

IBM Business Process Manager Operations and House Keeping

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Introduction

- *In this session, you will discover how to maintain an efficient IBM BPM environment, with a specific focus upon some of the key considerations required to deliver an effective and available service to the business, including end-users, developers and operations teams.*
- *This session assumes some prior knowledge of the IBM BPM solution, with specific focus upon the BPMN aspects of the solution (Process Center, Process Server, Process Applications, Toolkits, Snapshots etc.)*



With thanks to

- Dave Spriet
- Phil Coulthard
- Andy Garratt
- And many others



Context

- Focused on BPMN engine
 - Often used for long-running processes
 - Typically more stateful
 - Includes process application snapshots
 - Includes in-flight process instances

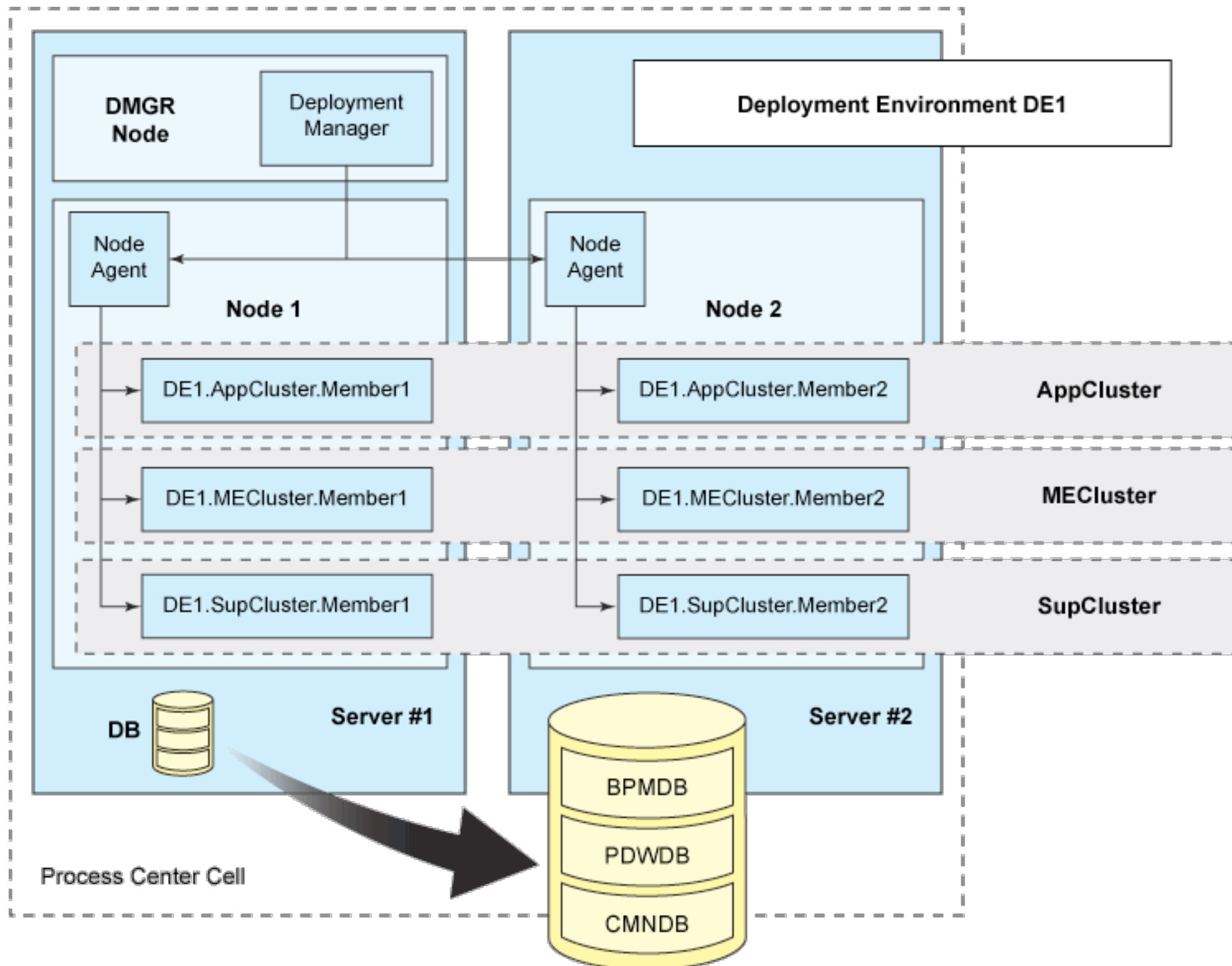


Terminology

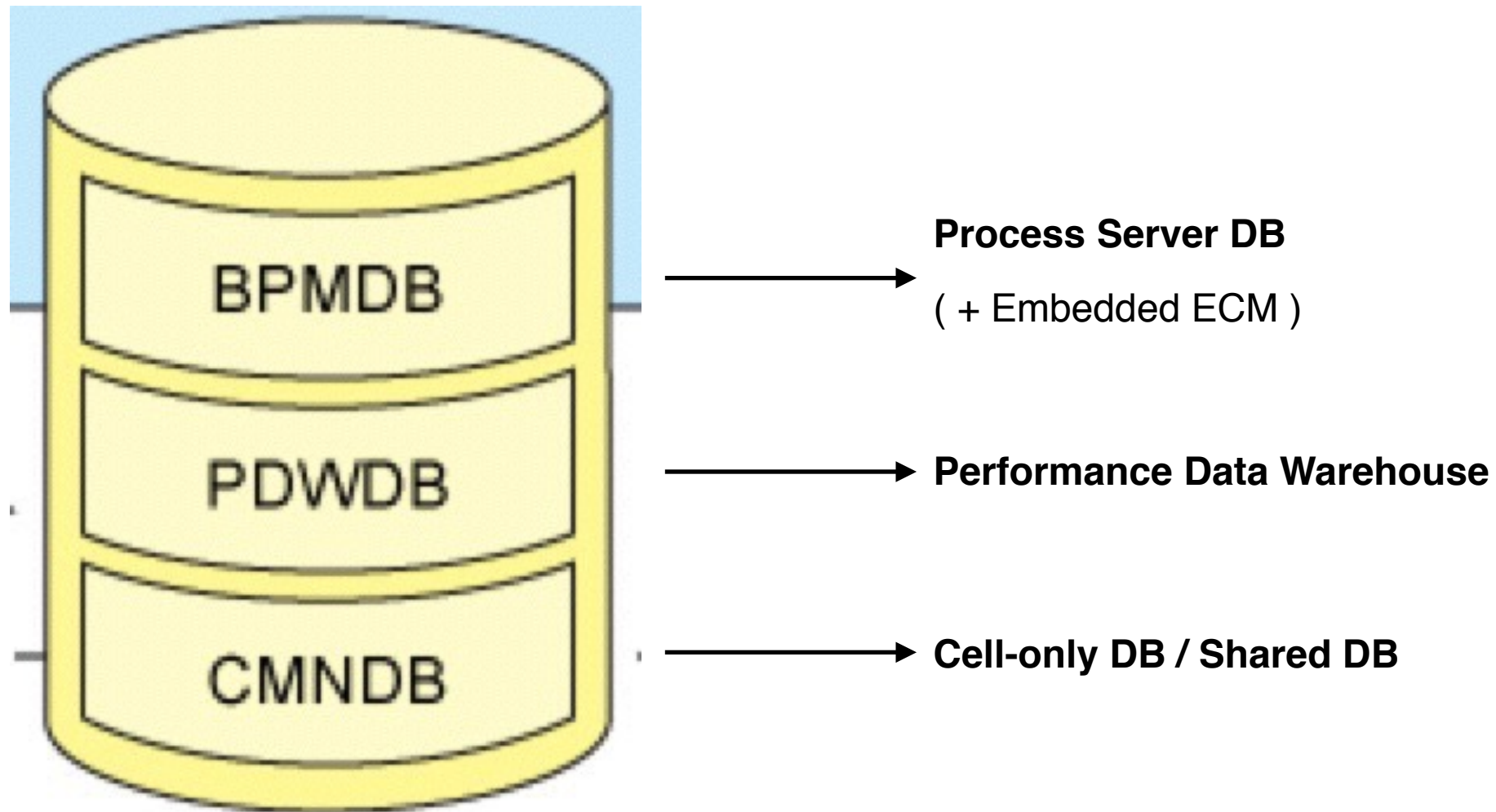
- Process Applications (PA)
 - Contains: -
 - Business Process Definitions (BPD)
 - Services
 - Integrations
 - Business Objects
 - In fact any BPM artefacts
 - not just processes
- Toolkits
 - Think shared libraries
- Snapshots
 - Deployable artefacts
 - TeamWorks Export (TWX)
- Process Instances
 - Instantiated business processes
- Performance Data Warehouse
 - Provides metrics on BPM usage



