

1 SCOPE OF WORK

- 1.1 NTC Data Center Islamabad comprises two Availability Zones, i.e. POD-I with 30 racks and POD-II with 20 racks. The existing Huawei-DCF Upgradation of the Rack Power Densities, cooling infrastructure is to be carried out at POD II and backup UPS at UPS 1 & 2 to meet NTC's operational requirements and support high density Infrastructure. As the existing Data Center infrastructure is Huawei-based, the required equipment has been specified from the same OEM to ensure compatibility, seamless integration, system standardization and continuity of OEM support.
- 1.2 The scope of this project comprises the **supply, installation, testing, commissioning, integration, and successful handover** of equipment and services required for the upgradation of rack power density, precision cooling infrastructure, backup UPS capacity, and DCIM integration at the NTC Data Center (NDC), Islamabad. The objective is to enhance the existing Huawei Fusion Module 2000 POD infrastructure to support higher-density IT equipment while maintaining operational continuity and the existing TIA-942 Rated-3 (Tier III) data center design principles.
- 1.3 The scope of work shall include, but not be limited to, the following:
 - a) **Dismantling:** Safe dismantling, removal, relocation (where applicable), and disposal/handing over to NTC of the existing single-phase IT racks, associated PDUs, cabling, and related accessories to accommodate the installation of new three-phase racks and in-row precision cooling units. The Contractor shall disconnect, remove in a planned manner without compromising the operation of the live data center. Any civil, electrical, containment, flooring, or cable management modifications required for the installation of the new equipment shall be included in the scope. All dismantling and installation activities shall be carried out in accordance with Huawei OEM recommendations and without affecting the **existing TIA-942 Rated-3 (Tier III) operational requirements**.
 - b) **Supply of Racks:** Supply and installation of new Huawei 42U IT racks complete with all required accessories, cable management, blanking panels, grounding components, side panels, sealing plates, and associated hardware for installation within the existing Huawei Fusion Module 2000 POD.
 - c) **Supply of PDUs:** Supply, installation, testing, and commissioning of intelligent three-phase rack Power Distribution Units (PDUs) with minimum 40A input rating, outlet-level monitoring, environmental sensor support, and integration with the existing Huawei NetEco DCIM monitoring platform.
 - d) **Supply of Power Modules:** Supply, installation, testing, commissioning, and integration of Huawei UPS5000-E 50 kVA power modules into the existing UPS-1 and UPS-2 systems, including all accessories, communication modules, configuration, firmware compatibility verification, synchronization, load sharing, and functional testing.
 - e) **Supply of Electrical Infrastructure:** Supply and installation of all associated electrical infrastructure including breakers, industrial sockets, power cables,

terminations, grounding, labeling, cable management, testing, and commissioning required for complete implementation.

- f) **Supply of Cooling Units:** Supply, installation, testing, and commissioning of Huawei FusionCol5000 in-row precision cooling units, complete with refrigerant piping, insulation, condensate drainage, humidifier water connections, teamwork/group control functionality, and all accessories required for reliable operation within the existing Huawei Fusion Module 2000 POD.
- g) **Supply of Allied Material:** Supply and installation of refrigerant-grade copper piping, insulated drain piping, supports, fittings, brazing, refrigerant charging, pressure testing, vacuum evacuation, and all ancillary materials required for complete installation of the precision cooling system.
- h) **Thermal Assessment:** Conduct thermal assessment of the upgraded POD including cooling load verification, airflow assessment, heat dissipation verification, thermal performance testing, and commissioning to ensure adequate cooling performance for the expanded IT load.
- i) **Integration:** Complete integration of the newly installed racks, intelligent PDUs, environmental sensors, precision cooling units, and upgraded UPS systems with the existing Huawei NetEco DCIM platform, including communication interfaces, configuration, programming, testing, alarm verification, and commissioning.
- j) **Installation and Commissioning:** Perform all installation, testing, commissioning, and integration activities in accordance with Huawei OEM recommendations while ensuring compatibility with the existing Huawei Fusion Module 2000 infrastructure. The Contractor shall ensure that the implementation does not compromise the existing TIA-942 Rated-3 (Tier III) concurrent maintainability, redundancy, reliability, or availability of the operational data center.
- k) **Documentation:** Submit complete documentation including shop drawings (where applicable), test reports, commissioning reports, cable schedules, configuration records, operating manuals, and warranty.

- 1.4 The Contractor shall provide all equipment, materials, accessories, communication interfaces, software licenses (where applicable), firmware updates, tools, consumables, transportation, labor, supervision, testing equipment, and any other items necessary for successful completion of the works, whether specifically mentioned or not, to deliver a fully operational and integrated solution.