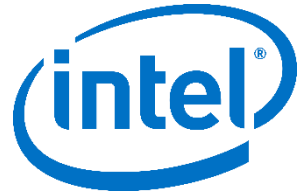




Hewlett Packard
Enterprise



Using SQL/MX DBS

Demo using iTP webserver
May 2018

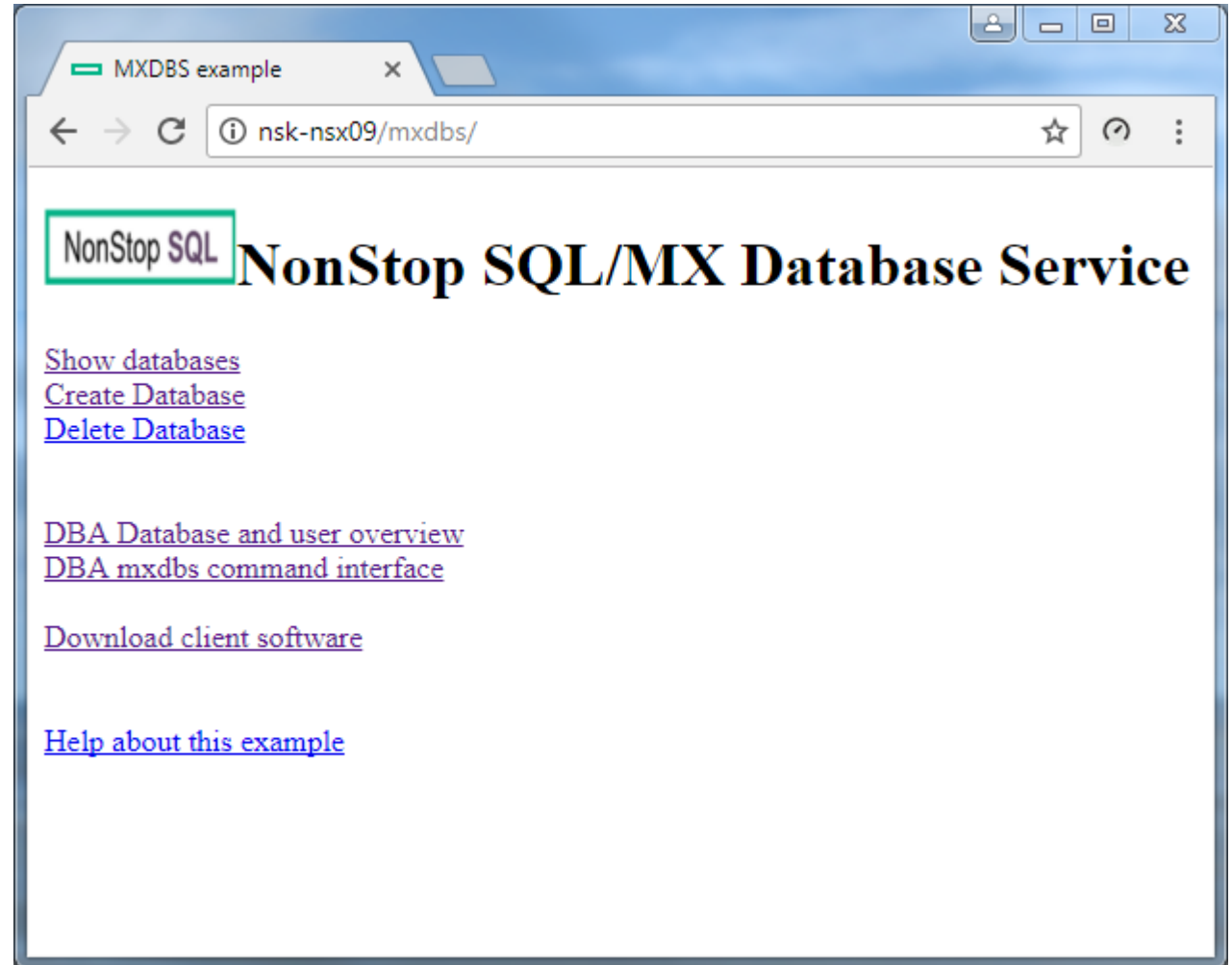
Frans Jongma, Advanced Technology Center

A guided tour through SQL/MX DBS using iTP Webserver

- Requirements
 - NonStop System
 - iTP Webserver running
 - Firefox or Chrome browser
 - SQL/MX DBS 3.5.1 installed and configured for DBS
 - The demopages installed
 - Softlinks for downloadable client software created
 - Use `mxcreatelinks -s -d /usr/tandem/sqlmx/downloads`
 - Navigate your browser to http://your_system/mxdbs

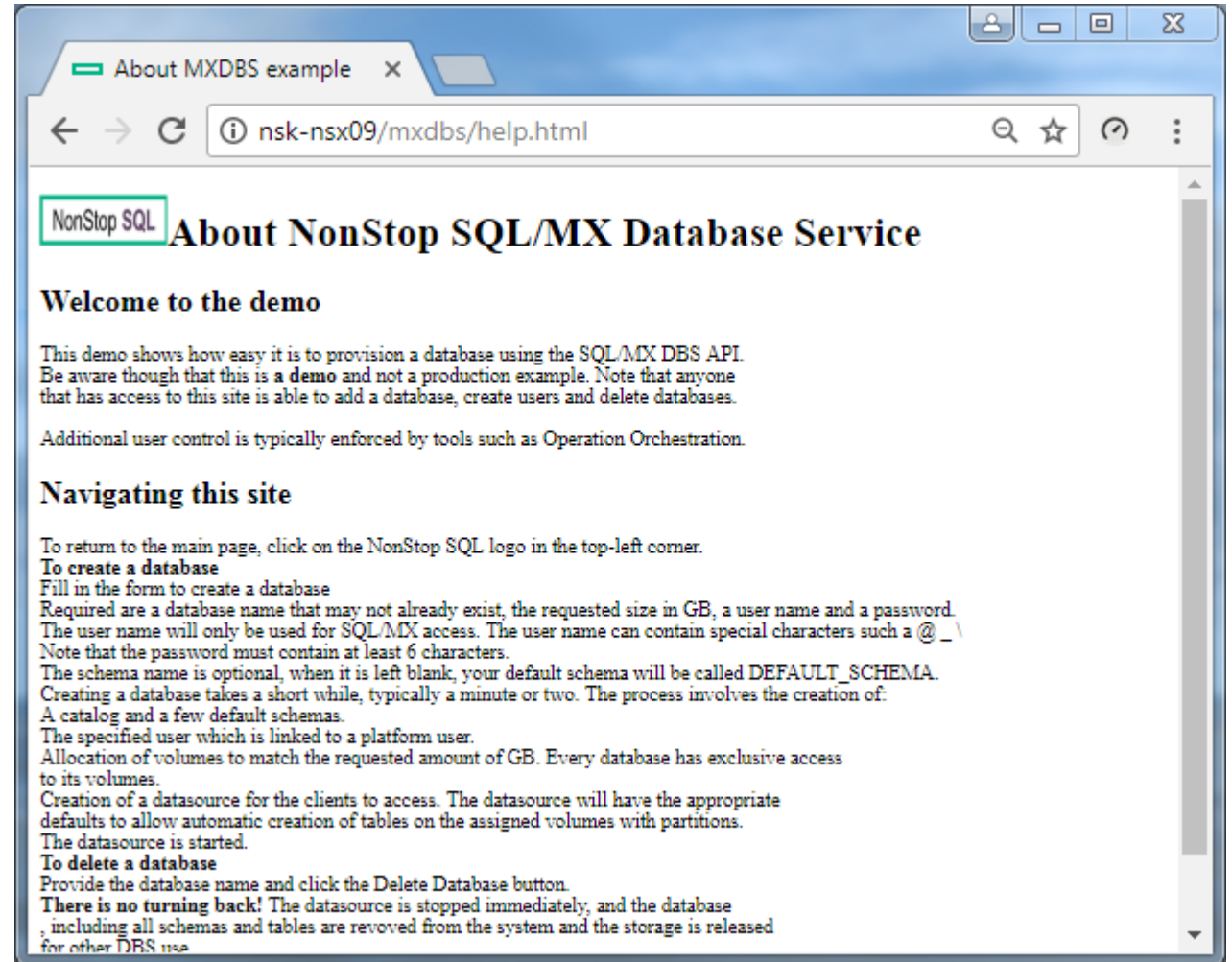
Demo Homepage

- This page shows the basic functions for this demo
- This is a demo, it lacks full access control
 - You could add user control to a system admin in iTP webserver
 - That way, you do not get self-service, but a system admin will be able to quickly provision databases for users that do not require access to the NonStop Operating Environment via bash or TACL
- Included are a few “DBA” pages that require a valid NonStop User-ID for verification
 - Not a complete solution



