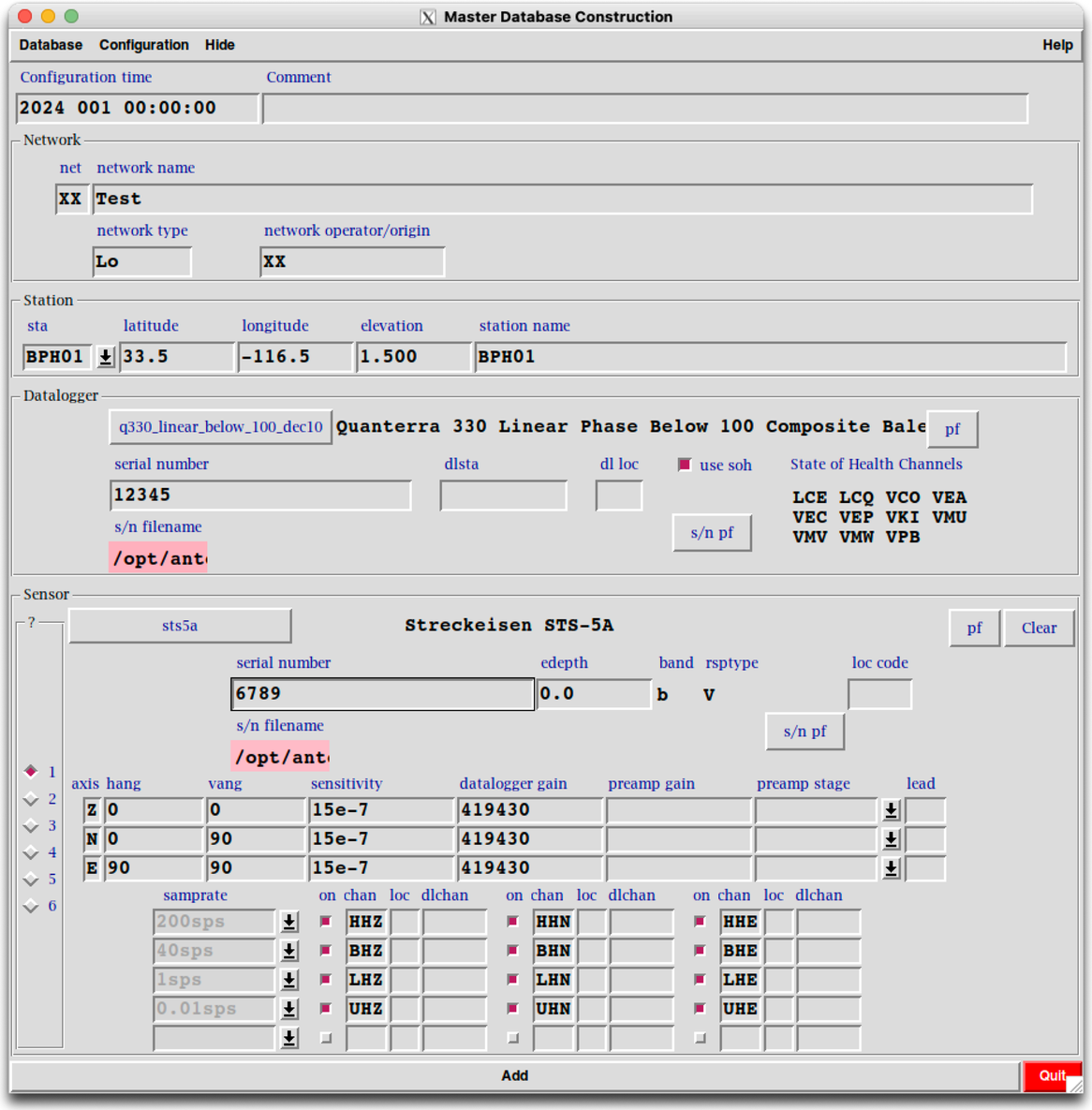
Dbbuild

- Program to build metadata for CSS 3.0 databases
- Batch and Interactive mode
- Tested on many different networks
- Builds dbmaster from sensor and data logger parameter files using a library of known responses
- Data logger parameter to handle complexities of data loggers
- Integrates three component sensors into dbmaster
- Integrates broadband and strong motion sensors into dbmaster
- Library of sensors and dataloggers currently does not encompass all known instrumentation

