

Astute Networks Keeps Drives Operational With “Cool Runnings”

The 1993 movie, “Cool Runnings” made the Jamaican Olympic Bobsled Team famous, but running cool is also an essential Network Equipment Building System (NEBS) requirement. Heat is the enemy of network reliability. That is why operators, telecommunications companies and network equipment providers (NEPs) specify NEBS-class equipment to keep their networks running cool under the most severe environments.

There are as many strategies in the telco business as there are operators, which range from those selling the lowest cost services to those providing the most innovative new features. However, to remain competitive in this market, operators must ensure the networks they are supporting remain operational and reliable. Billions of dollars each year are spent to make sure that subscribers select and use operator networks. The revenue comes from recording billable transactions and distributing new services. At the core of this business is the simple disk drive. Protecting the operating environment of the disk drive is crucial to maximizing revenues, extending capital investments, lowering operating expenses and keeping subscribers on the network.

When it comes to protecting the operations of a network, heat is the principal operational enemy of reliability. That is why running cool is vital to the business goals of operators, telcos and NEPs. Astute Networks’ Edge Storage Architecture uses an innovative Active Cooling Technology (ACT) feature to keep components running cool and keep networks reliable.

NEBS – The Global Benchmark for Reliability with Cool Running

As most people in the telco industry are aware, NEBS specifications are a set of environmental standards for operation of computer and network equipment in telco implementations. The NEBS standard is the most common set of safety, spatial and environmental design guidelines applied to telecommunications equipment. The NEBS standard was developed by Bell Labs in the 1970s to standardize equipment that would be installed in a telecommunications central office. The objective was to make it easier for a vendor to design equipment that was compatible with a typical Regional Bell Operating Company (RBOC) central office. As such, NEBS set the global benchmark for reliability and operations under extreme conditions.

There are three levels of NEBS certification:

- ◇ NEBS Level 1- means there is a very low threshold of equipment hazards and network degradation. NEBS Level 1 addresses the personnel and equipment safety requirements of GR-63-CORE and GR-1089-CORE. Operability requirements are not enforced for NEBS Level 1 certification. This level of certification is primarily used for testing prototypes in lab environments. RBOCs require all equipment deployed by competitive local exchange carriers to be NEBS Level 1 certified.
- ◇ NEBS Level 2 - addresses equipment operability in a controlled environment (usually data centers) that will not be subjected to environmental stress. Due to ambiguity, this level of certification is rarely, if ever, used.
- ◇ NEBS Level 3 - is a term from a Telcordia (and its predecessor company, Bellcore) special report, SR-3580, which means the equipment meets all of the requirements of GR-63-CORE and GR-1089-CORE specifications. NEBS Level 3 has strict specifications for fire suppression, thermal

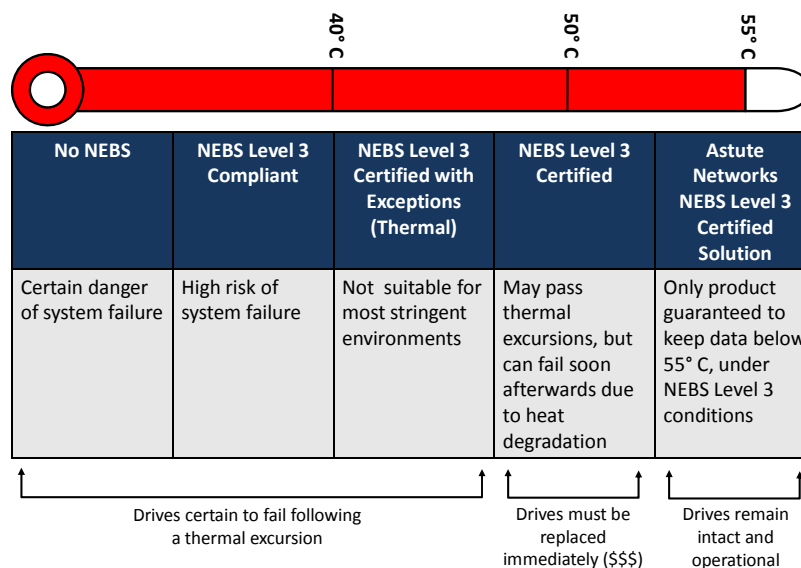
margin testing, vibration resistance (earthquakes), airflow patterns, acoustic limits, failover and partial operational requirements (such as chassis fan failures), failure severity levels, radio frequency emissions and tolerances and testing/certification requirements.

