

# The Scenario\_Builder Tool

[http://yardbirds.ccr.buffalo.edu/datagrid/Scenario\\_Builder.php](http://yardbirds.ccr.buffalo.edu/datagrid/Scenario_Builder.php)

The screenshot shows a web browser window titled "CCR Grid Computing Services: Data Management - Microsoft Internet Explorer". The address bar displays the URL [http://yardbirds.ccr.buffalo.edu/datagrid/Scenario\\_Builder.php](http://yardbirds.ccr.buffalo.edu/datagrid/Scenario_Builder.php). The page header features the University at Buffalo logo and the text "Center for Computational Research GRID PORTAL High Performance Grid Computing". The main content area is titled "Welcome to the Scenario Builder - a tool for generating and visualizing scenarios for data grid testing." and includes two buttons: "Generator" and "Visualizer". Below the buttons, a 3D ball-and-stick molecular model is displayed. A text instruction reads: "Select 'generate' to create new scenarios and elements, or choose 'visualize' to view scenarios and elements that already exist." The left sidebar contains a navigation menu with categories like "PORTAL LOGOUT", "User Tools", "Grid General Info", "Contact Us", "Projects", "Resources", and "Education/Outreach". The footer of the page features a graphic of a network and the text "Advanced Center for Computational Research Data Center".

By Catherine Ruby

CSE 718

January 2004

# First : the 'Scenario'

...the building block of the testing tool

scenario : a situation a data grid could be in at any given time, made up of **users, directories, files, groups**, and affiliated with existing **resources** (like yardbirds).

Each component of the scenarios is associated with attributes that either the user specifies or are randomly generated.

So, a scenario is simply a collection of certain numbers of these components and their attributes, and from these we can experiment and derive behaviors/trends of the data grid when certain circumstances arise.

All scenarios and their components and attributes are stored in tables in phpMyAdmin/datagrid, and are manipulated and graphed by the Scenario\_Builder Tool.

# Functions of the Scenario\_Builder Tool :

- Allows users to create, delete, manipulate and view different “scenarios” for research in the data grid project.
- Serves as a graphical interface to allow users controlled access to certain phpMyAdmin tables where information about the scenarios are stored.
- Gives users the ability to create varying situations involving different numbers of elements of the data grid.
- Allows users to simulate file aging among the different scenarios by setting parameters and viewing results over time.
- Shows trends across all scenarios or within individual situations set up by the user.

# Basic structure of the tool

## The Scenario Generating tool

The screenshot shows the 'Scenario Generating' tool interface. It includes a sidebar with navigation options like 'PORTAL LOGOUT', 'Manage Account', and 'Grid General Info'. The main area has a 'Generating files' section with a 3D molecular model. Below it, there are input fields for 'Operation generate', 'Scenarios to choose from db7', 'Elements to generate files', 'User vpetrie', and 'Resource ID young.ccr.buffalo.edu'. A 'GO!' button is present. A status message says 'Loading existing directory info... done. Loading records.' Below that, it shows 'Total time for generation = 0 seconds', 'Number of repeats from the database : 0', and 'Number of repeats from this generation : 0'. At the bottom, there is a table with columns: File #, Filename, Resource, P\_id, dir\_id, Owner, Group, Scenario, and Creation time.

File #	Filename	Resource	P_id	dir_id	Owner	Group	Scenario	Creation time
1	Tank.asc	young.ccr.buffalo.edu	11	596	vpetrie	cnn66	db7	2001-01-03 03:15
2	Oracle.exe	young.ccr.buffalo.edu	11	596	vpetrie	cnn66	db7	2000-09-07 07:23
3	Aoent.txt	young.ccr.buffalo.edu	11	596	vpetrie	cnn66	db7	2003-01-12 12:18

## The Scenario Simulation tool

The screenshot shows the 'Scenario Simulation' tool interface. It features a sidebar with navigation options. The main area has a 'Aging Files Now' section with a 3D molecular model. Below it, there are input fields for 'Operation simulate', 'Scenario db7', 'User probability 0.1', 'Group probability 0.25', and 'Public probability 0.1'. A 'GO!' button is present. Below the input fields, there is a table with columns: File #, Filename, P\_id, dir\_id, Owner, Group, Creation time, Access time, and Modification time.

