What’s new in IMS Connect Extensions V3.1

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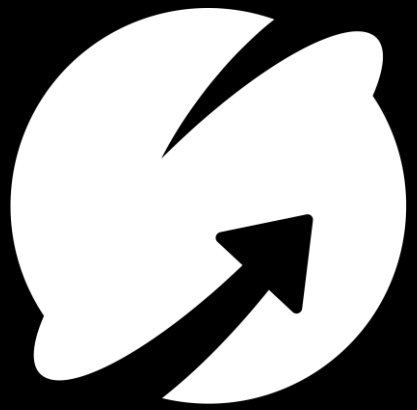


IBM

IMS **Tools**

for z/OS

IMS Connect Extensions V3.1 new feature summary

Feature	Primary resource
Socket and journal usage in IMS Connect	https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-oc-statusmon-opening.html
New and improved **REXX automation** samples New **REXX queries** (journals, sockets, status and statistics).	https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-rexx-samples.html
IP address rules (security)	https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-ipaddr.html
PassTickets in IMS Open Database (APAR PH01608)	n/a
Wildcard in OTMA routing rules (APAR PI79483)	https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-defn-otma-rrule.html
Operations Console for z/OS Explorer direct download	https://developer.ibm.com/mainframe/products/ibm-ims-connect-extensions-z-os/
OTMA and ODBM rules-based routing – major documentation updates, new procedures and diagrams	https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-part-extend-tranproc.html
IMS Connect Extensions feed (analytics engines) splunk>	https://developer.ibm.com/recipes/tutorials/forwarding-a-live-feed-of-ims-connect-events-to-splunk/

IBM IMS Connect Extensions for z/OS

Single point of control and monitoring via:

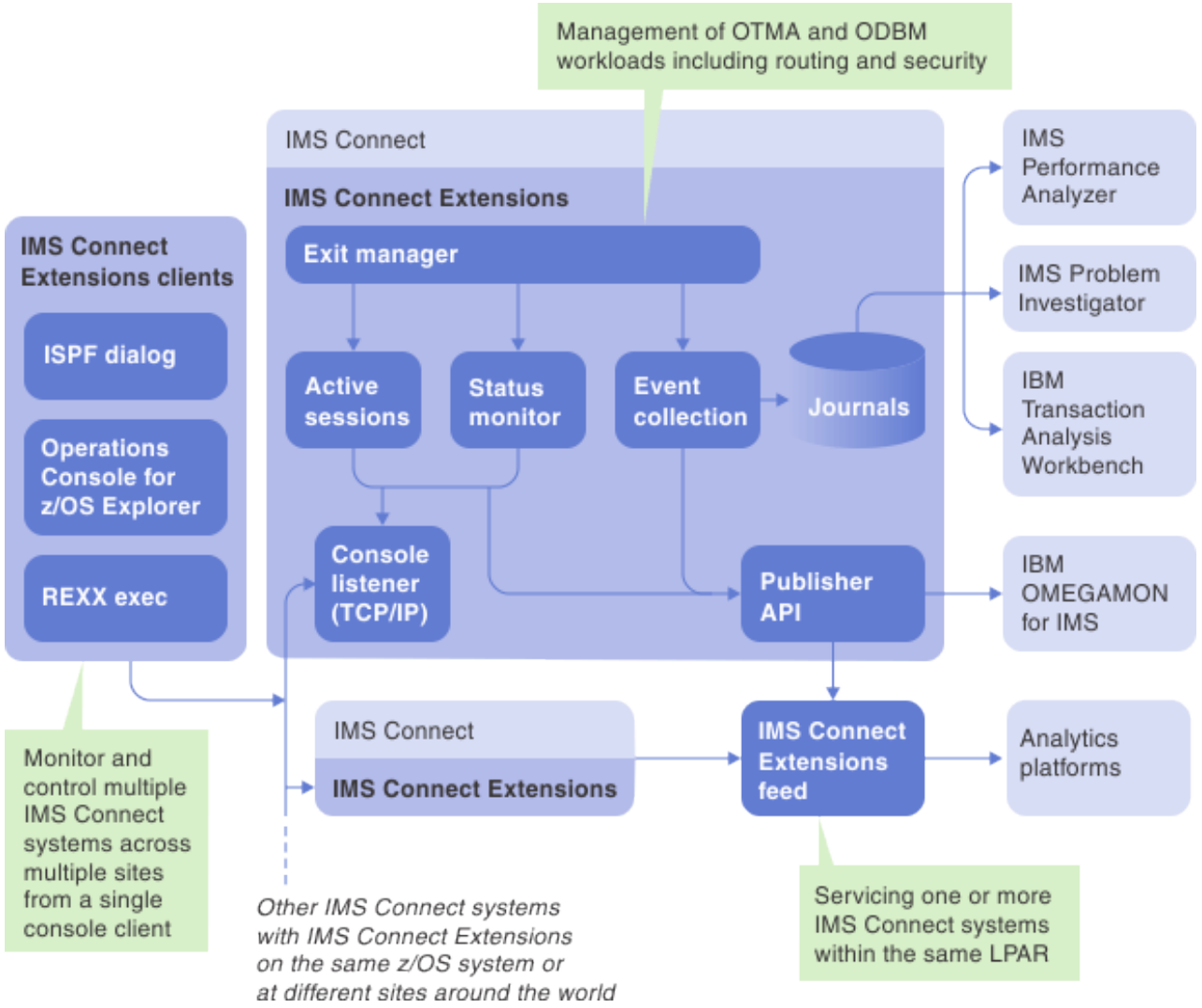
- ISPF
- Operations Console for z/OS Explorer
- REXX exec (automation!)

Delivers IMS Connect insights into:

- IMS Performance Analyzer (reporting)
- IMS Problem Investigator (journal browsing)
- IBM Transaction Analysis Workbench (journal browsing and analytics)
- IBM OMEGAMON for IMS (reporting)
- Analytics platforms (e.g. Splunk)

Builds on IMS Connect with:

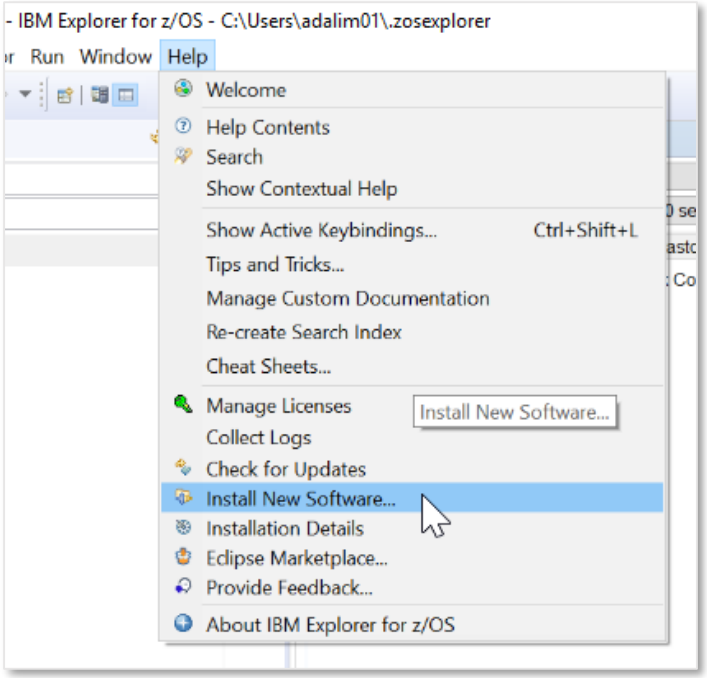
- Workload routing and balancing
- Additional security features
- IP address rules

