

# Is that Data Streaming yet ?

# (If you need to Replicate your data ....)

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The Simple Oracle DBA





Keywords: replication, notably for Reporting and Archiving. Experiences from Manufacturing. Preference for simple, Verifiable, and Understandable solutions. Agenda (<= 60 minutes)



Calendrian ●●● M w □ Thu, 22.May.2003 □ w M

Test Journal

19:25- TEST 123

TEST456

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SOLUTIONS THAT MATTER

10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00

20:00 20:27 21:00 23:52

We keep + replicate this data...

Classic Case? (I'm sure you have them too...)

Alternatives, pros + cons

What would You do?

(Think & Simplify)

(...)

Discussion

(Do Challenge!)

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Classic case of need-to-replicate, (or is it)? and a bit of ILM I want to pose a few stmnts, and then discuss with Peers. Possibly Improve life at the **coalface**?

# **Manufacturing Execution System - MES**

#### Before

-Plan Production (Recipes & Workflow)

During

- Execution: "Do This Now" (please)
- -Track products (BOM, lots of prints, barcodes)
- -Track Quality (most Important!)
- Evaluate (live SPC, SixSigma Any data they can....)

#### After

- -Investigate and Report on tons of details.
- -Keep the data forever... (someone may need it)



#### **Obsessions: Uptime, Quality!** (and... Location)





Current customer is a maker of goods. The process involves "execution", (not jokes about MES) Need to verify: BOM, tracking, Quality/testing, and record-keeping. (location: close! - 1000s ppl working)



#### What does it look like..





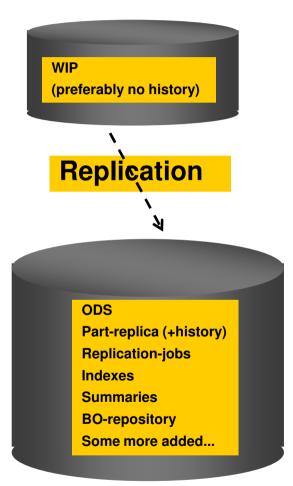
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Couldn't resist... after this changing room, not allowed to take pictures anymore.. For travel pictures from Asia: later...

### WIP and ODS – the Classic.





### Work In Progress

- -Recent data,
- -Needed for running "the plant".
- Operational Data Store
  - -More like an "archive"
  - -No deletions.
  - -Used to report anything else...
  - -But has to be "Timely"

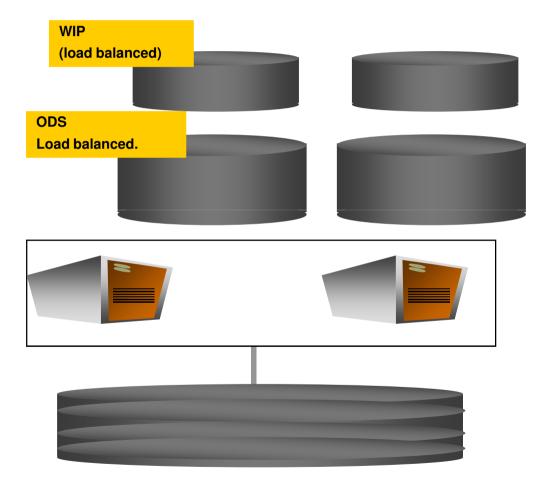
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Classic case of OLTP and Reporting. (I'm leaving out the web of interfaces!) But some tiwsts.. And did I mention: the customer wants this "On Site" .. (airco anecdote..)

### **The Database Infrastructure: RAC**





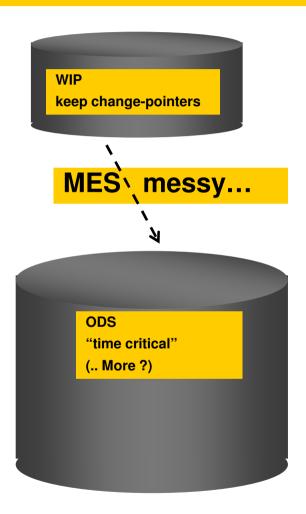
- Two node RAC
- RHEL-64, 16cpu/24G
- EVA 5TB, OCFS-2
- 300-500 session.
- Databases <= 1T / yr</li>
- Largest Table: <50G / yr</li>
- Sufficient!
- Sar: 10% usage

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Vanilla infrastrcture. RAC (designed in 2008 ? built in 2009) But some tiwsts.. (complex hosting situation : we are not root, and not DBA)

# (MES) What can possibly be wrong?



- Vendor:
  - Replication Code in application
  - De-supports this version...
  - -(VERY) Afraid of large WIP.
  - -Modifies tables 1/month++.
- Userbase:
  - -ODS now on shop-floor!
  - -Outages of replication
  - -Spotted holes.
- No trust in ODS.
- No Purge in WIP.

