SAVE MAINFRAME COSTS
ZIIP™ YOUR NATURAL APPS

Reduce your mainframe TCO with Natural zIIP Enabler

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Can you afford not to zIIP?

With two-thirds or more of your IT budget dedicated to just "keeping the lights on", you likely face constant pressure to reduce the cost of your existing mainframe systems. If you could quickly implement a risk-free solution that required no code changes and achieved immediate cost savings, wouldn't you try it?

Natural zIIP Enabler is a quick win—it can help you significantly lower the cost of operating your IBM® System z® mainframe by moving almost all of your Natural batch and online application workload from your main CPU to IBM's zIIP specialty engine. With no code changes required, this solution is fast and simple to install and will achieve immediate IT cost savings while still delivering high performance and reliability.

Our customers have reduced the costly CPU consumption on their mainframe by up to 98 percent, resulting in hundreds of thousands of dollars in savings within months—savings that will continue for life. The immediate savings achieved enable customers to recoup their investment in only a matter of months. With this rapid ROI, even if you are planning a re-host to Linux® or change in the future, you will benefit significantly from implementing Natural zIIP Enabler now.

Let us project what you can save by using Natural zIIP Enabler before you even acquire new zIIP engines. We will conduct a free proof-of-value assessment by selecting some critical batch or online jobs with high CPU consumption to run without and with Natural zIIP Enabler. We will then analyze the results to determine your specific ROI.

It couldn't be easier to get started. All measurement tools needed are already in your products, just turn on the switch. How can you afford not to explore zIIP-enabling your Natural application workload to reduce the cost of your existing mainframe systems? Ask your Software AG representative today for a free proof-of-value assessment.

"Natural zIIP enablement has exceeded CalSTRS expectations. It has allowed us to save significant Natural batch processing costs in a span of few short months with very little effort."

— Mohammad Asghar | Adabas DBA, Business Solutions, CalSTRS

Realize immediate benefits

The benefits of zIIP-enabling your Natural applications are really quite significant for simply reducing the amount of CPU consumed on your mainframe. By offloading online and batch workload to lower-cost zIIPs, you reduce the Total Cost of Ownership (TCO) for the whole machine.

With Natural zIIP Enabler, you can:

- Reduce your mainframe's TCO
- Achieve immediate results, without disruption, as installation requires no changes to the application
- Significantly reduce mainframe CPU consumption, typically by 90 percent or more
- Save software costs and mainframe operating costs
- Improve price-performance ratio by increasing throughput with low-cost zIIPs while deferring hardware upgrades and their attendant software costs

Unlike IBM and CA who can only offer partial solutions for offloading enterprise application workload, Software AG owns both the application and data management platform and thus can offload nearly all of your mainframe workload. We are currently working on solutions to zIIP-enable Adabas in the near future. It is our goal to make Adabas & Natural the most efficient application platform on the System z mainframe in the world, so you can achieve the lowest TCO possible for your mainframe.

Customers quickly achieve significant savings

Customers using zIIP Enabler have realized a 70 to 90 percent or more reduction in Natural CPU consumption on the mainframe, yielding significant savings in operational costs, rapid ROI and other operational benefits.

GPP LOAD WAS
REDUCED
FROM
100%
TO
22%
in Early Customer Review

Immediate load reduction
Natural zIIP Enabler is a great example of customer-driven development. Collaboration between Software AG and a large IT solution provider in Austria who tried Natural zIIP Enabler for Batch in production yielded important lessons that led to product enhancements that greatly improved the benefits of leveraging zIIP.

For example, a new way for the Adabas-Natural interface to communicate with the Adabas nucleus was implemented to avoid switches for Adabas calls altogether. This new communication does not require the return from zIIP to the GPP, thus reducing the number of switches dramatically and allowing even more CPU consumption to be moved to the zIIP. This new Adabas communication was a breakthrough in reduction of overhead.

The customer put the improved product back into production, for their end of quarter batch processing, and saw their GPP load reduced from 100 percent to 22 percent.

Rapid ROI
America's second largest public pension fund and the largest educator-only pension fund in the world saved much faster than anticipated when it implemented Natural zIIP Enabler. The agency expected to recoup the investment cost over the first year but achieved this savings in the first five months.

There were no Natural code changes or modifications to batch jobs required to use Natural zIIP Enabler. This was a huge selling point for the customer, since its team was concerned that a new product would require more testing and more validation—in short, more time to realize savings. Savings happened faster than planned. In eight months, the agency saved a total of $623,768—$77,971 a month. The savings achieved on both batch and online processing will continue for life.

