

# The Implementation of 40G in High-Performance ATCA Platforms

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*Some ideas on how to deploy ATCA  
for internal and external 40G  
Ethernet operation at line rates and  
with multiple ATCA blades.*

# Last Year @ ATCA Summit

## AdvancedTCA & 40G Ethernet *A Perspective*

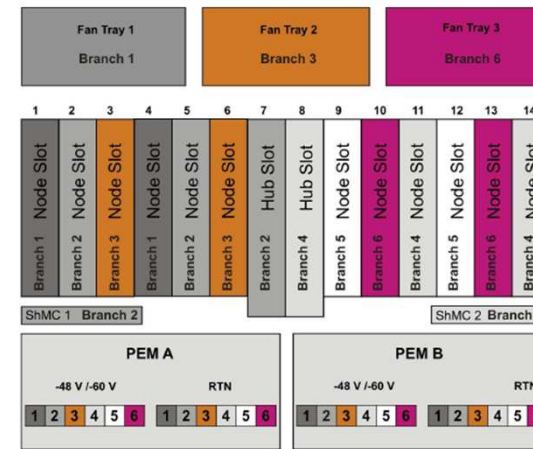
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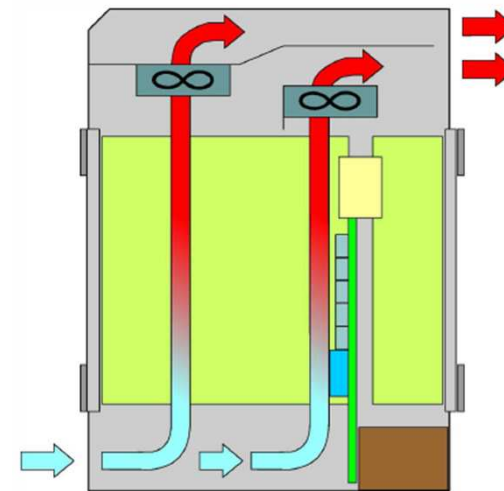
# The ATCA Chassis