Dbbuild


Master Database Construction
Database
Configuration
Hide
Help
Configuration time
Comment
2024 001 00:00:00
Network
net
network name
XX
Test
network type
network operator/origin
Lo
XX
Station
sta
latitude
longitude
elevation
station name
BPH01
33.5
-116.5
1.500
BPH01
Datalogger
q330_linear_below_100_dec10
Quanterra 330 Linear Phase Below 100 Composite Bale
pf
serial number
dlsta
dl loc
use soh
State of Health Channels
12345
LCE LCQ VCO VEA
VEC VEP VKI VMU
VMV VMW VPB
s/n filename
/opt/ant
s/n pf
Sensor
?
sts5a
Streckeisen STS-5A
pf
Clear
serial number
edepth
band
rsptype
loc code
6789
0.0
b
V
s/n filename
/opt/ant
s/n pf
1
2
3
4
5
6
axis
hang
vang
sensitivity
datalogger gain
preamp gain
preamp stage
lead
Z
0
0
15e-7
419430
N
0
90
15e-7
419430
E
90
90
15e-7
419430
samprate
on
chan
loc
dlchan
200sps
HHZ
HHN
HHE
40sps
BHZ
BHN
BHE
1sps
LHZ
LHN
LHE
0.01sps
UHZ
UHN
UHE
Add
Quit

Dataless Seed

- Dataless SEED volumes contains the metadata including instrument responses, instrument coordinates, compression type, etc..
- Commonly used to build dbmaster for Antelope systems
- seed2db

Nominal Response Library

- IRIS DMC collects an "authoritative" set of manufacturers' recommended nominal instrument responses
- The goal behind the Library is to make it easier for the seismological community to both share and create metadata for common instrumentation
  - 29 Datalogger Manufacturers
  - 38 Sensor Manufacturers
- Improve response accuracy for users of the data.
- All links to responses are queries to the NRL web service.
- https://ds.iris.edu/ds/nrl/

Complexities of Dataloggers

Guralp - 10 models

- Affinity — Number of configurations: 168
- **CMG-6TD** — **Number of configurations: 1418**
- CMG-CD24 — Number of configurations: 1421
- CMG-CD24E1 — Number of configurations: 68
- **CMG-DM24-Mk1** — **Number of configurations: 148**
- **CMG-DM24-Mk2-DF** — **Number of configurations: 144**
- **CMG-DM24-Mk2-SE** — **Number of configurations: 148**
- **CMG-DM24-Mk3-Fixed** — **Number of configurations: 570**
- **CMG-DM24-Mk3-Variable** — **Number of configurations: 3989**

Blue Text In dbbuild library

Complexities of Dataloggers

Kinemetics - 9 models

- **Basalt** **Number of configurations: 270**
- Dolomite Number of configurations: 240
- **Etna** **Number of configurations: 3**
- **Etna2** **Number of configurations: 16**
- Granite Number of configurations: 270
- **K2** **Number of configurations: 60**
- Makalu Number of configurations: 60
- **Mt Whitney** **Number of configurations: 60**
- **Obsidian** **Number of configurations: 300**

Complexities of Dataloggers

Nanometrics - 13 models

- **Centaur** **Number of configurations: 360**
- CentaurHighGain Number of configurations: 359
- EuropaT Number of configurations: 110
- **HRD-24** **Number of configurations: 24**
- MeridianCompact Number of configurations: 240
- MeridianPosthole Number of configurations: 360
- Orion Number of configurations: 24
- Pegasus Number of configurations: 120
- **Taurus** **Number of configurations: 200**
- TitanEA Number of configurations: 60
- TitanSMA Number of configurations: 60
- **Trident** **Number of configurations: 110**
- Trident305 Number of configurations: 200

