2018 TPF Users Group Main Tent Presentation

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Agenda

The Letter “P”

IBM z14 Built by Design Thinking

The world's premier system for enabling data as the new security perimeter

- Pervasive encryption
- No application changes
- Protect from internal and external threats

Designed for data serving in a cognitive world

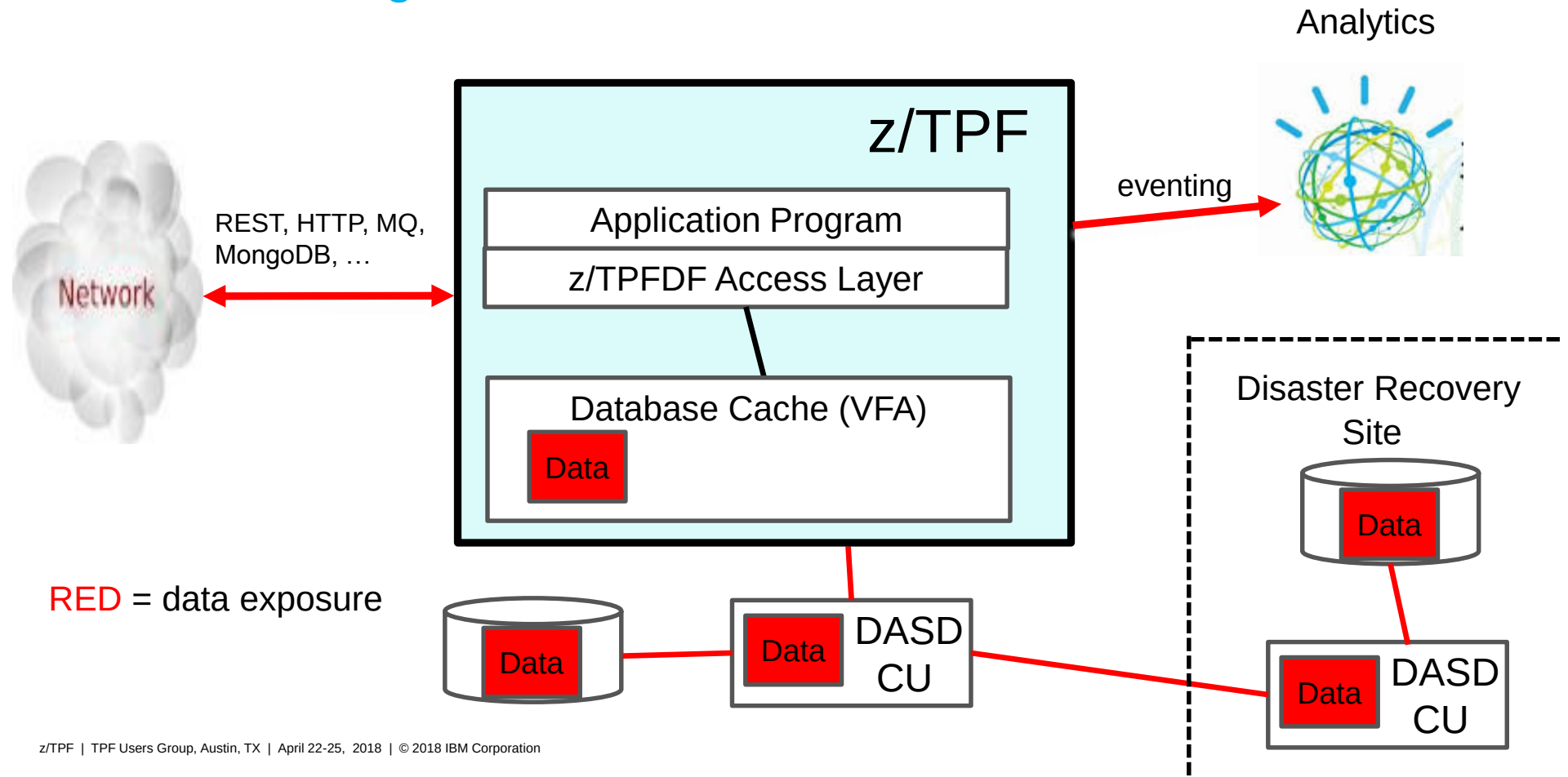
- Speed, scale and reduced latency
- Efficiency for managing data
- Secure and flexible access to data

