**荷兰斯海尔亨托博斯（'s-Hertogenbosch）省立众议院地下室内建造的全新数据中心**
**A new data centre was constructed in the basement of the Provincial House in 's-Hertogenbosch.**

荷兰南部的北布拉班特是该国第三大省份，面积约5100平方公里，人口近250万。该省的议会、政府和委员会均在首都斯海尔亨托博斯的省立众议院内办公。省立众议院包括一个带地下室的两层楼和一座堪称市内最高建筑的103.5米高的24层办公大楼。

The province of North Brabant in southern Holland is the third largest province in the country, with an area of approximately 5100 square kilometres and a population of just under 2.5 million. The parliament, government and Commissioner of the Province are based in the Provincial House in s'-Hertogenbosch, the capital of North Brabant. The Provincial House consists of a two-storey building with a basement and a 24-floor office tower 103.5 metres high, the city's tallest building.

对数据存储、安全性、速度和业务连续性的需求稳步增长，已经开始超越了省立众议院现有基础设施的负荷能力，因此在2014年开始在大楼地下室内建造一个全新的数据中心。还必须安装几个额外的主干网连接，便于分阶段迁移到新的数据中心，并且避免该省的主要工作流程发生中断。

The steadily growing requirements for data storage, security, speed and business continuity were beginning to overload the existing infrastructure of the Provincial House, so in 2014 a start was made on constructing a completely new data centre in the basement of the building. Several additional backbone connections also had to be installed, so that migration to the new data centre could be carried out in stages and disruption to the province's primary processes could be avoided.

**案例精选**
REFERENCE PROJECT

# 未来高适应性
# FUTURE VIABILITY

数据存储、安全、速度和业务连续性要求的不断增长，有必要在荷兰北布拉邦特省立众议院内建立一个现代化高性能数据中心，并将其与光缆和铜缆主干网连接。最终选择了由HTC国际和德特威勒公司提供的解决方案。

Growing data storage, security, speed and business continuity requirements made it necessary to establish a modern high-performance data centre in the North Braband Provincial House, and to link it up with a fibre optic and copper backbone. The solution selected was provided by HTC International and Datwyler.

### 高性能安装

首先，新数据中心需要面向未来。新的主干网基础设施必须满足非常严格的标准。省立众议院不仅要实现10 Gbit/s的传输速率，而且要为未来提速做好准备。为了能够在数据中心集成系统与铜缆连接，铜链路必须并行安装到现代化光纤上。此外，布线结构需要简单、明确布局且没有交叉。时间限制也提出了挑战——数据中心以及两座建筑主干网基础设施的安装必须在6周内完成。

### High-performance installation

First and foremost the new data centre needed to be future-proof. The standards demanded of the new backbone infrastructure were just as stringent. The Provincial House not only wanted to allow transmissions of 10 Gbit/s, but also to be prepared for even higher speeds. In order to be able to incorporate systems with copper connections in the data centre, copper links also had to be installed in parallel to modern fibre optics. In addition the cabling structure needed to be simple, clearly laid out and have no cross-overs. The time frame stipulated also posed a challenge, for the installations in the data centre and in the backbone infrastructure of both buildings had to be completed within only six weeks.

**数据中心主干网中的光纤链路和铜缆接口。**
**Fibre optic connections and copper connections in the data centre backbone.**



基于创造力和解决方案的方法在招标阶段成为发挥关键作用的因素，也正是HTC国际公司投资德特威勒成熟的高性能产品和定制的专业解决方案的原因。

Creativity and a solution-oriented approach were factors that played an important role in the bidding phase. Which is why HTC International B.V. put their money on Datwyler's proven high-performance products and customised specialist solutions.

### 未来拓展的保证

德特威勒数据中心解决方案是久经验证和调试的布线系统。其核心部件是工厂预端接模块、预端接MPO线盒以及易测量的细MPO电缆。"这是一个需要安装的便捷简单的系统，也是数据中心的重要部分之一。"HTC的相关项目策划人Fons Schute 解释说。"此外，连接质量也非常好。"

### Reserves for future expansion

The Datwyler Data Centre Solution is one of the tried and tested cabling systems. Its core components are factory pre-assembled modules, pre-assembled MPO cassettes and ready-measured thin MPO cables. "This is a quick and easy system to install – quite an important aspect in a data centre," explained Fons Schute, the project planner responsible at HTC International. "In addition, the connections are really of very good quality."

