

| Linie Ziel           | Gleis | Abfahrtszeit |
|----------------------|-------|--------------|
| U1 Volksdorf         | 1     | 3 Min        |
| U1 Farmsen           | 1     | 6 Min        |
| U1 Norderstedt Mitte | 2     | 1 Min        |
| U1 Garstedt          | 2     | 4 Min        |

**Tarif-Information**

Alle Tarifleistungen sind vollständig online über unser Web-Interface oder über die hvv-App verfügbar.

| Einzel- und Tageskarten | Reiseplan |
|-------------------------|-----------|
| Einzelkarte             | Reiseplan |
| Tageskarte              | Reiseplan |

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# Hamburger Hochbahn – Remote maintenance thanks to Connectivity Suite

CASE STUDY

Hamburger Hochbahn AG has been able to make the maintenance and monitoring of ticket vending machines more efficient thanks to our Connectivity Suite.

## The Project

Hamburger Hochbahn AG (HHA) is one of the largest local transport companies in Germany and operates the Hamburg underground and a large part of the bus services within the Hamburger Verkehrsverbundes (hvv).

In the course of upgrading the ticket vending machines to so-called self-service terminals, Hamburger Hochbahn AG was looking for a way to equip the machines with data communication in order to also be able to offer online services as well as cashless payment options such as EC or credit cards. Since more than 200 ticket vending machines were to be replaced and about 100 additional machines had to be converted to an LTE connection, simple management and maintenance of the routers over-the-air was required.

## NET MODULE



«NetModule was the only supplier that could meet the challenges with its modular routers and device management software.»

Martin Austen  
Project Manager  
Hamburger Hochbahn AG

## Requirements

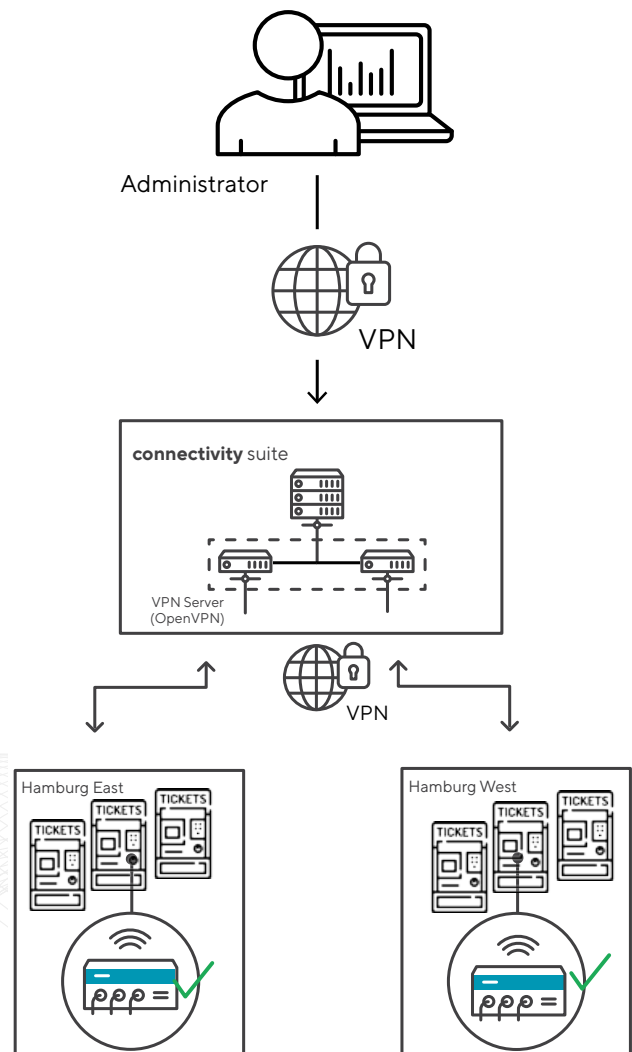
The requirements of the Hamburger Hochbahn were:

- Industrial router with mobile radio, WiFi and LAN/SFP
- Operability and management of the devices must be over-the-air
- Security, reliability and speed
- Comprehensive device management and monitoring in the cloud and on-premise
- Easy integration and expandability of additional devices

## Solution

After reviewing the requirements, the NetModule team was awarded the contract via the manufacturer of the new self-service terminals, as NetModule was the only provider that could meet all the criteria and requirements together.

Hamburger Hochbahn AG received the high-performance industrial router NB1810 in combination with the Connectivity Suite as device management software for the administration of the approx. 300 routers. The modularity of the router was enormously important, as at bus stops where there is no LAN connection, the data connection must be made via mobile radio. At the underground stops, data communication was realised via WLAN. In the future, the network will be expanded so that the existing routers can be converted to LAN resp. glass fibre connections.



The biggest advantage, however, is the management and control with the Connectivity Suite. Here, everything is controlled over-the-air and the situation of remote maintenance is for the technician as if he were on site. All of the approximately 300 routers can be easily monitored and are displayed in a list, whereby a quick overview of the online status, firmware version and position of the router can be seen and impractical Excel lists are no longer necessary. Also, thanks to the Connectivity Suite, the service technician can roll out updates over-the-air and does not have to travel to each router on site. Another feature is the auto-setup function, which makes it possible to set up an encrypted VPN infrastructure.

Thus, the Connectivity Suite and the routers are the perfect solution to connect the new ticket vending machines to the internet and to monitor them.