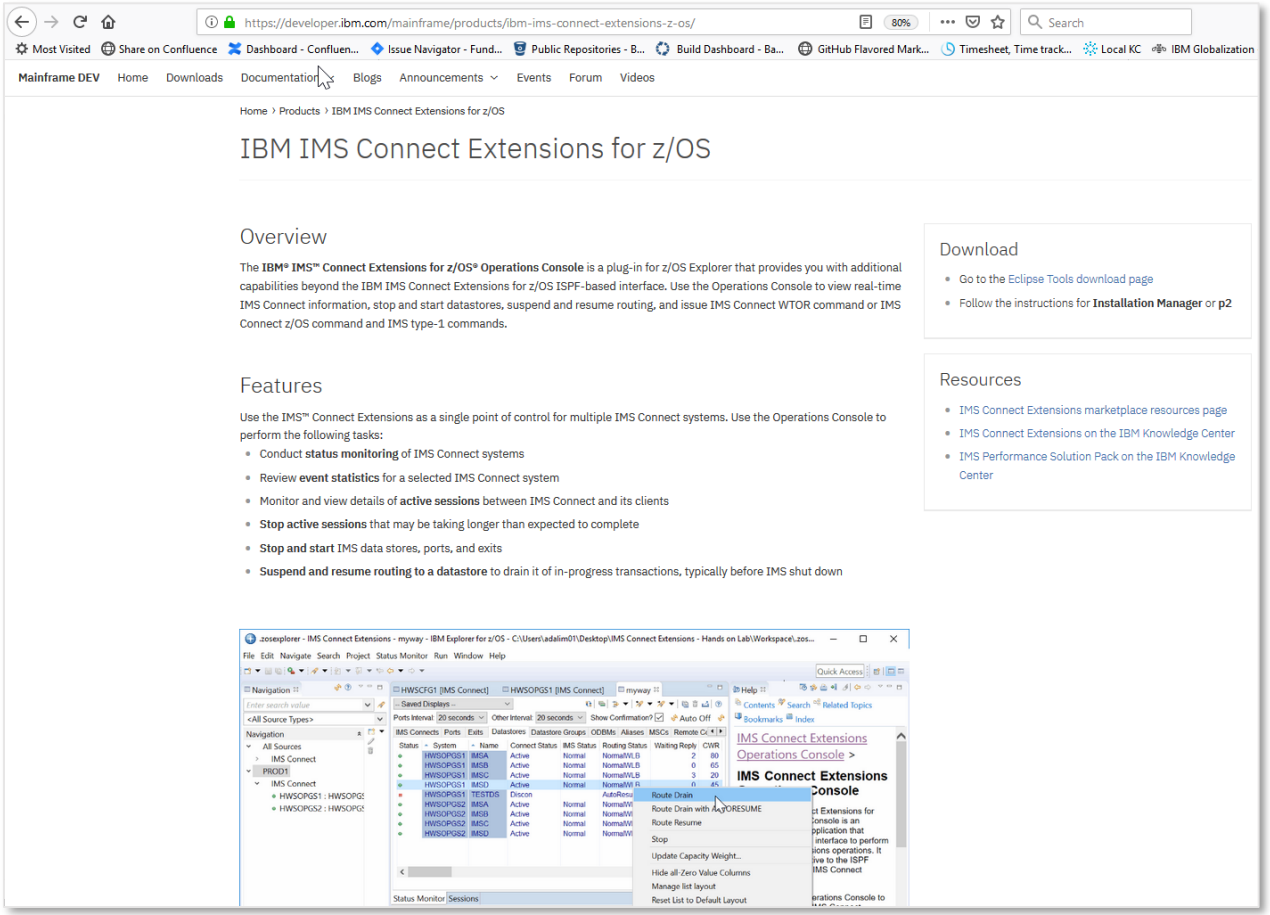


Operations Console

Download the Operations Console from IBM

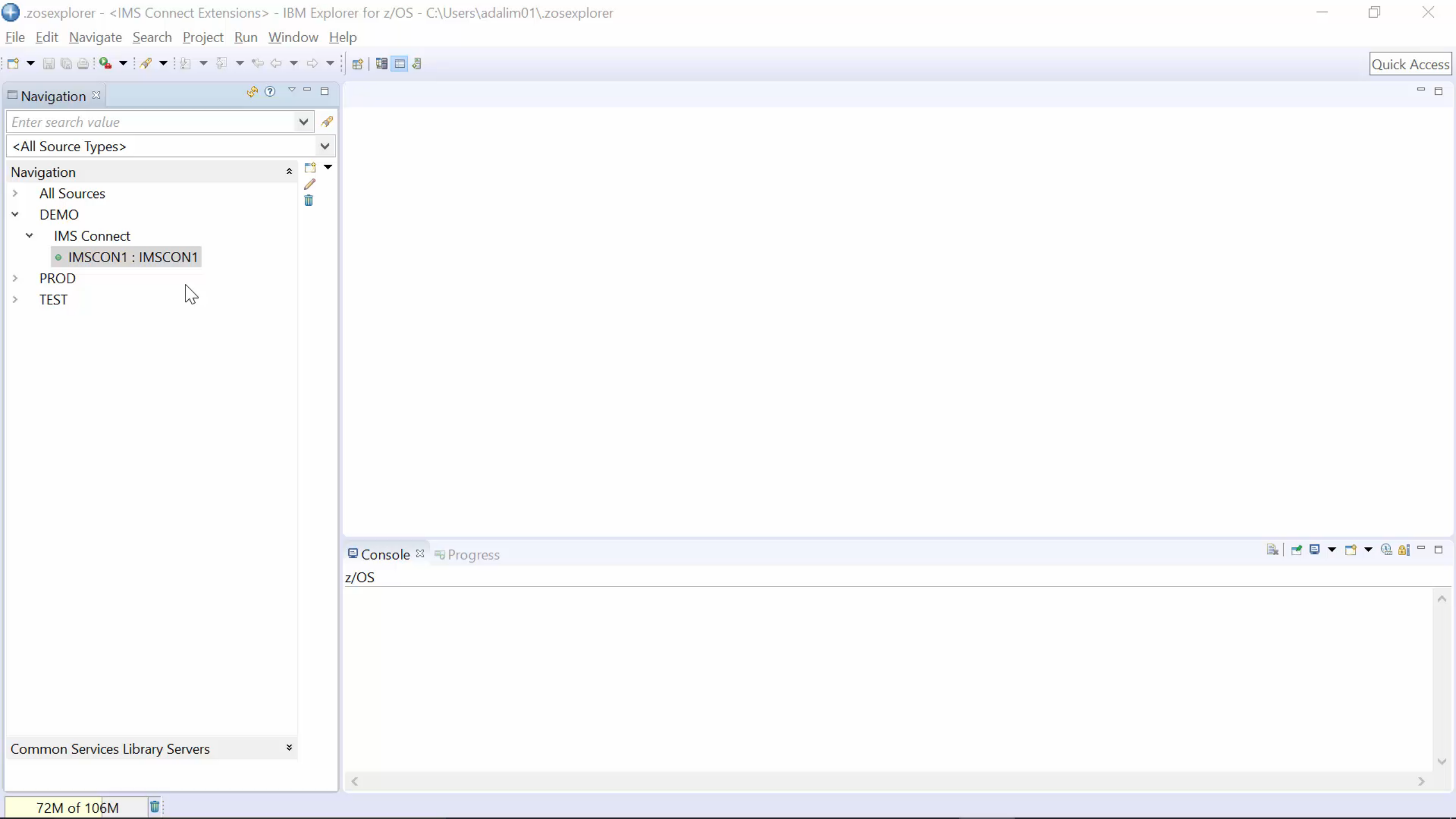
In the past, you had to install it manually after transferring it off the mainframe. Now you can easily select it from within z/OS Explorer or go directly to the website for updates…





https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-oc-overview.html

https://developer.ibm.com/mainframe/products/ibm-ims-connect-extensions-z-os/

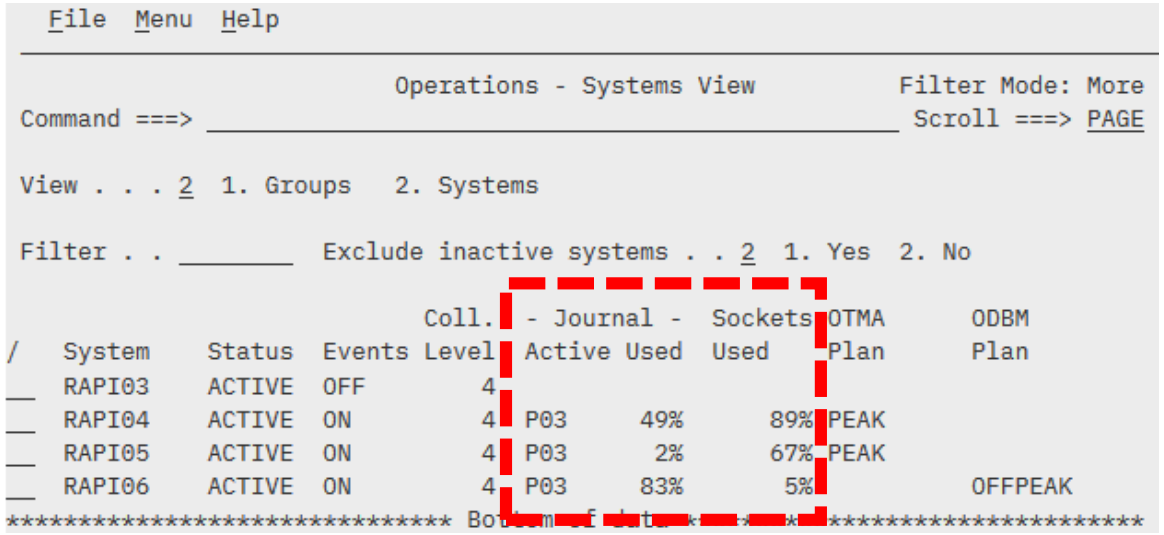

.zosexplorer - <IMS Connect Extensions> - IBM Explorer for z/OS - C:\Users\adalim01\.zosexplorer
File Edit Navigate Search Project Run Window Help
Quick Access
Navigation
Enter search value
<All Source Types>
Navigation
All Sources
DEMO
IMS Connect
IMSCON1 : IMSCON1
PROD
TEST
Common Services Library Servers
Console
Progress
z/OS
72M of 106M

Journal and socket usage

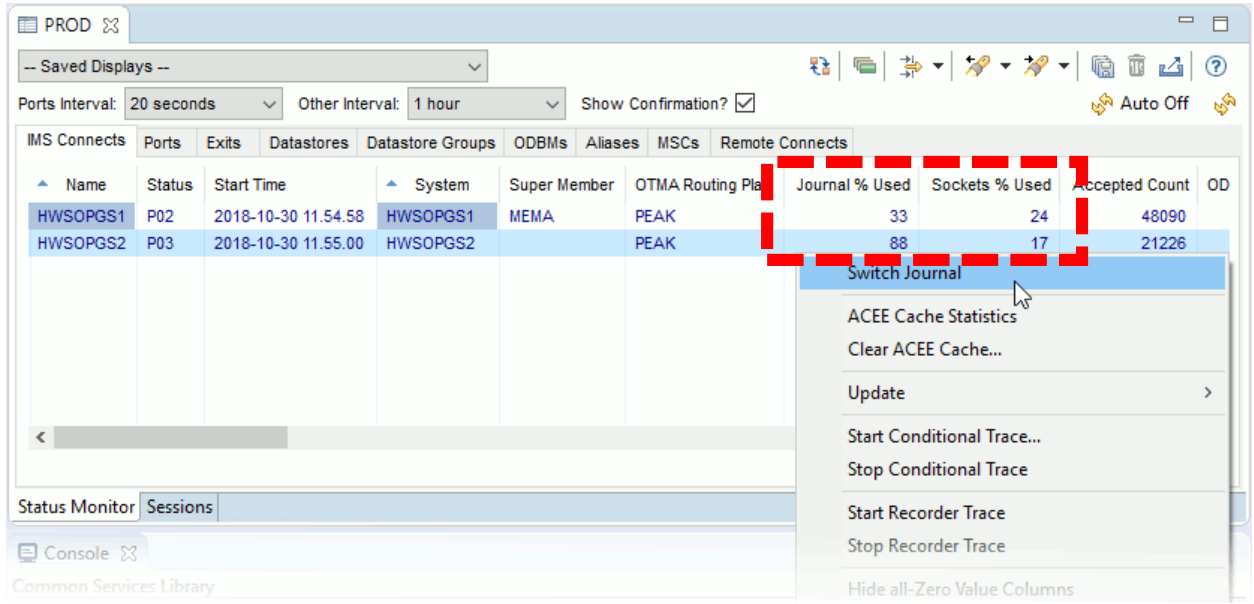
Journal and socket usage in IMS Connect Extensions V3.1 clients

View statistics from multiple IMS Connect systems on a single screen

ISPF Operations dialog



Operations Console for z/OS Explorer



https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-ops-dialog-system.html

https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-oc-statusmon-iconview.html

Suppress switching if journal has been recently switched or is about to be switched (CEXRXC03)

https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-rexx-samples.html

- REXX sample checks the active journal utilization for the given IMS Connect system and issues a SWITCH TYPE=JOURNAL command to switch the active journal if the observed active journal utilization falls within a specified range.
- **Process:**
  1. Query the current journal utilization for an IMS Connect system
  2. Switch the journal if utilization is within range
- **Host commands used:** `OPTION`, `CONNECT`, `QUERY`, `SWITCH`.
- **Example usage:**
  - Run an automatic journal switch at midnight, but don't perform the switch if a switch has just occurred or was about to occur.

https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-rexx-command-summary.html

Identify and optionally respond to the scenario where an IMS Connect system is approaching MAXSOC (CEXRX81)

https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-rexx-samples.html

- REXX sample to help identify and optionally facilitate an automated response to resolve the scenario where an IMS Connect system is approaching MAXSOC (all available sockets in use).
- **Process:**
  1. Query the current socket utilization for an IMS Connect system
  2. If the system's current socket utilization is found to cross a specified threshold:
     a. Identify (report) eligible persistent OTMA sessions that have been idle for longer than a specifiable session wait time threshold.
     b. Cancel those sessions to free sockets (optional)
- **Host commands used:** `OPTION`, `CONNECT`, `QUERY`, `DELAY`, `SHELL`.
- **Example usage:**
  - Periodic check for better alerting, maximize time for analyst to respond and remedy

https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-rexx-command-summary.html

REXX automation samples (SCEXSAMP library)

https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-rexx-samples.html

- IMS Connect Extensions journal switching
  - **New: Suppress switching if journal has been recently switched or is about to be switched**
- IMS Connect Extensions trace
- Drain (suspend) routing to IMS data stores
  - **New: Suspend routing to a list of DATASTOREs (connections to IMS) and then issue IMS shutdown**
- Activating OTMA and ODBM routing plans
- Submitting IMS type-1 commands
- Query status information
  - **New (details on next slide):**
    - **Status Monitor statistics**
    - **Journal utilization metrics**
    - **Socket utilization metrics**
- ACEE cache management
- Workload balancing
  - **New: Incremental capacity weight rating adjustment for an IMS data store (dynamic workload shaping, respond to changing conditions!)**
- Socket usage
  - **New: Respond to IMS Connect MAXSOC condition**

