



Introduction to MariaDB

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Agenda

- What is Maria
- Install
- Access
- GUI's
- DB2 Storage Engine
- Q&A



What is MySQL?

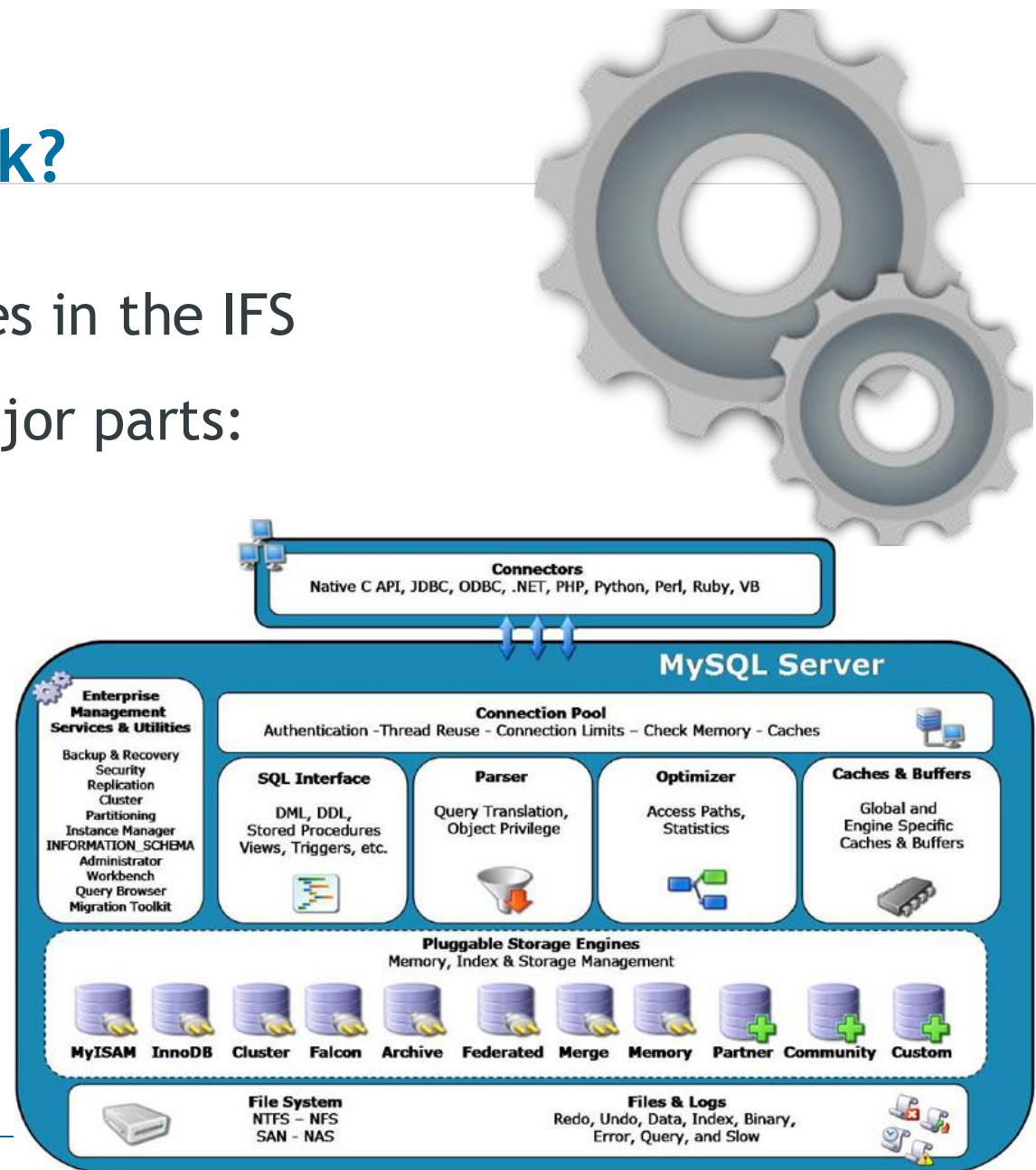
LAMP

- Most Popular and widely used **Open Source** Database
- Relational Database management System (RDBMS)
- Like DB2, but not, really
- Command line interface
- Many GUI utilities available to manage



How does it work?

- Essentially flat files in the IFS
- MySQL has two major parts:
 - UI Layer
 - Storage Engine
 - MyISAM
 - INNODB
 - IBMDB2
- Sound familiar?





HISTORY OF MYSQL/MARIA



In the beginning

- Founded in 1994 -1995 by
- David Axmark
- Allan Larsson
- Michael “Monty” Widenius
- Named after Monty’s daughter “My” (Pronounced mee)
- Monty now working on MariaDB so let’s shift focus...



Ownership

- **MySQL**
 - Remember MySQL is Open Source: Anyone can compile the source code and use the binaries as long as they follow the rules of the license.
 - Jan 2008: Sun purchased MySQL for \$1B
 - Oracle purchased Sun about a year later for \$7.4B
 - FUD ensues...
 - Today, MySQL continues to live on, but Maria DB is waiting in the wings should MySQL fall away.
- **Maria**
 - Monty created a foundation so no one will ever “own” Maria

What about IBM i? *Zend DBI == MariaDB*

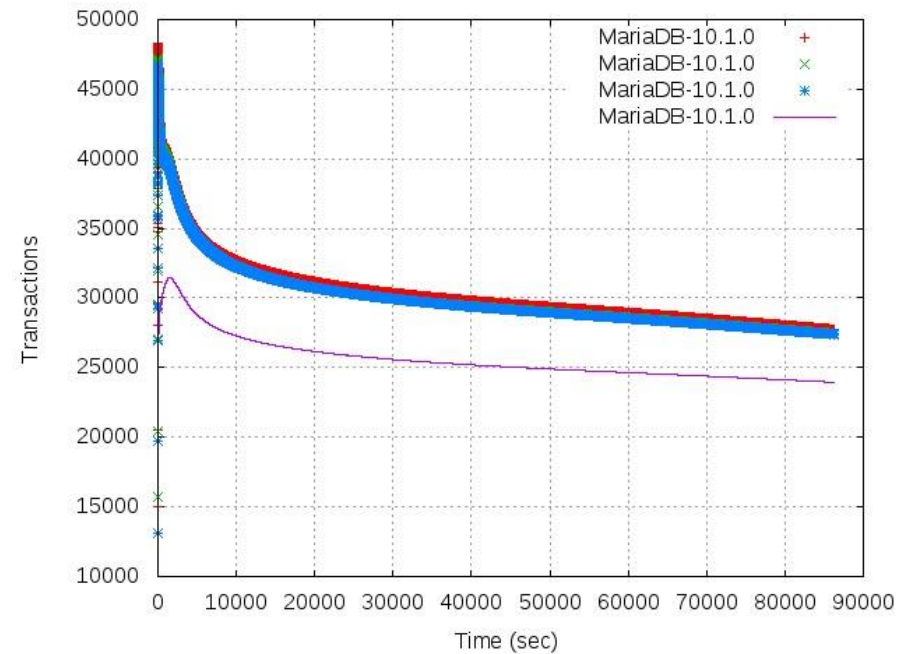
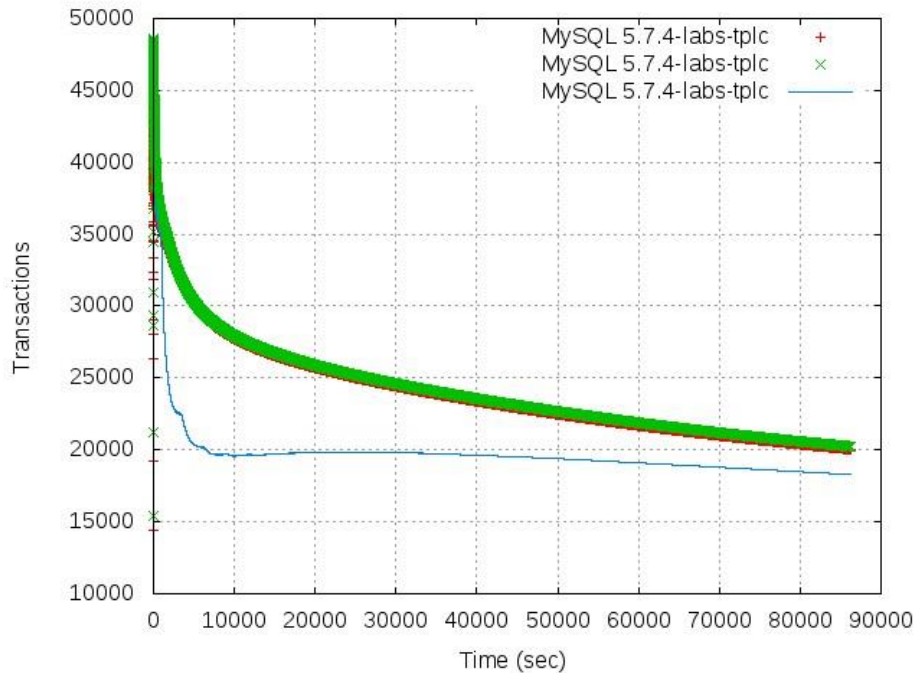
- A few years ago Oracle dropped support for MySQL on Power and discontinued compiling the binaries.
- Old binaries still available on Oracle archive site
- IBM began looking for a new suitor
- Zend stepped up and took over the binary distribution for MySQL for IBM i and the new product is called **Zend DBi**
- Same wonderful MySQL, just compiled for POWER IBM i
- Supported on i7.1 and higher
- Available for no charge at www.zend.com/products/dbi
- What gets installed?
 - Maria 10.1 with MySQL 5.6 compatibility

Why Maria?

- **Primarily the license**
- **But also to have a purely open source solution with no ties to commercial competitor**
- **Performance benefits**
- **More storage engines**
- **A ton of optimizer enhancements**
- **Extensions and new features**
 - **KILL feature for runaway queries**
 - **Faster join and subquery**
 - **SHOW EXPLAIN**
 - **Extended user statistics**

Maria Performance

- <https://mariadb.org/update-on-performance-measurement-on-mariadb-10-1-and-mysql-5-7-4-labs-tpc/>