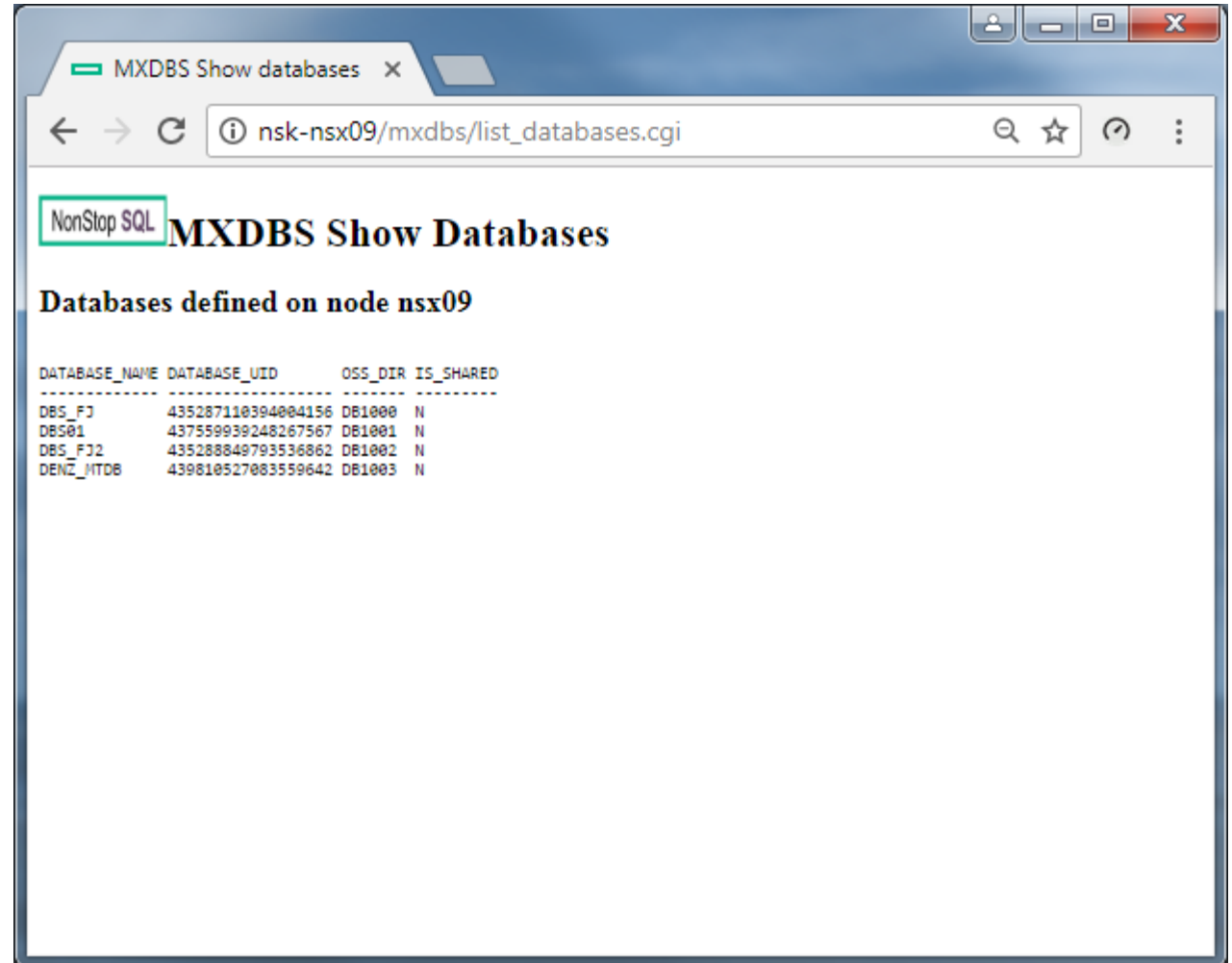
A little explanation

- Read this first to learn how to navigate through these pages
- Click [NonStop SQL](#) to return to the main page



See what is out there

- Databases are unique on the system they are defined
- Before creating your database, see if your choice of name has not been defined already



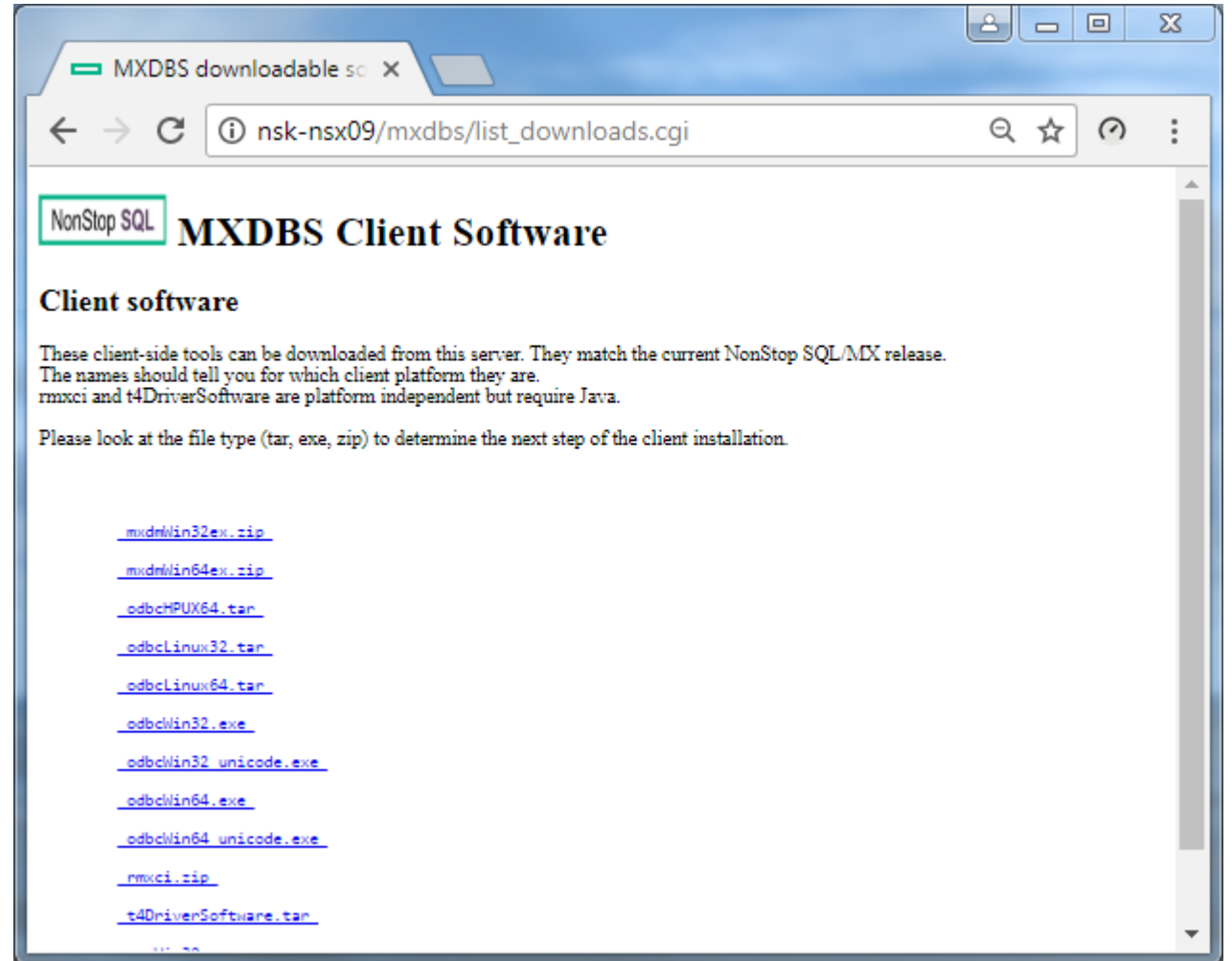
NonStop SQL **MXDBS Show Databases**

Databases defined on node nsx09

DATABASE_NAME	DATABASE_UID	OSS_DIR	IS_SHARED
DBS_FJ	435287110394004156	DB1000	N
DBS01	437559939248267567	DB1001	N
DBS_F32	435288849793536862	DB1002	N
DENZ_MTD8	439810527083559642	DB1003	N

