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ORACLE 10g DATA PUMP

Inderpal S. Johal
Manager, DBA Group
indy.johal@prnewswire.com

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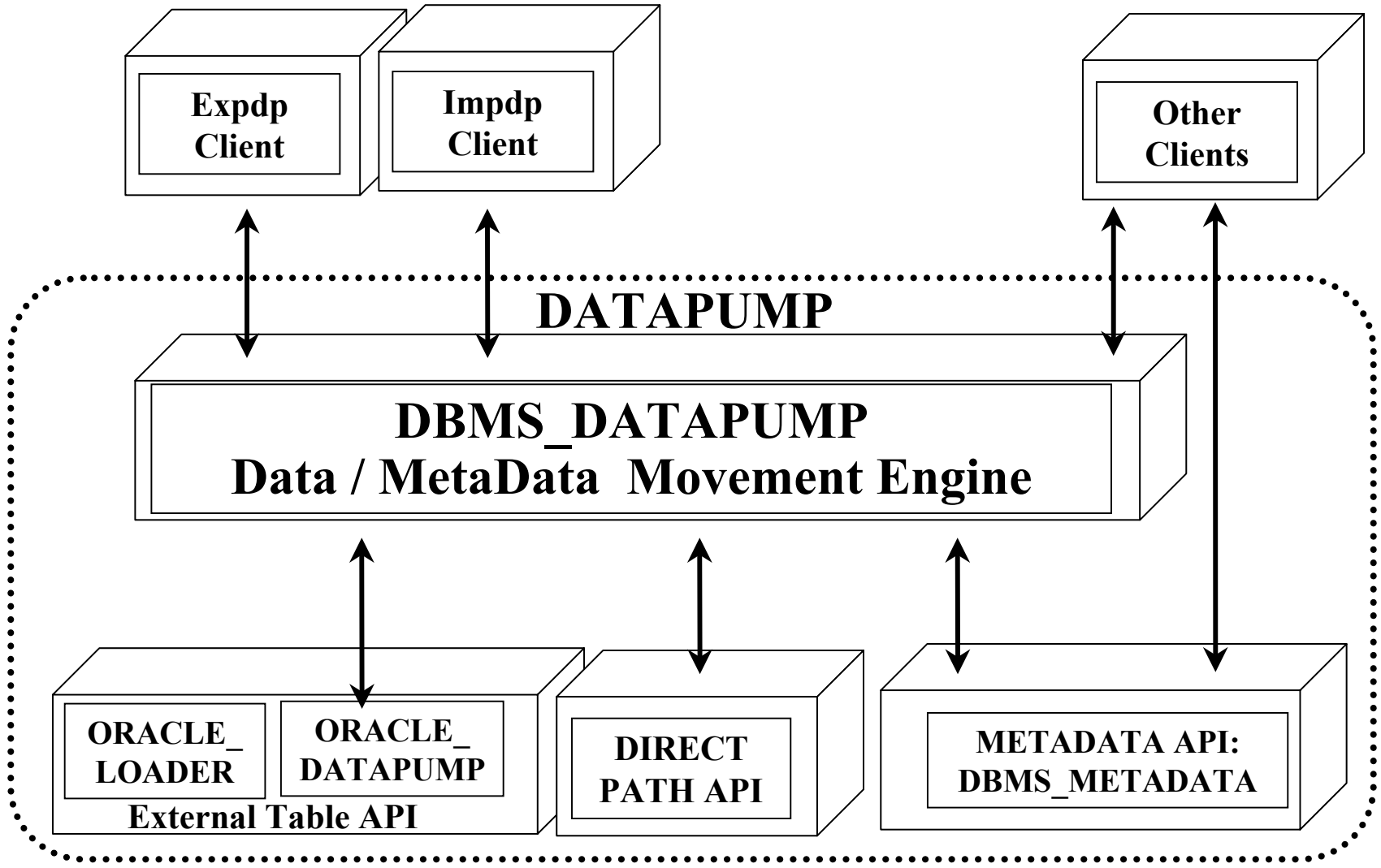
AGENDA

- Introduction to Data Pump
- Data Pump Architecture & Implementation
- Benefits of Data Pump Utility
- Data Pump vs Exp/Imp
- DBMS_DATAPUMP package
- Questions & Answers

