Objectives

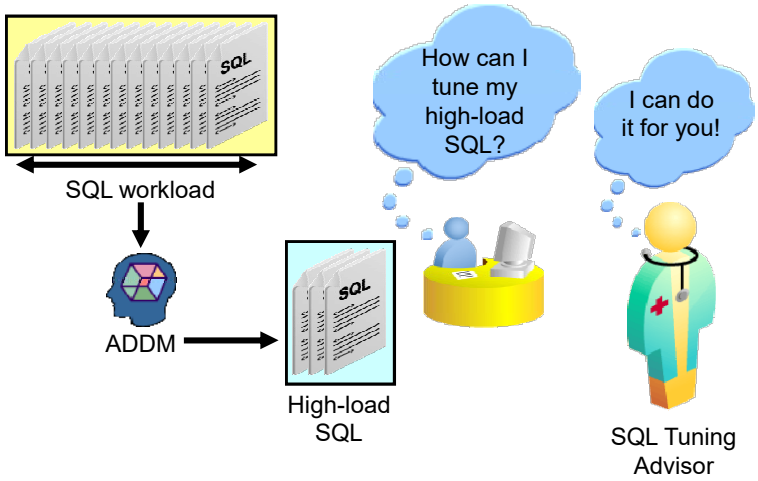
After completing this lesson, you should be able to:

- Describe statement profiling
- Use SQL Tuning Advisor

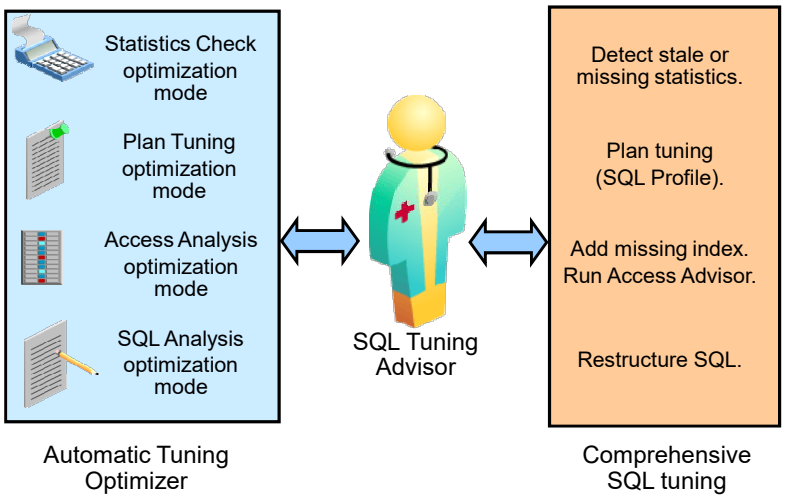
Tuning SQL Statements Automatically

- Tuning SQL statements automatically eases the entire SQL tuning process and replaces manual SQL tuning.
- The optimizer has two modes:
  - Normal mode
  - Tuning mode or Automatic Tuning Optimizer (ATO)
- You use SQL Tuning Advisor to access the tuning mode.
- You should use tuning mode only for high-load SQL statements.

Application Tuning Challenges



SQL Tuning Advisor: Overview



Stale or Missing Object Statistics

- Object statistics are key inputs to the optimizer.
- ATO verifies object statistics for each query object.
- ATO uses dynamic sampling and generates:
  - Auxiliary object statistics to compensate for missing or stale object statistics
  - Recommendations to gather object statistics where appropriate

