



iT-AUSTRIA grows business and reduces complexity with eNetwork Software.

iT-AUSTRIA, located in Vienna, is the data processing outsourcing subsidiary of two major financial groups: the Bank Austria/Creditanstalt Group and Erste Bank & the Austrian Savings Banks. The 670-person computer staff at iT-AUSTRIA designs, maintains and operates the

systems which deliver around-the-clock online services to locations all over Austria, managing about 13.6 million accounts. iT-AUSTRIA delivers these services to the customers and to the combined staff of 38,500 employees of the two financial groups.



iT-Austria, Vienna, Austria

System	IBM Parallel Sysplex
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Software	IBM OS/390 IBM VTAM IBM TCP/IP IBM NCP IBM Advanced Peer-to-Peer Networking IBM High Performance Routing
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Hardware	IBM 2216 Nways Multiaccess Connector (Model 400) IBM 3746 Nways Multiprotocol Controller (Model 900) IBM 3172 Nways Interconnect Controller IBM 3745 Communications Controller ESCON channel links
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Maximize investment and minimize work effort using IBM eNetwork Software.

iT-AUSTRIA's network strategy and APPN/HPR

Beginning in 1995, the network strategy at iT-AUSTRIA was driven by three major business imperatives:

- Support aggressive business growth
- Maintain high availability of online services to the businesses
- Maintain high productivity of information technology staff

With the emergence of IBM® networking products supporting Advanced Peer-to-Peer Networking® (APPN®) and High-Performance Routing (HPR), it rapidly became clear that these new technologies would provide the solutions iT-AUSTRIA needed to support its major business imperatives. It was therefore decided to implement APPN/HPR gradually in the data centers and into the network starting with IBM eNetwork™ Software, such as the Communications Server for OS/390®.

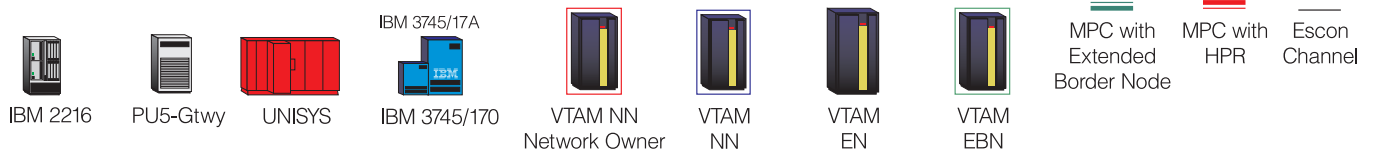
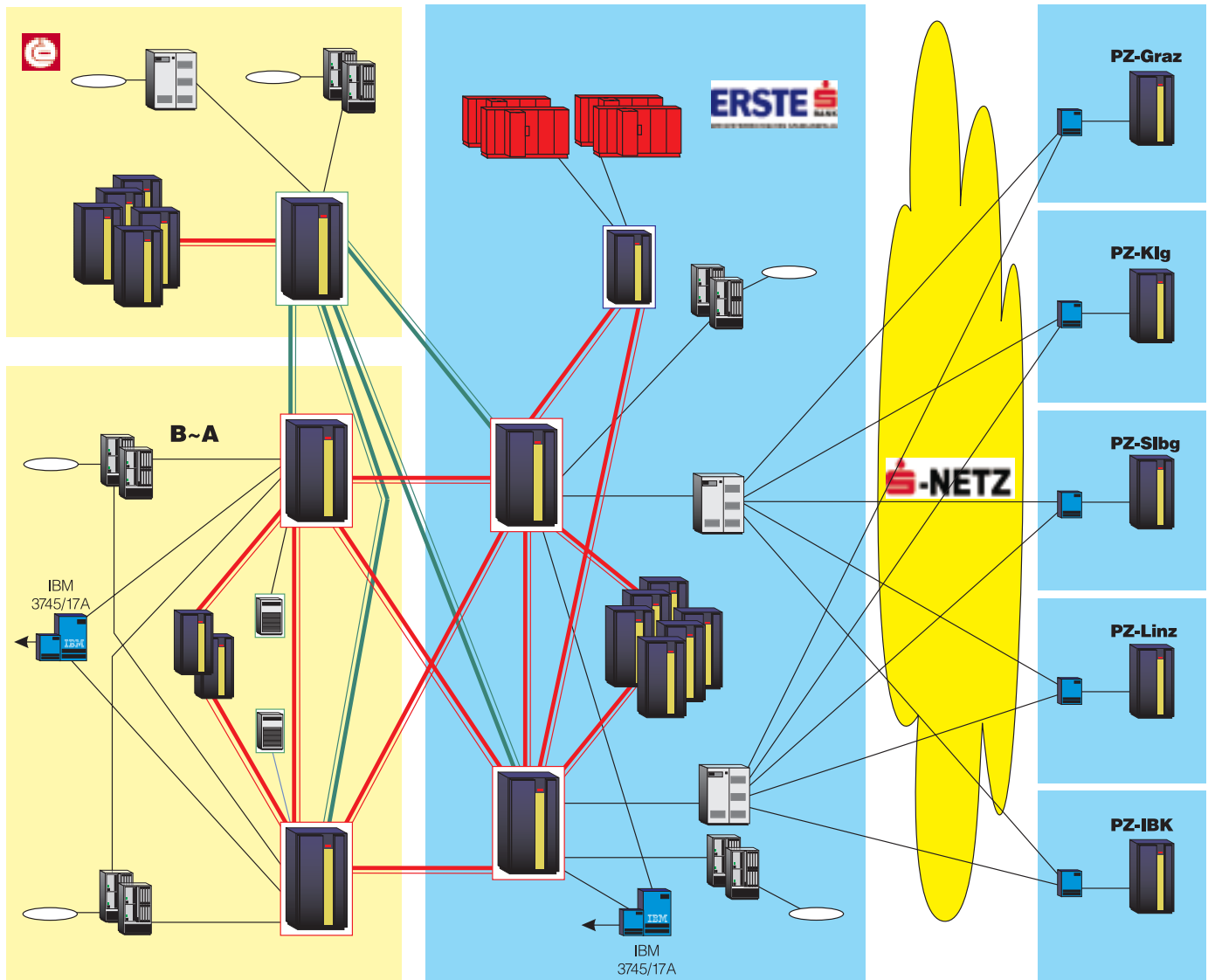
Building a solid foundation

