IMS Performance Analyzer for z/OS

Product introduction

Tracy Dean
IBM Product Manager
IMS Tools, z/VM Tools
tld1@us.ibm.com

Agenda

Overview

Fixed vs Form-based reports

Sample reports

IMS Performance Analyzer (IMS PA) overview

Comprehensive batch reporting of the IMS log, monitor, and traces

Official historical reporter for

- OMEGAMON for IMS (Application Trace Facility)
- IMS Connect (with IMS Connect Extensions)

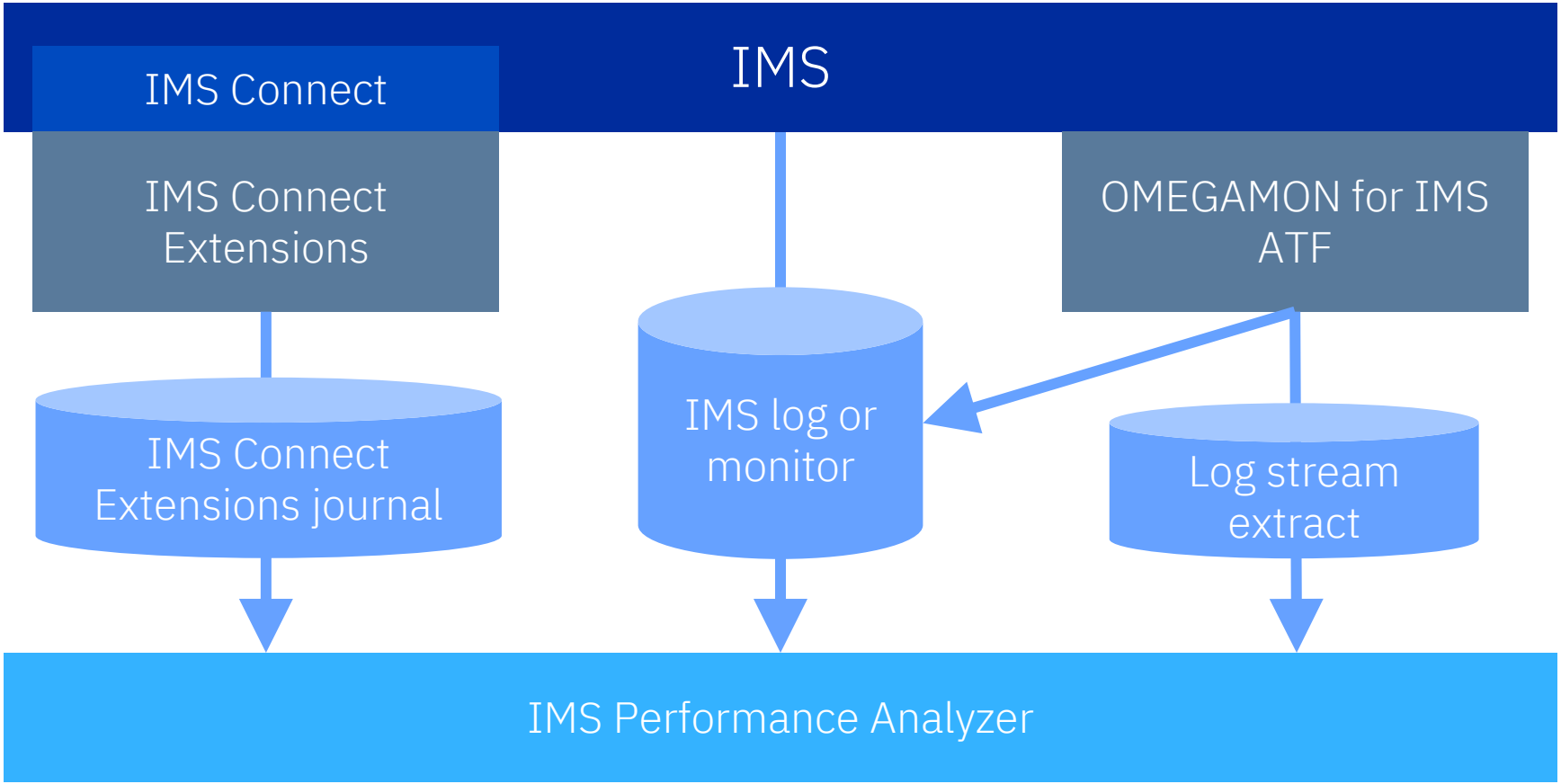
Signature feature

- Form-based reporting to design your own reports
- Flexible way of analyzing transaction performance

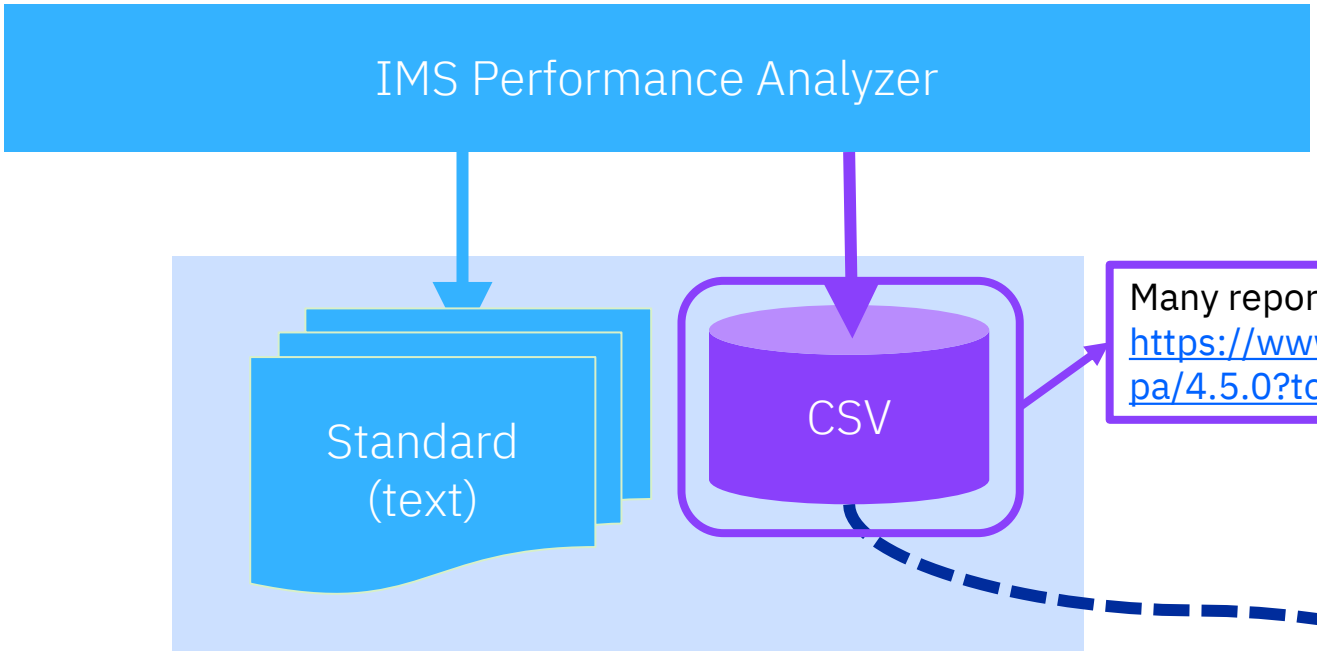
Typical customer use:

- Daily **transaction** performance and system health check reporting
- Performance benchmarking for release migration and application changes
- Ad-hoc problem determination
- Long-term historical performance data collection
- Forwarding transaction performance data to analytics platforms

Data sources



Reporting formats

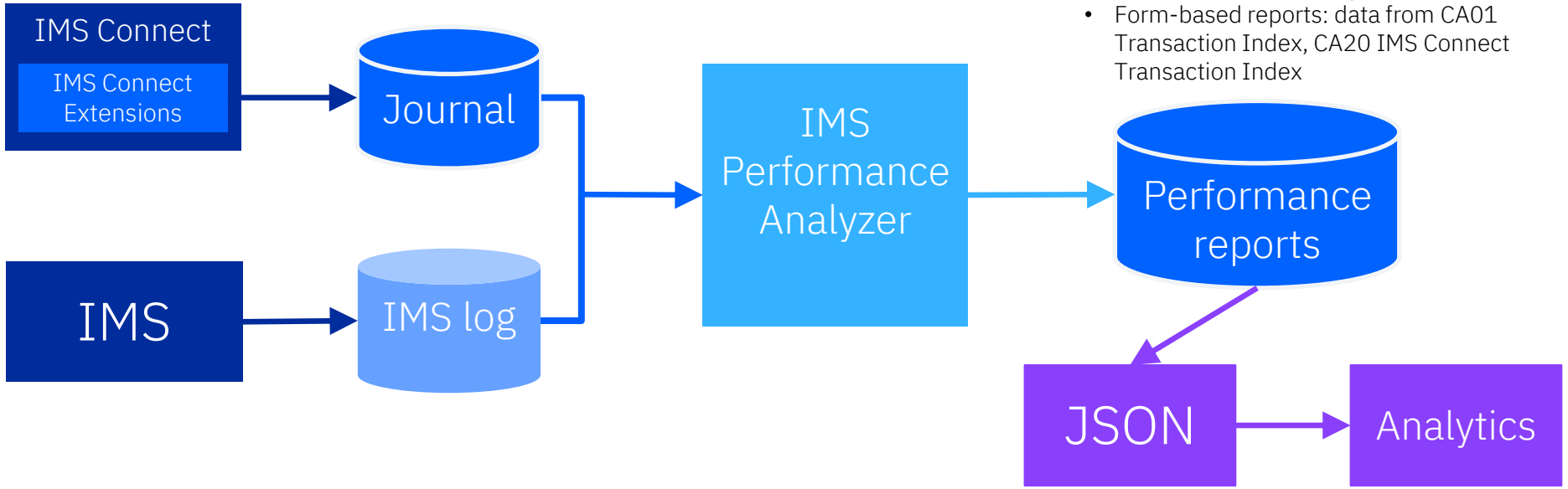


Many reports supported:
https://www.ibm.com/docs/en/ims-pa/4.5.0?topic=setup-extracts-csv-files

MS Excel, Db2, Elastic Stack, Splunk, Tableau, Jupyter…

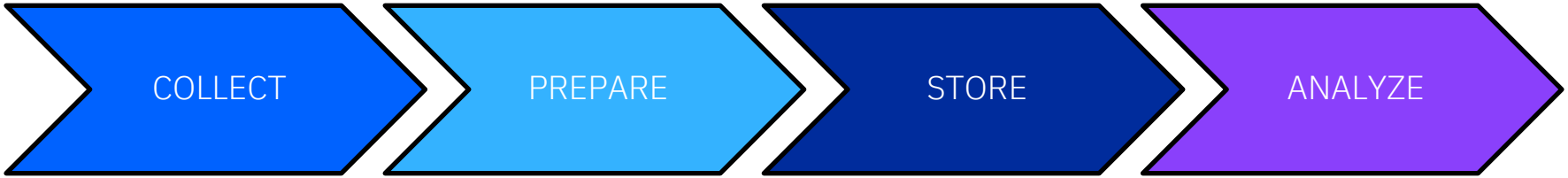
External analysis

Post-processing: Sending performance report data to analytics



- System Checkpoint Report
- Internal Resource Usage Report
- Form-based reports: data from CA01 Transaction Index, CA20 IMS Connect Transaction Index

Where does IMS Performance Analyzer sit in the pipeline?

