

LANCOM™ Techpaper

Modern networks in retail

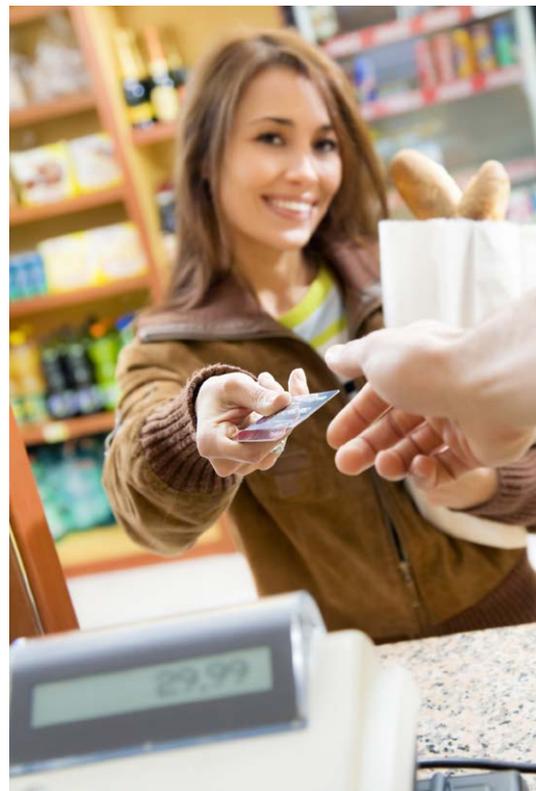
Introduction

Increased profits, sustainably reduced operating costs, and customers using innovative technologies for a unique shopping experience – all of these aspects can be united with the help of a modern network infrastructure. This techpaper informs you as a retailer about how products from LANCOM will get your stores fit for today and the future.

Optimized business processes, delighted customers

Processes in chain-store resource planning are optimized with professional network infrastructures – for sustainable savings in time and costs: Secure VPN networking of the stores with the main office can, for example, allow vital sales figures to be exchanged and analyzed instantly. WLAN helps with real-time picking and, if desired, re-ordering can be triggered automatically.

Modern and personalized shopping experiences are an inspiration for the clientele: State-of-the-art network infrastructure provides a high-performance basis for modern retail applications, such as hotspots, shop-in-shop concepts, digital signage, electronic price tags,



and shopping apps for customers. Network applications of this type are helping retailers to stay up-to-date and competitive.

Secure Site
Connectivity
via

VPN

Wireless
Freedom due
to

**WLAN &
Hotspots**

Digital
Pricing
with

**Electronic
Shelf Label**

Business
Analytics &
Target Marketing
with

**Location Based
Services**

Infrastructure requirements

Increasingly sophisticated customer demands require a state-of-the-art network infrastructure that enables retailers to offer the latest technologies and manage internal processes even more efficiently. High-performance network components from a single source are a professional basis for the retail applications of today and tomorrow, which will improve the customers' shopping experience. With the support of monitoring and management tools, roll-outs are conducted quickly and smoothly, and the entire network infrastructure can be controlled from one central location. This enables several applications to be operated on a single infrastructure, while remaining securely separated from one another. The result is a highly intelligent network with drastically reduced operating costs and personnel expenses.

Site connectivity via VPN

Increasingly, the retail sector is discovering that the integrated networking of different sites is the key to faster, seamless communications – and thus to true competitive advantage. There is a constant increase in the demand for cost-effective, powerful, and in particular secure ways of providing site connectivity. Virtual private networks (VPN) provide an economical alternative for inter-connecting several sites, even if they are separated by great distances. VPNs use either private lines (MPLS) or the low-cost public Internet as a medium for communicating via connections that are completely secure from outside access. This technology is used to collect several different sites into one large network. Thus all of the employees at all of the sites have real-time access to the network resources. Important information and resources no longer get lost, and communication is instant. External service providers can quickly and securely perform their service and maintenance work, such as for the digital signage and check-out systems. Thanks to the secure tunnel-in-tunnel technology, they only have access to the services intended for them. For small, mid-sized, and large enterprises, VPN solutions are the flexible and economical solution for networking



headquarters, subsidiaries, stores, and sites. All of the VPN solutions from LANCOM are highly secure and are made in Germany. A particularly high level of security is on offer with the LANCOM CC routers, which have been certified by the BSI (German Federal Office for Information Security) in accordance with the high standards of the Common Criteria.