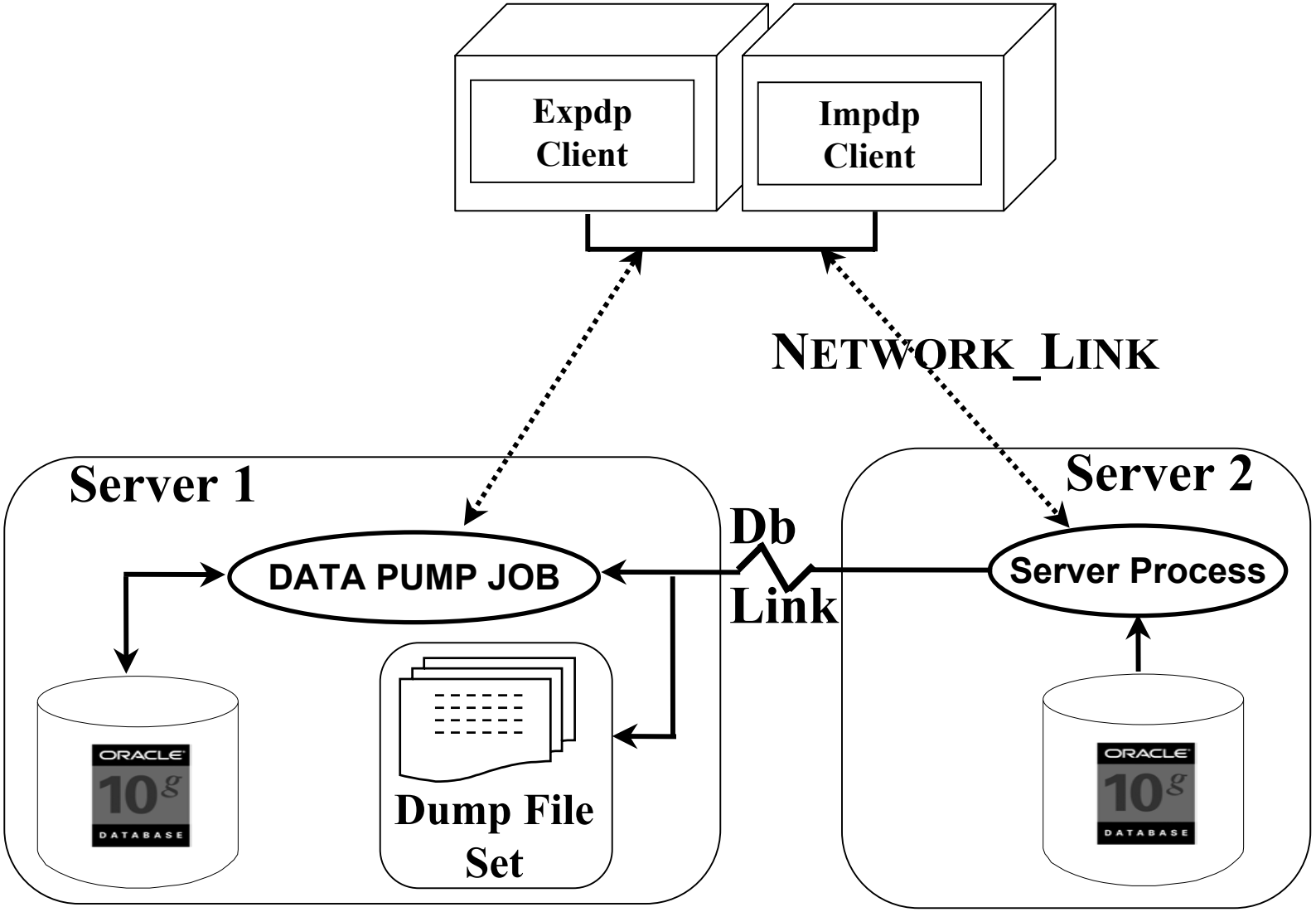
DATA PUMP - Introduction

- High speed server based utility
- Support parallel, bulk data & metadata movement
- Create platform independent dump file in binary proprietary format
- Available with all Oracle 10g version for all Oracle supported platform
- Can be monitored remotely.
- Replacement for original Export/Import with New client expdp and impdp
- Allow Data movement thru database links
- Use DBMS_DATAPUMP & DBMS_METADATA