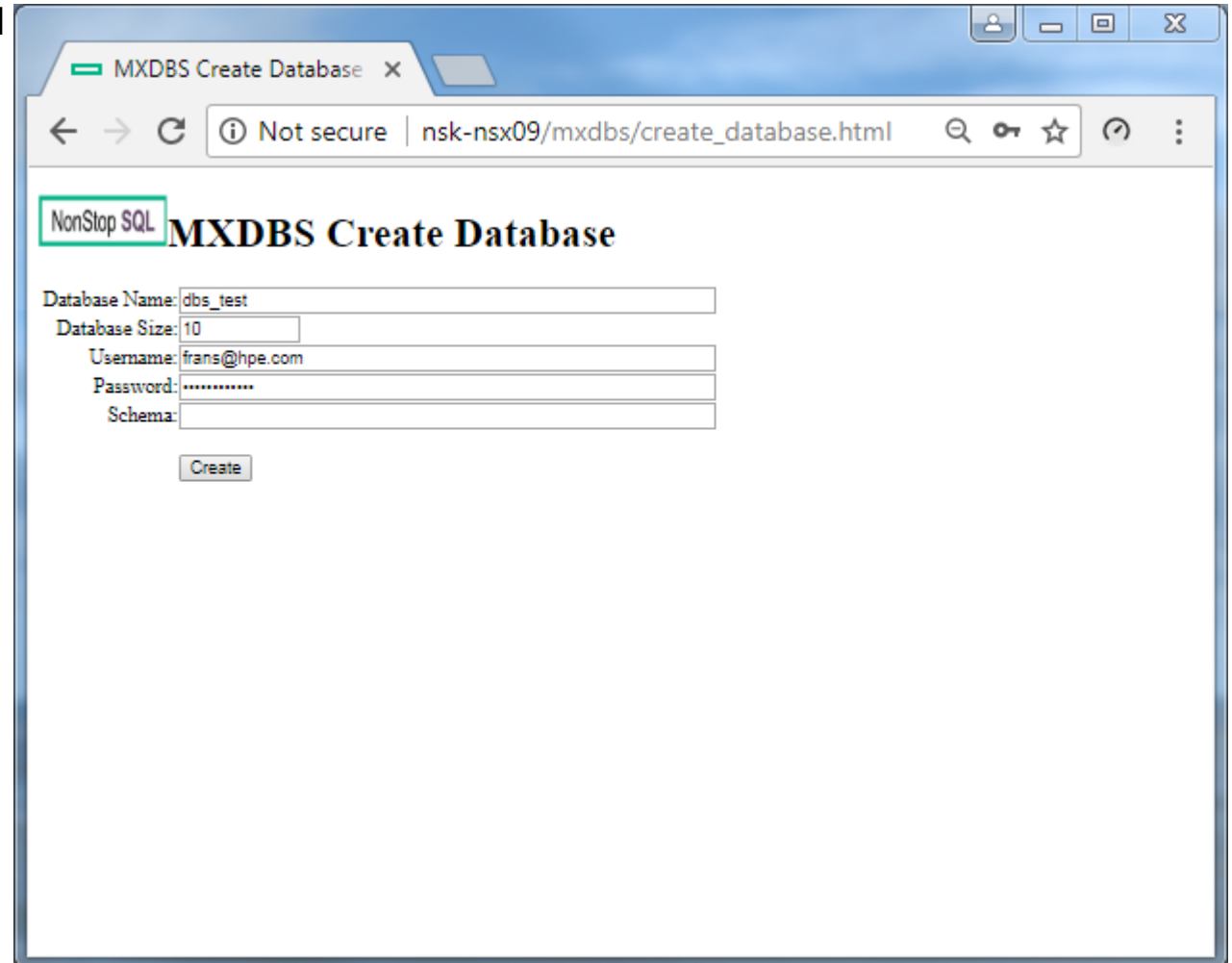
Download page for client software

- HPE documentation is written for system managers, not for end-users
- The same software can be downloaded using this page
 - These are soft links in OSS space that link to Guardian installation files
 - Unlike the Guardian files, the file names are self-explanatory
 - Unzip the zip files, untar the tar files and see what is in them to decide the next step.
 - For example, the mxdm zip files contain the Windows setup executable files.



Create a database

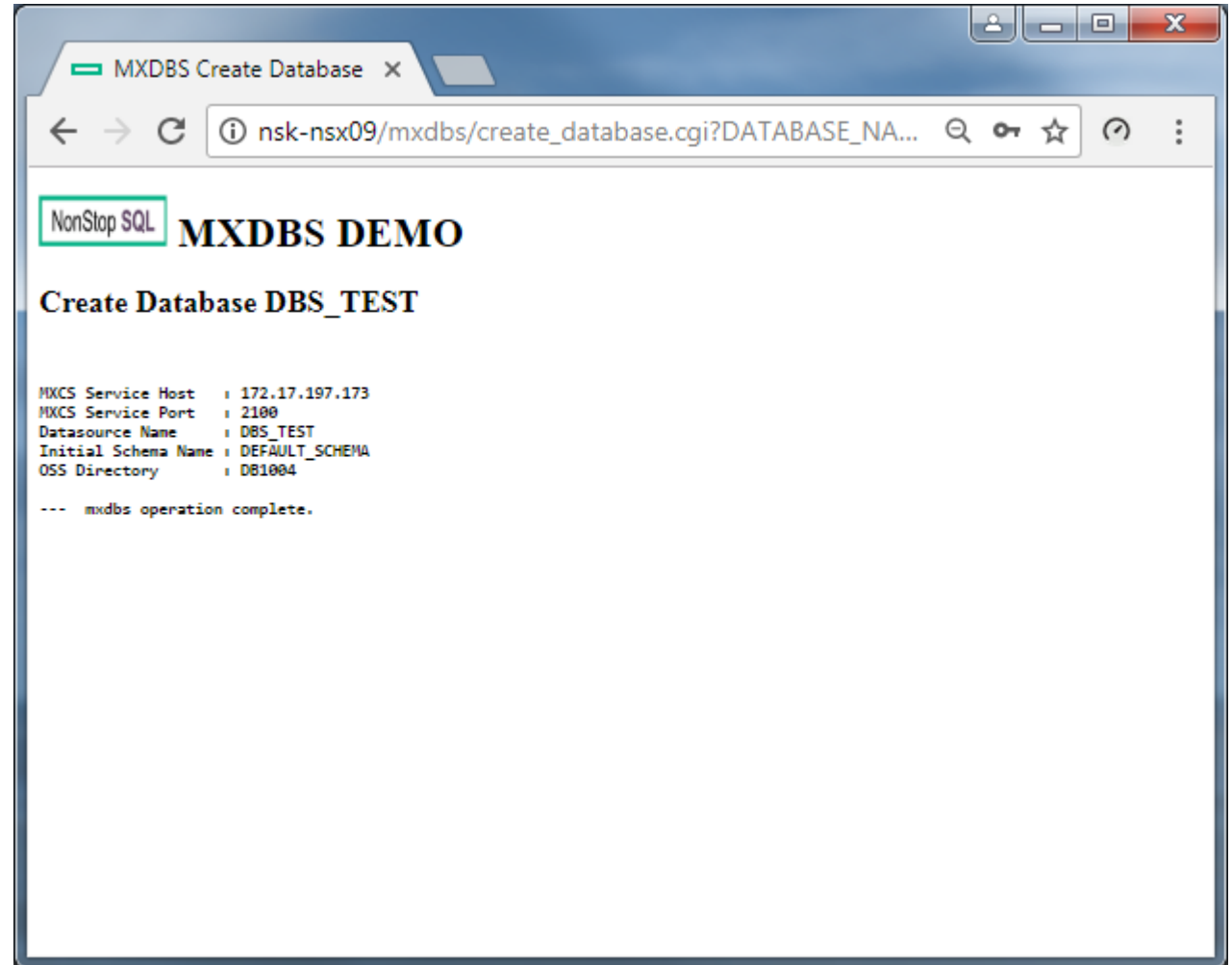
- A database defines the user environment. Its name is used for
 - The name of the catalog
 - The name of an MXCS datasource
- For database and schema names, use SQL identifiers (i.e no spaces, no special characters except underscore _)
- Password must adhere to Safeguard rules (typically > 6 characters)
- User name is not case-sensitive, and may include special characters
 - Email addresses are OK (frans@hpe.com)
 - Windows domain names are OK (emea\frans)
 - Users are not case-sensitive unless so defined in the SYSTEM_DEFAULTS table
- Schema is optional, if not defined, DEFAULT_SCHEMA is created
- Database create takes about 1.5 -2 minutes



The screenshot shows a web browser window titled "MXDBS Create Database". The address bar shows the URL "nsk-nsx09/mxdfs/create_database.html". The page content includes a "NonStop SQL" logo and the title "MXDBS Create Database". Below the title, there are several input fields: "Database Name" (containing "dbs_test"), "Database Size" (containing "10"), "Username" (containing "frans@hpe.com"), "Password" (containing "*****"), and "Schema" (empty). A "Create" button is located below the input fields.

Database create results

- When create is finished, the status is reported
 - Connection information for host
 - Includes the default schema name that is used in MXCS
 - Typically port 2100 is used for MXCS (defined during DBS installation)
 - Datasource name to be used when a connection is made must be in uppercase.
 - ODBC and JDBC names are case-sensitive!



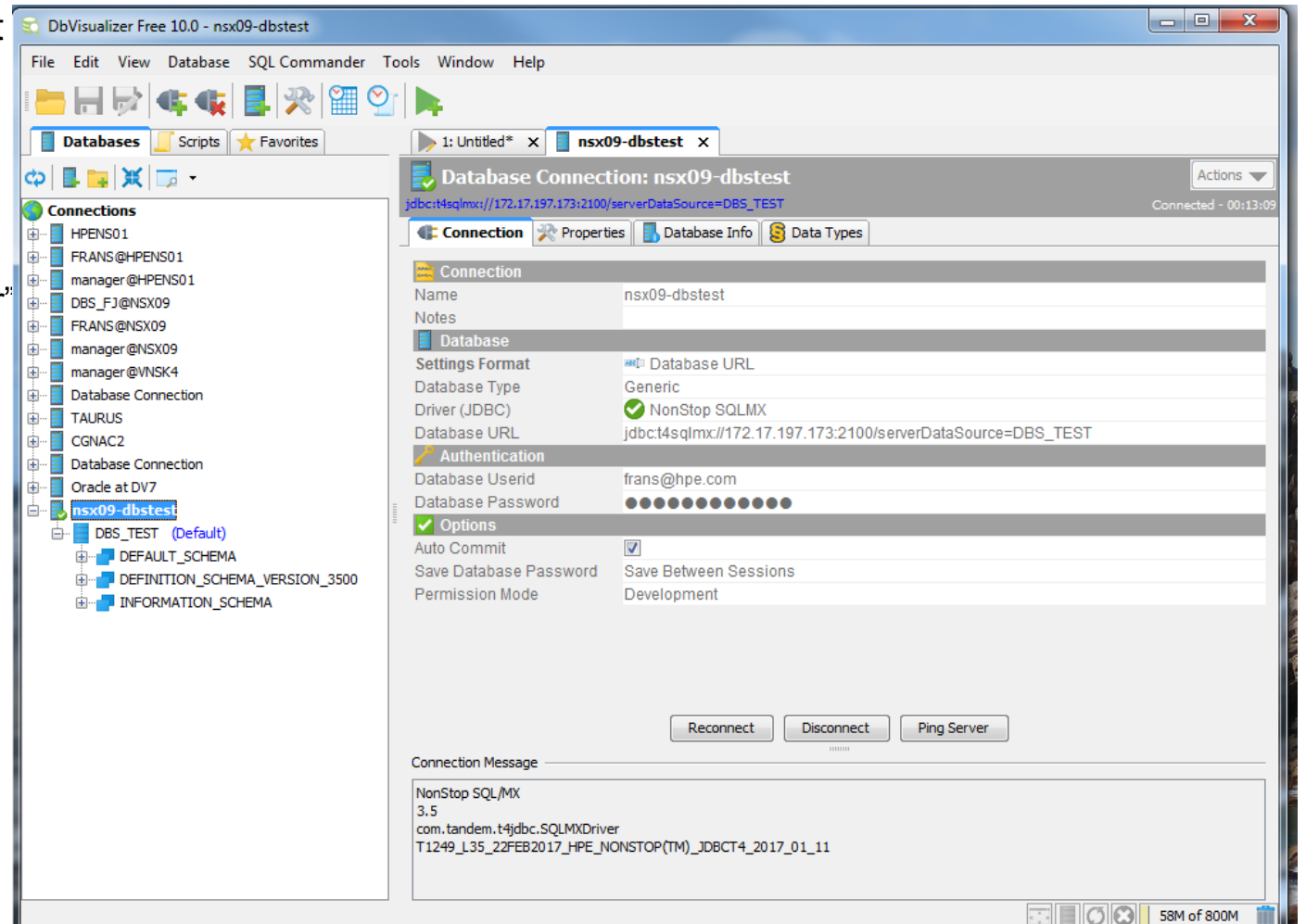
The screenshot shows a web browser window with the title "MXDBS Create Database". The address bar contains the URL "nsk-nsx09/mxdfs/create_database.cgi?DATABASE_NAME...". The page content includes the "NonStop SQL" logo, the heading "MXDBS DEMO", and the sub-heading "Create Database DBS_TEST". Below this, the following information is displayed:

```
MXCS Service Host : 172.17.197.173
MXCS Service Port : 2100
Datasource Name   : DBS_TEST
Initial Schema Name : DEFAULT_SCHEMA
OSS Directory     : DB1004

--- mxdfs operation complete.
```