There has also been no effect in performance; processes run in about the same time on the zIIP as on the central processor. An unexpected benefit is that the agency is now able to run some business processes on the mainframe faster and at a lower cost than on the server.

ROI
IN 5 MONTHS

ZERO
CODE CHANGES REQUIRED

$623K
SAVED IN 8 MONTHS

Postponed hardware upgrades and reduced operating costs
By using Natural zIIP Enabler, a state agency in the U.S. avoided purchasing a new mainframe when they were approaching capacity. By moving eligible workloads to the zIIP, the computer system used by state and county workers to determine eligibility for public assistance and health care, saved well over $150,000 a month in CPU costs.

REDUCTION
IN CPU

$150,000 A MONTH
IN SAVINGS

POSTPONED
MAINFRAME UPGRADE

Why zIIP? An IBM innovation

For the past few decades, the perceived cost of running business workloads on a mainframe drove companies to consider alternative hardware platforms employing operating systems such as Linux, UNIX® and Windows®. New workloads created by IBM WebSphere®, which encouraged the pervasive use of CPU-intensive Java®-based applications, required increases in mainframe capacity but businesses were reluctant to invest so heavily in new mainframe hardware.

Today, judicious exploitation of IBM's innovative z Systems Integrated Information Processors (zIIPs) can increase effective capacity by moving eligible work from the General Purpose Processor (GPP) to zIIP, thereby reducing the need for costly upgrades and improving total cost of ownership. Like the zAAPs (Application Assist Processors for Java code execution, XML parsing, etc.) and IFLs (Integrated Facility for Linux execution) that preceded zIIPs, these processors can be purchased for significantly less money than equivalent GPP capacity. This means any infrastructure or application functions that can be diverted to a zIIP run at a much lower cost.

Natural zIIP Enabler—an optimal step toward Digital Transformation

At Software AG, we strongly believe that mainframe applications have a strong role to play in companies' future. As such, we strive to provide the fastest, most efficient application platform on the mainframe—Natural!

To help our customers address the increasing demand to serve online, mobile and cloud applications, as well as the Internet of Things, we introduced Natural zIIP Enabler for Batch, Com-plete and CICS®. With these add-on products, you can move your ever-increasing batch and online application workload to zIIP—a low-cost alternative to your mainframe—and to reduce your overall total cost of computing. Natural zIIP Enabler is just one example of Software AG's Adabas & Natural 2050+ agenda in action. We are continuously innovating and developing new products and services to ensure your Adabas & Natural applications—that hold your differentiated business logic and high-value data—can play a key role in your organization's Digital Transformation.

Adabas & Natural 2050+ will help you:

- Optimize your IT operations to save costs
- Modernize your applications to appeal to users and developers and connect with the newest technologies
- Transform your business to be digital-software-driven

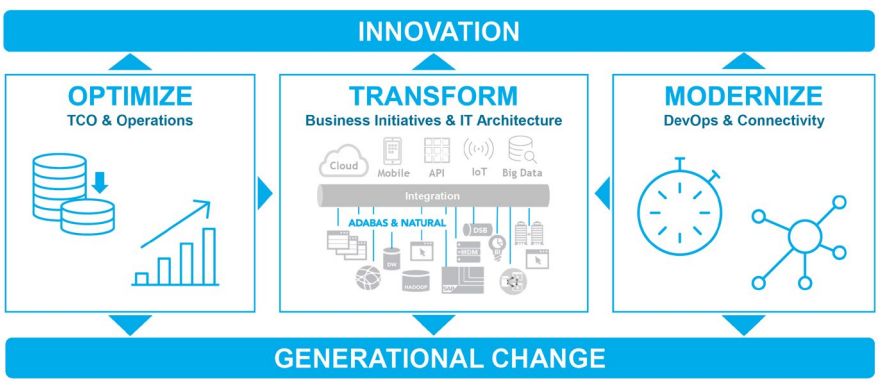

Figure 1: Adabas & Natural 2050+ Agenda

"Our Adabas & Natural system is highly reliable with tremendous transaction speeds and low TCO. Our productivity with Natural is very high and we are always able to improve system performance with tools like Adabas Fastpath, Natural zIIP Enabler and Event Replicator for Adabas."

— Alfred Prenner | Systems DBA, s IT Solutions

Get started on your own Digital Transformation—implementing Natural zIIP Enabler is an easy first step toward optimizing your operations and reducing your TCO. Visit http://2050.softwareag.com to explore our Adabas & Natural 2050+ agenda for more ways to optimize, modernize and transform your business to become future-ready—now.

