



Welcome to the Virtual IMS user group newsletter. The Virtual IMS user group at [www.fundi.com/virtualims](http://www.fundi.com/virtualims) is an independently-operated vendor-neutral site run by and for the IMS user community.

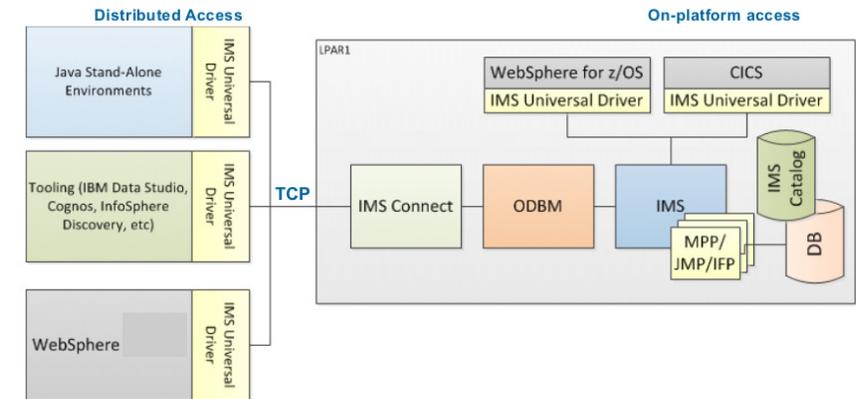
## Virtual IMS user group presentation

The latest webinar from the Virtual IMS user group was entitled, "IMS ODB". It was presented by Kevin Hite, Senior Technical Staff Member (STSM) - IMS Architect at IBM.

Kevin has been part of the IMS team at IBM since 2006.

Kevin Hite started his presentation by looking at IMS Java solutions (see Figure 1). He said that Java application developers can access IMS assets from both Java running on distributed environments over TCP/IP and Java running on z/OS in IMS or other middleware such as CICS or WebSphere Application Server.

The IMS Universal Database Drivers (imsudb.jar)

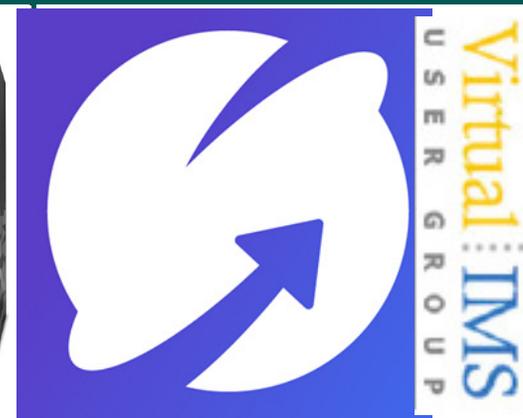
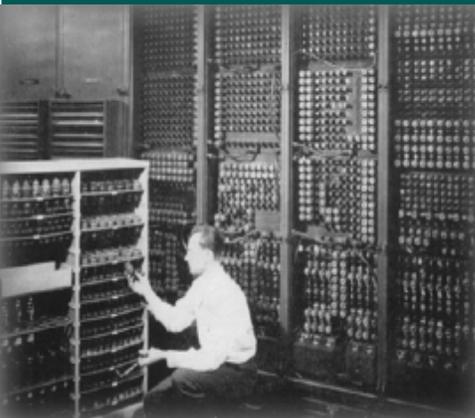


