



Hybrid IT: The Conflict of Availability, Accessibility, and System of Record

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Setting the Scene

How Much Are Mainframes Used?

- Mainframes process 30 billion transactions daily
- They process \$23B worth of ATM transactions annually
- ~80% of the world's *corporate* data reside on the mainframe



Setting the Scene

Who's Using Mainframes?



- 71 of the Fortune 100
- 92 of the world's largest 100 banks
- Other Industries: Insurance, Healthcare, Government, Aviation, Retail

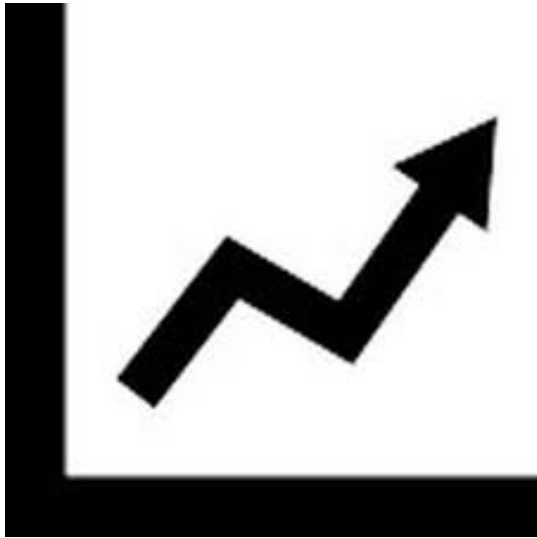




Current Conditions

Cloud Community

Who's Here?



- Trends tell us we should be here.
- 85 percent of enterprises have a multi-cloud strategy, up from 82 percent in 2016.
- Private cloud adoption fell from 77 percent to 72 percent, also bringing hybrid cloud adoption down from 71 percent to 67 percent year-over-year.

Cloud Community

Why Are They Here?



- More easily integrated
- Redux in CapEx costs
- Redux in OpEx costs
- Availability
- Scalability



Cloud Community

What are the hurdles?



- Costs tough to nail down.
 1. Egress Totals
 2. Disk Consumption
 3. CPU size, RAM total
- Choosing a provider.

Legacy Systems

Why stay where you are?



- Little risk and comfortability
- Security
- Systems of Record



Legacy Systems

Ongoing Challenges



- Aging Workforce
- Aging Technology
- Talent Pool





Considerations

Considerations



Two Main Hurdles

- Deployment in the cloud
- Integration to modern systems



Considerations

Cloud Deployment



Migrating Data

- Costly
- Technical Challenges
- System of Engagement

Considerations

Cloud Deployment



Migrating Data - Costs



- Labor Costs
- Licensing Costs
- Hosting Costs



Considerations

Cloud Deployment



Migrating Data – Technical

- Data isn't always relational
 - > VSAM – (VSE, z/OS)
 - > Integrated File System - AS/400
- Synchronization



Considerations

Integration Challenges



Security

- Determining what to expose and how
- Preventing direct access to your data



Considerations

Integration Challenges



Applications

- Communicating to modern applications
- SOA: SOAP and REST
- Business applications – COBOL, PL/1, RPG, even Assembler

```
<definitions name="HelloService"
  targetNamespace="http://www.examples.com/wsdL/HelloService.wsdL"
  xmlns="http://schemas.xmlsoap.org/wsdL/"
  xmlns:soap="http://schemas.xmlsoap.org/wsdL/soap/"
  xmlns:tns="http://www.examples.com/wsdL/HelloService.wsdL"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <message name="SayHelloRequest">
    <part name="greeting" type="xsd:string"/>
  </message>
  <message name="SayHelloResponse">
    <part name="greeting" type="xsd:string"/>
  </message>
</definitions>
```





