



### Business challenge

To keep pace with consumer demand for the latest mobile technology, companies want to develop secure cutting-edge applications at high speed—and without major investments in extra infrastructure.

### Transformation

Previously, enterprises had no way to harness the cutting-edge power of Node.js technology alongside systems of record on their mainframes. Thanks to IBM Systems, these firms can now use Node.js to develop or run cutting-edge web and mobile applications while profiting from the outstanding speed and rock-solid reliability of IBM mainframes.

#### Business benefits:

### Delivers

excellent performance, especially for apps that hook back into enterprise systems

### Enables

co-location of Node.js server apps with data on z/OS, cutting access latency

### Leverages

trusted landscape to maximize security and uptime for critical Node.js apps

# IBM Systems

## Combining modern web development with the security, reliability and performance of the IBM mainframe

IBM Systems creates solutions and middleware to serve the constantly changing needs of commercial and government organizations on every continent.

*“Companies hoping to harness the compact power of Node.js can now profit from the speed, security and reliability of the mainframe.”*

Andrew McIntyre, z Systems consultant, IBM

Share this



## Responding to demands for new technology

The growing popularity of mobile and cloud technology is putting companies under increased pressure to develop lightweight, ultra-efficient applications suited to small portable devices. These apps must be released quickly to keep pace with consumer demands for the latest functionality—but they must also offer high quality, strong security and excellent performance. Critically, consumers can also be employees and business partners, as business apps are increasingly used on personal devices.

The Node.js runtime environment is designed for fast, nimble development, with a high degree of flexibility and ease-of-use, earning it a broad and fast-growing following. Many fresh graduate developers prefer to use Node.js as their platform of choice, having gained experience with it during their studies.

In the past, organizations planning to use Node.js typically had to invest in distributed systems to support it. And if the new Node.js apps needed to exploit mainframe data, these organizations faced added network latency and security challenges when connecting mainframes to distributed systems. IBM Systems set out to give these companies a better option.

## Profiting from tried-and-tested performance and reliability

The IBM Systems team ported Node.js to IBM z Systems™ servers featuring Integrated Facility for Linux processors, which are dedicated to running Linux workloads.

Andrew McIntyre, a z Systems consultant at IBM, explains: “Organizations already using the mainframe can now tap into the agility of Node.js without the cost and complexity associated with purchasing and running a whole new infrastructure to support their development environment. What’s more, this option brings new standards for performance and security to Node.js apps. You can now develop these apps wherever you choose—on or off the mainframe—but run the production environment on your trusted z Systems servers to get the advantages of colocating the mainframe data with the application: enhanced security, reduced latency and greater redundancy.

“Furthermore, companies that do not currently have IBM z Systems servers can choose to invest in the platform to profit from its tried-and-tested reliability and outstanding performance.”



Joran Siu, Advisory Software Developer at IBM Systems, adds: “Our benchmarking tests found that IBM mainframes can already almost match distributed systems in terms of raw CPU performance. And if you look at real-world work, rather than benchmarking tests, running Node.js on the mainframe, right next to the systems of record you’re pulling data from, translates into ultra-high performance.

“Many new consumer apps, such as mobile banking, need to draw on enterprise systems of record residing on IBM z Systems servers. If you develop these applications on the mainframe, you are right next to the data you need, and IBM HiperSockets™ virtual networking gives you extreme speed and security. You also benefit from the abundant time and effort that IBM has invested in achieving rock-solid reliability and outstanding performance for the IBM z Systems platform and the IBM DB2 for z/OS database.”

## Cost-effective option

Organizations that already run mainframes can take advantage of the platform's highly advanced virtualization technology to provision multiple development environments on their existing servers.

This approach ensures that production workloads are unaffected by development tasks, while eliminating the need to invest in additional physical servers and networking equipment. Colocating the production Node.js apps alongside the enterprise data they need to use on the mainframe translates into reduced latency and increased security.

Many companies are already developing and running Node.js on IBM z Systems servers, and believe that this will save them money compared to deploying distributed systems.

Marcel Mitran, Distinguished Engineer - CTO z Systems Software Performance and Linux Ecosystem at IBM, comments, "Based on positive feedback from companies already using Node.js on the IBM z Systems platform, we believe this combination has huge potential to enable rapid delivery of secure, high-performance leading-edge functionality – while enabling our clients to avoid purchasing additional hardware.

"By deploying Node.js on z Systems, clients can provide new benefits that build on the mainframe platform's core strengths of security, availability and scalability."

## Cutting-edge functionality in record time

Companies can now tap into the excitement around Node.js and develop secure, high-performance web and mobile applications for their customers, partners and staff extremely quickly, meeting their demands for the latest technology. Equally important, employers can attract and retain new developers by providing them with not only the latest software tools, but tools they already know and like—all running on state-of-the-art mainframe hardware.

"IBM's continued commitment to bringing the latest technologies to the mainframe keeps developers happy, and enables businesses to extract the maximum possible value from their investment in the z Systems platform," says Mitran. "We're excited to be bringing a brand-new source of business value to the mainframe, and we're working with the Node foundation to push all of our code back to the community."

### Solution components

- IBM® DB2® for z/OS®
- IBM SDK for Node.js
- IBM z Systems™
- IBM Integrated Facility for Linux processors

### Take the next step

To learn more about IBM solutions, contact your IBM representative or IBM Business Partner, or visit the following website: [ibm.com/software/os/systemz/apps](http://ibm.com/software/os/systemz/apps)

To download Node.js from developerWorks, visit: [ibm.com/developerworks/web/nodesdk](http://ibm.com/developerworks/web/nodesdk)

### Connect with us



© Copyright IBM Corporation 2015. IBM Corporation, 1 New Orchard Road, Armonk, NY 10504 U.S.A. Produced in the United States of America, November 2015.

IBM, the IBM logo, ibm.com, DB2, z/OS and z Systems are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at [ibm.com/legal/us/en/copytrade.shtml](http://ibm.com/legal/us/en/copytrade.shtml).

Node.js is a trademark of Joyent, Inc. and is used with its permission. We are not endorsed by or affiliated with Joyent.

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates. THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT. IBM products are warranted according to the terms and conditions of the agreements under which they are provided.



ZSC03322-USEN-00