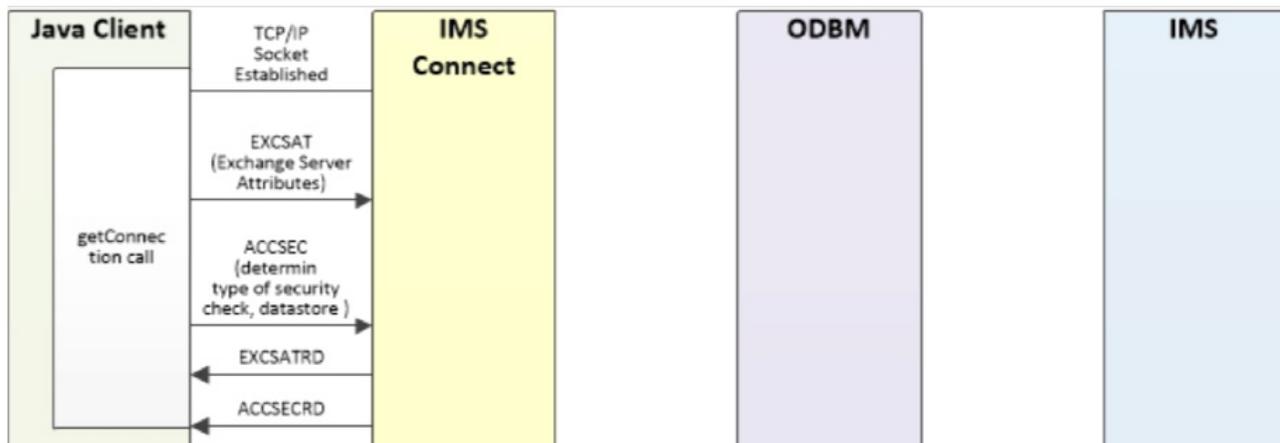
**Figure 1: IMS Java solutions**

include: JDBC interface; DL/I for Java API (IMS DB support); and DL/I for Java API (IMS TM support). IMS ships four IMS Universal Database Resource Adapters: imsudbJLocal.rar (JDBC with single phase commit (recommended)); imsudbJXA.rar (JDBC with two phase commit (recommended)); imsudbLocal.rar (CCI with single phase commit); and

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**Figure 2: Performance considerations: DRDA deeper dive 1**

imsudbXA.rar (CCI with two phase commit).

Distributed access over TCP/IP to IMS data (via IMS Connect and ODBM) includes IMS Universal Database Driver/Resource Adapter using TCP/IP to connect to IMS Connect. Then using XCF to SCI and XCF from SCI to ODBM. And, lastly, PC calls from ODBM to IMS.

With these steps, there are a number of performance considerations. For applications, there are SQL considerations and JDBC considerations. For distributed servers, there are thread pool settings and connection pool settings, eg number of connections and connection time limits For IMS Connect, think about timeout settings frontend (client), timeout settings backend (IMS), and ODBM

routing. For Open Database Manager (ODBM), consider Max Threads, Fast Path buffer tuning, and RRS=Y or RRS=N. And for IMS, consider pool tuning (PSB, PSBW, DMB), MAXPST, and PCB processing options (PROCOPT).

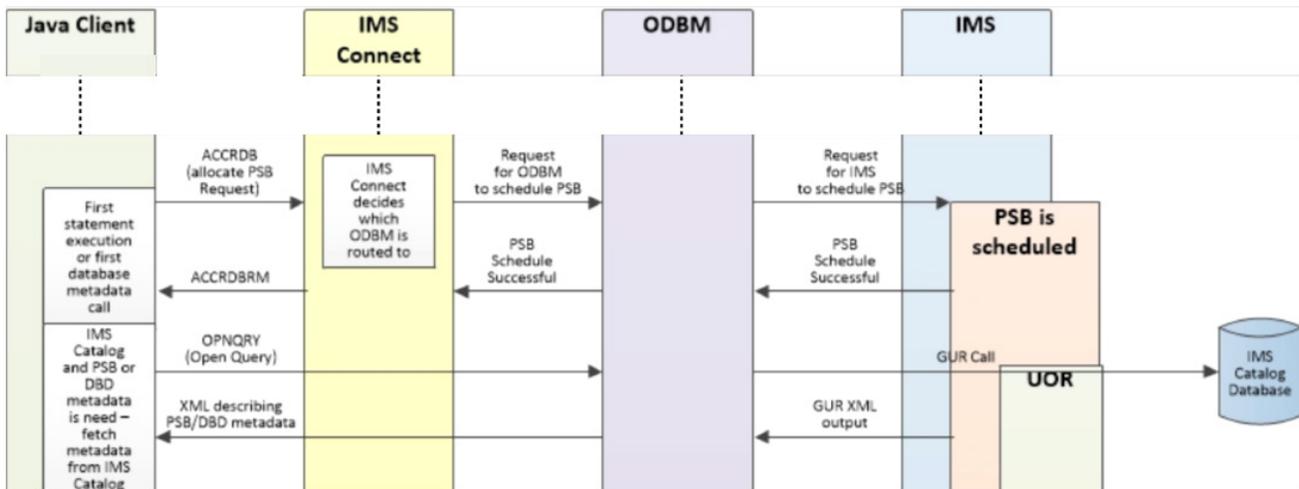
There are performance considerations for Distributed Relational Database Architecture (DRDA). DRDA is used to define the TCP/IP protocol for accessing IMS data as well as: authentication/authorization; IMS scheduling of PSBs for data access; database insert, update, delete, and retrieve requests; and commit/rollback. DRDA monitoring tools include IMS Connect Extensions for logging DRDA activity through IMS Connect (to captures activity between TCP/IP client and IMS Connect, and IMS Connect and ODBM);

and IMS Universal Driver traces for analyzing DRDA activity during application development.