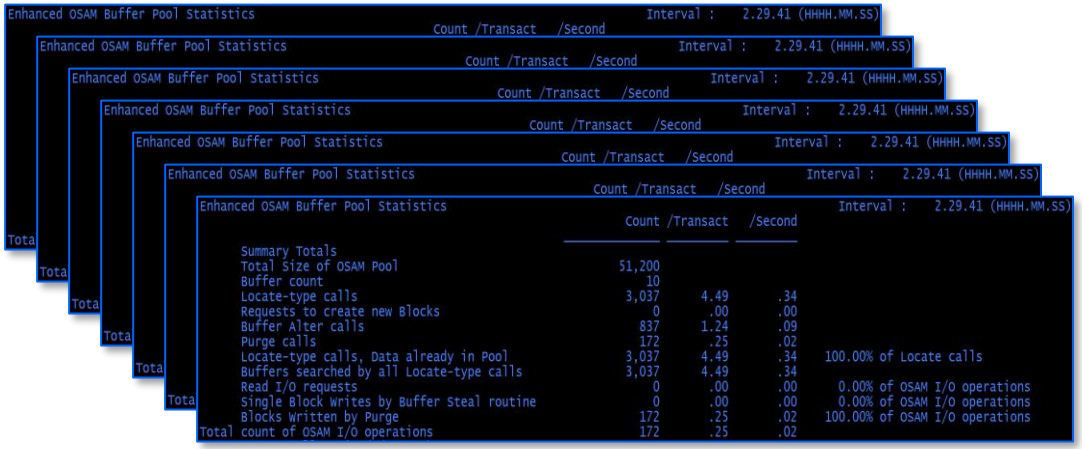


- IMS (via the IMS log)
- IMS Connect Extensions

- IMS Performance Analyzer

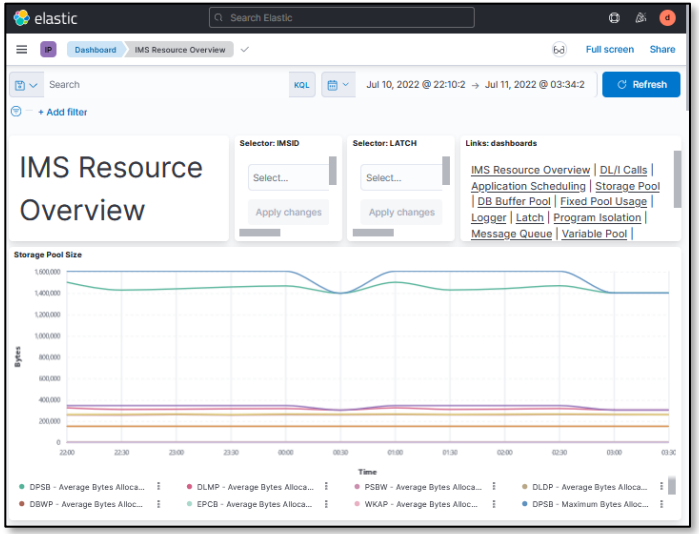
- Elastic
- Splunk
- More...

- You ☺



```
Enhanced OSAM Buffer Pool Statistics                    Interval :    2.29.41 (HHHH.MM.SS)

                                        Count /Transact    /Second
Summary Totals
Total Size of OSAM Pool                     51,200
Buffer count                                    10
Locate-type calls                            3,037        4.49        .34
Requests to create new Blocks                    0         .00        .00
Buffer Alter calls                             837        1.24        .09
Purge calls                                    172         .25        .02
Locate-type calls, Data already in Pool      3,037        4.49        .34   100.00% of Locate calls
Buffers searched by all Locate-type calls    3,037        4.49        .34
Read I/O requests                                0         .00        .00     0.00% of OSAM I/O operations
Single Block Writes by Buffer Steal routine      0         .00        .00     0.00% of OSAM I/O operations
Blocks Written by Purge                        172         .25        .02   100.00% of OSAM I/O operations
Total count of OSAM I/O operations             172         .25        .02
```



Dozens of fixed-format reports for common issues

IMS Log

Transaction Transit
- Analysis
- Statistics
- Log
- Extract by Interval
- Transaction Exception

Resource Usage & Availability
- Dashboard
- Management Exception
- Transaction Resource Usage
- Resource Availability
- CPU Usage
- Internal Resource Usage
- *(over 20 different reports)*

- MSC Link Statistics
- Message Queue Utilization
- Database Update Activity
- Region Histogram
- OSAM Sequential Buffering
- Deadlock
- System Checkpoint
- BMP Checkpoint
- Gap Analysis
- Cold Start Analysis

Fast Path Transit
- Analysis
- Log
- Extract By Interval
- Transaction Exception

Fast Path Resource Usage
- Resource Usage & Contention
- Database Call Statistics
- IFP Region Occupancy
- EMH Message Statistics
- DEDB Update Activity
- VSO Statistics

ATF Enhanced Summary
- Transaction Analysis
- DLI Call Analysis
- Db2 Call Analysis
- MQ Call Analysis

Trace
- DC Queue Manager Trace
- Database Trace (Full Function)
- DEDB Update Trace
- ESAF Trace

IMS Monitor

Region Activity Summary
- Schedule Transaction
- Region
- Program (PSB)
- Database IWAIT

Region Activity Analysis
- Region Analysis
- Application Detail
- Database IWAIT Analysis
- Performance Exceptions
- Enqueue/Dequeue Trace
- Region Histogram

System Analysis
- Total System IWAIT

Program Analysis
- Program Activity Detail
- Program Trace
- Batch VSAM Statistics

Resource Usage
- Buffer Pool & Latch Statistics
- Communication
- MSC
- ESAF
- Synchronous Callout

Fast Path Analysis
- DEDB Resource Contention
- Fast Path Buffer Statistics
- BALG/Shared EMHQ Analysis
- OTHREAD Analysis
- VSO Summary

Monitor Data Analysis
- Monitor Record Trace

IMS Connect

Transaction Transit
- Analysis
- Log
- Extract

Resource Usage
- Port Usage
- Resume Tpipe
- ACK/NAK
- Exception Events
- Gap Analysis

