IBM SDK for Node.js – z/OS

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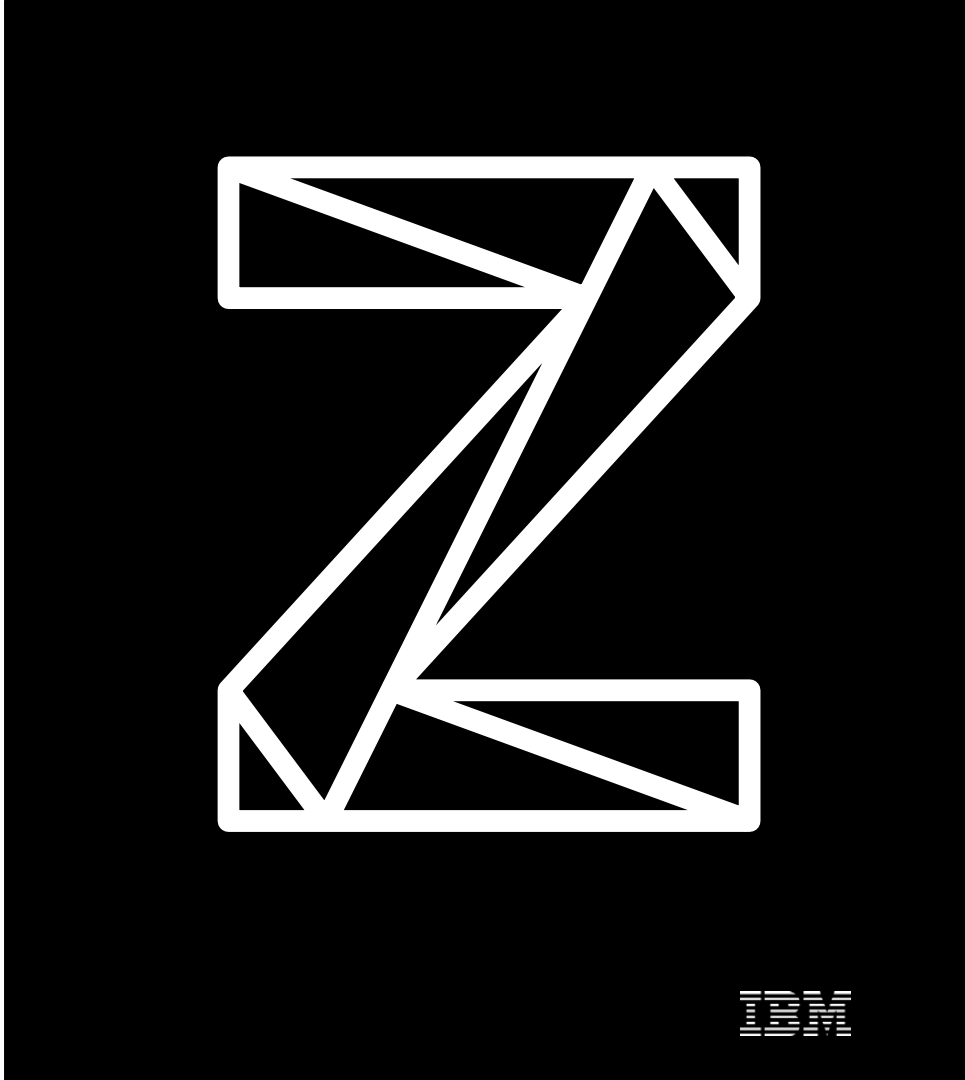

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The **mainframe** and enterprise assets are at the center of a **digital enterprise**

Virtually Limitless Scale
1.3 million CICS transactions are processed every second, every day…**20X** the number of Google searches.

Trusted Computing
The **highest level of security** certification for commercial server and **99.999%** application availability.