Typical BPM Topology



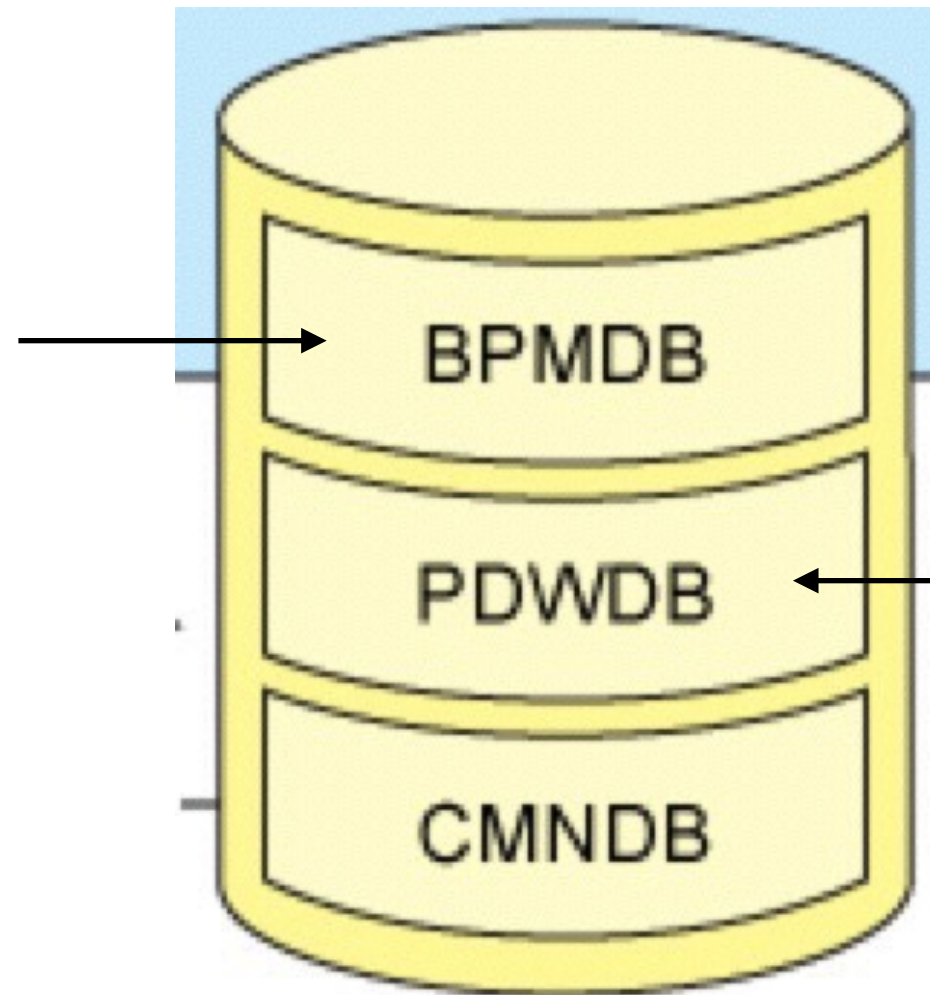
But it's all about the databases ...





Specifically ...

- Snapshots
- Instances



- Events
- Tracking Data



Typically three, can be five

- Conventional pattern is for three databases
 - CMNDB
 - BPMDB
 - PDWDB
- Option for two more
 - MEDB - Messaging Engine schemas
 - BPCDB - Business Process Choreography (BPM Advanced only)
- Let requirements dictate the solution



Remember - 1/2

- Product databases
 - Not for business data
 - consider temporary SoR
 - avoid direct access of BPM DB :-(
 - schemas are subject to change :-)
 - look for, and use, APIs, rather than direct access
 - e.g. Get Next Task



Remember - 2/2

- BPM DB and PDW DB are very different
 - One is highly transactional
 - One is a data warehouse
- **Strongly** consider database placement, disk I/O
- **Strongly** consider monitoring, tuning, indexing, inlining BLOBs, monitoring ...
- Love your DBA :-)

BPMMDB - Process Center -



1/3

- Repository of BPM artefacts - PA, BPD, Toolkits
 - "Single version of the truth"
 - Analogous to Source Code Management e.g. Git, RTC, ClearCase etc.
- PAs and Toolkits can be archived
 - Removes from view, does NOT delete
- PAs and Toolkits can be deleted
 - Actually removed from DB

BPMMDB - Process Center -



2/3

- There's always a minimum of one snapshot
 - Known as **Current** or **Tip**
 - The editable version of a PA or a Toolkit
- Developers create snapshots
 - in Process Designer or Process Center UI
 - one per major code change i.e. code drop, release, milestone

BPMMDB - Process Center -



3/3

- **However** unnamed snapshots are created each time developer hits the "Save" button
 - Provides "Time Machine"-like capability
 - allows for roll-back and governance
- This can have unintended consequences on storage and performance
- There is good news coming in a few slides ...



BPMMDB - Process Server

- BPM run time
 - Hosts Process Applications
 - Deployable unit == snapshots
 - Snapshots encapsulate PAs and dependent Toolkits
 - Multiple snapshots, multiple instances
- Historically no way to remove snapshots :-(
- Process instances can also accrete over time
- There is good news coming in a few slides ...



