Getting Going With PSM on Informix 12

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Tom is a Senior Database Consultant and has been with Advanced DataTools for over 15 years. He has been working with Informix since college with a long time fondness for open source languages. Tom is the lead consultant for Networking, Unix System Administration and Web Development needs. Currently, he is the Project Manager and lead developer on a variety of Web Development projects.

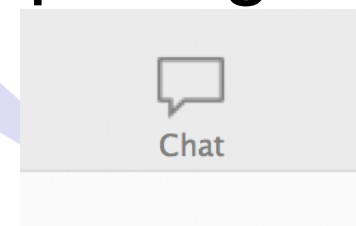Contact Info:
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Webcast Guidelines

- The Webcast is being recorded. The Webcast replay and slides may be available in a few days.

- Please Mute your Line. Background sounds will distract everyone.

- Use the Chat Button in the upper right to ask questions.

Chat

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Primary Storage Manager

- Introduced in version 12.10
- Replaces the old ISM (v11.7 and earlier)
- Used to allow for flexible backup storage management
- Allows usage of the onbar command against local storage devices

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Benefits of PSM

- Have multiple storage devices
- Manage limits on storage devices
- Migrate backup data between storage devices
- Parallel backups
- Point in time restores
- Allow STDIO devices
- Combine the simplicity of ontape with features of onbar
- Support for cloud based backup solutions

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Catalog

- Primary storage base for all of the backups on the system
- All information on the backup system as well as the individual backups are stored in the catalog
- Stored in C-ISAM table format (flat files)
- Need to do separate backups of the catalog as needed
- Can be migrated

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Pool

- Pools are containers that hold information on the devices that store backups

- One pool per type of backup (Data, logs, external objects)

- Can have other pools on the system not used as part of the primary backup
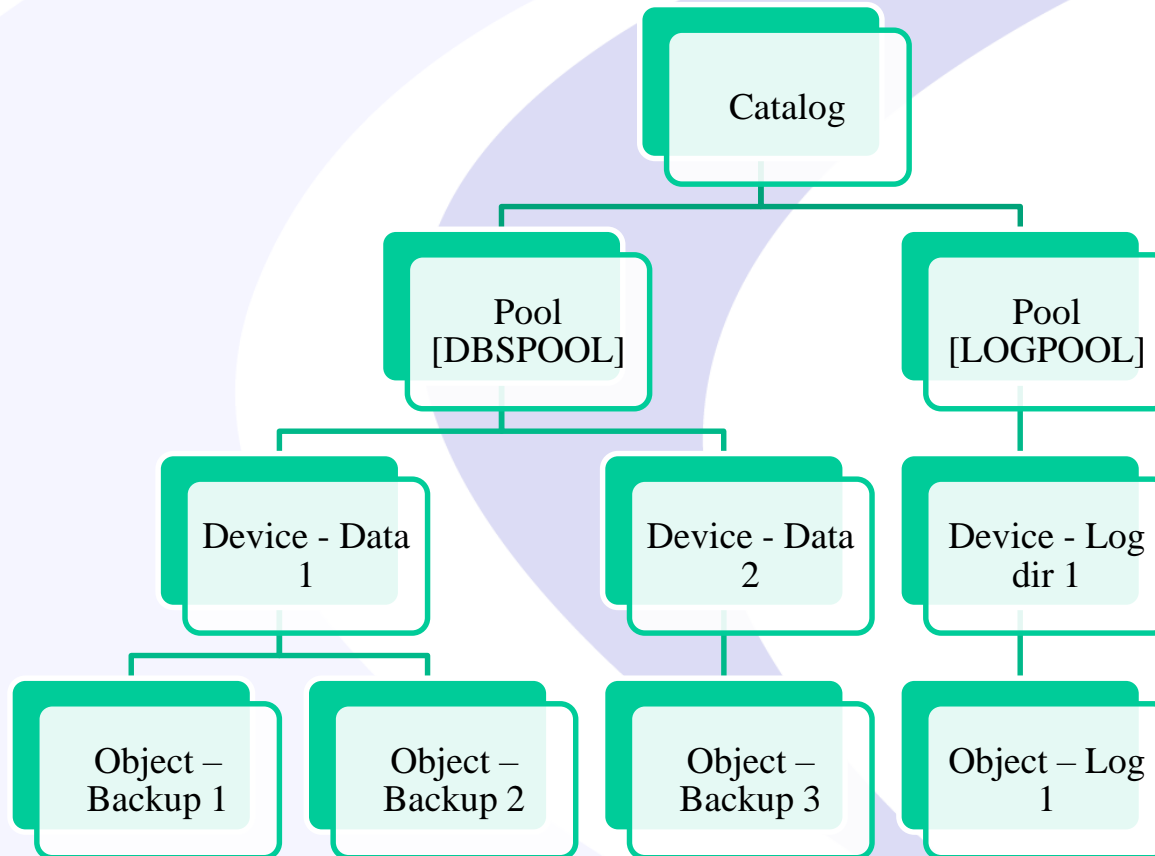
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Devices