Enterprise Data Serving
Over **80%** of all corporate structured data

Business Critical Applications Serving
$3T of all daily commerce flows through **COBOL Applications**

Digital Transformation is driving requirements at an unprecedented pace for every industry

Integrate digital technology into all areas of businesses to deliver value to customers

Drive innovation, business growth, and industry disruption

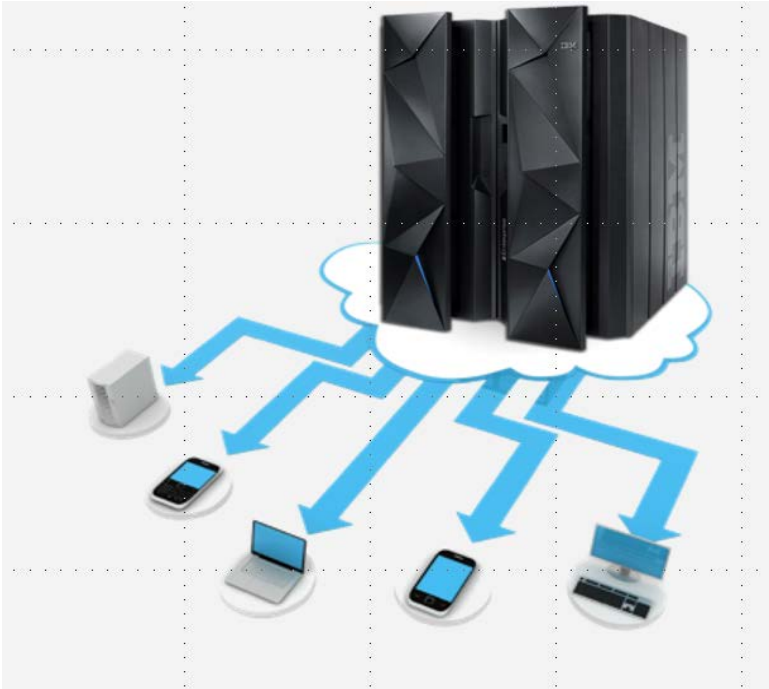
How Node.js on z/OS can help

To succeed in delivering the best digital experience for clients and tapping into new revenue opportunities, enterprises must develop new skills around becoming more agile, customer-centric, innovative and efficient

Clients are looking to embrace newer application platforms that allow them to develop and experiment new digital experiences quickly and at low cost

IBM has recently made Node.js available on z/OS which can help leverage existing critical assets and data on the IBM Z platform and extend them to support new mobile or cloud applications

Combine z Systems high I/O bandwidth with Node.js scalable non-blocking I/O model for increased performance



What is Node.js

Node.js is an application framework built on Chrome's JavaScript runtime for easily building fast and scalable network application designed for scalable network applications

Server-side JavaScript platform

– Built on Google’s established V8 JavaScript engine

Event-driven, single-threaded, non-blocking I/O model

– Best suited for data-intensive (i.e. I/O bound) applications

Provides a module-driven, highly scalable approach to application design and development that encourages agile practices.

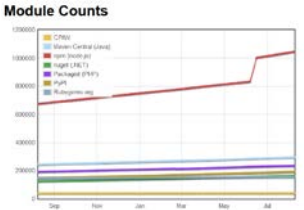
11M

Access a vast pool of 11+ million JavaScript developers world wide.

https://www.daxx.com/blog/development-trends/number-software-developers-world

1M

Repository of over 1M community contributed node packages. 3x growth rate vs other runtimes averaging 805 a day.



http://www.modulecounts.com/

Ideal for digital transformation

Compared to other languages Node.js is:

Simplicity:

