Going deeper underground – handling baggage with KVM

Subterranean baggage basement

Amsterdam Airport Schiphol. Atmosphere of departure. With a packed suitcase, the newspaper tucked under my arm and the passport in my hand, I'm on my way to the departure hall. I'm greeted by an airlock, waiting for my luggage. It's one of the newly installed self-service baggage drop-off points.
I let it scan my ticket, check the data and weigh my suitcase. It hands out a barcode label, waits until I fix it on my suitcase, lets down the blind and swallows my suitcase. Let the journey begin. For me it starts in two hours, my suitcase, however, is already on its journey through the airport's underground. Schiphol has one of the most sophisticated baggage handling systems in the world. I never really thought about what my luggage has to go through – literally speaking – and the complex technology that is needed to keep all systems running.

Travelling underground

Being a hub airport for national, international and transit flights makes the baggage handling system (BHS) in Schiphol highly complex. A total of 21 km of transport belts can carry the luggage on its underground journey. The subterranean baggage basement with conveyor belts, carousels and laterals covers an overall area of 12 football fields.

In the underground the conveyors of departure, arrival and transit merge, which makes it even harder to keep an overview and maintain the system.
The entire luggage is handled with hardly any human intervention. Humans are as little as possible required to do the heavy work – instead they simply operate the system.

Taking a glimpse behind the scene

Schiphol's self-service baggage drop-off points

Efficiency and reliability have top priority when it comes to handling baggage. Screening, unloading, sorting, storing, transporting, uploading – the BHS runs in a continuous cycle. All processes are constantly controlled and monitored in the baggage handling control room. The operators in this control room use more than 80 computers to perform this task, 24 hours, 7 days a week.

Overview

Customer

Amsterdam Airport Schiphol is Europe's fifth largest airport in terms of passengers and third largest in cargo. More than 2000 people work at Schiphol to ensure best travel conditions. Approximately 130 of the employees at Amsterdam Airport Schiphol employees are responsible for deploying, monitoring, managing and maintaining all baggage systems, including the computers and software that monitor the system. Schiphol expects in the future to handle more than 70 million items of luggage each year.

Partner

Koning & Hartman provides solutions in the areas of telecom, industry and infrastructure. Their employees embrace the latest technologies on a daily basis and collaborate with leading technology partners and clients.

Challenge

➤ Finding a solution for a large number of mission-critical servers
➤ Installation during live operation
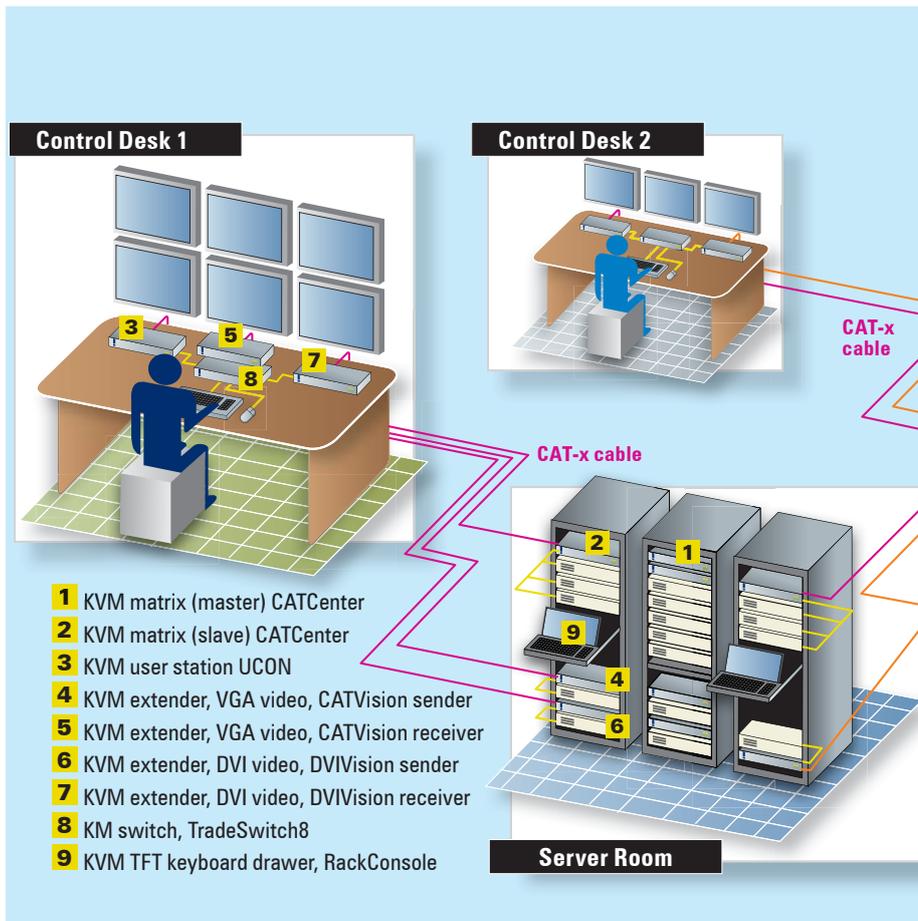➤ Integration of different server types

