

Business benefits from next generation Infrastructure Platforms

Telecom Overview

If we look around and comment on the current telecom scenario, it is safe to say that for most telecom services, the unit revenues are falling faster than their unit costs and it's not lack of demand that's causing this problem. The Telecom market is a dynamic market, currently driven by gaining consumer market share via attractive Services offerings. But just introduction of services/ bundling of services is no longer enough for differentiation in such a competitive market place. The value proposition is shifting from connectivity to personalization and hence quality of experience and time-to-revenue are becoming critical factors for differentiation. By leading these shifts, the over-the-top internet vendors such as Google, Myspace.com, Yahoo, Skype, MSN etc. are biting into the incumbent operator's market share. These forces are driving major transformations in the telecommunication industry which are rapidly changing the rules for competing. How well and how quickly a company embraces these new rules will have a major impact on growth and profitability.

To sustain and to differentiate, service providers really need to focus on strategic service areas with long term planning in place. The modernization of the telecom infrastructure toward a more open, IP-focused IT architecture is like a ray of hope for the telcos and hence the need for deployment of applications such as IMS, IPTV, Rich Content, VoD, SDP etc. is much more essential at this point of time. The transition toward an IT-like structure where any application can run over many different types of network transport will revolutionize new service creation in the telco community. But to fetch the maximum benefits from this transition, telcos now need to simultaneously start evaluating underlying infrastructure hosting these applications/services. In such a complex scenario, TekPlus believes, business/ infrastructure solutions running on carrier-grade advanced platforms from established vendors is the key to success.

Given the above scenario, we at TekPlus believe that it's highly imperative for Service Providers to think about the hardware infrastructure that goes in. Hence the succeeding paragraphs in this paper will focus more on telecom hardware to help Service Providers take profound decisions that drive optimum business benefits.

What Service Providers require

New technologies/architectures such as SOA, Web 2.0, and Security 2.0 etc. are now becoming center-pieces. What customers want today is more personalized services rather than basic ones and that too at a cheaper price. Hence margins on commodity services such as voice or even some data services are drastically decreasing. This in turn creates a necessity to deploy platforms to rapidly introduce new revenue generating services and to transform the existing networks to reduce the costs of existing network services.

Examples of these types of services, which are co-deployed across the network, include video-based services; IPTV, VoIP, call management services, and OSS/BSS billing services. However, the next generation of services will combine content with Web services and data services over a unified IP-enabled network that will deliver a full value stack and a wide variety of services to a comprehensive range of endpoint devices. Hence service providers are in critical need for platforms that are highly scalable, versatile, flexible and cost-effective.

They want platforms that are pre-integrated and can easily be tuned for optimum benefits. Service providers will no longer opt for fork-lifting their infrastructure as soon as technology changes, not at least for another 5-7 years down the line. Hence they require a rugged platform that is based on open-standard and has carrier-grade functionality i.e. 5 nines availability, Carrier Grade Linux (CGL), highly redundant, and regulatory-compliant which also maximises the ROI involved. There is immense pressure on providers to keep their OPEX and CAPEX as low as possible and at the same time to be competitive, innovative and maintain quality. All these aspects enforce telcos to rapidly change their way of doing things i.e. a change in business models, processes, decisions related to offerings, decisions related to purchase of solutions and infrastructure etc.

TekPlus advice is more upfront and early planning on infrastructure implications very early in the business decision processes especially of evolving SDP and IMS platforms which currently does not happen - hardware considerations currently seem to be way down the list.. Considering hardware in the early decision cycles would address the threatening issues around Datacenter power and space utilization and allow for longer term planning and utilisation of infrastructure.

Telecom Hardware options

Infrastructure spending accounts for a significant chunk of an operator's total cost base, hence any decision related to this is critical. Telecom Operators broadly have two options to get their infrastructure right. One option is to go for dedicated, stand-alone appliances and the other is to go for consolidated hardware on standardized advanced platform. Dedicated stand-alone appliances fit into the short-term needs but cannot sustain the ever-changing technology landscape. Many of the appliances available today are built around the blade and chassis notion to boost up scalability and performance. However the chassis itself are proprietary based and cannot leverage cost savings from standard components thus overriding the benefits fetched from those appliances. Proprietary-based hardware brings in vendor lock-in and hampers operator's flexibility. The competitive pressure from new internet over-the-top vendors is so immense that service providers at this point in time cannot afford to repeat the same mistakes that have been done in the past. Hence TekPlus believes, to sustain as well as flourish in such a competitive marketplace, Telecom Operators ought to be opting for consolidated hardware based on Commercial off the shelf (COTS) platforms because the benefits are bucketful.