- JavaScript
- Simple, easy to learn & lightweight
- Full stack development

Agile

- Microservice by nature, 50% less code written, more streamlined testing

Performance

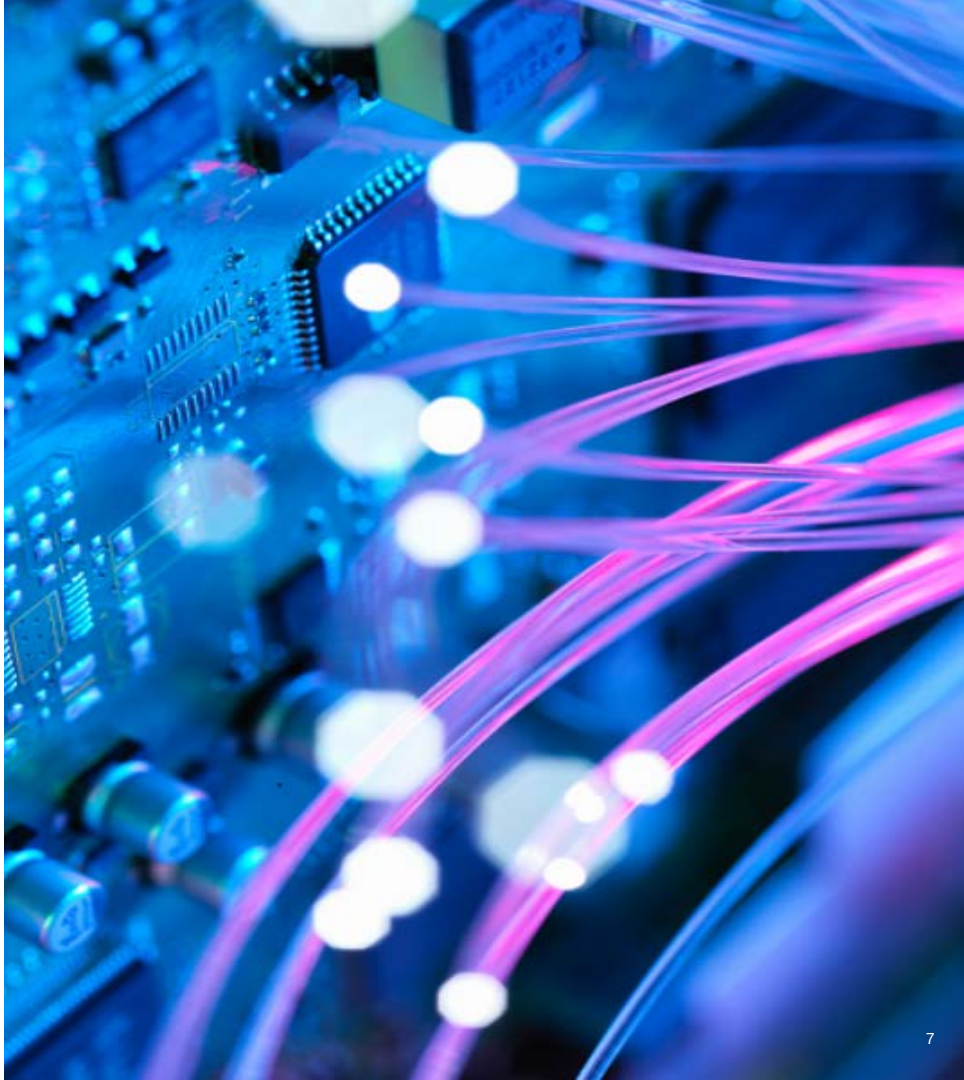
- I/O intensive applications, highly scalable

APIs and Microservices

- JSON - REST APIs

Open Architecture

- Node.js is an open-source project, active and vibrant community, strong cross platform support



Value to the enterprise

Growth: Take advantage of the enormously **popular** and **growing** technology on IBM Z to power digital transformation

Skills: Access a vast pool of **11+ million JavaScript** developers

Performance & Security: Take advantage of **co-location** of Node.js applications with **critical assets** (i.e. applications and data) on z/OS

– Reduce response time, increase throughput and increase security

Develop business logic using **Node.js on z/OS** or take advantage of its great cross-platform support and deploy Node.js applications written on x86 to Z

Value to the development organization

Common language for **client & server:**

- Use JavaScript to develop applications throughout the application stack

Increases **efficiency and simplify** application development:

- **NPM (node package manager)** simplifies build process, and quickens time to market.
- Leverage the NPM ecosystem to **simplify** application development

Use module-driven, highly **scalable** approach to application design, development, and deployment

Connect to your z/OS assets

z/OS Connect EE

– Access z/OS assets that are exposed through IBM z/OS Connect EE

  - zosconnect-node: https://www.npmjs.com/package/zosconnect-node
  - loopback connector for z/OS Connect EE: https://www.npmjs.com/package/loopback-connector-zosconnectee