Turbo LAMP whitepaper

- <https://www.ibm.com/developerworks/community/groups/community/turbolamp>

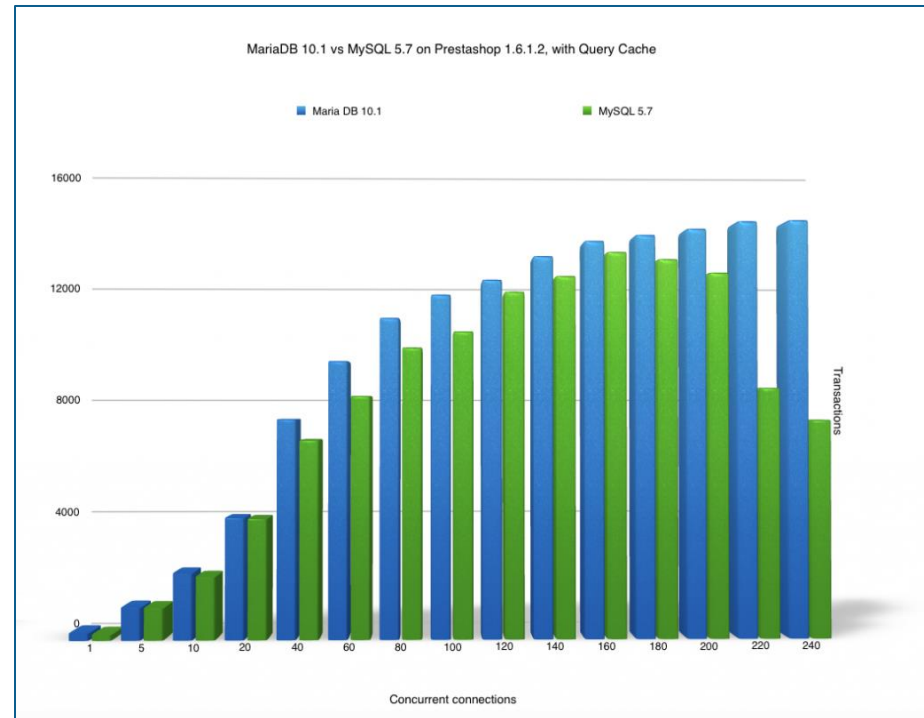
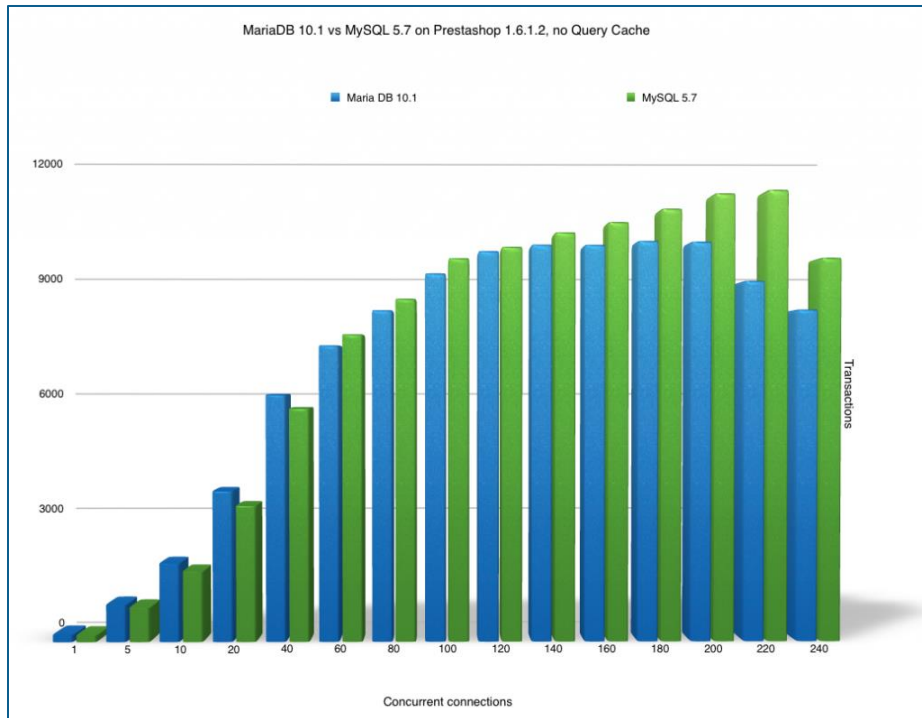
- Exclusive parallel slave architecture which delivers nearly 10x better cluster replication performance than MySQL. MariaDB 10's advanced replication algorithms will likely deliver an even bigger boost when coupled with the speed and throughput of Mellanox networking in the Turbo LAMP architecture.

UP TO 10 TIMES FASTER QUERIES

Foedus experienced a significant improvement in the Octopus performance when switching from MySQL 5.6 to MariaDB 10.0. "We realized that one of our longest running queries on MariaDB was almost 10 times faster than the same query executed on MySQL. And once we built the system on MariaDB with IBM POWER8 the execution time of the same query improved from "hours" to "seconds". During this migration the MariaDB team provided us with all the support we needed and was a great back-up for us," said Paolo Messina, CEO of Foedus Group.

Softizy Performance

- Cache is KING!



Maria Likes Power

<https://mariadb.com/products/mariadb-ibm-power8>



[HOME](#) » [PRODUCTS](#) » [MARIADB ON IBM POWER8](#)

Performance boost your application and lower your TCO with MariaDB on IBM POWER8

MariaDB Corporation and IBM have joined forces to bring you a new platform on which to deploy MariaDB Enterprise - IBM's Power System servers. IBM's [advanced server platform](#) is based on a mature, highly scalable and high performance RISC architecture featuring multi-core, multi-terabyte memory servers combined with open software architectures such as MariaDB and Linux. Now you can scale-out your applications even more cost-effectively using these proven solutions.

IBM and MariaDB Corporation worked together to port MariaDB to POWER8, making the database compatible with both big-endian and little-endian instruction sets, as well as tuning and performance benchmarking. MariaDB Enterprise is an integral part of IBM's TurboLAMP stack, a full stack of infrastructure software optimized for POWER8.

Now two leaders in enterprise computing - IBM and MariaDB - are working together to bring you unprecedented scalability and performance for the most demanding enterprise workloads.



Who is using Maria?

- Google
 - <http://www.zdnet.com/article/google-quietly-dumps-oracle-mysql-for-mariadb/>

Google quietly dumps Oracle MySQL for MariaDB

Linux distributors have been moving from Oracle's MySQL to its popular fork, MariaDB - and now Google is also moving to MariaDB.

- Wikipedia
 - <http://www.infoworld.com/article/2614268/open-source-software/wikipedia-dumps-mysql--hooks-up-with-mariadb.html>

Wikipedia dumps MySQL, hooks up with MariaDB

Driven by preference for open source software 'without bifurcated code bases,' Wikipedia embraces MariaDB, a MySQL fork free of Oracle baggage