The best infrastructure to support an open and connected world

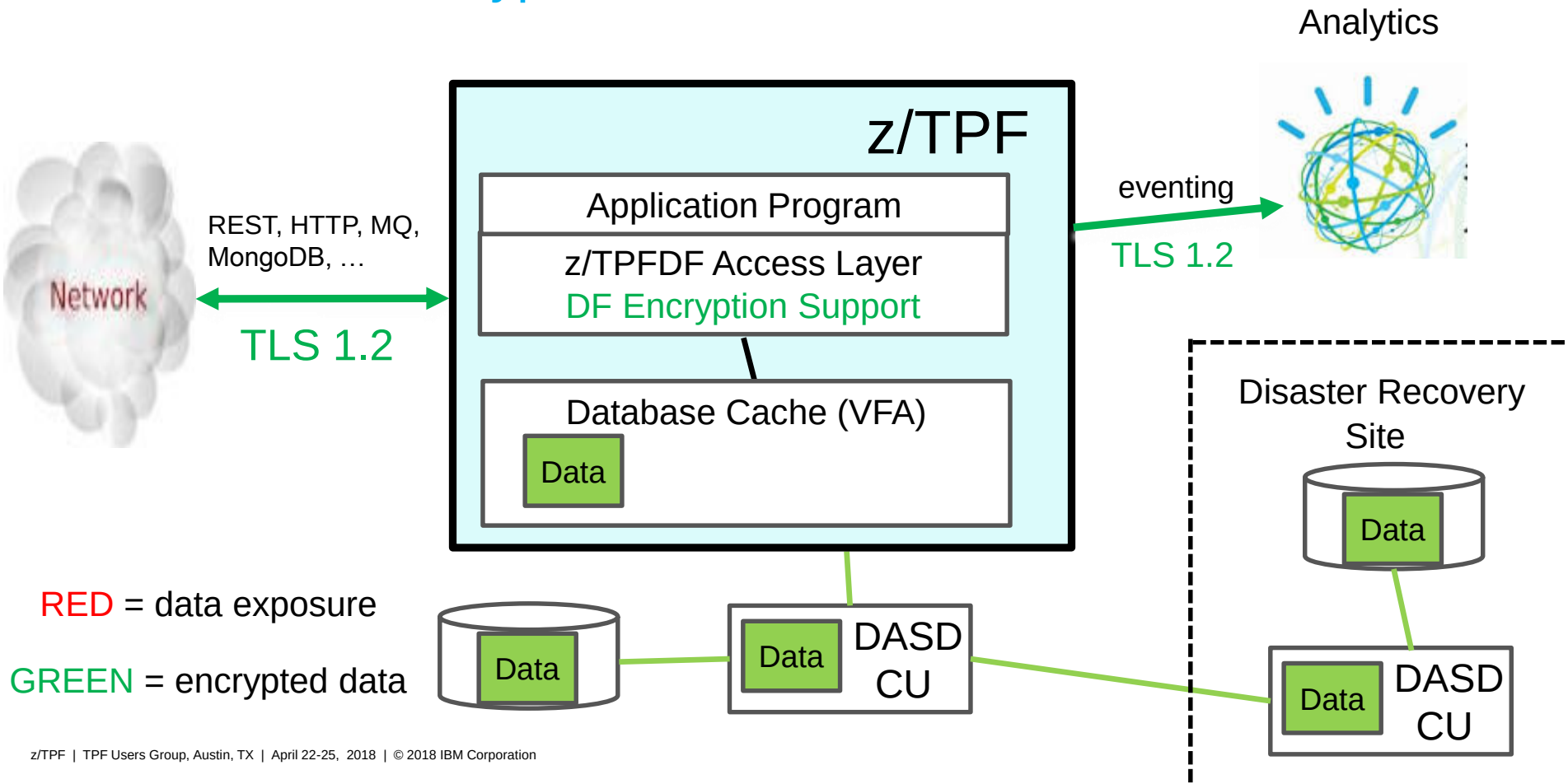
- From anywhere' mobile access
- Simplified sys admin of z/OS®
- Standardization for skills transfer

ERVASIVE ENCRYPTION

Where Data Might Be At Risk



Use Pervasive Encryption to Protect Your Data



z14 Makes Pervasive Encryption Even More Attractive

- Over **600,000** encrypt or decrypt operations per second **per I-stream**
  - Data size of 4K
  - Using AES-256 secure keys in the z/TPF keystore
  - **68%** better performance on z14
- RSA public cryptography operations **2x** faster on z14
  - Used when starting SSL sessions
  - Used for creating/verifying digital signatures
- Perfect for secure web services and protecting data at rest
- Integral part of growing regulatory compliance (PCI-DSS, GDPR, etc.)

“Large” Memory

2 GB

VERY Large Memory

2 GB

16,000x

Up to 32 TB on z14

Ponder This - What Could I Do with All that Memory?

- Cache or put more data in memory
  - More data in VFA, z/TPFDF cache, and user memory tables allows you to:
    - Reduce DASD I/O
    - Create smarter applications by making more data available to your applications without impacting transaction response times
  - Put results of frequently called query transactions in z/TPF enhanced logical record cache
    - If answer already exists, no need for your application to burn MIPS recreating that same answer
- Take full advantage of Java support

Out of the Box Benefits (No Assembly Required)

- Java support can use new instructions introduced on z14
- Hot Line Table (HLT)
  - Introduced on z14 to improve CPU performance of heavily hit cache lines
    - Core locks and other memory with high update rates
  - Cache line accesses per second improvement for this type of memory*:
    - **15-18%** on z/TPF system with 8 I-streams or less
    - **93%** on z/TPF system with 16 I-streams
    - **97%** on z/TPF system with 32 I-streams
  - Enables a given z/TPF image to scale much higher than ever before

* Your results may vary

REDICTABILITY

Dynamic CPU Support

- Ability to immediately add CPU capacity as needed to handle increased workload to meet business needs and maintain SLAs
  - Temporary or permanent CPU capacity
- In addition, when defined to the processor as a shared LPAR
  - z/TPF can right-size itself (schedule work on more or fewer I-streams) to improve overall performance of the IBM Z box
    - Enables more workload to be processed on your current HW

z/TPF

RE-REQUISITES

APARs for z/TPF on z14

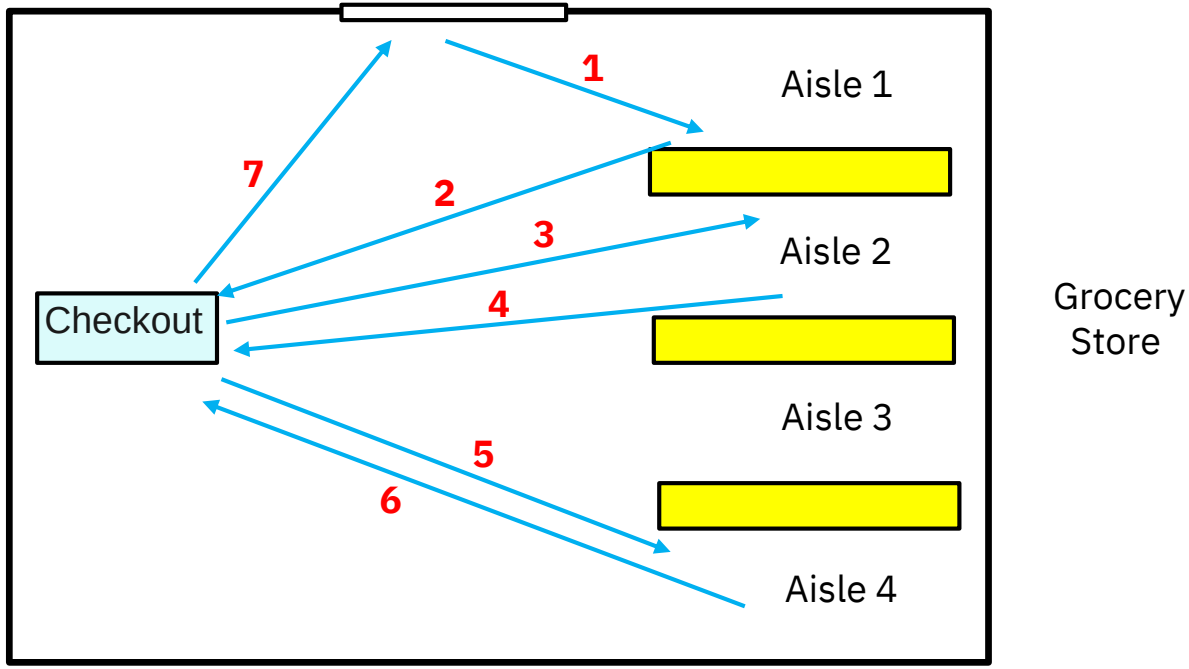
- **APAR PJ42031 (PUT 11)**
  - Allows z/TPF can operate on a system that IPLs in z/Architecture® mode
  - You must have this APAR installed before you can use z/TPF on the z14
  - Make sure this APAR is applied correctly, otherwise, z/TPF will hang at IPL
- **APAR PJ44689 (PUT 14)**
  - Support for the Crypto Express6S card.
  - You must install this APAR if you plan to use the Crypto Express6S card
- **APAR PJ44862 (PUT 14)**
  - Support for the OSA-Express6S card
  - You must install this APAR if you plan to use the OSA-Express6S

