



P-Tracker for z/OS SOFTWARE ASSET MANAGEMENT

Decision Aid for Software Clean-up & Assessment

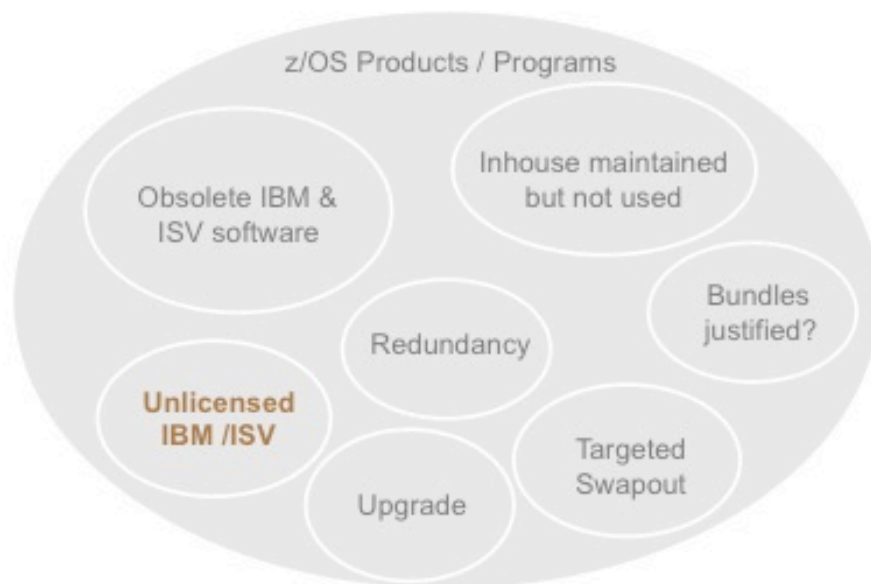
How important is the review & control of mainframe software?

- Software Asset Management (SAM)
- Software as fixed intangible assets
- Company's balance sheet