MORE LIKE THIS

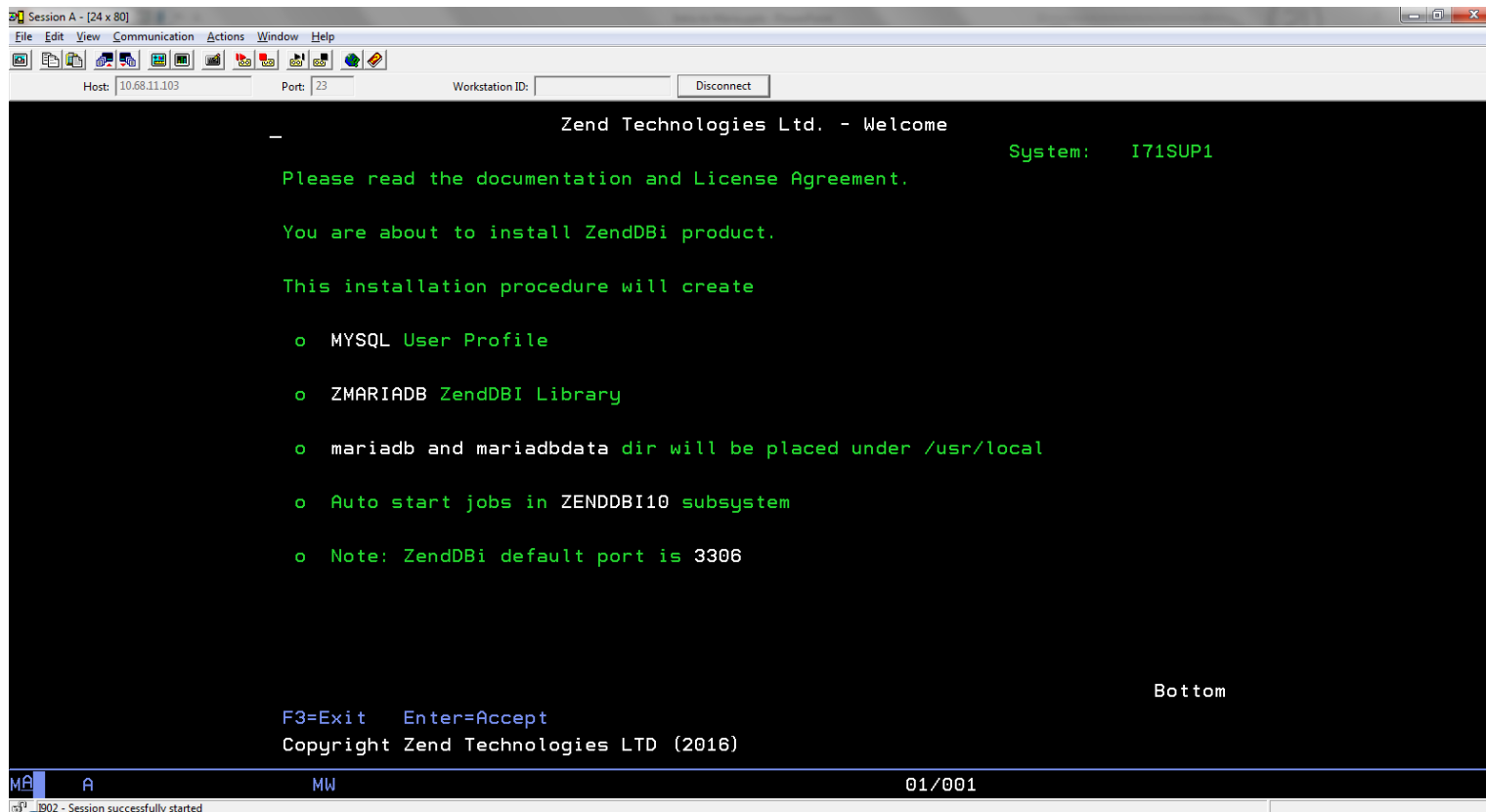
SkySQL, MariaDB to merge

Fedora, OpenSuse ditch MySQL, in a

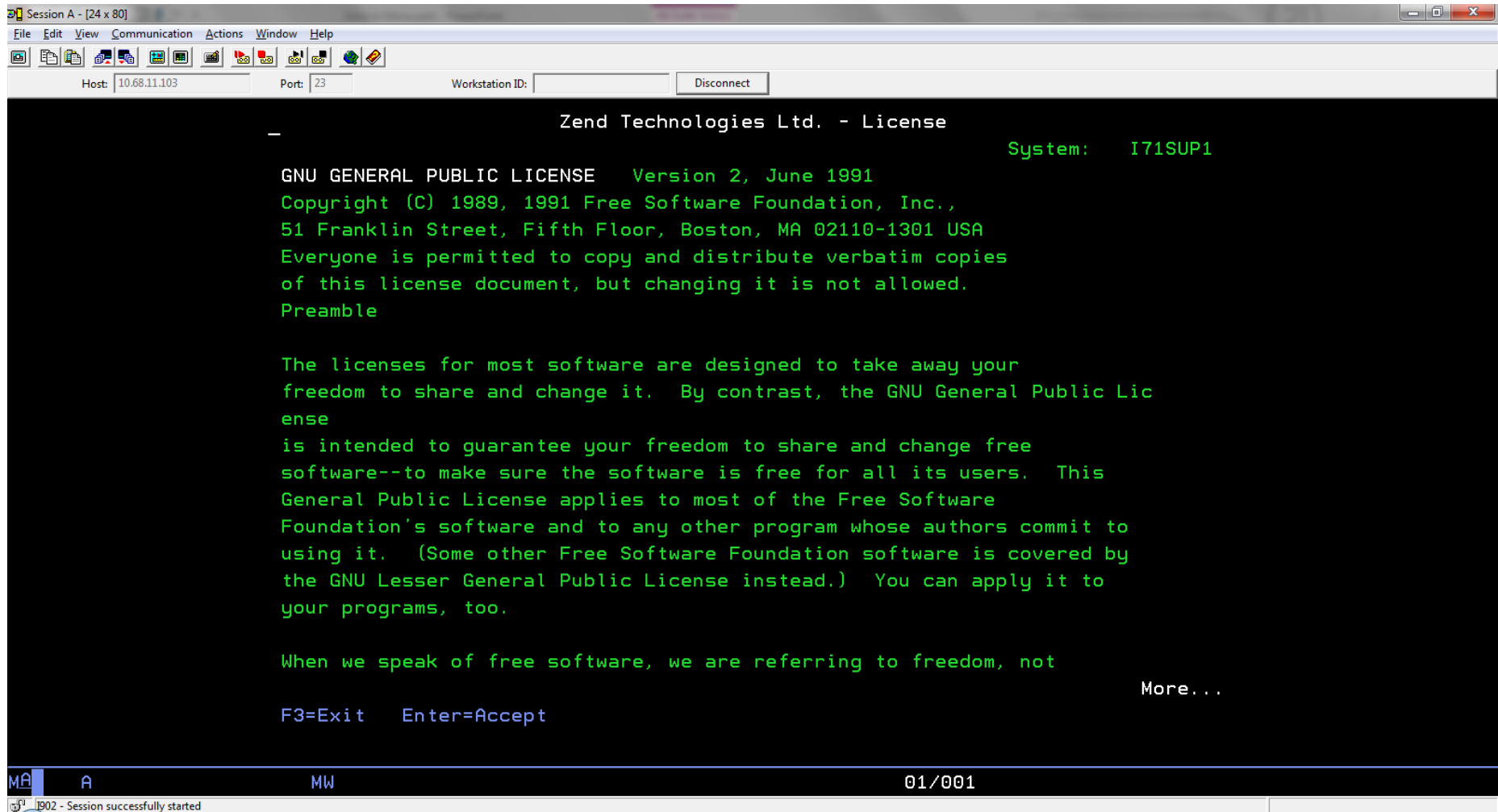
Introduction to Maria

Installation

- Announcement screen



License



The screenshot shows a terminal window titled "Session A - [24 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The terminal content is as follows:

```
Host: 10.68.11.103      Port: 23      Workstation ID:      Disconnect

                                Zend Technologies Ltd. - License

                                System:  I71SUP1

GNU GENERAL PUBLIC LICENSE  Version 2, June 1991
Copyright (C) 1989, 1991 Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301 USA
Everyone is permitted to copy and distribute verbatim copies
of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your
freedom to share and change it.  By contrast, the GNU General Public Lic
ense
is intended to guarantee your freedom to share and change free
software--to make sure the software is free for all its users.  This
General Public License applies to most of the Free Software
Foundation's software and to any other program whose authors commit to
using it.  (Some other Free Software Foundation software is covered by
the GNU Lesser General Public License instead.)  You can apply it to
your programs, too.

When we speak of free software, we are referring to freedom, not

                                More...

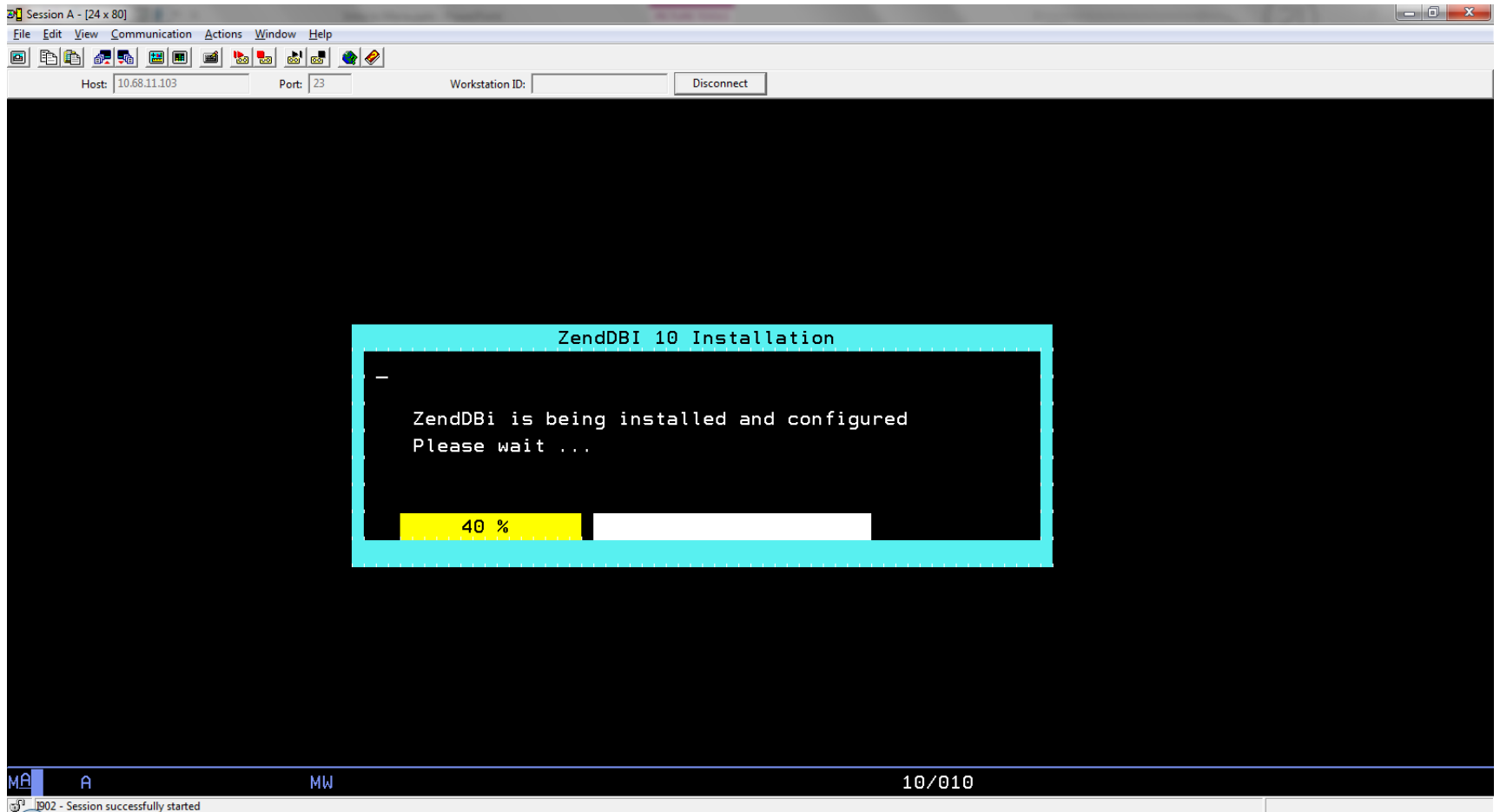
F3=Exit  Enter=Accept
```

At the bottom of the terminal window, there is a status bar with the text "01/001" and a small icon on the left. Below the terminal window, a system tray shows "1902 - Session successfully started".

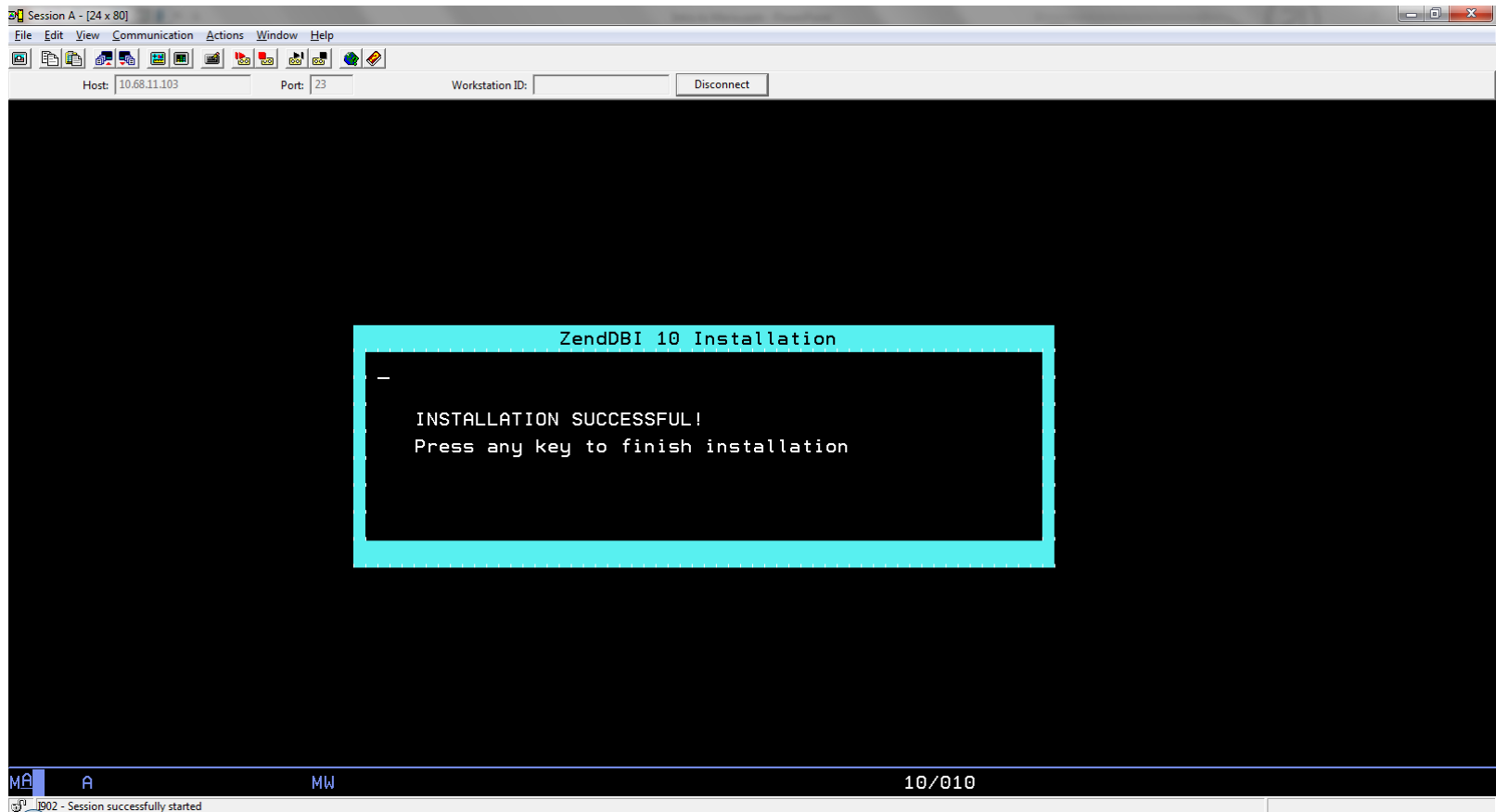
Status

The screenshot shows a remote session window titled "Session A - [24 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The session parameters are displayed as "Host: 10.68.11.103", "Port: 23", and "Workstation ID: []", with a "Disconnect" button. The main area of the window is black, displaying a terminal window with a cyan border. The terminal text reads: "ZendDBI 10 Installation", followed by a blank line, "ZendDBi is being installed and configured", "Please wait ...", and "Creating ZendDBi Subsystem ZendDBi.". At the bottom of the session window, there is a status bar with "MA", "A", "MW", and "10/010". A small icon and the text "1902 - Session successfully started" are visible in the bottom-left corner.