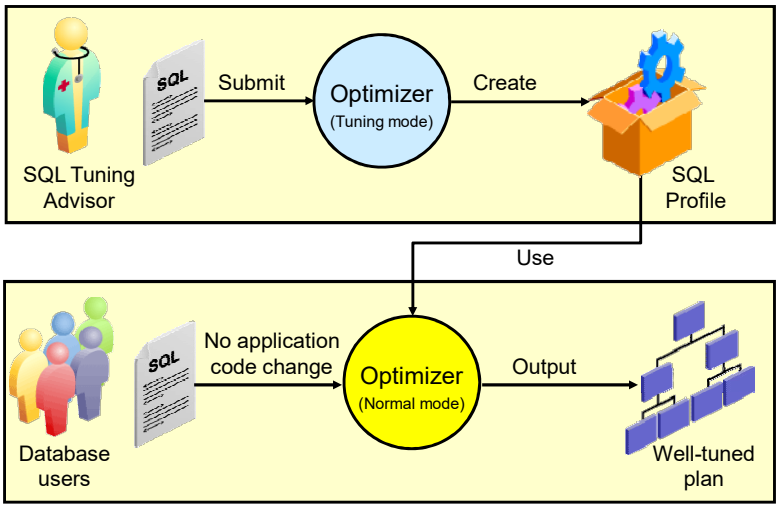
```
EXEC DBMS_STATS.GATHER_TABLE_STATS(
ownname=>'SH', tabname=>'CUSTOMERS',
estimate_percent=>DBMS_STATS.AUTO_SAMPLE_SIZE);
```

SQL Statement Profiling

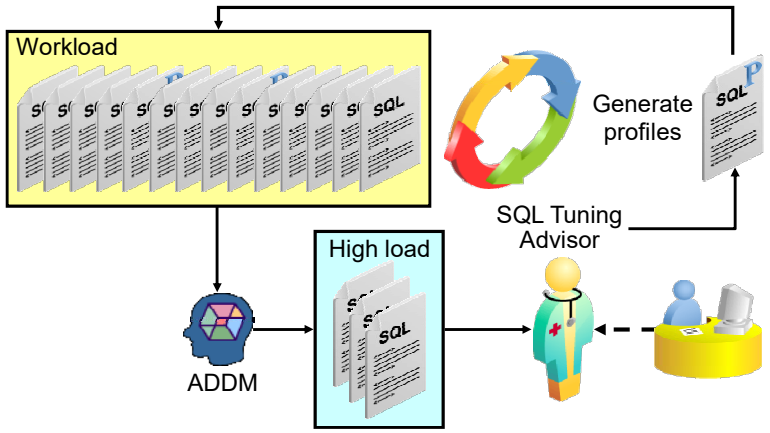
- Statement statistics are key inputs to the optimizer.
- ATO verifies statement statistics such as:
  - Predicate selectivity
  - Optimizer settings (`FIRST_ROWS` versus `ALL_ROWS`)
- ATO uses:
  - Dynamic sampling
  - Partial execution of the statement
  - Past execution history statistics of the statement
- ATO builds a profile if statistics were generated.

```
exec :profile_name :=                -
dbms_sqltune.accept_sql_profile( -
task_name =>'my_sql_tuning_task');
```

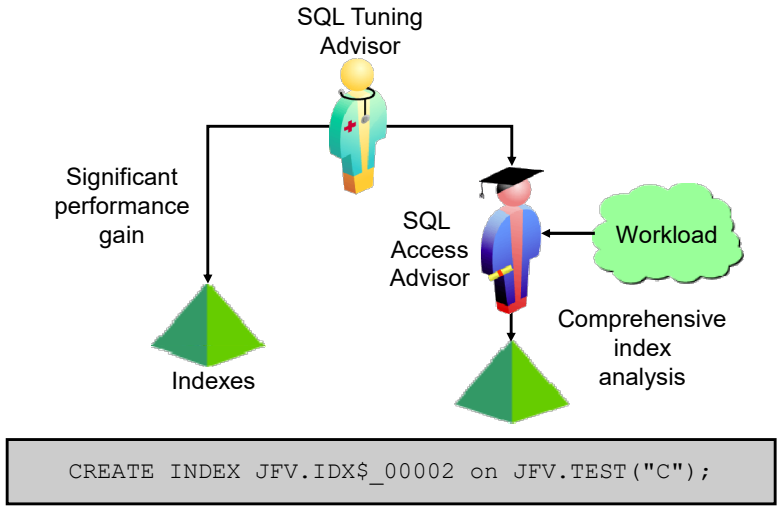
Plan Tuning Flow and SQL Profile Creation