在数据中心的大约60个特别的1U面板中，德特威勒安装了超过100根MPO电缆以及相应数量的2xMTPon-6xLCQ MPO类型光纤盒。由于每个面板可容纳三个光纤盒，因此依然预留了足够的插槽用于未来扩展。

In around 60 special 1U panels in the data centre Datwyler installed over 100 MPO cables and the corresponding number of type 2xMTPon-6xLCQ MPO cassettes. As each of the panels accommodates three cassettes there are still enough slots left for future expansion.

在背面，MPO光纤盒通过微型可分支光缆相互连接，每一根都包含48芯OM3光纤，并在两端提供预端接的MTP接头。

At the back the MPO cassettes are interconnected by mini-breakout cables, each of which comprises 48 OM3 fibres and were supplied with preassembled MTP connectors at both ends.

### 气吹式光纤解决方案可以节约时间和资金

为了实现主干网——省立众议院的光纤骨干网——基础设施的现代化——HTC采用了一种由德特威勒及其认证合作伙伴共同开发的特殊解决方案。共有超过12公里的微缆被吹入了一个特殊的防火风管系统中。该微缆包含12根厚度仅为2.6mm的S-Micro OM4多模光纤。为了满足电信运营商的连接，额外增加了500米24芯单模OS2微缆。这种组合解决方案显著简化了安装工序，否则会非常耗时，尤其是在大厦内。

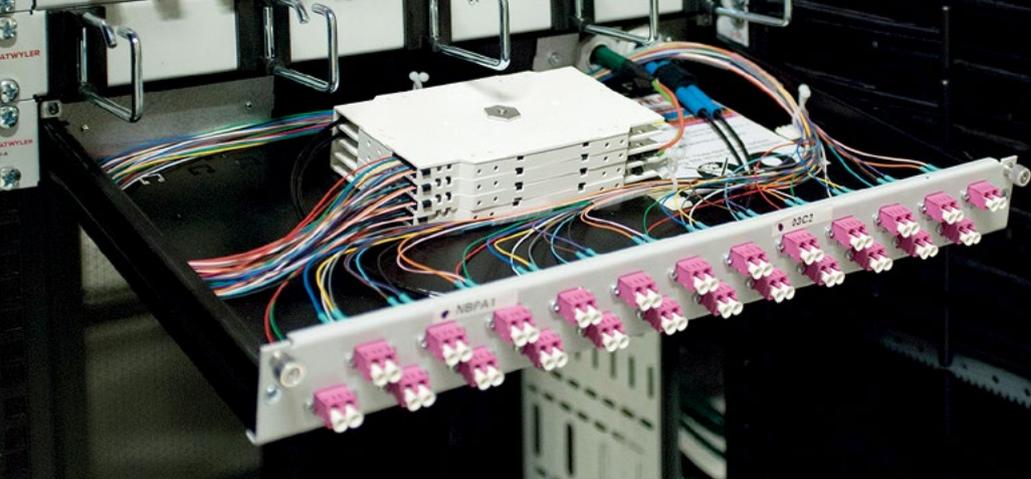### Blown fibre solution saves time and money

To modernise the backbone infrastructure – the fibre optic backbone in the Provincial House – HTC employed a special solution developed jointly by Datwyler and its certified partner. Altogether more than 12 kilometres of micro cable were blown into a special fireproof duct system. The cable is a 12-fibre type S-Micro OM4 multimode cable only 2.6 mm thick. A further 500 metres of 24-fibre OS2 micro cable were added for the provider connection. This combined solution substantially simplified installation, which would otherwise have been very time-consuming, particularly in the tower.

在各个楼层的配线架上，微缆端接到60个抽出式OV-A熔纤盒中。德特威勒供应批量带有24个LCD适配器（多模）以及若干带有6个SCD适配器（单模）和尾纤的产品。适当数量的管理面板也让楼层中的安装布局更加明确。

In the distribution racks on the floors the micro cables are terminated in 60 pull-out type OV-A splice boxes. Datwyler supplied the bulk of these with 24 LCD adapters (multimode), as well as a few preassembled with six SCD adapters (single-mode) and pigtails. An appropriate number of management panels makes the installation layout very clear on the floors too.