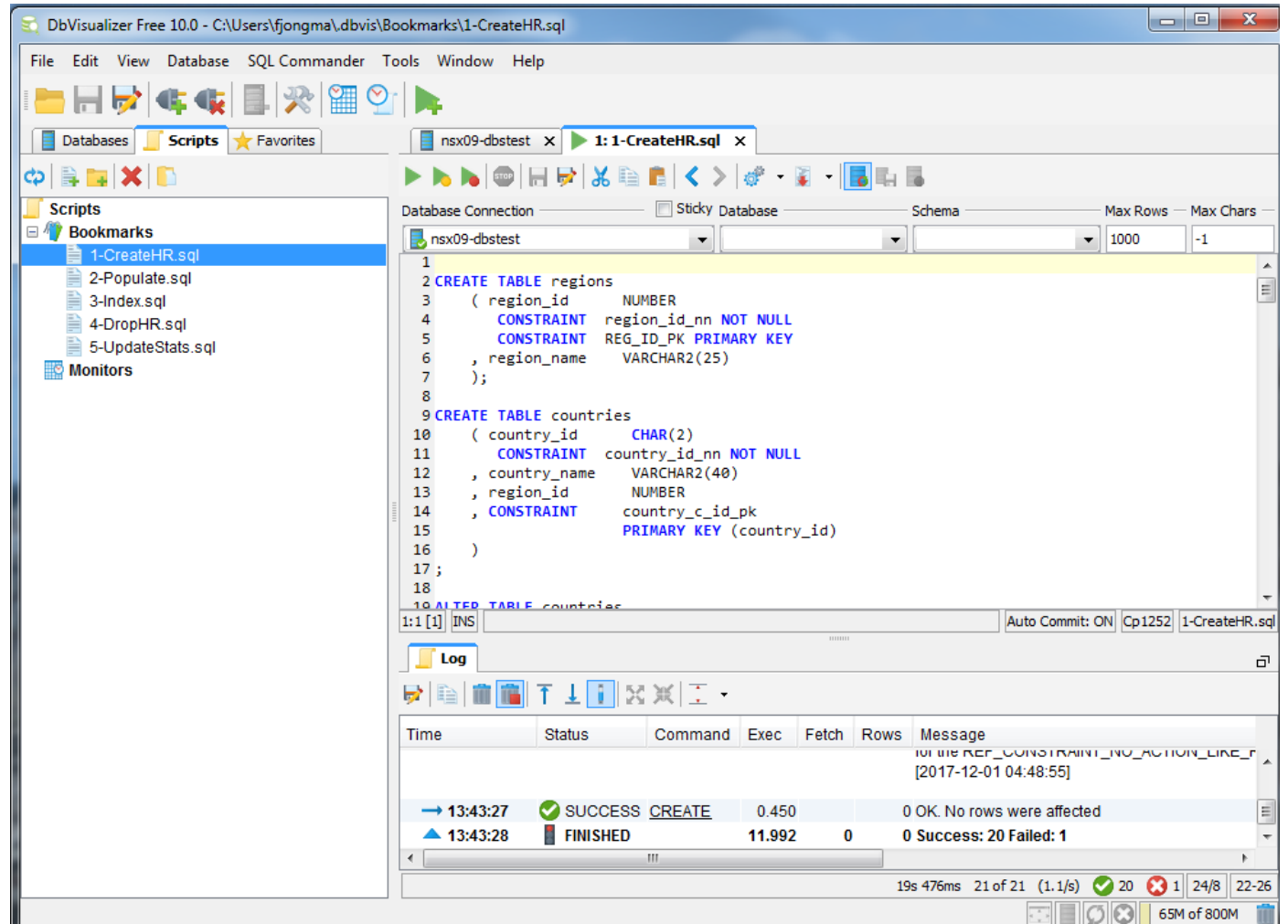

Time to try the connection

- This slide shows DbVisualizer, a popular tool that also has a free version with some limited functionality
- To connect, use the SQL/MX T4 driver
 - Driver is downloaded as part t4DriverSoftware.tar
 - Configure the driver using the DbVis "Driver Manager" window
- ★ - Tip: In Driver Properties, set `java.sql.statement.setFetchSize 50`



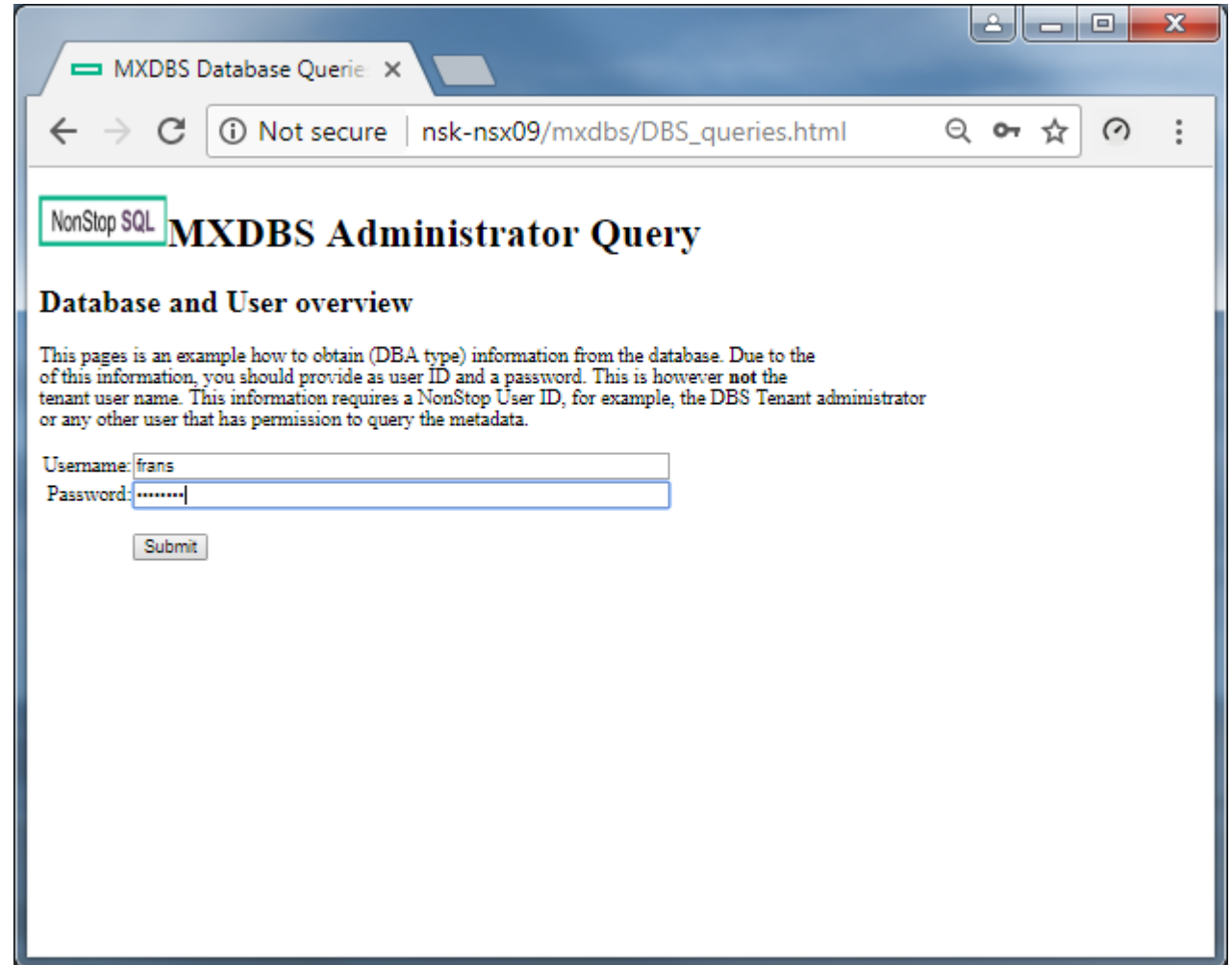
Use the database

- This example shows how tables are created
- Note the use of Database Compatibility features
 - REGION_ID NUMBER
 - REGION_NAME VARCHAR2



A DBA query (request)

