



4Q.2009 Global & Regional Carrier Class Switching & Routing Equipment Market Forecast

Introduction

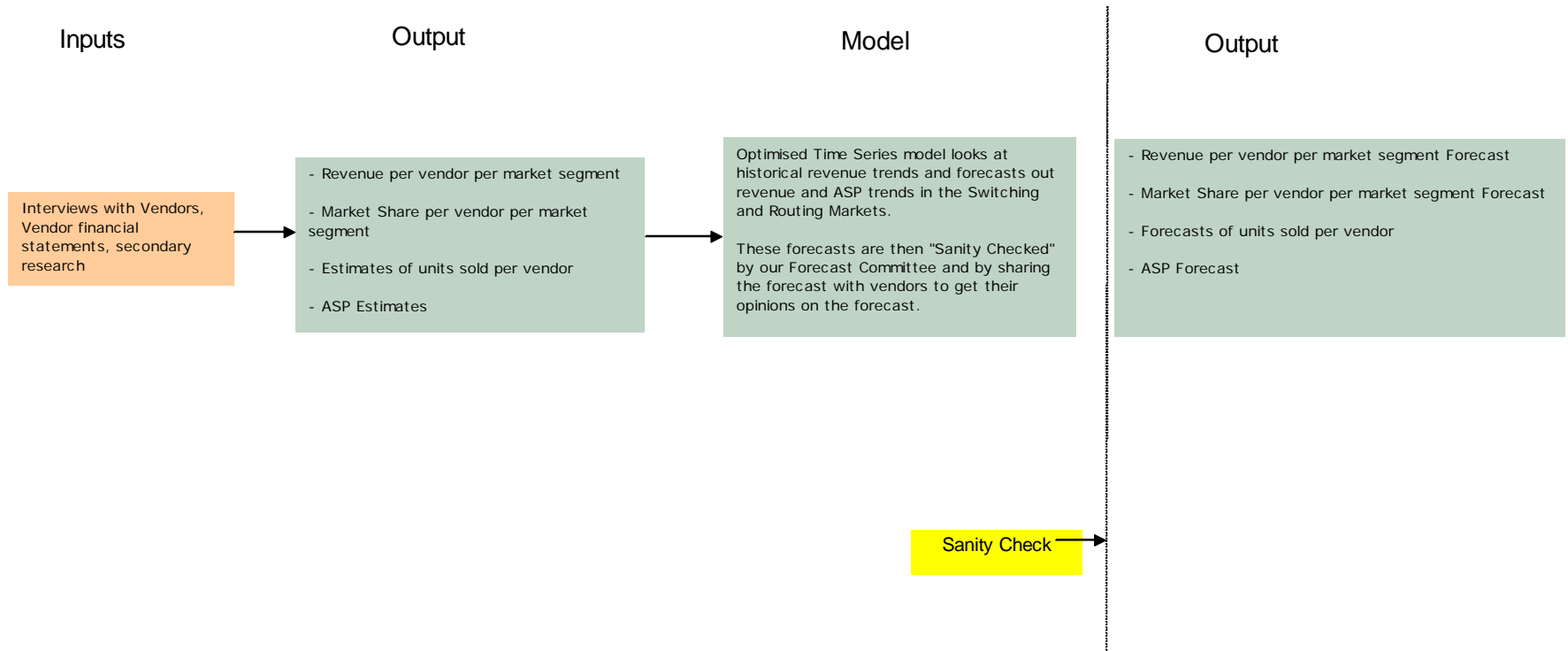
- **Carrier Switching and Routing are the largest segments of the data networking equipment industry, and account for the majority of revenues for firms such as Cisco, Juniper, etc. This report provides IEMR's revenue and revenue market share estimates, Average Selling Price (ASP) of Carrier Switching and Routing Equipment, and forecasts for Global and Regional Carrier Switching and Routing Markets. We provide detailed historical revenue metrics for eighteen of the leading switching and routing equipment vendors in the world. For each vendor, we cover a broad range of carrier-class product and services categories, including their Core IP/MPLS, Edge IP/MPLS, IP/Ethernet aggregation, and ATM/MPLS products and services.**
- **Together with historical revenue, market share, and ASP metrics, we provide forecasts at the global and regional level for our 18 coverage firms in the carrier switching and routing market based on IEMR's structural-time series modeling.**
- **This Executive Summary document is accompanied by a companion Excel file which provides clients with extensive charts of revenue and market share metrics for the Top-5 companies in each of the four market segments of the carrier switching and routing market.**
- **In addition to explaining overall trends in carrier switching and routing markets world-wide, we discuss region-specific and vendor-specific trends. Our Excel Sheet also provides key charts depicting market share forecasts, ASP forecasts, and revenue forecasts for various vendors.**