Trace
- Transit Event Trace

OMEGAMON ATF

Transaction Transit
- List
- Summary

Trace
- Record Trace

Extracts
- Exception Transaction

Form-based reporting concepts

A form is a report template where you select the field to be reported

Two form types:

- List forms define reports that shows per-transaction data
- Summary forms use statistical functions to summarize multiple transactions

Fields available for reporting:

- 160+ IMS transaction index fields
- 40 IMS Connect transaction index fields

Sample forms help you get started with many common tasks

Form-based reporting

Powerful and flexible alternative to fixed format reports – ask a question and get an answer

```
File  Edit  Options  Help
EDIT                  Summary Report Form - CPUHEAVY     Row 1 of 8 More: < >
Command ===> _____                                       Scroll ===> CSR

Description . . . CPU heavy hitters                 Page Width . . . 132
                                                    Precision  . . . 6
                                                    Digit Grouping   SEC

   Field    Sort                      ---------- Range ----------
/  Name +   K  O Func   Len  From +    To         Report
__ PROGRAM  K  A _____    8  _________ _________ _________
__ TRANCNT     _ _____   10  _________ _________ _________
__ CPUTIME     D TOTAL    8  _________ _________ _________
__ CPUTIME     _ AVE      8  _________ _________ _________
__ CPUTIME     _ RANGE    8  >0.2 Not good      PERCENT   Seconds
__ CPUTIME     _ RANGE    8  >0.5 Bad           PERCENT   Seconds
__ CPUTIME     _ RANGE    8  >2.0 Ugly!         PERCENT   Seconds
__ EOR         _ _____    _  _________ _________ _________
******************************** Bottom of data ********************************
```

Features:

- Individual transactions or summarization
- Important information always at the top
- Five statistical functions
- View in SDSF, Db2 or spreadsheet, analytics
- Many samples provided

Sample use cases:

- Programs – highest CPU consumers
- Databases – most I/O activity
- Regions – over and under utilized
- IMSplex – workload distribution, false scheduling

CPU heavy hitters

Program	Tran Count	Tot CPU Time	Avg CPU Time	>0.2 CPU Time	>0.5 CPU Time	>2.0 CPU Time	Max CPU Time	Avg Process Time	>1.0 Process Time	>2.0 Process Time	Max Process Time
BANKING	143	66.22499	0.476439	43.88%	20.14%	0.00%	1.758429	6.405757	32.17%	27.97%	187.6067
FINANCE	19	54.28877	2.857303	73.68%	63.16%	42.11%	11.19808	10.10058	100.00%	94.74%	59.88424
MOBILE	16,132	35.17463	0.002180	0.00%	0.00%	0.00%	0.014006	0.023198	0.00%	0.00%	0.519829
ONLINE	12	28.91666	2.628787	100.00%	100.00%	100.00%	5.865392	25.13817	100.00%	100.00%	104.9229
ORDERS	77	21.79370	0.283035	90.91%	0.00%	0.00%	0.313683	0.791294	22.08%	10.39%	5.615369
INVENTRY	70	17.12364	0.244623	7.14%	5.71%	2.86%	7.029314	1.332807	35.71%	7.14%	20.97937
CUSTOMER	2,219	15.33635	0.006911	0.00%	0.00%	0.00%	0.022029	0.063811	0.00%	0.00%	0.749206
STOCK	68	13.95261	0.205185	50.00%	1.47%	1.47%	2.677944	2.321356	55.88%	30.88%	49.71441
.											
.											
.											
Total	44,290	438.5006	0.010333	0.59%	0.19%	0.08%	12.05804	0.819255	5.92%	0.50%	3673.108

Some sample report forms – there are many more

Name	Type	Description
ALLLIST	LIST	Transaction List
ALLSUMM	SUMMARY	Transaction Summary
ALLSUMMX	SUMMARY	Transaction Summary Extract
BADRESP	SUMMARY	Bad Transaction Response Time
CEXLIST	LIST	Connect Transit Log
CEXNACK	SUMMARY	Connect ACK/NAK Summary
CEXTCODE	SUMMARY	Connect Analysis by Trancode
COMBLIST	LIST	Connect and IMS List
COMBPLEX	SUMMARY	Connect PLEX Usage Summary
COMBSUMM	SUMMARY	Connect and IMS Summary by Time
COMPLVL	SUMMARY	Transaction Completion Summary
CPUHIGH	SUMMARY	High CPU Usage Transactions
DASH	SUMMARY	Transaction Dashboard
DBCLIST	LIST	DBCTL Transaction List
DBCSUMM	SUMMARY	DBCTL Transaction Summary
FPANAL	SUMMARY	FP Transit Analysis by Trancode
FPBUFUSE	SUMMARY	FP Buffer Usage
FPDBCALL	SUMMARY	FP Database Calls
FPLOG	LIST	FP Transaction Transit Log
FPMSG	SUMMARY	FP Message Statistics

Name	Type	Description
FPRESUSE	SUMMARY	FP Resource Usage
FPTRANX	LIST	FP Tran Exception - Basic
FPTRANXD	LIST	FP Tran Exception - Detailed
MSGLEN	SUMMARY	Message Length Analysis
OLRLIST	LIST	HALDB Online Reorg List
OLRSUMM	SUMMARY	HALDB Online Reorg Summary
QTYPE	SUMMARY	Queue-type Summary
RESPDIST	SUMMARY	Response Time Distribution
SMQLIST	LIST	SMQ Transaction Transit Log
SMQTCOD	SUMMARY	SMQ Transaction Analysis
SWITLIST	LIST	Program-Switch List
SWITSUMM	SUMMARY	Program-Switch Summary
SYNCCOUT	LIST	Synchronous Callout List
TRANCLAS	SUMMARY	Transit Analysis by Class
TRANINTV	SUMMARY	Interval Transaction Analysis
TRANPRTY	SUMMARY	Transit Analysis by Priority
TRANRES1	SUMMARY	Transaction Resource Usage
TRANRESD	SUMMARY	Tran Resource Usage DLICall Summ
TRANRESU	SUMMARY	Transaction Resource Usage
TRANTCOD	SUMMARY	Transit Analysis by Trancode