Complexities of Dataloggers

Quanterra - 10 models

- **Q330HR** **Number of configurations: 176**
- **Q330HRS** **Number of configurations: 86**
- **Q330SR** **Number of configurations: 88**
- **Q330Splus** **Number of configurations: 168**
- **Q380** **Number of configurations: 20**
- **Q4120** **Number of configurations: 8**
- **Q680** **Number of configurations: 20**
- **Q730** **Number of configurations: 8**
- Q8 Number of configurations: 544
- **QEP** **Number of configurations: 8**

Complexities of Dataloggers

Reftek - 11 models

- 125 Number of configurations: 16
- 125A Number of configurations: 112
- **130-01 Number of configurations: 26**
- 130-SMA Number of configurations: 26
- **130S-01 Number of configurations: 26**
- 130S-SMHR Number of configurations: 26
- 72A06 Number of configurations: 98
- **72A07 Number of configurations: 64**
- **72A08-16bit Number of configurations: 224**
- **72A08-24bit Number of configurations: 3180**
- Wrangler Number of configurations: 756

Complexities of Dataloggers

Guralp CMG-DM24-Mk3-Variable Number of configurations: 3989

Taps

['400-200-100-50-25-5', '1000-200-40-20-4-2', '1000-250-125-25-5-1', '400-100-50-10-2-1', '500-100-50-10-5-1', '1000-200-50-25-5-1', '400-200-40-8-4-2', '500-100-20-4-2-1', '400-80-40-20-10-5', '1000-500-250-50-25-5', '1000-200-50-10-5-1', '400-200-40-20-5-1', '400-80-40-20-4-1', '1000-500-100-20-10-2', '400-100-20-4-2-1', '1000-200-100-50-25-5', '400-80-40-10-5-1', '1000-500-100-20-4-1', '1000-200-100-20-10-2', '400-200-100-20-4-1', '1000-500-250-50-10-5', '1000-200-100-50-10-2', '1000-200-40-8-4-2', '400-100-20-10-2-1', '1000-200-40-20-10-2', '1000-250-50-10-5-1', '400-80-40-20-4-2', '400-100-50-10-5-1', '400-80-40-8-2-1', '400-80-20-10-2-1', '1000-200-100-20-4-1', '400-80-16-8-2-1', '500-100-20-10-5-1', '400-80-16-8-4-1', '1000-500-125-25-5-1', '400-200-40-10-5-1', '1000-500-250-50-10-2', '1000-200-100-20-5-1', '500-100-50-10-2-1', '1000-250-50-25-5-1', '1000-500-250-125-25-5', '400-200-40-20-4-1', '400-200-100-20-10-5', '500-100-50-25-5-1', '400-200-100-25-5-1', '1000-200-40-8-4-1', '400-200-100-20-10-2', '1000-200-40-20-10-5', '1000-500-100-50-10-5', '400-80-40-10-2-1', '1000-200-100-20-4-2', '1000-500-100-20-5-1', '500-250-50-10-5-1', '400-80-40-20-5-1', '400-200-40-10-2-1', '400-200-50-25-5-1', '1000-200-100-50-10-5', '1000-200-40-10-5-1', '500-250-125-25-5-1', '400-200-40-8-4-1', '1000-200-100-20-10-5', '1000-500-100-20-4-2', '1000-500-100-20-10-5', '400-80-16-8-4-2', '1000-200-40-20-4-1', '400-200-40-20-10-5', '400-200-40-20-4-2', '400-100-20-10-5-1', '400-200-100-50-10-2', '400-200-100-50-10-5', '400-80-40-8-4-2', '1000-200-50-10-2-1', '500-100-20-10-2-1', '400-200-50-10-2-1', '500-250-50-25-5-1', '400-200-50-10-5-1', '500-250-50-10-2-1', '400-100-50-25-5-1', '1000-200-40-20-5-1', '400-80-16-4-2-1', '1000-250-50-10-2-1', '400-200-40-20-10-2', '1000-200-40-8-2-1', '1000-200-40-10-2-1', '400-200-40-8-2-1', '400-80-20-10-5-1', '1000-200-100-25-5-1', '400-80-40-8-4-1', '400-80-40-20-10-2', '1000-500-100-50-10-2', '1000-500-100-50-25-5', '1000-500-100-25-5-1', '400-200-100-20-5-1', '400-80-20-4-2-1', '400-200-100-20-4-2']