Definitions & Methodology

Following are definitions of product coverage in our report

Core IP/MPLS; and IP Transport and Services	Core routers are housed in the middle or backbone of the network and offer high-performance packet forwarding services between other core and edge routers. They also manage on-going traffic congestion in the fore network. Products covered include: Cisco: CRS-1, Cisco 12000, XR 12000; Brocade: NetIron XMR, Big Iron Series; Huawei: NE5000E/80E, Juniper Networks: T640, T320; ZTE Corporation: T1200, T600, T128, T64E
Edge IP/MPLS; and IP Transport and Services	IP Edge routers handle tasks like connecting two IP networks, VPNs, and routing data packets between one or more local area networks (LANs) and an ATM backbone network, whether a campus network or a wide area network (WAN). Products covered include: Alaxala Networks/Hitachi: AX7800R/7700R, AX2000R; Alcatel-Lucent 7450, 7750, 7710; Cisco 6400, 7200, 7400, 7500, 7600, 10000 series and 12000 series; ECI Telecom: ST series; Fujitsu: GeoStream R980; Huawei: NE80/40m NE40E, NE 20E/20, NE 16E/08E/05, CX600/300/200, ME60, MA5200G; Juniper: M5, M7i, M10, M10i, M20, M40E, M120, M320, MX, E-Series; NEC: CX4220, CX4210, CX5220, CX5210; Ericsson / Redback/Redback: SMS, SmartEdge; Tellabs 8800, 8600; and ZTE T1200, T600, T128, T64E, GER08/04/02, GAR, ZSR1800, 2800, 3800
IP/Ethernet aggregation Products; and Ethernet Transport and Services	These are devices that aggregate end-node carrier ethernet switches and are commonly referred to as Broadband Aggregation Servers (B-RAS). Products covered by this report include: Alaxala Networks/Hitachi: AX7800S, 5400S, 6300S, 6700S; AX3600S/2400S/1200S; Alcatel-Lucent OnniSwitch 7700, OmniSwitch 7800, OmniSwitch 8800; Cisco ME2400, ME 3400, 3750, Cisco Catalyst 4507R/6509/6513; ECI Telecom: 9200, Extreme Black Diamond Series, Alpine, Summit series; Fujitsu FW5500; Brocade/Foundry: NetIron, BigIron; Force10 Networks: E1200, E600, E300, C300, C150, S50, S25P, S50V; Hitachi Cable: Apresia 2000/3000/4000/13000/6000/8000/18000; Huawei: S8500, S6500, S5600, S3900, S3500, S3000, S2000, S1000; NEC CX2510, CX2610, CX2690-AE, CX2600/220, CX2700-R80G; Nortel: MERS 8600, OM8000; Riverstone: RS38000/8600, XGS 9016/9008; NSN: 66xx/6650/6670; ZTE 8900, 6900, T240G, T160G, T64G, T40G, 5x00, 3x00, 2x00
ATM/MPLS Products; and Legacy Transport and Services	These are switches and products that read various types of traffic, including legacy ATM/Frame Relay traffic and convert the traffic to Ethernet/IP while retaining the original characteristics. These products are key to the long-term strategy of most carriers to converge all of its networks to packet based networks. Products covered by this report include: Alcatel-Lucent 7670 50G, 7270, 7470, 7670 (ESE & MG), GX550, CBX500, CBX3500; Ciena DN7000, DN7050, DN7100, DN7200; Cisco MGX8800, MGX8950; Ericsson / Redback TNX210, TNX1100, ASX1000, ASX4000, ASX4000M, BXR48000, MR8000; NEC IX5010/5020; Nortel Passport 15000, 20000, 7400, 6400

Methodology



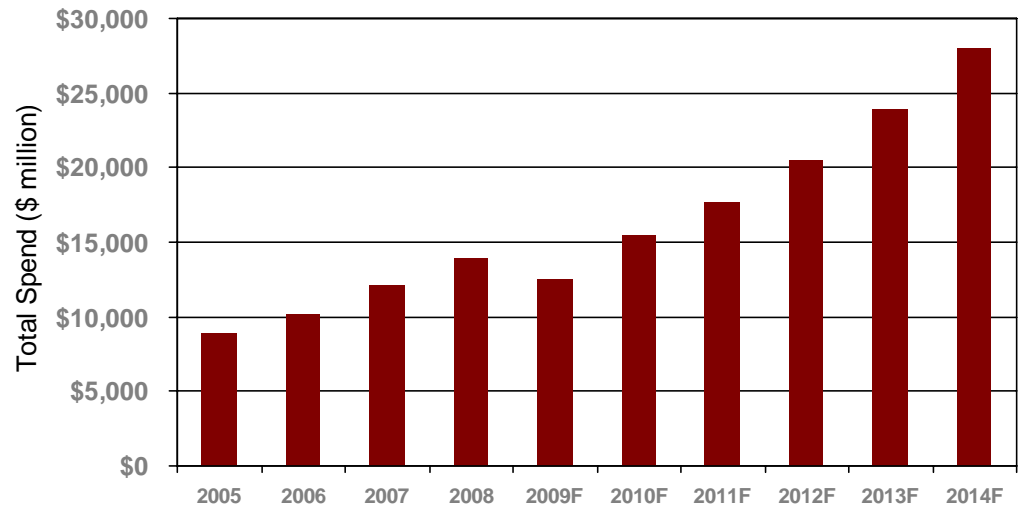
Source: IE Market Research Corporation

Global market for Carrier Switching & Routing Equipment to rise to \$27.9 billion in 2014, a CAGR of 17.3%

The fundamental long-term market drivers behind the carrier-class routing market remain in place, causing us to maintain our longer term positive forecast for this market.

- The “Great Recession” took a chunk out of the carrier-class switching and routing equipment market in 2008. Year-over-Year (YoY), total revenues from carrier-class switching and routing equipment and services were down -25.6% in Q2.2009 and came in at \$2.72 billion in Q2.2009.
- Sequentially, however, we saw some stabilization in the market with overall revenues remaining unchanged Quarter-over-Quarter (QoQ).
- Our positive view about the longer-term prospects for carrier class switching and routing equipment and services market remains unchanged.
- Broadband connectivity demand and the move by operators to replace their legacy ATM and Frame Relay networks will continue to drive demand for carrier-class switching and routing equipment and services.