Discovering the Savings



Non-Compliant



Discovering the Savings



Discovering the Savings



Discovering the Savings



Discovering the Savings



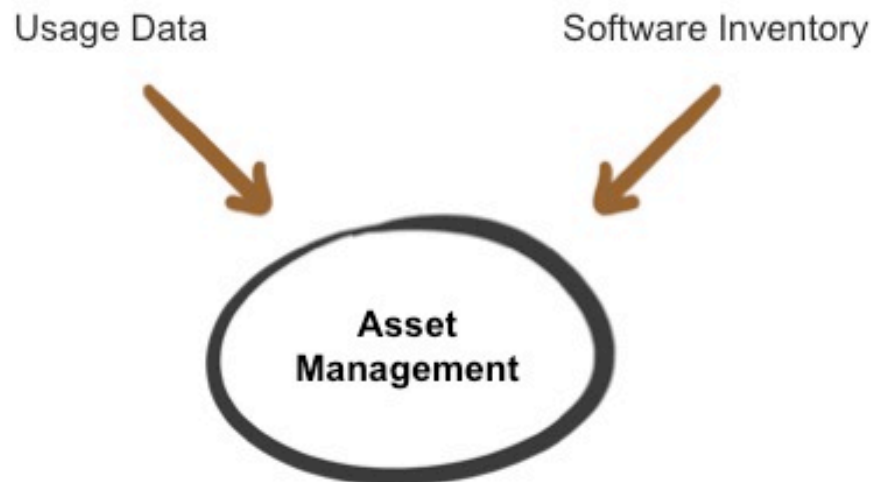
Discovering the Savings



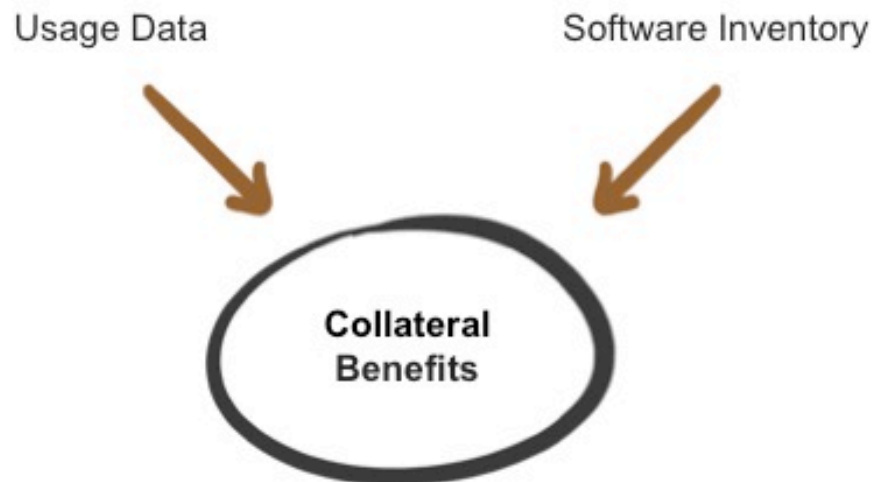
Potential Mistakes



SAM's Fundamental Data



Savings, Discoveries & other Benefits

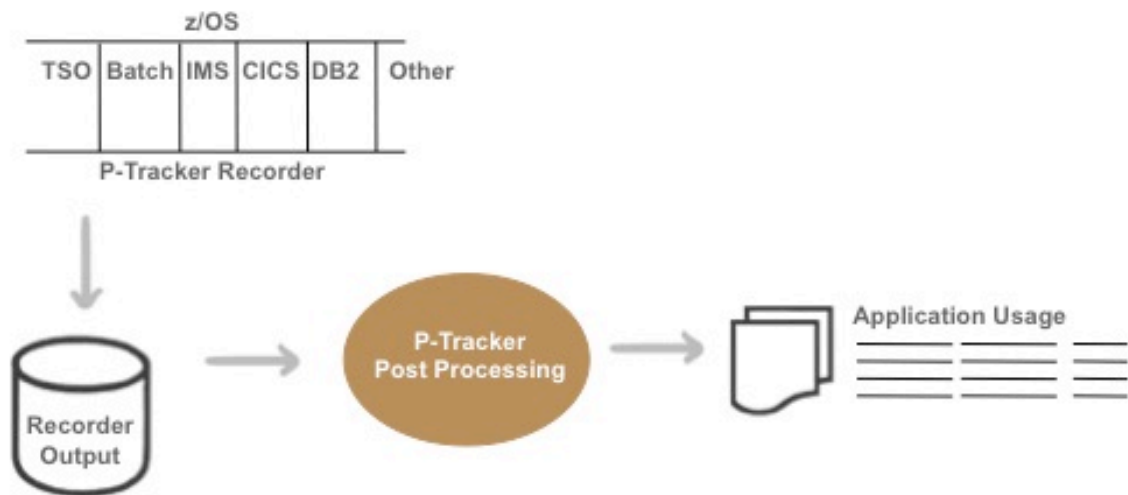


How does P-Tracker work?

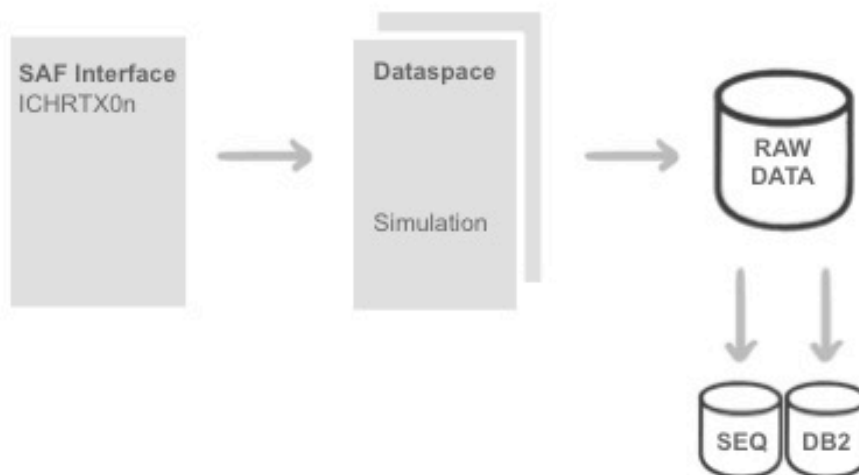
P-Tracker gets to the asset sources automatically

- **Inventory** locates every library on your system
- **Recorder** records every execution of each load module
No matter how it's invoked (interactively or in batch)
Explicitly or via another program
- **Identifier** identifies product name and vendor

Recorder records everything



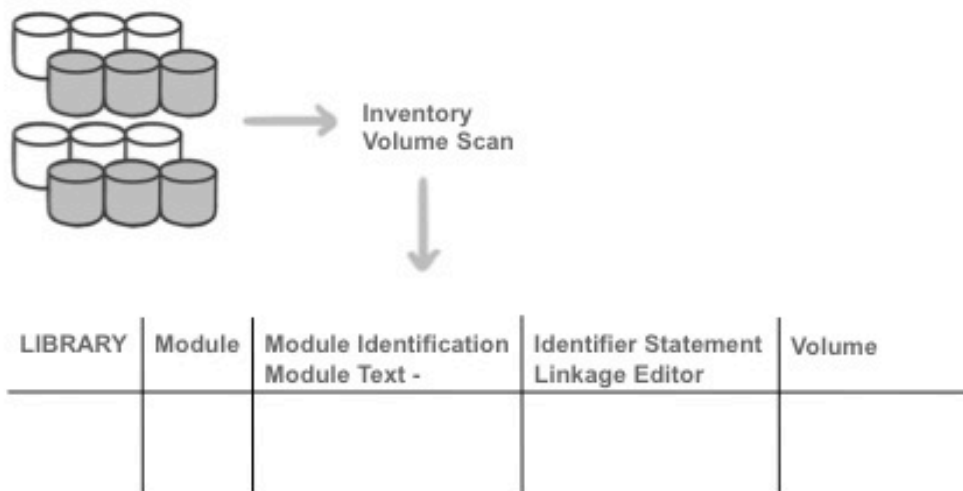
Recorder



The Recorder Data Layout

- FB, LRCL 220
- The fields are:
 - System ID,
 - User ID, Transaction
 - Calling program, Called Program, Called Library, Caller's library
 - Jobname, Job Step Pgm, Job Step Name, Job Select Time, Job Step Number,
 - Jobtype, Job ID, Timestamp, Proc
 - Source Language

