A next-generation data center could be regarded as the ideal vessel for cloud computing. Huawei has deployed its desktop cloud container data center solution for in-house use; it now serves some 45,000 engineers, and has been recognized by the industry as one of the most reliable and capacious solutions of its kind, ushering in a new era of collaboration for the vendor.
Desktop cloud can help enterprises centralize IT resource management, enhance data security, reduce total cost of ownership (TCO), and “ubiquitize” employee access.

Clouds roll in at Huawei

Desktop cloud can help enterprises centralize IT resource management, enhance data security, reduce total cost of ownership (TCO), and “ubiquitize” employee access. Huawei embarked on its cloud journey in 2009, with employees at its Shanghai research center the first to enjoy desktop cloud services such as cloud storage and collaboration via Huawei’s self-developed thin client and cloud computing data center. Experiences in Shanghai proved promising, and this motivated the vendor to expand its cloud efforts in the container data center (DC) sphere.

Huawei container data center

Huawei initiated a container DC project for desktop cloud at its Shenzhen headquarters in July 2012. This particular model (IDS1000) adopts tier-III+ (99.98%) availability in terms of planning and design and a 2N architectural design for the core system. The first phase of this project aimed to serve some 10,000 R&D personnel, with another 20,000 R&D personnel joining in for the second.

Rapid deployment – Huawei’s IDS1000 container solution incorporates modularity into its very core. All components (power supply, refrigeration, IT, and control) are prefabricated and pre-engineered at the factory, with even the spare parts standardized, leading to a trim production cycle of less than two months. Engineers on site need only connect the cabinets to the local communications, power, and water, and this holds the installation time to under one week, with the time spent on construction overall reduced by 80% when compared to a more conventional solution, enabling even the fastest-growing enterprises to keep their storage ahead of the curve.
The container solution reduced CAPEX by 70% when compared with a leased data center (DC) and by 28% versus a traditional self-deployed DC, while reducing OPEX by 27% compared with a conventional DC.

Power efficiency – Power consumption is a serious hindrance to data center expansion. In 2011, 400,000+ data centers in China accounted for 70 billion kilowatt hours of consumed power, roughly 1.5% of China’s total for the year. Cooling and heat dissipation are issues as well, especially in the warmer climes (i.e., most of the markets that are growing).

Huawei advocates the strategy of “Green Communications, Green Huawei, Green World” in its operations, products, solutions and services. For the Shenzhen data center project, the power usage effectiveness (PUE) limit was set at 1.4; this would be good in Iceland, but it’s outstanding in a place where the average daytime temperature is above 27°C (80°F) for roughly six months out of the year.

This savings is accomplished through the channeled separation of hot and cool air flows, made possible through the proper allocation of box and cabinet space. This channeling avoids the partial overheating that can happen when air flows mix. A highly-efficient water cooling solution is also adopted where air conditioning units are located at the near end of the container (closest to the server). Hot air from the servers is captured instantaneously from the source so that the distance between the cooling source and hot air circulation is greatly shortened. This method brings down the power consumption of a fan by around 50%, while the single cabinet power density shoots up to 9kW.

Safety & security – Huawei’s container data centers are equipped with an air sampling system that enables both the detection and extinguishment of fires, while Huawei’s NetEco monitoring system employs Secure Sockets Layer (SSL) technology for data transmission, providing 24-hour smart remote monitoring for each module; this improves management efficiency for the system, making for a nice reduction in O&M costs.

A big difference

Starting from scratch, both phases of Huawei’s Shenzhen container data center project were completed in less than three months. The container solution reduced CAPEX by 70% when compared with a leased data center and by 28% versus a traditional self-deployed data center, while reducing OPEX by 27% compared with a conventional data center.

In December 2012, Huawei’s container data center project won the Data Center Blueprints award (the Oscars of the DC industry) from Datacenter Dynamics, a great achievement for the Chinese vendor. The IDS1000 was also awarded tier-III certification in May 2013 by the Uptime Institute, the DC branch of market analysts The 451 Group.

Huawei’s container data center enjoys a 15-year service life, and can work in temperatures from -40°C to +55°C, while its IP55-certified dustproof and waterproof design, and special corrosion resistance, ensures continued operation in a rough and tumble world. The IDS1000 has been successfully applied in such industries as telco, education, petroleum, medicine, and power, across Europe, Asia, Latin America, Africa and the Middle East.