

# **Using SQL to Generate SQL**

***Tips for Administrating an Informix  
Server***

**by Lester Knutsen**

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# Lester Knutsen



Lester Knutsen is President of Advanced DataTools Corporation, and has been building large Database Systems using Informix since 1983. Lester focuses on large database performance tuning, training and consulting. Lester is a member of the IBM Gold Consultant program and was presented with one of the Inaugural IBM Data Champion awards. Lester was one of the founders of the International Informix Users Group and the Washington Area Informix User Group.

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# Agenda

- A Quick Example – SQL to generate an SQL script to revoke public access
- Structure of SQL script to generate SQL (or shell script)
- Data Source - System Tables
- Examples - More Scripts that Work
- Demo

# Advantages

- Write the SQL one time
- Use to SQL on any Database or Server to accomplish the task

# mkSQL\_revoke\_public.sql

```
-- Output Section
output to "o_revoke_public.sql"
without headings
-- Syntax revoke all on tablename from public;
select "revoke all on " ,
       trim(tabname) ,
       " from public;"
from   systables , systabauth
where  systables.tabid = systabauth.tabid
and grantee = "public"      -- tables that have public access
and systables.tabid > 99;   -- non system tables
```

# Structure of SQL script to generate SQL

## 1– Basic Select Statement

```
select
    tabname
from    systables , systabauth
where   systables.tabid = systabauth.tabid
and     grantee = "public" -- tables that have public access
and     systables.tabid > 99; -- non system tables
```

# Structure of SQL script to generate SQL

## 2 – Add the Correct Syntax

revoke all on tablename from public;

```
select "revoke all on " ,  
       trim(tabname) ,  
       " from public;"  
from   systables , systabauth  
where  systables.tabid = systabauth.tabid  
and grantee = "public"      -- tables that have public access  
and systables.tabid > 99;   -- non system tables
```

# Structure of SQL script to generate SQL

## 3 – Add the Output Selection

-- Output Section

output to "o\_revoke\_public.sql"

without headings - No headings and column names

Other Output Options

- Unload statement
- Insert into external table



# Dbaccess limitation

- Dbaccess is limited to 80 character output
  - Lines greater the 80 characters will wrap in the wrong place – may lead to syntax errors
  - Best practice is to separate lines and variables that will expand

# mkSQL\_disable\_PK.sql

**This example to wrap at 80 characters and lead to Syntax errors**

output to "o\_disable\_PK.sql"

without headings

```
select "set constraints " || trim(constrname) || " disabled ;"  
from sysconstraints  
where tabid > 99      -- non system tables  
and constrtype = "P"; -- Constraint type is Primary Key
```

# mkSQL\_disable\_PK.sql

**Best practice is to keep syntax text and variables on separate lines**

output to "o\_disable\_PK.sql"

without headings

```
select  "set constraints ",  
        trim(constrname),  
        " disabled ;"
```

```
from sysconstraints
```

```
where tabid > 99      -- non system tables
```

```
and constrtype = "P"; -- Constraint type is Primary Key
```

# Data Source – System Tables

- Systables
- Syscolumns
- Syscnstraints
- Sysusers
- Systabauth
- Sysindexes
- Sysprocedures

# Data Source – Sysmaster Database

- See my other presentations on the Sysmaster Database

# Examples – More Scripts that Work

- `mkSQL_alter_row_lock.sql`
- `mkSQL_create_PK.sql`
- `mkSQL_dbSPACE_script.sql`
- `mkSQL_drop_constraint.sql`
- `mkSQL_llogs_script.sql`
- `mkSQL_PK_disable.sql`
- `mkSQL_revoke_public.sql`
- `mkSQL_update_stats_low.sql`
- `mkSQL_update_stats_med.sql`

# Alter Table to Row Level Locking

output to o\_alter\_row\_lock.sql without headings

```
select  "alter table ",
        trim(tabname) ,
        "lock mode ( row );"
from systables
where locklevel = "P"  -- tables with page level locking
and tabtype = "T"     -- real tables
and tabid > 99       -- non system tables
```

# Enable Primary Keys

output to "o\_enable\_PK.sql"

without headings

```
select  "set constraints ",  
        trim(constrname),  
        "enabled;"
```

```
from sysconstraints
```

```
where tabid > 99      -- non system tables
```

```
and constrtype = "P"
```

```
order by constrid desc; -- Constraint type is Primary Key
```