iT-AUSTRIA currently operates 12 data centers in and around Vienna, seven of which are linked with high-speed, dark-fiber connections. The data centers run IBM OS/390 on 18 production, two development and three test systems, totalling 2,117 million instructions per second (MIPS) of central processing power and 8.64 terabytes of disk storage.

The iT-AUSTRIA network includes 391 concentrators which provide data-center access to about 5,000 defined SNA physical units (PUs) and 120 thousand defined SNA logical units (LUs). Approximately 3,250 PUs and 106 thousand LUs are active during peak time.

In 1997, iT-AUSTRIA's production systems delivered an average of 9.63 million transactions per day.

“IBM's earlier subarea networking technology had served us very well over the years but we came to the conclusion that we could no longer afford the time and effort required to manually code and maintain static network definitions during the week, and then to apply the changes on weekends,” states Josef Killmeyer, iT-AUSTRIA team leader in charge of Network Design, Implementation and Support. “We were, therefore, very attracted to IBM APPN/HPR technology which introduced, among other features, a truly dynamic way of setting up highly reliable network routes at a fraction of the effort required in the past.”



APPN/HPR Configuration Design at iT-AUSTRIA

All of iT-AUSTRIA's OS/390 host systems have now been fully migrated to APPN and HPR, with five network nodes (NNs) and 18 end nodes (ENs) connected using both IBM multipath channel (MPC) and cross-system coupling facility (XCF) technologies. There is also one extended border node connecting two of the data centers over high-speed ESCON® channel links. "We can see HPR in action with over 600 Rapid Transport Protocol (RTP) pipes operational at peak time," says Josef Killmeyer, enthusiastically.

iT-AUSTRIA has also started rolling out 10 IBM 2216 Nways® Multiaccess Connectors (running Nways Multiprotocol Access Services (MAS), Version 3, Release 1) in production, to replace IBM 3172 Nways Interconnect Controllers and IBM 3745 Communications Controllers, and thus implement a single platform to connect SNA traffic to the Communications Server for OS/390 and its application systems. "The IBM 2216 connectors were very easy to install: to replace an IBM 3172 with an IBM 2216, including hardware removal and installation and configuration, takes at most one hour," explains Josef Killmeyer. "We are very happy and very satisfied with the capacity and performance of our new IBM 2216 connectors."