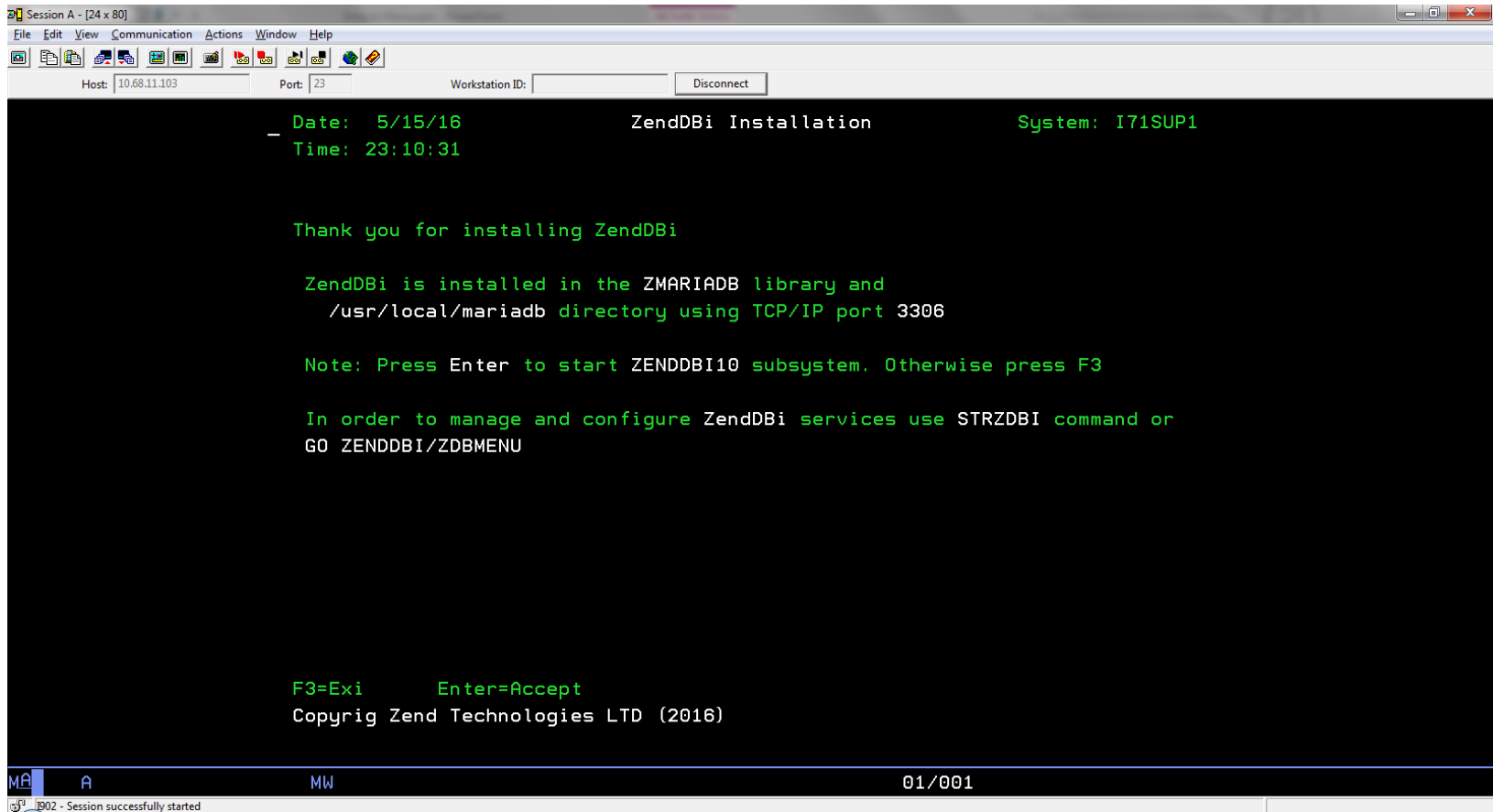
Progress bar



All done



Announcement



The screenshot shows a terminal window titled "Session A - [24 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The terminal content is as follows:

```
Host: 10.68.11.103      Port: 23      Workstation ID:      Disconnect

Date: 5/15/16          ZendDBi Installation      System: I71SUP1
Time: 23:10:31

Thank you for installing ZendDBi

ZendDBi is installed in the ZMARIADB library and
/usr/local/mariadb directory using TCP/IP port 3306

Note: Press Enter to start ZENDDBI10 subsystem. Otherwise press F3

In order to manage and configure ZendDBi services use STRZDBI command or
GO ZENDDBI/ZDBMENU

F3=Exi      Enter=Accept
Copyrig Zend Technologies LTD (2016)
```

At the bottom of the terminal window, there is a status bar with the text "002 - Session successfully started".

See the option listed in GO LICPGM

```
Session A - [24 x 80]
File Edit View Communication Actions Window Help
Host: 10.68.11.103 Port: 23 Workstation ID: Disconnect

Display Installed Licensed Programs
System: I71SUP1

Licensed Program Installed Status Description
5770XE1 *COMPATIBLE IBM i Access for Windows
5770XW1 *COMPATIBLE IBM i Access Family
5770XW1 *COMPATIBLE IBM i Access Enablement Support
1ZENDB *INSTALLED ZendDBI for IBM i 10.1.12
2ZSVRPI *INSTALLED Zend Server for IBM i 5.6.0 ( PHP 5.3 )
6ZSVRPI *INSTALLED Zend Server for IBM i 8.5.1 ( PHP 5.6 )
7ZSVRPI *INSTALLED Zend Server for IBM i 9.0.0 ( PHP 7.0 )

Bottom

Press Enter to continue.

F3=Exit F11=Display release F12=Cancel F19=Display trademarks

Already at bottom of area.

MA A MW 01/001
1902 - Session successfully started
```

Subsystem and jobs

```
Session A - [24 x 80]
File Edit View Communication Actions Window Help
Host: 10.68.11.103 Port: 23 Workstation ID: Disconnect

Work with Active Jobs I71SUP1
05/15/16 23:12:29
CPU %: 59.0 Elapsed time: 01:25:23 Active jobs: 238

Type options, press Enter.
  2=Change  3=Hold  4=End  5=Work with  6=Release  7=Display message
  8=Work with spooled files 13=Disconnect ...

Current
Opt Subsystem/Job User Type CPU % Function Status
--
  2 ZENDDBI10 QSYS SBS .0 DEQW
  3 ZENDDPID MYSQL BCI .0 PGM-sh THDW
  4 ZENDDPID MYSQL BCI .0 PGM-mysqld SELW

Parameters or command
===> _____
F3=Exit F5=Refresh F7=Find F10=Restart statistics
F11=Display elapsed data F12=Cancel F23=More options F24=More keys

Bottom

MA A MW 10/002
1002 - Session successfully started
```

Monitor

- Maria has no native GUI interface (sound familiar?)
- Command line accessible from QSHELL, QP2TERM, etc.
- This is the natural method for accessing.
- Will show you access, but not a big fan.
- Fully documented at Maria website
- Many books on the subject

Setup terminal in green screen

- CALL QP2TERM or QSH
- cd /usr/local/mariadb/bin
- Load the terminal: export TERM=xterm
- mysql -u root

```
> export TERM=xterm
$
> mysql -u root
(B [0;1mWelcome to the MariaDB monitor.  Commands end with ; or \g.
(B [0m (B [0;1mYour MariaDB connection id is 2
Server version: 10.1.12-MariaDB-debug Source distribution

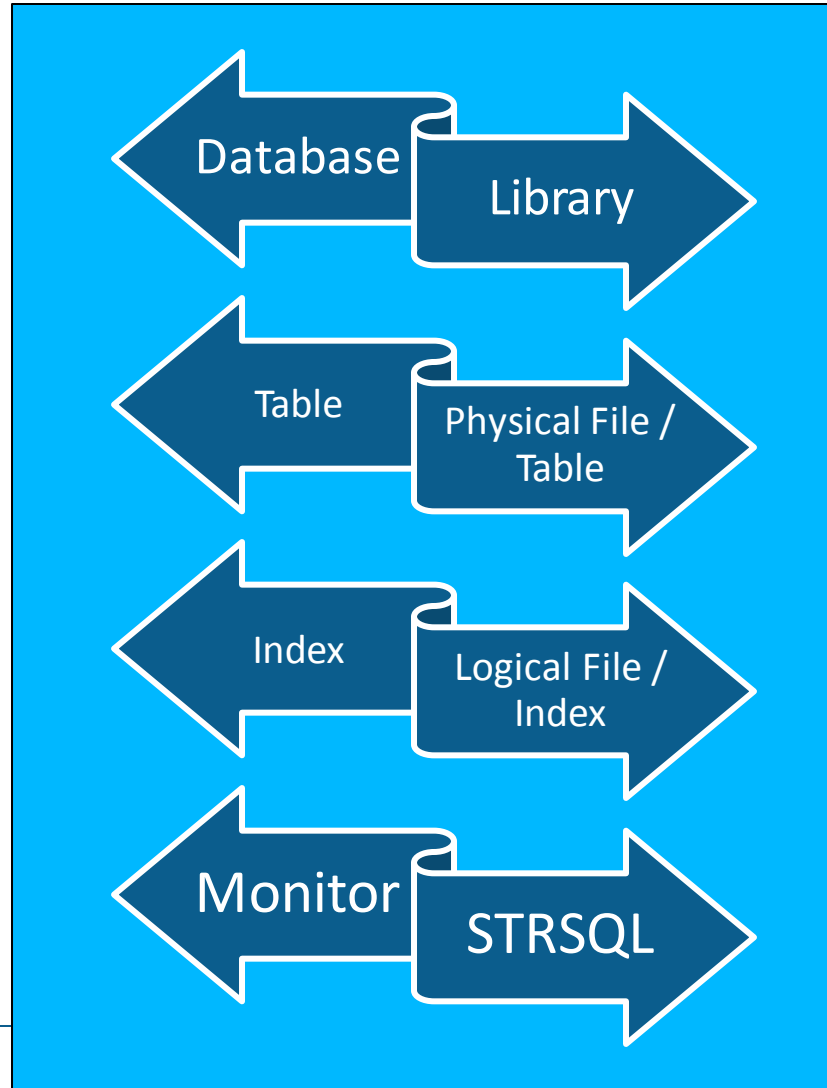
(B [0m (B [0;1mCopyright (c) 2000, 2016, Oracle, MariaDB Corporation Ab and others.

(B [0m (B [0;1mType 'help;' or '\h' for help. Type '\c' to clear the current input statement.

(B [0m [?1034hMariaDB [(none)]>

===> _____
```

MySQL to DB2 terminology



Can issue commands like show

- Show databases
- Then switch to use a database
 - Selects the database you will use for processing
 - Database is like a library, where you store tables, etc.
 - Typically one database per application

```
> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| test |
+-----+
(B [0;1m4 rows in set (0.00 sec)
(B [0m (B [0;1m
(B [0mMariaDB [(none)]>

===> _
```

```
> use mysql
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

(B [0;1mDatabase changed
(B [0mMariaDB [mysql]>

===> _
```

Show some columns from table

```
> select host, user, password from user;
+-----+-----+-----+
| host          | user  | password |
+-----+-----+-----+
| localhost     | root  |          |
| i71sup1.cvo.roguewave.com | root  |          |
| 127.0.0.1     | root  |          |
| ::1          | root  |          |
| localhost     |       |          |
| i71sup1.cvo.roguewave.com |       |          |
+-----+-----+-----+
(B [0;1m6 rows in set (0.00 sec)
(B [0m (B [0;1m
(B [0mMariaDB [mysql]>

===>
```

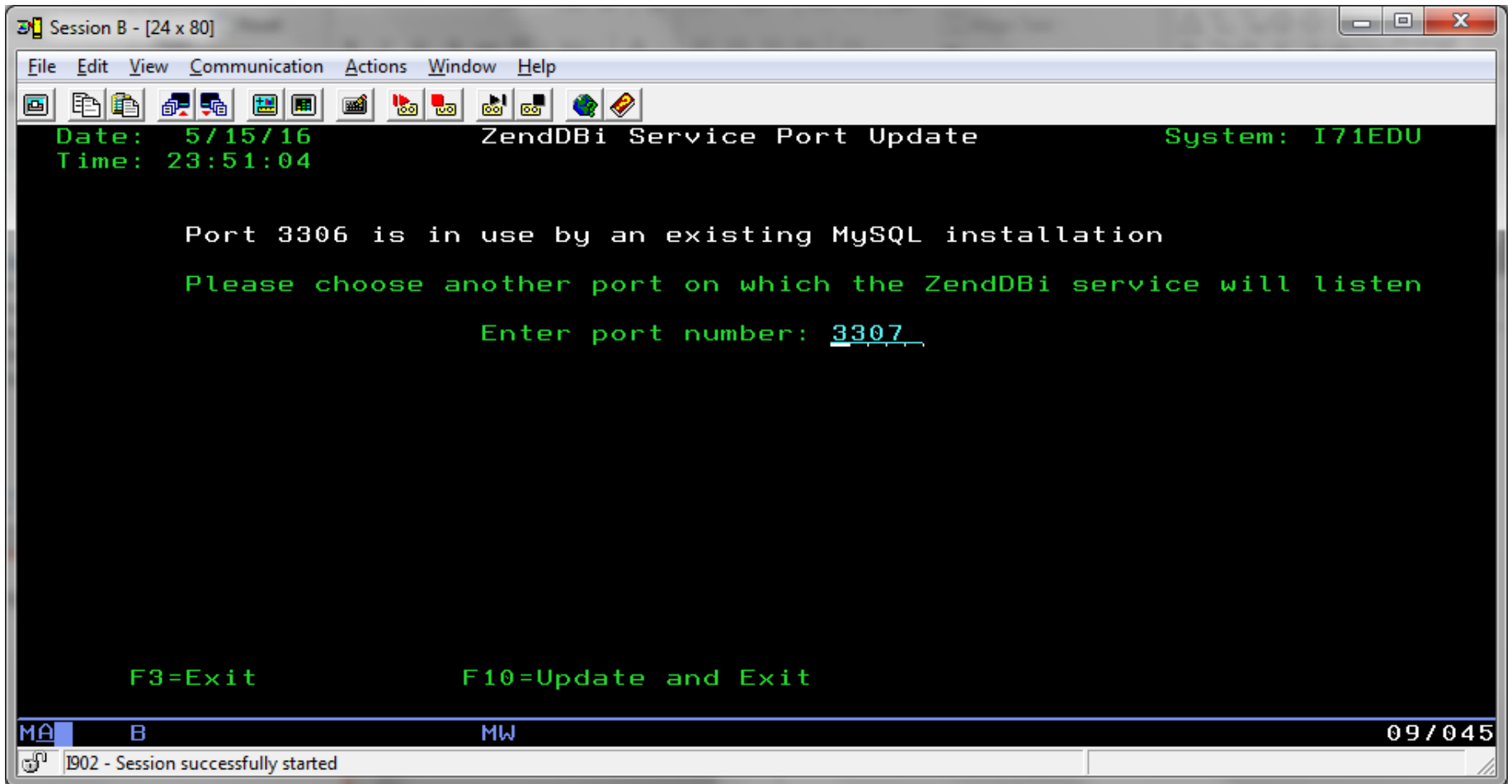
Toodles

```
> quit  
  (B [0;1mBye  
  (B [0m$  
  
===> _____
```