Products

➤ G&D KVM extenders for analogue or digital video signals and the use of different infrastructural cables (DVIVision, FIBREVision, CATVision)
➤ G&D KM switches for combining multiple keyboards/mouses into one set (TradeSwitch 4, TradeSwitch 8)
➤ G&D KVM matrix switches for cross operation of multiple servers by multiple controllers in a 1:1 connection (CATCenter, UCON)
➤ Keyboard drawer (RackConsole)

Solution

Removing computers from the control room into a dedicated server room and bringing them back together using various KVM applications.

Benefits

Best working conditions for both controllers and servers, less peripherals and energy consumption.

Control Desk 1

Control Desk 2

CAT-x cable

fibre optics

CAT-x cable

1. KVM matrix (master) CATCenter
2. KVM matrix (slave) CATCenter
3. KVM user station UCON
4. KVM extender, VGA video, CATVision sender
5. KVM extender, VGA video, CATVision receiver
6. KVM extender, DVI video, DVIVision sender
7. KVM extender, DVI video, DVIVision receiver
8. KM switch, TradeSwitch8
9. KVM TFT keyboard drawer, RackConsole

Server Room

roller. For this Koning & Hartman used different KVM extender systems, depending on the type of video signal and transmission cable in use.

KVM in operation

A KVM extender consists of a sender and a receiver. The sender is placed at the computer in the server rack from where infrastructural cables bridge the distance to the controller's desk. At the desk the user connects keyboard, monitor and mouse to the receiver and is therefore directly connected to the server. Whenever controllers have more than one of these extender systems at their desks, they can combine them at one keyboard/mouse switch, a TradeSwitch, to reduce the number of input devices on their desks.

Now the airport baggage supervisors in the baggage handling control room work under ideal ergonomic conditions. At their desk, operators use screens with 1920 x 1200 pixel resolutions. They monitor and control the baggage systems to make sure that any processes run smoothly.

Requirements & challenges

Peter Dielessen, Project Manager at Amsterdam Airport Schiphol, is in charge of the project new baggage handling control room. In cooperation with their system integrator Peter Janssen, Sales Consultant at Koning & Hartman, they created a solution that exactly meets the airport's needs:

- handle arrival, departure and transfer baggage information in one system
- ensure ideal ergonomic conditions for control staff with fewer peripherals at the desk and less heat and noise sources
- keep valuable computers cool, safe and access protected in centralised server room
- access all computers from all desks
- work without software installations
- integrate different operating systems
- use only infrastructural cables
- ensure easy access for computers' maintenance staff

Implementing a powerful solution

Koning & Hartman opted for diverse KVM products from Guntermann & Drunck. Peter Janssen and his team provided the comple-te package. They did the planning, supplied the hardware and installed the entire system.