See the following published service bulletin for more information
http://www.ibm.com/support/docview.wss?uid=swg22008593

PROXIMITY MATTERS

Imagine Grocery Store with Modern Checkout, but No Carts

Shopping Sequence

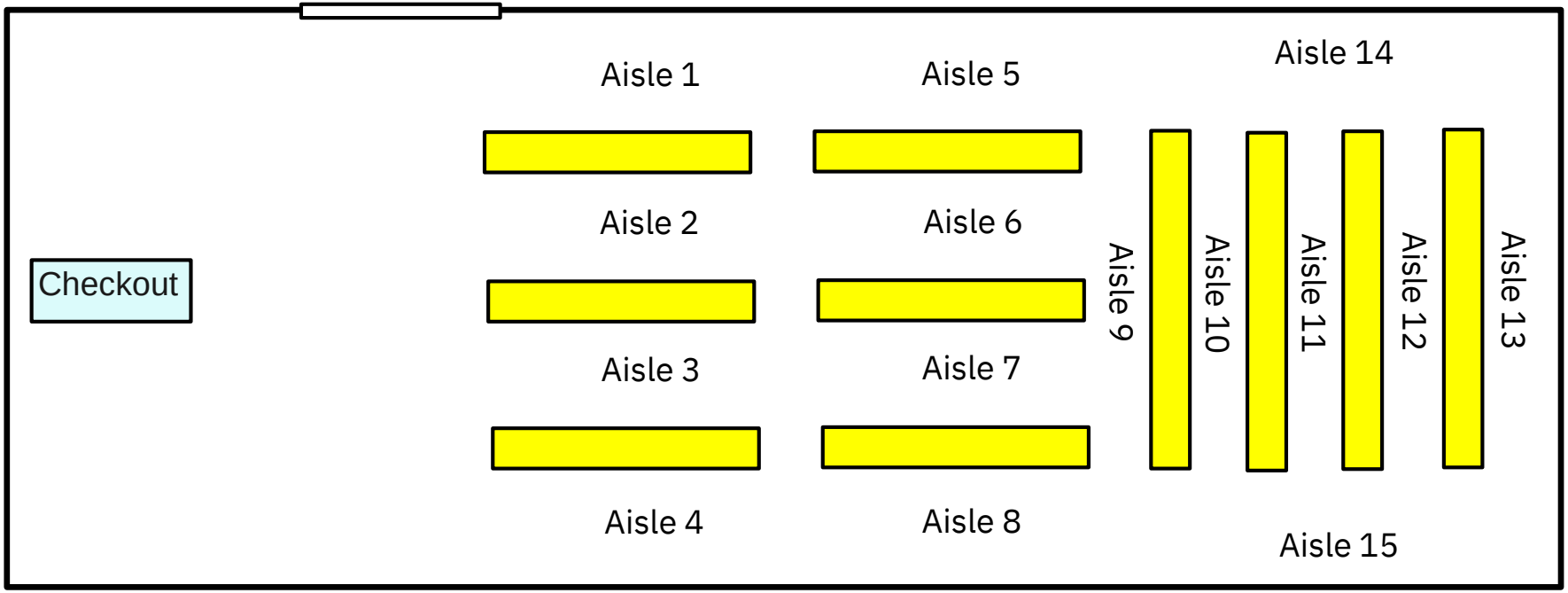


Grocery Store

Problems with This Environment

- Shopping transaction takes a long time (time from entering store to exit store)
- Checkout register is locked up during the majority of the shopping time
  - Likely resulting in long queues of other shoppers waiting to checkout
- High transport costs (time and resources) of going back and forth across the store multiple times