Today the need is for a common platform – a platform that is open-standard based, has reusable components, can scale up and down on demand, sustain longer-term technology changes and provides optimum performance/price. Consolidated hardware on advanced platforms does all this for you and brings in reduced time-to-revenue at overall less cost. It marries the power, agility, innovation and cost structures of enterprise computing with the ruggedness and reliability demands of the telecom marketplace to launch the new era of on demand, next generation communications. Commercial-off-the-shelf (COTS) approach provides freedom of choice, lower deployment cost and freedom to mix and match different components as per need. The advanced platform offers Economy of scale in the form of re-using different hardware and software modules in multiple products. There is a significant inherent OPEX saving as a result of module re-use that manifests itself in two ways: lower levels of overall inventory; and a reduction in the amount of training/ cross-training required among the users.

There are a number of advanced platforms available; but only two of them currently stand tall in the marketplace. One of them is Blade Center HT (BCHT) from IBM and the other one is Advanced Telecom Computing Architecture (ATCA) from PICMG. Both these platforms have many things in common and are beginning to co-exist in the marketplace. Both platforms have similar external views with a 12 blades, 12U chassis. Also on the management side these platforms are similar to each other as both use IPMI for internal and OpenHPI for external management. AMC card support as well as μ TCA chassis support is also available for both standards. In addition, both BCHT and ATCA are Network Equipment Building Standard (NEBS)-3 and ETSI compliant. However despite the commonality, the platforms do vary in certain attributes and both possess different strengths and weaknesses whilst still evolving. Before looking at the two platforms more closely we need to keep in mind the actual needs from the platforms. For example, as demand for video based services and quality of experience intensifies, the need for enormous processing power as well as I/O transactions is becoming more stringent. So the ideal telco platform must be at par for both compute centric as well as I/O centric applications. One size will not fit all and hence TekPlus believes both platforms will have to co-exist in a telco infrastructure thereby leveraging each platform's unique attributes for overall optimum ROI.

TekPlus has had a closer look at both these platforms and evaluated them considering certain attributes which are mentioned below. But the key here for the telcos is to rank these attributes and start with the platform that currently strategically fits best into their long-term plans.

Closer look at BCHT and ATCA

As mentioned above, both these platforms are born out of documentation supplied from multiple standards bodies. This documentation includes specifications for platform elements such as chassis dimensions, backplane properties, module size and backplane interface specifications, power rating, cooling, etc. However slight twist and tweaks in a few specifications has created some differences in these platforms. The key here for the telcos is to evaluate these attributes in conjunction

with the issues around interoperability, particular vendor's future roadmap, strength of their eco-system partners, ability to reduce technology upgrade cycles and more importantly the applicability of the platform itself.

As can be seen from the table below, these platforms vary in form factor and base specifications. IBM BCHT definitely has an upper hand over ATCA currently in case of Compute-intensive applications such as Services Plane/Control Plane Applications – Directory Services, Gaming, Applications servers for IMS, IPTV, VoIP, VoD and advanced security, HLR/HSS, Session Border Controller (SBC), Wireless Base Station Controllers, and many more.

On the other hand, ATCA currently has a slight advantage over BCHT in case of I/O-intensive applications such as Transport Plane Applications - Signaling Gateways, Wireless Access Gateways, Media Gateways, etc. It is worth noting that one has to look at the I/O debate in detail as there is an argument to be made for throughput on each port and thus merely having more ports may not be the ideal requirement. The bottom line for both these platforms is great performance i.e. they are resilient, scalable, and flexible carrier-grade platforms. The modular architecture and COTS technology brings in significant cost savings and reduced time-to-market. Hence a clearer picture can be gained only if we deeply evaluate these platforms considering performance/price ratio, much more CAPEX & OPEX savings and easy availability of high-end technologies such as quad-core CPUs, more memory and large storage on blade, advanced CGL support, high-speed switching, etc. A white paper out soon will look at these issues in more detail but below we highlight some of the reasons as to why TekPlus believes the IBM BCHT currently has the advantage over the ATCA platform.

The IBM Blade Center architecture is similar for Enterprise IT as well as the Telco carrier grade space and hence leverages economy of scale. So by spreading their cost around a much bigger pie, IBM can offer platforms at much lower price but not to the detriment of quality. On the other hand, because ATCA is purely telco-focused it misses out on the high-volume play. TekPlus believes that over time it will be impossible for vendors to maintain two different platform architectures – one for IT and one for Telco especially as the demand on Telco infrastructure becomes as intensive as current enterprise IT.