- These are the storage devices
- Supports files, directories, STDIO and cloud objects
- Can define the priority of the device
  - HIGHEST, HIGH, LOW, READ-ONLY
- Can use the priority list to identify where backups will go to first
- Can modify them after they have been added

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Objects

- Individual items in the backup
- Each backup is an object
- Can be purged with onpsm or onsmsync
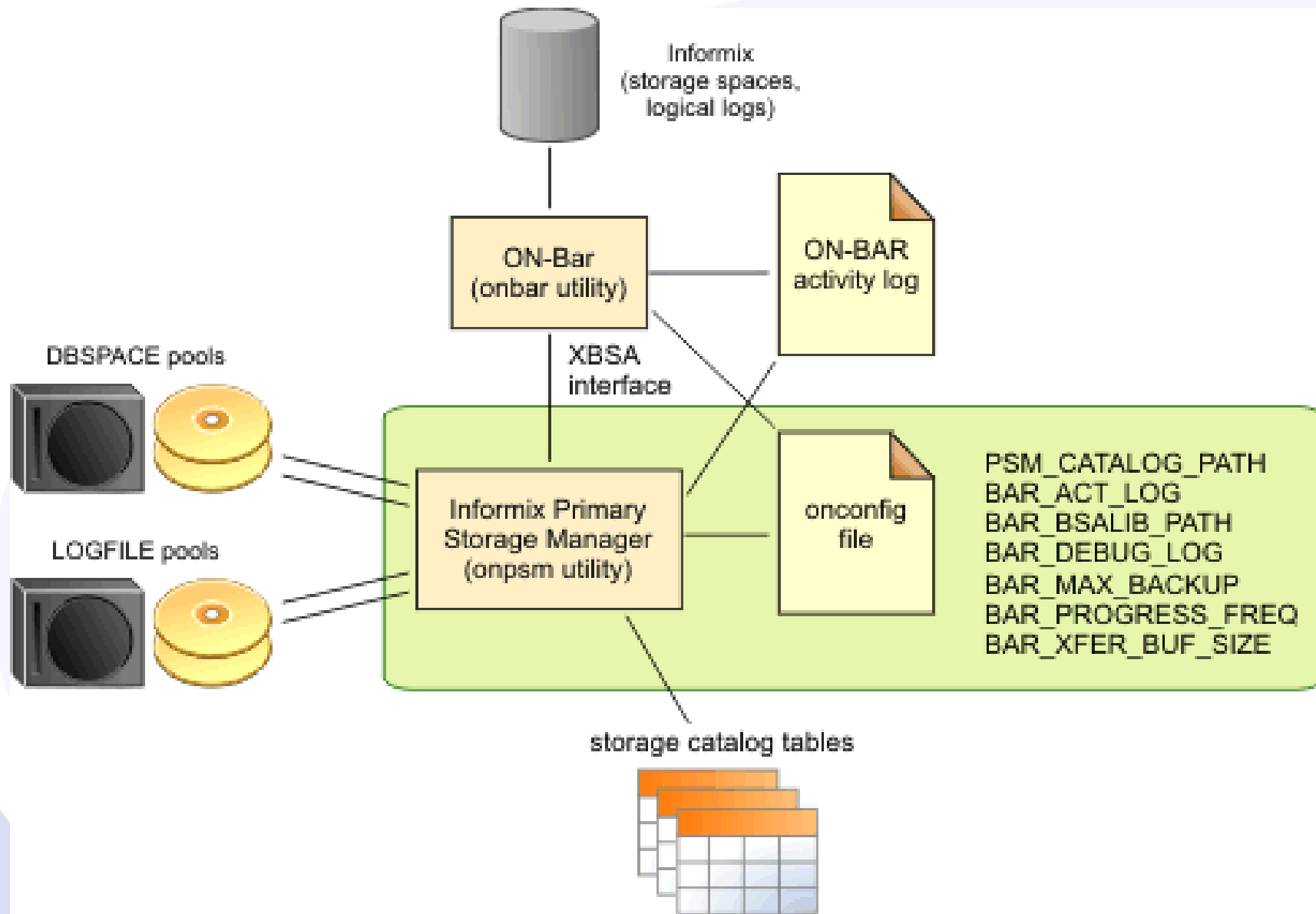- Can be written directly out to a file