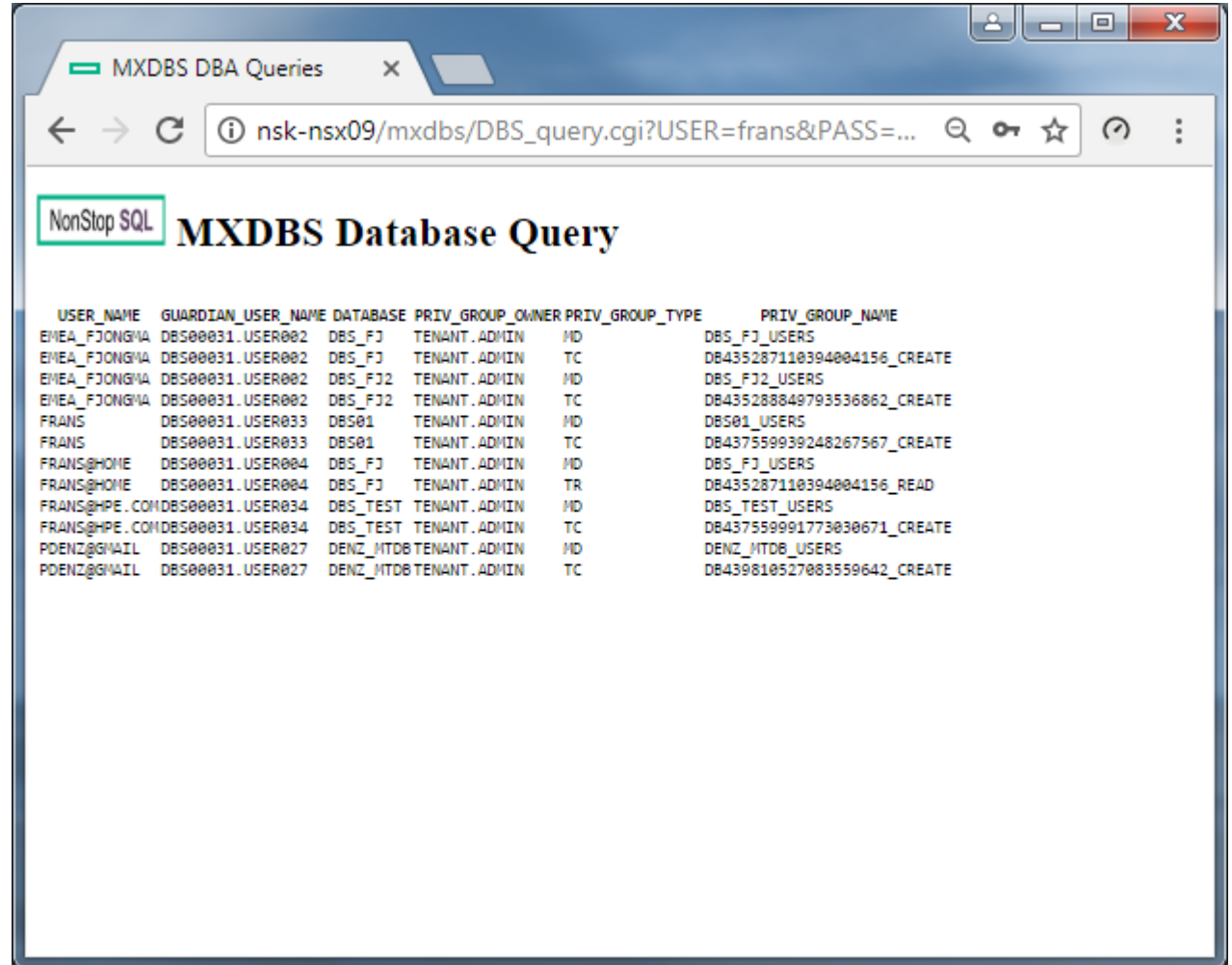
- This is an example of how one might run metadata queries from a controlled user. This page invokes a cgi script on the host, and the script will only execute the query if the user ID and password are valid for system access.
- Tenant users (such as the created frans@hpe.com) cannot run these queries.



The screenshot shows a web browser window with the address bar displaying "nsk-nsx09/mxdfs/DBS_queries.html". The page content includes a "NonStop SQL" logo, the title "MXDBS Administrator Query", and a section titled "Database and User overview". Below this section is a paragraph of text explaining that the page is for obtaining (DBA type) information from the database and that it requires a NonStop User ID and password. At the bottom of the form, there are two input fields: "Username: frans" and "Password:", followed by a "Submit" button.

A DBA query (response)

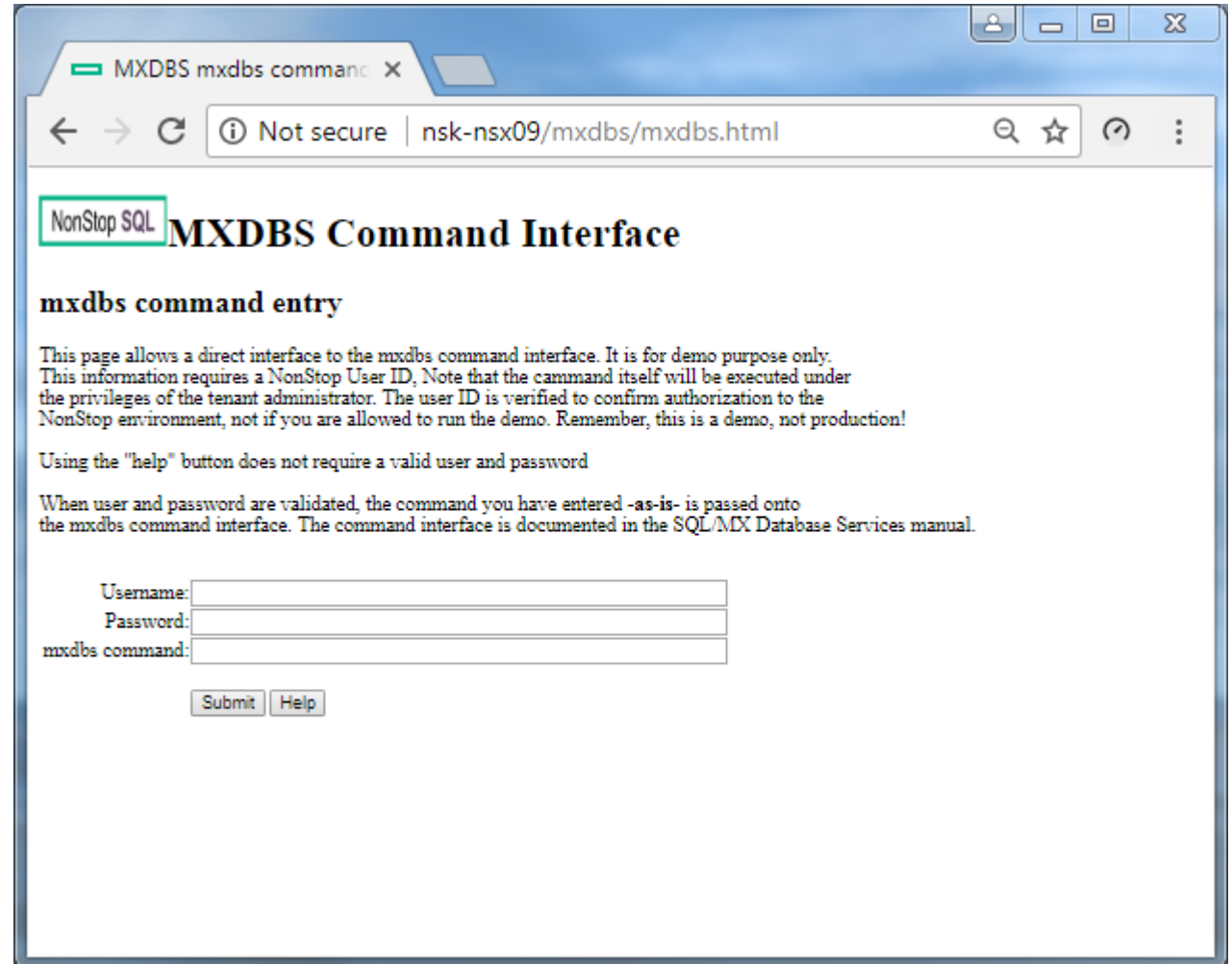
- This is an overview of external users and their Guardian equivalent
- Also shows to which databases and privilege groups they belong



USER_NAME	GUARDIAN_USER_NAME	DATABASE	PRIV_GROUP_OWNER	PRIV_GROUP_TYPE	PRIV_GROUP_NAME
EMEA_FJONGMA	DBS00031.USER002	DBS_FJ	TENANT.ADMIN	ID	DBS_FJ_USERS
EMEA_FJONGMA	DBS00031.USER002	DBS_FJ	TENANT.ADMIN	TC	DB435287110394004156_CREATE
EMEA_FJONGMA	DBS00031.USER002	DBS_FJ2	TENANT.ADMIN	ID	DBS_FJ2_USERS
EMEA_FJONGMA	DBS00031.USER002	DBS_FJ2	TENANT.ADMIN	TC	DB435288849793536862_CREATE
FRANS	DBS00031.USER033	DBS01	TENANT.ADMIN	ID	DBS01_USERS
FRANS	DBS00031.USER033	DBS01	TENANT.ADMIN	TC	DB437559939248267567_CREATE
FRANS@HOME	DBS00031.USER004	DBS_FJ	TENANT.ADMIN	ID	DBS_FJ_USERS
FRANS@HOME	DBS00031.USER004	DBS_FJ	TENANT.ADMIN	TR	DB435287110394004156_READ
FRANS@HPE.COM	DBS00031.USER034	DBS_TEST	TENANT.ADMIN	ID	DBS_TEST_USERS
FRANS@HPE.COM	DBS00031.USER034	DBS_TEST	TENANT.ADMIN	TC	DB437559991773030671_CREATE
POENZ@GMAIL	DBS00031.USER027	DENZ_HITDB	TENANT.ADMIN	ID	DENZ_HITDB_USERS
POENZ@GMAIL	DBS00031.USER027	DENZ_HITDB	TENANT.ADMIN	TC	DB439810527083559642_CREATE