Another advantage IBM brings is its vast knowledge as a systems integrator and the resources globally to be a single point of contact for a fully integrated platform. This minimizes the issues around interoperability thereby reducing the hassles of hunting for different components, an ideal example of this is IBM's activities around Blade.org making it defacto open environment. By leveraging the strengths of its eco-system partners, IBM or its partners can deliver pre-integrated, tested and validated platforms that can straight-away go into the existing telco infrastructure.

Higher performance/watt power and cooling capabilities in a platform are ideal for telcos deployment. This coupled with efficient fail-over mechanisms can bring in significant reductions of power consumptions, resulting in reduced OPEX. Currently IBM BCHT with its 400 watts/blade capabilities is more applicable compared to -200 watts/blade

Attributes		IBM BCHT	PICMG ATCA
Market Attributes	Business Model	High Volume Low Margin	High Margin Low Volume
	Offering Model	Integrated system platforms	Components parts
	Target Market	Enterprise IT + Telco Market	Only Telco Market
Functional Attributes	Ideal for	Compute-intensive applications	I/O-intensive applications
	Slots available	12 blade slots + 8 switch slots	12 blade slots + 2 switch slots
	Power & Cooling capabilities	400 Watts/blade	~200 Watts/blade
	Technology Availability	High	Moderate
	I/O Capabilities	AMC, microTCA, PCI	AMC, microTCA
	Power Supply Module	Redundant DC or AC	Dual Redundant DC
	Warranty	3 yrs onsite limited warranty	1-2 yrs limited warranty (depending on the vendor)

capabilities provided by ATCA. The 200 Watts/blade specification is somewhat restricting ATCA vendors to incorporate high-speed processing power delivered by new high-end processors such as multi-core CPUs in their platforms. We believe the ATCA specifications will have to change over time to accommodate more powerful blades. As mentioned above, to achieve faster time-to-market easy availability of High-end Technologies is must. Technologies such as Quad-core CPUs, 64GB on blade, multi-terabyte storage blade, 10GB switch from system vendor etc. are readily available on IBM BCHT. Here the vast eco-system of ISV's and IHV's come into the picture. As IBM has a large number of eco-system partners it can reduce the technology upgrades cycles and better serve the telco customers. ATCA's ecosystem is still growing and is not so matured and hence is grasped with long delays and limitations. As more and more vendors start adopting ATCA this scenario might change. However TekPlus believes this will take some time and currently BCHT is more capable of providing advanced technologies i.e. reduced time-to-market and eventually large ROI.

TekPlus also believes from its conversations with many Network Equipment Providers that they are not ready to put all their cherries in the ATCA basket and have a dual prone approach – on the one hand encouraging ATCA standards - for obtaining maximum benefit from a choice of numerous suppliers - whilst also creating propriety based solutions which are as near to open standards as possible but which are highly tuned to the particular needs of each service provider. This necessarily means that they will focus on differentiating at the software layer whilst utilizing the best hardware infrastructure solutions which may or may not be on ATCA.

Conclusion

Network infrastructure is being transformed as carriers and service providers prepare to deliver the next generation of IP-enabled workloads, including IMS, VoIP, IPTV, and VOD. The mix of workloads, and the technology components that will support that mix, can be expected to change over time. The modular, flexible designs of advanced platforms fit telecommunications customer requirements for systems that can be quickly and easily updated over time as business requirements change. As telcos evaluate these new platforms it becomes a necessary requirement to plan it early into their decision making cycle. The decisions made at this stage on this advanced platform infrastructure will have a significant impact on OPEX and CAPEX over a longer time-frame. As none of these standards, BCHT, ATCA, μ TCA, AMC etc. fits for all; they need to co-exist and telcos have to think in terms of what is the right solution for the right service to be delivered and optimize it to that level. These platforms in turn will require more and more intense processing and I/O power and will probably move to a curve very near to high-end Enterprise IT requirements. As this happens telcos will have to look at vendors that can incorporate this into their cycle and make this happen much faster with very fast deployment cycle and upgradeability.

Thus the centrepiece of our advice – Advanced solutions, standardized platforms and long-term planning done well in advance – will drive more services offerings quicker for more revenue and hence more growth for the Operators and bring better rewards on OPEX and CAPEX by leveraging the Infrastructure platforms over a number of years. We at TekPlus believe at this point in time IBM BCHT fits these requirements better and should be considered when analyzing and evolving your telecom strategy.

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