

Lower Storage Power and Cooling Costs

Astute Networks has developed the Caspian R1100 Edge Storage Blade to bring down the power and cooling demands of storage for ATCA chassis. The advent of the 10Gb ATCA mid-plane option now makes internal storage blades, using iSCSI, the right choice to get the performance, reliability, manageability while lowering operating costs. Internal iSCSI storage blades leverage the ATCA chassis power and cooling vs. External FC which requires significantly more power and operating costs. The reduction in power and cooling cost directly lowers the cost/subscriber support in each ATCA frame. In this paper we review the advantages of reduced power and cooling with Caspian R1100 Edge Storage Blades versus external FC storage.

The Extra Costs of External FC Storage

For years external Fibre Channel RAID has been the preferred model for centralized storage in ATCA chassis. However, external Fibre Channel adds significant power and cooling requirements to ATCA chassis and drive incremental costs. The key drivers of these increased costs include:

- ◇ **Not ATCA Form Factor** – External FC is not ATCA form factor and does not leverage the management, power, cooling and other infrastructures benefits of the ATCA chassis.
- ◇ **More Devices equals More Power** – Total part count to install an FC solution for 24 servers involves almost 80 power consuming components versus 4 ATCA Caspian R1100 blades. Since most external FC connection are connected to the FC RAID, via an AMC FC HBA and FC SFPs they draw extra power, increasing power and cooling costs.
- ◇ **Power and Cooling Overhead** - The use of external FC storage also places greater demands for power and cooling on the rack. This adds incremental cost and reliability concerns for Telcos.

iSCSI Storage Blade Power & Cooling Benefits

Astute Networks' Caspian R1100 Edge Storage Blade is designed to provide high performance, high availability storage with a very low power and cooling budget which lowers the operational storage cost per server.

- ◇ **80% Lower Power and Cooling Costs** – The integrated design of Caspian eliminates the need and cost of power consuming external FC, AMC HBA and FC SFP components. The accompanying chart shows storage power and cooling requirements are reduced by over 80% versus comparable external FC storage.

- ◇ **Less Hardware equals lower costs** – Reducing the total part count of storage lowers the power and cooling requirements which in turn drops the cost per subscriber.
- ◇ **ATCA Compliant Power & Cooling** – By leveraging the 10Gb ATCA chassis power and cooling system standards, Caspian is fully compliant with all ATCA solutions.

	24 ATCA Servers w/External FC	24 ATCA Servers w/R1100
Storage Components	External FC	Caspian
RAID Hardware	6	4
FC HBAs	24	0
FC SFP	48	0
Total Items to Purchase	78	4
Power Consumed per Unit (W)		
RAID Hardware (Watts)	750	200
FC HBAs (Watts)	13	0
FC SFP (Watts)	2	0
Operational Power Used/Unit		
RAID Hardware (Watts)	4,500	800
FC HBAs (Watts)	312	0
FC SFP (Watts)	96	0
Total Operational Power Used	4,908	800
Cooling Required (Power + 25% Overhead) in Watts		
RAID Hardware	5,625	1,000
FC HBAs	390	0
FC SFP	120	0
Cooling Power in Watts	6,135	1,000
Total Power Used (Power + Cooling) in Watts		
RAID Hardware	10,125	1,800
FC HBAs	702	0
FC SFP	216	0
Total Power Used Watts	11,043	1,800
Annual Power Costs*		
Total for Operational Power	\$3,869	\$631
Total for Cooling Power	4,837	788
Total Power Consumed	\$8,706	\$1,419