Automated log file selection

When requesting reports, you specify:

- IMS subsystem names to report
- Date/time range

IMS Performance Analyzer selects the corresponding

- IMS log files
- IMS Connect Extensions journals

Selects and merges logs across the sysplex

No need to know which input data set names to specify

One-time-only setup task

- **Register your IMS and IMS Connect subsystems** in the IMS PA ISPF dialog

Report details
Some examples

LOGINFO report: summary of IMS log

Provides a quick recap of the type and volume of records in the IMS log

Always produced when you run IMS Performance Analyzer or IMS Problem Investigator

V4R3M0 IMS Performance Analyzer - Log Information

Log data From 2014-06-29 14:58:00.941667 To 2014-06-29 15:12:39.354269 Duration 14:38.412602

	In							
Code	Count	MCNT	Recs/Sec	Ave len	Max Len	Byte/Sec	MB	%	
01 IN	21,342		24	1,725	3,240	41,942	36.8	6.3	IMS Message
INPUT	15,072		17	1,727	3,240	29,655	26.0	4.5	Input message
MSC FE	134		0	1,032	1,912	157	0.1	0.0	MSC front end
MSC BE	3,418		3	1,193	3,240	4,644	4.0	0.7	MSC back end
01 OUT	291		0	1,410	3,157	467	0.4	0.1	IMS Message
MSC FE	149		0	1,486	2,325	252	0.2	0.0	MSC front end
MSG SWI	142		0	1,331	3,157	215	0.1	0.0	Message switch
03 IN	97,160		110	2,176	3,240	240,902	211.5	36.2	IMS Message
INPUT	25,643		29	1,218	3,240	35,597	31.2	5.3	Program switch
MSC FE	7,661		8	3,235	3,240	28,234	24.7	4.2	MSC front end
MSC BE	11,236		12	807	3,240	10,337	9.0	1.6	MSC back end
CONT	52,620		59	2,782	3,240	166,731	146.3	25.0	Continuation
03 OUT	15,257		17	2,081	3,240	36,166	31.7	5.4	IMS Message
OUTPUT	14,603		16	2,138	3,240	35,568	31.2	5.3	Output message
MSC BE	137		0	1,749	2,672	272	0.2	0.0	MSC back end
MSG SWI	517		0	551	800	324	0.2	0.0	Message switch
07	41,039	50,985	46	456	456	21,314	18.7	3.2	Program schedule end
MPP	32,753	34,446	37	456	456	17,010	14.9	2.6	MPP
QUICK	8,190	16,463	9	456	456	4,253	3.7	0.6	MPP quick reschedule
FALSE	12	0	0	456	456	6	0.0	0.0	MPP false schedule
BMP	15	0	0	456	456	7	0.0	0.0	BMP
ABEND	69	76	0	456	456	35	0.0	0.0	ABEND
08	41,040		46	148	148	6,917	6.0	1.0	Program schedule
MPP	32,835		37	148	148	5,534	4.8	0.8	MPP
QUICK	8,190		9	148	148	1,380	1.2	0.2	MPP quick reschedule
BMP	15		0	148	148	2	0.0	0.0	BMP

Syncpoint – how is it affecting response time?

External subsystems and DASD mirroring might affect the time it takes for transactions to commit:

- Total syncpoint time
- Phase 1
- Phase 2
- Phase 2 attributable to Fast Path database only
- OTHREAD time to complete (asynchronous – not part of SYNCPT)

Syncpoint analysis

Trancode	Count	Process Time	CPU Time	DB Calls	Syncpt Time	Phase 1 Time	Phase 2 Time	Phase 2 FP Time	OTHREAD Time
BANK1	18	0.041045	0.006635	8	0.014769	0.000030	0.014739	0.014739	0.000980
BANK2	26	0.051985	0.005922	8	0.000071	0.000032	0.000039	0.000039	0.001107
BANK3	280	0.048873	0.004889	23	0.000038	0.000018	0.000019	0.000019	0.001203
ORDERS	299	0.044485	0.004687	23	0.000034	0.000017	0.000017	0.000017	0.001200
MOBILE1	316	0.040288	0.004833	23	0.000789	0.000019	0.000771	0.000028	0.000789
MOBILE2	307	0.057567	0.004862	23	0.000037	0.000018	0.000019	0.000019	0.001195
MOBILE3	282	0.033802	0.004694	23	0.000036	0.000019	0.000016	0.000016	0.001191
WEBORDER	19	0.039227	0.007359	9	0.000076	0.000034	0.000043	0.000043	0.001057
STOCK1	21	0.036017	0.006329	9	0.000070	0.000031	0.000039	0.000039	0.001034
STOCK2	15	0.299056	0.020897	21	0.000053	0.000036	0.000016	0.000016	0.000983
STOCK3	16	0.372236	0.020957	21	0.000056	0.000039	0.000017	0.000017	0.001064
Total	18,243	0.089237	0.010805	11	0.000116	0.000027	0.009074	0.000012	0.001106

Shared queues: Local-first and false scheduling

1. IMS workload broken down by queue type:
   - GLOBAL – shared queues where transactions came in on another system
   - LOCAL – shared queues where transactions came in on this system
   - LOCALF – local-first where shared queue was bypassed

Shared queues transaction performance

IMS ID	Queue Type	Tran Count	Avg InputQ Time	Avg Process Time	Avg OutputQ Time	Avg Total Time	>1.0 InputQ Time	>1.0 Process Time	Avg CPU Time	Max CPU Time	>0.1 CPU Time
IMS1	GLOBAL	493	0.152755	0.353057	0.111123	0.613036	4.26%	11.76%	0.018737	0.199393	5.77%
IMS1	LOCAL	222	0.164432	0.567554	0.000162	0.732051	4.05%	21.62%	0.028475	0.199393	7.37%
IMS1	LOCALF	8701	0.003339	0.056002	0.208816	0.249786	0.10%	0.92%	0.007174	15.15835	0.32%
IMS2	GLOBAL	472	0.157556	0.432707	0.000675	0.590806	4.45%	15.89%	0.023619	0.236885	6.86%
IMS2	LOCAL	224	0.234427	0.457905	0.000130	0.692367	7.14%	16.52%	0.022103	0.208415	5.58%
IMS2	LOCALF	8131	0.002857	0.065651	0.190159	0.242889	0.00%	0.97%	0.012947	31.13607	0.47%
Total		18243	0.015950	0.089237	0.186943	0.276655	0.42%	2.07%	0.010805	31.13607	0.87%