Inventory



Library, Modules and Copyright Statements

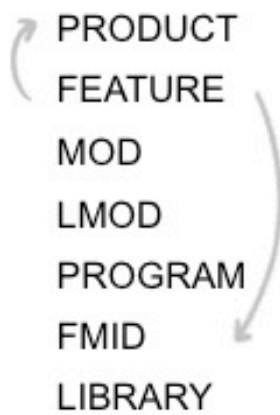
ZCRES1 CBC.SCCNSMP Extent Tracks = 7795, Track lengthe = 58780
 obtained workarea length 5878000 at 37120028

Volume Type Library	Copyright Information	Members
ZCRES1 PDSE CBC.SCCNCMP	IBM Corp. 1991, 1999 AT&T and UNIX System AT&T 1984, 1990. IBM CORP. 1991,2010.	CCNDRVR CCNEIPAO CCNQIPA CCNECICS CCNEIPA3 CXXFILT CCNECWI CCNEMDEP ICCNMSGT CCNEDFLT CCNEOPTP CCNEDSCT CCNEP CCNEDWRT CCNEPP CCNED1C0 CCNETBY CCNEFILT CCNMSGE CCNEHIFC CCNMSGT

ZCRES1 CBC.SCLBDLL2 Extent Tracks = 100, Track lengthe = 58780
 obtained workarea length 5878000 at 370C2028

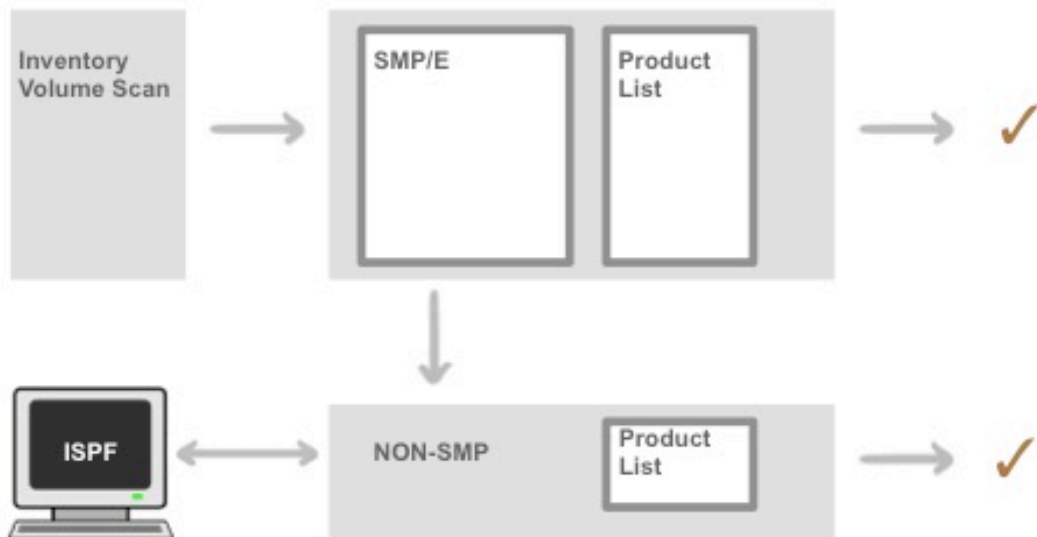
Volume Type Library	Copyright Information	Members
ZCRES1 PDSE CBC.SCLBDLL2	IBM Corp. 1992, 2004. 5094-A01 (C) IBM CORP.2004	CLEQIOS CLEQMSGGE CLEQMSGT ICBQMSGT