New REXX host commands for IMS Connect Extensions

`QUERY TYPE=JOURNAL`

- Information about the active IMS Connect Extensions journal

`QUERY TYPE=SOCKETS`

- Information about IMS Connect socket usage

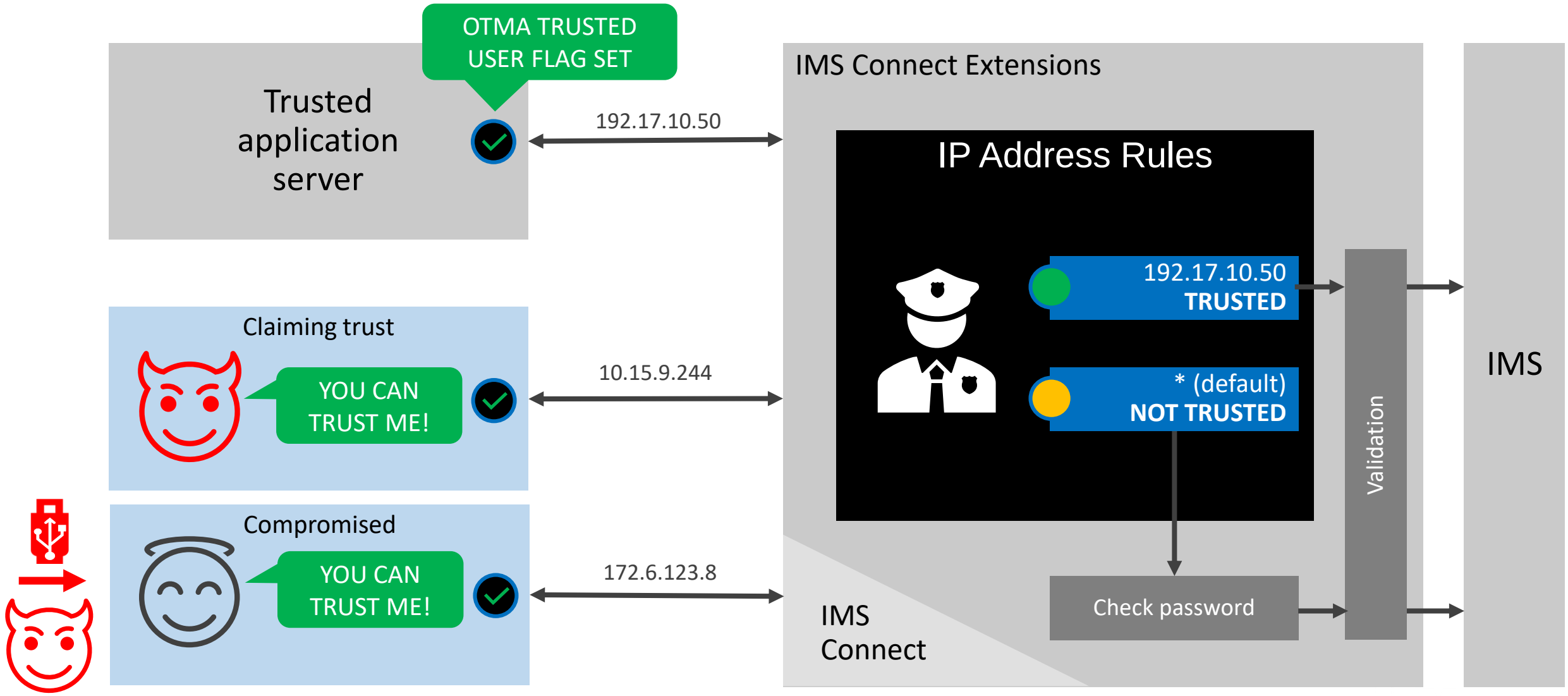
`QUERY TYPE=STATUS_MONITOR`

- Retrieves IMS Connect and IMS data store **status** and **statistics**. Retrieve information on TCP/IP ports, IMS Connect, DATASTORE connections to IMS, user exits, ODBM targets, IMS aliases, MSC link statistics, and remote IMS Connect system statistics.

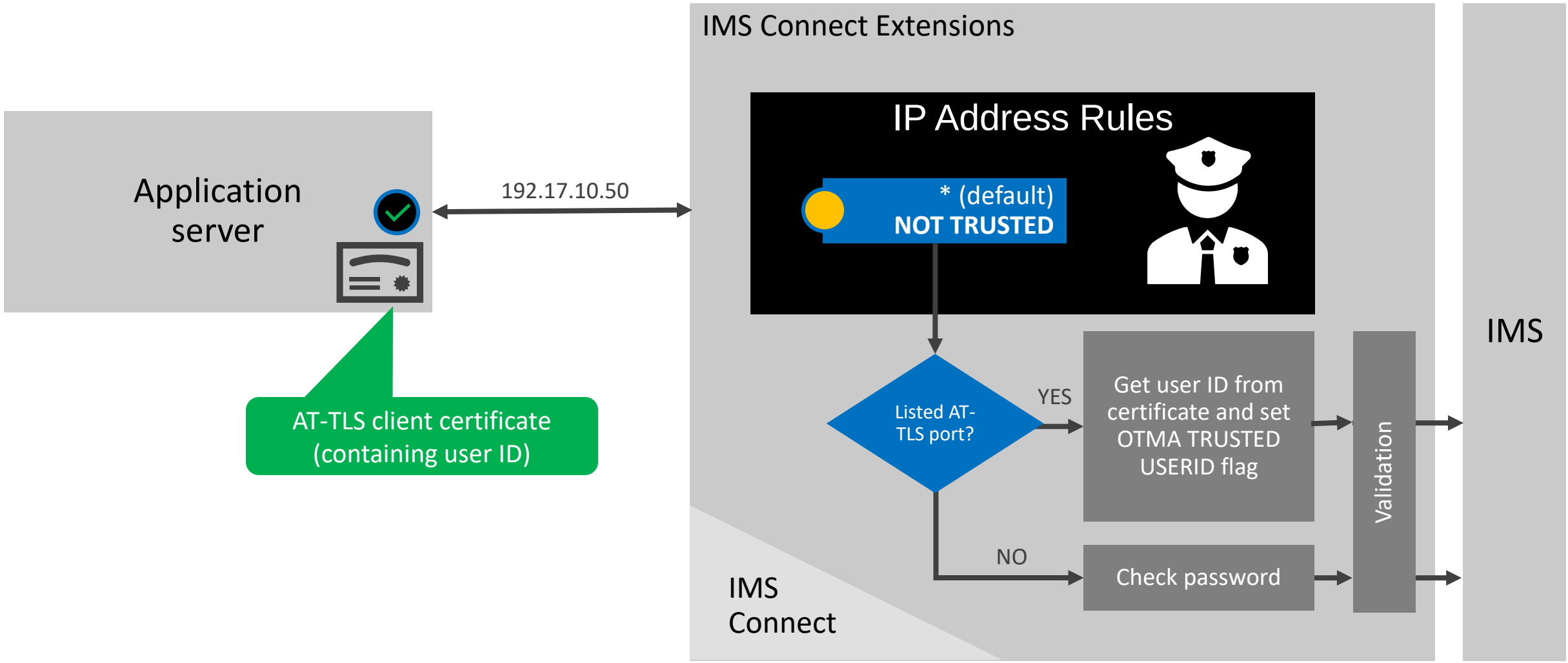
https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-rexx-query.html

Security and IP address rules

Centralized management of trust based on IP address



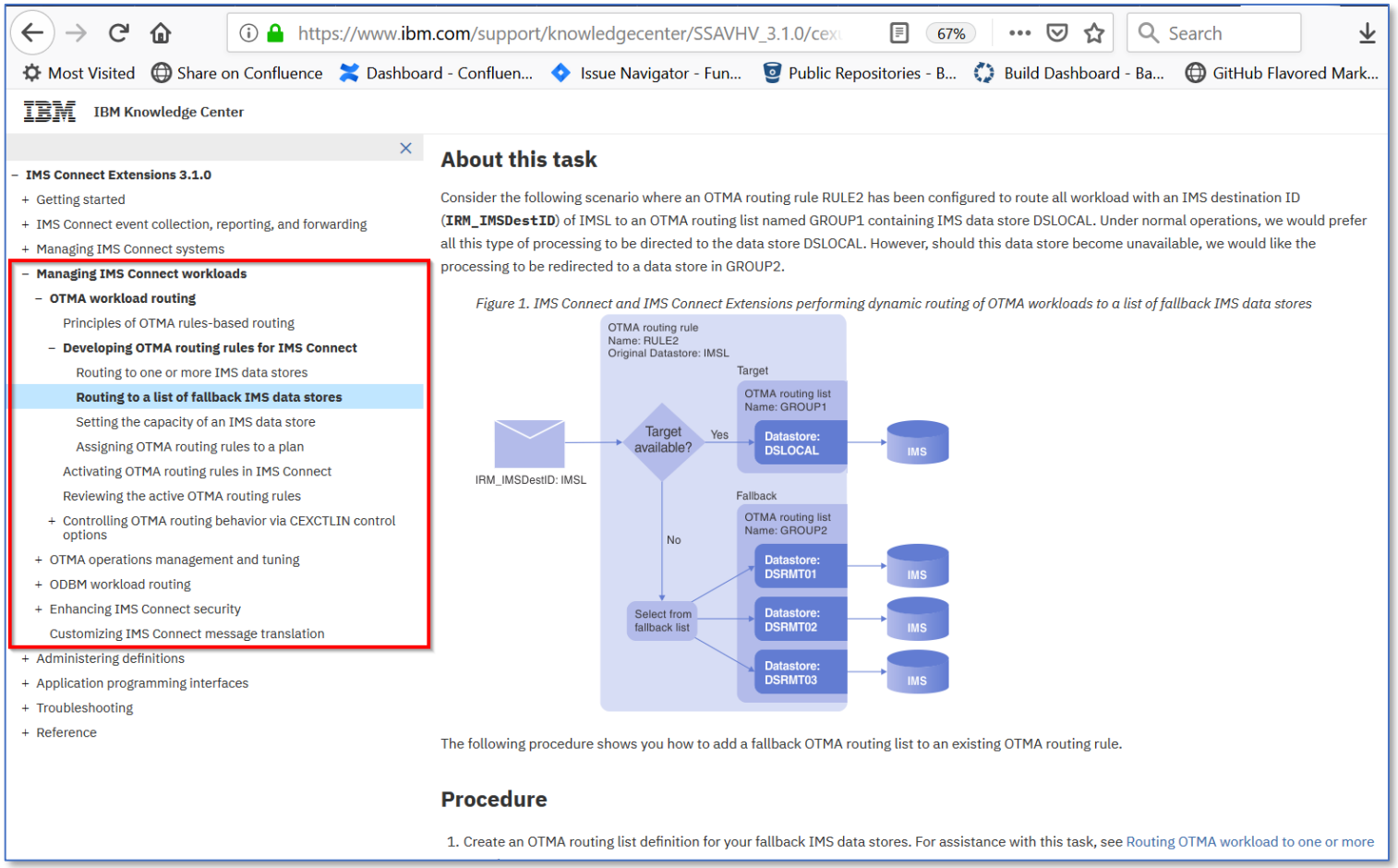
Take the user ID from the client's digital certificate (AT-TLS)



Implementing OTMA and ODBM rules-based routing and workload balancing

Major documentation updates for IMS Connect workload management

- **Step by step procedures** for creating OTMA and ODBM workload rules
- Major routing scenarios described **visually:**
  - **Using a fallback IMS**
  - **Distributing workload across 2 or more IMS systems** (to balance workload, reduce single DATASTORE bottleneck)
  - **Shaping workload** (set the “capacity” of a DATASTORE or ODBM target)
- Making a routing plan (containing a set of routing rules)



