Rack Layout

Murrough Landon – 14 March 2002

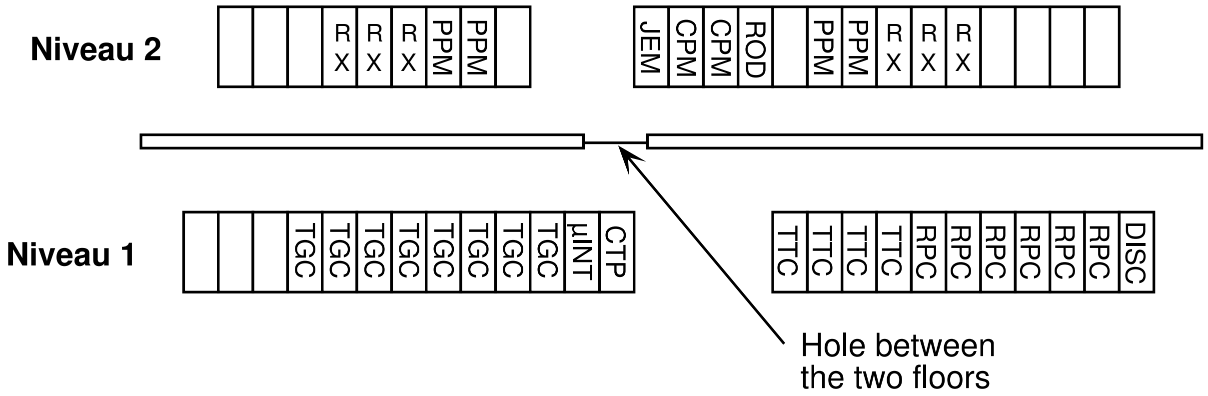
`http://www.hep.ph.qmul.ac.uk/~landon/talks`

Overview

- Rack Allocation Meeting
- Cables and latency
- Receiver/PP layout and cabling?

Proposed Niveau 1 and Niveau 2 Layout

- Trigger rack layout presented (and accepted) at the recent rack allocation meeting.
- CTP is now very central (NB CPM/JEM racks swapped to match – compared to Philippes document).
- Our allocation includes the requested gaps and spare racks.



Cables and Latency

Cable Lengths

- Signal cables (holes to outer Receivers): 7m

  (NB plus length from detector to holes)

- Receiver to PPMs: 5m

  (assumes rack layout shown and most direct route across the front of the racks)

- LVDS cables from PPMs to CPMs/JEMs: 11m

- InterCMM cables: 3m

  (assuming under the floor, 1m via hole between racks)

- CMM to CTP: 7m

- Total: 33m

- More details at:

  `http://www.hep.ph.qmul.ac.uk/~landon/atlas/racks`

  `http://www.hep.ph.qmul.ac.uk/~landon/atlas/racks/racklayout.html`

Receiver and PPM Layout

RX/PP Rack Layout

- All layouts have shown two receiver racks next to two PP racks.
- If we abandon any attempt to have PP crates arranged in phi quadrants (simplifies the RX-PPM cabling as Paul would like) then why not intermingle RX and PP racks?
- Easiest if PP crates (mostly) follow layout of RX crates.

“Octopus Cables” or Patch Panels?

- We are supposed to document our cabling, including that between Receivers and PPMs.
- How should we handle the awkward cables in the barrel/endcap transition regions in EM and hadronic layers?
- If implemented as cables we need 72 cables with three “ends” and 8 cables with nine “ends”! (Plus 360 standard cables).
- 5U space above each crate was requested for cabling (64 1.3cm diameter cables per crate, bending radius $>$10cm)
- Patch panels would need 3 connectors per slot per rack: 6U?
- Present layout has 8U spare per rack at the bottom.

RX and PP racks: EM

Receiver rack: EM

Receiver crate: EM Barrel

Quadrant 1				Quadrant 2				Quadrant 3				Quadrant 4			
1A	1B	1C	1D	1A	1B	1C	1D	1A	1B	1C	1D	1A	1B	1C	1D
2A	2B	2C	2D	2A	2B	2C	2D	2A	2B	2C	2D	2A	2B	2C	2D
3A	3B	3C	3D	3A	3B	3C	3D	3A	3B	3C	3D	3A	3B	3C	3D
4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db

Patch panel: EM Barrel/Endcap transition

Patch Panel Q1				Patch Panel Q2				Patch Panel Q3				Patch Panel Q4			
4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db
4A	4B	4C	4D	4A	4B	4C	4D	4A	4B	4C	4D	4A	4B	4C	4D
4Ae	4Be	4Ce	4De	4Ae	4Be	4Ce	4De	4Ae	4Be	4Ce	4De	4Ae	4Be	4Ce	4De

Receiver crate: EM Endcap

Quadrant 1				Quadrant 2				Quadrant 3				Quadrant 4			
4Ae	5A	5C	7AB	4Ae	5A	5C	7AB	4Ae	5A	5C	7AB	4Ae	5A	5C	7AB
4Be	6A	6C	7CD	4Be	6A	6C	7CD	4Be	6A	6C	7CD	4Be	6A	6C	7CD
4Ce	5B	5D	8AB	4Ce	5B	5D	8AB	4Ce	5B	5D	8AB	4Ce	5B	5D	8AB
4De	6B	6D	8CD	4De	6B	6D	8CD	4De	6B	6D	8CD	4De	6B	6D	8CD