Source; Schroff



Source; Schroff



Source; Schroff

## Schroff 40G ATCA Technology Examples

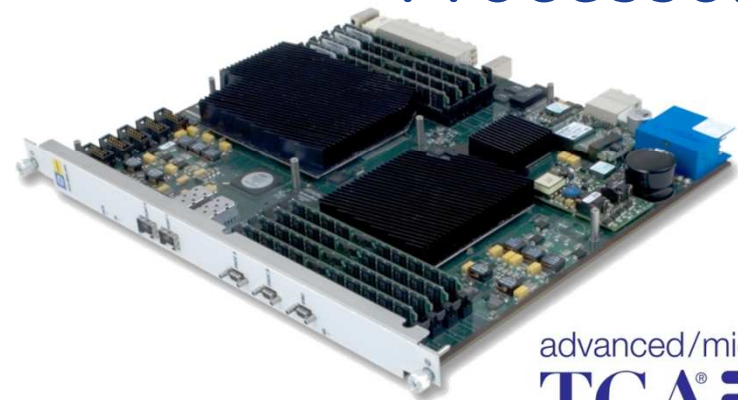
# The ATCA Blades



The  
SBC

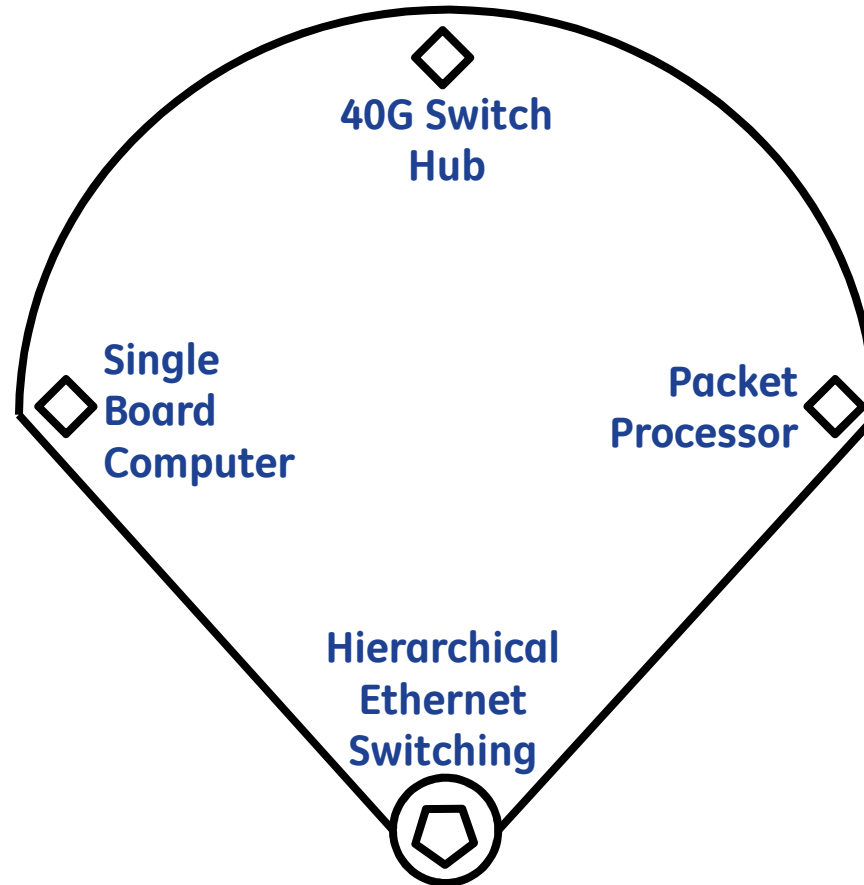


The Switch  
Hub



The Packet  
Processor

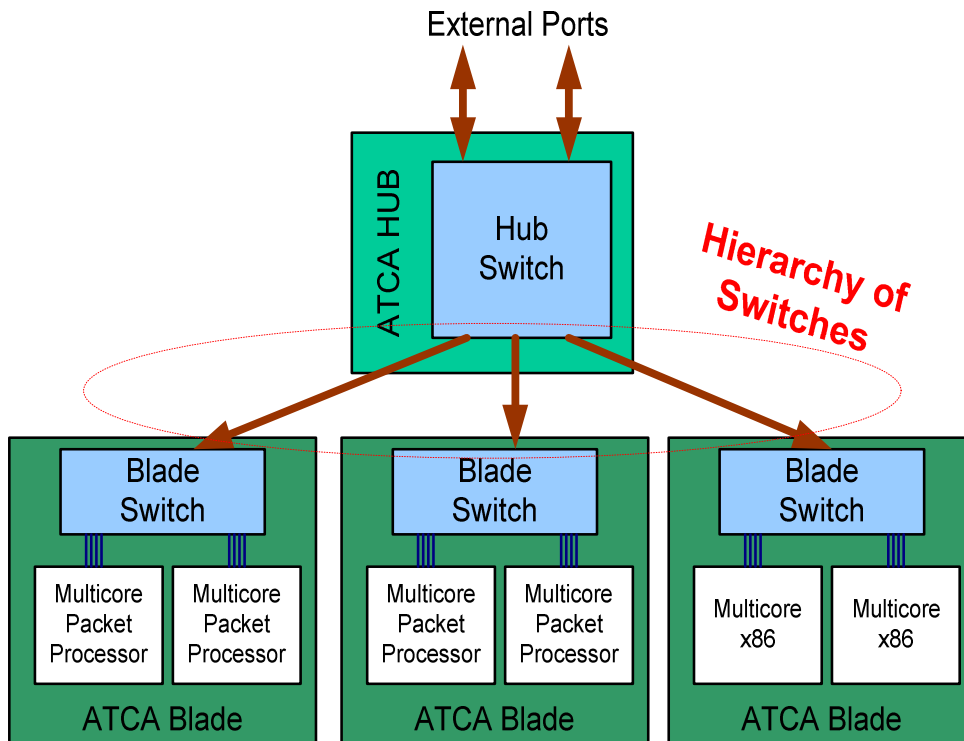
# How to get the 40G Ethernet traffic to move effectively



## An ATCA Triple Play

# Hierarchical Ethernet Switching (HES)

The concept of connecting ATCA switching and processing elements together via a unified hierarchical architecture of programmable, interactive Ethernet switching components, taking advantage of these switch's built-in interconnect technology, is call Hierarchical Ethernet Switching.