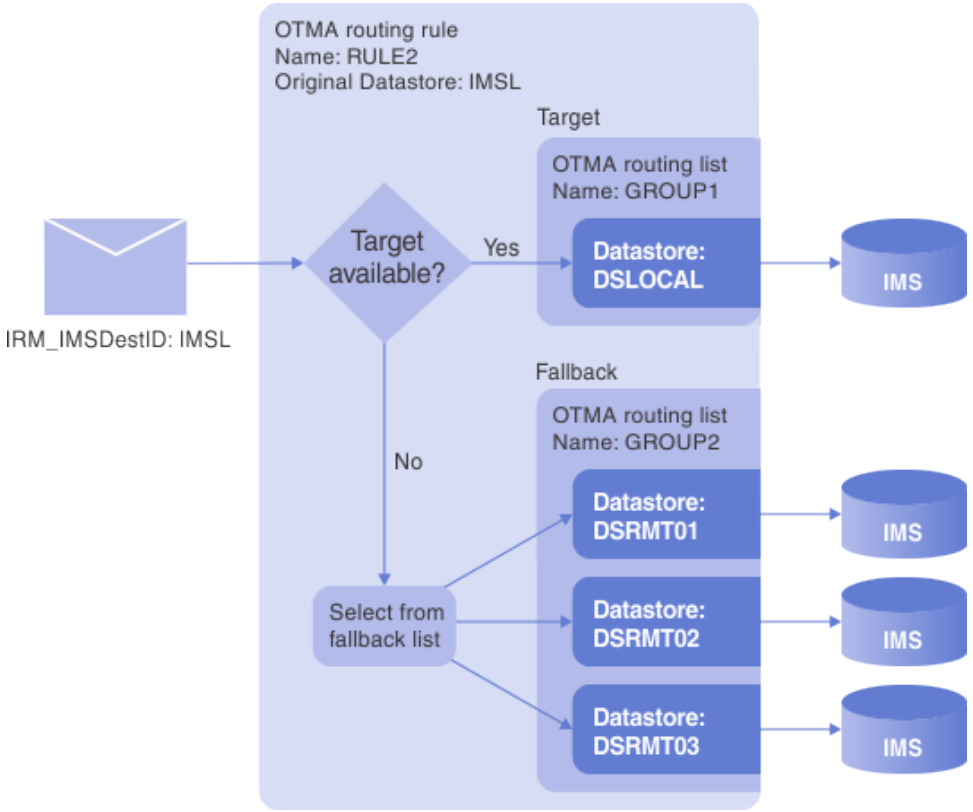
https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-part-extend-tranproc.html

Detailed procedures for implementing classic OTMA routing scenarios in IMS Connect Extensions

https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-part-extend-tranproc.html

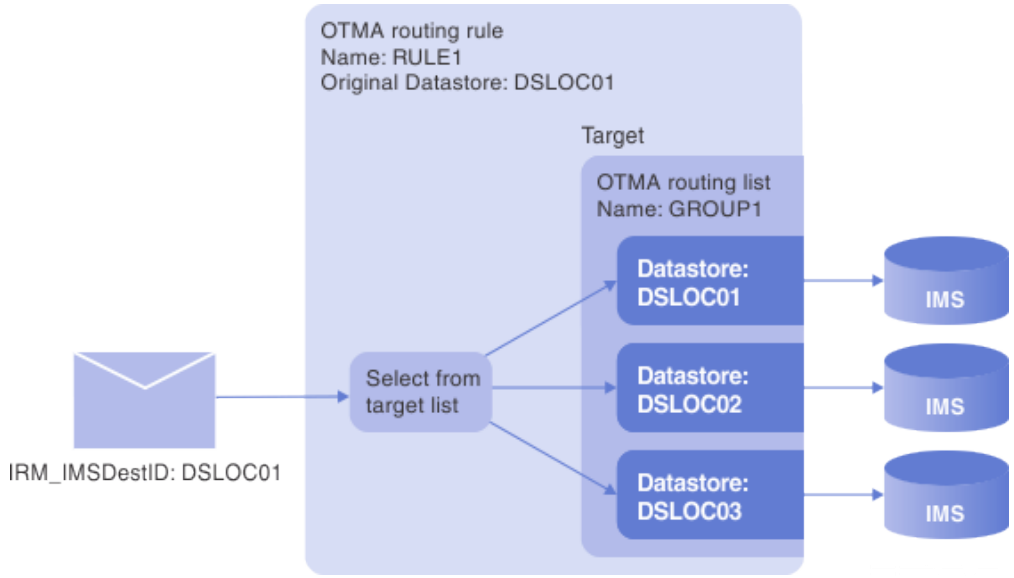
Primary and fallback IMS data stores

- Route to primary. If primary unavailable, use fallback(s)
- Useful for maintenance (planned/unplanned)



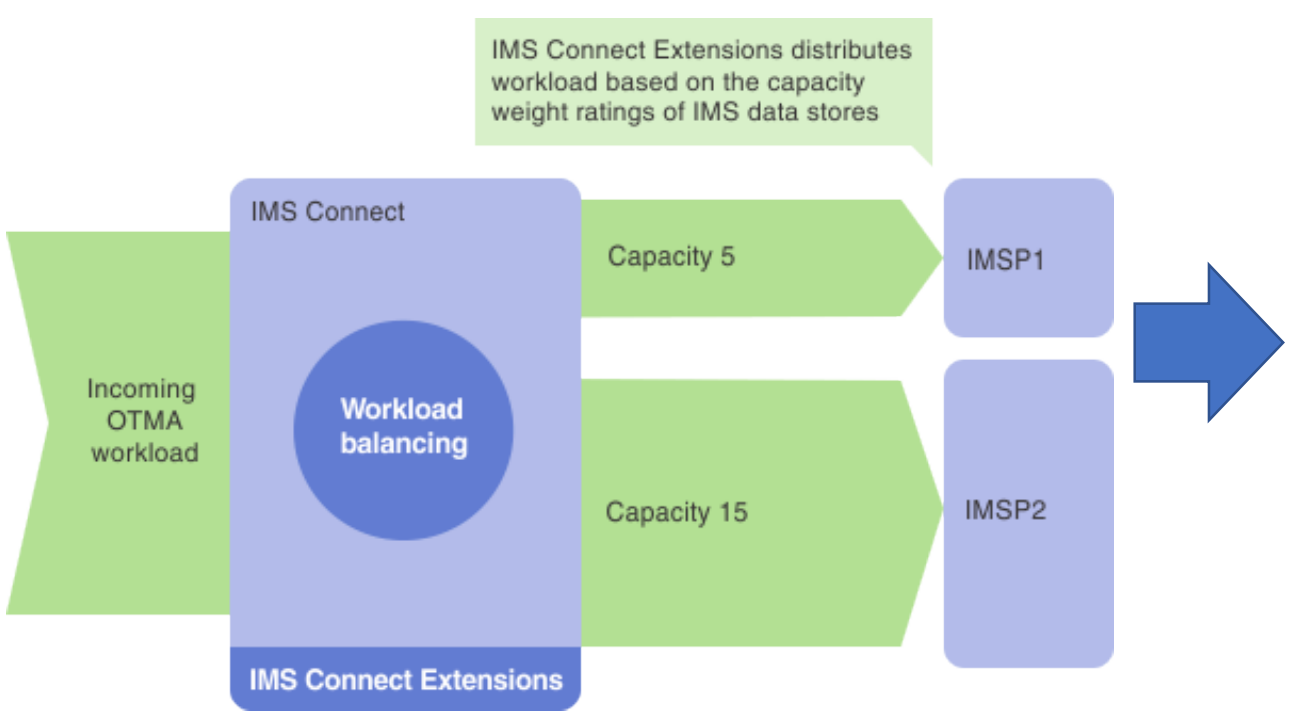
Route to any IMS data store in a predefined list

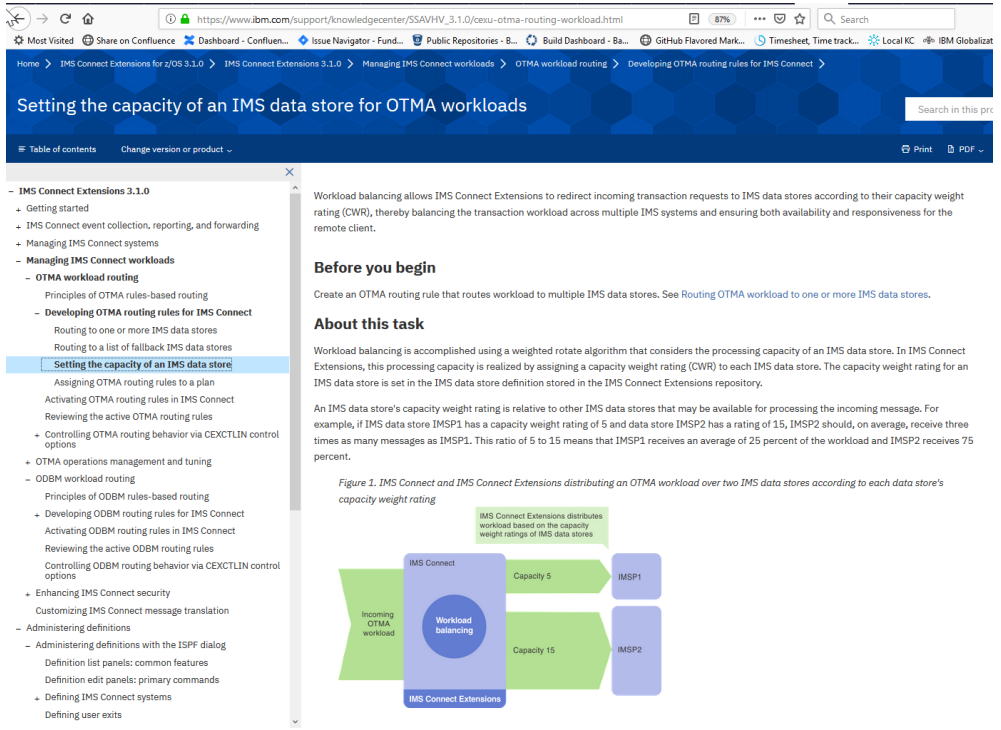
- Distribute requests across multiple
- Balances workload across systems
- Reduces chances of DATASTORE bottleneck



OTMA workload shaping in IMS Connect Extensions

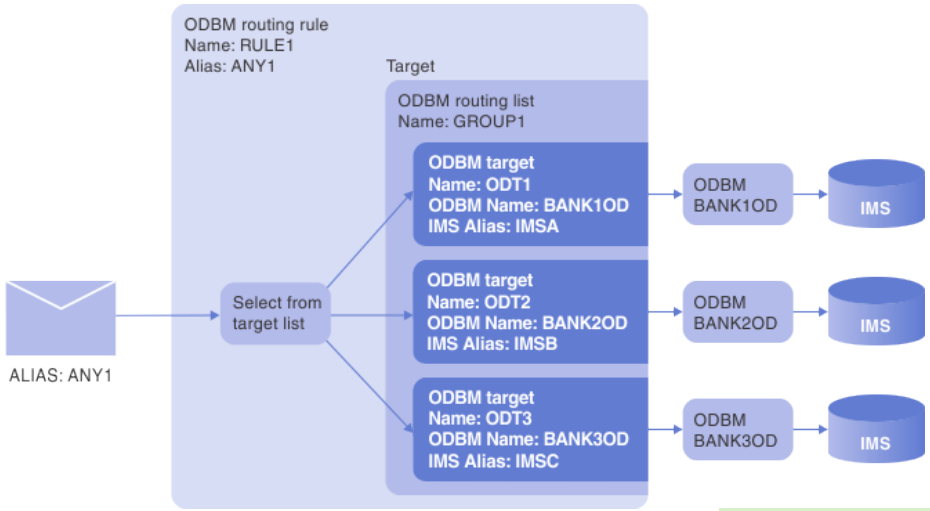
Shift the work around (and use REXX to update it dynamically)