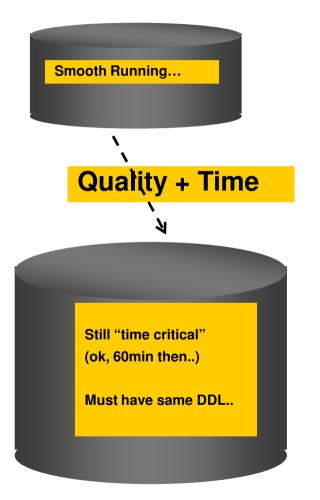
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Base problem: replication originally in app. That became un-maintainable: ODS if now a real MESS Nb: the app is widely used by Industry for electroncs/chips: the busin ess-case of this app/vendor is Strong.

#### **Step back: Requirements, Constraints**





- Timely Replication to ODS (minutes)
- Quality Replication (no holes!)
- Get load off WIP (what load??)
  - -No heavy Qries (or: no impact!)
  - -Allow purge WIP
- But.. Keep all data (in ODS)
- Absorb DDL (eeehhh....?)
  - -1100 tables, 1099 of which..

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What do we need this for again...and how much of the requirments is "FUD" or "insurance" Ànd then the killer: allow easy maintenance... e.g.





# Thank You !



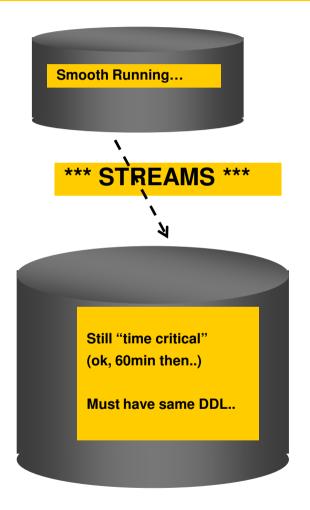


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Find out from the audience. What kind of replication in the room...

# Vendor: OK, here are some "streams" scripts...

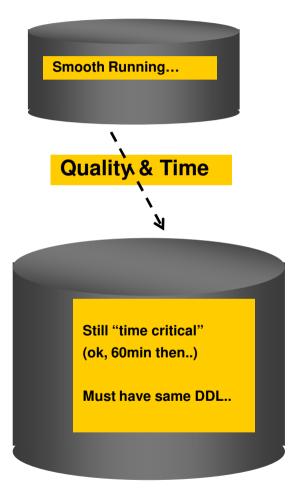


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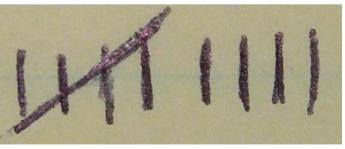
- Vendor was "sold" on Streams
  - -Oracle "partner" (11.1...)
  - -Sort-of grasped the concept
  - -Had Streams solution "developed"
  - -And Tested (on laptops)
- "Here are some scripts..."
- Never Worked @ Customer site....
  - -Windows ...
  - -Not DBA-built
  - -Not DBA deployed.

#### **Alternatives.**





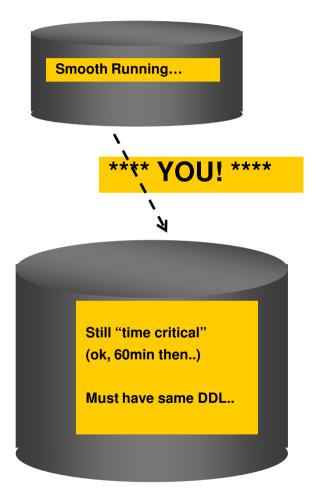
- DIY
  - -Make PL/SQL Code..
  - Mviews / Triggers
- No ODS...
  - -All Reports on WIP..
  - -Never purge
- DB-replication...