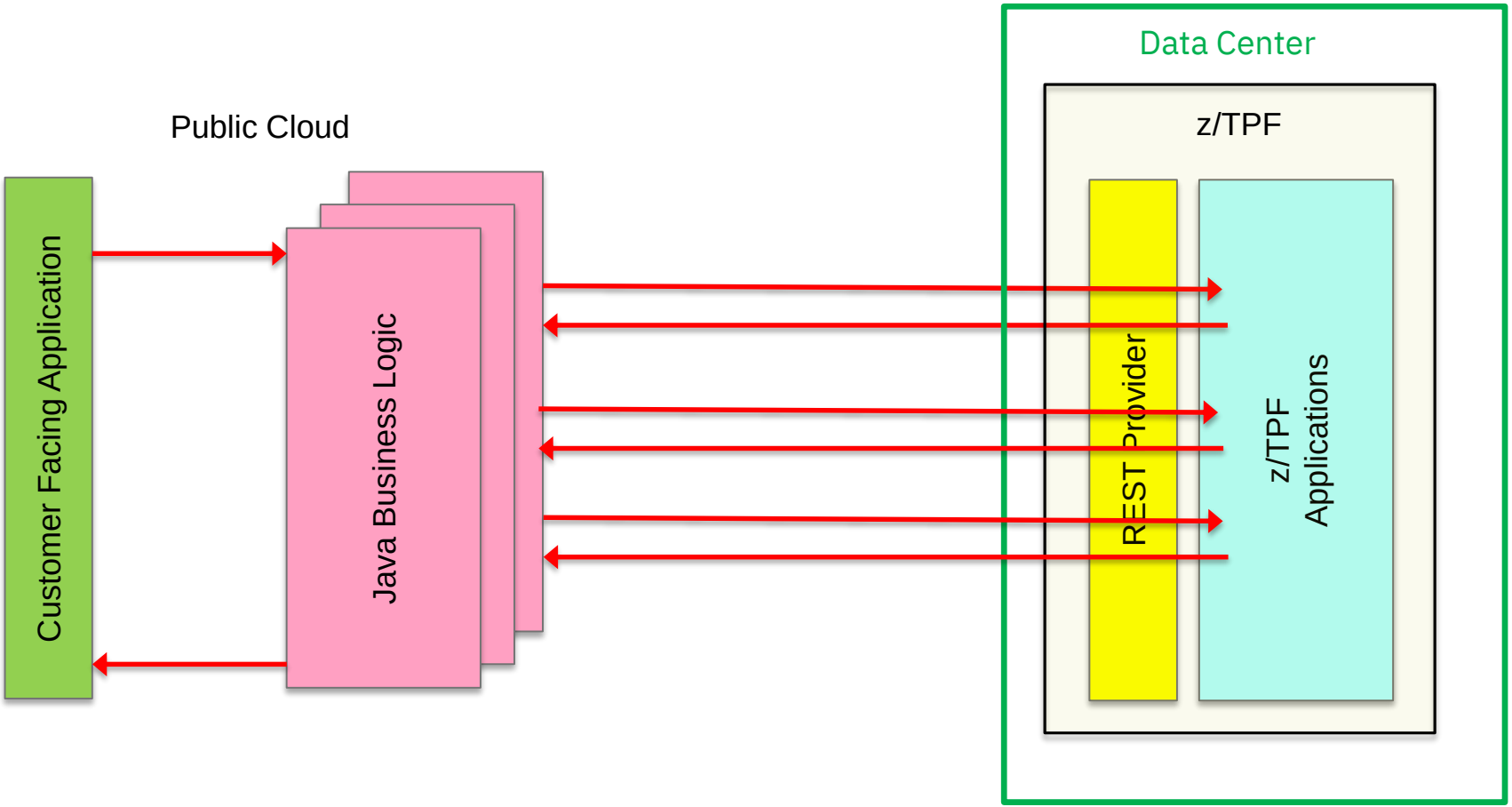
Ever Worse in a Large Grocery Store



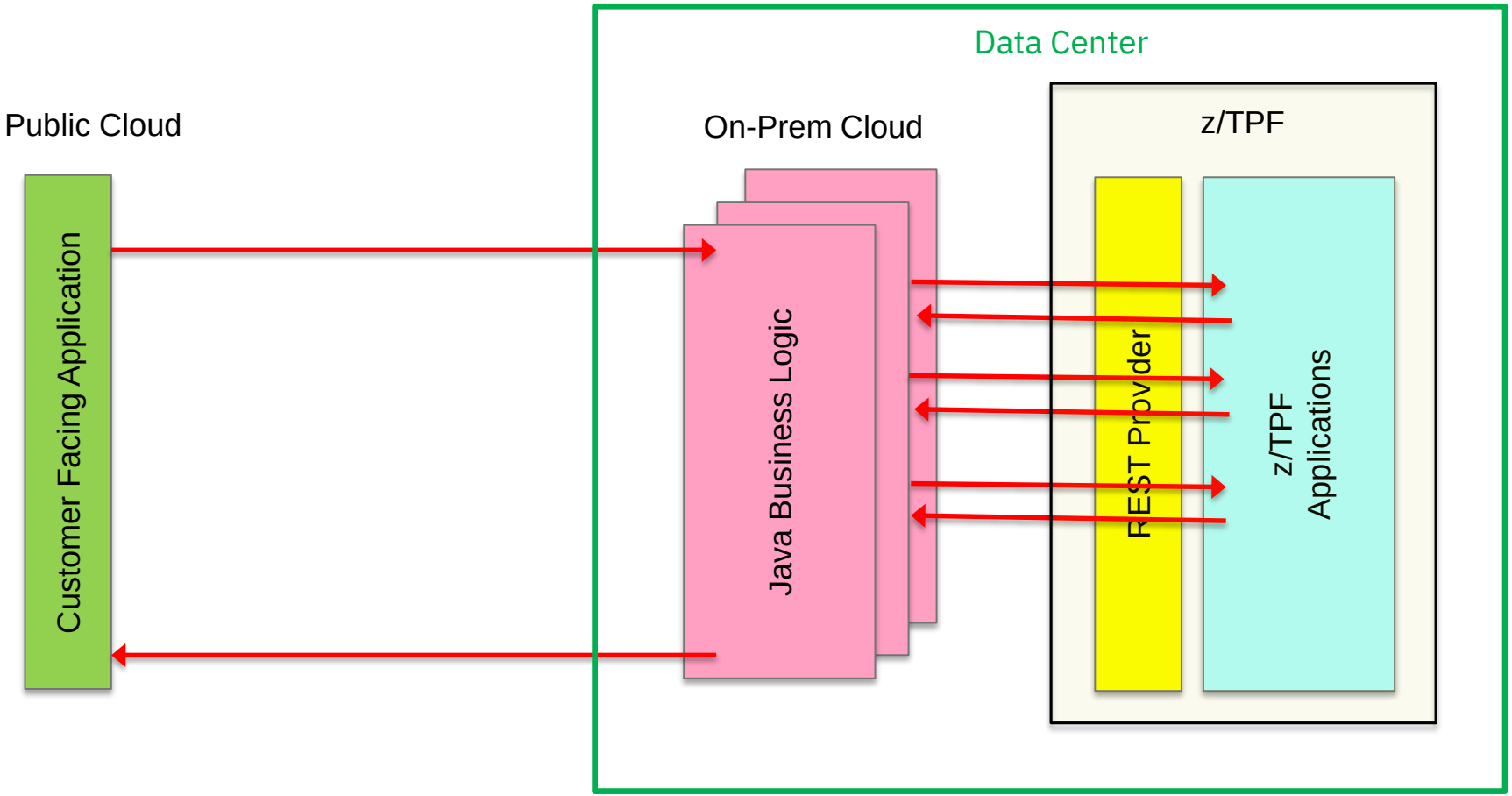
UBLIC

RIVATE

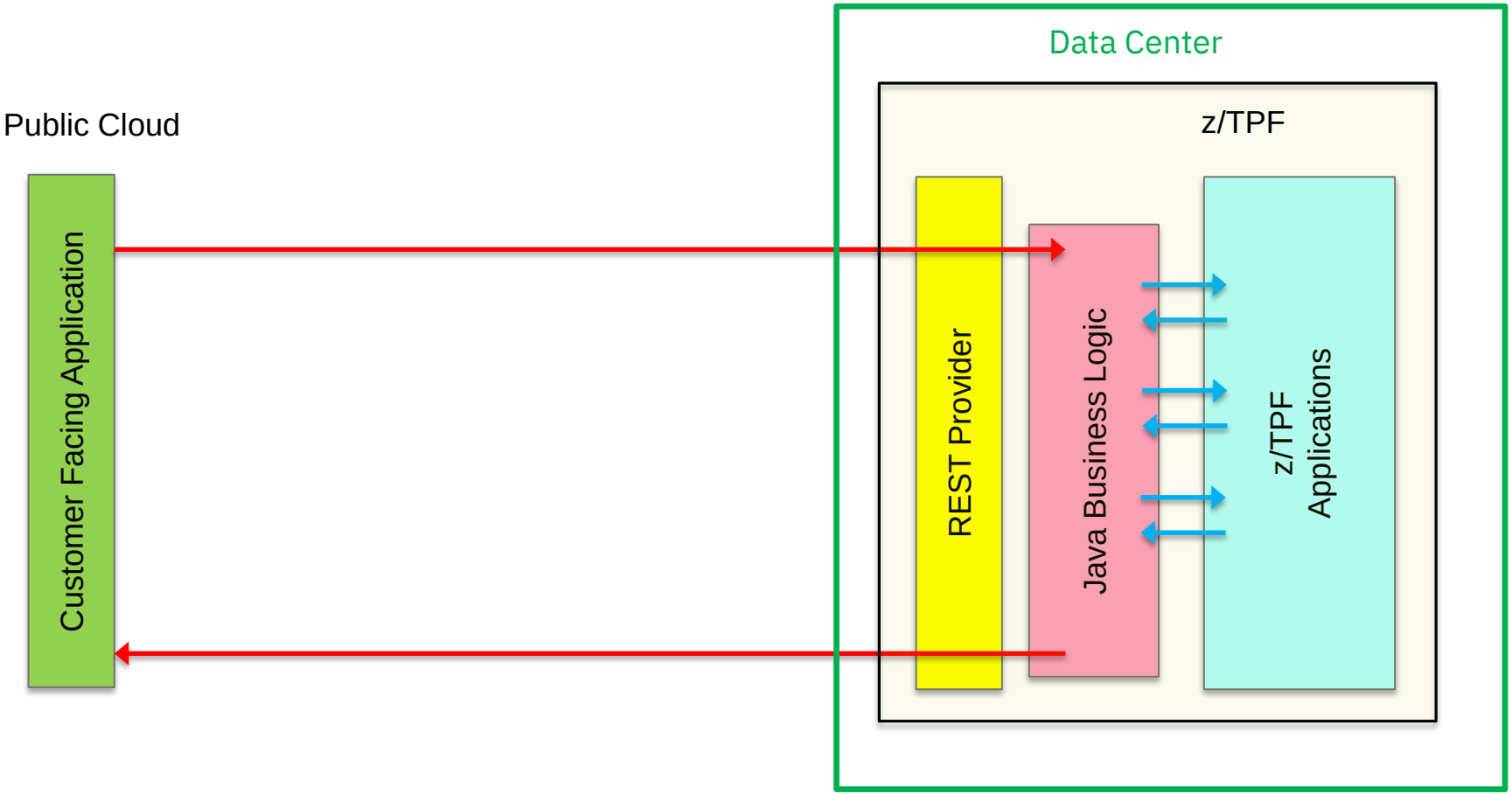
