



Huawei warehouse-based DC integration service

With the advancement of information technology, cloud investment and data center construction will continue to grow. However, the long & costly construction cycle and high TCO for data centers remain problematic. A sustainable model based on supply & demand is needed as enterprises transform for ICT.

By Qian Shenxing & Wu Ning

From modular to warehouse DC

During traditional DC construction planning, builders and integrators pay special notice to the availability, stability, and security. However, in some cases, availability is over prioritized, leading to one-off planning & construction, excessive investment, idle assets, and slow deployment. What's more, poor scalability can be a real problem, but not if your DC is modular.

DC modules can be all-in-one or specialized, with the most common form factor in this case being the freight container – a cheap and easy form factor to be sure, but less so if the environment is indoors. Huawei has launched the first indoor solution in this vein – a modular data center best suited for warehouse spaces. It is specially designed for traditional buildings, with its modules housing either cabinets, power distribution, or cabling, supplemented by an independent fire suppression system.

Hot and cold air flows are separated, with in-row air conditioning (AC) supported. Combined, these measures can effectively improve both the power density per cabinet and overall energy efficiency. But of course, the big feature is that this solution can utilize a business's idle spaces, with minimal modification, or perhaps none at all.

Huawei warehouse-based DC service solution

Carriers cannot transform traditional DCs on their own; they must cooperate with strategic partners over the long term if they hope to keep the pace & efficiency high. Huawei's warehouse-based modular DC integration service solution encompasses professional consultancy & planning, E2E integration/design, delivery by contract, and intelligent & highly-efficient O&M, making for rapid construction, smart management and flexible expansion.



Professional consultancy & planning

This process encompasses business & strategic consultancy, network & technology consultancy, and operational consultancy, spanning the entire DC course of transformation. Huawei has accumulated substantial DC statistics from over 1,000 samplings worldwide spanning 32 different industries, giving us an indepth understanding of market trends and user behaviors/preferences. What's more, Huawei has established a database for global DC site selection and designed 20 site selection assessment models that take into account 39 different factors, such as local economics, power supply, weather & landscape, and technology levels.

E2E integration design

Huawei's warehouse-based DC architecture consists of four layers - base, hardware, isolation, and top coverage. The base layer is the foundation and load-bearing platform, on which the AC piping is installed. It consists of a rack-sized equipment base, a water pan, and a raised floor, while the hardware layer integrates most of the DC's equipment, including the server cabinets, power distribution cabinets, air conditioning, and fire suppression systems.

The isolation layer separates hot/cold air flows and prevents airflow short circuiting. The top of the contained cold air channel is made of tempered glass, allowing in natural light. LED lighting is also deployed in the channel. This design of contained hot/cold air channels ensures power efficiency.

The top coverage layer is the outside shielding for the modules and protects DC gear from external damage. In many cases, a warehouse based DC container will be installed in an old and/or renovated building which may have leakage or standing water, but the shielding of our solution keeps it essentially waterproof.

A proper DC requires a unified top-down design, from the service and IT layers to the infrastructure layer. Huawei can coordinate and unify E2E design thanks to the concerted efforts of our IT service team, infrastructure team, and construction team, ensuring IT sustainability. As an APAC founding member of the Uptime Institute, the DC branch of market analysts the 451 Group, Huawei boasts many Accredited Tier Designer (ATD) - certified experts and DC designers who enjoy over 15 years' industry experience. Huawei introduces computational fluid dynamics (CFD) and Building Information Modeling (BIM) tools into DC design to visualize the design in three dimensions, making for greatly improved design & communication efficiency and enabling design verification by sight. In December 2012, Huawei's desktop cloud project won the Data Center Blueprints award (the Oscars of the DC industry) from Datacenter Dynamics, while receiving tier-III



certification by the Uptime Institute.

Contract-based delivery

As of September 2013, Huawei successfully delivered over 330 DC projects and developed a four-stage quality project management system (planning, assurance, control and evaluation) covering 16 steps. This system enables efficient monitoring of the entire delivery process, which guarantees timely, quality, contract-based project delivery. Thanks to our thorough understanding of industry standards and project implementation, Huawei can fully satisfy customer needs and avoid unexpected work, realizing timely and high-quality delivery of the entire project and its subsystems (power distribution, AC, waterproofing, etc.).

New technological elements are pre-integrated and pre-tested by Huawei's professional integration & testing lab. Project materials are also tested by Huawei's Global Compliance and Testing Center (GCTC), which is certified and authorized by over 18 international and domestic standards organizations, including the FCC and China's National Accreditation Service for Conformity Assessment (CNAS), in over 20 fields, such as EMC and security.

Huawei's DC delivery team is composed of over 1,000 experts, accredited by the likes of ATD and VMware, as well as over 400 excellent global partners to ensure quality project implementation. Huawei has also partnered with over 60 top-tier suppliers, and our six supply chain platforms, distributed worldwide, can guarantee timely product delivery.

Intelligent and efficient O&M

Data collection and analysis systems, integrated within each DC module, enable precise management with real-time system data collected while conducting unified management, remote monitoring, and unattended operation, with reports generated automatically.

Success in the field

A Chinese operator set out to transform two warehouses (5,600 square meters in total) using Huawei's warehouse-based solution. Over 1,000 cabinets were to be deployed, with all components pre-fabricated and pre-engineered. Over the span of three months, Huawei completed the low-level design (LLD) and preintegration of machinery, sampled finished products, assessed factory targets, and successfully manufactured, delivered, and deployed these DC units on the aforementioned scale, totaling some 48 DC micro-modules and 1,100 cabinets. On the whole, this solution enables on-demand planning, deployment, and



expansion, with onsite assembly, timely deployment and delivery, and operation all included, helping carriers fully utilize their assets and take a stronger hold of the market.