# NASK

Velociraptor2
A/D Acquisition System

Features

- Continuous collection of up to 500MHz bandwidth

- Highly customizable storage options

- Various packaging styles from fixed to portable

- Four user selectable bandwidths up to 500MHz

- Optional Integrated Receivers up to 40GHz

- X-Midas based software (Linux OS)

The Velociraptor2 (VR2) is the next generation high-speed A/D acquisition system capable of digitizing an analog signal at rates from 200-1500 MHz. The acquisition system is Linux based and a full X-Midas based software suite is provided. The large array of high-speed disk drives enables continuous collection at one of four user selectable bandwidths up to 500 MHz from an analog prefilter frontend. Simultaneous recording and offload capabilities allow for 24/7 archiving. Removable drive bays allow quick and easy physical transfer of collected data.

The VR2 system is highly customizable for each individual's needs. Packaging options range from fixed rack mount to ruggedized mobile suitcase. Optional data transfer options include tape drive(s) and recovery system(s).
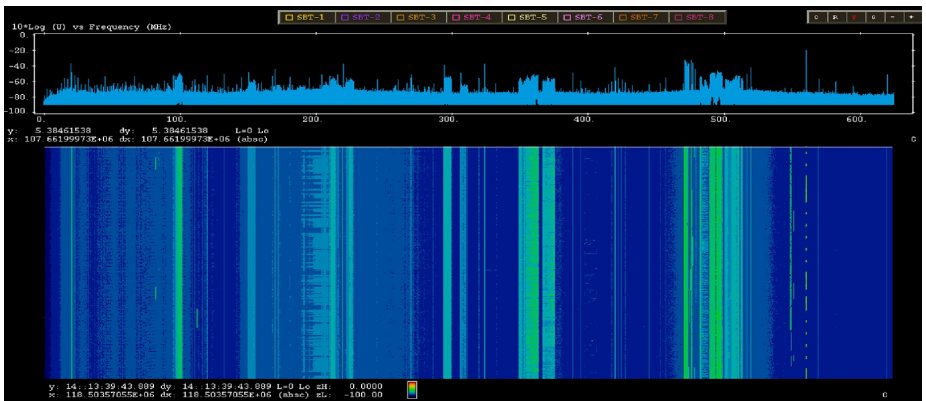
Signal Conditioning Options:

Option #1:
- Receiver with 20-2500MHz tuning capabilities
- Standard bandwidths: 40|100|280|500MHz
- Four selectable inputs
- Gain: 35 dB min, 40 dB typical
- Gain Adjustment:
  - -60 to +15 dB, in 1 dB steps (IF Input)
  - -60 to +20 dB, in 1 dB steps (IF Output)
- Noise Figure: 15 dB max. at max gain setting
- Form factor: 1U, 26.5" depth

Option #2:
- 0.5-18GHz RF frontend frequency extension
- Optional frequency extension to 26.5GHz
- Noise Figure:
  - 15 dB max. from 1-26.5GHz
  - 17dB max from 0.5-1GHz
- IF output connects to first input of Option #1
- Additional 42dB frontend gain controls
- Form factor: Adds 1U to Option #1

Analog Bandwidth:		40MHz	100MHz	280MHz	500MHz
Record Time (Hrs)	**8TB:**	9.7	4.8	2.4	1.5
	16TB:	19.4	9.6	4.8	3.0
	Scales in 8TB increments...				
	96TB:	116.4	57.6	28.8	18.0

Data Offload Capabilities:
- Dual-port 10/40GbE NIC
- Optional 100GbE NIC
- Real-time 500MHz bandwidth data stream
- RAID-50 subsystem storage arrays for continuous file offload

Acquisition Server:

- **Standard System:**
  - E5-2643V4 CPU
  - 64GB Memory (48GB System, 16GB reserved for A/D)

- **Standard Storage:**
  - 8TB RAID-50 SSD's
    - See maximum internal storage capacities for standard form factors below

- **GPS Options**

  Standard:
  - Internal TSync-PCIe GPS card
  - Accuracy to UTC: ±50 ns
  - 10 MHz Accuracy: $5x10^{-12}$ (average over 24 hours)

  Ultra-Stable (US-OCXO) GPS:
  - 1U EndRun Meridian II GPS Receiver with Ultra-Stable OCXO
  - Accuracy to UTC: ±10 ns
  - STS (1 sec): $5x10^{-13}$

- **Ruggedized Portable Computers**

  Single Headed:
  - 1x 21.5" LCD Display
  - Configurable to 14TB, RAID-50 SSD's
  - 20.6"W x 13.7"H x 8.9"D
  - Padded carrying case with wheels

  Triple Headed:
  - 3x 21.5" LCD Displays
  - Configurable to 11TB, RAID-50 SSD's
  - 21.1"W x 14.5"H x 11.7"D
  - Padded carrying case with wheels

- **Rackmount Server Computers**

  Standard:
  - 3U Rack Mount Server
  - 21.5" Deep
  - Configurable to 96TB in 8TB increments, RAID-50 SSD's

  MAX Storage:
  - 4U Rack Mount Server
  - 24.5" Deep
  - 128TB, RAID-50 SSD's

  1U KVM available upon request for rack mount server