Another DBA function screen

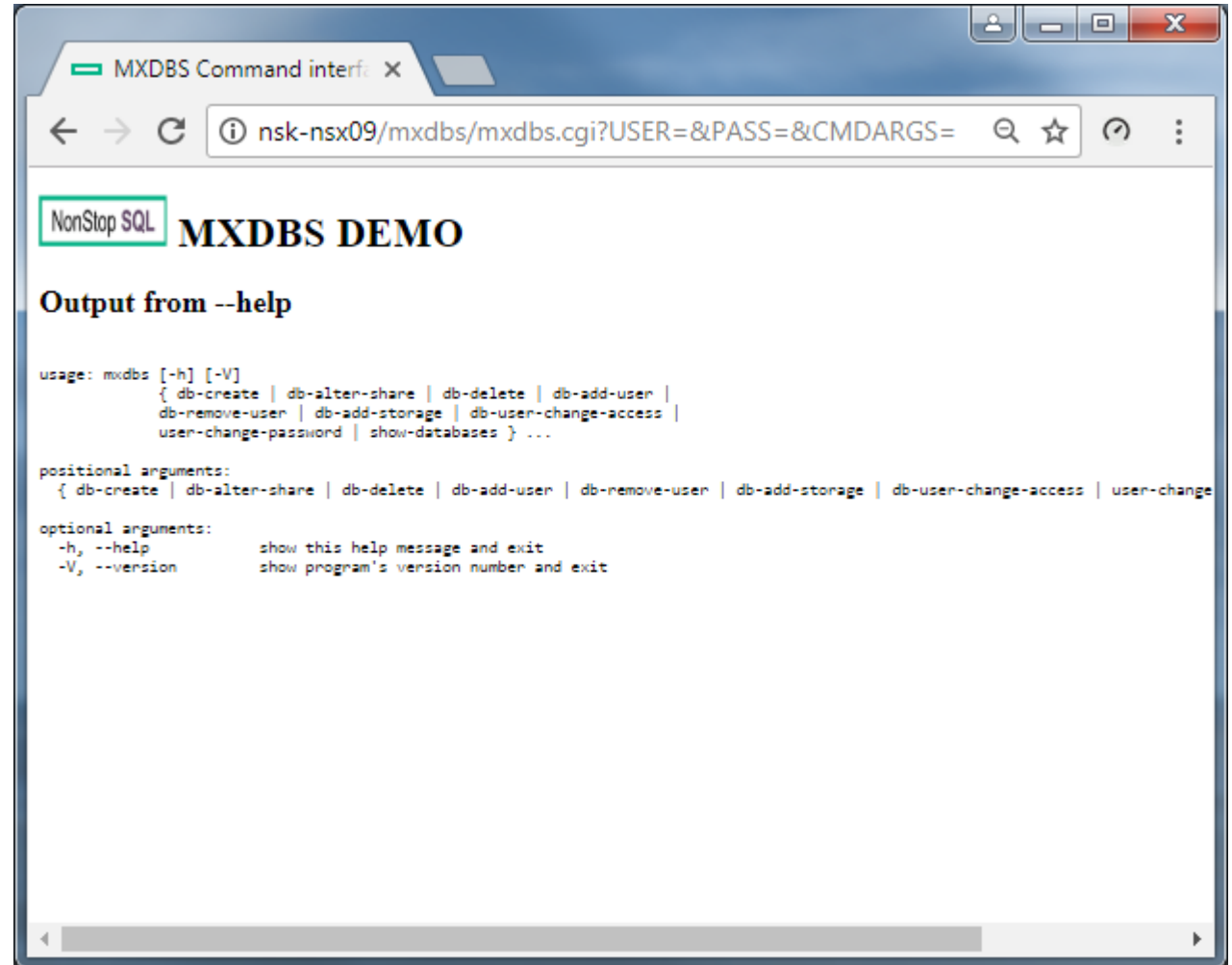
- Just in case you need to invoke another mxdbms command
- User ID and password are required
 - Except if you press the help button



The screenshot shows a web browser window with the title "MXDBS mxdbms command" and the URL "nsk-nsx09/mxdbms/mxdbms.html". The page content includes a "NonStop SQL" logo, the title "MXDBS Command Interface", and a section titled "mxdbms command entry". The text explains that the page provides a direct interface to the mxdbms command interface for demo purposes, requiring a NonStop User ID and password. It also notes that the command is executed under the privileges of the tenant administrator and that the user ID is verified for authorization. A note states that using the "help" button does not require a valid user and password. Below the text, there are three input fields: "Username:", "Password:", and "mxdbms command:". At the bottom, there are two buttons: "Submit" and "Help".

Another DBA function screen (help output)

- The help button invokes the `mxdbms --help` command and this is the output.
- Alternatively you can enter the command (or specific help commands) on the input screen



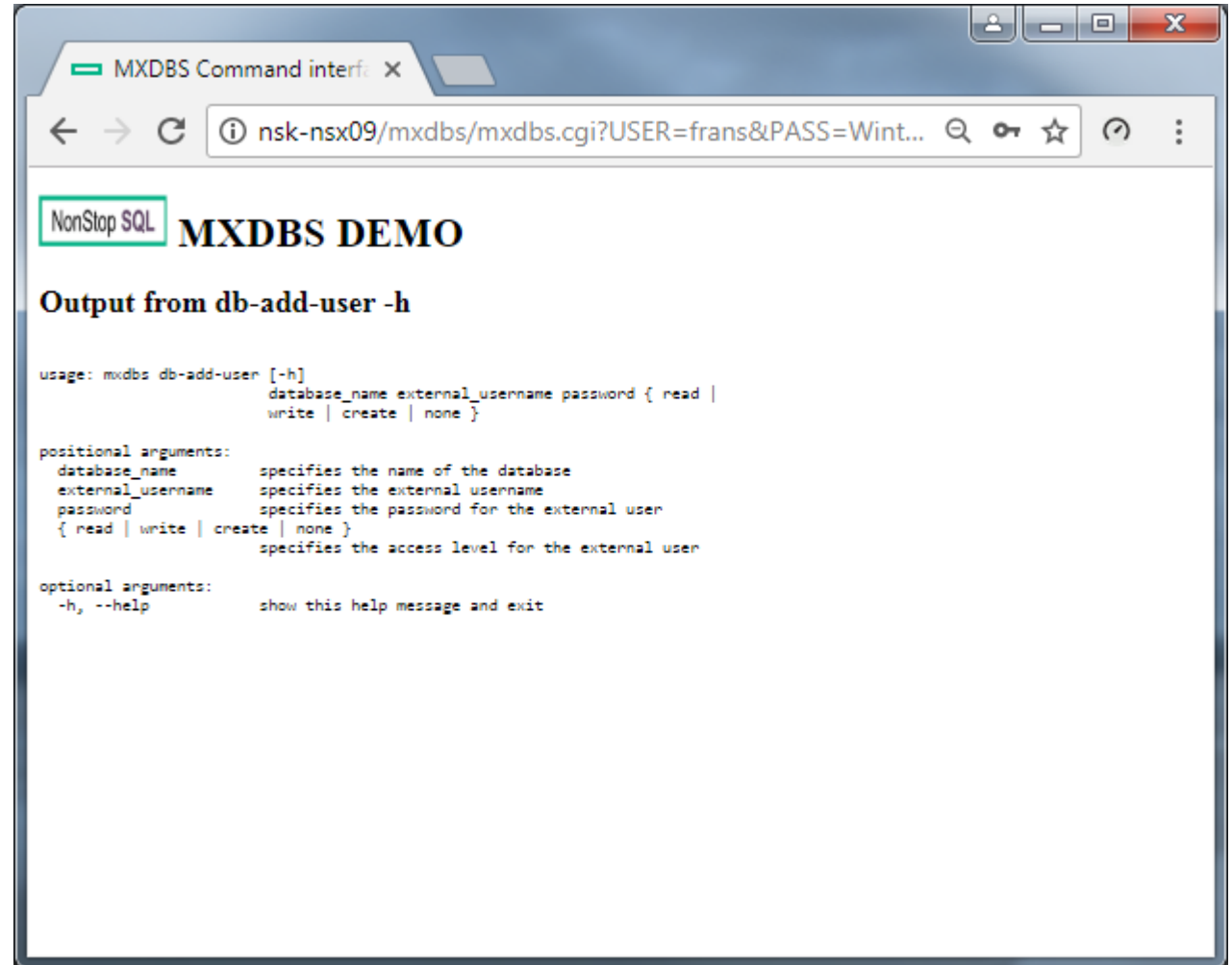
The screenshot shows a web browser window titled "MXDBS Command interf: x". The address bar contains the URL `nsk-nsx09/mxdbms/mxdbms.cgi?USER=&PASS=&CMDARGS=`. The page content includes a "NonStop SQL" logo and the text "MXDBS DEMO". Below this, the heading "Output from --help" is displayed. The main content is the help text for the `mxdbms` command, which lists usage, positional arguments, and optional arguments.

```
usage: mxdbms [-h] [-V]
           { db-create | db-alter-share | db-delete | db-add-user |
             db-remove-user | db-add-storage | db-user-change-access |
             user-change-password | show-databases } ...

positional arguments:
  { db-create | db-alter-share | db-delete | db-add-user | db-remove-user | db-add-storage | db-user-change-access | user-change

optional arguments:
  -h, --help            show this help message and exit
  -V, --version         show program's version number and exit
```

Another DBA function screen



Another DBA function screen

- Add a new user to a database

MXDBS Command Interface

mxdb command entry

This page allows a direct interface to the mxdb command interface. It is for demo purpose only. This information requires a NonStop User ID, Note that the command itself will be executed under the privileges of the tenant administrator. The user ID is verified to confirm authorization to the NonStop environment, not if you are allowed to run the demo. Remember, this is a demo, not production!