At first, they separated staff and computers by removing servers into a server room where they were installed in a server rack. Several computers were then connected to one single KVM matrix switch from G&D, the CATCenter. The server's operating system is irrelevant as KVM accesses only the standard interfaces at the server. The CATCenter unites all computers and their control. With the CATCenter, multiple users can access multiple computers and thus no longer require a computer at their workplace. All KVM matrix switches were then grouped at a master switch that enables users to configure and operate any connected devices.

In a next step, each controller desk was equipped with a UCON user station. It allows users to access and switch between numerous computers using hotkeys or the on-screen display.

However, some computers could not be implemented into a matrix switch system since they were assigned to a certain cont-

◄ Peter Dielessen, Project Manager at Amsterdam Airport Schiphol

„All the part of BHS at Amsterdam Airport Schiphol requires reliability and solidity. The products of G&D have proven that they give us this certainty."

„Guntermann & Drunck understands the business of their customers. High-end, high quality KVM solutions for 24/7 demanding applications."

Peter Janssen, Sales Consulatan at Koning & Hartman ►

◄ *Controller's desk without computers*

Challenges of 24/7 operation

Amsterdam Airport Schiphol provides a special test room that mirrors the working environment of controllers. Here, the products are installed to examine the existing systems and the benefit for the users. Even the test site is created under ergonomic aspects to create optimal conditions for users and servers.
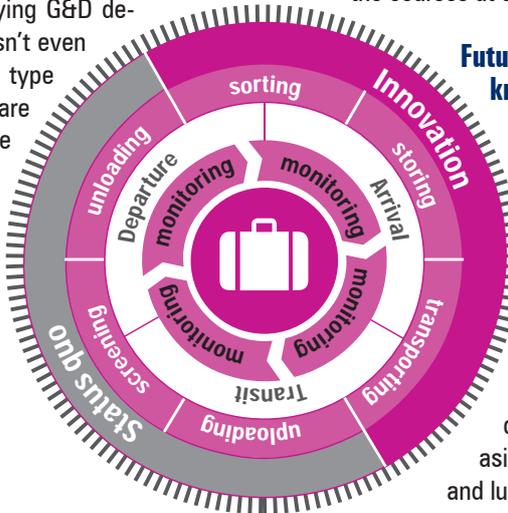
The installation had to take place during night time because the systems could not be switched off. Prior to this, Koning & Hartman had to participate in a strict and intensive safety training to become familiar with the courses at the airport.

IT service staff can work without interrupting the controllers. For maintenance within the server rack, IT staff require keyboard drawers that can handle these resolutions. To find such a drawer wasn't an easy task. However, Koning & Hartman solved it by providing G&D's RackConsole17-HR.

When deploying G&D devices, it doesn't even matter what type of monitors are placed at the controller's desk since the devices transmit digital and analogue video signals.

► *Continuous cycle of the processes of baggage handling with constant need for monitoring*

Future demands are already knocking at the door

In the future, Amsterdam Airport Schiphol expects to handle even more pieces of luggage - around 70 million a year - with the same amount of staff. Therefore the airport needs IT systems, which meet the growing demands of Schiphol's increasing number of passengers and luggage.

To properly handle the large quantity of bags, the airport is continuously investing in expanding and improving the baggage system. Traditional systems will slowly but surely make way for ultramodern systems and more systems will be automated. More drop-off points will become self-drop-off points and RFID will be gradually introduced. In 2013, the airport's existing baggage areas will be interconnected by a high speed rail system, the "Backbone".

▲ *Server room - computers are stored safely and easy accessible for maintenance staff*

Left to my personal thoughts

Too bad that my suitcase cannot tell what it has seen and experienced on the journey through Schiphol's underground baggage system. But in the end I'm happy that, as a passenger, I don't have to worry about baggage handling. Clearly Amsterdam Airport Schiphol has that part covered.

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