Benefits at a glance:

- **One IT infrastructure** – for a variety of applications thanks to network virtualization
- **High-availability network connection** – even if the cable connection fails, a backup via 3G or 4G is activated
- **Priority for critical IT applications** – through dynamic bandwidth management and optimal load distribution
- **Secure integration** – of external service providers via tunnel-in-tunnel technology
- **Central monitoring and management** – across all sites and all network components
- **Flexible connectivity** – external staff or service providers are easy to integrate into the network

In-store wireless LAN

WLAN is already being used widely as a basis for greater efficiency, productivity, and cost savings. WLAN offers wireless freedom for numerous modern retail applications, and there is also the option to grant Internet access to customers with mobile devices.

Indoor WLAN solutions offer the greatest possible flexibility when networking buildings and offices. Shops link their stocktaking directly into the central ERP system via wireless barcode scanners. Customers use a separate network for access to the Internet and information about special offers. Although this network is based on the same WLAN infrastructure, the company network remains completely off limits to them.

Stores which regularly go through refurbishment remain fully networked without having to install any expensive cabling.

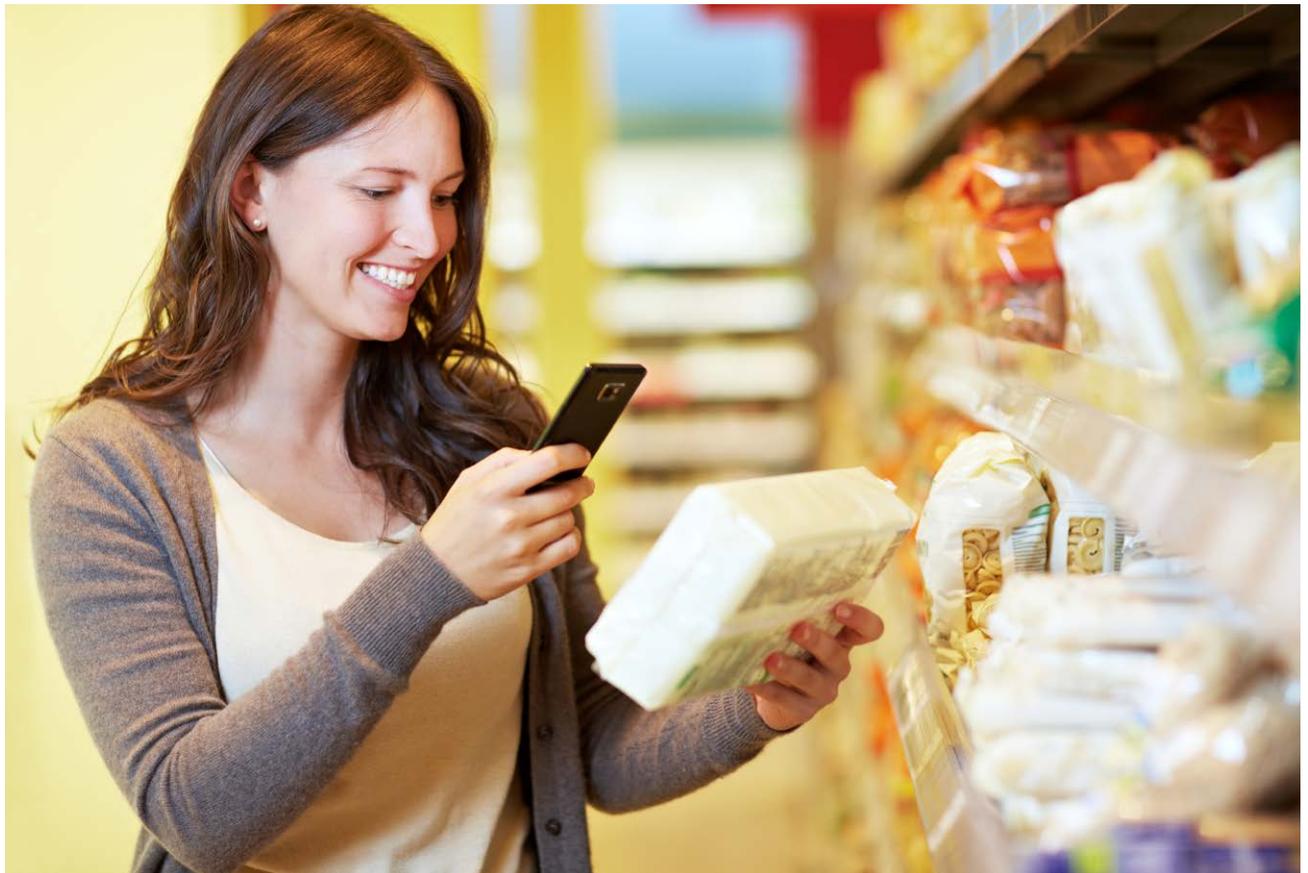
Benefits at a glance:

- **Integration of mobile devices** – including smart phones, WLAN hand scanners, mobile checkout systems, etc.
- **Scalable installations** – that grow on demand: From just a few access points all the way to controller-based WLANs

- **Provision of WLAN hotspots** – for stronger customer loyalty and new marketing activities
- **LANCOM Active Radio Control** – reliable, cost-efficient WLAN operation due to RF Optimization, Spectral Scan, Adaptive Noise Immunity, Client Steering, and Band Steering

WLAN hotspots

Modern customers are increasingly using their mobile devices as a matter of course to retrieve information from the Internet, wherever they happen to be. This means that installing a hotspot for customers in a retail outlet offers them genuine added value. This enhances the customer's shopping experience and the attractiveness of the store. A hotspot solution needs to be easy to set up, visitors must be able to access the Internet comfortably, and hotspot providers need to know that their own corporate network is secure from unauthorized access. LANCOM hotspot solutions are ideal for this purpose.



Benefits at a glance:

- **Maximum security** – through strict separation of the store and guest networks within a single network infrastructure
- **Quick and easy login** – via Smart Ticket with the help of SMS self-service or, in future, fully automatically via Hotspot 2.0 technology
- **Web access without prior authentication** – access to the retailer's homepage or partner sites
- **Convenient hotspot interface** – for easy integration of specialized provider solutions
- **Easy setup** – thanks to uniform configuration via management tools for the entire network infrastructure
- **Highly flexible** – software options upgrade in-store routers to WLAN controllers and hotspot gateways

Electronic shelf labels for retailers

Electronic price tagging is one of the major fields in the future of retail: Price changes, article names or even barcodes and QR codes on ePaper displays are updated via wireless.

Thanks to this innovative technology, paper labels are things of the past – for the first time, prices can be maintained centrally and automatically in close-to real time. State-of-the-art LANCOM access points in retail now provide professional WLAN coverage in combination with the wireless servicing of radio-controlled, battery-powered electronic shelf labels. These modern displays are updated by a wireless technology that is specifically geared to the energy-efficient control of ePaper displays. By supporting both of these wireless systems, the installation and operating costs are significantly reduced. The daylight-suitable displays based on ePaper technology are capable of displaying graphics and they communicate in the same frequency band as WLAN solutions, 2.4 GHz. Unlike standard WLAN applications, the ePaper



Fig. 1: WLAN and electronic shelf labels combined

technology focuses on extremely low power consumption to achieve years of operation without an external power supply. The access point ensures that mutual interference during the parallel operation of WLAN and ESL is reduced to a minimum. Smooth coordination between the components is vital for the ePaper displays to achieve a battery life of 5-7 years and maximize on your investment.

The advantages of the electronic shelf label

- **Central price update within seconds** – the pricing on the electronic displays and the central ERP system are directly linked via the wireless infrastructure
- **Increased profitability** – dynamic pricing models such as best-price guarantees or special-offer prices on perishable goods
- **Full price integrity** – Alignment of offline and online prices – ideal for the multi-channel sales
- **Maximum convenience** – thanks to wireless updates to electronic price labels, error-prone paper price labels are things of the past
- **Low operating and installation costs** – just one wireless infrastructure, cabling, and installation thanks to integrated WLAN and ESL
- **Maximum investment protection** – optimum ESL battery life

**Location-based services –
an interactive shopping experience**

The multimedia equipment in the customers' hands offers new opportunities for personalized digital marketing directly at the PoS. With location-based services, the customers' mobile devices provide information for visitor flow analyses, and they also serve as a platform for electronic marketing and shopping apps. A wealth of information about customer behavior can be captured and analyzed thanks to the WLAN-based localization of customer smart phones. It is also possible to send personalized offers directly to customer smart phones. This opens up new applications for a modern shopping experience.