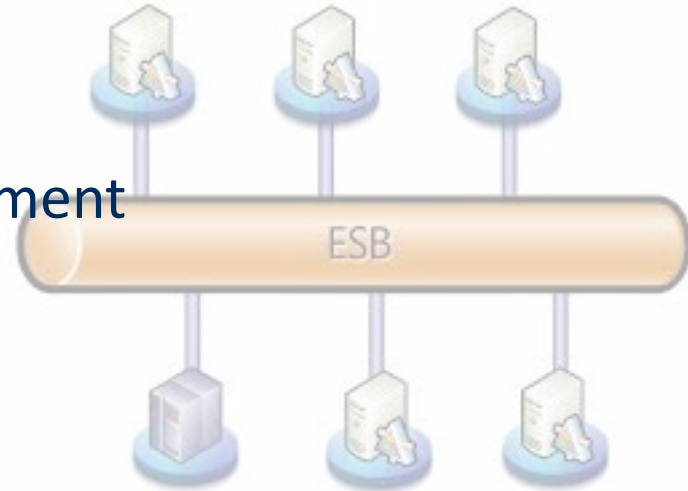
Integration Solutions

Integration Solutions



Options

- Custom Development
- Screen Scrapers
- ESB
- SOA



Integration Solutions

Options



Custom Development

- **Time Intensive**
 - > 5 Year ROI Recognition
 - > Time to Market
- **Future Positioning**
 - > Paradigm Shifts



Integration Solutions

Options



```
Processes: 167 total, 2 running, 4 stuck, 161 sleeping, 104 threads, 18/62/31
Load Avg: 1.46, 1.77, 1.73 CPU usage: 2.13% user, 3.32% sys, 94.55% idle
SharedLibs: 11M resident, 1M data, 0% linkedin.
MemRegions: 261M total, 164M resident, 5M private, 80M shared.
MemPage: 480M used (120M wired), 11% unused.
VM: 319G vsize, 187M (freezer) vsize, 6863471B swappin, 1654851G swappeds.
Network: packets: 191209/218M in, 10961/23M out.
Disk: 11726/4848M read, 8748/4892M written.

PID COMMAND CPU TIME #TH #Wg #PORT #RSEC HCH #PRVT. PUSC OPR
4650 screenclap 0.0 00:00.02 5 7 52 88 1624K 728K 16K 09
4669 eduonker 0.0 00:00.03 5 2 56 62 1860K 1100K 09 09
6646 eduonker 0.0 00:00.06 4 1 54 63 4620K 4960K 09 09
4647 quicklook 0.0 00:00.00 4 2 136 338 13M 32M 54M 09
4643 eduonker 0.0 00:00.18 3 6 52 65 447K 364K 09 09
4632 quicklook 0.0 00:00.34 2 6 46 71 4146K 3160K 09 09
4630 quicklook 0.0 00:00.22 4 6 45 63 363K 238K 09 09
6825 CMCCompiler 0.0 00:00.47 2 1 38 44 21M 21M 29K 09
6822 eduonker 0.0 00:00.18 3 1 33 78 6588K 334K 09 09
6821 hsp 3.1 00:18.71 1-1 6 31 37 1700K 166K 09 09
6798 bash 0.0 00:00.01 1 6 19 32 660K 344K 09 09
6796 login 0.0 00:00.02 2 6 39 47 1088K 658K 09 09
6796 ifers 0.6 00:03.04 10 3 195 324 42M 17M 554K 09
6793 com.apple.ic 0.0 00:00.22 5 6 87 77 3466K 2712K 09 09
```

Screen Scraping

- One for One Translations
- Appears unresponsive
- Burdened UX

Integration Solutions

Options



Sub System APIs

- Additional Costs - CTG
- Unwieldy execution - MQ
- Learning Curves
- Protocol Interface Exposure

Enterprise Service Bus

- Great for modern architectures and deployments
- Limited legacy support
- Limited native on-platform support

Integration Solutions

Options



Service Oriented Architecture

- CORBA, SOAP, REST
- Messaging
- Supported platform vendor solution

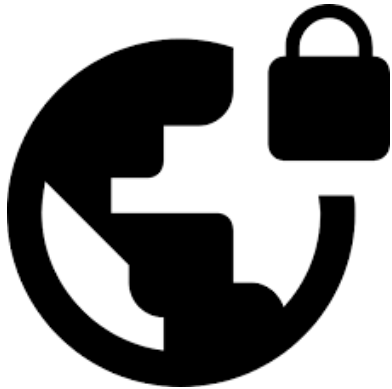
Integration Solutions

Options



Security

- MPLS
- SD-WAN
- Cloud provided VPN





Best of Breed Strategy

Best of Breed Strategy

GT Software



Ivory Service Architect

- Multiple deployment strategies
 - > Multi-SOA support
 - > Containerized
- Zero Coding
- Fast API Development
- VPN/MPLS/SD-WAN



Q & A



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