File #	Filename	P_id	dir_id	Owner	Group	Creation time	Access time	Modification time
1	Morphaus.txt	11	2	yHoweS	cnn60	2000-01-20 09:58:42	2003-04-13 10:06:27	2000-01-20 09:58
2	Morphaus.doc	11	1	yHoweS	trv26	2001-12-31 11:00:30	2004-05-12 06:21:14	2001-12-31 11:00
3	Dozer.txt	11	4	yHoweS	cnn60	2001-03-09 07:58:19	2003-12-07 09:36:01	2001-03-09 07:58
4	Dozer.jpg	11	2	yHoweS	trv26	2001-09-06 06:18:20	2004-01-04 08:26:53	2001-09-06 06:18
5	KeyMaster.xls	11	3	yHoweS	cb33	2001-08-21 04:24:56	2003-09-19 07:31:48	2001-08-21 04:24
6	Appm	11	5	yHoweS	cm400	2003-11-23 09:04:08	2003-10-18 02:59:20	2003-11-23 09:04
7	Oracle.ksh	11	2	yHoweS	cnn60	2000-05-13 09:59:10	2003-12-29 12:22:54	2000-05-13 09:59
8	Trinity.dot	11	1	yHoweS	cb33	2001-03-27 01:35:02	2003-12-15 08:10:28	2001-03-27 01:35

## The Scenario Visualization tool

The screenshot shows the 'Scenario Visualization' tool interface. It features a sidebar with navigation options. The main area has a 'Drawing graph from the table information' section with a 3D molecular model. Below it, there are input fields for 'Operation visualize', 'Elements to view view all', and 'Visualization Scope all'. A 'GO!' button is present. Below the input fields, there is a bar chart titled 'Elements in Scenarios' showing the 'Numbers of Elements' for each scenario (db1 to db7) across four categories: Users (red), Directories (blue), Files (green), and Groups (yellow).

Scenario	Users	Directories	Files	Groups
db1	0	0	500	0
db2	0	0	500	0
db3	100	0	50	0
db4	0	0	500	100
db5	0	500	100	0
db6	0	0	50	0
db7	0	0	50	0

# The Scenario Generator

The window for the user to manipulate scenario information stored in the phpMyAdmin tables.

- Allows the user to create, modify, or delete scenarios that currently exist.
- The user may modify existing scenarios by creating users, directories, files, or groups based on parameters entered in the graphical interface.
- Elements are generated randomly from user inputs and stored in phpMyAdmin table.

# The Organization of the Generating Tool

The user enters parameters for the generation of elements of the current scenario...

CCR Grid Computing Services: Data Management - Microsoft Internet Explorer

Address: http://yardbirds.ccr.buffalo.edu/datagrid/new\_data\_grid\_generator.php?db=db6&app=3

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Please select a user to create files for, the number to create and the resource id of the entries

Scenario	Groups	Users	Directories	Files	Size (GB)
db6	10	8	18	40	1.79

Operation: generate

Scenarios to choose from: db6

Elements to generate: files

User: ipetrie32

Number to create: 10

Resource ID: crosby.ccr.buffalo.edu

GO!

This will create the specified number of files for the specified user and resource id and insert them into the file\_management2 table.

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...and the elements are generated and inserted into the appropriate phpMyAdmin table.

CCR Grid Computing Services: Data Management - Microsoft Internet Explorer

Address: http://yardbirds.ccr.buffalo.edu/datagrid/new\_data\_grid\_generator.php?db=db6&app=3&user=ipetrie32&resource=U3b2=nash.ccr.buffalo.edu

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Generating files

Operation: generate

Scenarios to choose from: db6

Elements to generate: files

User: ipetrie32

Number to create: 10

Resource ID: nash.ccr.buffalo.edu

GO!