CICS

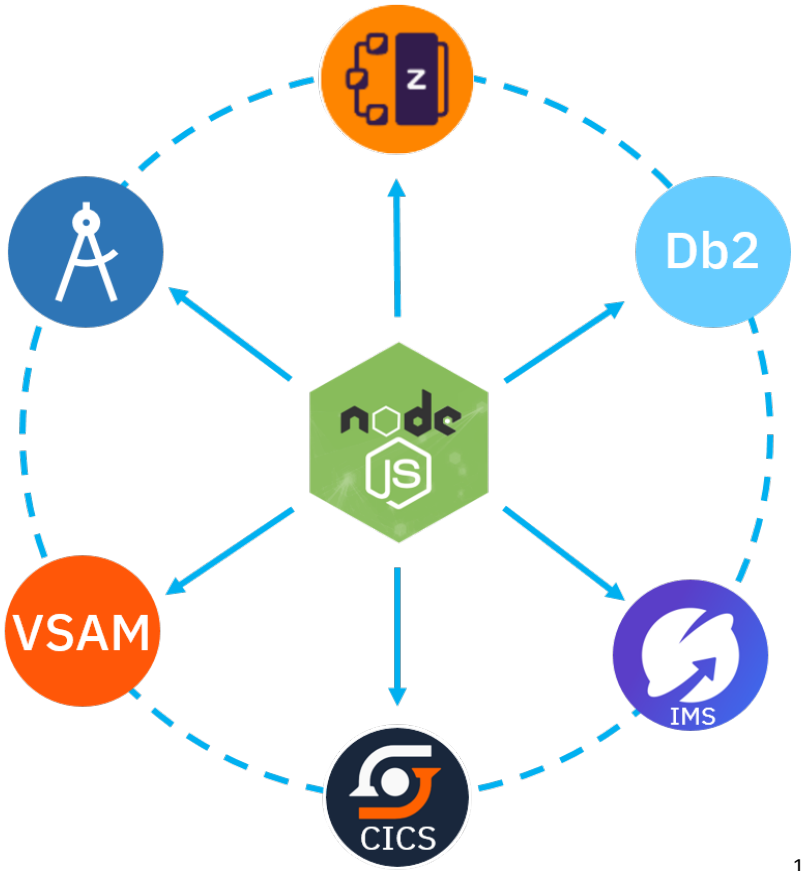
– Can deploy Node.js application in CICS the same way as COBOL. https://www.npmjs.com/package/ibm-cics-api

Db2

– npm module to provide direct access to Db2 on z/OS: https://www.npmjs.com/package/ibm_db

VSAM

– npm module to interact with z/OS VSAM datasets and records https://www.npmjs.com/package/vsam.js



Connect to your z/OS assets continued..

z/OS Node Accessor

- Module to interact with z/OS MVS dataset and USS files and simple J operations: https://www.npmjs.com/package/zos-node-accessor

zREXX (new)

- Call z/OS REXX scripts residing in PDS from Node.js
- https://www.npmjs.com/package/zrexx

RACF (new)

- This NodeJS module enables your application to validate against RAC
- https://www.npmjs.com/package/racf

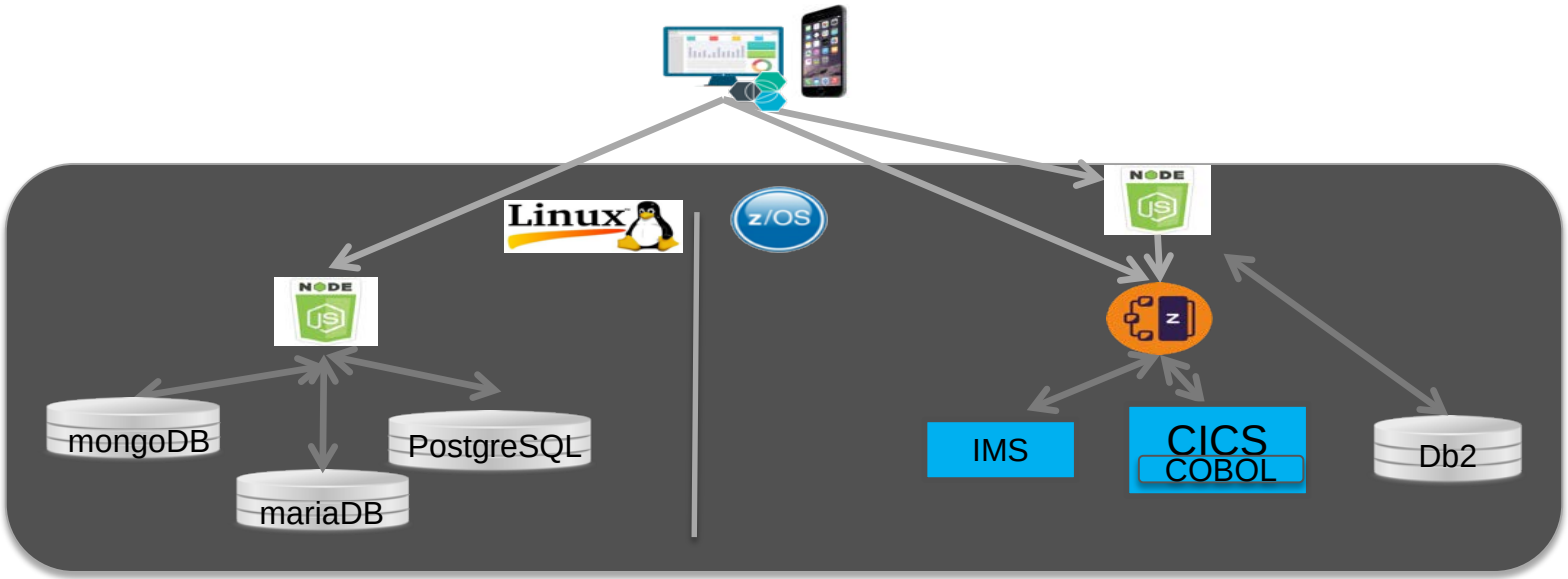
BPXWDYN (Dynamic Allocation) (new)