Input from SMP/E

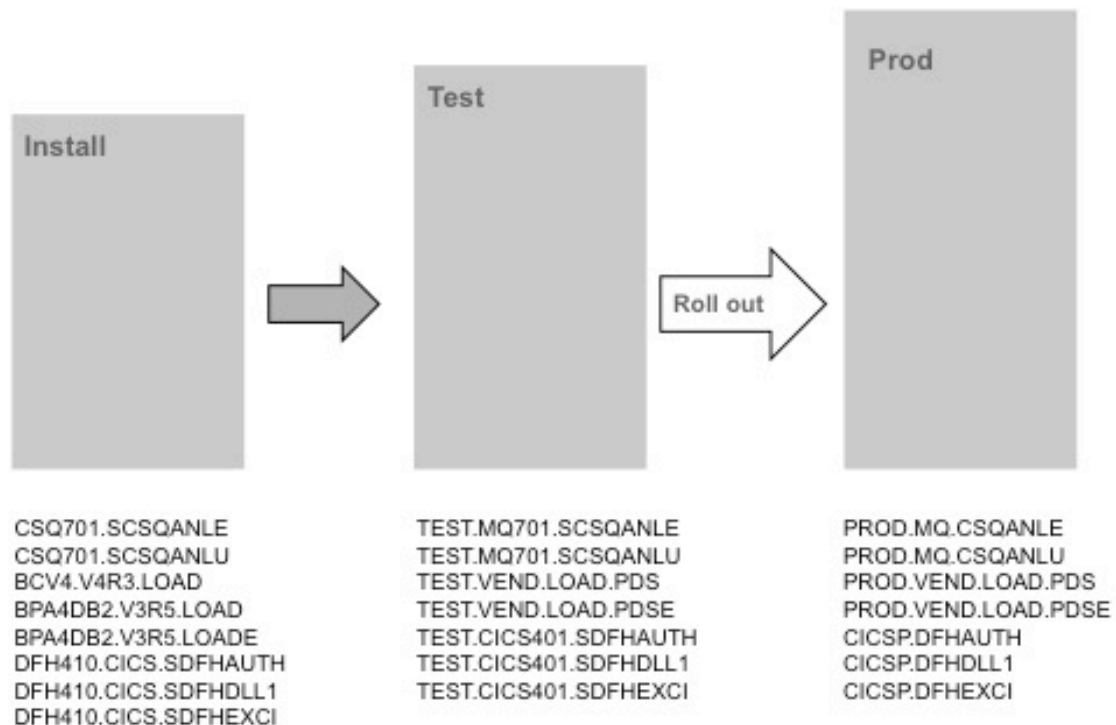


.... GLOBAL.CSI

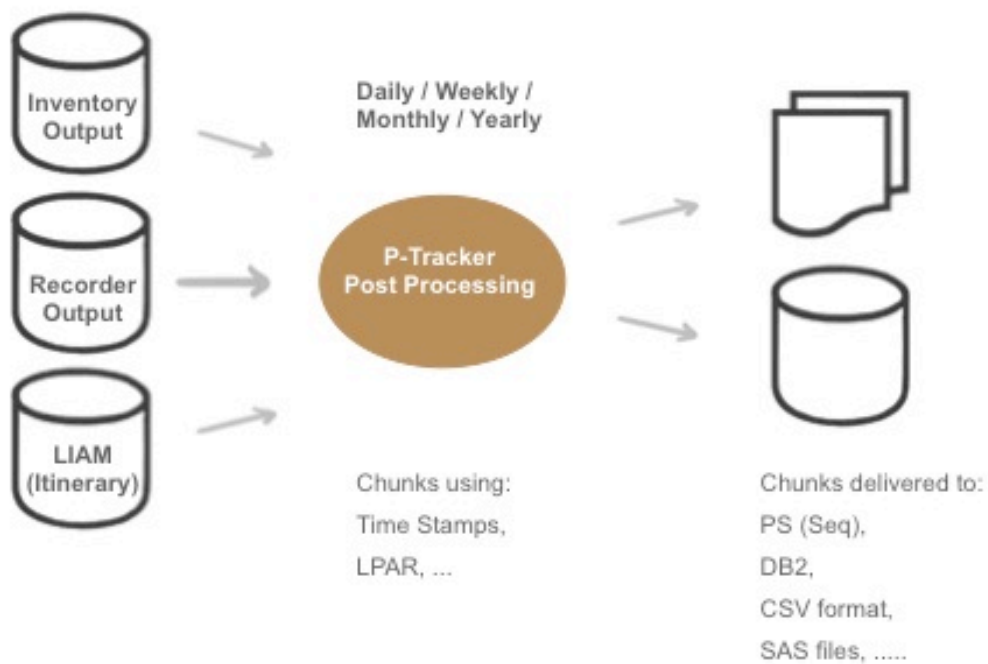
Process of Identification



Product Identification in Staged Environments



Reporter / Exporter



P-Tracker Administration

```
P-Tracker          Ptracker Inventory & Identification          V. 2.1.1

Option ==>

Select Option, press ENTER to proceed.          Subsystem: ACM1
Enter END command to terminate P-Tracker Inventory  Type      : SG

1  SCAN          Run Inventory Batch Analyzation
2  MERGE         Merge Inventories, Product and Vendor tables
3  EDIT          Edit Product and Vendor Table
4  ACTIVATE      Merge Product and Vendor Table to LIAM table

                VERSION 2.1.1 (C) COPYRIGHT UBS Hainer GmbH 2012
```

LIAM License & Internal Software Asset Management
LIAMT Your Knowledge Base



Editor

```

P-Tracker          Inventory Dataset Display          Row 41 to 80 of 463
OPTION ===>          SCROLL ==> CSA

The following line commands are valid for each specific field

M Show Members      C Show Copyright Entries      D Show Duplicate Entries

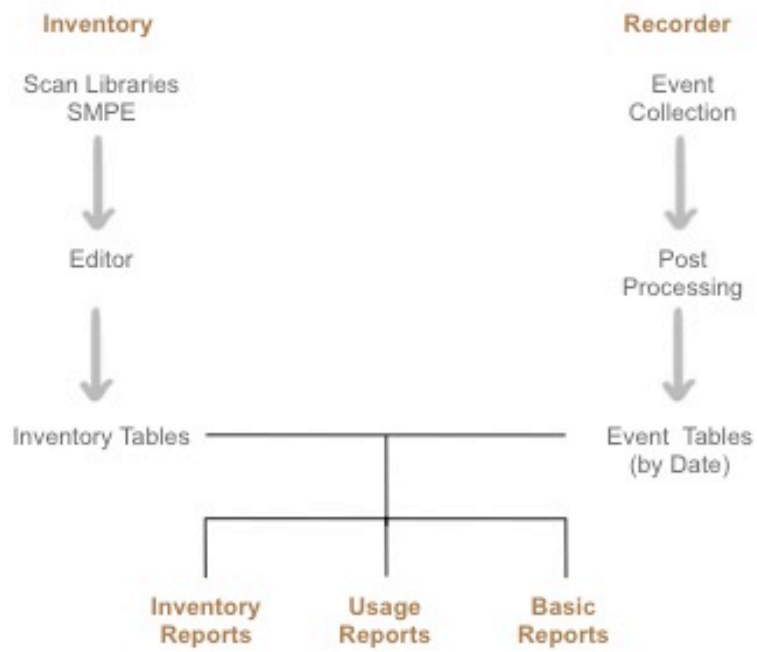
Vendor:             Member:             Find:             Lvl: 1   Act: N
SMPE : Y            Scan : Y            Prod: Y

S M Library
=====
ACM.XMIT.V1R1M9.LOAD.U05
ACMX.V1R1M9.LOAD
ACM119.LOAD
ACM9.V1R1M9.LOAD
ADB710.SAOBLINK      IBM      5697-L90 07.01.00
ADB710.SAOBLLIB      IBM      5697-L90 07.01.00
ADB720.SAOBLINK      IBM      5697-L90 07.02.00
ADB720.SAOBLLIB      IBM      5697-L90 07.02.00
ADB720.SGOCLLIB      IBM      5697-L40 07.02.00
ADCD.Z112.LINKLIB
APS420.LINKLIB      IBM      5655-M32 04.02.00
APS420.NUCLEUS      IBM      5655-M32 04.02.00
APS420.SAPKMOD1      IBM      5655-M32 04.02.00
APS420.SAUPLOAD      IBM      5655-M32 04.02.00
ASN820.SASNLOAD      IBM      5655-I60 08.02.00
AUT330.SINGMOD1      IBM      5698-SA3 03.03.00
AUT330.SINGMOD2      IBM      5698-SA3 03.03.00
AUT330.SINGMOD3      IBM      5698-SA3 03.03.00
BCV4.LOAD
BCV4.LOAD.PDS
BCV5.V2R3.LOAD
BCV5.V2R3.LOAD2
BCV5.V2R3.REL.LOAD
BCV5.V2R3.REL.LOAD2