Chart 1: Total Global Spend on Carrier-class Switching and Routing Equipment, 2005 - 2014



Source: IE Market Research Corporation

Global market for Carrier Switching & Routing Equipment to rise to \$27.9 billion in 2014, a CAGR of 17.3%

Our forecast takes into account the scenario that wireless backhaul will be a more immediate concern for carriers during the forecast period

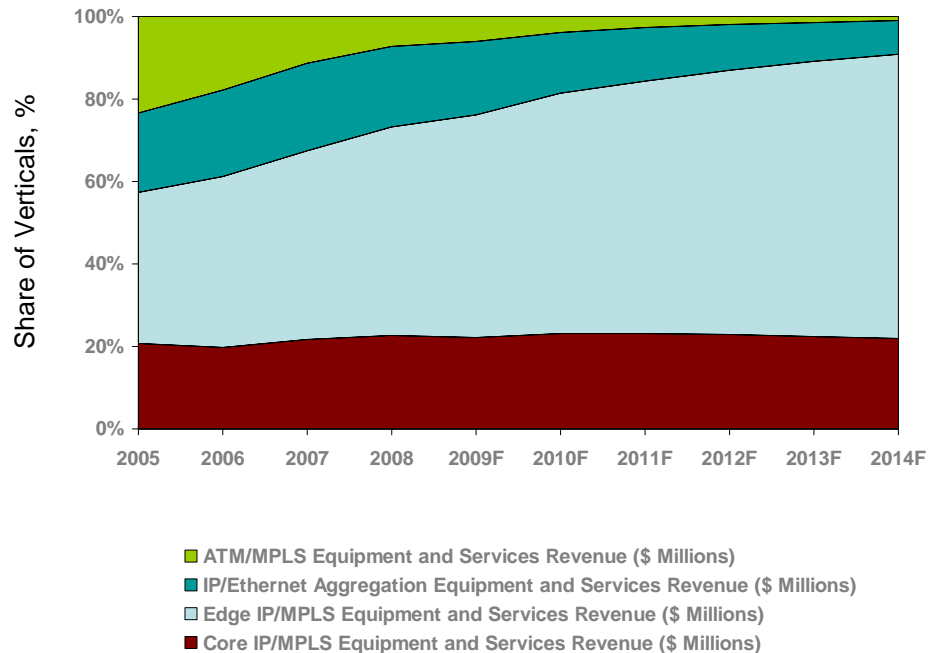
- Our forecast that the carrier-class switching and routing market will grow at a CAGR of 17.3% over the next five years is based on assumptions of the wireless backhaul opportunity.
- Wireless operators have traditionally backhauled their voice and data traffic to/from their cell sites to switching centers by leasing T1 or E1 copper lines. With the rapid use of 3G and impending use of 4G and converged devices during the forecast period, carriers face the difficult choice of increasing lease rates on their T1/E1 copper lines or making the move towards ethernet switches that are both lower cost and better able to move data than existing solutions.
- Our interviews with operators suggest that intelligent edge routing will evolve and replace TDM-based mobile switching centres. We also think that carriers will continue to invest in ethernet switches in order to move away from their (higher) potential investments in T1/E1 lines.
- We think that wireless backhaul provides THE growth opportunity for the carrier switching and routing market and it is going to happen in the next five years. At the same time, we do not think that the current economic downturn will result in reductions in internet traffic growth and believe that growth (and traffic demand) will occur across the board in all regions.

Carrier Edge Switching and Routing Equipment to see the biggest growth, growing at a CAGR of 23.2% over the next five years

Carrier Edge Switching and Routing equipment and services driven by Edge IP/MPLS growth

- Edge IP/MPLS equipment and service revenue dropped by -18.3% in Q2.2009 (YoY).
- Edge IP/Ethernet Aggregation equipment and service revenue dropped by -29.0% in Q2.2009 (YoY). Edge IP/MPLS grew +10.3% sequentially (QoQ) in Q2.2009, suggesting to us that the main part of the market will see continued growth for the rest of 2009.
- We are forecasting Edge IP/MPLS equipment and service revenues to grow at a CAGR of 23.2% over the next five years.
- We are forecasting Edge IP/Ethernet Aggregation Equipment revenues to remain flat and grow at a CAGR of +0.3% over the next five years.
- We also think that there is upside in the Edge Switching and Routing Equipment and Services market coming from replacement of legacy cross connects with routers designed to aggregate cellular traffic from base stations.

Chart 2: Share of different Carrier-class Switching and Routing Equipment by Total Spend, 2005 - 2014 (%)



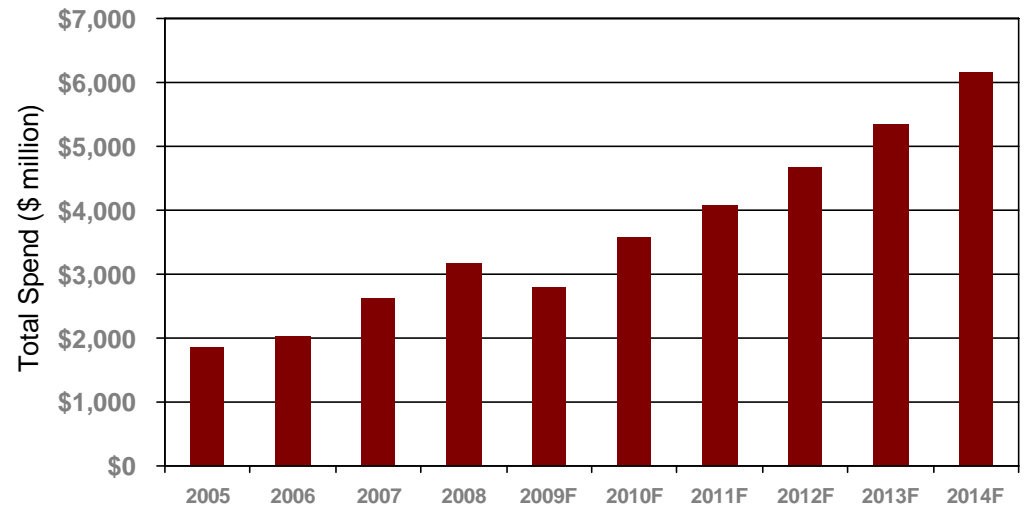
Source: IE Market Research Corporation

Carrier Core Switching and Routing Equipment to grow at a CAGR of 17% over the next five years

