1 Use Cases

	Use Case	**Method**	**Comment**
1	Existing experiment with full *MDSplus* control, typ: one 10s shot per 10 min.	Use MIT-supplied Host-Side scripts included with *MDSplus* distribution.	Fits with existing experimental model
2	Shot based system with autonomous upload	Use a post-shot *Thin Client* script based on **mdsPutCh**	Very simple, no-driver required integration with *MDSplus*
3	Live Scope Display	Use *Thin Client*, segmented upload and repeat control script. Repeat shots at up to 2Hz	*MDSplus* Scope Display plots repeatedly on event. Uses same tree as longer pulse data.
4	Experiment with repetition <1Hz	Use *Thin Client*, segmented upload and repeat control script	Simple implementation.
5	Experiment with very long data set, long time between shots	Use *Thin Client*, segmented upload.	Simple implementation. Example: ACQ216, 4ch mode, 50MS/channel.
6	Experiment with repetition >1Hz, <10Hz	Use *Repeating Gate Mode*, **ftp** upload, host-side **acq_demux-mds**	Allows multiple shots per second, with live plot
7	Experiment with large data quantity, limited time between shots	Use one shot capture, **ftp** upload, host-side **acq_demux-mds**	Example: ACQ132 ECEI, 5s capture, 20s upload, 1GB data per card, typ 12 GB per system.
8	Experiment with continuous data	Use *RTM-T* to upload on *PCI-Express*, host-side **acq_demux-mds**	Example: ACQ196CPCI, 1000s capture, 96ch x 100kHz achieved. Live plot of data subset Multicore speed-up expected.

2 Technology Summary

	Demux	Transport		Mode		MDSplus technology		
		Ethernet	PCI-Express	Host-Pull	Target Push	ThinClient/ MDSIP	MDSOBJECTS	SEGMENTS
1	ACQ	YES		YES				
2	ACQ	YES			YES	YES		
3	ACQ	YES			YES	YES		YES
4	ACQ	YES			YES	YES		YES
5	ACQ	YES			YES	YES		YES
6	HOST	YES			YES		YES	YES
7	HOST	YES			YES		YES	YES
8	HOST		YES		YES		YES	YES

1. **Demux: where data dechannelization is done. Slow on ACQ, fast on HOST. Running on the ACQ keeps it simple on the host, also achieves good parallelism.**
2. **Transport: choice of Ethernet (Gigabit preferred) or PCI-Express**
3. **Mode:**
   1. **Host-Pull : Host polls for it and fetches**
   2. **Target Push : ACQ sends data immediately it's ready**
4. **MDSplus Technology**
   1. **Thin Client/ MDSIP : ACQ sends data in MDSIP wire protocol to MDSIPD server**
   2. **MDSOBJECTS : Host side code linked to MDSPLUS class library**
   3. **SEGMENTS: Long Pulse Extension: multiple MDS puts per channel.**