```

- FIND DSN Mask
- VENDOR Name
- MEMBER Mask
- ASSIGN VENDOR
- ASSIGN PRODUCT
- ASSIGN VERSION

How everything plays together



Components & Execution

Component	Execution	Execution interval	CPU Time	Impact on Application
Recorder	Started Task	24h/day	10 sec./day	Not measurable
Post Processor	Batch Job	1min*	2 sec./run	none
Usage Report	Batch Job	On demand		none
Simple Report	Batch Job	On demand		none
Call Tree	TSO Session	On demand		none
Inventory	Batch Job	Once a month		minimal
Editor	TSO Session	On demand		none

CPU Times have been taken on a 100 MIPs CPU

* 10 times / day

Basic Reporting

Describe Report →

Select sort order fields →

Select additional fields to show →

```

ACHRDEF r                                     Define reports                               V. 2.3.0
Command ==>

Report name                                     ==> W
Report description                             ==> TEST REPORT 1
Include counter (Y-N)                         ==> Y
Include Headers (Y-N)                         ==> Y

Fields to keep (1...21: sort order, S=keep without special order)
=====
1  Called Program Name
2  Library of called Program
3  Calling Program                               (from PRB)
4  Library of calling Program                     (PRB Program)
   Program called from JCL
   Job Name
   Step Name
   Procedure Step Name
   User ID
   Jes Job ID
   Job Step Number
   Job Select Time                               (binary, Store Clock Format)
   Job Select Time                               (Character Converted)
   Flag1
   Language                                       (always Assembler)
   Request
   Source                                         (RACF, REXX, CLIST, JCL-Proc)
   Jobtype                                       (Stc, Job, Tsu)
   CICS Transaction
   CICS Terminal
   IMS Transaction
S  SMF ID                                         (SMF ID of collecting System)
  
```

Basic Reporting

P-Tracker Simple Reporting Selection Criteria Row 1 to 2 of 2
 OPTION ==> SCROLL ==> CSR

Please Identify the Selection Criteria to be used for Simple Reporting

The following line commands are valid for each specific field

I Insert Entry S Select Entry D Delete Entry

CM	FieldName	Operand	Value	Logic	Level
C	TIMESTAMP	GT	C'2013100'	AND	
C	TIMESTAMP	LT	C'2013110'		

***** Bottom of data *****

- Define Selection Criteria
& Submit

Basic Reporting

SOURCE: REPORT 16/045

13/11/01

Called Program	Calling Program	Called Library	Calling Library
ACMACTL	ISPSUBS	ACM.V2R3D.LOAD	ISPSLIB.V2R3D.LOAD
ACMBR14	ACM	ACM.V2R3D.LOAD	ACM.V2R3D.LOAD
ACMBR15	ACM	ACM.V2R3D.LOAD	ACM.V2R3D.LOAD
ACMHLP1	ACMINVTN	ACM.V2R3D.ISPCLIB	ACM.V2R3D.ISPCLIB