2. False schedule and WFI analysis:

Region overview

MPP Total	CPU	Sched	Trans	******* DLI Calls ******* DB	DC	Other	WFI SUBQ6	Quick		**** Schedule Distribution **** =0	=1	>1
Total	181858	4636	16842	178088	41165	24530	41556K	6279	Sched	1408	2131	1097
/Sched	39	1.0	3.6	38.4	8.9	5.3	8963	1.4	Tran	0	2365	14477
/Tran	10	0.3	1.0	10.6	2.4	1.5	2467		Tr/Sch	0	1	13
/Minute	30309	772.7	2807.0	29681.3	6860.8	4088.3	6926016	1046.5	Sc/Min	234.7	355.2	182.8
% Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	%Sched	30.37	45.97	23.66

Database update activity

1. For each database, shows the programs that updated it, and how often
2. Shows DLI call and physical I/O statistics

Database Update Activity-IMS1

Database	Program	Proc	5050 Total		Updates	ISRT	DLET	REPL	ROLx	New Block	Free Space	5052 Insert	5051 Problem	20 Open/ 24 Error
ORDERS	MOBILE	APPL	84	DLI	84	21	42	21	0			21	0	0
				I/O	63	21	0	42		0	0			0
	ONLINE	APPL	168	DLI	168	84	63	21	0			0	0	0
				I/O	126	21	0	105		0	42			0
STOCK	MOBILE	APPL	42	DLI	42	21	21	0	0			21	0	0
				I/O	21	21	0	0		0	0			0
	ONLINE	APPL	126	DLI	126	63	42	21	0			0	0	0
				I/O	84	21	0	63		0	42			0
Total		APPL	420	DLI	420	189	168	63	0			42	0	0
				I/O	294	84	0	210		0	84			0

Program switch summary

IMS Performance Analyzer
Program Switch Summary

SUMM0001 Printed at 22:35:20 06Jul2011 Data from 14.58.00 27Jun2011 to 15.12.39

Org Trancode	Trancode	Tran Count	Avg InputQ Time	Avg PgmSwtch Time	Max PgmSwtch Time	Avg Process Time	Max Process Time	Avg OutputQ Time
BANK0101	BANK0101	932	0.011484	-	-	0.044661	3.590554	0.000000
...								
BANK0101	BANK0150	126	0.188746	0.188721	7.246319	0.507465	5.454976	0.000000
BANK0101	BANK0153	309	0.006004	0.005973	0.549195	0.396116	4.169538	0.000000
BANK0101	BANK0154	607	0.002426	0.002396	0.337522	0.313873	1.866285	0.000000

The switch time for trancode BANK0150 stands out as a potential bottleneck

27Jun2011

Avg Total IMS Time	Avg IMS Resp Time	Avg CPU Time
0.056145	0.498563	0.004940
0.696186	-	0.014304
0.402089	-	0.020677
0.316269	-	0.019530

Program switch list – following the trail of transactions

IMS Performance Analyzer
Program Switch List

Org LTERM	IMS Tran Start	Parent Trancode	Trancode	Prog Swit#	InputQ Time	PgmSwtch Time	Process Time	OutputQ Time	Total IMS Time	IMS Resp Time	CPU Time
NEWYORK	14.58.02.023922		BANK0001	0	0.004688	-	0.009277	-	0.013965	4.467306	0.000737
	14.58.02.037859	BANK0001	BANK0010	1	0.000150	0.000137	1.065917	-	1.066054	-	0.014046
	14.58.03.102187	BANK0010	BANK0011	2	0.001114	0.001093	0.762127	-	0.763220	-	0.015807
	14.58.03.861171	BANK0011	BANK0012	3	0.004557	0.004535	0.586579	-	0.591114	-	0.015897
	14.58.04.449915	BANK0012	BANK0013	4	0.003350	0.003330	0.458266	-	0.461596	-	0.014347
	14.58.04.909175	BANK0013	BANK0014	5	0.101360	0.101341	0.428108	-	0.529449	-	0.013495
	14.58.05.435875	BANK0014	BANK0015	6	0.312120	0.312099	0.754851	0.000000	1.066950	-	0.028735

Cold start and gap analysis

Cold start analysis

- Analyzes what would happen after an emergency cold start of IMS at *some point in time* (for example, now or at end of log)
- Identifies what messages would be lost
- What in flight transactions with external subsystems would be lost
- Helps for disaster recovery planning and executing a disaster recovery
- May help provide information on unprocessed input messages