How Natural zIIP Enabler works

Natural zIIP Enabler moves Natural workload from the GPP by switching to Service Request Block (SRB) execution mode whenever possible. By keeping the overhead involved with switching to a minimum, while maximizing the execution time on the zIIP processor, reductions in GPP CPU of up to 98 percent can be achieved. Since no changes to the Natural application are required, this low-risk solution is easy to deploy.

As you see in the zIIP usage report in Figure 2, peak CPU usage is reduced to a lower value by offloading both batch and online processes with Natural zIIP Enabler. Our goal is to reduce mainframe operation costs by providing the most cost efficient application runtime environment on IBM System z.

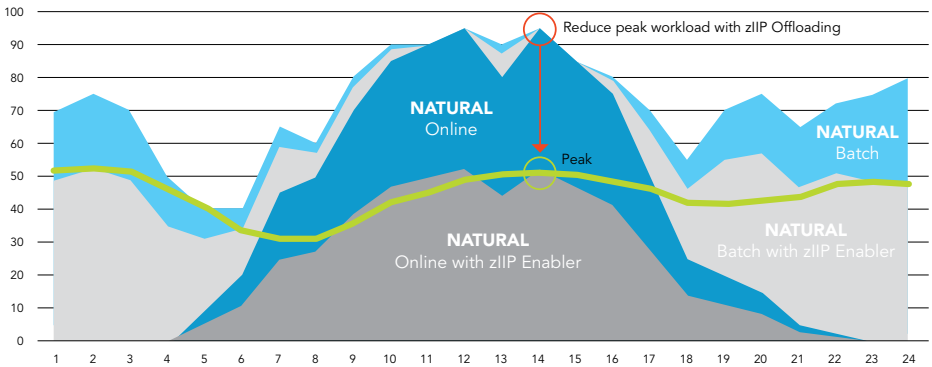

Figure 2: Reduce Peak Workload with zIIP Offloading

The total amount of load that can be directed to zIIP depends on numerous factors such as the structure of the applications, user exits, file I/O, 3GL components, external Sort and other software competing for zIIP capacity.

Offload CICS and Com-plete workload

To offload some internal Natural workload from CICS or Com-plete to a zIIP processor, we leverage Natural Roll Server, which operates as a different server outside the Transaction Processing (TP) environment. In TP and server environments, Natural has to save the working buffers from one task to the next. While these buffers mostly cannot be kept in core memory, they typically are rolled out to an external storage medium. This roll out lengthens the response time and increases the CPU usage of your applications because it is part of the working tasks.

Fortunately, a roll server designed to handle IBM Parallel Sysplex® environments is able to handle parts of the rollout workload asynchronously. With Natural 8.2.6, we have extended Natural Roll Server to perform this function as well as handle the compression and de-compression of the data in the roll server region as shown in Figure 3.

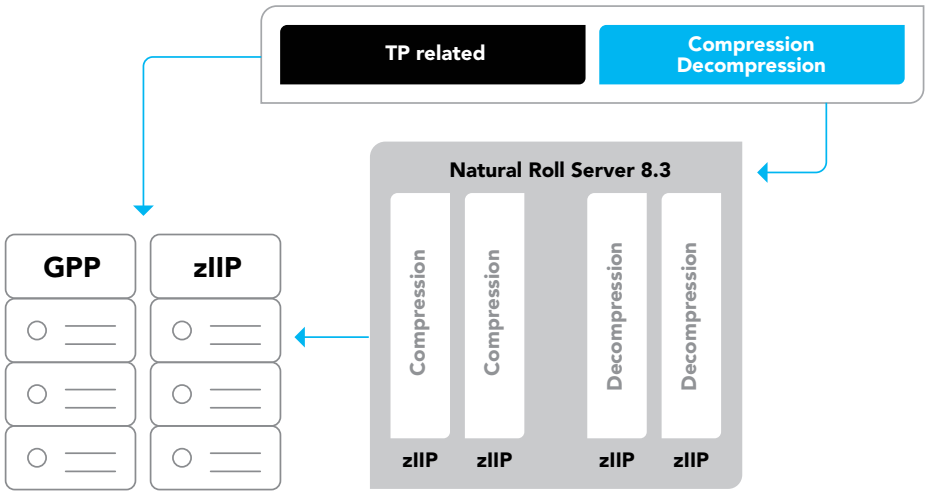

Figure 3: Lower your mainframe TCO by offloading Natural workloads to IBM zIIP with Natural Roll Server.