Tree Display

```

P-Tracker Call Tree Display Module for IGWCL00 Row 1 to 47 of 216
OPTION ===> SCROLL ===> CSM

The following line commands are valid for each specific field:

C Show Callers      S Follow Call Tree

C Lvl Program      M Library
=====
1 IGWCL00          LPA
2 .ACMDINI          ACM.V2R10.LOAD
2 .ACMFDSF          ACM.V2R10.LOAD
3 .BPX1GMH          SYS1.CSSLIB
2 .ACMFDTA          ACM.V2R10.LOAD
3 .CEEBCINIT        CEE.SCEERUN
4 .CEEPLPKA         CEE.SCEERUN
5 .CELHV003         CEE.SCEERUN2
6 .CELHDCPP         CEE.SCEERUN2
7 .C128             CEE.SCEERUN2
8 .CEEMENU3         CEE.SCEERUN
9 .CCNEDFLT         CBC.SCCNCMP
10 .CCNEOPTP        CBC.SCCNCMP
2 .ACMLIAM          ACM.V2R10.REL.LOAD
2 .ACMLIAM          ACM.V2R10.LOAD
3 .CEEBCINIT        CEE.SCEERUN
4 .CEEPLPKA         CEE.SCEERUN
5 .CELHV003         CEE.SCEERUN2
6 .CELHDCPP         CEE.SCEERUN2
7 .C128             CEE.SCEERUN2
8 .CEEMENU3         CEE.SCEERUN
9 .CCNEDFLT         CBC.SCCNCMP
10 .CCNEOPTP        CBC.SCCNCMP
2 .ACMNUPR          ACM.V2R10.LOAD
3 .CEEBCINIT        CEE.SCEERUN
4 .CEEPLPKA         CEE.SCEERUN
5 .CELHV003         CEE.SCEERUN2
6 .CELHDCPP         CEE.SCEERUN2
7 .C128             CEE.SCEERUN2
8 .CEEMENU3         CEE.SCEERUN
9 .CCNEDFLT         CBC.SCCNCMP
10 .CCNEOPTP        CBC.SCCNCMP
2 .ACMRDTA          ACM.V2R10.LOAD
3 .CEEBCINIT        CEE.SCEERUN
4 .CEEPLPKA         CEE.SCEERUN
5 .CELHV003         CEE.SCEERUN2
6 .CELHDCPP         CEE.SCEERUN2
7 .C128             CEE.SCEERUN2
8 .CEEMENU3         CEE.SCEERUN
9 .CCNEDFLT         CBC.SCCNCMP

```

31 | 42

- Select the entry point of the tree
- Tree levels reflect LINK, ATTACH, XCTL, ...
- Option available to show all callers
- Option available to follow the call tree
- REXX, CLISTs and JCL Procedures are included

Usage Reports

ACMMACC r
COMMAND ===>

Product Usage Reporting V. 2.3.0

Select Date Range
→

Optionally Select Vendor
→

Type of Report
→

Report Options
→

Input Specification

Period From ===> 2013 To ===> 2013 (CCYY)
 ===> 06 ===> 06 (MM)
 ===> 06 ===> 30 (DD)
 Select Product or Vendor ===> NO (YES,NO)
 Logfile Type ===> DAILY (D-daily)

Output Details

Product Usage per Product and User-ID ===> YES (YES,NO)
 Product Usage per Product ===> YES (YES,NO)
 Products with zero Usage Count ===> YES (YES,NO)
 Unused Libraries ===> YES (YES,NO)
 Unused Programs ===> YES (YES,NO)
 Headers for CSV output ===> NO (YES,NO)
 Report Datasets for products listed ===> NO (YES,NO)
 Usage Count Mode ===> BOTH (ALL,ONCE,BOTH)

Enter CANCEL on the Command Line to cancel your Input
 Use ENTER to generate the Accounting Processing Job

Usage Reports

Daily usage counts (any usage per user counted once per day)
Date from 2013-04-25 07.40.57 to 2013-04-25 10.42.24 SMFID ADCD

Product	Vendor	Text	Version	FMID	Feature	P	Count
5094-A01	IBM	z/OS V1 Base	01.12.00	HBB7770	IZOBB1C0		00000003
5094-A01	IBM	z/OS V1 Base	01.12.00	HLE7770	IZOBB1C0		00000001
5094-A01	IBM	z/OS V1 Base	01.12.00	HTE7770	IZOBB1C0		00000001
5094-A01	IBM	z/OS V1 Base OPT. Features I	01.12.00	HSM1K00	DZOBB1C0		00000001
5094-A01	IBM	z/OS V1 DFSMS rmm	01.12.00	HDZ1C10	IZOD31C0	*	00000001

Daily usage counts (any usage counted once per day)
Date from 2013-04-25 07.40.57 to 2013-04-25 10.42.24 SMFID ADCD

Product	Vendor	Text	Version	FMID	Feature	P	User	Count
5094-A01	IBM	z/OS V1 Base	01.12.00	HBB7770	IZOBB1C0		+CONSOLE	00000001
5094-A01	IBM	z/OS V1 Base	01.12.00	HBB7770	IZOBB1C0		N/A	00000001
5094-A01	IBM	z/OS V1 Base	01.12.00	HBB7770	IZOBB1C0		START2	00000001
5094-A01	IBM	z/OS V1 Base	01.12.00	HLE7770	IZOBB1C0		START2	00000001
5094-A01	IBM	z/OS V1 Base	01.12.00	HTE7770	IZOBB1C0		GERD1	00000001
5094-A01	IBM	z/OS V1 Base OPT. Features I	01.12.00	HSM1K00	DZOBB1C0		START2	00000001
5094-A01	IBM	z/OS V1 DFSMS rmm	01.12.00	HDZ1C10	IZOD31C0	*	START2	00000001

Usage Reports

Products with Zero use count
 Date from 2013-04-25 07.40.57 to 2013-04-25 10.42.24 SMFID ADCD