Hybrid Cloud Environment using Public Cloud



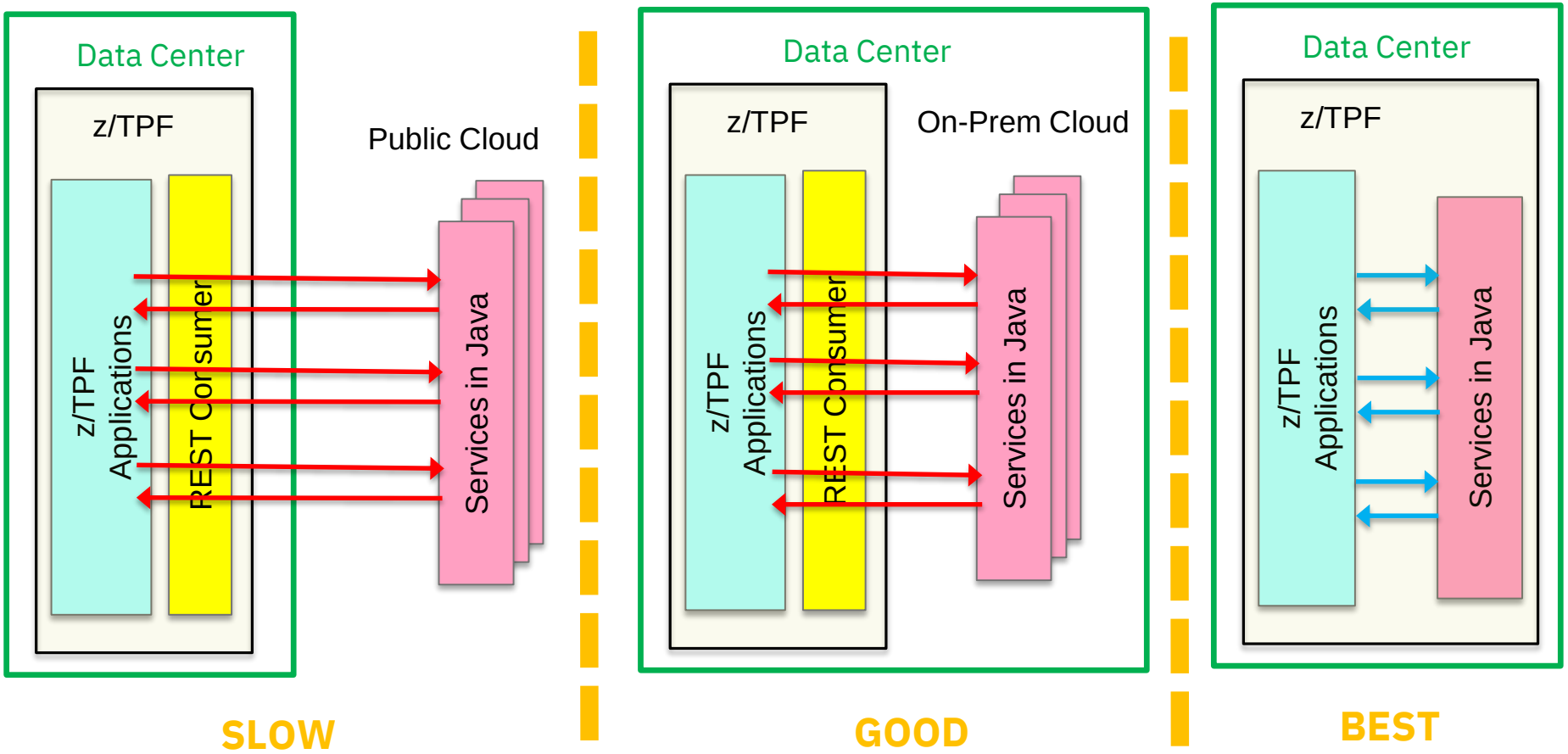
Closer is Better: Hybrid Cloud with On-Prem Too