## Advantages:

- Higher data throughput
- More efficient load balancing
- Packet processing offload at Switch = better payload processor utilization
- Multi-layer switch management
- Optimized internal & external congestion management
- Reduced overall time to process an individual packet

*Now, some examples of  
Hierarchical Ethernet Switching  
to consider.*



imagination at work

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# The 40G ATCA Platform

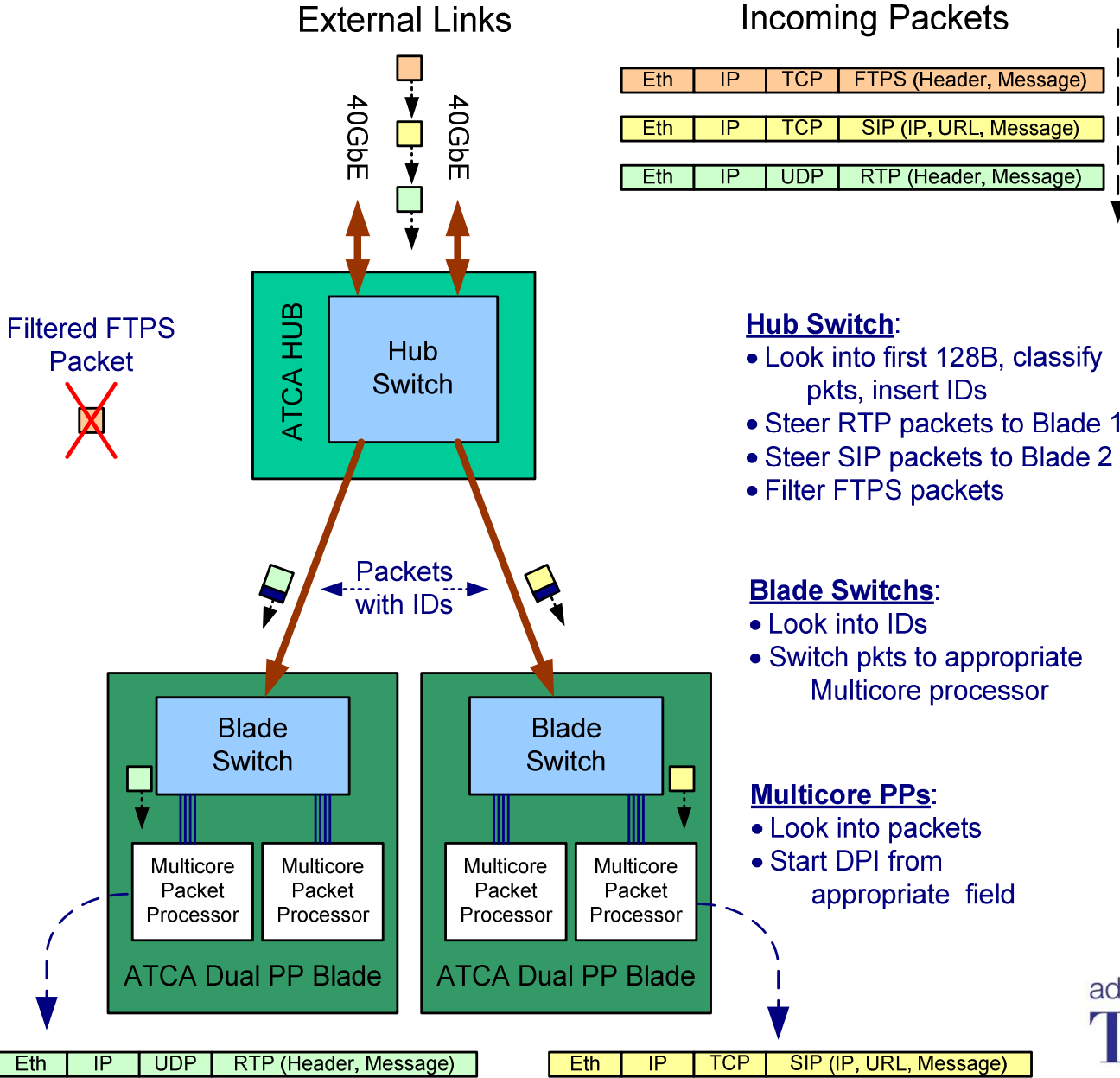
## Legend:

- ShMC – Shelf Manager
- SBC – Single Board Computer, Intel next-gen x86-based
- PP – Packet Processor Blade, Multicore OcteonII-based
- HUB – 40GbE Ethernet Switch Hub Blade
- PEM – Power Entry Module
- Cooling Unit - 2 fans/tray x3 trays = 6 Pull Fans total.