By using Natural Roll Server to offload workload, your applications will run faster and you will be able to run more transactions in parallel. When you have a zIIP installed, the Natural Roll Server will transfer this workload to a zIIP, reducing your costs by saving CPU resources on your GPPs.

Technical requirements

We recommend that you run Natural zIIP Enabler with Natural for Mainframe 8.2.6 and later. If you are running a version of Natural older than 8.2.6, a solution may be available to you upon request.

Please note that Natural zIIP Enabler for CICS requires CICS TS 4.2 and above as earlier versions are not supported by Natural CICS Interface 8.3.3 due to the end-of-maintenance dates of earlier CICS TS versions.

When running a CICS Open Transaction Environment (OTE), the Natural CICS Interface front-end program must be defined to CICS as "Threadsafe" and "OpenAPI" so that Natural sessions can run simultaneously in multiple threads. If you are calling 3GL programs from a Natural program, you may need to adapt your 3GL programs if the way your programs are called requires it.

The conditions for running Threadsafe under CICS are described in: IBM Threadsafe Considerations for CICS: An IBM Redbooks publication, Published 05 April 2012 (www.redbooks.ibm.com/abstracts/sg246351.html?Open&pdfbookmark).

To activate zIIP mode

Set the profile parameter ZIIP (values: AUTO/ON/OFF)

Alternatively, set the parameter in the NTZIIP macro

Offload workload of Adabas client add-ons

The Adabas link routine and the Adabas add-on client products are zIIP-enabled. Natural zIIP Enabler checks, via the Adabas link module, if the Adabas link routine is prepared for zIIP processing. If yes, Natural zIIP calls the Adabas link routine in SRB mode and the Adabas client add-on runs on the zIIP processor.

Add-on products supported by Natural zIIP Enabler for CICS and Natural zIIP Enabler for Batch include Adabas FastPath, Adabas Vista, Adabas Transaction Manager, Adabas SAF Security and Adabas Review. Support of Adabas client add-ons for Natural zIIP Enabler for Com-plete is planned for release October 2017.

Monitor your zIIP savings opportunity

What zIIP statistics are available for viewing?
You can use the Natural system command ZIIP to display zIIP statistics and analyze your CPU savings from using Natural zIIP Enabler. The command displays the number of GPPs and zIIPs available in your z/OS environment. You can see the CPU time consumed and view a list of components that are causing Server Request Block (SRB)/ Task Control Block (TCB) switches—switching to the zIIP and switching back again.

How can I determine how much load could move to zIIP?
Natural zIIP Enabler provides statistics on how much load is moved to zIIP as well as how much load could not be moved due to limits on zIIP capacity. You can forecast how much load will be directed to zIIP in your environment from statistical reporting. Even if you don't currently have any zIIPs in place, the statistics will tell you how much load could be moved to zIIP for each Natural batch job or each Natural online environment as IBM has added "PROJECTCPU" as an option in PARMLIB member IEAOPTxx. With Natural 8, output of statistics can be controlled globally via the Natural parameter NTZIIP (on, stat=on).

Monitor zIIP exploitation
With webMethods Optimize for Infrastructure, you have additional means of monitoring how much you can exploit zIIP for offloading mainframe workload. webMethods Optimize for Infrastructure provides a single holistic view across your Software AG product landscape to let you identify potential problems at a glance as well as identify opportunities for performance improvement by evaluating Key Performance Indicators (KPIs).

webMethods Optimize for Infrastructure lets you monitor the impact Natural zIIP Enabler has on your system from a single, web-based dashboard. These monitoring features also provide an accumulated view of overall zIIP utilization as well as trend analysis over certain time frames. Here you can easily measure the CPU savings achieved with Natural zIIP Enabler.

Start saving now

Ask your Software AG sales representative today about projecting your ROI for Natural zIIP Enabler, before even acquiring zIIP processors. Software AG will conduct a free proof-of-value approach by:

- Selecting some critical batch jobs or TP-environments with high CPU-usage
- Running select applications without and then with zIIP-enabled Natural
- Analyzing the results to determine your specific ROI

Don't give up on your mainframe assets as you make your transformation to address the digital economy. zIIP provides a low-cost alternative to increasing capacity on your existing mainframe if you are reaching your z/OS capacity limit or are just looking to reduce operating costs. Natural zIIP Enabler is an ideal way to reduce maintenance costs while addressing increased demand for transaction processing.

About the author

Karlheinz Kronauer is Senior Director of product management for Natural and Natural add-on products. He has more than 30 years of experience working in the IT industry, specializing in the areas of product development, product marketing and product management. Karlheinz recently led the successful product management of NaturalONE, the new Eclipse-based integrated development environment for Natural.

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