The WLAN provides a fast data connection for smart phone apps, but it can also be used for determining position. The latest generation of LANCOM access points is able to operate with what are known as iBeacons. These are additional wireless transmitters, which are detected by smart phone apps and can trigger location-based push messages. They may, for example, provide information about a special offer as soon as a customer smart phone with the suitable app moves within range.



Fig. 2: Smart phone localization

Applications

- **Business Intelligence** – visitor flow analysis identifies areas of a store that are quiet or busy, and is thus an aid to sales-floor optimization
- **Location-based push marketing** – customers are informed about special offers as soon as they enter the store, or even while they are still outside
- **Indoor navigation** – radio-controlled localization and an app - or web-based floor plan conveniently guides customers to the desired offers

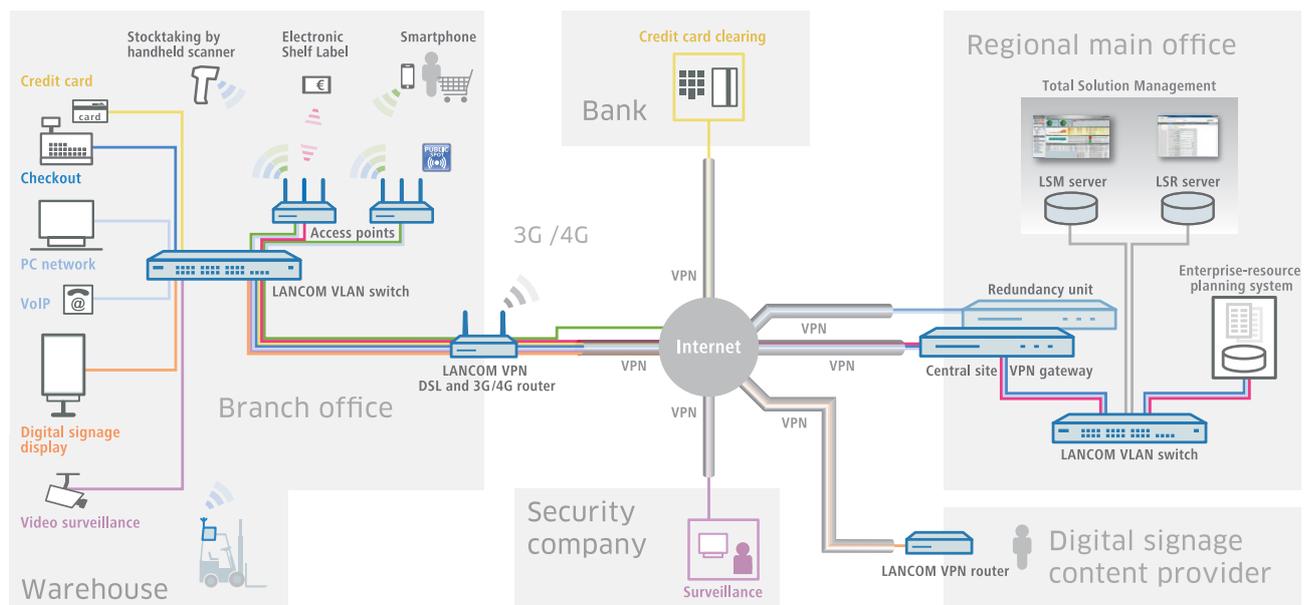


Fig. 3: Applications in retail

Summary

The industry of brick-and-mortar retail is subject to change: To offer customers a genuine shopping experience, to meet their increasingly sophisticated demands, and to stay a step ahead of the competition, there is no substitute for creativity and innovation. The ideal basis for this is a state-of-the-art network infrastructure, which not only serves to efficiently control internal processes, it also provides the potential to incorporate the latest technologies into the store concept. Due to the integration of electronic shelf labels, prices are controlled centrally and can be communicated in close-to real time. This saves precious time, provides space for individual price adjustments, and cuts the error rate of manual price labeling.

New opportunities are arising through the use of smart phones. With the help of business intelligence, customer tracking identifies the optimal design of the sales floor and increases sales. Through the use of target marketing, customers receive personalized messages on their smart phones and are informed about special offers when they enter the store, or even before. The innovative and highly secure network technology from LANCOM is "Made in Germany" and provides these new applications for chain stores and retailers from a single source. Fully compatible products, holistic management and monitoring systems, together with an extensive partner network provide for the efficient and cost-effective operation of complex networks.