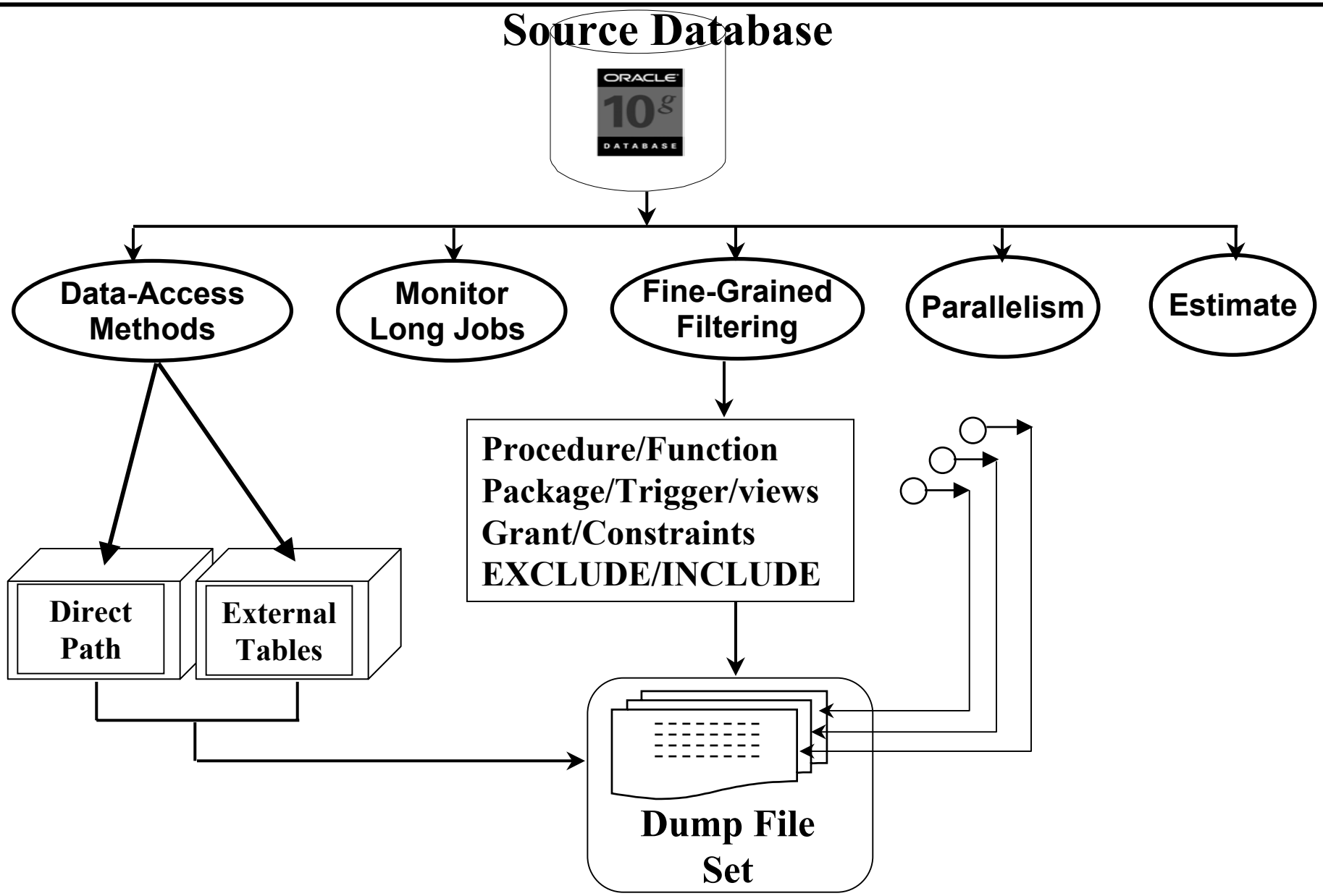
DATA PUMP Architecture



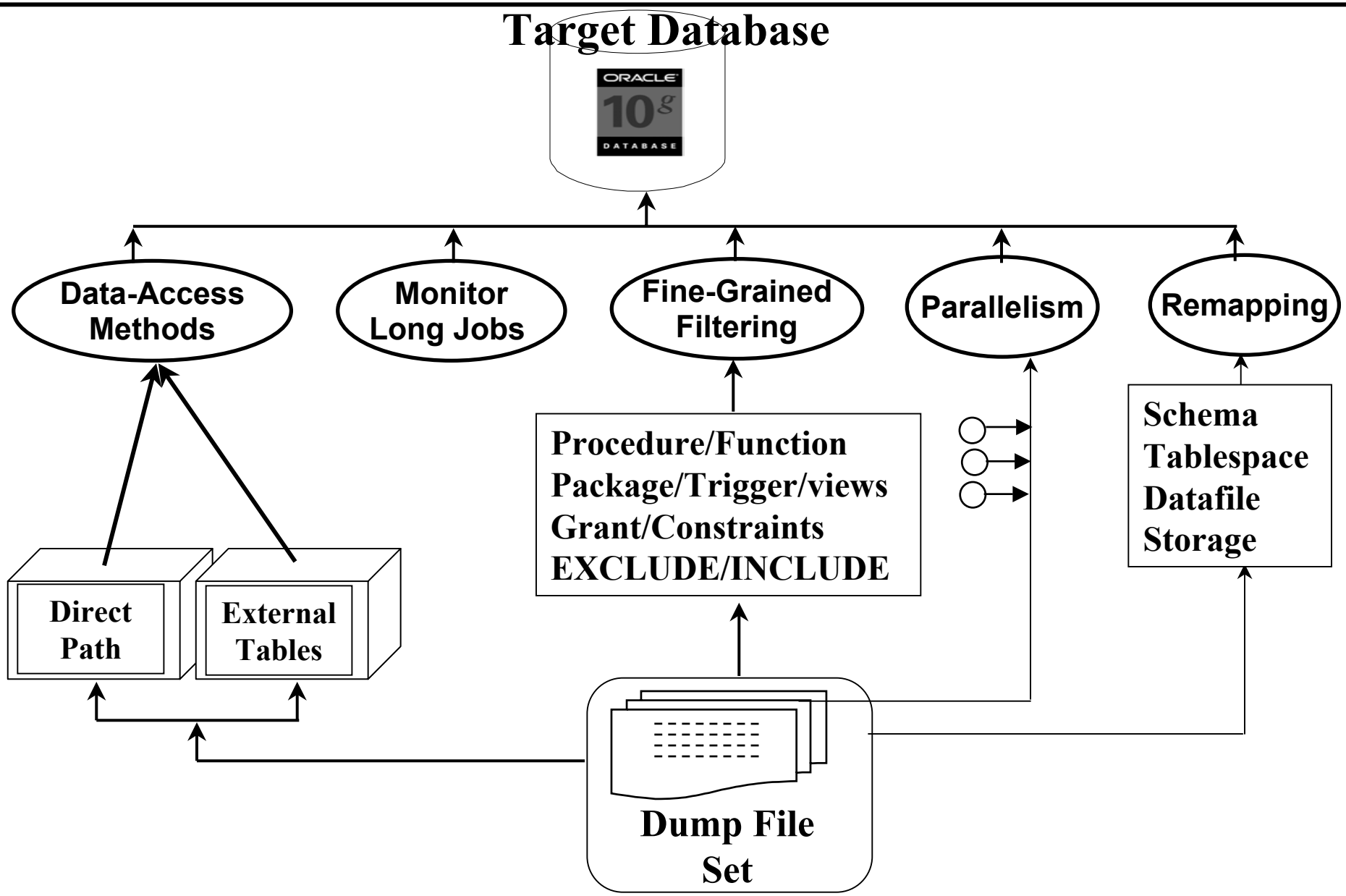
DATA PUMP – New Client



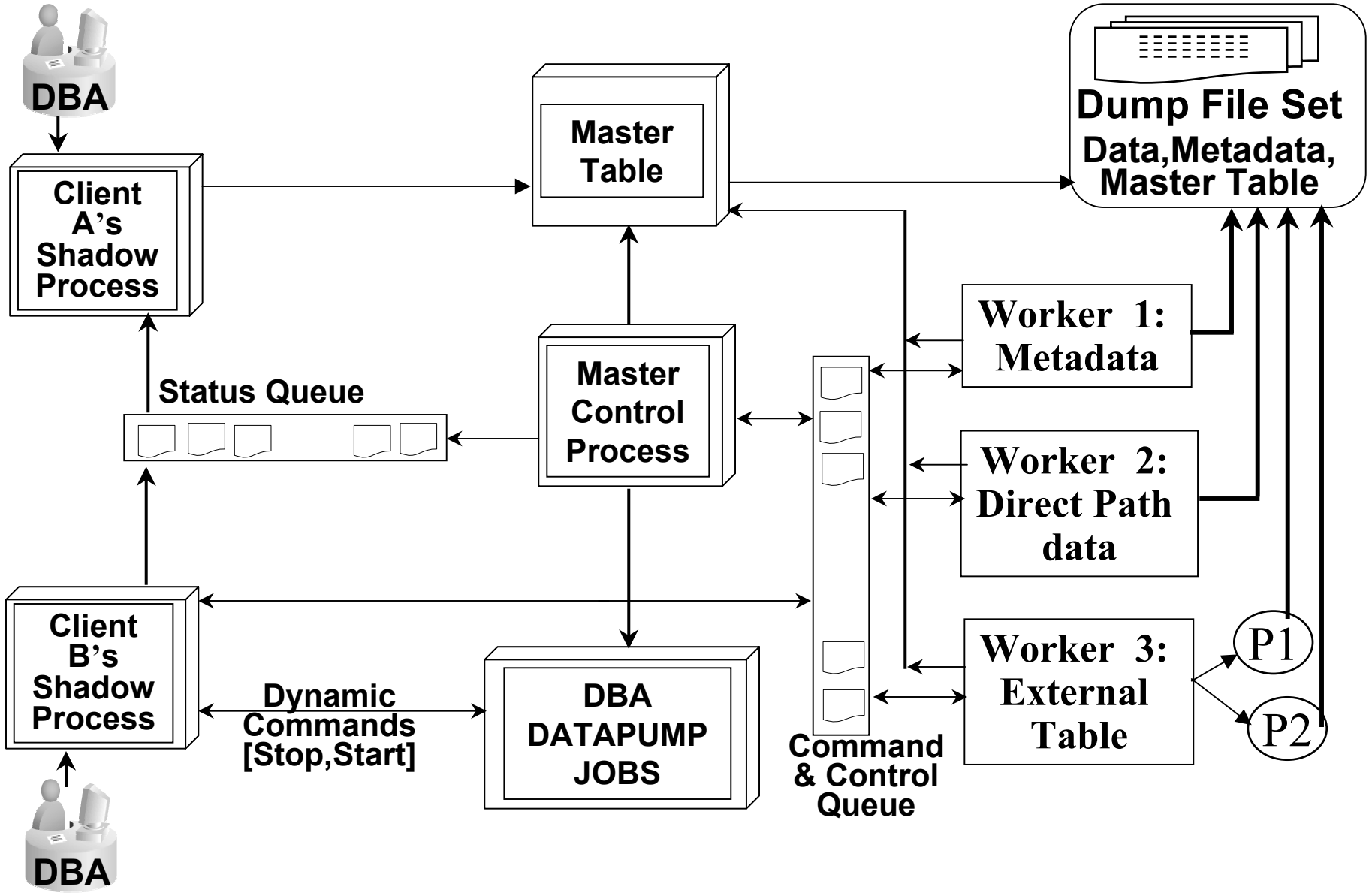
DATA PUMP – Data Unloading Features



DATA PUMP – Data Loading Features



DATA PUMP IMPLEMENTATION



New Background Process

- **Ora_dmNN_<InstanceName> for MCP**

  e.g ora_dm01_indy

- **Ora_dwNN_<InstanceName> for Worker Process**

  e.g. ora_dw01_indy

When DIRECT Path is not used by DATA PUMP

- Loading tables with Global index on partitioned tables.
- Loading tables with domain index exists for a LOB column
- Loading Clustered tables
- Loading tables with active Triggers
- Loading and Unloading tables with encrypted columns
- Loading tables with fine-grained access control enabled for inserts
- Loading table containing BFILE or VARRAY columns