2009 was a difficult year for Core Routing Equipment with YoY revenues declining by -32.1%

- Core Switching and Routing Equipment and Service market declined by -32.1% (YoY) in 2Q.2009 with global revenues coming in at \$584 million in 2Q.2009.
- Sequentially, there was stabilization in this market with QoQ growth rate of -2.2% in 2Q.2009.
- We are forecasting Core IP/MPLS revenues to grow at a CAGR of 17% over the next five years.
- We think that core switching and routing is a bandwidth and capacity market with changes in market share related largely to upgrade cycles at customers of the major vendors (Cisco, Juniper, Huawei).
- We also think that as new capacity and infrastructure begin to be laid out in Emerging Asian and African markets, Chinese players like Huawei stand to benefit from their lower cost structure and better traction they have with operators in these markets.

Chart 3: Total Global Spend on Carrier-class Core IP/MPLS Equipment, 2005 - 2014



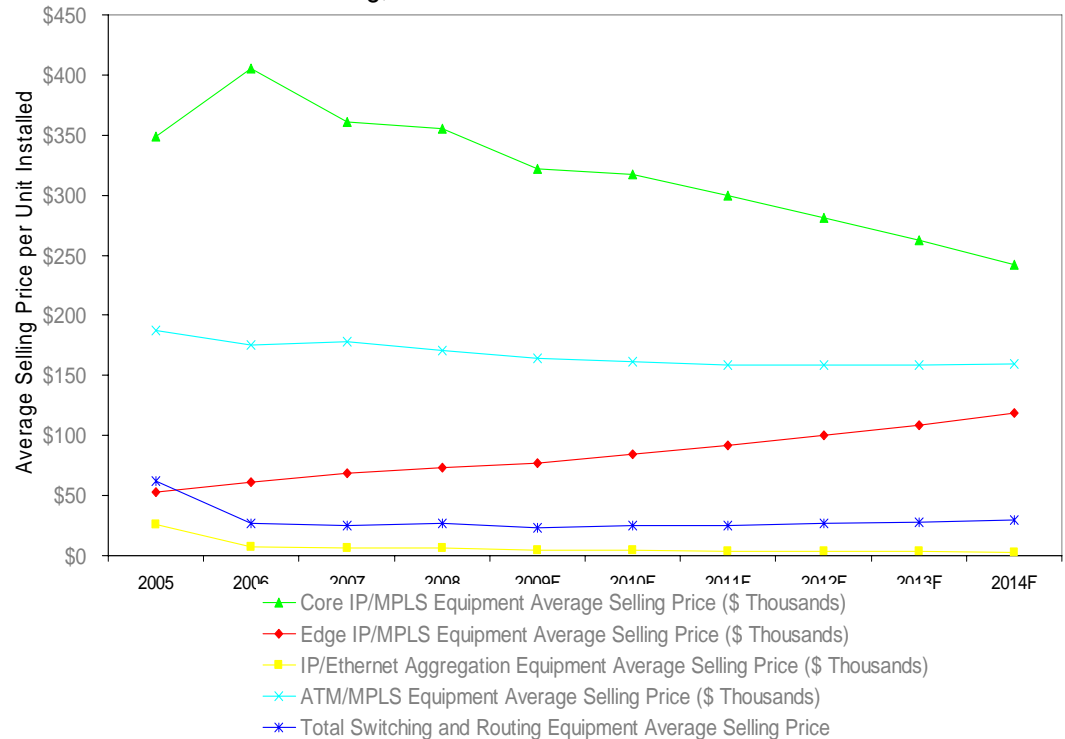
Source: IE Market Research Corporation

Edge IP/MPLS Equipment ASPs to firm up while other segments will see pricing weakness

We think that as edge IP/MPLS evolves to replace TDM-based mobile switching centres, ASPs in the Edge IP/MPLS segment will firm up

- Our channel checks with leading service providers and vendors suggest that they expect pricing of Edge IP/MPLS equipment to firm up as equipment productivity and intelligence increases.
- For this segment, we are expecting a price point increase (per unit sold) of 9.0%. We expect the average selling price for Edge IP/MPLS equipment to rise from an expected \$76,800 in 2009 to \$118,400 in 2014.
- While ASPs for IP Ethernet Aggregation Equipment have seen a precipitous decline of -37% CAGR over the last four years, we think that the carnage in this segment will continue. Our forecast is that ASPs in this segment will decline at a CAGR of -9.6% over the next five years.

