

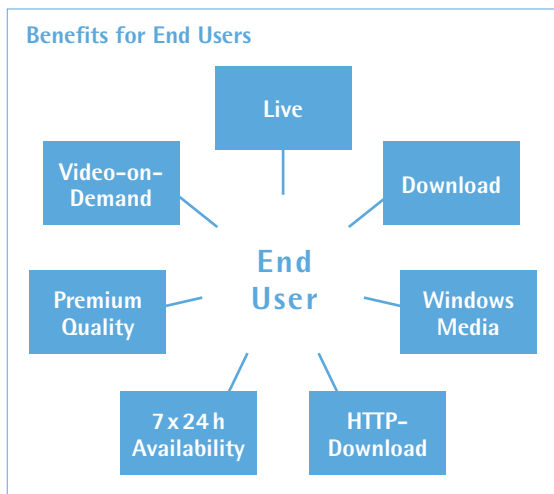
Content Delivery Network

In 1996 media transfer AG (mtG) was the first company in the world to implement an mp3 file download service via public networks. Having continuously extended its cutting-edge expertise in this field, mtG is today able to offer a complete portfolio of solutions for the electronic commerce of multimedia products.

Development and building of a "next generation" Content Delivery Network for a major international carrier

On account of the rapid acceptance of multimedia formats in the IP world, networks must fulfill ever growing performance requirements. mtG has addressed and met these requirements with the development of the CDN. This network allows extremely large numbers of subscribers – for example in the case of Olympic broadcasts – to be served with consistently high quality.

Our customer is now able to offer the public a solution which is both scalable and fail-safe, yet comprised entirely of standard components in order to minimize the costs for deployment, operation, training and support.



Solution development

Following a thorough evaluation, mtG selected the appropriate technical components for the required formats and then designed the complete platform in collaboration with the customer: This process covered the hardware to be installed, support with the network infrastructure, the architecture of the platform, and finally the GUI of the order management system."

The outcome was a 24/7 solution which allows an automatic full installation of the CDN through the central administration site. New software releases, such as the

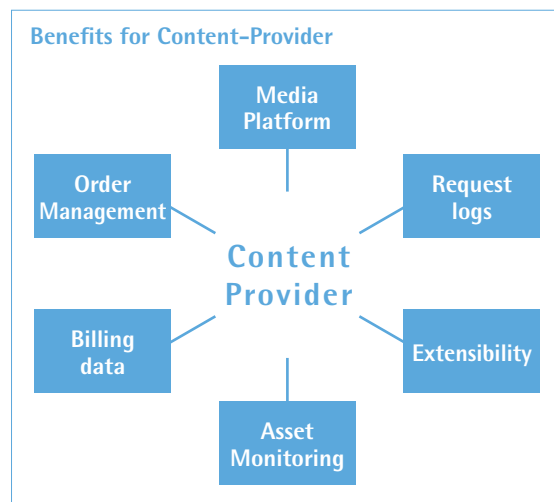
operating system, the application software or security updates, are centrally deployed and automatically distributed across the network.

Advantages of the "new generation" CDN for end users, content providers and CDN operators:

End users are provided a stable Internet platform from which they can request movies, videos, live events, media library material, etc. in premium quality. Performance bottlenecks in the case of major events such as Olympic broadcasts or concerts are now a thing of the past. End users can watch different-quality movies on the Internet with a stable connection. Moreover, the Internet attains or even surpasses the picture quality of TV.

A key advantage for **content providers** is that they can tap into an additional distribution channel by offering additional interactive information about the television programme on the Internet. The CDN controls which content may be requested in which countries. These possibilities can also be limited according to time.

The CDN allows content providers to continue using their existing media servers and directory structures.



Produkt-Highlights

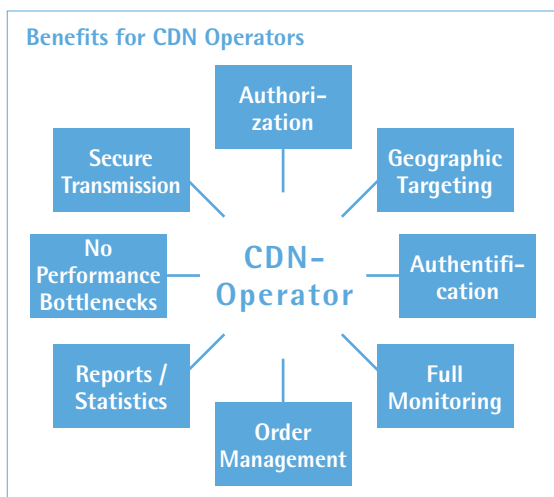
- > Aim: low operating costs through highly automated platform in a distributed network
- > Scalable fail-safe solution
- > Evaluation and choice of the best-of-breed components
- > Resources scalable during operation
- > Quality on a par with conventional TV or better
- > Fully monitored content delivery
- > Protection of investments already made
- > Optimized backbone utilization by intelligent routing and caching
- > Low operating costs by proactive control and centralized management of all resources
- > Scalability not dependent on content provider's resources
- > Creation of billing information
- > Deployment of information for controlling and marketing purposes



Content providers require no extra hardware or software resources in order to respond to repeat content requests because the content is served from the CDN. They can therefore plan and calculate their costs and resources (e.g. bandwidth) down to the last detail.

The reporting system of the CDN delivers all data on connections, sales revenues and customers that is required by content providers.

For order management purposes and optimization of their marketing strategy content providers can view statistics on content utilization on a graphical interface (e.g. volume of traffic or number of requests of the most popular assets, number and volume of assets hosted on the CDN, or in right time the number of concurrent requests per unit of time).



CDN operators can optimize their existing bandwidth thanks to the intelligent routing technology of the CDN.

mtG has implemented a multi-tier intelligent caching solution. Subsequent requests for content that has been stored on the CDN are not retrieved by the content provider but are served from the CDN, however without

any changes in reporting activities and the production of billing data. The CDN operator can customize all resources (servers, memory space, etc.) to the requested formats in optimum fashion using standard hardware and configurable applications.

The CDN provides the international carrier offering the CDN service with statistics on important parameters such as resource utilization, bandwidth availability and asset requests – broken down according to format or location. In addition, the CDN allows centralized viewing and setting of the current availability status or maintenance status of all servers distributed across the network, blocking of asset requests as well as updating and propagating of system information across the network. Thus the CDN system includes a convenient network management feature.

In this way the CDN operator provides a transparent delivery platform for video-on-demand, live streaming and digital content downloads for customers. mtG supports the carrier in constantly adapting the platform to current requirements such as new formats.

mtG supports the entire product lifecycle:

- > Design
- > Development
- > Operation
- > Optimization

The company:

Established in 1995, media transfer AG (mtG) has focused its business activity on IT security and digital medial platforms.

The company currently employs 45 people at its headquarters in Darmstadt (Germany). Their work involves product developments and services for many well-known customers from different sectors such as IT & telecommunications industry, insurance industry and public administrations.

mtG holds majority interests in the companies 'subsequent' (operation and distribution of digital media platforms and solutions) and 'audiomagnet' (artists' self-marketing platform).



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