DATA PUMP different File Types

DUMPFILE -- Used for creating Dump Files

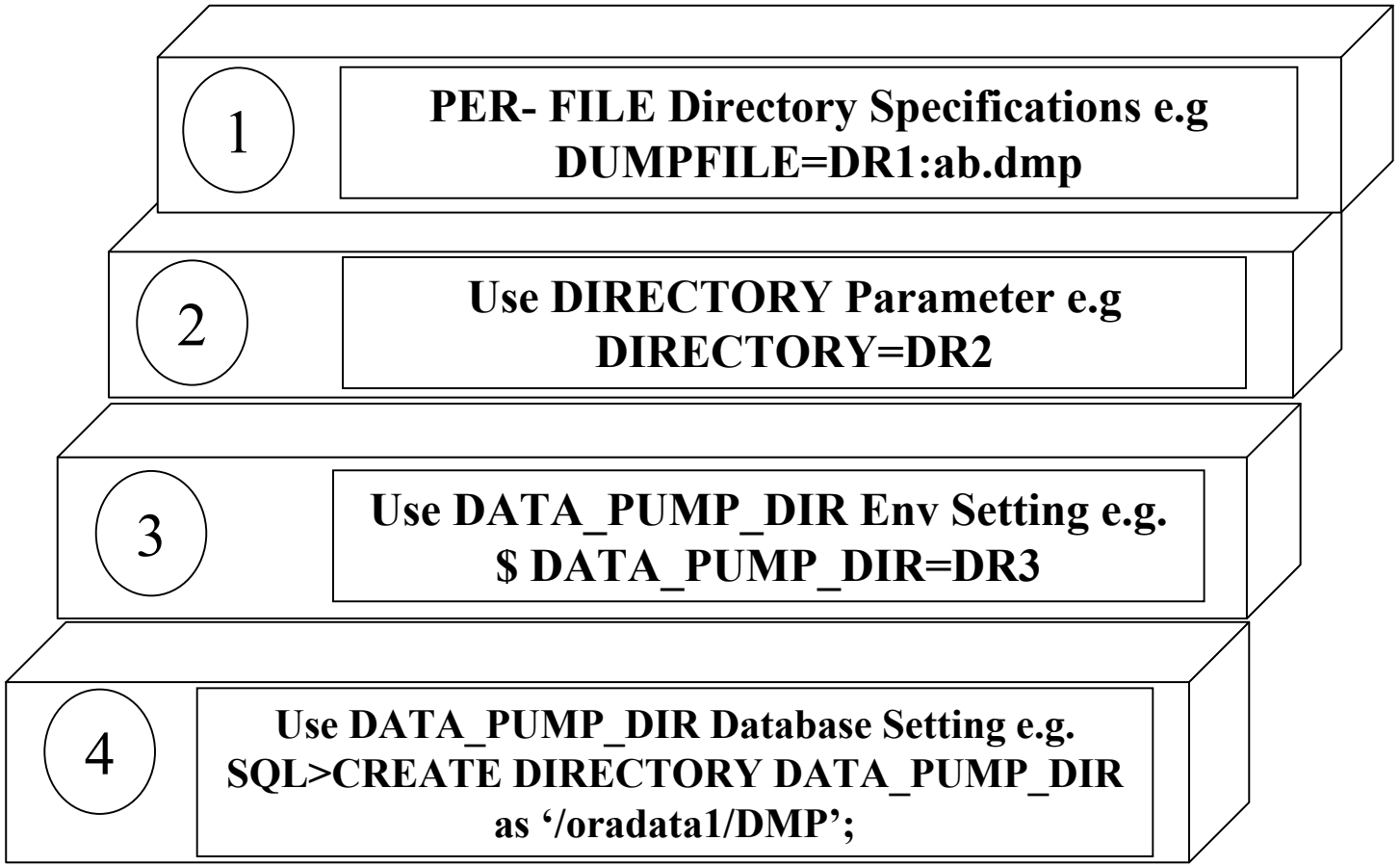
LOGFILE -- Used for Creating Log file

SQLFILE -- Used for DDL Script File

```
SQL>CREATE DIRECTORY dr1 AS '/oradata1/abc';
SQL>GRANT READ,WRITE ON DIRECTORY dr1 TO hr;
```

```
$ expdp hr/hr DIRECTORY=DR1 dumpfile=indy.dmp