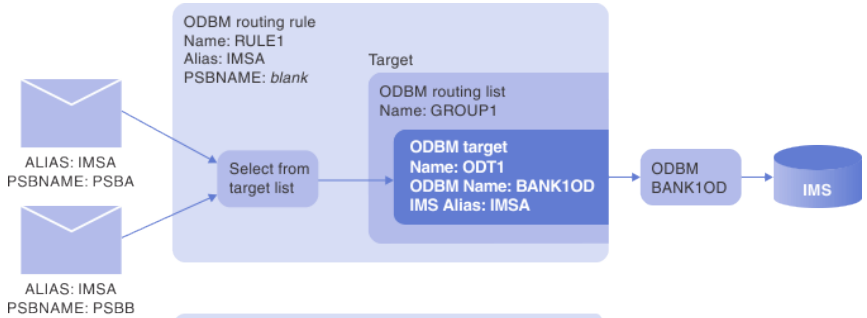


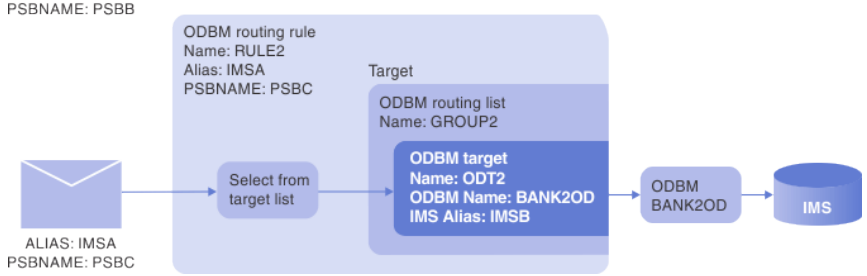


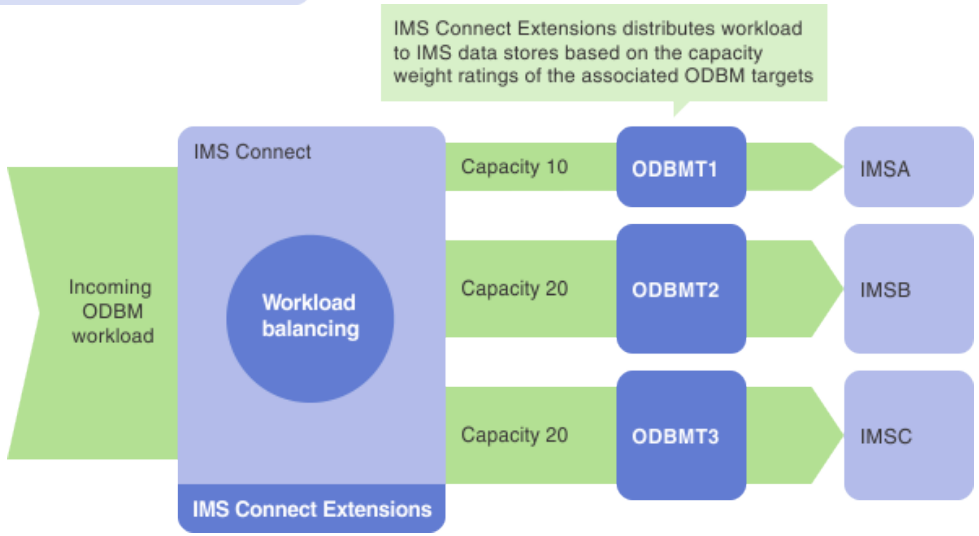
https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-otma-routing-workload.html

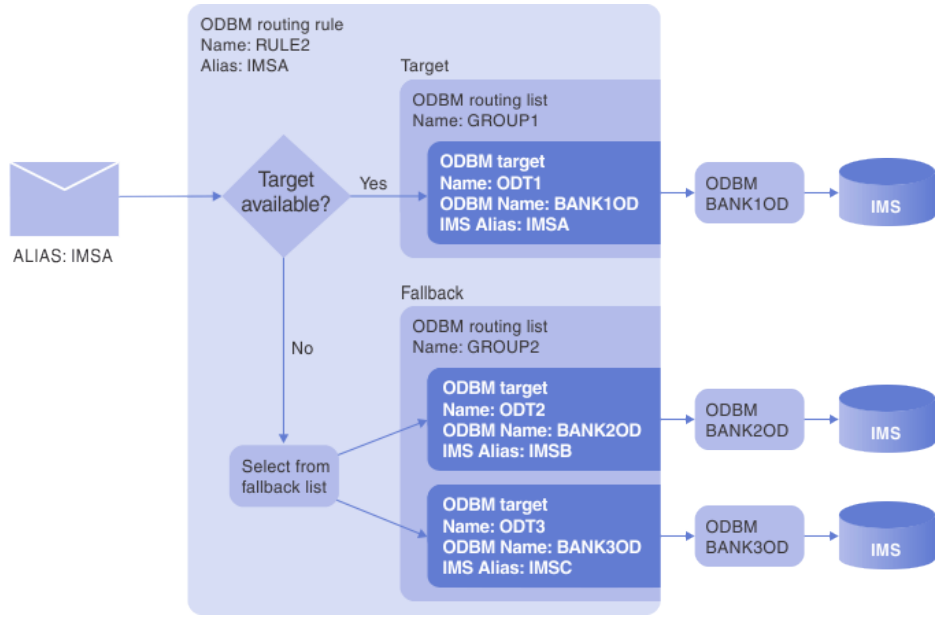
New routing scenarios and procedures for ODBM workloads…











https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cexu-odbm-routing.html

IMS Connect Extensions feed for operations analytics

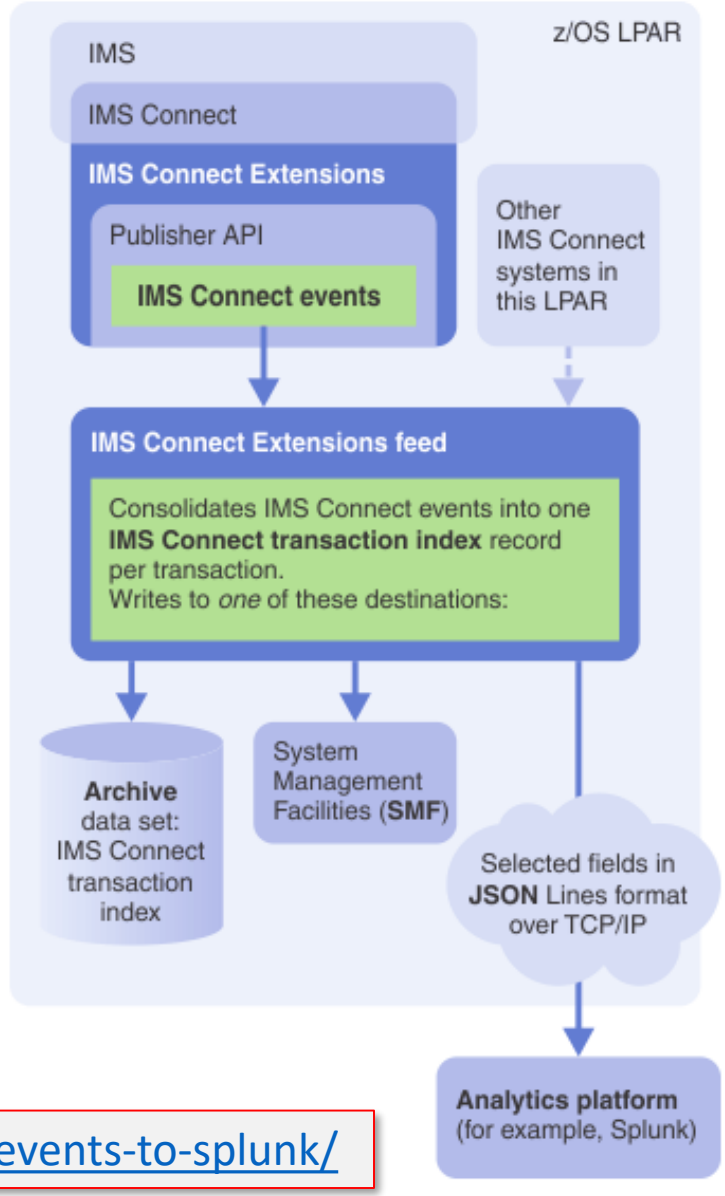
IMS Connect Extensions feed

What is it?

- A near real time data feed of IMS Connect transaction activity in summary form.
- The feed uses the IMS Connect Extensions Publisher API.
- It processes event records from the IMS Connect Extensions Publisher API using the same process that is found in IMS Performance Analyzer to produce IMS Connect transaction index records (also known as CA20 records).

What can you do with it?

- Chart the data in analytics platforms
  - Splunk sample application: https://splunkbase.splunk.com/app/4320/
  - Forward as JSON Lines, or use SMF (Common Data Provider)
- Use the IMS Connect transaction index with IMS Performance Analyzer, IMS Problem Investigator, or IBM Transaction Analysis Workbench.



https://developer.ibm.com/recipes/tutorials/forwarding-a-live-feed-of-ims-connect-events-to-splunk/

IMS Connect transaction analysis app
Overview dashboard

splunk>enterprise App: IMS Connect transaction analysis

Search | Dashboards | Overview | Workload distribution | Workload mapping | Performance comparison | Elapsed time components | Docume

Overview

IMS Connect transactions grouped by your choice of identifier, showing the top 10 values by transaction count

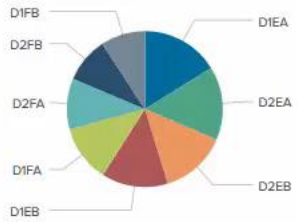
Time range: Part of a Day

Identifier: IMS data store (target)

Hide Filters

Transaction count

IMS data store (target)

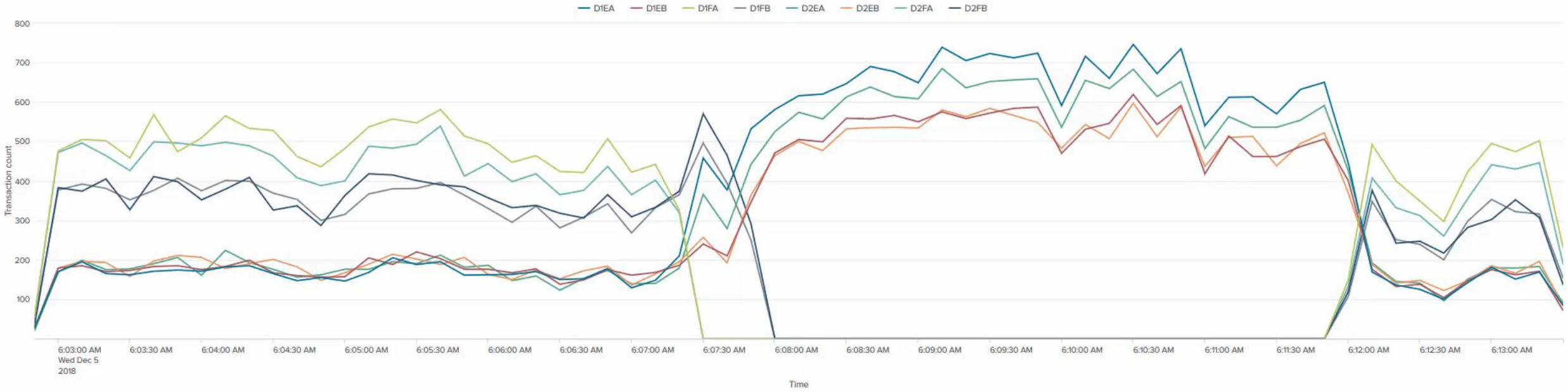


IMS data store (target)	Transaction count	Percentage
D1EA	23482	16.20%
D2EA	22059	15.22%
D2EB	20041	13.83%
D1EB	19992	13.79%
D1FA	17041	11.76%
D2FA	15282	10.54%
D2FB	13728	9.47%
D1FB	13311	9.18%