Chart 4: Core IP/MPLS, Edge IP/MPLS, IP/Ethernet and ATM/MPLS Pricing, 2005 - 2014



Source: IE Market Research Corporation



Regional Overview



Asia-Pacific carrier-class switching and routing market to rise to \$11 billion in 2014, a CAGR of 21.9%

The Asia Pacific region will account for 39.4% of the world market share for carrier-class switching and routing equipment spend

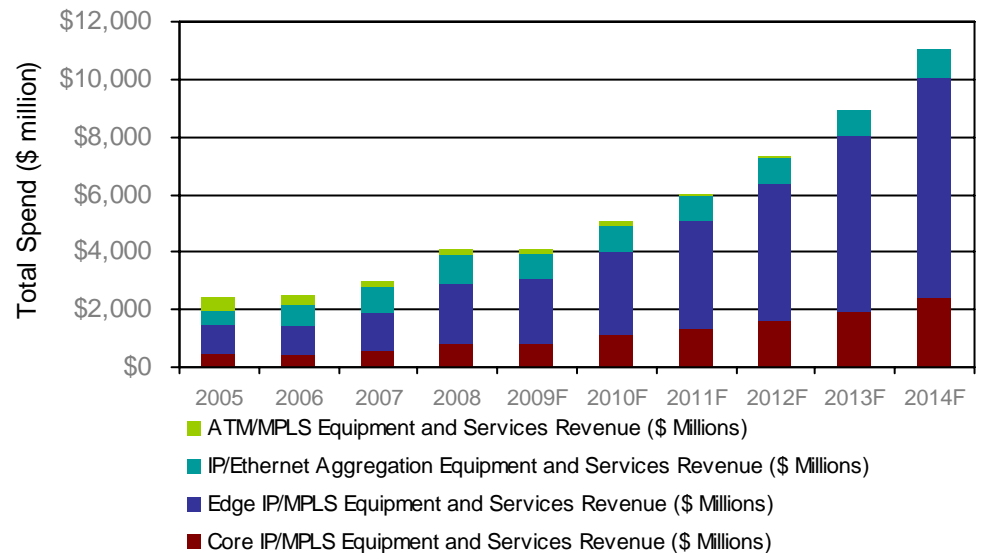
- We see the biggest growth in carrier-class switching and routing equipment coming from the Asia-Pacific Region. Total spend in the region will rise at a CAGR of 21.9% to reach \$11.03 billion by 2014.

- Readers will note that in 2008, spend on carrier-class switching and routing equipment in the Asia Pacific Region was \$4.1 billion (accounting for 32.5% of global spending).

- Pricing of equipment and services has always been competitive in Asia. As with our global scenario, we think that equipment and services pricing will firm up in Asian markets (+5.3% CAGR in the 2009 – 2014 period).

- However, ASP levels will remain lower in the Asia Pacific Region. The only exception to this scenario are Edge IP/MPLS equipment and services. As carriers in this region adopt a “spend to save” approach to network development, vendors will see some price improvements for their equipment and services.

Chart 5: Total Asia-Pacific Spend on carrier-class switching and routing equipment by category, 2005 - 2014



Source: IE Market Research Corporation

North America carrier-class switching and routing market to rise to \$7.86 billion in 2014, a CAGR of 14.7%

While 2009 will be a tough year for North America, we expect growth to resume in 2010

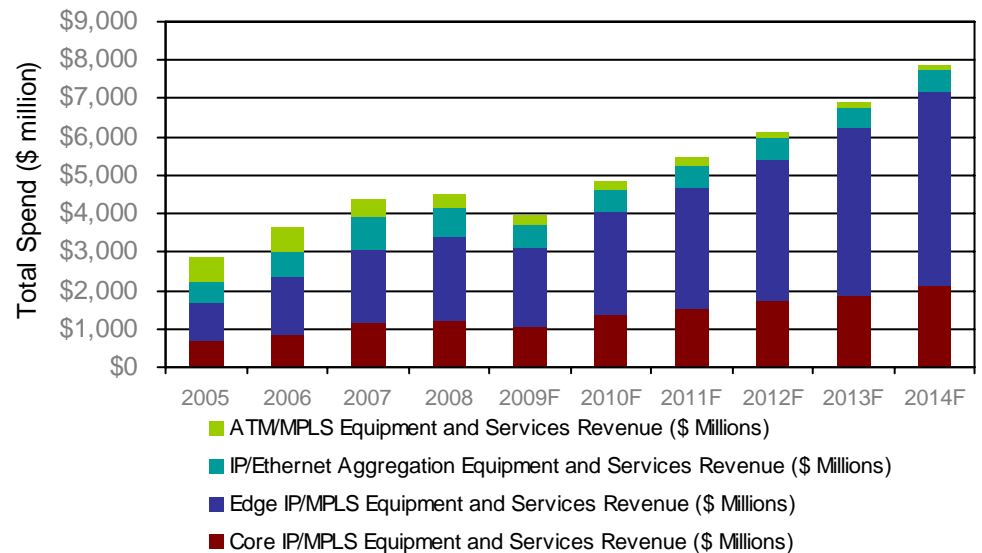
- For North America, Q2.2009 saw total spend on carrier-class switching and routing equipment decline by -23.8% YoY, a terrible rate of growth for sure.

- However, a look at the QoQ number show that total spend in Q2.2009 actually rose from \$787 million to \$913 million, a sequential increase of 16%. This tells us that demand by carriers continues to be firm.

- Our forecast for North America is that total carrier-class switching and routing equipment spend will increase from the expected \$3.96 billion in 2009 to \$7.86 billion in 2014, a CAGR of 14.7%.