Maria Options

1. Maria can install on clean LPAR and listen on port 3306
 1. Install the LP and go
2. Maria can install side by side with older version of MySQL
 1. Installer will ask you for another port
 2. Export data from MySQL, import to Maria

See options if MySQL already on 3306



The screenshot shows a terminal window titled "Session B - [24 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main content area displays the following text:

```
Date: 5/15/16           ZendDBi Service Port Update           System: I71EDU
Time: 23:51:04

Port 3306 is in use by an existing MySQL installation

Please choose another port on which the ZendDBi service will listen

Enter port number: 3307_

F3=Exit           F10=Update and Exit
```

At the bottom of the terminal window, there is a status bar with "MA" and "B" on the left, "MW" in the center, and "09/045" on the right. Below the status bar, a message reads "1902 - Session successfully started".

See both operating

- MySQL 5.1 and Maria 10.1 side by side

```
Session A - [24 x 80]
File Edit View Communication Actions Window Help
Host: 10.68.11.101 Port: 23 Workstation ID: Disconnect

Work with Active Jobs I71EDU
05/16/16 05:12:00
CPU %: .0 Elapsed time: 00:00:00 Active jobs: 219

Type options, press Enter.
 2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message
 8=Work with spooled files 13=Disconnect ...

Current
Opt Subsystem/Job User Type CPU % Function Status
--- Q1ABRMNET QSYS SBS .0 DEQW
--- Q1ACPDST QBRMS P.I .0 DLY-60 DLYW
--- ZENDDBI QSYS SBS .0 DEQW
--- ZENDDBI10 MYSQL BCI .0 PGM-mysqld SELW
--- ZENDDBI10 QSYS SBS .0 DEQW
--- ZENDDBI10 MYSQL BCI .0 PGM-sh THDW
--- ZENDDBI10 MYSQL BCI .0 PGM-mysqld SELW
--- ZENDSVR6 QSYS SBS .0 DEQW
--- ZSDAEMON QTMHHTTP BCI .0 PGM-watchdog THDW

More...

Parameters or command
==> _____
F3=Exit F5=Refresh F7=Find F10=Restart statistics
F11=Display elapsed data F12=Cancel F23=More options F24=More keys

MA A 10/002
0902 - Session successfully started
```


Details on deleting MySQL

- Steps for a clean removal...
 - ENDSBS ZMYSQL OPTION(*IMMED)
 - DLTLIB ZMYSQL
 - CALL QP2TERM
 - `rm -f /usr/local/mysql`
 - `rm -r -f /usr/local/mysql-5.1.50-i5os-power-64bit`
 - `rm -r -f /usr/local/mysqldata`
 - `rm -f /etc/my.cnf`
 - `rm -f /tmp/mysql.sock`





GUI ANYONE?



Many GUI solutions, here's a couple...

- Adminer
- Single PHP script
- Lightweight, powerful and easy to use

- phpMyAdmin
- Widely used by community
- Installed with Zend Server

Adminer 3.3.4



Adminer - <http://www.adminer.org/>

Open source & lightweight

All code in single PHP script, drop it in and go!

Language:

MySQL » [Server](#) » Database: a264133_9f2rp027

Adminer 3.3.4

Database: a264133_9f2rp027

[SQL command](#) [Dump](#)

[Create new table](#)

[select albums](#)
[select interprets](#)
[select songs](#)

[Alter database](#) [Database schema](#) [Privileges](#)

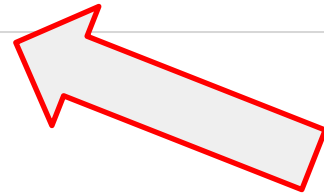
Tables and views

Search data in tables:

<input type="checkbox"/>	Table	Engine	Collation	Data Length	Index Length	Data Free	Auto Increment	Rows	Comment
<input type="checkbox"/>	albums	InnoDB	utf8_general_ci	16,384	16,384	0	2	~ 1	Albums
<input type="checkbox"/>	interprets	InnoDB	utf8_general_ci	16,384	0	0	2	~ 1	Interprets
<input type="checkbox"/>	songs	InnoDB	utf8_general_ci	16,384	16,384	0	15	~ 14	Songs
	3 in total	MyISAM	utf8_general_ci	49,152	32,768	0			

Move to other database:

phpMyAdmin



- Open Source PHP Project
- Provides nearly every access to MySQL you might need
- Can be deployed from Zend site
 - http://files.zend.com/help/Zend-Server-/content/installing_phpmyadmin.htm
- Documentation at <http://www.phpmyadmin.net/documentation/>

Installing and Configuring phpMyAdmin

This topic explains how to install and configure [phpMyAdmin](#) on Zend Server.

Note:

phpMyAdmin is a free software tool written in PHP, intended to handle the administration of MySQL over the Web. This tool is not supported by Zend.

Deploying phpMyAdmin


This procedure describes how to download and deploy the phpMyAdmin application package on Zend Server.

Note:

Currently, deployment of phpMyAdmin on Zend Server can only be performed on Apache and nginx servers.



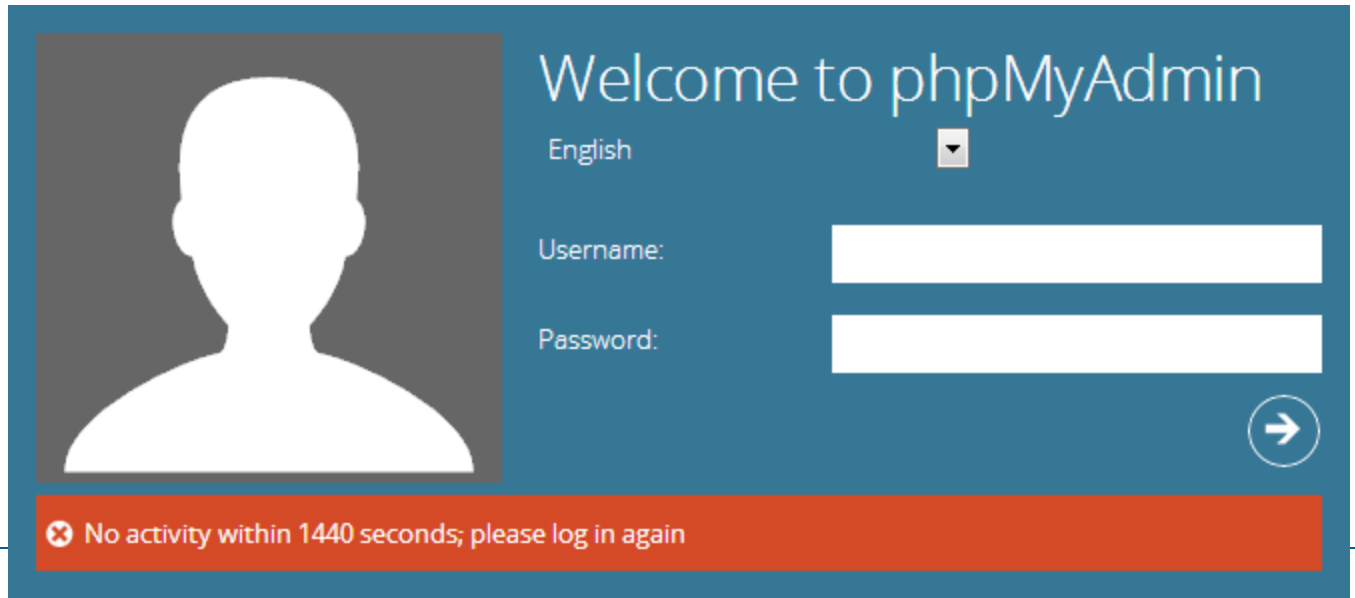
To install phpMyAdmin:

1. Click [here](#) to download the phpMyAdmin application package.
2. In the UI, go to the **Applications | Apps** page.
3. In the Action bar, click  **Deploy Application**.

The Deploy Application wizard displays.

phpMyAdmin - Password management

- Login with “root” profile
- Create your profile
- Test your profile
- Change root password
IMMEDIATELY (if not sooner)



Welcome to phpMyAdmin

English

Username:

Password:

→

⊗ No activity within 1440 seconds; please log in again


Tour the dashboard..then on to users

The screenshot displays the phpMyAdmin interface for a MySQL server at 127.0.0.1:3306. The left sidebar lists databases from PHP01 to PHP16. The main content area is divided into four sections:

- General Settings:** Includes a 'CHANGE PASSWORD' button and a 'SERVER CONNECTION COLLATION' dropdown menu set to 'utf8_general_ci'.
- Appearance Settings:** Includes a 'LANGUAGE' dropdown menu set to 'English' and a 'THEME' dropdown menu set to 'metro'. A 'MORE SETTINGS' button is also present.
- Database server:** Lists server details: Server: 127.0.0.1 via TCP/IP, Software: MySQL, Software version: 5.1.59 - MySQL Community Server (GPL), Protocol version: 10, User: mpavlak@localhost, and Server charset: UTF-8 Unicode (utf8).
- Web server:** Lists web server details: Apache, Database client version: libmysql - mysqlnd 5.0.10 - 20111026 - 5fd: e707c415db32080b3752b232487a435ee03...5, and PHP extension: mysqli.

