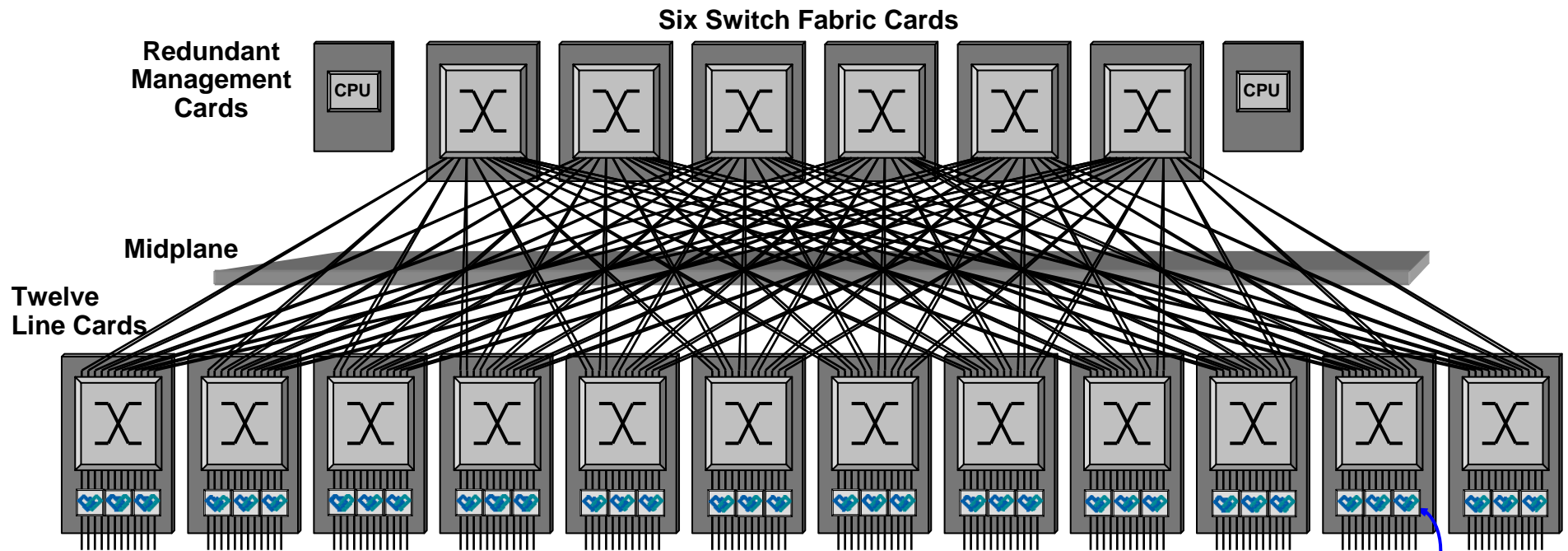




# **iWARP and Adaptive Routing in a 10G Ethernet Cluster**

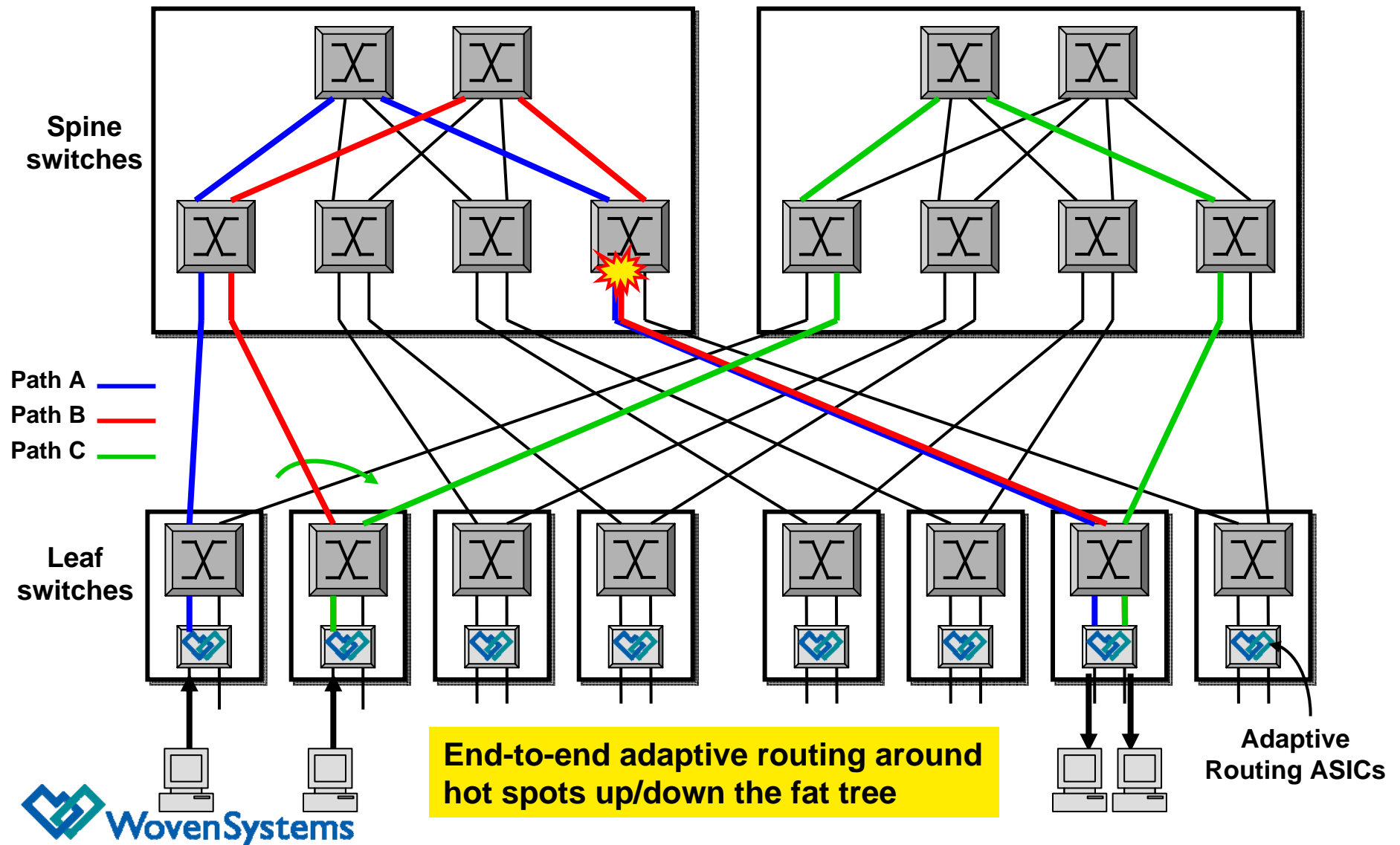
**Bert Tanaka, Woven Systems**

# Adaptive Routing Ethernet Fabric Switch

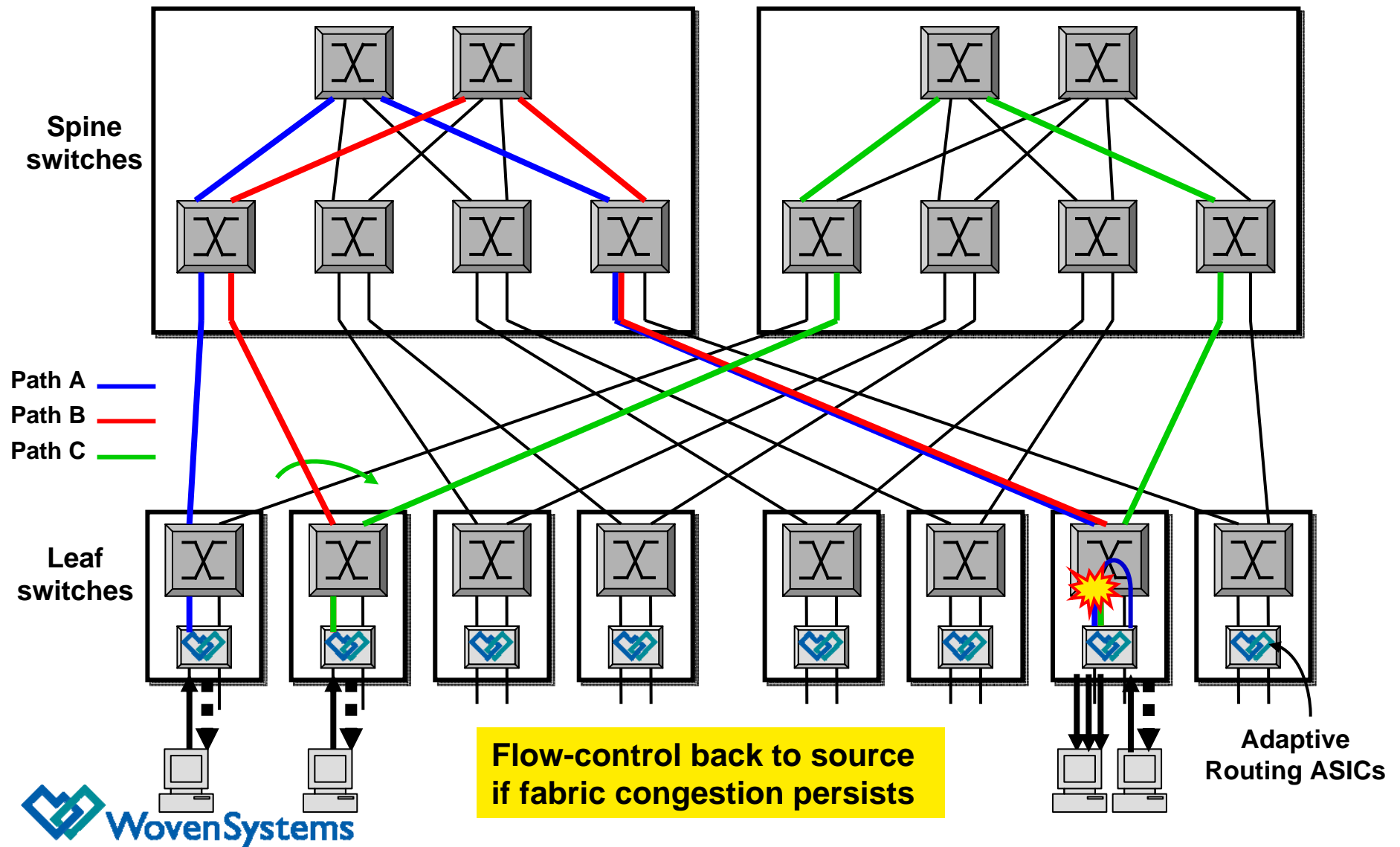


- Twelve 12-port 10GE line cards
- Fat-tree architecture
- Woven ASIC at edge of switch perform adaptive routing: detects congestion and reroutes traffic around hot spots onto alternate paths

# Adaptive Routing (source re-routing) over a Multi-tier Fat Tree Topology



# Source Flow-Control over a Multi-tier Fat Tree Fabric



# Key ASIC Technologies to Enable Adaptive Routing

1. Parallel multiple paths between each source and destination
2. Congestion detection via one-way real-time latency and latency jitter measurement
3. Dynamic re-routing decision based on comparison between path latency and alternate path(s) latency
4. Flow-control back to source as last resort if fabric congestion continue to persist