- As in other markets, revenues in the Edge IP/MPLS category will lead the North American market. We are forecasting revenue growth in the Edge IP/MPLS segment of 19.5% CAGR, with revenue in this segment coming in at \$5.1 billion in 2014 (up from \$2.2 billion in 2008)

Chart 6: Total North America Spend on carrier-class switching and routing equipment by category, 2005 - 2014



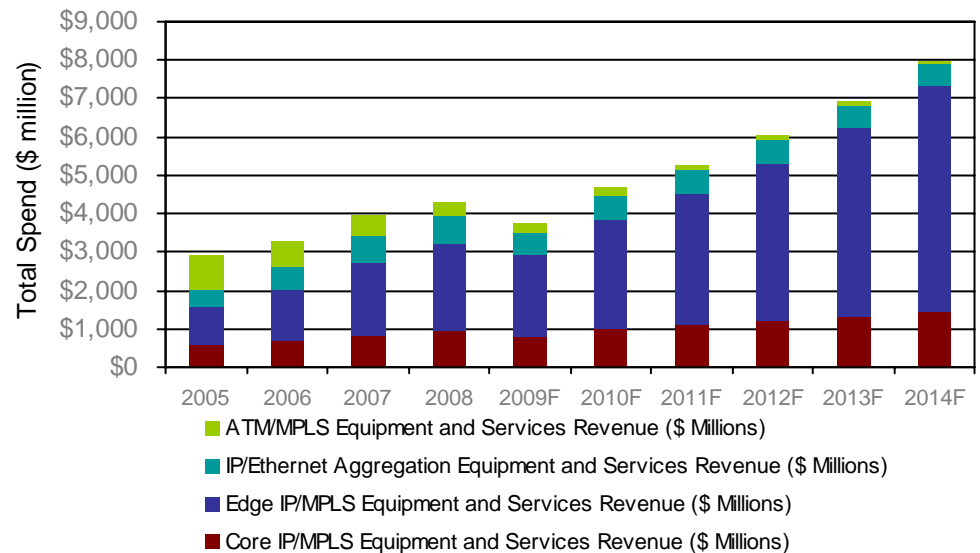
Source: IE Market Research Corporation

EMEA carrier-class switching and routing market to rise to \$7.97 billion in 2014, a CAGR of 16.3%

We are expecting EMEA operators to also recover from the fall in spending being experienced in 2009

- Spending among EMEA carriers dropped even steeper compared to North American carriers. Q2.2009 saw total spend on carrier-class switching and routing equipment decline by -32.9% YoY.
- Sequential growth rates were also not positive, with total spend in Q2.2009 coming in at \$729 million, a sequential decline of -12.9%.
- Our forecast for EMEA is that total carrier-class switching and routing equipment spend will increase from the expected \$3.75 billion in 2009 to \$7.97 billion in 2014, a CAGR of 16.3%.
- The basic trends affecting operators in other regions will also be present in EMEA and the higher growth rates in the region compared to North America is attributable to the presence of emerging markets (like Russia etc.) in this grouping.

Chart 7: EMEA Spend on carrier-class switching and routing equipment by category, 2005 - 2014



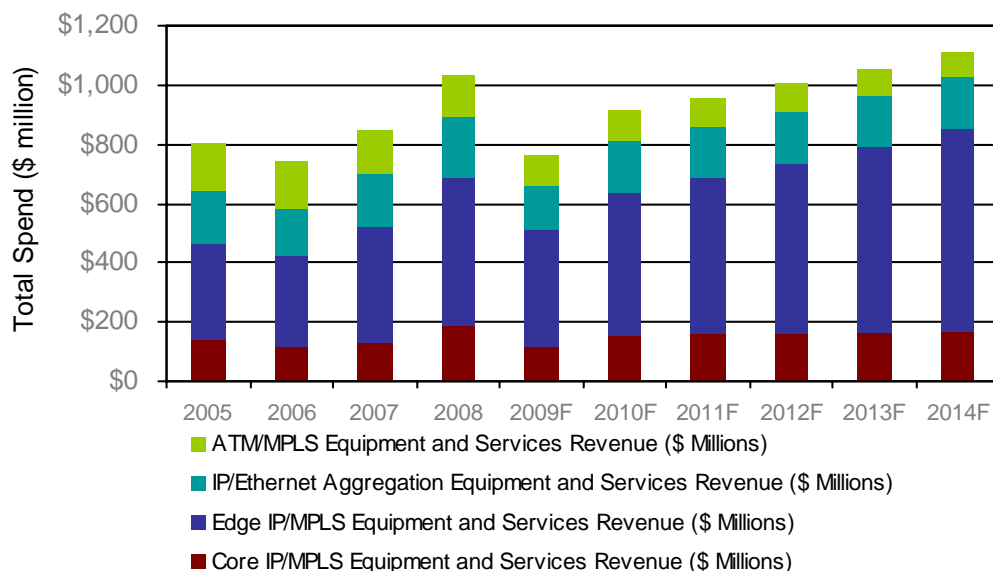
Source: IE Market Research Corporation

Latin America carrier-class switching and routing equipment market to remain slow

Unlike other regions, our forecasting model is predicting a slower growth rate in Latin America compared to other regions

- Spending among Latin American carriers dropped considerably over the last year. Q2.2009 saw total spend on carrier-class switching and routing equipment decline by -60.4% YoY.
- Sequential growth rates were also not positive, with total spend in Q2.2009 coming in at \$112 million, a sequential decline of -44.6%.
- Our interviews with operators and vendors on their Latin America prospects have conditioned our forecast for this region.
- We are forecasting that total carrier-class switching and routing equipment spend will increase from the expected \$766 million expected in 2009 to \$1.1 billion in 2014, a CAGR of 7.7%.