Co-Location is Best Hybrid Cloud Option



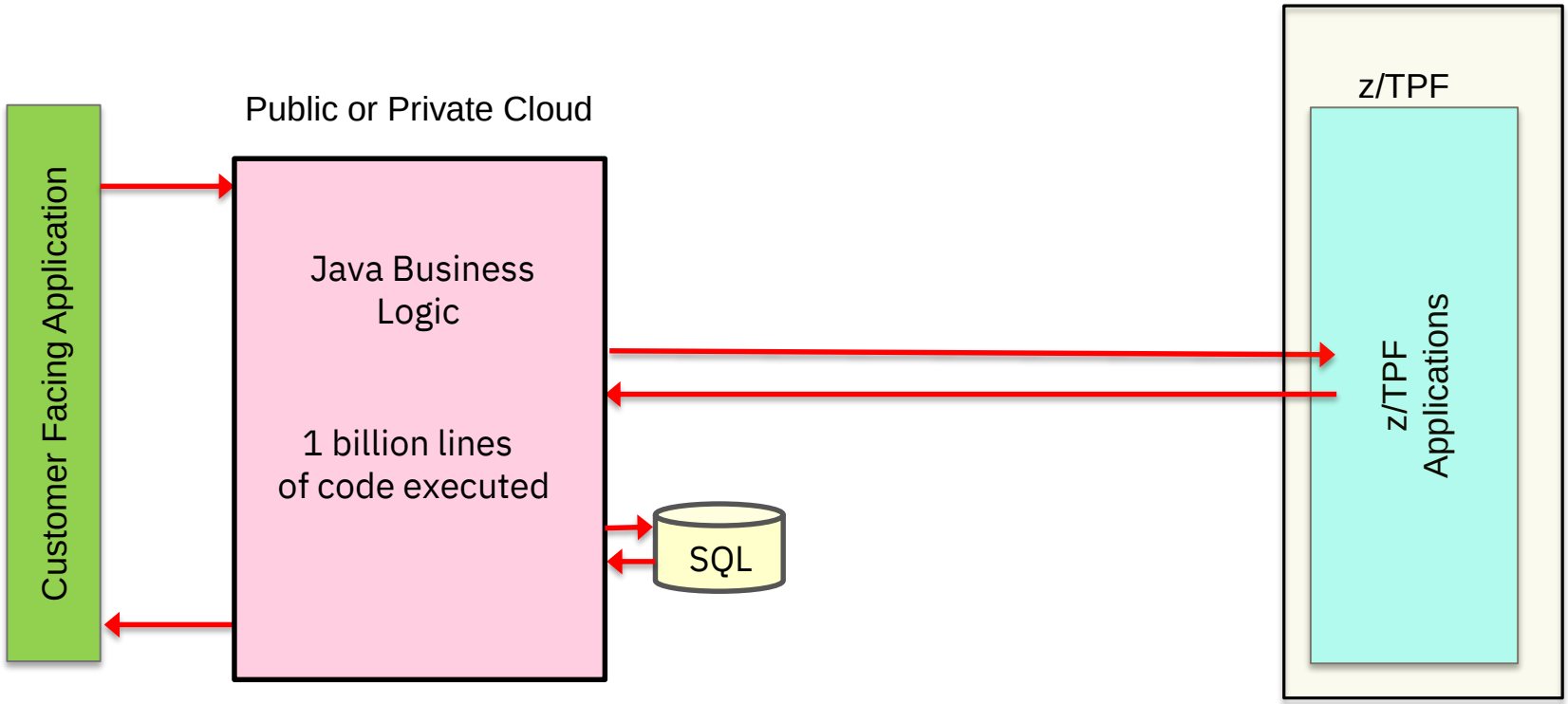
Same Applies to z/TPF Applications Consuming Services



