Executive Summary

**Industry**
Governments and Public Utilities

**Challenges**
- Diversified divisions and service systems; dispersedly located terminals
- Various peripherals and high compatibility risks

**Huawei Solution**
- Provided an end-to-end desktop solution with FusionAccess, E6000 blade servers, S5500T IP SAN devices, S5352 switches, and CT5000 TCs.
- Provisioned 300 virtual desktops to be concurrently used by employees from 25 government agencies and more than 40 departments.
- Passed compatibility tests for more than 70 peripherals at one try.

**Customer Benefits**
- Efficient and centralized O&M management
- High peripheral compatibility, supporting quick project delivery and meeting various office requirements

Case Study

**Introduction**
On October 18, 2006, the Shanghai Pudong Authority established the first district-level public service center in Shanghai. The Public Service Center of Shanghai Pudong is an important platform for improving and innovating government services, improving social relationship of the government, and strengthening social construction. More than 500 employees from 23 commissions, offices, and bureaus, and from more than 50 functional departments work in the Public Service Center, and 196 counters have been set. People can learn service guides in a one-stop manner through the touchscreen, LED screen, and portal website in the Public Service Center. Since foundation, the Public Service Center greatly improves public affair processing efficiency and is highly recognized by the society.

**Challenges**
In the Public Service Center, various divisions as well as service systems exist. Terminals are dispersedly located, and service systems are centrally managed in the data center. The desktop cloud is suitable in this scenario, to centrally manage desktops, improve resource usage, and provide on-demand cloud computing services.

The desktop cloud needed to provision office desktops to 25 government agencies and more than 40 departments. Three types of desktops were required: counter desktop, background desktop, and office desktop. Office applications of different government agencies vary a lot.

- The Industrial and Commercial Bureau and Tax Bureau use parallel port printers to print bills.
- The Food and Drug Administration uses composite printers to issue certificates.
- The Real Estate Bureau and Registry of Marriages use large-sized scanners to scan documents.
- The Science and Technology Commission uses DVD-ROM drives to copy product information of enterprises.
- Different divisions have different bill, certificate, and document specifications and use different models of devices. Near 10 brands and more than 60 types of printers and scanners are involved.
- The Purchasing Department and Financial Department use multiple types of Ukeys, ebank devices, and identity authentication devices.

Therefore, workload of verifying compatibility on site was heavy, and high risks...
existed in peripheral compatibility verification.

**Huawei Solution**

The Public Service Center of Shanghai Pudong chose Huawei to construct the desktop cloud project. This project adopted Huawei-developed FusionAccess 5.*. In this project, Huawei E6000 blade servers, S5500T IP SAN devices, and S5352 switches were deployed. CT5000 TCs configured with dual-core AMD CPUs were used, supporting various peripheral ports and smooth video playback.

The desktop cloud provisioned 300 virtual desktops to be concurrently used by employees from 25 government agencies and more than 40 departments. The desktop cloud efficiently resolved common peripheral compatibility issues in the industry and quickly rolled out desktop services, enabling efficient customer service processing. Office experience was also improved, reflecting desktop cloud's values of efficient management, green office, and elastic cloud services.

Huawei FusionAccess 5.* adopted proprietary Huawei Desktop Protocol (HDP) to support device-level and port-level resource mapping.

Device-level resource mapping refers to that the client detects devices connected to it and controls the devices (device drivers need to be installed on the client). In this mode, common devices, such as keyboards, mouse devices, printers, TWAIN devices (such as scanners), and PC/SC devices (such as smart cards), are supported.

The device-level resource mapping mode provides low peripheral compatibility. If the client runs a Linux operating system, some peripheral drivers cannot be supported. In this case, the port-level resource mapping mode can be used. In this mode, the client only maps peripheral port data to a VM, and the driver installed on the VM detects the device. This is also called peripheral redirection. This mode provides high peripheral compatibility.

The Huawei FusionCloud Desktop Solution supports the following redirection types:

- **Redirect** of USB peripherals, such as the USB flash drive, USB removable hard disk, USB key, external USB DVD-ROM drive, USB camera, USB printer, and USB scanner.

- COM port redirection

- Printer redirection, including parallel port and USB port printer redirection

- **TWAIN** device redirection. TWAIN devices refer to devices that use the TWAIN protocol, such as scanners, digital cameras, and digital audio and image databases.

With strong capabilities of Huawei HDP, the project team quickly completed compatibility tests for more than 70 peripherals and provisioned services to 200 users. The system had been running stably for near two months. Peripherals can be normally used. There are three self-service office desktops printing 10,000 pieces of paper per day.

Peripheral compatibility issues occurred during testing and were quickly resolved, reflecting the R&D strength of Huawei desktop cloud.

For example, during testing, the HP N8420 scanner could not work on a CT5000
Linux TC but could work on a CT6000 Windows TC. After troubleshooting on site, it was found that this issue was caused by the USB 2.0 protocol used by the Linux TC. After USB 2.0 was changed to USB 1.1, the issue was resolved.

When a KVM screen splitter was used to switch between the cloud desktop and a host on another government network, the keyboard and mouse could not work after switching back from the host to the cloud desktop. After analysis, Huawei found that the hot swap function was disabled in code, and therefore the keyboard and mouse were not supported in the hot swap scenario.

**Customer Benefits**

The Public Service Center of Shanghai Pudong provides a place for government agencies to centrally handle affairs for people. Various service systems with heavy workloads exist, challenging desktop cloud deployment. The Huawei FusionCloud Desktop Solution provides proprietary desktop protocol technologies to support diversified peripherals, enable quick project delivery, and meet various office requirements.