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Storage Hierarchary

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Image from:
https://www.ibm.com/support/knowledgecenter/en/SSGU8G_12.1.0/com.ibm.bar.doc/ids_bar_526.htm

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Commands - onpsm

- -C
  - Catalog management (check, export, import, init, unlock)
- -D
  - Manage storage devices (add, del, list, update)
  - Supports Amazon S3
- -O
  - Object Management (del, detail, dump, list)
- -P
  - Pool management (add, del, list)

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ONCONFIG Variables

- PSM_ACT_LOG
  - Path to log file
  - Default is the BAR_ACT_LOG file
- PSM_CATALOG_PATH
  - Path to where the catalog tables will be stored
  - Default $INFORMIXDIR/psm
- PSM_DBS_POOL
  - Defines the pool that PSM will use
  - Default is DBSPOOL
  - Can set it as an environment variable

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ONCONFIG Variables

- PSM_DEBUG
  - Same as BAR_DEBUG
  - Default will use BAR_DEBUG
- PSM_DEBUG_LOG
  - File to write the PSM debug log
- PSM_LOG_POOL
  - The default pool to use for log files
  - Default is LOGPOOL

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Basic Setup

- Make changes to onconfig
- Set up target directories or devices
- Verify or Modify pools
- Add devices to pools
- Preform a backup

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New Setup – Onconfig

BAR_BSALIB_PATH $INFORMIXDIR/lib/libbsapsm.so

BAR_ACT_LOG – set a good log file location

BAR_MAX_BACKUP – Set to a reasonable number for the number of devices

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Setup Filesystems

- mkdir /backup/DBSPOOL
- mkdir /backup/LOGPOOL
- chmod 770 /backup/*POOL
- chown informix:informix /backup/*POOL

- Create the directories as 770, or use flat files

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Verify Pools

- ## onpsm –P list

informix@psm:~$ onpsm -P list

Informix Primary Storage Manager Pool List

Pool Id   Name
1   DBSPOOL
2   LOGPOOL
3   EXTPOOL

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Add Devices

- onpsm –D add /backup/LOGPOOL -g LOGPOOL –p HIGHEST –t file
- onpsm –D add /backup/DBSPOOL -g DBSPOOL –p HIGHEST –t file

informix@psm:~$ onpsm -D list

Informix Primary Storage Manager Device List

Type	Prio	Block/Size (MB)	Pool Name	Device Name
FILE	LOW	--/--	DBSPOOL	/opt/informix/backups
FILE	HIGHEST	--/--	DBSPOOL	/backup/DBSPOOL
FILE	LOW	--/--	LOGPOOL	/opt/informix/backups
FILE	HIGHEST	--/--	LOGPOOL	/backup/LOGPOOL

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Test With Onbar

- onbar –b –l

```
informix@psm:~$ onpsm -O list
Informix Primary Storage Manager Object List


Object ID       Date Created        Size (MB) Logical path (name.version)
1               2018-03-06 22:02:29     9.8 /psmtcp/0/7/psmtcp.1
2               2018-03-06 22:02:29     9.8 /psmtcp/0/8/psmtcp.1
3               2018-03-06 22:02:30     9.8 /psmtcp/0/9/psmtcp.1
4               2018-03-06 22:02:30     9.8 /psmtcp/0/10/psmtcp.1
5               2018-03-06 22:02:30     9.8 /psmtcp/0/11/psmtcp.1


informix@psm:~$ ls -l /backup/LOGPOOL/psmtcp/0/11/
-rw-rw---- 1 informix informix 10244309 Mar  6 22:02 psmtcp.1.1
```

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Full Backup

- onbar –b

22:05:20 Level 0 Archive started on rootdbs

22:05:21 Archive on rootdbs Completed. ←⎯⎯⎯⎯⎯⎯⎯ Rootdbs is always first

22:05:22 Checkpoint Completed: duration was 0 seconds.