Gap analysis

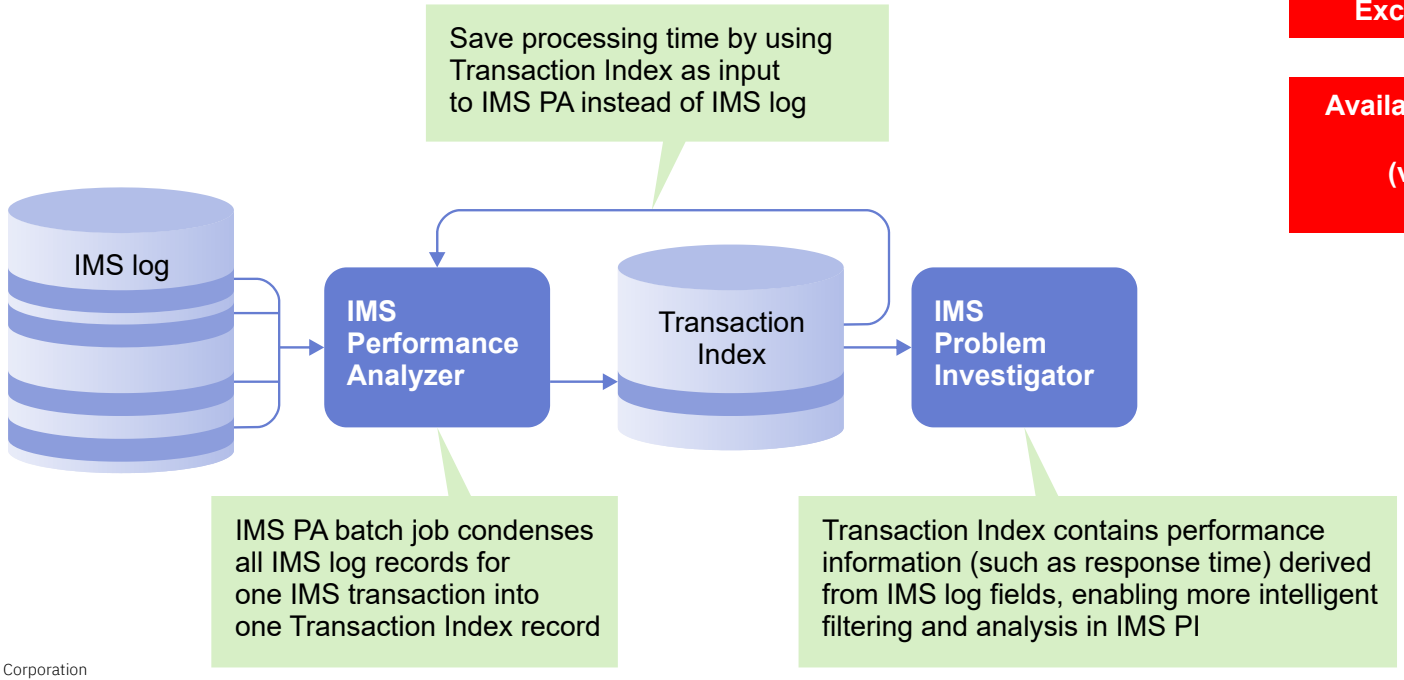
- Gap analysis identifies periods of time where log records are not being cut
- Can highlight an external system event that may have caused IMS to slow down
- Ability to set thresholds to reduce the number of “false positives”
- Can run across all systems in the IMSplex
- Can be used for IMS Connect Extensions journals

IMS Transaction Index records

- Accumulated information from IMS log about each transaction in a single transaction index record
- Created by IMS Performance Analyzer
- Use the transaction index as input into:
  - IMS PA reporting - instead of re-processing large SLDS log files
  - IMS Problem Investigator analysis - enable more intelligent problem detection

Standard Processing OR Exception Processing

Available for both IMS and IMS Connect (via IMS Connect Extensions)



IMS and IMS Connect Transaction Index records

```
__ CA01 IMS Transaction                                          IMS-000000000021
        UTC=17.10.09.284078 TranCode=FBOIAT41 Program=FBOIAP41 Userid=FUNTRM10
        LTerm=FUNTRM10 Terminal=SC0TCP10 Region=0002
        OrgUOWID=IDDG/CC1476B6713CB884 IMSRel=131
        RecToken=IDDG/0000000400000000
        CPU=45.699549 InputQ=0.000309 Process=72.612278 OutputQ=0.000356
        TotalTm=72.612943 RegTyp=MPP
```

IMS

```
__ CA20 Connect Transaction                                      0000000000000001
        TranCode=PRT2 Userid=CEX2 IMSID=ICDH ClientID=CLNAC02 Port=3801
        LogToken=C8962E0E2AF33103 SSN=0689 Response=0.041073 CM=1 SYNCLEVEL=1
        TOV=38_MIN  Socket=Tran
```

IMS Connect

- IMS x'CA01' and IMS Connect x'CA20' index records:
  - Created by IMS Performance Analyzer
  - Records contain all of the performance metrics of each IMS transaction in one record
  - Used in form-based reports

Report Forms – two reporting styles

1. List – Chronological list of transactions with performance details

Origin LTERM	Trancode	Program	Start Time	CPU Time	Userid	InputQ Time	Process Time	OutputQ Time	Total IMS Time	DB Call Count	ESAFcall Count	ABEND
NYC1	WEBONLIN	PROGRAM1	14.51.39.7360	0.0511	JOHN	0.0216	0.6168	-	0.6384	86	19	
	BUYSHOES	PROGRAM2	14.51.40.3744	0.0046	SALLY	0.0105	0.0109	-	0.0202	5	19	
	ADD2CART	PROGRAM3	14.51.40.3920	0.0032	JACK	0.0112	0.0177	0.0000	0.0280	5	19	
NYC2	WEBONLIN	PROGRAM1	14.51.40.7500	0.0476	JILL	0.0057	0.3147	-	0.3204	86	19	
	BUYSHOES	PROGRAM2	14.51.41.0703	0.0030	STEVE	0.0164	0.0184	-	0.0337	5	19	
	ADD2CART	PROGRAM3	14.51.41.0933	0.0031	JAMES	0.0102	0.0218	0.0000	0.0312	5	19	U0777