### **DIY. (Do It Yourself)**





- DIY Replication
  - **-1999**
  - -PL/SQL or..
  - Mviews ( still got DDL)
  - -Trigger ( + code) Noooo !!
- Risk of batch-hiccups
  - Errors
  - Peak-loads (22:00)

#### Maintenance!



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Programmers like it. If done well: it is maitainable, and fixable. – the "total control" is attractive, but... Not for regularly changing DLL

# No ODS, No Replica. - SIMPLE !





- Easy no mechanism needed.
- Quality No holes, no discussion.
- Hold this idea...
- Scary:
  - -WIP is my "archive"
  - -Too big WIP (?)
  - Too many indexes (?)
  - "Vendor don't like"
  - Bad OLTP code... will run badly...

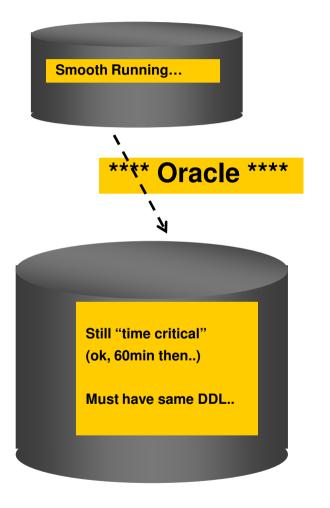
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Can we keep 10Tb... in WIP. We can! - one user-site actually does this (vendor don't like) - too many time bombs...

#### GodenGate or ... Streams.



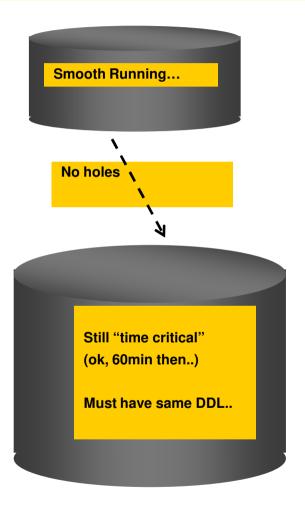


- Replica at Redo-level
- Always most efficient
- Single Point of Truth = Redo.
- Catches DDL zero Maintenance.
- Streams:
  - -Tweaking (lots, patches, params)...
- GG
  - -Some tweaking still.
  - -Cost (we can work a year for...)



#### **Poll: Your Choice....?**





#### • DIY

- WIP forever...
- Streams
- GG
- Other ...



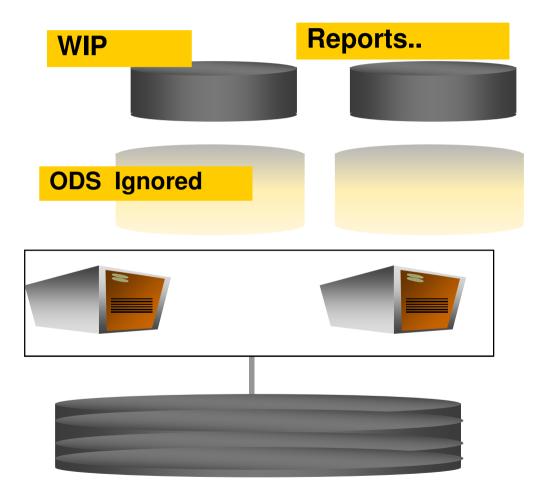
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Spent quite a lot of time here.. IT-politics, App-politics, Business... Old system is "broken", and by doing nothing, we defaulted to ... WIP. And it worked.

#### Wait long enough....





- ODS is "broken"
  - -Reports go to..
- Wip!
- WIP Instance 2
  - -E.g. use RAC
- Partly Coincidence..
- But working fine
- (and we're not alone)

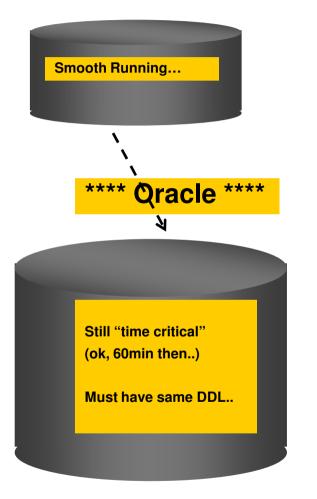
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Do-nothing means: ODS will fade Users will switch all queries to WIP, WIP gets more indexes, And lo-n-behold, this works fine (and guess what : at least one other customer is in this situation, on 9.2.0.8)

### Take back control.. Make a choice.





- After much deliberation...
- Back to Streams
  - -We know it can work (have done..)
  - -Vendor "happy"
  - -Simplify streams to CCA
- Now go prove to Business...
- Test
- And tweak
- And patch
- And test ...