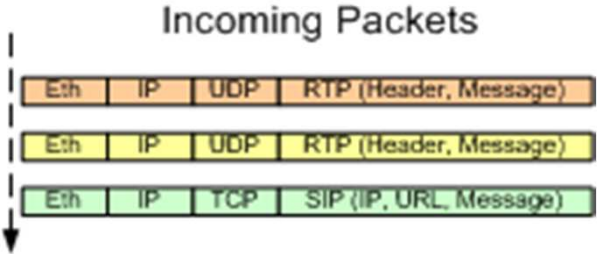
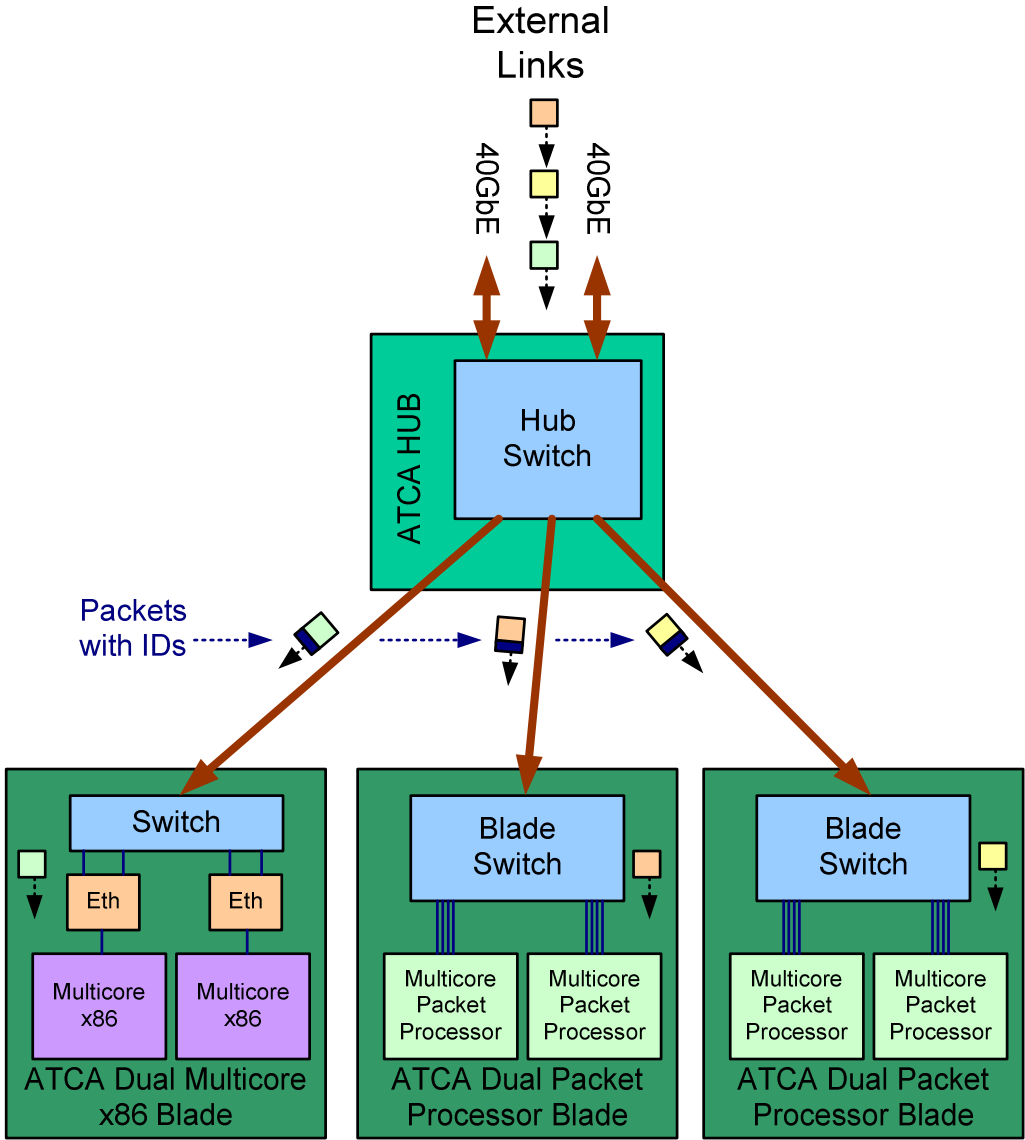


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# Example 1 - HES Packet Flow Control for DPI



# Example 2 -HES Packet Load Balancing



**Hub Switch:**

- Look into first 128B and classify packets
- Insert packet ID
- Switch packet to appropriate blade