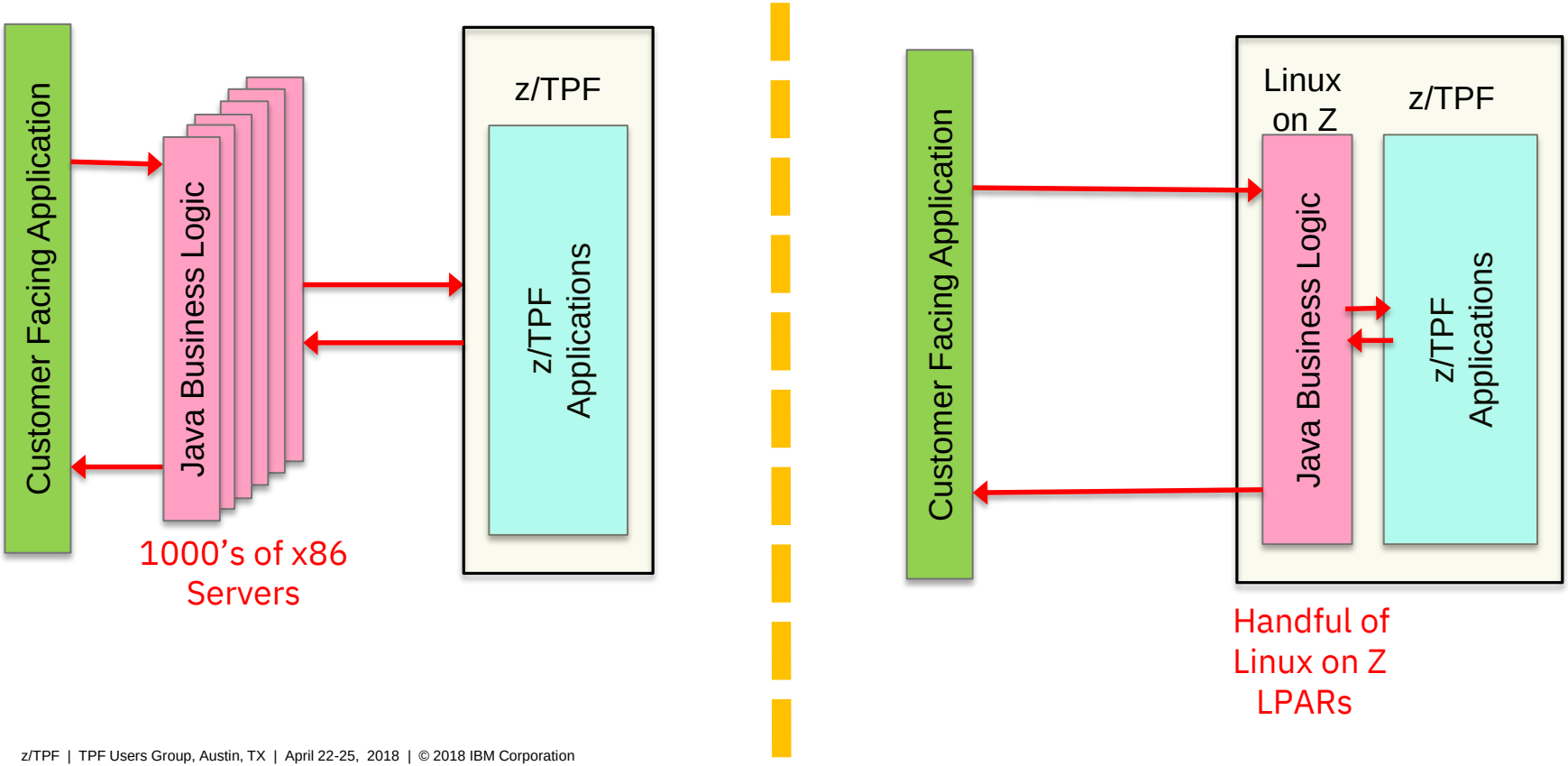
Services on z/TPF is Best Performance

- Lowest transaction latency, especially for chatty-protocols (multiple flows)
- Reduces lock hold times and queued up ECBs for synchronous calls
- Eliminates external flows (that might require encryption)
  - CPU costs lower in many cases
- Reduces application programming complexity
- Less systems to manage and maintain (servers, network switches/routers)
- If services interacting with z/TPF will run off z/TPF
  - Recommend private (on-prem) cloud for acceptable/reliable performance and better data security

Heavyweight Java Service – Minimal Interaction with z/TPF



Heavyweight Java Service Invoked 5000 Times per Second Which Environment Do You Want to Manage?



Hybrid Cloud Principles

- Use **Fit-for-Purpose** mentality taking into consideration:
  - Performance requirements
  - Data Persistence requirements
  - Data Protection and Privacy
  - Platform Flexibility
  - Projected Growth
  - Pricetag