Producing dynamic results

With rapidly growing business volumes, iT-AUSTRIA needed to deliver host capacity on demand very quickly.

"Because APPN/HPR makes it so easy to define configurations, we now have both the flexibility and scalability to add, split or merge any number of application-owning VTAM® systems as end nodes (ENs), which makes it really easy to support the group's business growth," states Josef Killmeyer.

To maintain high availability of online service, HPR sets up RTP pipes dynamically and on a Class-of-Service basis, in a way which guarantees optimal routes. "If a connectivity outage occurs somewhere along a given route, then HPR will automatically and dynamically create an alternate optimal route so that end-users will not experience any session outage," states Josef Killmeyer.

Additional capacity, resilience and performance are delivered through features such as MPC, which allocates multiple read/write subchannels within a single channel connection between APPN/HPR nodes, and the Communications Server for OS/390 feature known as multiple dynamic switched major nodes, which performs dynamic load balancing of session traffic.

"HPR is delivering everything it promised at announcement time, and I am very happy that we have it in production!"

Josef Killmeyer, iT-AUSTRIA team leader in charge of Network Design, Implementation and Support

This feature also enhances productivity by allowing switched devices (PUs and LUs) to be created dynamically at system startup and to be updated in-flight. The benefit is that it is no longer necessary to take the systems down during weekends to apply configuration changes. Josef Killmeyer states, "Today, we can apply these changes any time, safely and with a simple command."

In addition, multiple dynamic switched major nodes helped consolidate and simplify operational scenarios by using the same configuration design for production, backup and disaster recovery.

By combining the use of OS/390 Syscloning, XCF and APPN/HPR features, iT-AUSTRIA can now add new APPN/HPR end nodes (ENs) without any subsequent systems programming effort once these functions have been enabled.

Planning for the future

iT-AUSTRIA has already implemented IBM Parallel Sysplex® and geoplex, and has planned the following:

- The Communications Server for OS/390 generic resources (GR) facility, currently running on some production systems, will gradually be propagated to other systems.

“Our systems are ready to fallback anytime and easily, regardless of whether an outage was planned or not.”

Josef Killmeyer

- Dependent-LU requester (DLUR), currently under test, will be a first stage towards the planned adoption of multinode persistent sessions (MNPS). DLUR will add between 20 and 40 network nodes (NNs) to iT-AUSTRIA's current APPN/HPR configuration when implemented.
- The IBM 2216 will be implemented as a multiprotocol platform for both SNA and IP traffic using the IBM multipath channel+ (MPC+) technology to connect to the Communications Server for OS/390 and its application systems.
- MPC+ and XCF will be implemented between all OS/390 systems. MPC+ is already operational on 30 percent of the network.

iT-AUSTRIA's relationship with IBM

The networking team at iT-AUSTRIA has built an excellent working partnership with IBM over the last few years. In addition to the local support team in Austria, they also worked closely with the IBM staff in Raleigh, North Carolina, who design and develop the Communications Server for OS/390 product, and with the IBM Installation Support Centre (ISC) at Hursley in the United Kingdom, which provides Product Introduction Programmes for IBM European customers.

"We found the whole IBM team very committed to listening to our technical ideas and business requirements," says Josef Killmeyer. "As a result, the Communications Server for OS/390 designers agreed to enhance their product with support for multiple dynamic switched major nodes and its feature of in-flight updates."

Advice to other IBM customers

Among the many benefits resulting from iT-AUSTRIA's successful implementation to APPN/HPR, Josef Killmeyer regards migration design as key to ensuring a smooth transition: "It is important to design the migration phases (from subarea to APPN/HPR) in the correct sequence; if this is done, then the migration will be straightforward!"

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10-98
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Printed in the United States on recycled paper containing 10% recovered post-consumer fiber.



G325-3836-00