# Drop Constraints

output to "o\_drop\_constraints.sql"

without headings

```
select "alter table ",  
       trim(tabname) ,  
       "drop constraint ",  
       trim(sysconstraints.constrname),  
       " ;"  
       ;
```

from sysconstraints, systables

where sysconstraints.tabid = systables.tabid

and sysconstraints.constrtype = "R" ; - Reference Constraints

# Alter Table to add Primary Keys

```
--- Script to alter tables with unique index to add a primary key
--- Get tables with no primary key and a unique index
output to "o_creat_pk.sql"
without headings
select "alter table ",
       trim(tabname) ,
       " add constraint primary key (" ,
       trim(colname), ")" ;"
from systables, sysindexes, syscolumns
where systables.tabid = sysindexes.tabid
and   systables.tabid = syscolumns.tabid
and systables.tabid > 99
and systables.tabid not in ( select tabid from sysconstraints where constrtype = "P" )
and sysindexes.idxtype = "U"
and sysindexes.part1 = syscolumns.colno;
```

# Update Statistics low

output to o\_update\_stats\_low.sql

without headings

```
select "update statistics low for table ",  
       trim (tablename) || " ;"  
from systables where tabid > 99  
and tabtype = "T";
```

# Update Statistics Medium

output to o\_update\_stats\_med.sql

without headings

```
select "update statistics medium for table ",  
       trim (tablename) ,  
       "distributions only;"  
from systables where tabid > 99  
and tabtype = "T";
```

# Update Statistics High

output to o\_update\_stats\_high.sql

without headings

```
select "update statistics high for table ",  
       trim (tablename) ,  
       " (",  
       trim (colname) ,  
       " )",  
       "distributions only;"  
from sysindexes i, systables t, syscolumns c  
where i.tabid = t.tabid  
and i.tabid = c.tabid  
and i.part1 = c.colno  
and i.tabid > 99  
and tabtype = "T";
```

# Drop Distributions

output to o\_update\_stats\_drop\_dist.sql

without headings

```
select "update statistics low for table ",  
       trim (tablename) ,  
       "drop distributions;"  
from systables where tabid > 99  
and tabtype = "T";
```

# Scripts to Replicate a Server

- Make the Physical Log
- Make the Logical Log
- Make the Dbspaces and Chunks
  
- See in 12.10:
  - `dbschame -c -ns`

# Make the Physical Log

```
-- Connect to the sysmaster database
database sysmaster;
output to "o_make_plog.sh" without headings
select
    "onparams -p -s " ||
    round (p.pl_physize*(d.pagesize/1024) ,0 ) ||
    " -d " ||
    trim (d.name ) ||
    " -y "
from   sysplog p,
       syschunks c,
       sysdbspaces d
where  p.pl_chunk = c.chknum
and    c.dbsnum = d.dbsnum;
```



# Make the Logical Logs

```
database sysmaster;
output to "o_make_llog.sh" without headings
select
    "onparams -a -d " ||
    trim( d.name ) ||
    " -s " ||
    round( l.size * ( d.pagesize/ 1024 ), 0)
from    syslogfil l,
        syschunks c,
        sysdbspaces d
where   l.chunk = c.chknum
and     c.dbsnum = d.dbsnum
order by l.number
```

# Demo

# Questions?

Send follow-up questions to  
[lester@advanceddatatools.com](mailto:lester@advanceddatatools.com)

# Downloads

Presentation and Scripts will be available to download in a few days at:

<http://www.advanceddatatools.com>

# Informix Training in 2017

- **Advanced Informix Performance Tuning** by Lester Knutsen and Art Kagel
  - July 10-13, 2017
- **Informix for Database Administrators**
  - Feb 13-16, 2017 and September 18-21, 2017
- All courses can be taken online on the web from your desk or at our training center in Virginia.
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# Informix Webcasts in 2017

- Informix Best Practices Series
  - Jan 26 - Informix Best Practices - Getting Started
  - Feb 23 - Informix Best Practices - ONCONFIG, CPUs and Memory
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  - Apr 20 - Informix Best Practices - Backup, Recovery and High Availability Disaster



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# Thank You

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