Product	Vendor	Text	Version	FMID	Feature	P	F
5025-DB2	IBM	DB2 BASE/TSO		HDBAA10			F
5025-DB2	IBM	IRLM		HIR2230			F
5025-DB2	IBM	Net search Extender V7	08.01.00	HDB771N	IDB2S810		F
5025-DB2	IBM	Net.Data Version 7	08.01.00	H242710	IDB2N810		F
5025-DB2	IBM	QMF Classic Edition	08.01.00	HSQ8810	IDB2C810		F
5025-DB2	IBM	QPP: DB2 UDB for z/OS	08.01.00	HDB8810	IDBQB810		F
5035-A02	IBM	IMS V11 Transaction Mgr	11.01.00	HMK1100	IIMTR1B0		F
5094-A01	IBM	z/OS V1 Base	01.11.00	HIF0J02	IZOBB1B0		F
5094-A01	IBM	z/OS V1 BookManager Build	01.09.00	HMKP300	IZOBM190	*	F
5094-A01	IBM	GDDM REXX	01.01.00	JGD3219	IZOGR110	*	F
5095-013	IBM	z/OS REXX Compiler	01.04.00	HMK0140	IREXC140		F
5095-014	IBM	REXX/370 Library	01.04.00	HMJ9140	IREXL140		F
5097-ENV	IBM	Enterprise Monitoring Agent	05.04.00	HENV54A	INVEM540		F
5097-H82	IBM	DB2 Buffer Pool Analyzer V2	02.01.00	H27121X	IDBPE210		F

- Shows Products with zero use count
- Priced Features are marked

Usage Reports

Libraries not used, lowest date 2013 051 08.52.22, highest_date 2013 181 17.10.45
Following Datasets had no activity

ACM.BCV4.LOAD	ACM.DATEV.LOAD
ACM.PTR.V1R1M7.LOAD	ACM.V1R1M0.LOAD
ACM.V1R1M7.GSF.LOAD	ACM.V1R1M7.LOAD.OLD
ACM.V1R1M7.LOAD.U01	ACM.V1R1M7.LOAD.U02
ACM.V1R1M9.LOAD	ACM.V2R1.LOAD

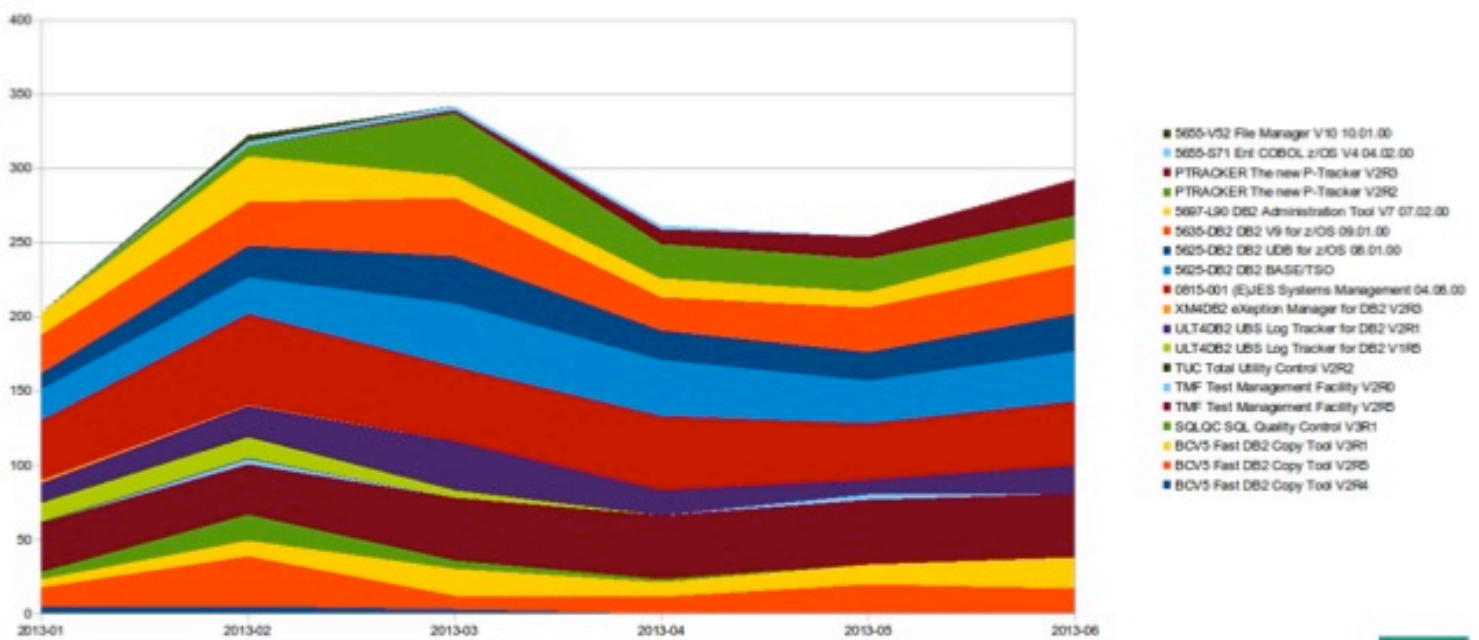
- Libraries with zero use count

Following Datasets had Members with no activity

Dataset	ACM.V1R1M7.LOAD	108				
ACM	ACM\$MS1	ACMAAAA	ACMACTL	ACMACTLX	ACMALET	ACMANPT
ACMCKRB	ACMCKRB1	ACMCLN1	ACMCLN2	ACMCLN3	ACMCLN4	ACMCNIT
ACMDB2M	ACMDINI	ACMDLI1	ACMD2CK	ACMD2T0	ACMD2T2	ACMEI1N
ACMHOOK	ACMINIT	ACMIRXS	ACMLDAP	ACMLOGR	ACMLOG2	ACMLOG3
ACMRDTAX	ACMREST	ACMRMI1	ACMRXVC	ACMRVVA	ACMRVVB	ACMRVVD

