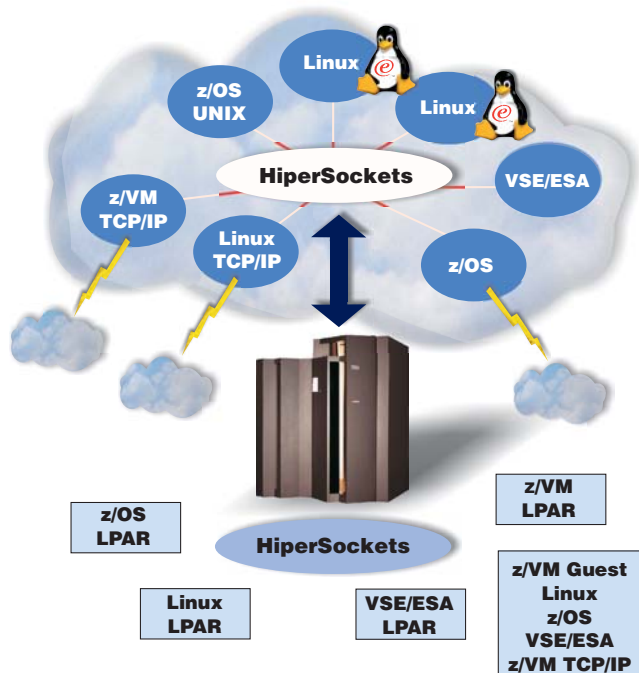


IBM @server zSeries HiperSockets: Optimizing Your Data Center Server Network



The more servers involved, the greater the number of network connections, equipment, and people needed to install, administer and maintain.

IBM @server zSeries HiperSockets™, can help provide a seamless network to consolidate servers into a simplified server-to-server network. HiperSockets can provide integrated, TCP/IP virtual LANs accessible among combinations of Logical Partitions (LPARs) and virtual servers within the zSeries. The IBM @server zSeries 800 (z800) and IBM @server zSeries 900 (z900) support up to four, the IBM @server zSeries 990 (z990) and new IBM @server zSeries 890 (z890) support up to sixteen.

Availability

Leveraging the z/Architecture mainframe strengths into data center networking, HiperSockets has no external network dependencies, no external components or associated latency, with no or minimal risk of impact from external network outages or congestion. There is no physical cabling exposure so there are no accidental disconnections. This can mean improved availability to access your on demand application environment.

Highlights

- **Availability that puts mainframe performance into your network**
- **Designed to increase bandwidth, decrease latency, while helping to save cost**
- **Ability to heighten network security with change**
- **Integrated function of z/Architecture™ on IBM @server® zSeries®**
- **So advanced, yet so simple**

Infrastructure Simplification Challenges

Connecting the collection of middle-tier, application, gateway, and grid computing servers surrounding your database and transaction serving mainframe can add complexity, cost, and stress into your on demand operating environment server-to-server network.

And the performance, availability, and your response time can be dependent on the stability of this network infrastructure.

Puts mainframe performance into your network

HiperSockets is a dramatic increase in networking bandwidth, with minimal media constraint, and a lower latency for your server-to-server transport path. With response time depending on application and TCP/IP stack path length, traffic rates, server workload, and other factors, HiperSockets is meant to speed application-to-application communication by using the zSeries memory bus with hardware latency close to zero; this is bandwidth far surpassing an external network connection. As inter-server traffic is moved to HiperSockets, you can free up capacity on the data center backbone LAN, thus increasing capacity for inbound/outbound traffic to the zSeries consolidated virtual server farm. This can help to improve performance, extend the life of the current backbone, and simplify management while optimizing your IT investment.

Increasing power while helping to save cost

With the consolidation power of HiperSockets comes the opportunity to save money by eliminating or avoiding the costs for external networking components required to build and maintain the data center server-to-server network. There are zero external components or cables to pay for, to break, to replace, to maintain, or to wear out. The more consolidation of servers, the greater your savings potential for costs associated with external servers and their associated networking components. The efficiencies of HiperSockets can free up zSeries system resources as well. Removing multi-tier server traffic from the data center backbone can free up costs associated with backbone capacity and simplify the mesh topology required for high availability operation. Benchmarks using two LPARs each with four CPUs, each running 31-bit Linux kernel 2.4.7 on

a zSeries 900 HiperSockets demonstrated up to four to six times more throughput than a single Gigabit Ethernet for batch streaming traffic, and up to between two and five three times more throughput for interactive traffic. This can translate into shorter batch windows and faster response times.

Helps to Heighten security with minimal change

With integrated HiperSockets networking, there are no server-to-server traffic flows outside zSeries, thus no exposure to physical “wire tapping” or probes on the LAN. And with support for up to sixteen HiperSockets, depending on zSeries model, you have flexibility to separate traffic between specific virtual servers and LPARs. You can use Virtual Private Networking or network Virtual LANs across a HiperSockets to further isolate traffic as required. This complements the certified LPAR security of the zSeries mainframe.

So advanced, yet so simple

HiperSockets is patent-pending Licensed Internal Code which runs with both standard and Integrated Facility for Linux (IFL) processors in both 31-bit and 64-bit environments, as well as with the new zSeries Application Assist Processor (zAAP). HiperSockets is part of z/Architecture technology including QDIO and advanced adapter interrupt handling to jump start message processing and minimize the frequency and overhead associated with I/O interrupts. The data transfer itself is handled much like a cross address space memory move, using the memory bus, not the Self-Timed Interface I/O bus. On z890 and z990 spanned channel support allows sharing of HiperSockets across multiple Logical Channel SubSystems (LCSS) and multiple LPARs. HiperSockets is designed to minimize contention with other system I/O activity; it does not use CPU cache resource, and thus has minimal association with other activity in the zSeries server.

HiperSockets is application transparent and appears as a typical TCP/IP device. Its configuration is simple, making installation easy. It is supported by existing, known management and diagnostic tools. You have flexibility to combine virtual servers and LPARs running Linux on zSeries, Linux for S/390®, z/OS® V1R2, z/VM® V4R2, z/OS.e, VSE/ESA™ 2.7 or later releases. HiperSockets can be tuned to represent traffic characteristics and differentiate between batch file transfer, interactive, Web, database query and other traffic types.

Why HiperSockets?

HiperSockets can expand the role of the mainframe in your on demand operating environment. HiperSockets networking can help to optimize the traffic transfer performance and response times among consolidated application, file, Web, gateway and grid computing servers. HiperSockets provides opportunities to save money by eliminating or avoiding the costs for the external networking components. It's simple

to install, with the flexibility to address the myriad of virtual server and LPAR combinations possible when moving to Infrastructure Simplification. There are no external dependencies, thus risk of impact of network outages or slowdowns is minimized and your data center network can be simpler to configure, to manage, to operate, and to maintain.

With this technology, the quality of service can increase, due to improved performance and higher network availability. With an integrated network, there are reduced physical security exposures.

Why pay for all the networking adapters, physical cabling, routers, switches, management tools, people, and other external dependencies you would need to connect mainframes and external servers together, when zSeries HiperSockets is designed to provide a better network with less dependencies?



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