Loading existing directory info... done. Loading records:

Total time for generation = 0 seconds  
Number of repeats from the database = 0  
Number of repeats from this generation = 0

File #	Filename	Resource	r_id	dir_id	Owner	Group	Scenario	Creation Time	Size	Permission
1	Smith.doc	nash.ccr.buffalo.edu	21	586	ipetrie32	fox797	db6	2000-09-10 04:35:40	60170	2
2	Dozer.ppt	nash.ccr.buffalo.edu	21	588	ipetrie32	mtv91	db6	2000-01-06 04:58:20	8912	2
3	Neo.txt	nash.ccr.buffalo.edu	21	584	ipetrie32	cb537	db6	2001-12-24 01:06:08	84246	1
4	Smith.m	nash.ccr.buffalo.edu	21	586	ipetrie32	rbcs557	db6	2000-02-17 08:14:00	45732	0
5	Morpheus.dat	nash.ccr.buffalo.edu	21	587	ipetrie32	espan32	db6	2001-12-02 05:03:47	54215	0
6	Dozer.dat	nash.ccr.buffalo.edu	21	587	ipetrie32	cb8208	db6	2000-06-27 07:56:40	19436	2
7	Trinity.m	nash.ccr.buffalo.edu	21	580	ipetrie32	rbcs557	db6	1999-12-17 12:50:32	70904	0
8	Cypher.jpg	nash.ccr.buffalo.edu	21	587	ipetrie32	cm77	db6	2003-03-06 09:40:52	37260	0
9	Cypher.asic	nash.ccr.buffalo.edu	21	578	ipetrie32	fox797	db6	2000-01-26 03:53:06	47041	1
10	Oracle.jpg	nash.ccr.buffalo.edu	21	579	ipetrie32	tmc738	db6	2003-02-07 07:46:30	48299	2

Description of table fields:

File # : The number of the file that was created.  
Filename : The name of the random file that was created. Chosen from a list of filenames (Neo, Morpheus, Trinity, Tanki, Dozer, Rabbit, Agent, Smith, Oracle, KeyMaster) and extensions (.sh, .sh, .csh, .m, .dat, .mpg, .jpg, .ppt, .xls, .doc, .exe, .txt).  
Resource : The name of the resource the file belongs to.

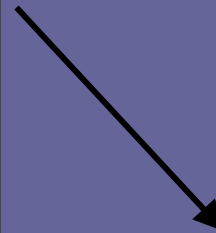
# The Scenario Simulator

The window for the user to simulate file accesses on files in stored in the phpMyAdmin tables.

- Allows the user simulate file aging over time in a specific scenario.
- The user may choose an existing scenario to age and enter parameters to specify the probability of access on files of different permissions.
- File access dates in the phpMyAdmin tables are updated and the new age of each file is stored.

# The Organization of the Simulating Tool

The user enters parameters for the simulation of file access in the chosen scenario...



File #	Filename	Size	Dir	Owner	Group	Creation time	Access time	Modification time	Size	Permission	File Age
1	Morpheus.txt	11	2	yhowellS	crn600	2000-01-20 09:18:42	2003-04-13 10:06:37	2000-01-20 09:18:42	85407	0	27180284
2	Morpheus.doc	11	1	yhowellS	trn26	2001-12-31 11:09:30	2004-02-12 06:21:14	2001-12-31 11:09:30	85025	0	1238307
3	Dozer.txt	11	4	yhowellS	crn600	2001-03-09 07:58:19	2003-12-07 09:36:01	2001-03-09 07:58:19	5912	2	6972220
4	Dozer.jpg	11	2	yhowellS	trn26	2001-09-06 06:18:20	2004-01-04 08:26:55	2001-09-06 06:18:20	15876	2	4600366
5	KeyMaster.xls	11	3	yhowellS	cb33	2001-08-21 04:24:56	2003-09-19 07:31:40	2001-08-21 04:24:56	93245	1	13852073
6	Neo.m	11	5	yhowellS	crn600	2003-11-23 09:04:08	2003-10-18 02:59:20	2003-11-23 09:04:08	6220	0	11319621
7	Oracle.ksh	11	2	yhowellS	crn600	2002-05-13 09:59:10	2003-12-29 12:22:54	2002-05-13 09:59:10	9075	2	5104607
8	Trinity.pdf	11	1	yhowellS	cb33	2001-03-27 01:35:02	2003-12-15 08:12:28	2001-03-27 01:35:02	43669	2	6329233