Users

- Click Add user
- Fill out details, click GO

<input type="checkbox"/>	root	127.0.0.1
<input type="checkbox"/>	root	MV15.MORAINEVILLE
<input type="checkbox"/>	root	localhost
↑ Check All / Uncheck All		
 Add user		



ADD USER

Add user

User name: Use text field:

Host: Any host ⓘ

Password: Use text field:

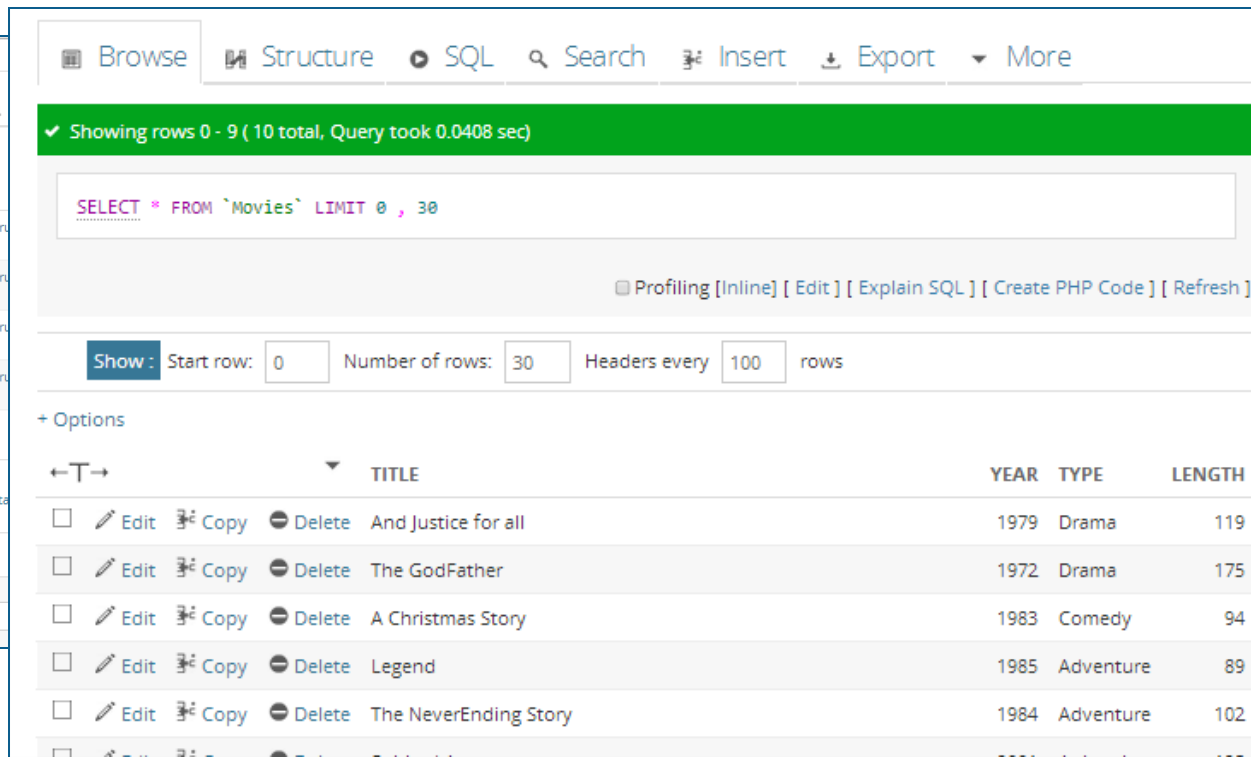
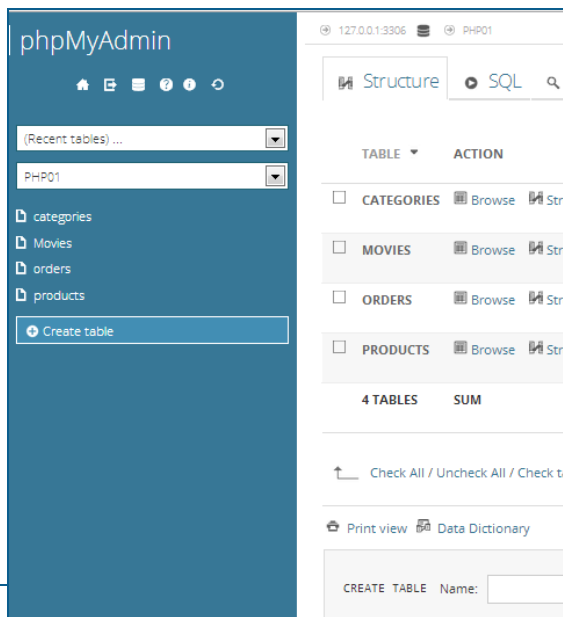
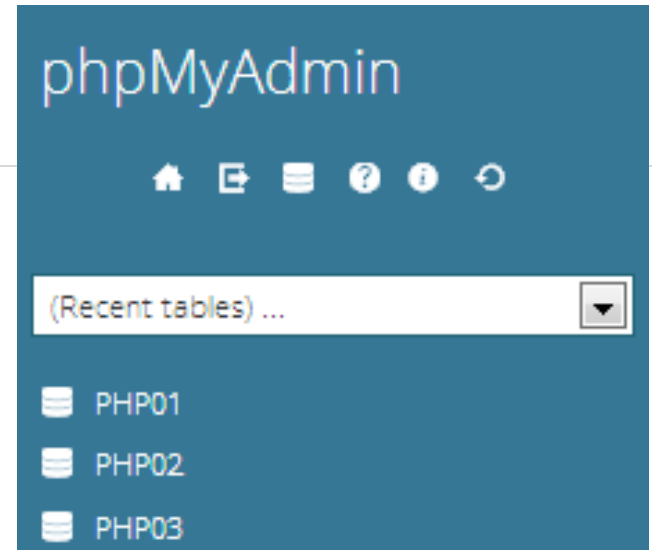
Re-type:

Generate password:

None Create database with same name and grant all privileges Grant all privileges on wildcard name (username_%)

Look at databases & tables

- Left hand navigation
- Right hand workspace
- FULL CRUD capabilities
- Think DFU for MySQL!

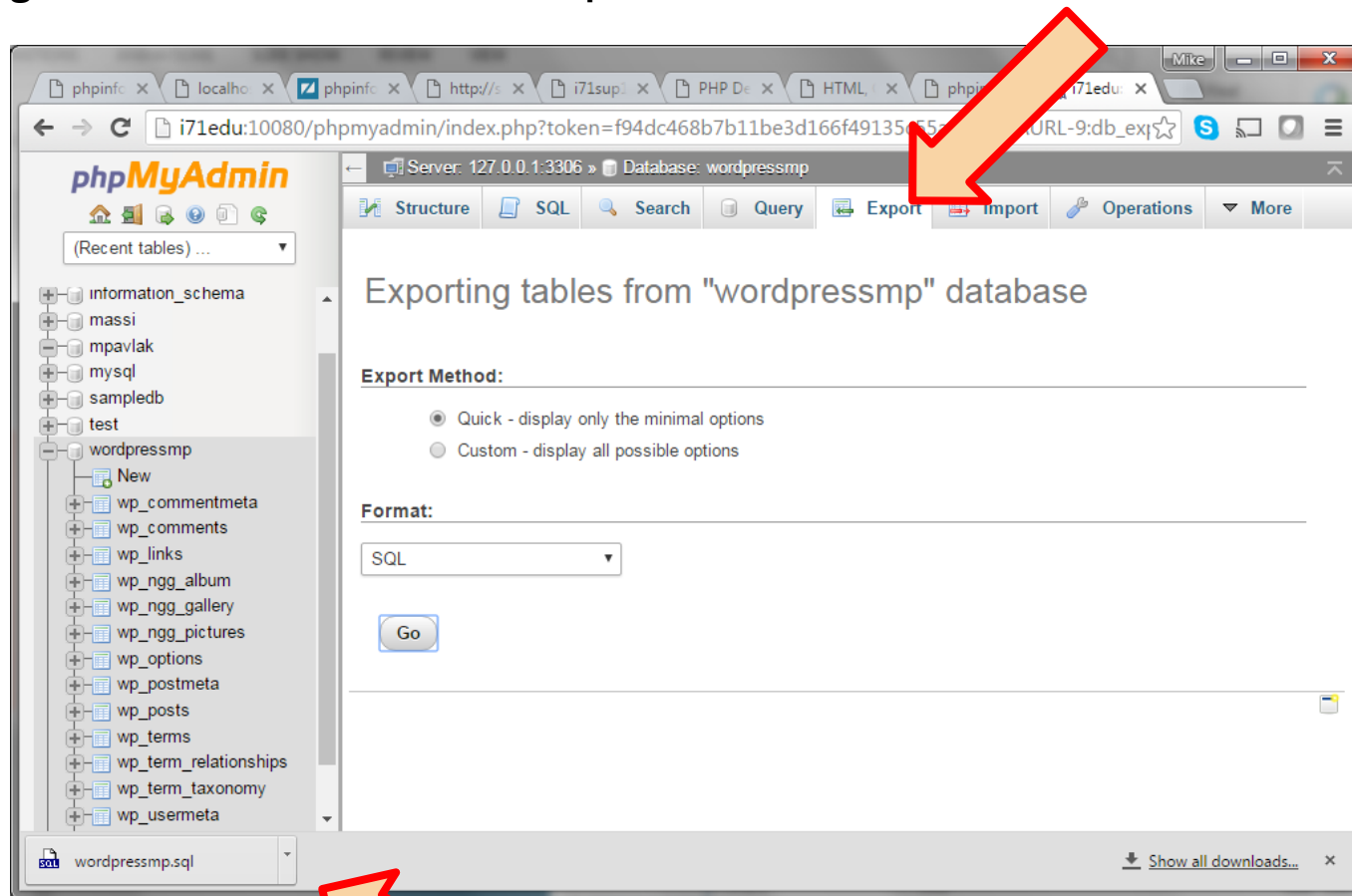


Introduction to Maria

Data Migration from MySQL

Export data using phpMyAdmin

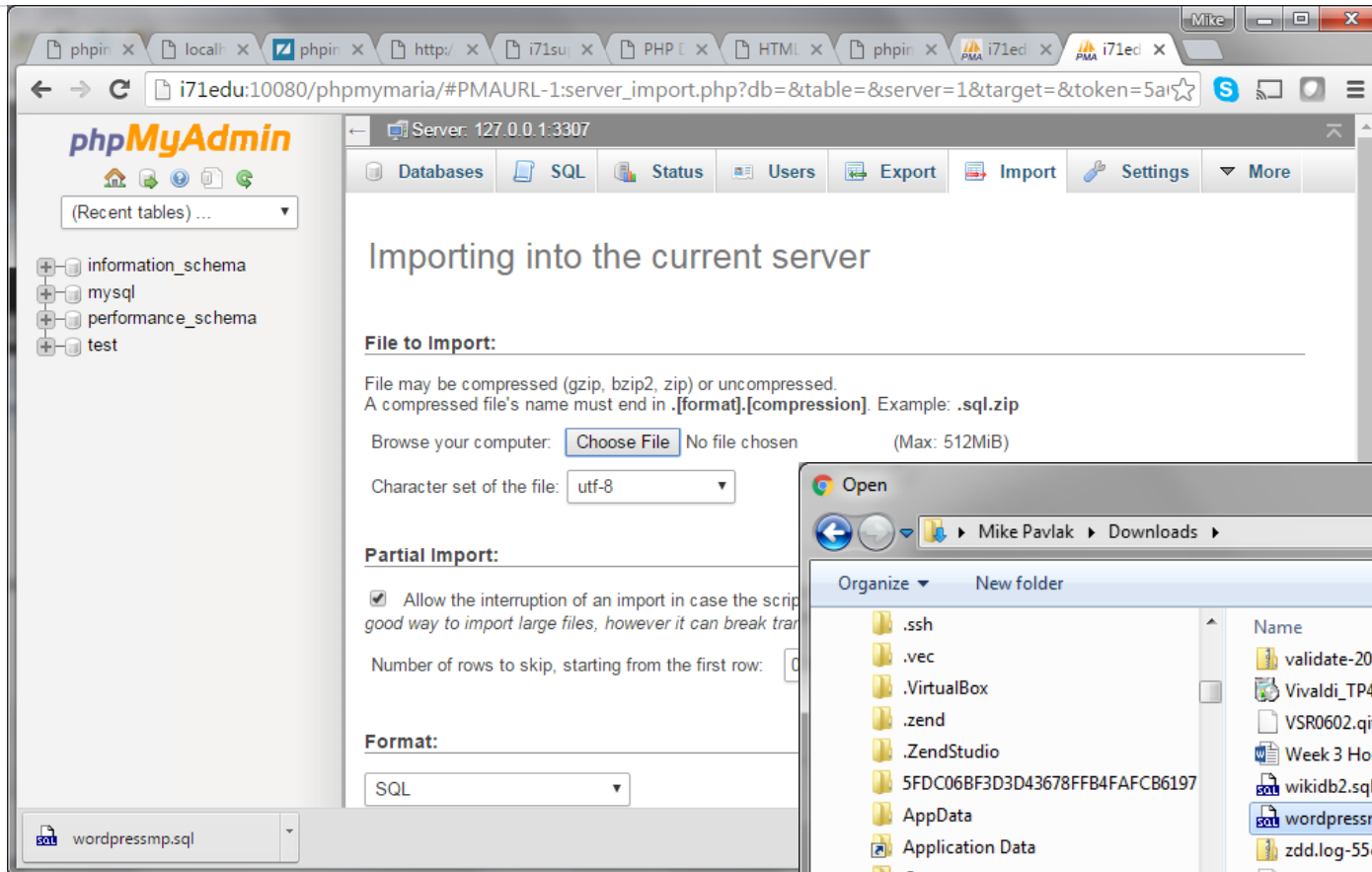
- Navigate to the database and click export