- "Dead Wood"

Some other useful reports: Product Usage History



Compliance Report on Product ABC

- V2R4, V2R5, V3R1 • SYP1, SYP2, SYP3

Date	V2R4 on SYP1	V2R5 on SYP1	V3R1 on SYP1	V2R4 on SYP2	V2R5 on SYP2	V3R1 on SYP2	V2R4 on SYP3	V2R5 on SYP3	V3R1 on SYP3
2013-21	7	6	8	7	6	8	7	6	8
2013-22	7	6	8	7	6	8	7	6	8
2013-23	11	13	10	9	0	12	10	0	11
2013-24	11	13	10	9	0	12	10	0	11
2013-25	11	13	10	9	0	12	10	0	11
2013-26	11	13	10	9	0	12	10	0	11
2013-27	11	13	10	9	0	12	10	0	11
2013-28	11	13	10	9	0	12	10	0	11

- Has not been executed since 2013-22 on SYP2 and SYP3

Compliance Report on Product ABC

- V2R4, V2R5, V3R1 • SYP1, SYP2, SYP3

Date	V2R4 on SYP1	V2R5 on SYP1	V3R1 on SYP1	V2R4 on SYP2	V2R5 on SYP2	V3R1 on SYP2	V2R4 on SYP3	V2R5 on SYP3	V3R1 on SYP3
2013-21	y	y	y	y	y	y	y	y	y
2013-22	y	y	y	y	y	y	y	y	y
2013-23	y	y	y	y	n	y	y	n	y
2013-24	y	y	y	y	n	y	y	n	y
2013-25	y	y	y	y	n	y	y	n	y
2013-26	y	y	y	y	n	y	y	n	y
2013-27	y	y	y	y	n	y	y	n	y
2013-28	y	y	y	y	n	y	y	n	y

- Has not been executed since 2013-22 on SYP2 and SYP3

Compliance
Report

Sept. 2013		Lpars:	SYP1	SYP2	SYT1	SYT2	SYD1		
			488	485	125	100	75	MSU Limit	MSU Total
BCV4	UBSH	y	n	y	n	n	n	700	613
BCV5	UBSH	y	y	y	y	n	n	1100	1198
Abend-Aid	Compuware	n	n	n	n	y	y	75	75
File-Aid	Compuware	y	y	y	y	y	y	1300	1273
Megacryption	ASPG	y	y	y	y	y	y	*	1273
Xpediter	Compuware	n	n	n	n	y	y	150	75
Oct. 2013		Lpars:	SYP1	SYP2	SYT1	SYT2	SYD1		
			488	554+	125	100	75	MSU Limit	MSU Total
BCV4	UBSH	y	n	y	n	n	n	700	613
BCV5	UBSH	y	y	y	y	n	n	1100	1267+
Abend-Aid	Compuware	n	n	n	n	y	y	75	75
File-Aid	Compuware	y	y	y	y	y	y	1300	1342+
Megacryption	ASPG	y	y	y	y	y	y	*	1342+
Xpediter	Compuware	n	n	n	n	y	y	150	75
Nov. 2013		Lpars:	SYP1	SYP2	SYT1	SYT2	SYD1		
			488	485-	125	100	75	MSU Limit	MSU Total
BCV4	UBSH	y	n	y	n	n	n	700	613
BCV5	UBSH	y	y	y	y	n	n	1100	1198-
Abend-Aid	Compuware	n	n	n	n	y	y	75	75
File-Aid	Compuware	y	y	y	y	y	y	1300	1273-
Megacryption	ASPG	y	y	n-	y	y	y	*	1148-
Xpediter	Compuware	n	n	n	y+	y	y	150	175+

Compliance Report

Σ

Sept. 2013	Lpars:	SYP1	SYP2	SYT1	SYT2	SYD1		
		488	485	125	100	75	MSU Limit	MSU Total
BCV4	UBSH	y	n	y	n	n	700	613
BCV5	UBSH	y	y	y	y	n	1100	1198
Abend-Aid	Compuware	n	n	n	n	y	75	75
File-Aid	Compuware	y	y	y	y	y	1300	1273
Megacryption	ASPG	y	y	y	y	y	*	1273
Xpediter	Compuware	n	n	n	n	y	150	75

Compliance Report

max

Sept. 2013	Lpars:	SYP1	SYP2	SYT1	SYT2	SYD1		
		488	485	125	100	75	MSU Limit	MSU Max
ProdA	xxxx	y	n	y	n	n	400	488
ProdB	yyyy	y	y	y	y	n	1100	488
ProdC	abcd	n	n	n	n	y	75	75
ProdD	ghij	y	y	y	y	y	1300	488
ProdE	ghij	y	y	y	y	y	*	488
ProdF	klmn	n	n	n	n	y	150	75

Thank you
for your
attention!

Your UBS Hainer Team