- Node.js interface to the BPXWDYN program, used for dynamic alloca
- https://www.npmjs.com/package/nodejs-bpxwdyn

Co-locate Node.js applications with critical assets

Move existing Node.js applications to z/OS for reduced latency in accessing critical applications and data

Up to 2.5x better throughput, 60% faster response time to DB2 on z/OS*



* Based on performance test on Linux on Z

Node.js Common Use Cases on z/OS

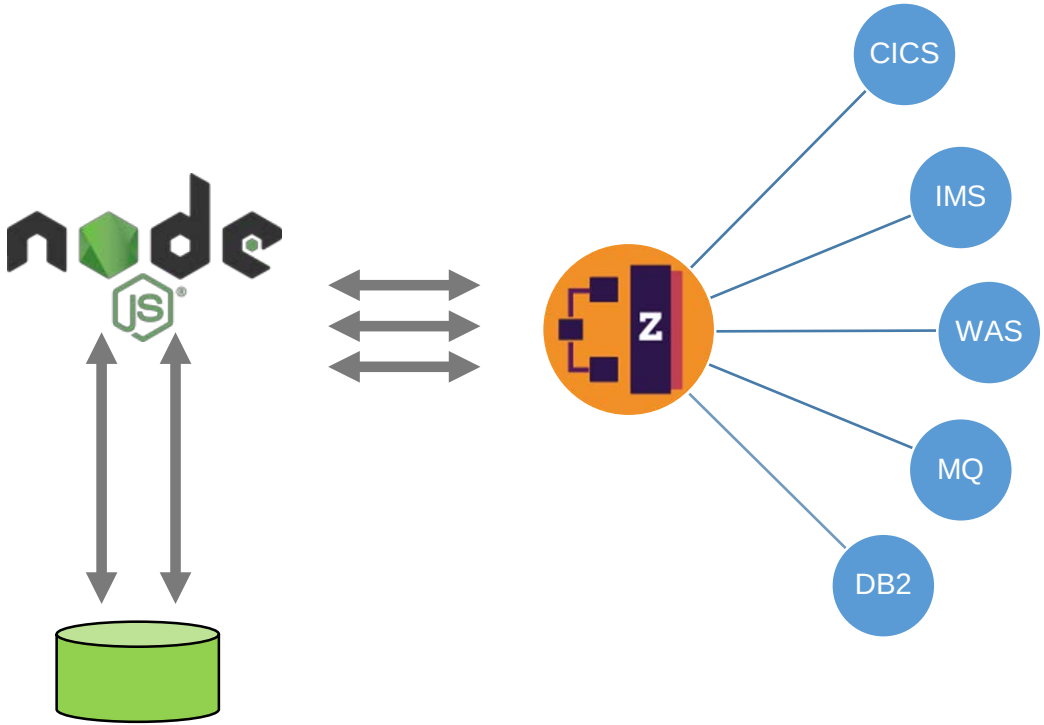
Micro-services

Web services

API Gateway

API Orchestration

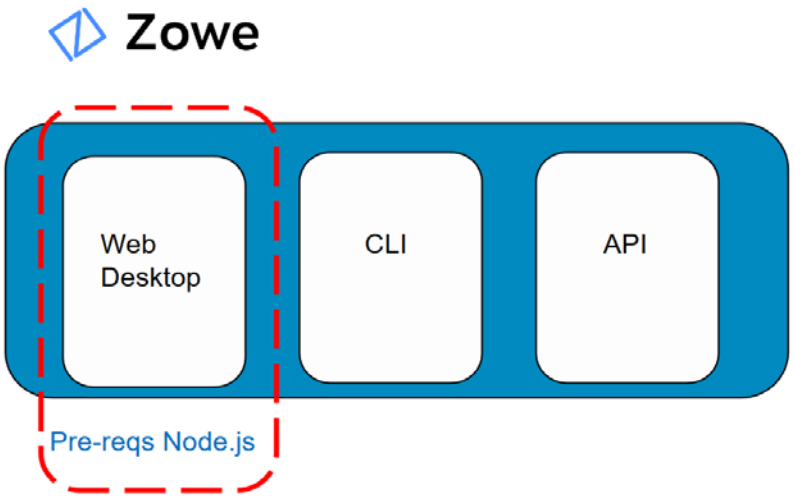
Presentation Layer



IBM is using Node.js – z/OS

IBM uses IBM SDK for Node.js – z/OS too!

The success of IBM co-founded product Zowe, a set of modern, cloud-like interfaces to interact with z/OS, relies on SDK for Node.js – z/OS for its web back end interface



IBM Software Z Trial for Node.js

IBM SDK for Node.js – z/OS

Try Node.js - z/OS hands on tutorials for 3 days on the cloud, no installation required. Ready in 2 hours.

https://www.ibm.com/account/reg/ca-en/signup?formid=urx-33320

IBM SDK for Node.js - z/OS

Modernize your applications and orchestrate your services with Node.js, the popular server-side JavaScript platform, now on z/OS. Develop and deploy Node.js on z/OS for better performance and security, and connect to your z/OS assets.

Register now

What's in the trial?

Your trial environment includes hands-on tutorials that explain how to:

- Deploy and test a Node.js LoopBack application on z/OS.
- Create and test a Node.js Express application accessing and managing a VSAM dataset on z/OS.

How to order IBM SDK for Node.js – z/OS

SDK for Node.js – z/OS (Official product) is available on Shopz