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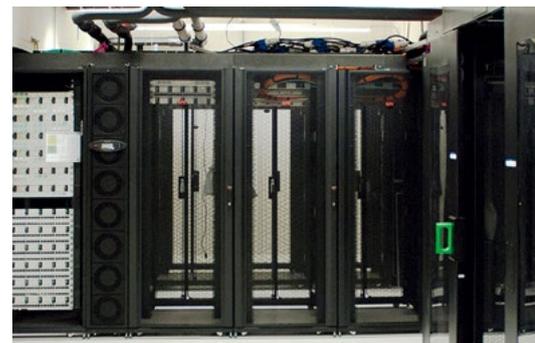**"我们对新的数据中心很满意，它满足了我们所有的需求……"**

**Martin Kuijl**

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机柜中全配OV-A型光纤熔接盒
全配熔接型光纤配线架
**Preassembled type OV-A splice boxes in the floor distributors**

硬件迁移之前的数据中心视图
**A view of the data centre before hardware relocation**



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**"WE ARE VERY HAPPY WITH THE NEW DATA CENTRE, WHICH MEETS ALL OUR REQUIREMENTS …"**

**Martin Kuijl**

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在数据中心的主干网中，所有的光纤链路都并行安装了约1000个铜缆接口。80%的24端口面板都安装了KS-T Plus 1/8 RJ45型模块，满足了6A类的所有要求。利用HTC负责安装的约12公里耐用的屏蔽数据电缆，省立众议院还可以通过铜缆网络实现高达10Gbit/s的传输速率。主干网中的旧铜缆依然可用于传统的电话业务。

Around 1000 copper connections were installed in parallel to all the fibre optic connections in the data centre backbone. 80 percent of the 24-port panels are filled with type KS-T Plus 1/8 RJ45 modules, which meet all the requirements of Category $6_A$. In combination with durable shielded data cables, approximately 12 kilometres of which were installed by HTC International, the Provincial House can also attain transmission rates of up to 10 Gbit/s via the copper network. The old copper cabling in the backbone is still used for traditional telephony.

新旧数据中心之间的光纤连接确保数据和应用程序可以在安装期间照常使用。这意味着，即使在迁移过程中，该省的主要事务也不会中断。

Fibre optic connections between the old and new data centre ensured that data and applications could continue to be used as normal during installation. This meant that even during the relocation there was no disruption to the province's primary processes.

## 满足每一个目标

2014年4月下旬，HTC如期将安装项目交付客户验收。"我们对新的数据中心很满意，它满足了我们所有的需求."该省团队领导人和项目负责人 Martin Kuijl 表示。与此同时，省立众议院还在网络中集成了建筑自动化以及部分安全应用。"一切都完美运行。"

## Every target met

In late April 2014 HTC handed the installation over to the client on schedule. "We are very happy with the new data centre, which meets all our requirements," says Martin Kuijl, Province team leader and project leader. In the meantime, the Provincial House has also integrated building automation and some security applications into the network. "Everything works perfectly."

HTC International 非常重视与德特威勒公司的良好合作关系："在各方面的合作都非常满意."Fons Schute 激动地说到。"一开始就在产品选择方面得到专家支持，其次是准时交付。有时候，各种长度的预装电缆甚至超过预期时间送达。由于工期紧张，因此这对于如期交付而言至关重要。所有交付的产品都具有非常好的质量，毫无缺陷。最后同样值得一提的是，价格非常公道。这完全超出了我们预期。"

HTC International underlines the good collaborative relationship with Datwyler: "Cooperation was excellent in every respect," enthuses Fons Schute. "It started with expert support in product selection, followed by deliveries made on time. In some cases the various lengths of preassembled cable arrived even sooner than expected. Given the narrow timeframe, it was very important that delivery deadlines were met. All of the products delivered were of good quality and free from defects. And last but not least, the price was right. What more could one want?"

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