Using the "help" button does not require a valid user and password

When user and password are validated, the command you have entered -as-is- is passed onto the mxdb command interface. The command interface is documented in the SQL/MX Database Services manual.

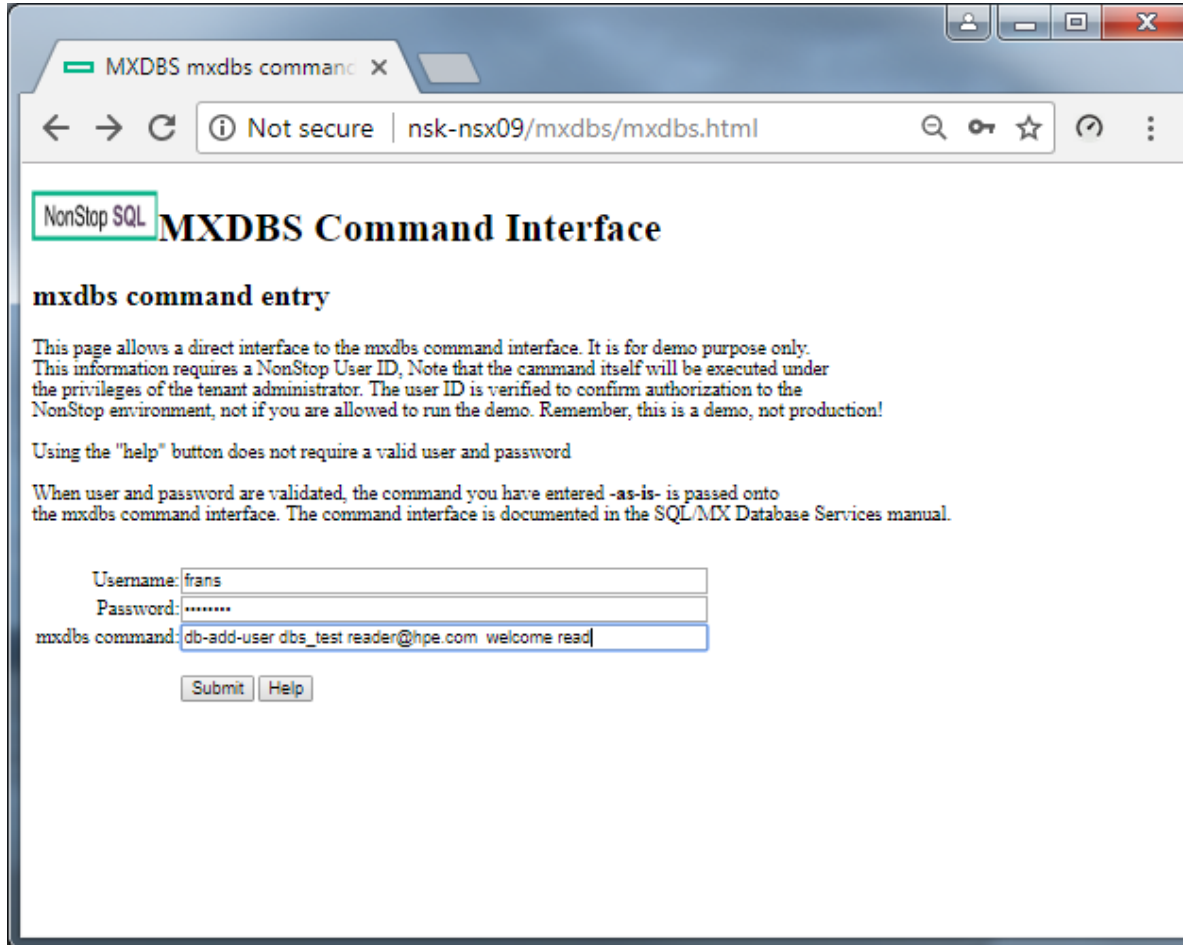
Username:

Password:

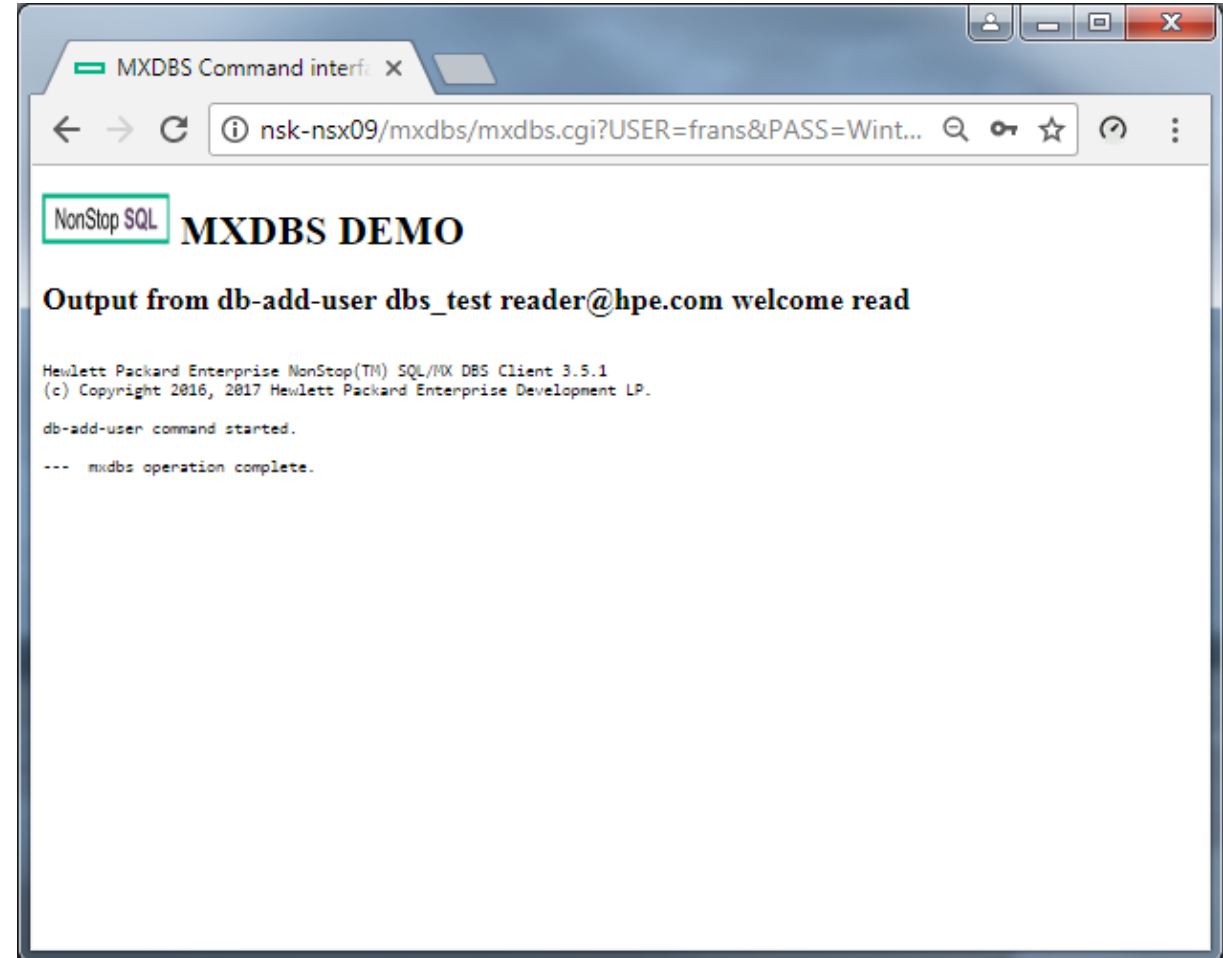
mxdb command:

Another DBA function screen

– Add a new user to a database



The screenshot shows a web browser window with the title "MXDBS mxdb command" and the URL "nsk-nsx09/mxdfs/mxdfs.html". The page content includes a "NonStop SQL" logo, the heading "MXDBS Command Interface", and a section titled "mxdfs command entry". Below this, there is a paragraph of introductory text, a note about the "help" button, and a paragraph explaining the command execution process. At the bottom, there are three input fields: "Username:" with the value "frans", "Password:" with masked characters, and "mxdfs command:" with the value "db-add-user dbs_test reader@hpe.com welcome read". There are "Submit" and "Help" buttons below the input fields.



The screenshot shows a web browser window with the title "MXDBS Command interf" and the URL "nsk-nsx09/mxdfs/mxdfs.cgi?USER=frans&PASS=Wint...". The page content includes a "NonStop SQL" logo, the heading "MXDBS DEMO", and a section titled "Output from db-add-user dbs_test reader@hpe.com welcome read". Below this, there is a paragraph of introductory text, a note about the "help" button, and a paragraph explaining the command execution process. At the bottom, there are three input fields: "Username:" with the value "frans", "Password:" with masked characters, and "mxdfs command:" with the value "db-add-user dbs_test reader@hpe.com welcome read". There are "Submit" and "Help" buttons below the input fields.