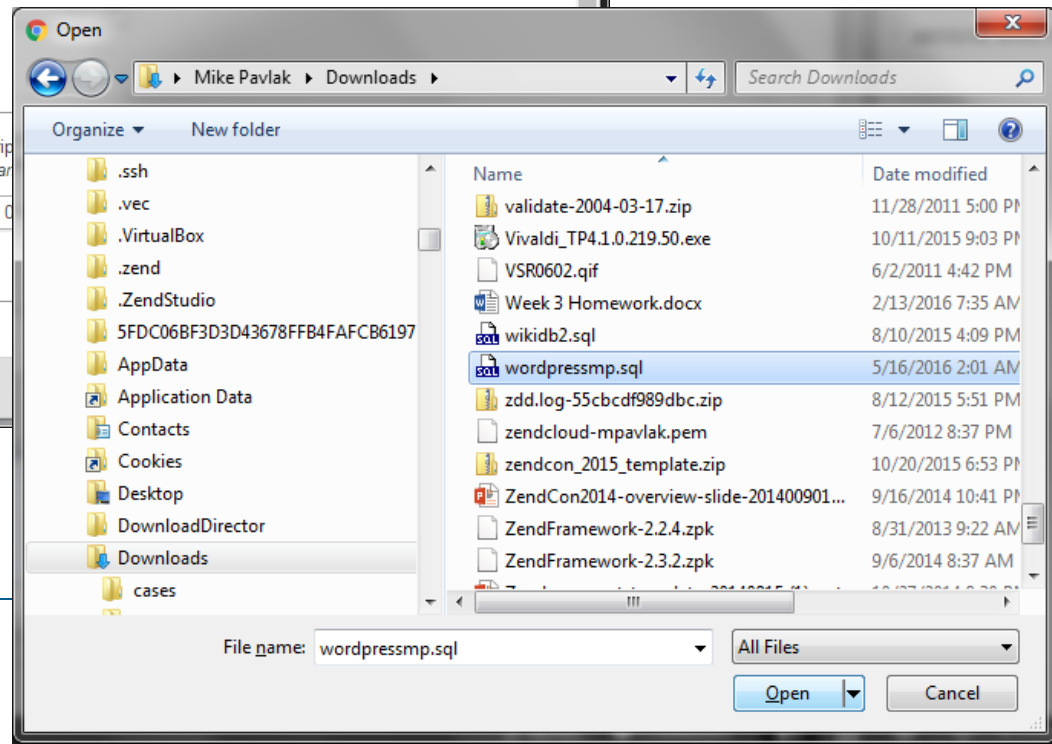
Exported file looks like SQL

```
CREATE TABLE IF NOT EXISTS `wp_comments` (  
  `comment_ID` bigint(20) unsigned NOT NULL AUTO_INCREMENT,  
  `comment_post_ID` bigint(20) unsigned NOT NULL DEFAULT '0',  
  `comment_author` tinytext NOT NULL,  
  `comment_author_email` varchar(100) NOT NULL DEFAULT '',  
  `comment_author_url` varchar(200) NOT NULL DEFAULT '',  
  `comment_author_IP` varchar(100) NOT NULL DEFAULT '',  
  `comment_date` datetime NOT NULL DEFAULT '0000-00-00 00:00:00',  
  `comment_date_gmt` datetime NOT NULL DEFAULT '0000-00-00 00:00:00',  
  `comment_content` text NOT NULL,  
  `comment_karma` int(11) NOT NULL DEFAULT '0',  
  `comment_approved` varchar(20) NOT NULL DEFAULT '1',  
  `comment_agent` varchar(255) NOT NULL DEFAULT '',  
  `comment_type` varchar(20) NOT NULL DEFAULT '',  
  `comment_parent` bigint(20) unsigned NOT NULL DEFAULT '0',  
  `user_id` bigint(20) unsigned NOT NULL DEFAULT '0',  
  PRIMARY KEY (`comment_ID`),  
  KEY `comment_post_ID` (`comment_post_ID`),  
  KEY `comment_approved_date_gmt` (`comment_approved`,  
  `comment_date_gmt`),  
  KEY `comment_date_gmt` (`comment_date_gmt`),  
  KEY `comment_parent` (`comment_parent`),  
  KEY `comment_author_email` (`comment_author_email`(10))  
) ENGINE=MyISAM DEFAULT CHARSET=utf8 AUTO_INCREMENT=2 ;  
  
--  
-- Dumping data for table `wp_comments`  
--  
  
INSERT INTO `wp_comments` (`comment_ID`, `comment_post_ID`,  
  `comment_author`, `comment_author_email`, `comment_author_url`,
```

Now import into Maria



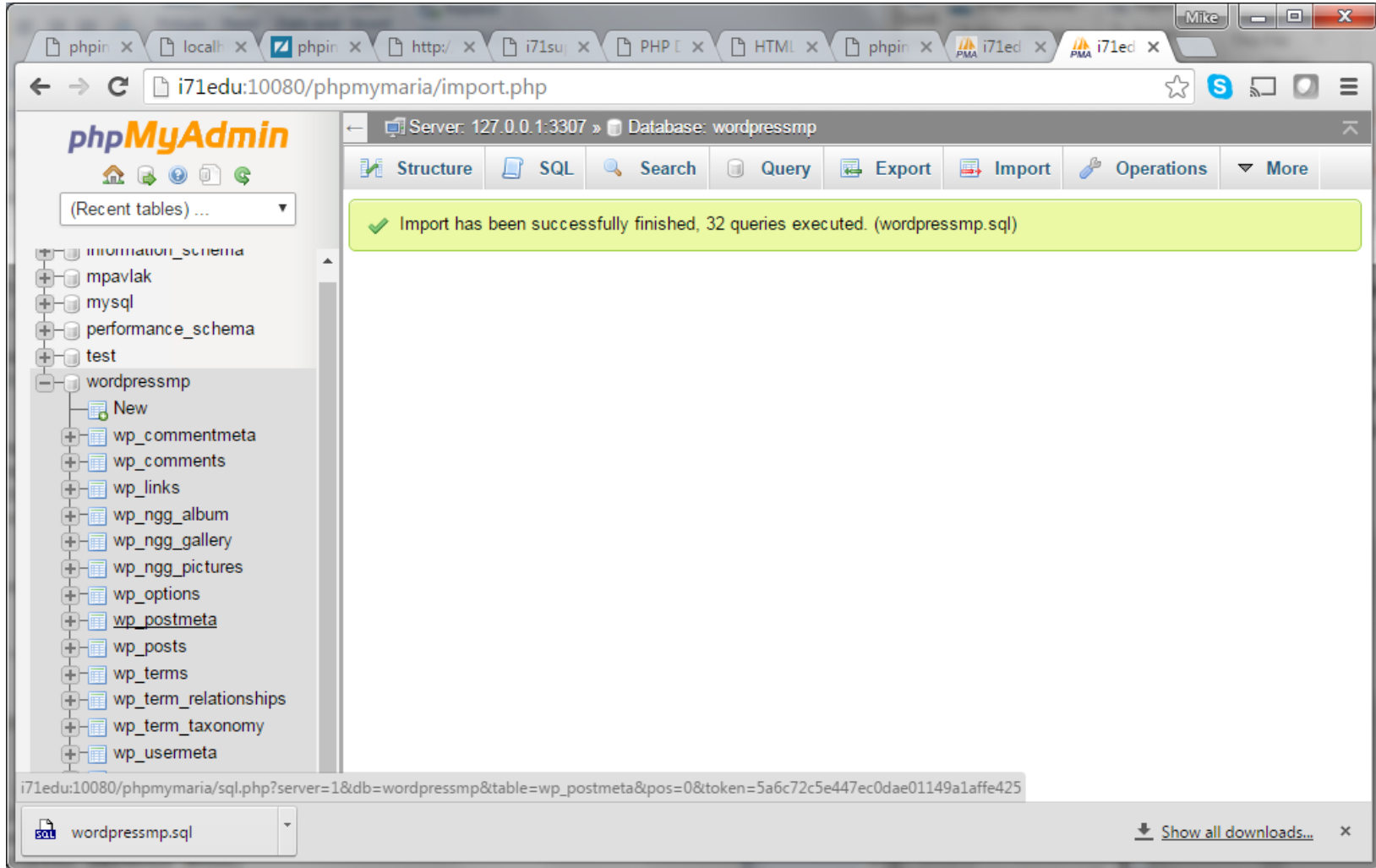
The screenshot shows the phpMyAdmin interface for a server at 127.0.0.1:3307. The 'Import' tab is active, displaying the title 'Importing into the current server'. Under the 'File to Import:' section, there is a 'Choose File' button and a note that the file may be compressed (gzip, bzip2, zip) or uncompressed. The 'Character set of the file:' is set to 'utf-8'. The 'Format:' dropdown is set to 'SQL'. A file named 'wordpressmp.sql' is selected in the bottom dropdown menu.



The screenshot shows a Windows File Explorer window titled 'Open' with the address bar set to 'Mike Pavlak > Downloads'. The left sidebar shows the 'Downloads' folder selected. The main pane displays a list of files and folders. The file 'wordpressmp.sql' is highlighted in blue. The 'File name:' field at the bottom contains 'wordpressmp.sql' and the file type is set to 'All Files'.

Name	Date modified
.ssh	
.vec	
.VirtualBox	
.zend	
.ZendStudio	
5FDC06BF3D3D43678FFB4FAFCB6197	
AppData	
Application Data	
Contacts	
Cookies	
Desktop	
DownloadDirector	
Downloads	
cases	
validate-2004-03-17.zip	11/28/2011 5:00 PM
Vivaldi_TP4.1.0.219.50.exe	10/11/2015 9:03 PM
VSR0602.qif	6/2/2011 4:42 PM
Week 3 Homework.docx	2/13/2016 7:35 AM
wikidb2.sql	8/10/2015 4:09 PM
wordpressmp.sql	5/16/2016 2:01 AM
zdd.log-55cbcdf989dbc.zip	8/12/2015 5:51 PM
zendcloud-mpavlak.pem	7/6/2012 8:37 PM
zendcon_2015_template.zip	10/20/2015 6:53 PM
ZendCon2014-overview-slide-201400901...	9/16/2014 10:41 PM
ZendFramework-2.2.4.zpk	8/31/2013 9:22 AM
ZendFramework-2.3.2.zpk	9/6/2014 8:37 AM

Was it OK?





IBM DB2 STORAGE ENGINE MYSQL ONLY, FOR NOW?



Why use MySQL to store in DB2?