$ expdp hr/hr DUMPFILE=DR1:indy.dmp
```

DATA PUMP File Usage and Preferences



DATA PUMP Export Interfaces

Command Line Interface

```
$ expdp Id/Pass DIRECTORY=abc DUMPFLE=indy.dmp PARALLEL=4
```

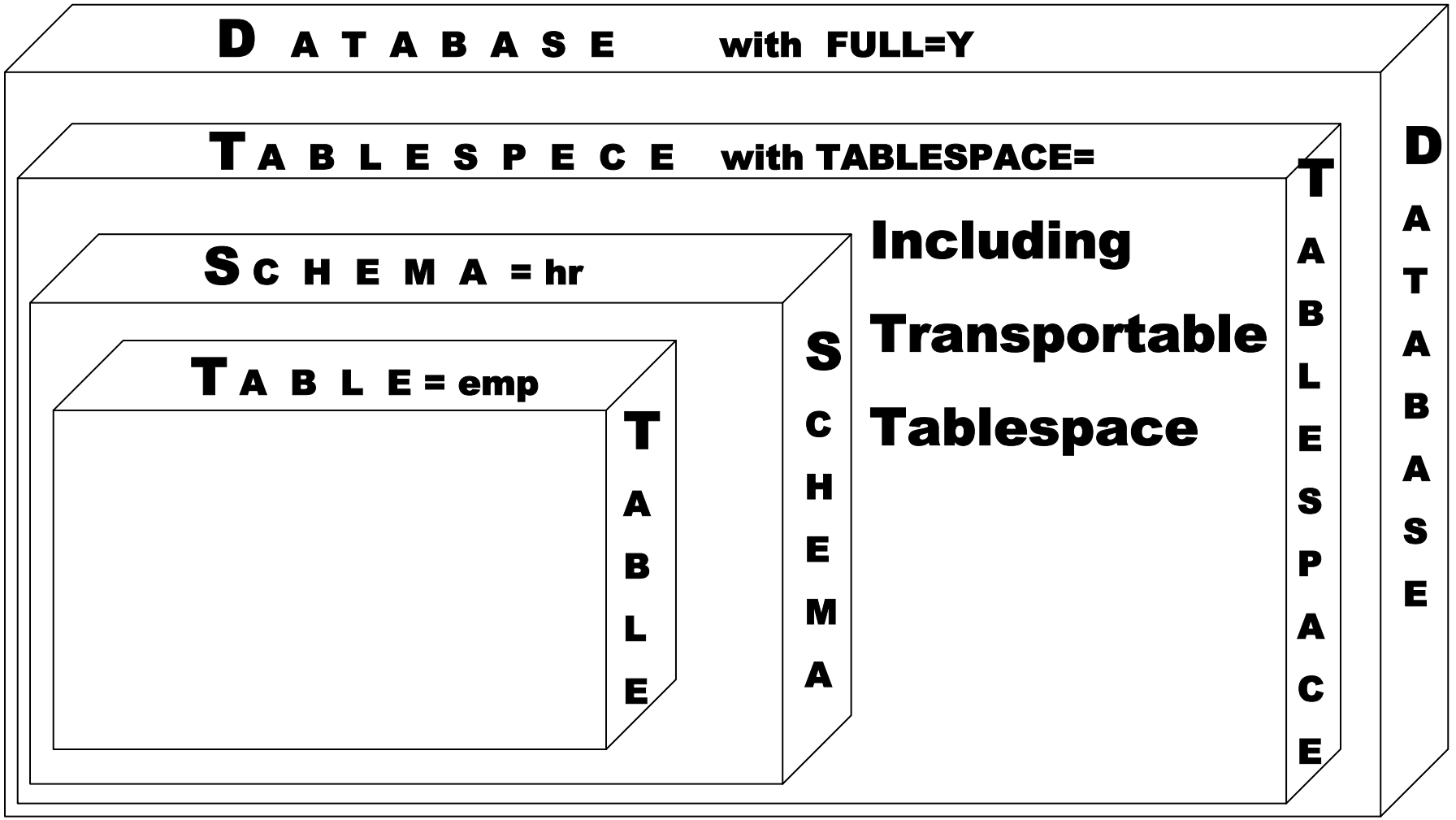
Parameter File Interface

```
$ expdp PARFILE=indy.par
```