Preprocessor rack: EM

Preprocessor crate: EM Barrel

Quadrant 1				Quadrant 2				Quadrant 3				Quadrant 4			
1A	2A	3A	4A	1A	2A	3A	4A	1A	2A	3A	4A	1A	2A	3A	4A
1B	2B	3B	4B	1B	2B	3B	4B	1B	2B	3B	4B	1B	2B	3B	4B
1C	2C	3C	4C	1C	2C	3C	4C	1C	2C	3C	4C	1C	2C	3C	4C
1D	2D	3D	4D	1D	2D	3D	4D	1D	2D	3D	4D	1D	2D	3D	4D

Patch panel: PPM7 sparsification

Patch Q1			Patch Q2			Patch Q3			Patch Q4		
7AB	7A	7B	7AB	7A	7B	7AB	7A	7B	7AB	7A	7B
7CD	7C	7D	7CD	7C	7D	7CD	7C	7D	7CD	7C	7D

Preprocessor crate: EM Endcap

	Quadrant 1			Q12	Quadrant 2				Quadrant 3			Q34	Quadrant 4		
	5A	6A	7A	8AB	5A	6A	7A		5A	6A	7A	8AB	5A	6A	7A
	5B	6B	7B	8CD	5B	6B	7B		5B	6B	7B	8CD	5B	6B	7B
	5C	6C	7C	8AB	5C	6C	7C		5C	6C	7C	8AB	5C	6C	7C
	5D	6D	7D	8CD	5D	6D	7D		5D	6D	7D	8CD	5D	6D	7D

RX and PP racks: Hadronic

Receiver rack: Hadronic

Receiver crate: Hadronic Barrel (Tiles)

Quadrant 1				Quadrant 2				Quadrant 3				Quadrant 4			
1A	1B	1C	1D	1A	1B	1C	1D	1A	1B	1C	1D	1A	1B	1C	1D
2A	2B	2C	2D	2A	2B	2C	2D	2A	2B	2C	2D	2A	2B	2C	2D
3A	3B	3C	3D	3A	3B	3C	3D	3A	3B	3C	3D	3A	3B	3C	3D
4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db

Patch panel: Hadronic Barrel/Endcap transition

Patch Panel Q1				Patch Panel Q2				Patch Panel Q3				Patch Panel Q4			
4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db	4Ab	4Bb	4Cb	4Db
4A	4B	4C	4D	4A	4B	4C	4D	4A	4B	4C	4D	4A	4B	4C	4D
4Q1				4Q2				4Q3				4Q4			

Receiver crate: Hadronic Endcap/FCAL

Q*	Quadrant 1			Quadrant 2			Quadrant 3			Quadrant 4			FCALEM/Had		
4Q1	5A	6A	7AB	5A	6A	7AB	5A	6A	7AB	5A	6A	7AB	9A	9Ax	9Ay
4Q2	5B	6B	7CD	5B	6B	7CD	5B	6B	7CD	5B	6B	7CD	9B	9Bx	9By
4Q3	5C	6C	8AB	5C	6C	8AB	5C	6C	8AB	5C	6C	8AB	9C	9Cx	9Cy
4Q4	5D	6D	8CD	5D	6D	8CD	5D	6D	8CD	5D	6D	8CD	9D	9Dx	9Dy

Preprocessor rack: Hadronic

Preprocessor crate: Hadronic Barrel (Tiles)

Quadrant 1				Quadrant 2				Quadrant 3				Quadrant 4			
1A	2A	3A	4A	1A	2A	3A	4A	1A	2A	3A	4A	1A	2A	3A	4A
1B	2B	3B	4B	1B	2B	3B	4B	1B	2B	3B	4B	1B	2B	3B	4B
1C	2C	3C	4C	1C	2C	3C	4C	1C	2C	3C	4C	1C	2C	3C	4C
1D	2D	3D	4D	1D	2D	3D	4D	1D	2D	3D	4D	1D	2D	3D	4D

Patch panel: PPM7 sparsification and FCAL merging

Patch Q1			Patch Q2			Patch Q3			Patch Q4		
7AB	7A	7B	7AB	7A	7B	7AB	7A	7B	7AB	7A	7B
7CD	7C	7D	7CD	7C	7D	7CD	7C	7D	7CD	7C	7D
9Ax	9Ay	9Ah	9Bx	9By	9Bh	9Cx	9Cy	9Ch	9Dx	9Dy	9Dh

Preprocessor crate: Hadronic Endcap/FCAL

F/E	Quadrant 1			Q12	Quadrant 2			F/H	Quadrant 3			Q34	Quadrant 4		
9A	5A	6A	7A	8AB	5A	6A	7A	9Ah	5A	6A	7A	8AB	5A	6A	7A
9B	5B	6B	7B	8CD	5B	6B	7B	9Bh	5B	6B	7B	8CD	5B	6B	7B
9C	5C	6C	7C	8AB	5C	6C	7C	9Ch	5C	6C	7C	8AB	5C	6C	7C
9D	5D	6D	7D	8CD	5D	6D	7D	9Dh	5D	6D	7D	8CD	5D	6D	7D