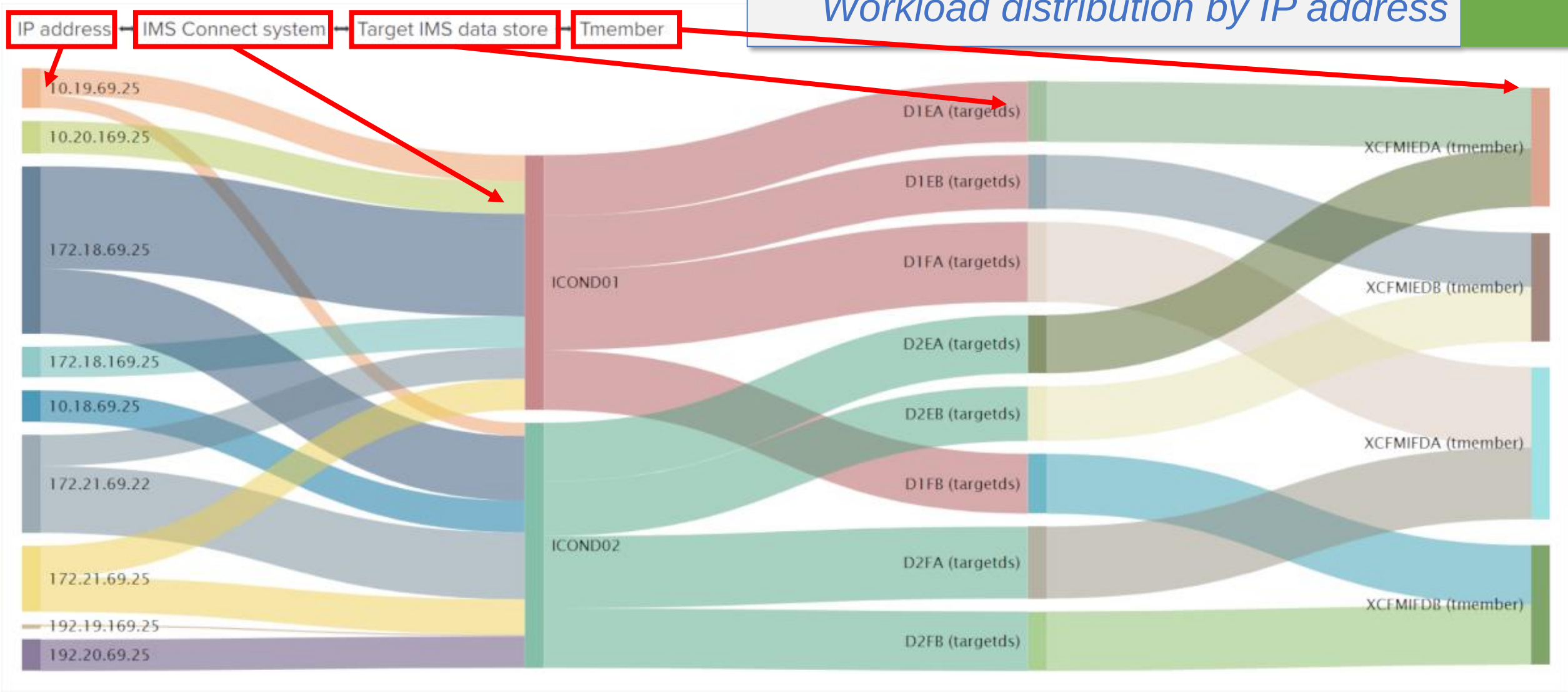
Average transactions per second

Transaction rate

IMS data store (target)



IMS Connect transaction analysis app
Workload distribution by IP address



Size of the ribbons and bars based on transaction count. See who's sending (IP address) and what IMS Connect systems, DATASTORES, and IMS systems are processing the most (and the path taken).

IMS Connect transaction analysis app
Workload mapping (OTMA routing rules in-effect)

splunk>

splunk>enterprise App: IMS Connect transaction analysis

Search | Dashboards | Overview | Workload distribution | **Workload mapping** | Performance comparison | Elapsed time components | Documentation

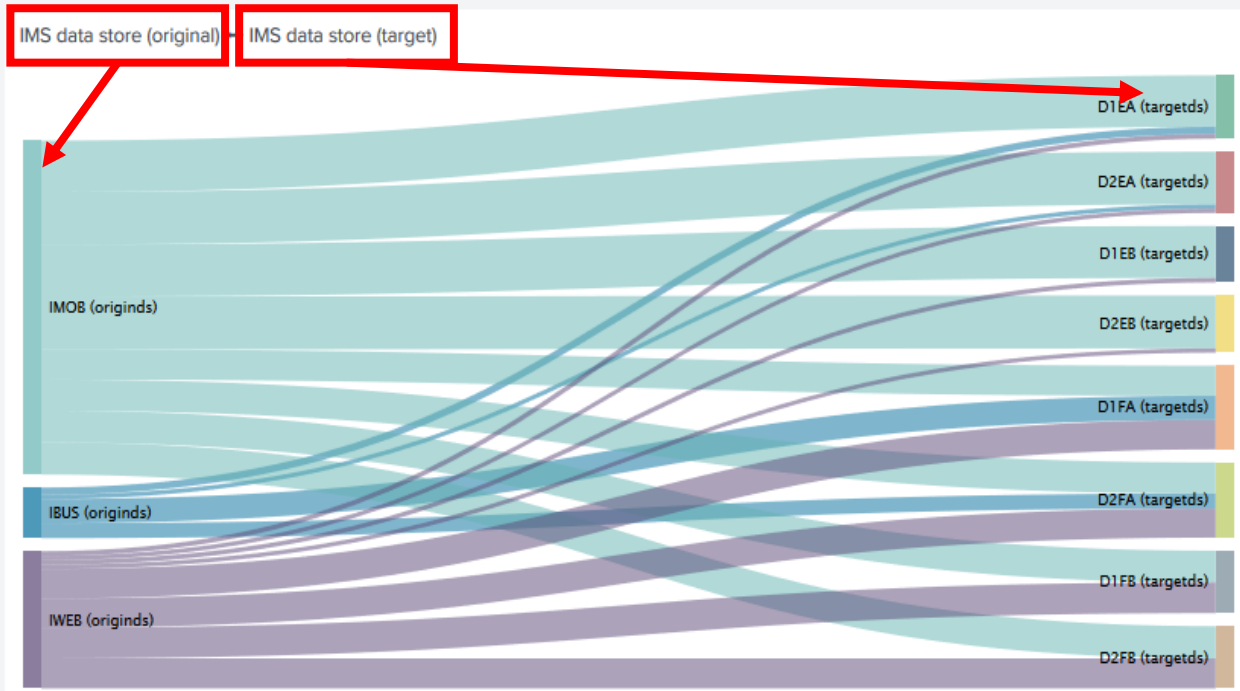
IMS Connect transaction analysis

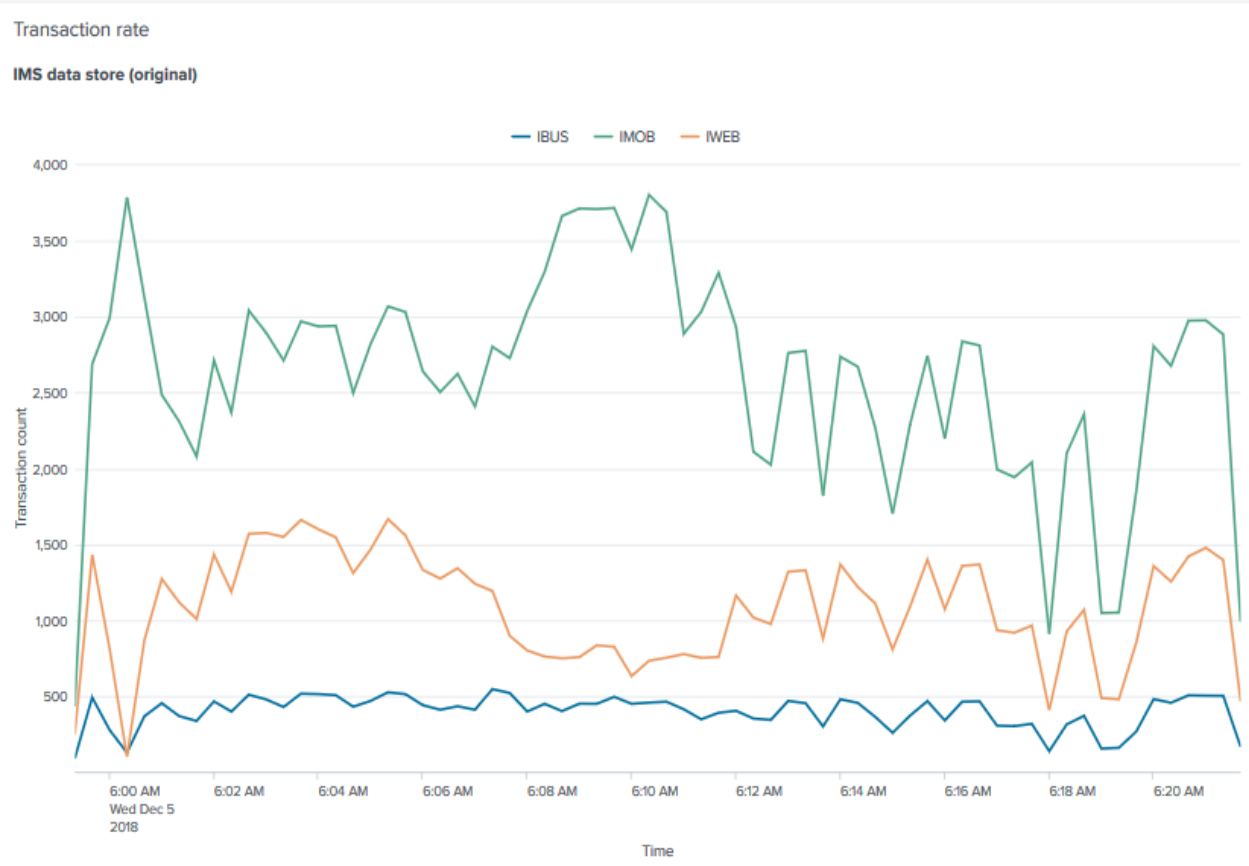
Workload mapping

Edit | Export | ...

Relationships between two IMS Connect transaction identifiers. For example, selecting Original and Target IMS data stores highlights IMS Connect Extensions routing.