Tap_Table_Lookup

['65', '47', '23', '27', '2', '56', '80', '64', '11', '55', '83', '76', '29', '74', '58', '78', '37', '20', '31', '19', '34', '71', '45', '35', '48', '33', '24', '53', '94', '12', '92', '77', '10', '93', '68', '72', '9', '44', '91', '50', '52', '16', '28', '25', '67', '6', '40', '17', '79', '32', '15', '57', '87', '21', '1', '75', '54', '18', '3', '86', '39', '81', '41', '46', '61', '60', '90', '42', '95', '30', '14', '5', '69', '59', '38', '36', '49', '22', '70', '8', '82', '13', '85', '7', '89', '73', '88', '84', '63', '26', '51', '62', '43', '66', '4']

Final_Sample_Rate

['8 Hz', '5 Hz', '10 Hz', '50 Hz', '4 Hz', '1000 Hz', '400 Hz', '80 Hz', '16 Hz', '200 Hz', '40 Hz', '20 Hz', '25 Hz', '1 Hz', '2 Hz', '250 Hz', '500 Hz', '100 Hz', '125 Hz']

Preamp_Gain

['32', '2', '1', '64', '8', '16', '4']

- Number of configurations: 3989

Complexities of Dataloggers

Obsidian - Number of configurations: 300

Full-Scale_Voltage

['40Vpp', '5Vpp', '10Vpp']

Final_Sample_Rate

['500 Hz', '2000 Hz', '1 Hz', '10 Hz', '250 Hz', '1000 Hz', '50 Hz', '5000 Hz', '100 Hz', '200 Hz']

Final_Filter_Phase

['Non-causal', 'Causal']

Preamp_Gain

['4', '8', '2', '16', '1']

Number of configurations: 300

Number of resourceIds: 1920

Number of unique resourceIds: 31

Complexities of Dataloggers

Centaur

DC_Filter

['Off', '0.001']

Full-Scale_Voltage

['2Vpp', '40Vpp', '20Vpp', '10Vpp', '1Vpp', '4Vpp']

Final_Sample_Rate

['80 Hz', '100 Hz', '250 Hz', '1000 Hz', '200 Hz', '500 Hz', '5000 Hz', '125 Hz', '50 Hz', '2000 Hz', '2 Hz', '20 Hz', '1 Hz', '40 Hz', '5 Hz', '10 Hz']

Final_Filter_Phase

['Linear', 'Minimum']

Number of configurations: 360

Number of resourceIds: 2160

Number of unique resourceIds: 66

Complexities of Dataloggers

Q8 Number of configurations: 544

Linear_Filter_Rates

['below100', 'below20', 'all', 'below40']

Final_Sample_Rate

['100 Hz', '50 Hz', '20 Hz', '250 Hz', '1 Hz', '10 Hz', '40 Hz', '1000 Hz', '200 Hz', '500 Hz']

Preamp_Gain

['16', '2', '8', '1', '128', '32', '4', '64']

Highest_Configured_Sample_Rate

['belowOrEqual200 Hz', 'above200 Hz']

Number of configurations: 544

Number of resourceIds: 1632

Number of unique resourceIds: 68

Complexities of Dataloggers

Wrangler **Number of configurations: 756**

Word_Size

['26 bits', '29 bits', '24 bits', '25 bits', '27 bits', '30 bits', '28 bits']

Final_Sample_Rate

['250 Hz', '5 Hz', '0.1 Hz', '1000 Hz', '500 Hz', '4000 Hz', '20 Hz', '10 Hz', '100 Hz', '2000 Hz', '50 Hz', '200 Hz', '125 Hz', '1 Hz', '40 Hz']

Final_Filter_Phase

['Lin', 'Min']

Preamp_Gain

['64', '1', '4', '16']

Number of configurations: 756

Number of resourceIds: 4340

Number of unique resourceIds: 45

StationXML

- The purpose of the FDSN StationXML schema is to define an XML representation of the most important and commonly used metadata structures to describe digital seismological data.
- The predecessor format of StationXML is SEED 2.4, from which many structures and field were inherited.
- The current preferred standard for metadata exchange
- ***stationXMLtodb is a priority***