Interactive Command Interface

```
$ expdp Id/Pass ATTACH=[illegible]_03

...
[illegible]: [illegible] 10.1.0.2.0 - 64[illegible] [illegible] [illegible], 17 [illegible], 2004
15:33
[illegible]: [illegible] [illegible] 10[illegible] [illegible] [illegible] [illegible] 10.1.0.2.0 - 64[illegible]
[illegible]
[illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible]: [illegible]_03
  [illegible]: [illegible]
  [illegible]: [illegible]

  ...
  [illegible] [illegible]: [illegible], 17 [illegible], 2004 15:31
  [illegible]: [illegible]

  .....
[illegible]>
```

DATA PUMP – Data Loading/Unloading Modes



DATA PUMP Vs Original Export

Export [exp]	Data Pump Export [expdp]
FILE	DUMPFILE
LOG	LOGFILE
GRANTS	EXCLUDE & INCLUDE
INDEXES	EXCLUDE & INCLUDE
CONSTRAINTS	EXCLUDE & INCLUDE
FEEDBACK	STATUS

Export [exp]	Data Pump Export [expdp]
BUFFERS	Not Applicable
DIRECT	Not Applicable

DATA PUMP Vs Original Export

Data Pump Export – New Parameter

- ATTACH
- DIRECTORY
- PARALLEL
- CONTENT
- ESTIMATE
- ESTIMATE_ONLY
- JOB_NAME
- KEEP_MASTER
- VERSION
- NETWORK_LINK
- NOLOGFILE
- INCLUDE & EXCLUDE

DATA PUMP Vs Original Import

Import [imp]	Data Pump Import [impdp]
FROMUSER/TOUSER	REMPAP_SCHEMA
ROWS=N	CONTENT=METADATA_ONLY
ROWS=Y	CONTENT=ALL
INDEXFILE	SQLFILE
IGNORE	TABLE_EXISTS_ACTION
DESTROY	REUSE_DATAFILES

Import [imp]	Data Pump Import [impdp]
FILESIZE	Not Applicable
COMMIT	Not Applicable

DATA PUMP – New Interactive Mode

```
$ expdp hr/hr ATTACH
OR
$ expdp hr/hr ATTACH=jobname
```

Data Pump Export – New Interactive Mode

- ADD_FILE
- CONTINUE_CLIENT
- EXIT_CLIENT
- KILL_JOB
- PARALLEL
- START_JOB
- STATUS
- STOP_JOB

DATA PUMP – Example # 1

```
$ expdp hr/hr FULL=Y PARALLEL=4
        DUMPFILE=DR1:fullhr1%U.dmp,
                 DR2:fullhr2%U.dmp,
                 DR3:fullhr3%U.dmp,
                 DR4:fullhr4%U.dmp
```

This will Create

- **Files as fullhr101.dmp, fullhr201.dmp and so**
- **Job name as SYS_EXPORT_FULL_01**
- **Master Table Name as SYS_EXPORT_FULL_01**
- **Use DR1,DR2,DR3,DR4 Directory defined in Database**

DATA PUMP – Example # 2

```
$ expdp hr/hr PARFILE= indy.par
```

```
DIRECTORY=DR1
DUMPFILE=hr1%U.dmp
SCHEMAS=HR
INCLUDE=PROCEDURE
INCLUDE=PACKAGE
INCLUDE=VIEW:"like 'VW_H%' "
```