Chart 8: Latin America Spend on carrier-class switching and routing equipment by category, 2005 - 2014



Source: IE Market Research Corporation



Company-level Market Share

Dynamics and Forecasts



Cisco's overall market share will continue to erode

Overall market share of Cisco fell to 39.7% in Q2.2009

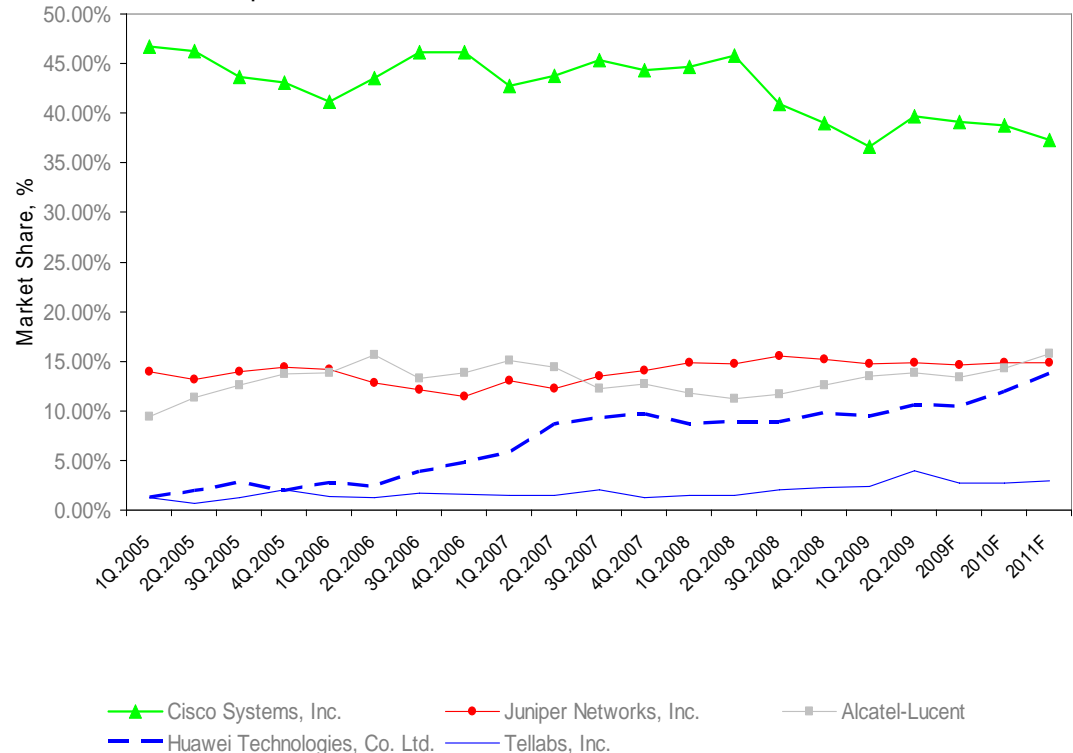
- Over the last five years, Cisco has seen a decline in its market share of the carrier-class switching and routing market. We are expecting total revenue for Cisco in this market to come in at about \$4.92 billion in 2009, a decline of -17.2% YoY.

- In Q2.2009, Cisco's market share of the overall market was 39.7%. We are expecting that for 2009, Cisco's market share will be 39.1%, which is down from 44.8% in 2005.

- We continue to expect market share declines for Cisco, primarily because of aggressive pricing and reach by Alcatel-Lucent and Huawei over the forecast period.

- Also, despite the recent acquisition of Starent by Cisco, we do not think that the combined Cisco + Starent entity would have enough traction which will cause operators to switch from their existing vendors to Starent's offering in the WCDMA and 4G (WiMax, LTE) markets.

Chart 9: Carrier-class Switching and Routing Equipment Revenue Market Share for Top-5 Vendors, 1Q.2005 - 2Q.2009, 2009F - 2011F



Source: IE Market Research Corporation

Cisco's Core IP/MPLS routing market share to decline to 47.9% by 2011

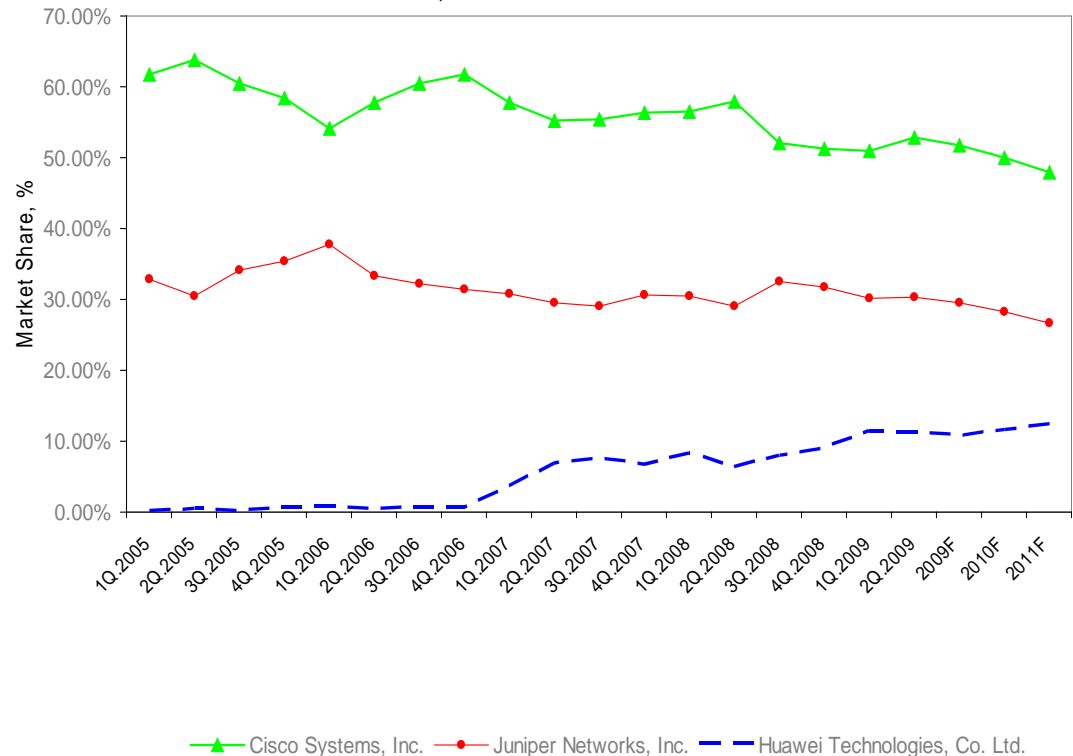
- Carrier core routing has largely become a bandwidth play with very little product differentiation, in our view.