Figures 2, 3 and 4 illustrate a closer look at what's happening and what things to consider in terms of performance. Kevin Hite explained these in detail.

He then turned his attention to performance considerations for IMS JDBC and SQL, IMS Connect, ODBM, IMS, and Java EE server.

Kevin next turned his attention to Java-enabled IMS dependent regions. The Java application first regions are: Java Batch Processing regions (JBP regions), which are used for online batch processing; and Java Message Processing regions (JMP regions), which are used for online message/



**Figure 3: Performance considerations: DRDA deeper dive 2**

transaction processing. The native application first regions (COBOL, PL/I) are: Message Processing Regions (MPP regions); Fast Path Regions (IFP regions); and Batch Message Processing Regions (BMP regions).

Kevin Hite looked at performance considerations for Java in IMS; IMS JDBC and SQL; Java Native Interface (JNI) considerations; Db2 access considerations; JVM tuning and monitoring considerations; and Language Environment (LE) considerations.

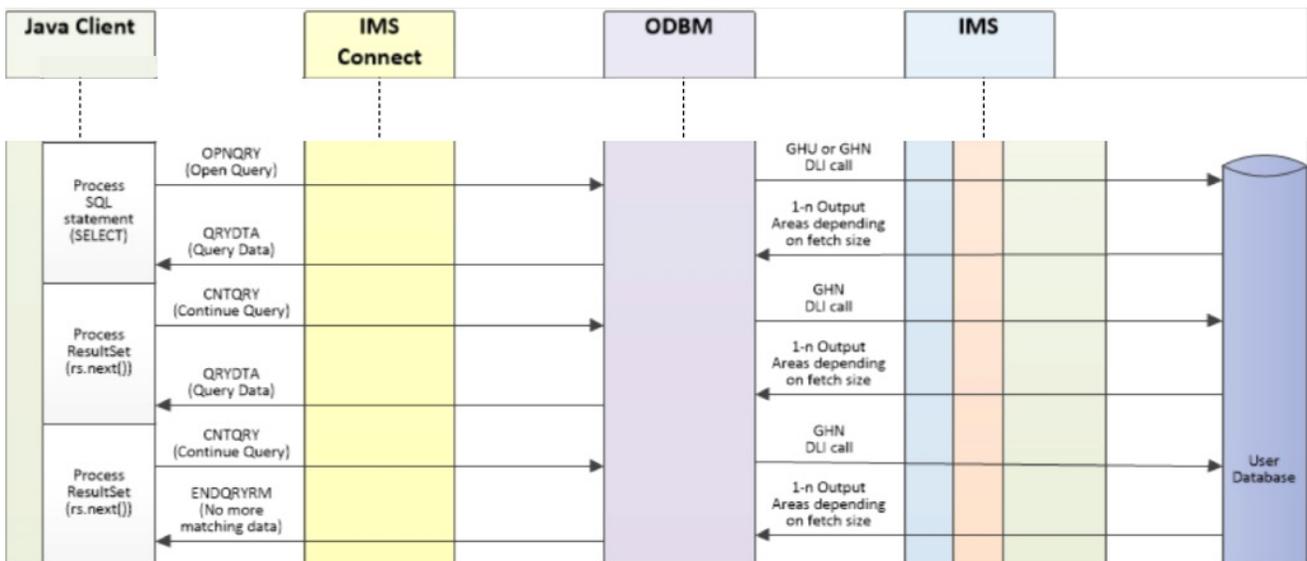
When it comes to monitoring/measuring performance, there are a number of tools that can be used. For monitoring Java, there's IBM OMEGAMON for

JVM on z/OS; IBM Health Center (Java application monitoring/analysis including method profiling, garbage collection/memory leaks, lock contention, file I/O, etc); IBM Application Performance Analyzer (application monitoring/analysis – Java, COBOL, PL/I, etc); Various Java libraries available for timing sections of code. To monitor IMS Connect, there's IMS Connect Extensions (capture/archive events (DRDA), ODBM routing exits, analyze active sessions); and IMS Problem Investigator (merged view of IMS Connect events (DRDA), IMS logs, etc). For IMS, there's IMS Performance Analyzer (process IMS logs – monitor PSB schedules, pools space). And to test drivers, there's Rational Performance Tester, Selenium, JMeter,

SOAP UI, stand-alone drivers.