- Zero license charge with Optional S&S - full production license

Clients can take advantage of the Tailored Fit Pricing - New Application Solution, to isolate Node.js workloads without impacting the MLC costs of existing workloads when deployed as part of an approved New Application Solution .

Download and install pax.Z version : https://www.ibm.com/account/reg/ca-en/signup?formid=urx-38045

You *do not* need S&S for prerequisite requirements for other IBM Product(s) or technology (e.g. Zowe or IBM products that uses Zowe)

- You can report problems in Git & Slack
- S&S is included in IBM products that pre-reqs Node.js
- If you want to try Node.js but don't want to order it from Shopz visit IBM Product page for more details: https://www.ibm.com/products/sdk-nodejs-compiler-zos

For more details, contact Jennifer Rowan, Node.js z/OS offering manager jenrow@ca.ibm.com

Resources

IBM Product Page (to download): https://www.ibm.com/products/sdk-nodejs-compiler-zos
Link to announcement blog: https://developer.ibm.com/mainframe/2019/12/13/ibm-sdk-fo-node-js-z-os-v12-is-now-available/

Ordering IBM SDK for Node.js – z/OS: https://community.ibm.com/community/user/ibmz-and-linuxone/blogs/blog-entry1/2019/07/15/obtain-the-smpe-edition-and-optional-support-of-ibm-sdk-for-nodejs-zos

Link to Node.js on z/OS video: https://mediacenter.ibm.com/media/0_334qv473

IBM SDK for Node.js – Documentation

Knowledge Center:
https://www.ibm.com/support/knowledgecenter/en/SSTRRS/welcome_nodesdk_family.html

Financing Available: IBM Global Financing provides numerous payment options to help you acquire the technology you need to grow your business. For more information, visit: ibm.com/financing.

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