- In Q2.2009, Cisco's market share of the Core IP/MPLS switching and routing market was 52.9%. We are expecting that for 2009, Cisco's market share in this segment will come in at 51.7%, which is down almost 1000 bps from its 61.1% market share in this segment only five years ago in 2005.

- In our view, Juniper Networks is also going to see a decline in its Core IP/MPLS market share over the forecast period. We are expecting Juniper's market share to decline to 26.7% in 2011 compared to its expected 29.6% market share expected in 2009.

- The key dynamic here is growth in Asia and Huawei's better reach in emerging markets such as China and India. Given commoditization in this market segment, our view is that Huawei's lower-priced offerings will continue to gain traction. We expect its market share of the Core IP/MPLS market to increase to 12.4% in 2011, up from its 7.9% market share in 2008 in the Core IP/MPLS segment.

Chart 10: Core IP/MPLS Revenue Market Share for Top-3 Vendors, 1Q.2005 - 2Q.2009, 2009E - 2014E



Source: IE Market Research Corporation

Cisco and Juniper to see increased competition from Alcatel-Lucent and Huawei in Edge Routers

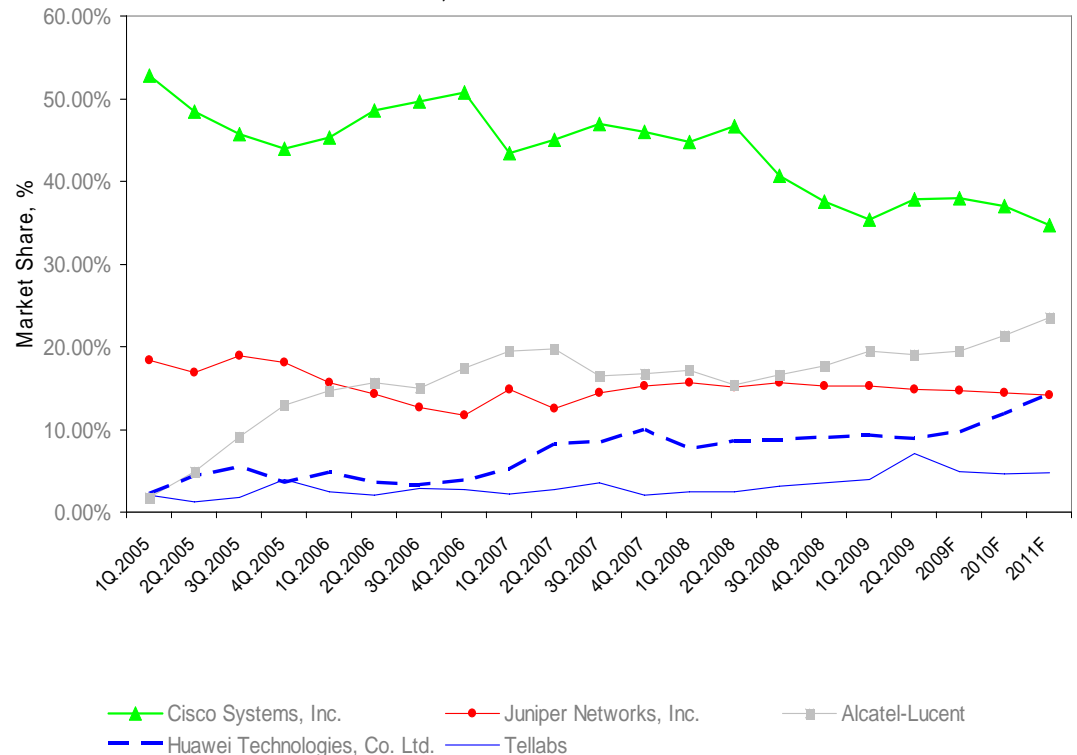
- We continue to believe that both Cisco and Juniper will see longer-term declines in their market shares in the Edge IP/MPLS router space.

- Readers should keep in mind that, historically, Cisco's market share has declined from 47.5% in 2005 to 42.4% in 2008. While Cisco was able to maintain a significant share with its legacy 7600 router through 2007, 2008 saw a decline in its Edge IP/MPLS market share as customers began to buy Juniper's MX routers. While Cisco's ASR9000 product does surpass Juniper's offering, Alcatel-Lucent, Huawei, and others have also come out with multi-service boxes that can compete with Cisco's offering.

- In our view, nothing in Cisco's or Juniper's latest financials suggest to us that there is a higher customer propensity to buy their latest Edge products. This can be compared to market share gains by Huawei and Alcatel in a down market.

- We expect Cisco's market share of the Edge IP/MPLS router market to decline to 34.7% by 2011 and Juniper's to decline to 14.2% in 2011.

Chart 11: Edge IP/MPLS Revenue Market Share for Top-5 Vendors, 1Q.2005 - 2Q.2009, 2009F - 2011F



Source: IE Market Research Corporation

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