A Java transaction running in a JMP region uses more CPU than a COBOL application running in IFP or MPP regions. In fact, CPU Busy is around 2-2.5 times higher for Java. However, Java processing is offloadable to zIIP. How much can be offloaded really depends on how much Java processing/business logic there is. It means that the 'cost' of a Java application can be similar to the cost of a COBOL application.

In terms of transaction rates and response times, for a Java transaction running in a JMP region and a COBOL application running in an IFP or MPP regions, the average transaction response times are very similar.



**Figure 4: Performance considerations: DRDA deeper dive 3**

Lastly, Kevin mentioned Makerspace, a multi-day framework that emphasizes IMS modernization and incorporates education of assets, design thinking exercises, and a potential Proof of Concept and Production delivery.

The user group were left with some key thoughts. And they were that organizations could leverage the vast amount of Java skills in the market and the thousands of Java libraries available. They now know that it is possible to write well-performing Java applications for IMS. And they should start small by converting simple transactions or simple batch jobs. And they should use language interoperability to start converting subroutines.

A copy of Kevin Hite’s presentation is available for download from the Virtual IMS user group Web site at [www.fundi.com/virtualims/presentations/IMSODBFeb19.pdf](http://www.fundi.com/virtualims/presentations/IMSODBFeb19.pdf).

You can see and hear the whole user group meeting at <https://youtu.be/CBiZOCQ7HWo>.

### Meeting dates

- On 9 April 2019, Scott Quillicy will be discussing “Streaming IMS to Kafka – Performance and Tuning”.
- The following meeting will be on 11 June when we’ll be looking at all the recent enhancements to IMS Connect Extensions V3.1. That’s with Tracy Dean,

IBM Offering Manager, IMS Tools and z/VM Tools.

### Recent IMS articles

*IMS transaction tracking data insights – we’ve got you connected!* by Sandy Sherrill on z Systems Developer Community (25 January 2019). You can find the article at <https://developer.ibm.com/zsystems/2019/01/25/ims-transaction-tracking-data-insights-weve-got-you-connected/>

Strengthening security for your IMS databases with RACF PassTickets by Emily Siu on z Systems Developer Community (16 January 2019). You can find the article at <https://developer.ibm.com/>

zsystems/2019/01/16/  
strengthening-security-for-  
your-ims-databases-with-  
racf-passtickets/

A Simple Way to Enhance  
IMS Database Dynamic  
Segment Layouts by Carlos  
Alvarado on z Systems  
Developer Community (16  
January 2019). You can  
find the article at [https://  
developer.ibm.com/  
zsystems/2019/01/16/a-  
simple-way-to-enhance-ims-  
database-dynamic-segment-  
layouts/](https://developer.ibm.com/zsystems/2019/01/16/a-simple-way-to-enhance-ims-database-dynamic-segment-layouts/)

## Arcati Mainframe Yearbook

Many members of the Virtual  
CICS user group contributed  
to this year's user survey  
in the Arcati Mainframe  
Yearbook.

If you want to get your hand  
on this one-stop shop for  
mainframers, the Yearbook  
is free to download from  
the Arcati Web site here:  
[http://www.arcati.com/  
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## About the Virtual IMS user group

The Virtual IMS user group  
was established as a way  
for individuals using IBM's  
IMS hierarchical database  
and transaction processing  
systems to exchange  
information, learn new  
techniques, and advance  
their skills with the product

The Web site at [www.  
fundi.com/virtualims](http://www.fundi.com/virtualims)  
provides a central point  
for coordinating periodic  
meetings (which contain  
technically-oriented topics  
presented in a webinar  
format), and provides  
articles, discussions,  
links, and other resources  
of interest to IBM IMS  
practitioners. Anyone  
with an interest in IMS  
is welcome to join the  
Virtual IMS user group and  
share in the knowledge  
exchange.

To share ideas, and for  
further information, contact  
[trevor@itech-ed.com](mailto:trevor@itech-ed.com).

The Virtual IMS user group  
is free to its members.



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