22:05:22 Tue Mar 6 - loguniq 12, logpos 0xf22018, timestamp: 0x292ab81 Interval: 77

22:05:22 Maximum server connections 2

22:05:22 Checkpoint Statistics - Avg. Txn Block Time 0.000, # Txns blocked 0, Plog used 50, Llog used 10

22:05:22 Level 0 Archive started on datadbs ←⎯⎯⎯⎯⎯⎯⎯⎯ Parallel

22:05:22 Level 0 Archive started on datadbs2 ←

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Files Backed Up

informix@psm:~/t$ onpsm -O list

Informix Primary Storage Manager Object List

Object ID	Date Created	Size (MB)	Logical path (name.version)
6	2018-03-06 22:05:20	29.5	/psmtcp/rootdbs/0/psmtcp.1
7	2018-03-06 22:05:22	3258.5	/psmtcp/datadbs/0/psmtcp.1
8	2018-03-06 22:05:22	3256.1	/psmtcp/datadbs2/0/psmtcp.1
9	2018-03-06 22:10:15	0.3	/psmtcp/sbspace/0/psmtcp.1
10	2018-03-06 22:10:16	0.1	/psmtcp/tmpdbs/0/psmtcp.1
11	2018-03-06 22:10:17	0.1	/psmtcp/logdbs/0/psmtcp.1
12	2018-03-06 22:10:18	7.7	/psmtcp/0/12/psmtcp.1
13	2018-03-06 22:10:18	0.0	/psmtcp/critical_files/ixbar/psmtcp.1
14	2018-03-06 22:10:18	0.0	/psmtcp/critical_files/oncfg/psmtcp.1
15	2018-03-06 22:10:18	0.1	/psmtcp/critical_files/onconfig/psmtcp.1
16	2018-03-06 22:10:18	0.0	/psmtcp/critical_files/sqlhosts/psmtcp.1

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Dumping Objects

- onpsm –O dump –o <object id>
- Will write the object to a file in the current directory
- Useful for easy restore of critical files

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Import/Export

- onpsm –C export
  - Will export the catalog to the current directory
- onpsm –C import
  - Will import the catalog from the current directory to the psm system

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onsmsync

- Standard Informix Tool
- Used to synchronize the storage manager with the Informix storage tables or PSM tables
- Also has export/import utilities when using PSM

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EXTPOOL

- 'offline' backups that are not tracked in PSM
- Used as staging to move backup objects to a new system
- Use the onsmsync utility to copy all objects from a particular backup to the extpool
- Can then import that directory on a new server into PSM

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Import/Export Of Data

- Add EXTPool device
- onsmsync –E –p <backup name> -g 1
  - Backup all objects from the latest (1) generation to the extpool directory
- Copy /EXTPOOL_DIR/<backup name> to the new server's extpool directory
- onsmsync –I –p <backup name>

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Filters (Supports ontape)

- Can use BACKUP_FILTER and RESTORE_FILTER
- Will allow to do live encryption/decryption of backups
- Can also auto compress/uncompress backups
- Will add more CPU overhead depending on the method used

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Questions?

Send follow-up questions to
tom@advancedatatools.com

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Next Webcast
Informix Best Practices

- **Getting going with PSM and Informix 12 for backups by Thomas Beebe**
  - **Thursday, April 12, 2018 at 2:00pm EST**
- **Optimizing the Operating System (Unix, Linux) for best Informix Database Performance by Lester Knutsen**
  - **May 17 at 2:00pm EST**
- **Automatic Informix Range Interval Partitioning and Rolling Windows to Organize your data by Lester Knutsen**
  - **June 21 at 2:00pm EST**

Please register for each webcast here at:
http://advancedatatools.com/Informix/NextWebcast.html

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Informix Training 2018

– **Informix for Database Administrators**

  • May 21-24, 2018

– **Informix for Database Administrators**

  • Sept 17-20, 2018

• All courses can be taken online on the web from your desk or at our training center in Virginia.

• We guarantee to *NEVER* cancel a course and will teach a course as long as one student is registered!

• Please register early as the last two courses have filled up and we have not been able to accommodate everyone.

http://advancedatatools.com/Training/InformixTraining.html

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New Training Servers

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Each Student in class will have a server running Informix with:
- 8 Cores
- 16GB RAM
- 1 SSD Disk
- 1-4 more disks

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Informix Support and Training from the Informix Champions!

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Thank You

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