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Inside same customer, we have multi-directional Streams-replication running on 10.2. But 11.1.0.7 ( "eleven one oh seven"), and with Schema-level replica, including DDL - not there yet

#### Some Streams "tips"



- Get a DBA, and get Full Control
  - Outsourced "dba" needs tickets for Everything.
- Simplify to CCA : Combined Capture + Apply.
  - No need for "propagate" one less component.
  - One point to monitor (the target)
  - Comes close to DataGuard (logical standby) a known trick.
- Practice Instantiate (build)
  - -You will need this often.
- Ignore errors (unfortunately)
  DISABLE\_ON\_ERROR => 'N'







- Replica Not in mid-tier, and not by "application vendor"
  - Data-replication is a DATABASE problem.
  - -They don't test.
  - They don't know your situation.
  - They don't think Conceptually, they just code...
- Look at simple Options first:
  - Mviews ? (They do come with some maintenance)
  - -DIY code (if limited set of data, and no DDL: most re
- Get a DBA, and get Full Control (again)
  - -Cannot wait for "ticket"





# **Replication - Conclusions 2/2**



- If you have to repliate more.. : use GG or Streams
  - -best possible concept,
  - -Single-point-of-truth (redo).
  - -Robust (up to a point / patch)
- IMHO: Streams can do the job
  - IF you can simplify it (CCA)
  - IF you have time to tweak + patch
- But.. No Revenue for Oracle (hence GG almost as complex)
- (and GG looks better on your resume)





### Don't Take my word for it...



Tahiti.oracle.com: start with concept-guides Technet (but be critical) Oracle-L : real world stuff

www.Bloggingaboutoracle.org (company ramblings) SimpleOracleDba.Blogspot.com (my ramblings)

Do some testing yourself ...

Goethe (simplicity, limitations...)



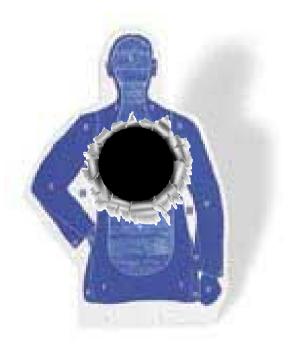








- Questions ?
- Reactions ?
- Experiences from the audience ?



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Question and Answer time. Discussion welcome Teach me something: Tell me where you do NOT AGREE. (what about that Razor?)





• Placeholder slide to indicate last slide.....

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You are Here...

## **My Opinion: Good Outsourcing**



- Correct Incentives
- Good Coordination
- Focused Teams.
- Not many Outsourcers have this...
   Do customers realize this ? Ask for it ?
- (apologies for the bog-standard bullet-list-ppt)









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Clusters often seem promising, but the "size" estimate requires predictable data. Willing to learn on this one! Someone do a ppt on this next Conference ? (demo\_sthc.sql if time)



#### Very light ppt..



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But... As soon as the where-clause gets out of the "comfort zone", The STHC reverts to conventional behaviour, or worse.





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Storage-wise, and STHC resembles a HEAP, but it is not supposed to "grow" And why would I need the PK...



•ODA brings control back to DBA A lot of Arcane Details...



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CD17Inconclusive. Modern hardware has moved the bottleneck from CPU to Disk.

#### Anecdotes... (later)



- O/S = layered expertise (NMP...)
- O/S = Many more "architects"
- O/S = Tickets (even between layers)
- O/S = Work done Everywhere (nowhere)
- O/S = Herd experts into groups then Squeeze!
- O/S = Resistance to Change
- O/S = Avoidance of relevant groups (DIY, testing))
- O/S = milking "Exceptions"
- O/s = Cross-sellers Dream...





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Not My Problem.. U have tikket? yes?... This has to go to Btrslv ... We'll just get some VMs on our macbooks... Ah, yesssirr, eeeh need PO... and you also need this extra storage cabinet...