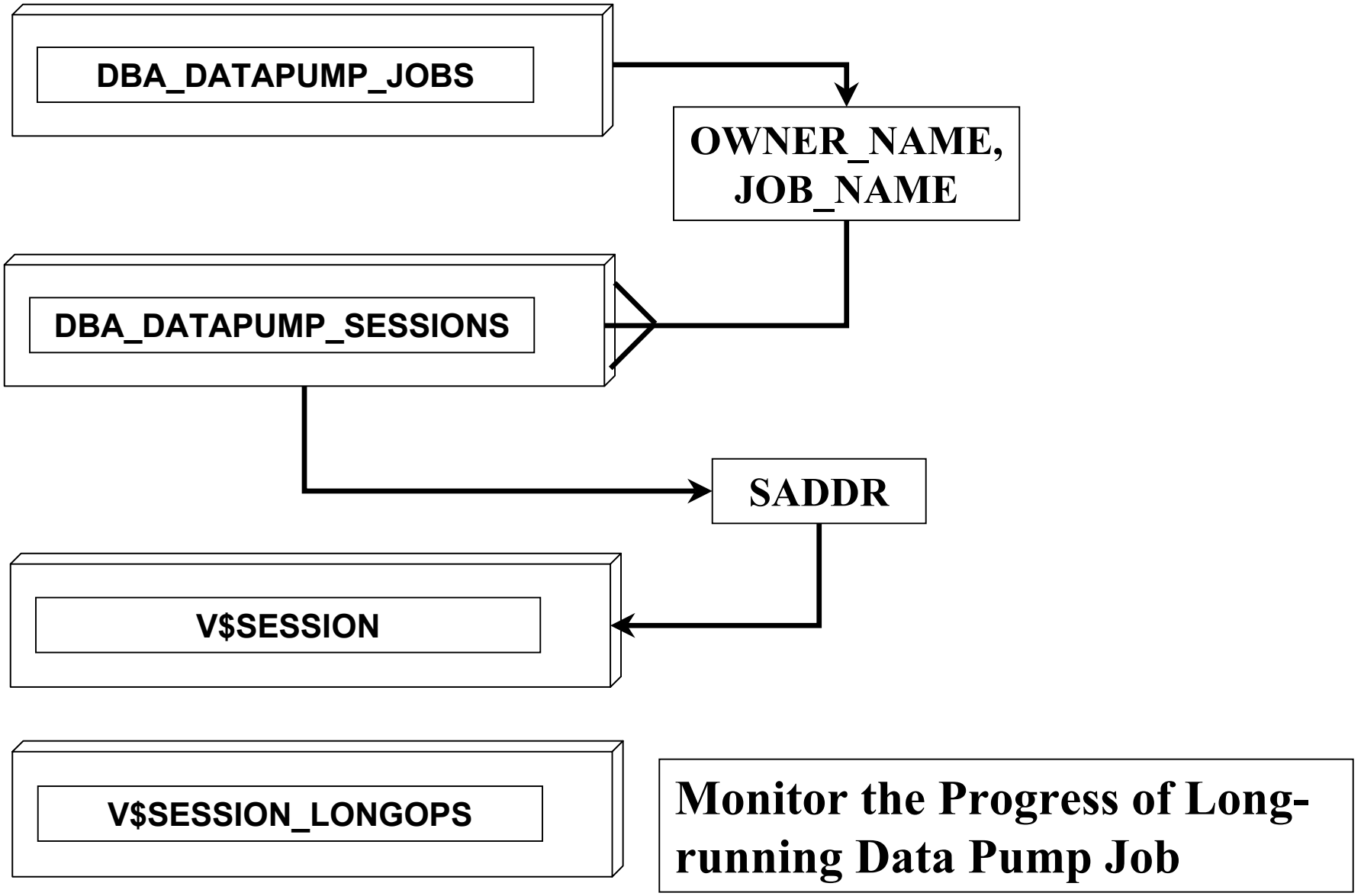
This will export

- **All Procedure, Packages and views like VW_H**
- **No Schema Definition/other System grants are exported**
- **Master Table Name as SYS_EXPORT_FULL_01**
- **Use DR1 Directory defined in Database**

DBMS_DATAPUMP Package

```
Declare
Handle1 NUMBER;

Handle1 :=
DBMS_DATAPUMP.OPEN('EXPORT','SCHEMA',NULL,'JOB_EXP','LATEST');

DBMS_DATAPUMP.SET_PARAMETER(handle1,'KEEP_MASTER',1);
DBMS_DATAPUMP.ADD_FILE(handle1,'indy.dmp','DMPDIR');
DBMS_DATAPUMP.METADATA_FILTER(handle1,'SCHEMA_EXPR',
'IN (''HR'')');

DBMS_DATAPUMP.START_JOB(handle1);

DBMS_DATAPUMP.DETACH(handle1);

END;
/
```

DATA PUMP – Dictionary Views



Few Performance Tips

- *Set PARALLEL to no more than 2 X number of CPU*
- *Sufficient SGA for Metadata API queries as well as Queues*
- *Spread the I/O by using Dumpfile Location to different drives using different pre-defined DIRECTORY setting*

Few Tips

- *Avoid Master Table deletion in export jobs*

  expdp id/pass **KEEP_MASTER**=Y dumpfile=dr1:t.dmp

- *Loading only Master Table in Import Jobs*

  impdp id/pass **MASTER_ONLY**=Y dumpfile=dr1:t.dmp

- *Debugging the Data pump export or import*

  expdp id/pass **TRACE=0x300** dumpfile=dr1:t.dmp

Or

Event=”39089 trace name context forever, level 0X300”

Few Scripts

- *Identify the File name associated with a Data pump Job.*

  SELECT user_file_name FROM <MTable>

  WHERE process_order IN (-22,-21);

- *Identify the type of Database object contained in the Master Table*

  SELECT object_type, Completed_rows FROM <MTable>

  WHERE process_order= -5

- *Identify the Tables contained in the Master Table*

  SELECT object_schema, object_name FROM <MTable>

  WHERE process_order > 0 and object_type =’TABLE’;

Few Test Results

- *Data Pump export is 2 times faster than DIRECT original export.*
- *Data Pump import is 5-40 times faster that original import*
- *Data pump export dump files are 10-15% compact than original export*


Q&A
QUESTIONS
ANSWERS

THANK YOU

I can be reached for any more queries at

indy.johal@prnewswire.com