ATT-TP-76207
AT&T Integrated Cloud (AIC) Store and Compute Equipment Physical Design Requirements

To: Telecommunications Equipment Suppliers

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1. General

1.1. Purpose

This document provides equipment suppliers with a comprehensive reference regarding the approval for use for store and compute device placement in AT&T. An equipment's compliance with the requirements and objectives of this section will not be the sole basis for the acceptance of the equipment, however non-compliance with one or more of the requirements or objectives of this section may be the basis for equipment denial of purchase.

1.2. Scope

This standard is restricted to the minimum AIC safety and engineering physical design requirements for store and compute electronics equipment (see Note 1). The physical and software architecture of the AIC network is designed to provide high network resiliency that will provide acceptable levels of availability for most, if not all services. If an enhanced level of AIC equipment availability is required for a specific need, the manufacturer will be directed to ATT-TP-76200 for equipment approval (see Note 2).

Note 1: This standard does not address AIC network equipment (e.g. switches, routers, etc.) or availability requirements (aka "NEBS") that are sometimes used to achieve enhanced levels of equipment availability required to meet critical service level goals.

Note 2: Separate infrastructure operating requirements for alternative operating environments such as Modular Technical Space (MTS, aka Containers) and existing Carrier Communications Space (CCS) are specified in other Technical Practices such as ATT-TP-76200. Compliance to these requirements will be specified as needed.

1.3. Process

All AIC store and compute equipment must demonstrate conformance to the subsets of requirements contained in ATT-TP-76207. The Equipment Detail Form must be completed in full and submitted during the equipment certification process. All sections must be answered truthfully by the equipment vendor to the best of its knowledge. Equipment found not to be in conformance to the specified subsets may be limited in location(s) of deployment. (See Appendix A)

1.4. Revision History

Issue 1: December 2015

2. Requirements

2.1. Safety Requirements

Safety requirements meet regulatory and code requirements for the equipment and deployment locations.

2.1.1. AT&T Technical Space

The following requirements apply to all AIC Store and Compute equipment deployed in any AT&T Technical Space. AT&T Technical Space refers to AT&T terminology for any space within the company that is dedicated to housing equipment infrastructure that supports the company's information and/or telecommunications (ITC) services and functions (e.g., EDCs, NTCs, COs, SNRCs, VHOs, etc.,).

R1-1: Listing

Equipment shall be appropriately listed for its purpose by a Nationally Recognized Testing Laboratory (NRTL – e.g., Underwriter's Laboratory). Typically the appropriate listing for store and compute equipment is UL 60950 or one of its international variants.

R1-2: FCC Part 15, Unintended RF Radiator

Equipment shall comply with the radiated and conducted emissions specifications of FCC Part 15.

2.1.2. AT&T Telco Carrier Communication Space

The following requirements apply to equipment deployed in any AT&T Telco Carrier Communications Spaces (e.g. Central Offices).

R1-3: Fire Spread

Field conditions for AIC deployment may require deployment in existing Carrier Communications Spaces that utilize Fire Code Exemptions and do not have automatic fire suppression. Store and compute equipment deployed in these locations shall meet the enhanced fire spread requirement below.

Equipment shall meet ATIS-0600319.2014 *Equipment Assemblies – Fire Propagation Risk Assessment Criteria* (see note below).

Note: Some equipment may conform to this requirement by way of inherent design features that include all items below:
- Height of 2 RU or less
- Single horizontally mounted main printed circuit board
- Metallic 6 sided fire enclosure with metallic or non-metallic front cover or faceplate
- Non-metallic materials shall comply with ATIS-0600307 or equivalent

For equipment that does not meet the fire spread requirements of ATIS-0600319.2014 by way of inherent design features noted above, the manufacturer shall attest that the equipment has successfully passed the burn test as referenced in the ATIS document.

2.2. Minimum Infrastructure Operating Requirements

Minimum infrastructure operating requirements state that the equipment works as intended and can be installed efficiently and effectively in AIC deployment locations (see note below). New equipment is required to integrate into the network seamlessly (fit, form and finish), without the impact or cost pressure to compensate for the product introduction. This supports the goal of having a "homogeneous" network that does not require special practices/procedures to accommodate each new equipment installation. These requirements apply to all equipment deployed in AT&T Technical Space.

Note: Separate infrastructure operating requirements for alternative operating environments such as Modular Technical Space (MTS, aka Containers) and existing Carrier Communications Space (CCS) are specified in other Technical Practices such as ATT-TP-76200. Compliance to these requirements will be specified as needed.

2.2.1. Environmental

R2-1: Temperature and Humidity Operating Requirements

Equipment shall be designed and verified to meet the following requirements:

Table 2-1 Temperature and Humidity Limits

Conditions	Limits
Operating Temperature	15^0C to 35^0C*
Rate of Temperature Change	20^0C/hr
Operating Relative Humidity	8% to 80%
Dew Point	17^0C
Notes: * Derate maximum allowable temperature 1^0C/300 m above 950 m	

R2-2: Energy Efficiency

When equipment is eligible for the United States Environmental Protection Agency (EPA) Energy Star® certification for Computer Servers, the supplier shall report if the equipment is EPA Energy Star® certified (Yes / No). If Yes, a copy of the written certification by a Certification Body recognized by the EPA for Computer Servers shall be provided. Eligibility criteria can be found at www.energystar.gov/specifications. AT&T's intent is to favor equipment that is Energy Star® certified.