Fancy Chauffeured Ride

Fancy Chauffeured Ride

Yes… 100 years ago

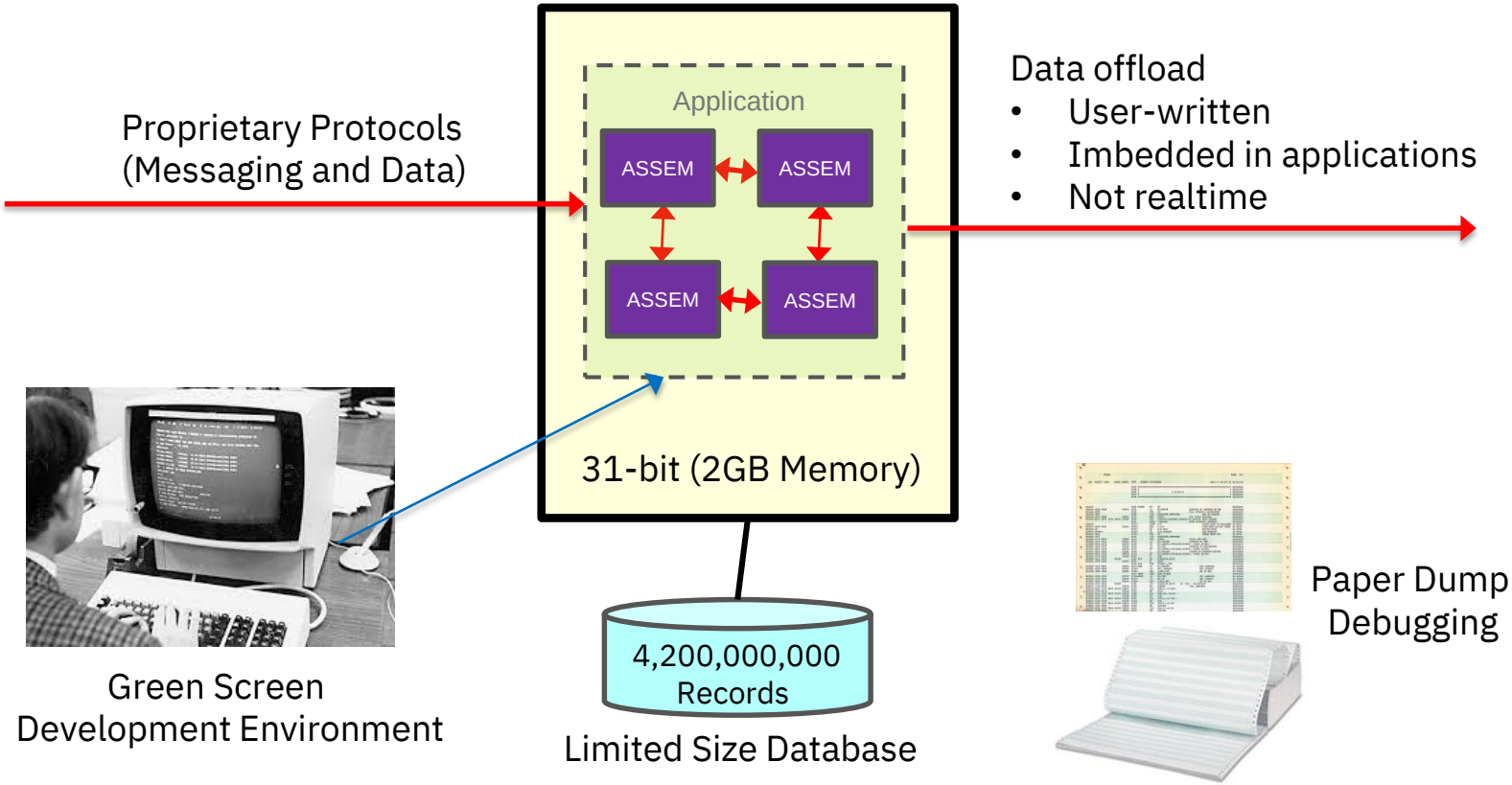
High Tech Mobile Phone

High Tech Mobile Phone

Yes… in the 1980’s

TPF

Sadly, Some People Still Think TPF as Being…



… When in Reality, z/TPF is Modern and Still Best of Breed

Open Standard Protocols
(REST, SOAP, HTTP, MQ
MATIP, MongoDB)

Secure (TLS)

Application

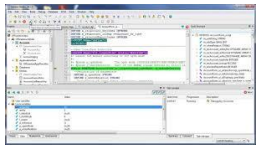
C/C++ JAVA C/C++

ASSEM C/C++ JAVA

64-bit (16TB Memory)

Data offload (data eventing)
- No application changes
- Realtime
- Standard formats (JSON/XML)

NVPC



Modern DevOps
- Eclipse-Based IDE
- Graphical Debugger
- Web Service Tooling

72,000.000,000,000,000
Secure Records

Massive Database Capacity

Analytics
Application Insights

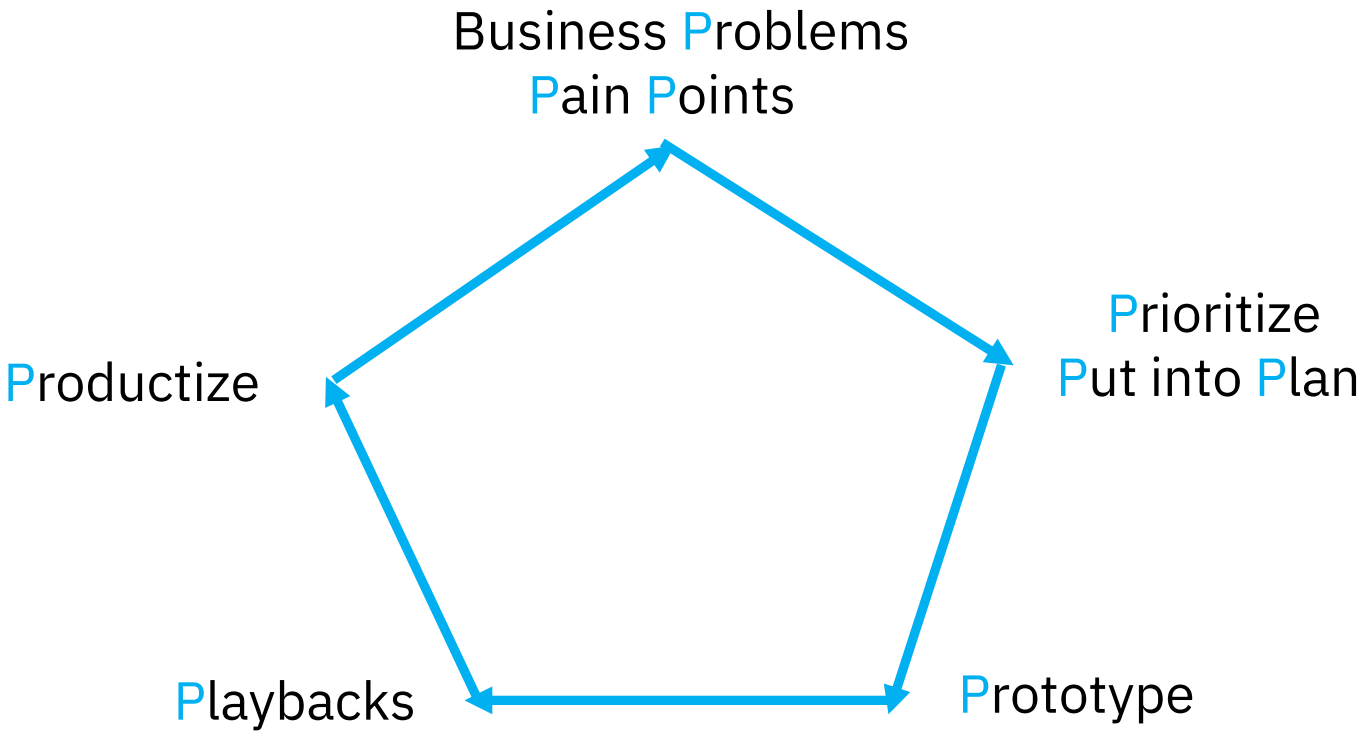
PHILOSOPHY

“By failing to prepare,
you are preparing to fail”

“Tell me and I forget.
Teach me and I remember.
Involve me and I learn.”

“An investment in knowledge
pays the best interest”

- Benjamin Franklin



PENTAGON OF LIFE

Trademarks

Notes

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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