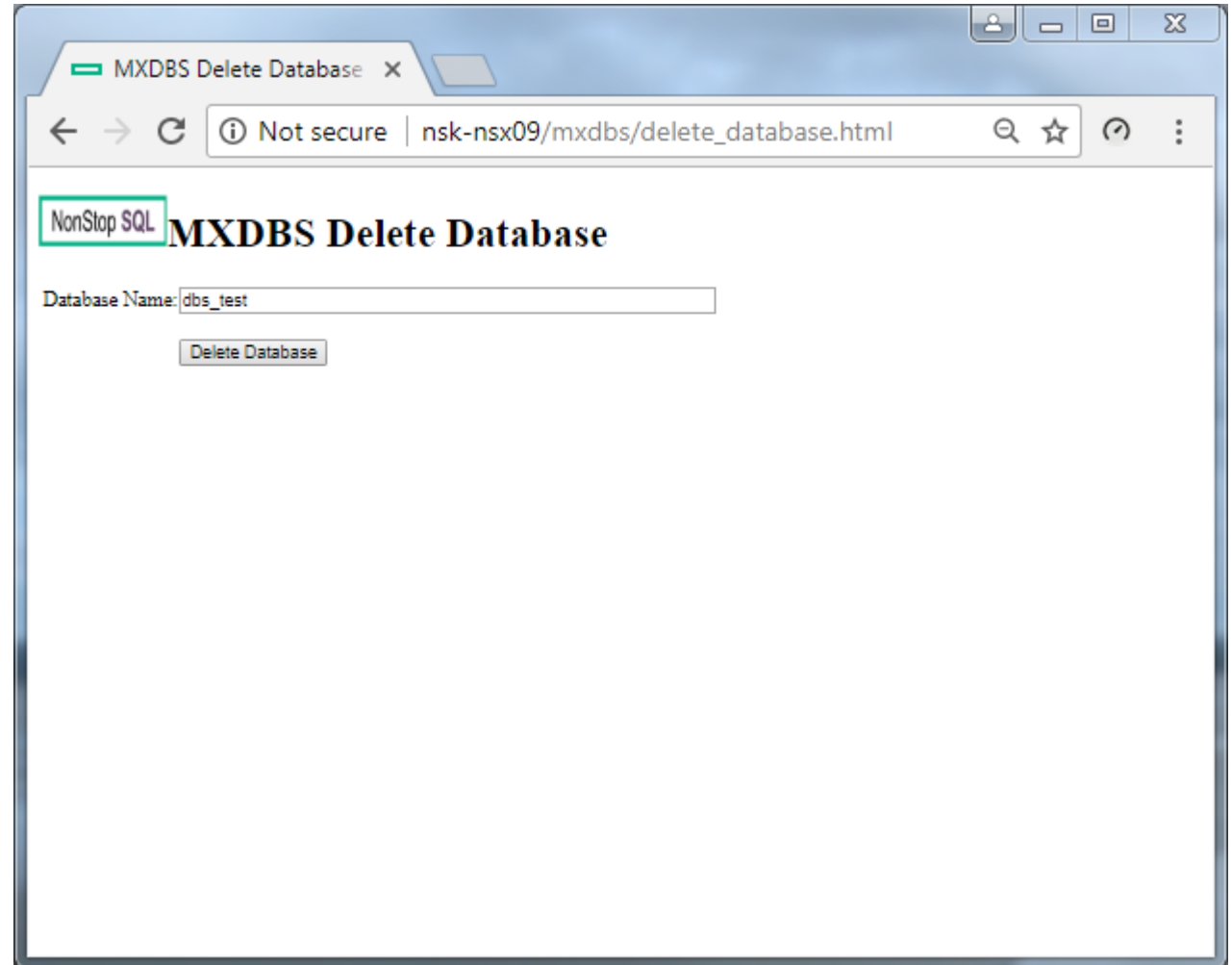
A DBA query (response)

- To show that reader@hpe.com has been added as a user to database DBS_TEST

USER_NAME	GUARDIAN_USER_NAME	DATABASE	PRIV_GROUP_OWNER	PRIV_GROUP_TYPE	PRIV_GROUP_NAME
EMEA_FJONGMA	DBS00031.USER002	DBS_FJ	TENANT.ADMIN	MD	DBS_FJ_USERS
EMEA_FJONGMA	DBS00031.USER002	DBS_FJ	TENANT.ADMIN	TC	DB435287110394004156_CREATE
EMEA_FJONGMA	DBS00031.USER002	DBS_FJ2	TENANT.ADMIN	MD	DBS_FJ2_USERS
EMEA_FJONGMA	DBS00031.USER002	DBS_FJ2	TENANT.ADMIN	TC	DB435288849793536862_CREATE
FRANS	DBS00031.USER033	DBS01	TENANT.ADMIN	MD	DBS01_USERS
FRANS	DBS00031.USER033	DBS01	TENANT.ADMIN	TC	DB437559939248267567_CREATE
FRANS@HOME	DBS00031.USER004	DBS_FJ	TENANT.ADMIN	MD	DBS_FJ_USERS
FRANS@HOME	DBS00031.USER004	DBS_FJ	TENANT.ADMIN	TR	DB435287110394004156_READ
FRANS@HPE.COM	DBS00031.USER034	DBS_TEST	TENANT.ADMIN	MD	DBS_TEST_USERS
FRANS@HPE.COM	DBS00031.USER034	DBS_TEST	TENANT.ADMIN	TC	DB437559991773030671_CREATE
POENZ@GMAIL	DBS00031.USER027	DENZ_HITDB	TENANT.ADMIN	MD	DENZ_HITDB_USERS
POENZ@GMAIL	DBS00031.USER027	DENZ_HITDB	TENANT.ADMIN	TC	DB439010537003559642_CREATE
READER@HPE.COM	DBS00031.USER035	DBS_TEST	TENANT.ADMIN	MD	DBS_TEST_USERS
READER@HPE.COM	DBS00031.USER035	DBS_TEST	TENANT.ADMIN	TR	DB437559991773030671_READ

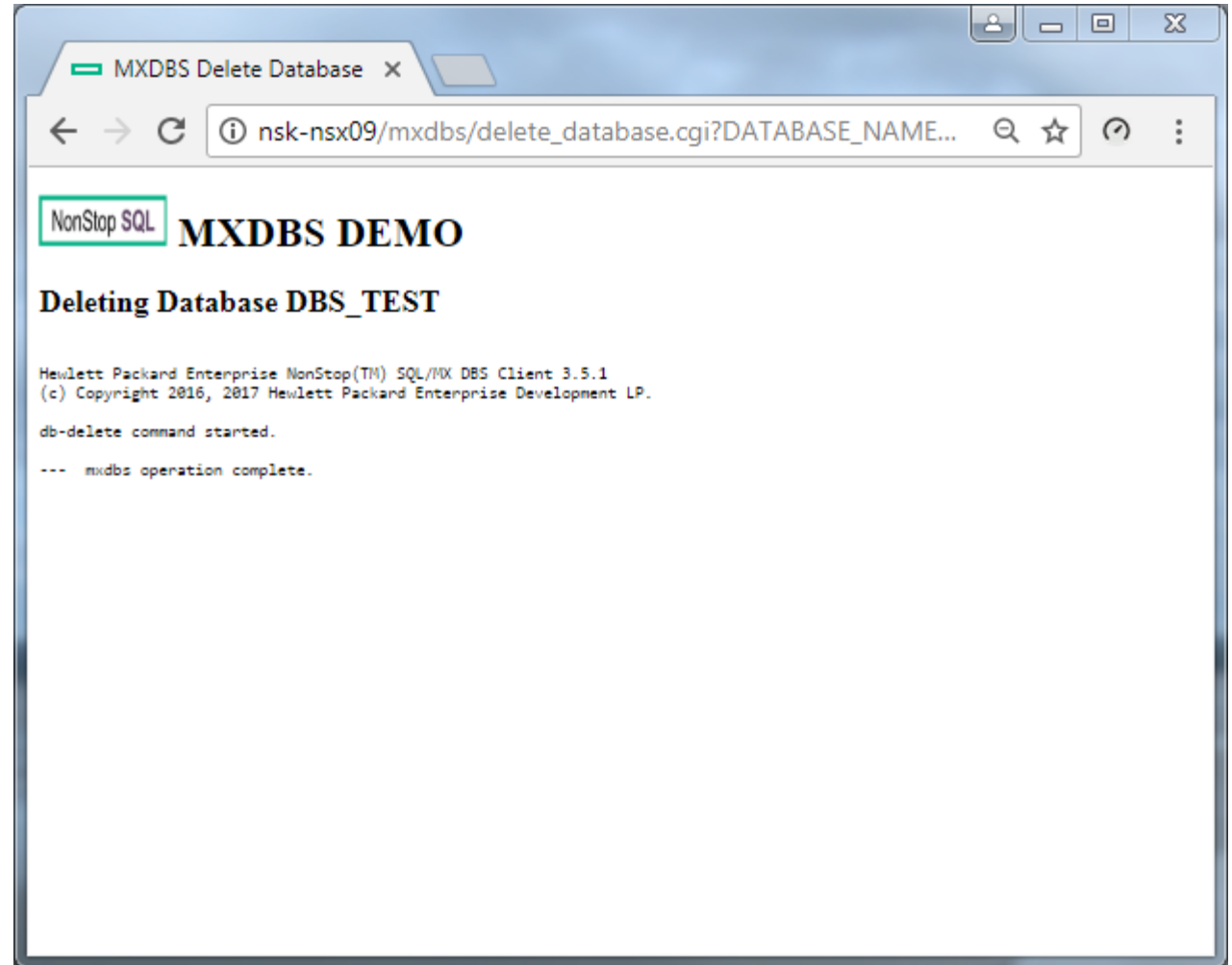
Cleaning up the database

- Free all the resources with a single command
- Drops the catalog and all the objects in it
- Stops and deletes the datasource
- Releases the storage back to the DBS storage pool
- Delete action takes about a minute



Database delete results

- After delete action finishes, the result of the action is displayed.



Summary

- SQL/MX DBS makes life easy for a DBA
- The demo shows “how” easy
- Remember, these HTML pages are not secure enough for production purpose
- They show the principle and making access secure is not rocket-science
- HTML and scripts are available
 - Working on packaging – send me an email
 - No warranty!



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Thank you

Frans.Jongma@hpe.com