2. Summary – Statistical analysis based on any key field combination e.g. by trancode or region type

Trancode	Tran Count	Ave InputQ Time	Max InputQ Time	Ave CPU Time	Max CPU Time	>0.05 CPU	Ave Process Time	Max Process Time	>1.0sec Process	Ave Total IMS Time	Max Total IMS Time	Ave DB Call Count	Ave ESAFcall Count
WEBONLIN	2	0.0137	0.0216	0.0493	0.0511	50.00%	0.4657	0.6168	0.00%	0.4794	0.6384	86.00	19.00
BUYSHOES	2	0.0134	0.0164	0.0038	0.0046	0.00%	0.0147	0.0184	0.00%	0.0269	0.0337	5.00	19.00
ADD2CART	2	0.0107	0.0112	0.0031	0.0032	0.00%	0.0197	0.0218	0.00%	0.0296	0.0312	5.00	19.00
INVENTRY	10	0.0061	0.0123	0.0368	0.0474	0.00%	0.5202	2.0075	10.00%	0.5273	2.0103	68.80	15.20
PAYMENTS	10	0.0041	0.0088	0.0020	0.0035	0.00%	0.1077	1.0045	10.00%	0.1115	1.0095	4.00	15.20
Total	26	0.0069	0.0216	0.0193	0.0511	3.85%	0.2800	2.0075	7.69%	0.2869	2.0103	35.38	16.08

Summary and references

Summary

Collection, reporting, and analysis of IMS instrumentation data is import

- Time consuming
- Challenging

IMS Performance Analyzer can help alleviate the challenges

Help you easily and efficiently:

- Collect instrumentation data for IMS and IMS Connect via automated file selection
- Report on various aspects of transaction performance and resource usage and availability for
  - IMS
  - IMS Connect
  - IMS Monitor
  - IMS Trace
  - OMEGAMON XE for IMS Application Trace Facility (ATF)
- Build customized reports - see only performance metrics that are important to you
- Create Transaction Index records for IMS and IMS Connect
  - Streamline transaction performance reporting
  - Use in other investigative tools like IMS Problem Investigator and Transaction Analysis Workbench

References

IMS Tools website
www.ibm.com/it-infrastructure/z/ims/tools

IBM Z Software Newsletter
http://ibm.biz/zITSMNewsletterSubscribe

IMS listserv
http://imslistserv.bmc.com

IMS Tools new functions
www.ibm.com/support/docview.wss?uid=swg22015506

IMS Tools support for IMS V15
https://www.ibm.com/support/pages/node/7151031

IMS Tools support for Managed ACBs
www.ibm.com/support/docview.wss?uid=ibm10731745

Subscribe to notifications about IBM products
https://www.ibm.com/support/pages/my-notifications-subscription-service

IMS Tools Videos on IBM MediaCenter
ibm.biz/ims-tools-mediacenter

IMS Tools support for Data Set Encryption
www.ibm.com/support/pages/ibm-ims-tools-and-data-set-encryption-support

IBM software announcements, end of support dates
https://www.ibm.com/support/pages/lifecycle

IMS Tools Product Documentation
www.ibm.com/support/docview.wss?uid=swg27020942

IMS Central
https://imsdev.github.io/index.html

IMS Fundamentals videos:
https://mediacenter.ibm.com/playlist/dedicated/122579632/1_b56rpdpt/1_jy8lv5f5

IMS Community (including IMS internship)
https://community.ibm.com/community/user/ibmz-and-linuxone/groups/public?CommunityKey=eba3ada3-db89-4dca-9154-328195f5e560

IMS new functions
https://www.ibm.com/docs/en/ims/15.5.0?topic=enhancements-ims-enhancement-ptfs

Trademarks

The following are trademarks of the International Business Machines Corporation in the United States and/or other countries.

IBM* IBM Z*
ibm.com
IBM Logo*

*** Registered trademarks of IBM Corporation**

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.
Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license therefrom.
IT Infrastructure Library is a Registered Trade Mark of AXELOS Limited.
ITIL is a Registered Trade Mark of AXELOS Limited.
Linear Tape-Open, LTO, the LTO Logo, Ultrium, and the Ultrium logo are trademarks of HP, IBM Corp. and Quantum in the U.S. and other countries.
Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.
The registered trademark Linux® is used pursuant to a sublicense from the Linux Foundation, the exclusive licensee of Linus Torvalds, owner of the mark on a worldwide basis.
Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.
Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.
OpenStack is a trademark of OpenStack LLC. The OpenStack trademark policy is available on the OpenStack website.
Red Hat®, JBoss®, OpenShift®, Fedora®, Hibernate®, Ansible®, CloudForms®, RHCA®, RHCE®, RHCSA®, Ceph®, and Gluster® are trademarks or registered trademarks of Red Hat, Inc. or its subsidiaries in the United States and other countries.
RStudio®, the RStudio logo and Shiny® are registered trademarks of RStudio, Inc.
UNIX is a registered trademark of The Open Group in the United States and other countries.
VMware, the VMware logo, VMware Cloud Foundation, VMware Cloud Foundation Service, VMware vCenter Server, and VMware vSphere are registered trademarks or trademarks of VMware, Inc. or its subsidiaries in the United States and/or other jurisdictions.
Zowe™, the Zowe™ logo and the Open Mainframe Project™ are trademarks of The Linux Foundation.
Other product and service names might be trademarks of IBM or other companies.

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.
IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.
All customer examples cited or described in this presentation are presented as illustrations of the manner in which some customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics will vary depending on individual customer configurations and conditions.
This publication was produced in the United States. IBM may not offer the products, services or features discussed in this document in other countries, and the information may be subject to change without notice. Consult your local IBM business contact for information on the product or services available in your area.
All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.
Information about non-IBM products is obtained from the manufacturers of those products or their published announcements. IBM has not tested those products and cannot confirm the performance, compatibility, or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.
Prices subject to change without notice. Contact your IBM representative or Business Partner for the most current pricing in your geography.
This information provides only general descriptions of the types and portions of workloads that are eligible for execution on Specialty Engines (e.g, zIIPs, zAAPs, and IFLs) ("SEs"). IBM authorizes customers to use IBM SE only to execute the processing of Eligible Workloads of specific Programs expressly authorized by IBM as specified in the “Authorized Use Table for IBM Machines” provided at www.ibm.com/systems/support/machine_warranties/machine_code/aut.html (“AUT”). No other workload processing is authorized for execution on an SE. IBM offers SE at a lower price than General Processors/Central Processors because customers are authorized to use SEs only to process certain types and/or amounts of workloads as specified by IBM in the AUT.