Time range: All time | First identifier: IMS data store (original) | Second identifier: IMS data store (target) | Hide Filters





IMS Connect transaction analysis app
Response time, input time, SAF time, OTMA time, and output time for IMS data store

splunk>enterprise App: IMS Connect transaction analysis

Search | Dashboards | Overview | Workload distribution | Workload mapping | Performance comparison | Elapsed t

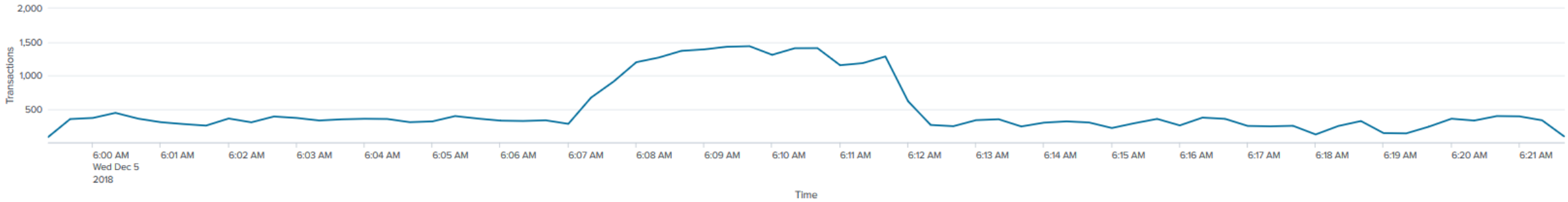
Elapsed time components

IMS Connect transaction performance grouped by your choice of identifier, limited to one identifier value

Time range: All time | Identifier: IMS data store (target) | IMS data store (target): D1EA | Hide Filters

Transaction rate

IMS data store (target) D1EA

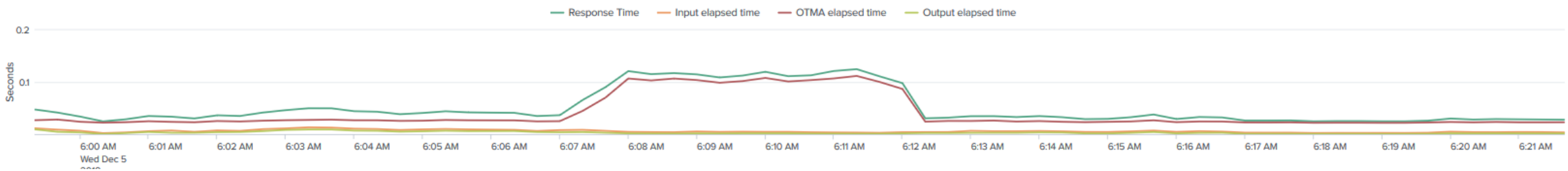


Transaction elapsed time components

Elapsed times

- Response time ×
- Input elapsed time ×
- OTMA elapsed time ×
- Output elapsed time ×

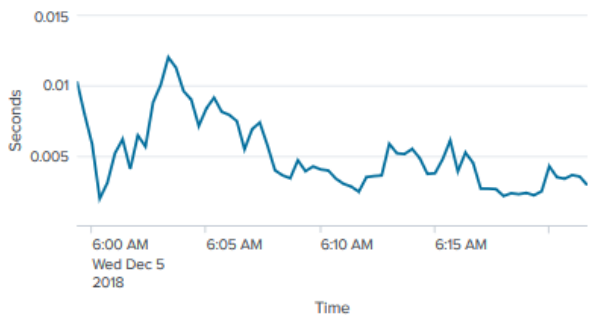
IMS data store (target) D1EA



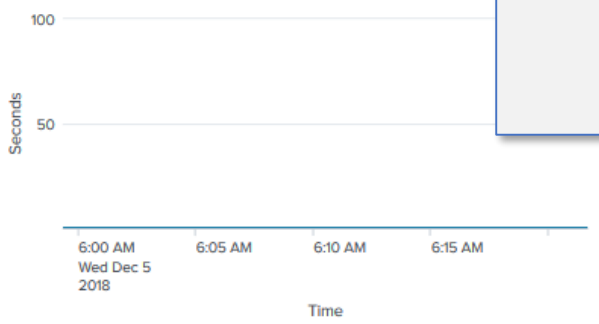
IMS Connect transaction analysis app
Transaction list

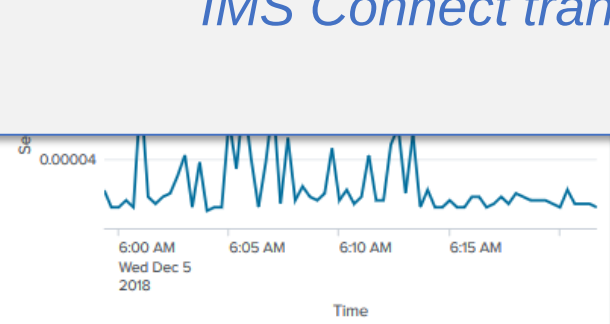
splunk>

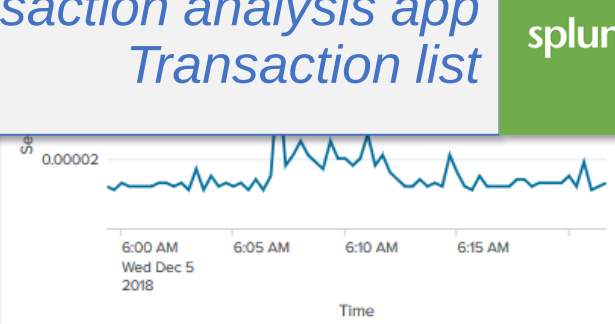
READ exit function elapsed time



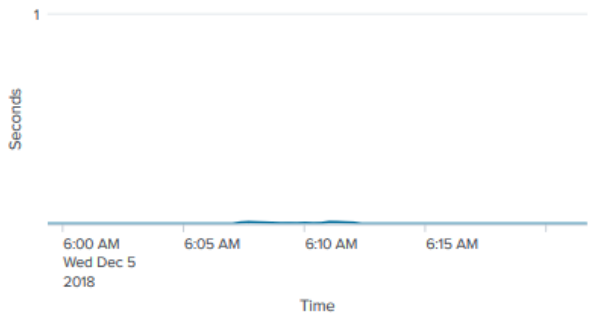
RXML exit function elapsed time



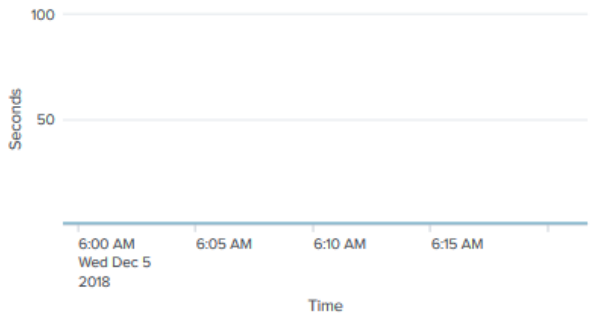




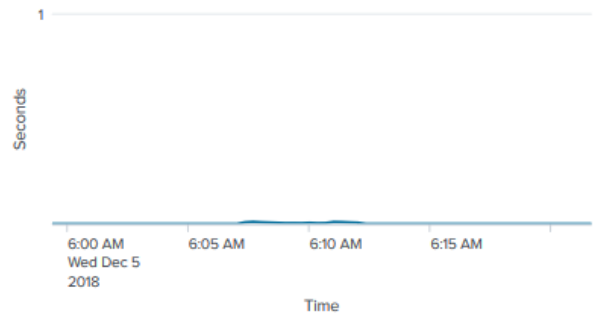
Elapsed time waiting for client ack



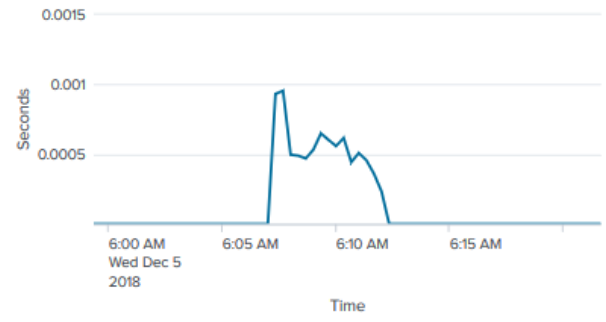
Resume tpipe elapsed time



Confirmation elapsed time



OTMA ACK elapsed time



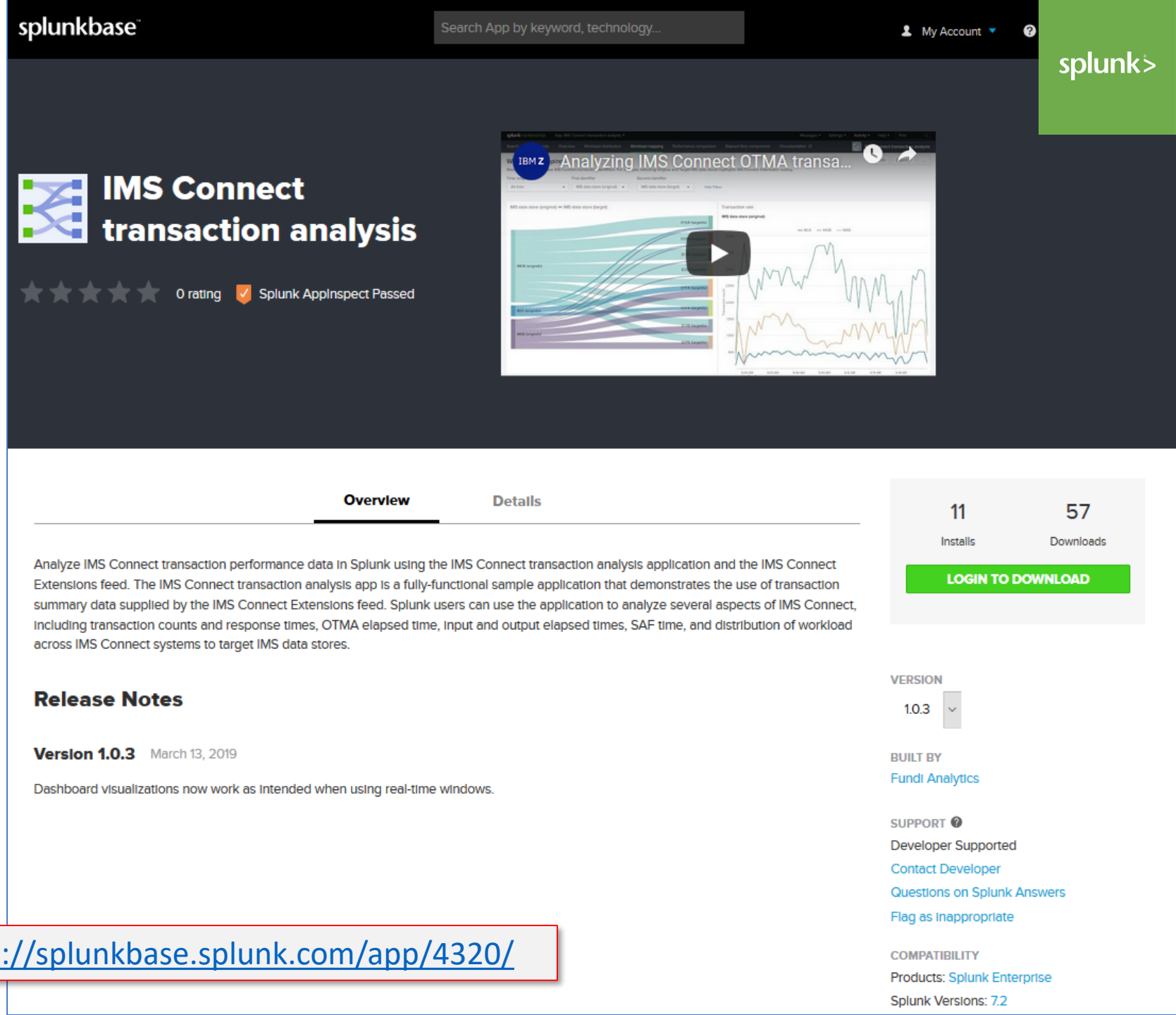
IMS Connect transactions

i	_time	Logon token	Client ID	IMS Connect system	IMS data store (original)	IMS data store (target)	IP address	Port	Read exit	Transaction code	Tmember	Tpipe	User ID	Response time	Input elapsed tim
>	12/5/18 6:21:45.161 AM	D555055FA75EF541	OTDCL11	ICOND01	IMOB	D1EA	172.18.169.25	4141	HWSSMPL1	JLMTRAN1	XCFMIEDA	4141	CEX002	0.031572	0.001719
>	12/5/18 6:21:44.995 AM	D555058E69D10643	OTDCL13	ICOND01	IMOB	D1EA	172.18.69.25	4142	HWSSMPL1	JLMTRAN1	XCFMIEDA	4142	CEX001	0.047282	0.00312
>	12/5/18 6:21:44.966 AM	D5550564ED4C2144	OTDCL12	ICOND01	IMOB	D1EA	172.21.69.22	4141	HWSSMPL1	JLMTRAN1	XCFMIEDA	4141	CEX003	0.023697	0.00153
>	12/5/18 6:21:44.952 AM	D555058E69D10643	OTDCL13	ICOND01	IMOB	D1EA	172.18.69.25	4142	HWSSMPL1	JLMTRAN1	XCFMIEDA	4142	CEX001	0.022604	0.001421
>	12/5/18 6:21:44.909 AM	D555058E6A805143	OTDCL14	ICOND01	IMOB	D1EA	10.20.169.25	4143	HWSSMPL1	JLMTRAN1	XCFMIEDA	4143	CEX009	0.038195	0.013171
>	12/5/18 6:21:44.794	D555058E6A805143	OTDCL14	ICOND01	IMOB	D1EA	10.20.169.25	4143	HWSSMPL1	JLMTRAN1	XCFMIEDA	4143	CEX009	0.025151	0.00217