When applicable, the Alliance for Telecommunications Industry Solutions (ATIS) Telecommunications Energy Efficiency Requirements rating (TEER) shall be measured and reported. Reference ATIS-0600015.2009 and supplemental standard

ATIS-0600015.01.2014, *Energy Efficiency for Telecommunication Equipment, Methodology for Measurement and Reporting – Server Requirements*, www.atis.org/docstore/default.aspx. AT&T's intent is to use the ATIS TEER rating to improve the energy efficiency of our network and in our Supplier Citizenship and Sustainability Report Card.

If the ATIS TEER rating is unknown, the latest SPECpower_ssj2008 server rating and output test document may be substituted. This benchmark is available from the Standard Performance Evaluation Corporation, 6685 Merchant Place, Suite 100, Warrenton, VA 20187.   www.spec.org

R2-3: Equipment Air Flow

Establishing consistent air flow patterns for all network elements supports the efficient design and use of infrastructure cooling technologies.

Air cooled equipment shall be designed and verified to utilize a front-aisle air inlet and a rear aisle exhaust.
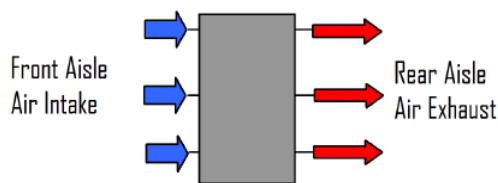
R2-4: Acoustic Noise

Manufacturer shall report the measured acoustic noise of equipment. It is a strong preference and an objective of AT&T that equipment not exceed an operating acoustic noise level of 78 dBA sound pressure at 78^0F, as measured according to ANSI ASA S12.10-2010, or a comparable industry standard.

R2-5: Equipment Units Design

Equipment physical design shall:

   A. Incorporate the use of holes or closed slots in mounting hardware for attachment to equipment framework mounting surfaces

   B. Be designed for 19" framework mounting

   C. Accommodate mounting in equipment frameworks using a 1-3/4 x 19 inch mounting hole pattern.

2.2.2.   Alarms and Indicators

R2-6: Alarms

An amber or red LED, located on the faceplate of the network element, shall be used to indicate the current status of any alarm. The LED shall be lit indicating that an alarm condition exists. The alarm LED is extinguished when all active alarms clear.

R2-7: Unit Indicator

It is preferred, but not required, that equipment provide a remotely activated blue LED on the faceplate and/or backplane of the Network Element to function as a unit indicator.

2.2.3.   Power

R2-8: AC and DC Power

Field conditions for AIC deployment may be either AC or DC powered. All equipment shall offer AC powered options. It is strongly preferred that all equipment also be available for purchase in a DC version.

R2-9: AC Powered

AC powered equipment shall accommodate a voltage range from 110V to 240V.

R2-10: DC Power – Nominal -48Vdc

Nominal -48Vdc is the preferred and standard platform for power delivery to network equipment. If the equipment uses a DC voltage other than -48Vdc, it shall be provided with internal DC-DC converters to meet the intent of this requirement. The design criterion of the nominal -48Vdc power is based on a normal operating voltage between -50V to -56.7Vdc, with nominal rating of -48Vdc and low voltage of -40Vdc measured at the input terminals of the network equipment.

R2-11: DC Battery Return Conductor

Equipment battery return configuration shall be DC-I. Equipment configured with the battery return and chassis ground bonded together (DC-C) shall not be deployed in the network. The DC-C configuration cannot be utilized with dual plant equipment operation.

R2-12: DC Power – Terminations General

    A. Power terminations shall be located on the rear of the chassis.
    B. All power connections shall be clearly labeled and fully protected with a non-metallic, non-flammable cover.

3. APPENDIX A
ATT-TP-76207 Equipment Detail Form

3.1. Purpose

The Purpose of this Appendix is to provide a sample of the questions that will be included on the Equipment Detail Form. This form is not to be submitted independently, but will be included in the documentation required for a tri-annual bid submission.

TECHNICAL SPECIFICATIONS			
Refer to ATT-TP-76207 for specific requirements			
Safety		**Engineering**	
UL 60950 Compliant*		Rack Units	
FCC Part 15 Compliant*		Weight	
ATIS 0600319.2014 Compliant*		Total Watts Max (W)	
		Max T. Sys Leakage Current (A)	
		T. Sys Peak Inrush Current (A)	
		Energy Star Rating*	
		ATIS TEER Rating	
		AC Power Range	
Environmental		Nominal -48V DC Powered*	
Operating Temperature Range		Meets DC Power Termination Rqmts*	
Operating Humidity Range		Has DC Battery Return Conductor*	
Operating Acoustic Noise (dBA) at 78°F		Has Visual Status/Alarm Indicators*	
Total Heat Dissipation		DC Fuse Style	
Front to back air flow*			
19" Rack Mountable*			
* Please answer Yes or No			