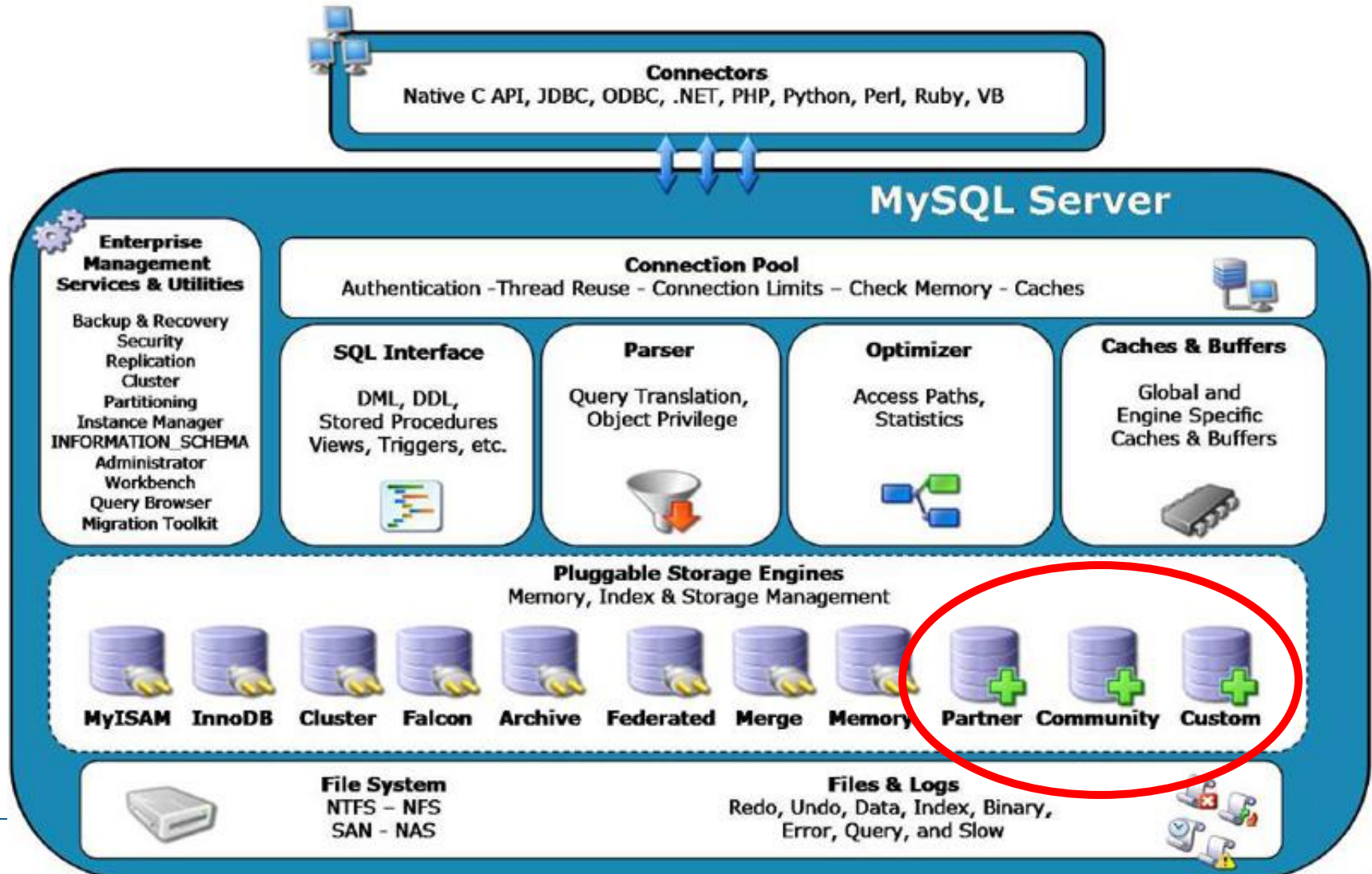
- Many PHP applications in the open source arena
- Can be easily installed
- Modifying to access DB2 can be cumbersome & then updates?
- Zend DBi includes IBM DB2 Storage Engine



Joomla!™



Architecture



How to install

- From the MySQL Monitor in QSH or QP2TERM
- *install plugin ibmdb2i soname "ha_ibmdb2i.so";*
- Instruction is in Install Notes for ZendDBi and IBM Redbooks

```
mysql>  
> install plugin ibmdb2i soname "ha_ibmdb2i.so";  
Query OK, 0 rows affected (0.17 sec)
```

Show engines...

```
> show engines;
```

Engine	Support	Comment	Transactions	XA	Savepoints
InnoDB	YES	Supports transactions, row-level locking, and foreign keys	YES	YES	YES
MRG_MYISAM	YES	Collection of identical MyISAM tables	NO	NO	NO
BLACKHOLE	YES	/dev/null storage engine (anything you write to it disappears)	NO	NO	NO
CSV	YES	CSV storage engine	NO	NO	NO
MEMORY	YES	Hash based, stored in memory, useful for temporary tables	NO	NO	NO
FEDERATED	NO	Federated MySQL storage engine	NULL	NULL	NULL
IBMDB2I	YES	IBM DB2 for i Storage Engine	YES	NO	YES
ARCHIVE	YES	Archive storage engine	NO	NO	NO
MyISAM	DEFAULT	Default engine as of MySQL 3.23 with great performance	NO	NO	NO

```
9 rows in set (0.00 sec)
```

```
mysql>
```

```
===>
```

IBM DB2 Storage Engine:phpMyAdmin

- Create Table, set number of fields
- Select storage engine

Table name: Add column(s)

STRUCTURE

NAME	TYPE	LENGTH/VALUES	DEFAULT	COLLATION	ATTRIBUTES
<input type="text"/>	INT	<input type="text"/>	None	<input type="text"/>	<input type="text"/>
<input type="text"/>	INT	<input type="text"/>	None	<input type="text"/>	<input type="text"/>
<input type="text"/>	INT	<input type="text"/>	None	<input type="text"/>	<input type="text"/>
<input type="text"/>	INT	<input type="text"/>	None	<input type="text"/>	<input type="text"/>

TABLE COMMENTS:

PARTITION DEFINITION:

STORAGE ENGINE:
InnoDB
MRG_MYISAM
BLACKHOLE
CSV
MEMORY
IBMDB2I
ARCHIVE
MyISAM

COLLATION:

If you are using command line...

Use the parameter option for the storage engine...

ENGINE = IBMDB2I

```
CREATE TABLE IF NOT EXISTS `exampleDB2` (  
  `name` varchar(20) NOT NULL,  
  `Address` varchar(20) NOT NULL,  
  `City` varchar(20) NOT NULL,  
  `State` text NOT NULL,  
  `Zip` text NOT NULL  
) ENGINE=IBMDB2I DEFAULT CHARSET=latin1 COMMENT='Customer info';
```

Add records to table

✓ Showing rows 0 - 3 (4 total, Query took 0.0905 sec)

```
SELECT * FROM `exampleDB2` LIMIT 0 , 30
```

Profiling [Inline] [Edit] [Explain SQL] [Create PHP Code] [Refresh]

Show : Start row: Number of rows: Headers every rows

+ Options

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NAME	ADDRESS	CITY	STATE	ZIP
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sheldon Cooper	Somewhere in CalTech	Pasadena	CA	91051
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Leonard Hofstadter	Somewhere Else in Ca	Pasadena	CA	91051
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Raj Koothrapali	Sheldons Office at C	Pasadena	CA	91051
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Howard Walowitz	Engineering @CatTech	Pasadena	CA	91051

What happened on the i?

- Library “TEST” was created
- Table “EXAMPLEDB2” was created
- Records populated

```
Session A - [24 x 80]
Work with Objects
Type options, press Enter.
2=Edit authority      3=Copy      4=Delete    5=Display authority  7=Rename
8=Display description 13=Change description

Opt  Object      Type      Library      Attribute      Text
___  EXAMPLEDB2  *FILE     TEST         PF

Parameters for options 5, 7 and 13 or command
===>
F3=Exit   F4=Prompt   F5=Refresh  F9=Retrieve  F11=Display names and types
F12=Cancel F16=Repeat position to F17=Position to

MA  A  MW  21/007
```

Records, please?

- STRSQL
- Select * from test/exampleDB2

Display Data

```
Position to line . . . . .
....+....1....+....2....+....3....+....4....+....5....+....6....
NAME                ADDRESS                CITY
Sheldon Cooper      Somewhere in CalTech   Pasadena
Leonard Hofstadter  Somewhere Else in Ca   Pasadena
Raj Koothrapali     Sheldons Office at C   Pasadena
Howard Wolowitz      Engineering @CatTech    Pasadena
***** End of data *****
```




WRAP IT UP



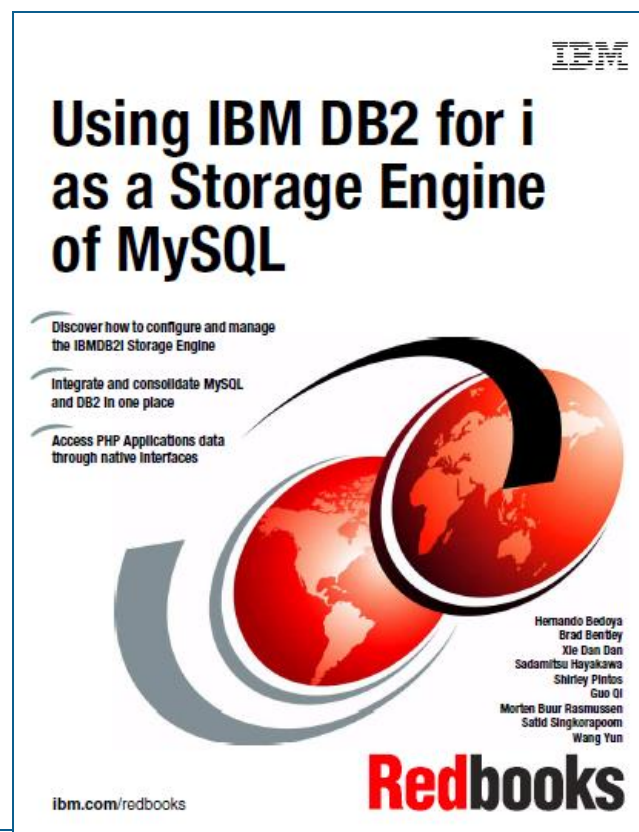
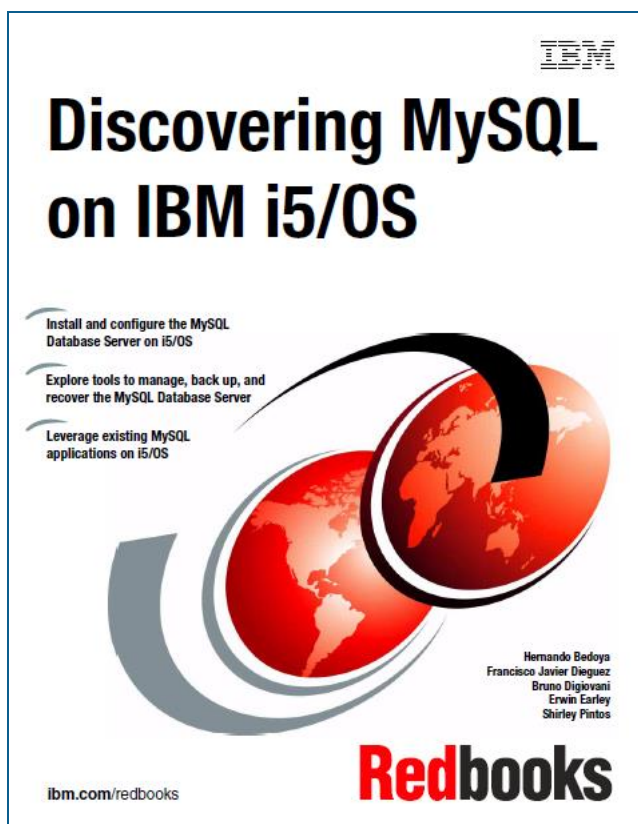
Reminders

- **ZendDBi == MySQL**
- **Command line or GUI**
- **ROOT profile**
 - **Should have a password**
 - **Rarely be used**
- **DB2 Storage Engine available with ZendDBi**
- **Data is actually stored in DB2 and not duplicated**
- **Base for thousands of open source applications**

IBM Redbook and Redpiece

Discovering MySQL

Using the DB2 Storage Engine



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www.zend.com

mike.p@zend.com

Please fill out your Session Evaluation!

A screenshot of a session evaluation form. The form is titled "2009 Business & Marketing Education Professional Development Evaluation" and "Session Evaluation" below it. It contains several sections with checkboxes and input fields for rating various aspects of the session, such as "Session Content", "Session Delivery", and "Session Materials". The form is partially filled out with numerical ratings.