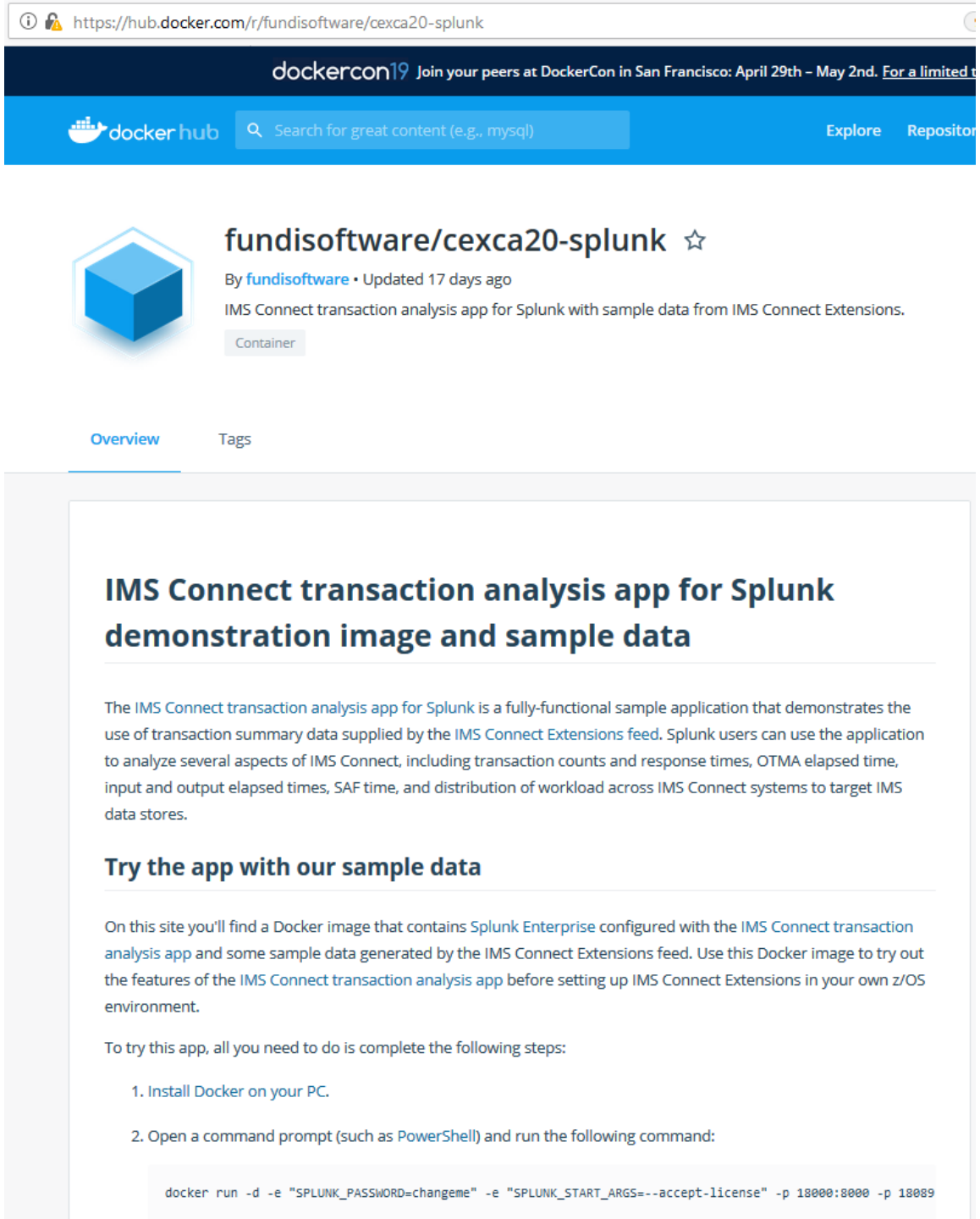
IMS Connect transaction analysis sample app

Download and install into Splunk from Splunkbase…

- Monitor transaction performance
- See the effect of IMS Connect Extensions OTMA workload routing rules
- Easy to configure, create your own charts in Splunk



https://splunkbase.splunk.com/app/4320/



Try it: IMS Connect transaction analysis app for Splunk demonstration image and sample data

NO MAINFRAME REQUIRED

1. Install Docker
2. Download and run the container
3. Open a browser and see for yourself

docker

https://hub.docker.com/r/fundisoftware/cexca20-splunk

https://developer.ibm.com/recipes/tutorials/forwarding-a-live-feed-of-ims-connect-events-to-splunk/

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Forwarding a live feed of IMS Connect events to Splunk

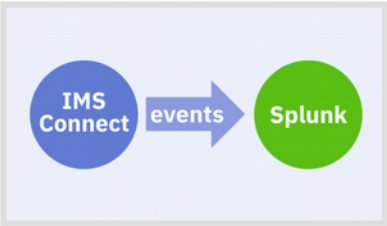
Live-streaming IMS Connect transaction performance data as JSON Lines to a Splunk TCP data input

GrahamHannington

Published on December 12, 2018 / *Updated on May 9, 2019*

812 | 2 | 0

SETTING UP THE FEED...



Contents

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Overview

Skill Level: Any Skill Level

You need to know how to use z/OS ISPF and Splunk: how to edit and submit JCL, how to view batch job output, how to edit Splunk configuration files, and how to perform searches in Splunk.

IBM IMS Connect Extensions for z/OS can capture events from running IMS Connect systems, consolidate the events into one record per transaction, and then forward the consolidated records as JSON Lines over TCP to a remote Splunk system.

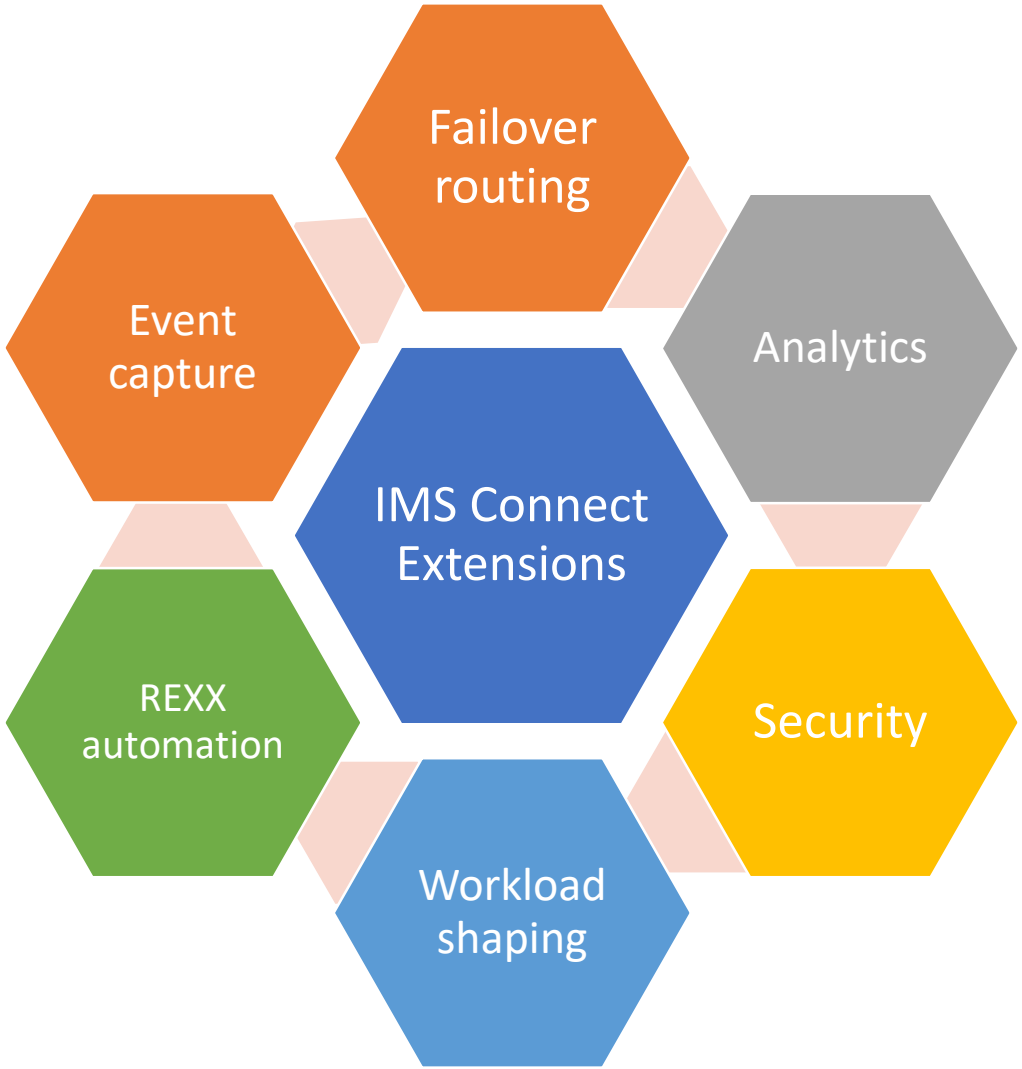
Ingredients

You will need:

- Running IBM IMS Connect systems.
- IBM IMS Connect Extensions for z/OS. This recipe uses the IMS Connect Extensions feed, introduced in IMS Connect Extensions V3.1.

https://developer.ibm.com/recipes/tutorials/forwarding-a-live-feed-of-ims-connect-events-to-splunk/

Key messages: IMS Connect Extensions



1. **IMS Connect** needs a lot of customisation if you want to do anything other than pass messages and requests.
2. Customizing **IMS Connect** is possible but very difficult - IMS Connect protocols are complex.
3. **IMS Connect Extensions** offers “out-of-the box” tried, tested workload management solutions that are well documented and fully supported by a team of experts.

Resource	Link
YouTube: Analyzing IMS Connect OTMA transactions in Splunk	https://youtu.be/wptRV2uz6pY
YouTube: Routing OTMA workload to a fallback IMS with IMS Connect	https://youtu.be/9FEaVJy3TA0
Docker: IMS Connect transaction analysis app for Splunk demonstration image and sample data	https://hub.docker.com/r/fundisoftware/cexca20-splunk
Developer.ibm.com: Forwarding a live feed of IMS Connect events to Splunk	https://developer.ibm.com/recipes/tutorials/forwarding-a-live-feed-of-ims-connect-events-to-splunk/
YouTube: Lifecycle of an IMS Connect transaction	https://www.youtube.com/watch?v=ygG9D6mfLDA
Knowledge Center: IMS Connect Extensions V3.1 User's Guide	https://www.ibm.com/support/knowledgecenter/SSAVHV_3.1.0/cex-welcome.dita
IMS Connect Extensions Workshop	**Take IMS Connect Extensions for a test drive (contact me for details)…**

धन्यवाद

Hindi

多謝

Traditional

감사합니다

Korean

Спасибо

Russian

Ndzi khense ngopfu

Tsonga

Gracias

Spanish

Thank You

English

Obrigado

Brazilian Portuguese

شكرا

Arabic

Grazie

Italian

Danke

German

多谢

Simplified Chinese

Merci

French

Ke a leboha

Tswana

நன்றி

Tamil

ありがとうございました

Japanese

ขอบคุณ

Thai