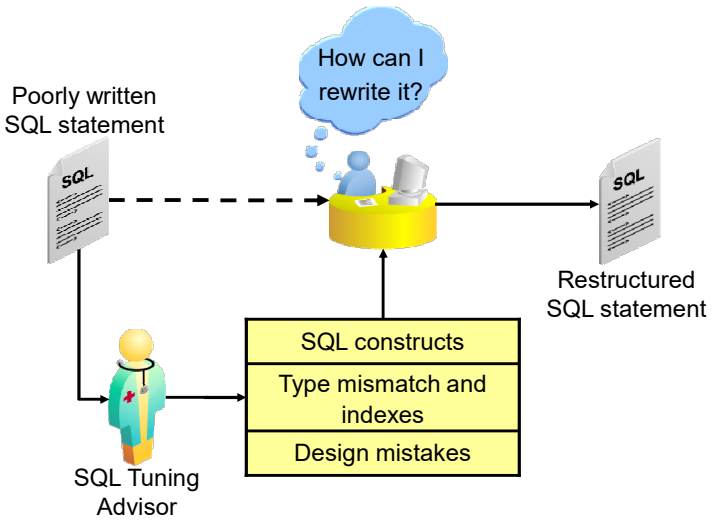
SQL Tuning Loop



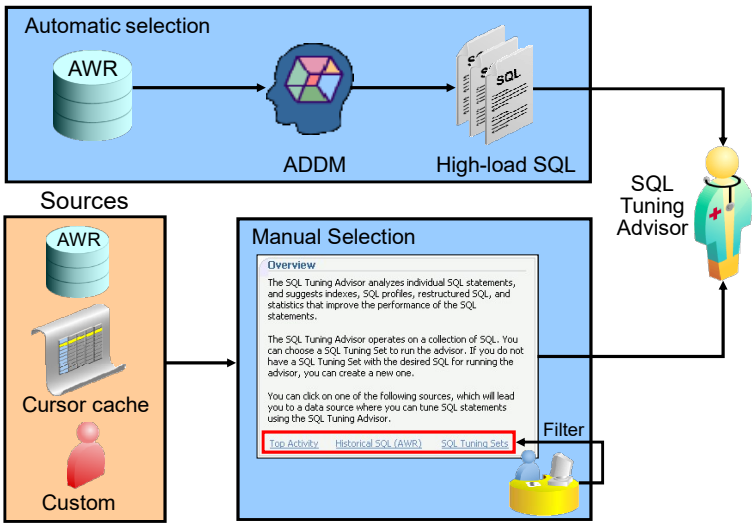
Access Path Analysis



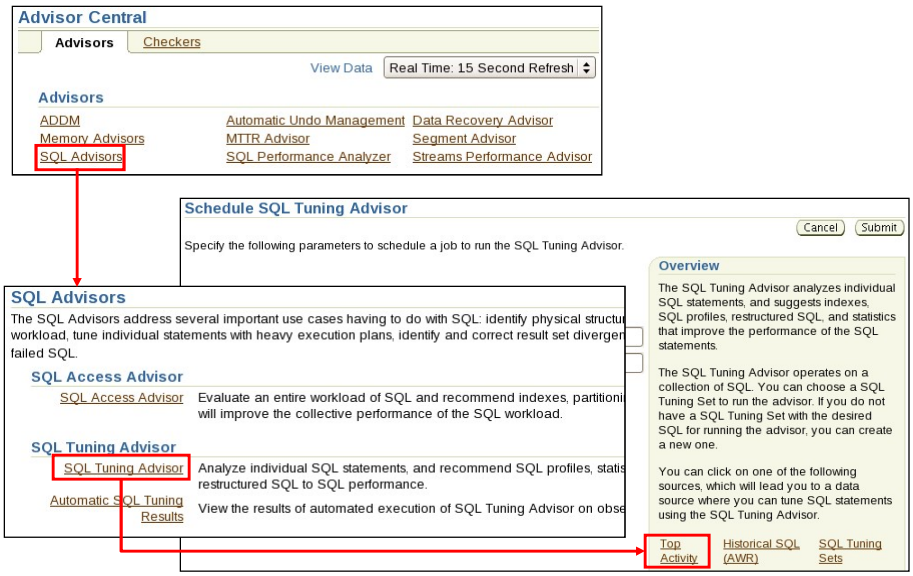
SQL Structure Analysis



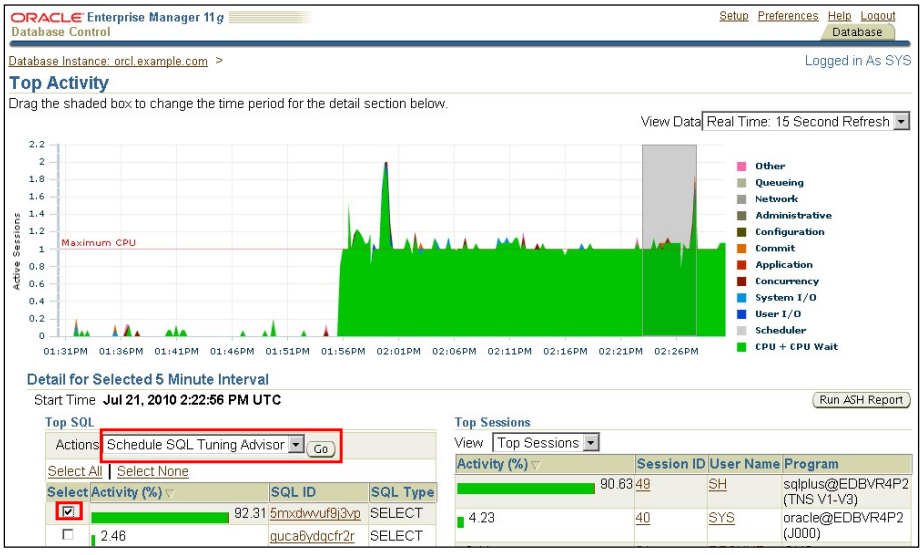
SQL Tuning Advisor: Usage Model



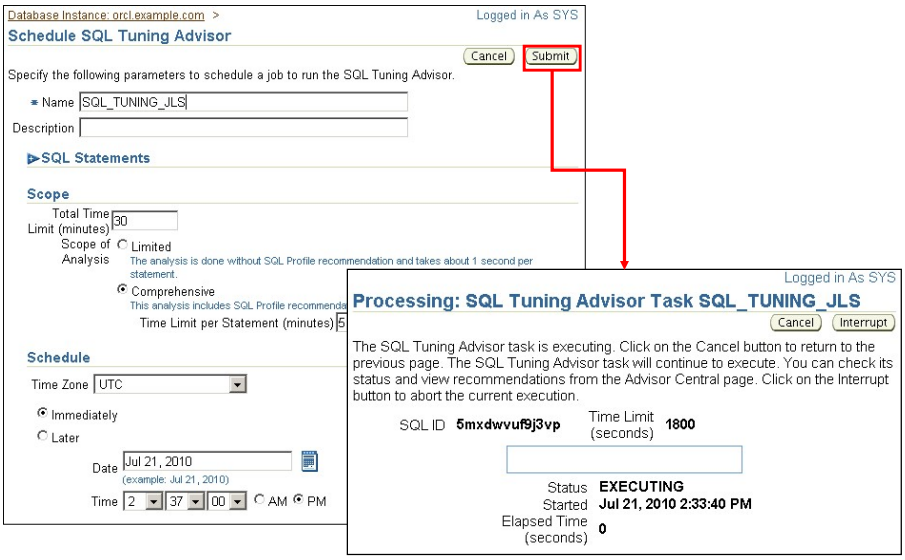