Cleaning up Snapshots - 1/2

- **BPMSnapshotCleanup** command for Process Center
 - Can remove named and unnamed snapshots
 - Added to 8.5.x
 - Backported to 7.5.1.2 and 8.0.1.2
 - Scriptable, so can be automated
 - 8.5.0.1 also added ability to automagically cleanup unnamed snapshots (see References slide)



Cleaning up Snapshots - 2/2

- **BPMDeleteSnapshot** command for Process Server
 - Only available since 8.0.1.0
 - Running instances need to have completed
 - Must not be the default snapshot
 - May require **BPMDeactivateSnapshot**, **BPMStop** and **BPMUndeploy** commands before use
 - Again, can be scripted
 - **Note** this also removes instance data **Note**



*** IMPORTANT ***

- Need to review this IBM Flash: -
Issues with BPMDeleteSnapshot and
BPMSnapshotCleanup commands in IBM Business
Process Manager (BPM)
- Maintained on a regular basis
- Covers versions 7.5.1.2 through 8.5.5



Cleaning up Instances

- Need to consider both task AND process instances
- Instance data is persisted when an instance completes
- BPM 8.0.1 introduced **BPMProcessInstancesCleanup** command
 - Can be parameterised for instance date, type
 - Can be scripted
 - Enhanced in 8.0.1.2 and 8.5.x
- Prior to version 8.0, need to use DB Stored Procedure **LSW_BPD_INSTANCE_DELETE**
 - Enhanced in BPM 7.5.1.X
- Also consider "Delete Task on Completion" and "Clean State" in Process Designer



Durable Subscriptions

- If used, Durable Subscriptions will also accumulate
 - Even if the messages have been consumed
 - Durable means durable :-)
- BPM 7.5.1.2 introduced **BPMDeleteDurableMessages** command
- Consider purging where needed



Purging PDW - 1/2

- PDW is immensely useful
- Should form part of any BPM implementation
- As any data warehouse, needs to be managed
- Firstly, look at auto-tracking
 - Automatically enabled prior to 8.5
 - A useful, but perhaps "costly" default



Purging PDW - 2/2

- Prior to BPM 7.5.0, only recourse was to rebuild PDW databases
 - 7.5.0 offered option to prune LSW_PERF_DATA_TRANSFER table
- 7.5.1.2 onwards provides pruning option within **perfDWTool** command



Other Considerations - 1/3

- BPM Advanced offers capabilities for process and task instance pruning
 - Consider automatic deletion of instances
 - Use BPC Explorer
 - Use supplied cleanup scripts
 - Use Cleanup Service in Human Task Manager
- Review BPM code and size/complexity of snapshot
 - Consider cleaning up and re-merging tracks and branches
 - Look at Toolkits and circular dependencies
 - Check for use of "Copy Of" and "Backup" in BPD code



Other Considerations - 2/3

- Monitor Failed Event Manager in WAS Admin
 - Can be scripted
- Consider Business Level Applications (BLA) in Process Center
- See [Purging data in IBM Business Process Manager](#) for much more detail
- Also evaluate **TWDocument** JavaScript method **deleteAllVersions()** to delete from internal document store
- Monitor, and regularly purge, OS system temp directory



Other Considerations - 3/3

- Evaluate good practice for snapshot management
 - How many are required ?
 - e.g. New, Mainstream, Deprecated
 - How many is too many ?



Reporting

- BPM DB is heart of the BPM runtime
 - Internal product database
 - Schema is subject to change
 - Avoid direct SQL queries
- PDW DB is available for reporting
 - Nominally off-line from core BPM application
 - However, plan to use out-of-the-box reporting in Process Portal, Process Admin etc.
- Consider whether PDW is sufficient for end-to-end BI
 - Consider BAM



In Conclusion

- BPM is 100% dependent upon its databases
 - BPMDB - highly transactional
 - PDWDB - it's a data warehouse
- A well built, well tuned, well maintained DB infrastructure is 100% crucial for a performant BPM environment
- Design BPM from the database upwards
- Plan for house-keeping from Day 1
- Love the DBA :-)



Questions ?





Want to provide feedback?

- Then please visit here: -

ibm.biz/wug15feedback



References

- [Purging data in IBM Business Process Manager](#)
- [Issues with BPMDeleteSnapshot and BPMSnapshotCleanup commands in IBM Business Process Manager \(BPM\)](#)
- [Business Process Management Deployment Guide Using IBM Business Process Manager V8.5](#)
- [Deleting unnamed snapshots from a Process Center server, automated method](#)
- [How to clean up the Performance Data Warehouse database and the LSW_PERF_DATA_TRANSFER table for IBM Business Process Manager \(BPM\)](#)



Useful Links

- IBM Business Process Manager Developer Center

<https://developer.ibm.com/bpm>

- IBM Operational Decision Manager Developer Center

<https://developer.ibm.com/odm>