Reliability - Cool Running with No Thermal Exceptions

The NEBS standard put the “thermal margin testing” in its Level 3 specification because it is one of the most difficult and vital tests for equipment located on the edge of the network. Equipment at the edge needs to have the highest level of operational integrity since it is often isolated and not easy to repair and has direct effects on the subscriber. Since NEBS Level 3 is so demanding, many equipment vendors claim to support NEBS Level 3, but they can only do this by making exceptions to the rules. These exceptions to the NEBS Level 3 specifications increase the risk of network failure and should make operators, telcos and NEPs cautious about using these products when constructing their networks. However, Astute Networks’ Caspian Edge Storage Architecture keeps things running cool...*without* thermal exceptions.

Caspian – NEBS Reliability with No Thermal Exceptions

How does Astute Networks keep things running cool? They provide Active Cooling Technology on every R1100 and J1110 Caspian Edge Storage Blade product while the Caspian E1112 Rear Transition Module (RTM) utilizes a proprietary passive cooling design. NEBS Level 3 is the benchmark for running cool, and the thermal margin testing requires a 96-hour test at 55°C to prove reliability. Many leading vendors claim to be NEBS Level 3 compliant, but they can only do this by claiming exceptions to the rules. The NEBS certification process does allow manufacturers of network gear to note and claim exceptions, however, one of the most common and dangerous exceptions to reliability is thermal margin testing. The key business impact for taking exemptions on thermal margin testing is a reduction in reliability due to disk drive failures. Astute Networks does not take an exception to this vital requirement.



Beating the Heat with Active Cooling Technology

Astute Networks' Active Cooling Technology measures the heat of disk drives in storage blades and uses dynamical heat management components to draw heat away from the disk drives to keep them running cool to beat the heat from demanding operating environments. The Active Cooling Technology provides:

- **More Cold Hard Cash** – The more transactions that the storage records, the more the operator can bill in revenues. Astute Networks' ACT makes sure the storage in the field is ready to record revenue and maximize operations.
- **Increased Network Reliability** – Astute Networks' Caspian Edge Storage Blades do more than just meet NEBS thermal margin testing; they increase the reliability of the network. Higher reliability means more satisfied subscribers and sustainable revenue streams for operators.
- **Real NEBS Level 3** – If there are always exceptions to the rule, then it is not truly a rule. Astute Networks' ACT meets true NEBS Level 3 requirements. When investing in products with NEBS capability, operators, telcos and NEPs should always select a vendor that can deliver the rule, not the exception.
- **Lower Field and Service Costs** – The key driver of lowering operational field and service costs is high-reliability network components. Astute Networks Caspian Edge Storage Blades leverage ATCA high-availability environments to deliver better field reliability than external storage systems.
- **RTM Disk Cooling** – The ability to effectively cool disk drives on an RTM has typically posed a problem to the ATCA market – until now. Astute Networks' proprietary passive cooling solution for its RTM products addresses this pervasive thermal issue, thus making the Caspian Edge Storage product family a total NEBS solution.
- **Over 600% Lower Power and Cooling Costs** – Astute Networks' Edge Storage Architecture uses ATCA to not only run cooler, but also to reduce overall power required in providing fault-tolerant storage. Astute Networks' Caspian Edge Storage Blades reduce total power consumption by over 600% versus comparable external Fibre Channel storage. The integrated design of Caspian eliminates the need and cost of external storage boxes, advanced mezzanine cards, host bus adaptors, cables and Fibre Channel SFP power consumption.
- **ATCA Blade Storage Advantage** - Since most external storage solutions for operators are more complex, have higher network component counts, require greater capital costs and fail to meet NEBS thermal margin testing, it is almost certain that these storage options will be less reliable.

To Learn More

To learn more about Astute Networks and its NEBS-certified Caspian Edge Storage Blade products, go to www.astutenetworks.com.

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