...and the files are aged and file access times and ages are updated in the phpMyAdmin tables that apply.



# The Scenario Visualizer

The window for the user to view scenario information stored in the phpMyAdmin tables.

- Allows users to view information about the scenarios that have been created.
- The user must choose an element to view (users, directories, files, groups, or all), a scope (all scenarios together or one scenario specifically), and the name of the graph to view.
- Interactive graphs are generated for the parameters entered - more information is shown when the mouse enters a graph region and a list of pertinent entries in the phpMyAdmin tables is displayed when regions are clicked.

# The Organization of the Visualization Tool

The user enters parameters for the visualization of elements in the existing scenarios...

CCR Grid Computing Services: Data Management - Microsoft Internet Explorer

Address: [http://yardbirds.ccr.buffalo.edu/datagrid/new\\_data\\_grid\\_visualizer.php?element=3&scope=all](http://yardbirds.ccr.buffalo.edu/datagrid/new_data_grid_visualizer.php?element=3&scope=all)

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Please select the graph of files you wish to view for the given scenario.

Operation: visualize

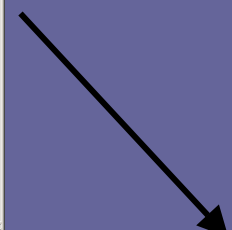
Elements to view: files

Visualization Scope: all [GO!]

Graph to view: [dropdown menu]

These are the different graphs available for the files. Select one to view the given information about the files that currently exist.

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CCR Grid Computing Services: Data Management - Microsoft Internet Explorer

Address: [http://yardbirds.ccr.buffalo.edu/datagrid/new\\_data\\_grid\\_visualizer.php?element=3&scope=all&graphs=6&info=db6](http://yardbirds.ccr.buffalo.edu/datagrid/new_data_grid_visualizer.php?element=3&scope=all&graphs=6&info=db6)

Files in Scenarios

File Size (kB)

Scenario : db6  
Files : 60  
File Size : 2.52

This gets the total size of all of the files from scenarios for each scenario that currently exists and draws them into the bar chart shown.

Number	File ID #	Resource ID #	Filename	Dir ID #	Owner	Group	Size	File Age	Scenario
1	1790	57	Dozer.exe	595	rkramer32	cbs37	37649	0	db6
2	1789	57	Trinity.ppt	595	rkramer32	mtv81	32805	0	db6
3	1788	57	Tank.txt	595	rkramer32	fox797	52653	0	db6
4	1787	57	Oracle.exe	595	rkramer32	cspan32	38713	0	db6
5	1786	57	Oracle.sh	595	rkramer32	mtv81	79592	0	db6
6	1785	20	Oracle.m	594	ehtrripper	cnr77	7717	0	db6
7	1784	20	Smith.jpg	594	ehtrripper	hbo535	91109	0	db6
8	1783	20	Agent.ppt	594	ehtrripper	hbo535	84299	0	db6
9	1781	20	Tank.xls	594	ehtrripper	mtv81	84301	0	db6

[http://yardbirds.ccr.buffalo.edu/datagrid/new\\_data\\_grid\\_visualizer.php?element=3&scope=all&graphs=6&info=db6](http://yardbirds.ccr.buffalo.edu/datagrid/new_data_grid_visualizer.php?element=3&scope=all&graphs=6&info=db6)

...and a graph is generated where the user is able to click the different regions to get a list of entries from the phpMyAdmin tables that apply.

...and now a demonstration...