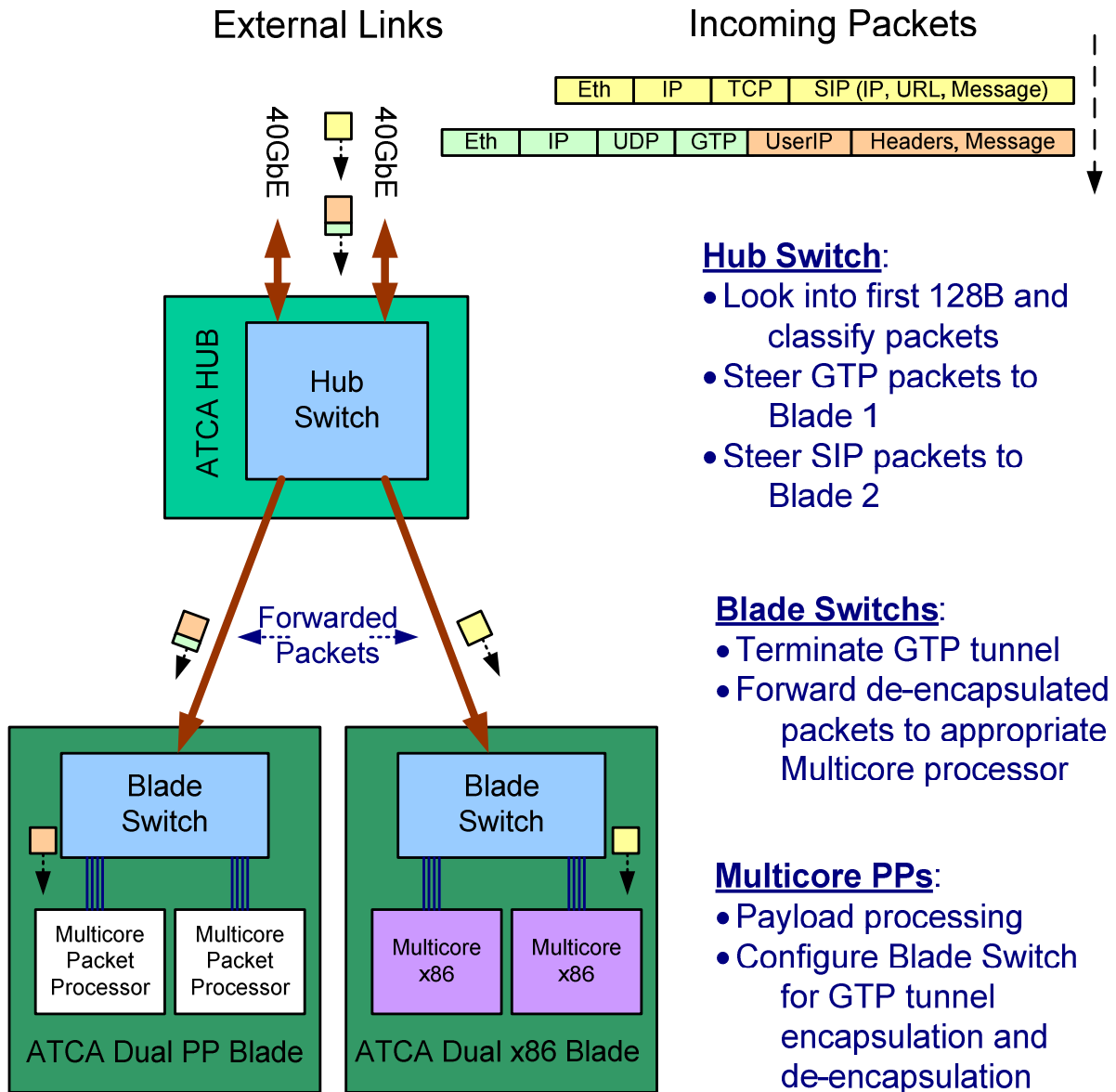
**Blade Switches:**

- Look at packet ID
- Switch packet to appropriate processor

**Blade Processors:**

- Look at packet
- Perform payload processing

# Example 3 – GTP Tunnel Termination



- Hub Switch:**
- Look into first 128B and classify packets
  - Steer GTP packets to Blade 1
  - Steer SIP packets to Blade 2

- Blade Switches:**
- Terminate GTP tunnel
  - Forward de-encapsulated packets to appropriate Multicore processor

- Multicore PPs:**
- Payload processing
  - Configure Blade Switch for GTP tunnel encapsulation and de-encapsulation

# Summary

- 40G Ethernet for high-performance ATCA platforms.
- Hierarchical Ethernet Switching to join Hub switching with Payload processing for 40G.
- Ethernet switching implemented at the blade as well as the Hub to perform a variety of packet processing applications, offloading the payload processors.

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Thanks!

*Comments or questions, please ask or contact:*

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