Database Control and SQL Tuning Advisor



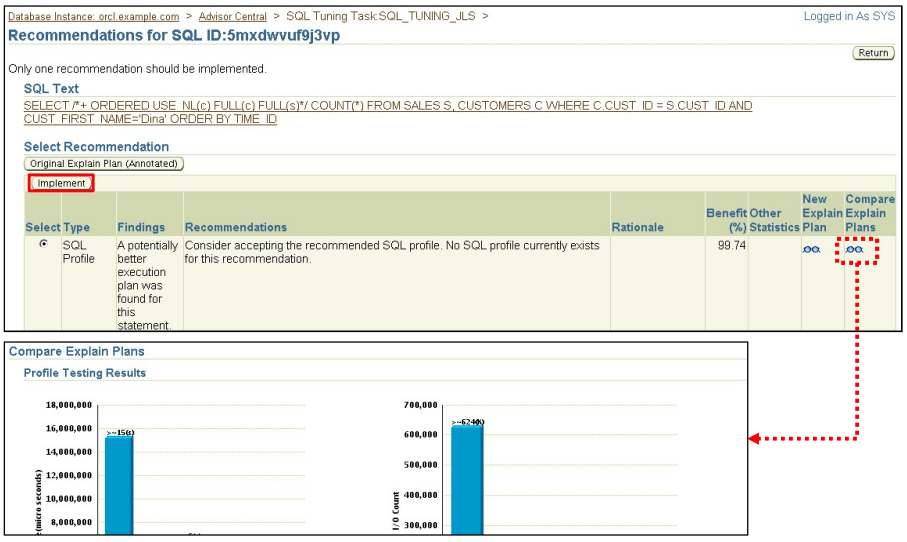
Running SQL Tuning Advisor: Example



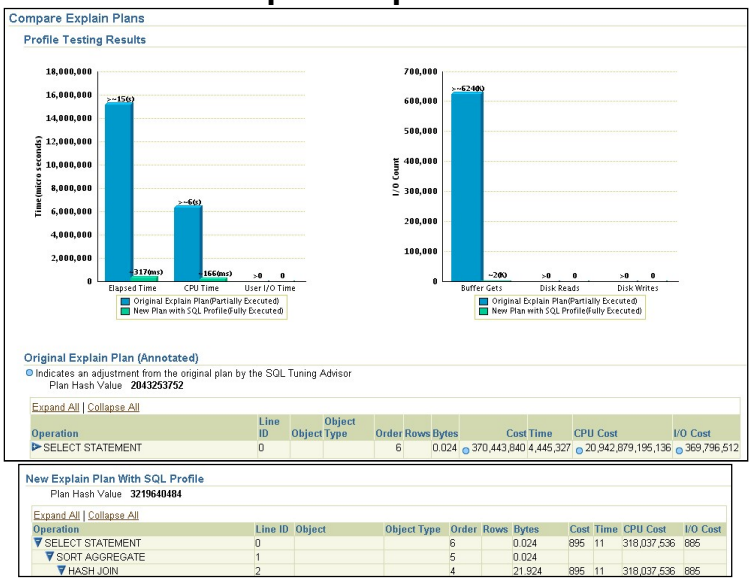
Schedule SQL Tuning Advisor



Implementing Recommendations



Compare Explain Plan



Quiz

SQL Tuning Advisor recommends:

a. SQL Profiles
b. Additional Indexes
c. Deleting Indexes
d. Rewriting SQL Statements
e. All of the above

Quiz

The SQL Profile forces the best execution plan even when the data in the table changes.

a. True
b. False

Summary

In this lesson, you should have learned how to:

- Describe statement profiling
- Use SQL Tuning Advisor