



# Christopher W. Lehman

## Ruby on Rails Portfolio



# Summary

## Development Team Member

### Project Description

- Picup - a real time contact management service that focuses on personal identity and presence. [www.picup.com](http://www.picup.com)
- BoBCAT - Boecore Bilateral Certification and Accreditation Tool, a document repository and dashboard for Information Assurance activities associated with US Air Force classified networks. (URL not available for public consumption.)
- Hospitality Industry - Reworking an ASP-based site into a Rails framework. The site allows managers of taverns and restaurants to update content to track special events, bands, happy hours, etc. See [www.sherlockspubco.com](http://www.sherlockspubco.com)



# Summary (Continued)

Rails applications for internal use within IBM's Intranet

## Project Description

- Disk Quota - Monitor disk space usage for a design team
- Software License Monitor - Display EDA tool license usage
- Batch Job Monitor - Track the status of compute-intensive jobs through a pool of servers
- Change Calendar - Release system for Linux OS bugs and features



# Summary (Continued)

- SOAR: Simulation Output Analysis and Recommendations - An integration of Rails and the CLIPS expert system

SOAR is the "Proof of Concept" component of my doctoral dissertation: "A Rule-Based Expert System for the Diagnosis of Convergence Problems in Circuit Simulation" - Colorado Technical University, 2006

---



# General Notes

---

- Unless otherwise noted, all the databases are MySQL. I have also used SQLite3 and IBM's DB2 Express C database
  - Some of the fields in the IBM sample displays have been smudged to protect IBM proprietary information.
  - All Rails projects were done on various versions of the Red Hat Linux OS.
  - Mongrel was used as the web server engine, but I have moved to the Apache / Phusion Passenger model for new development.
  - I have used Emacs, Aptana RadRails and NetBeans IDEs as a development environment at various times during the development of Rails applications.
  - Version control has been done with SVN or CVS. I am now using Git and GitHub for new development.
  - The admittedly boring IBM web page CSS was an IBM internal standard for Intranet web sites.
-



# Disk Quota

- Problem: Users run out of disk space, but it's not obvious - the Electronic Design Automation (EDA) tools exhibit run time errors, but there is no indication that the cause is a disk overflow. Also, since users share data, a full disk quota for User *A* can affect Users *B* and *C*.
- Solution: Monitor all the disks in use on one screen
- A cron job is used to check disk space, and database records are updated accordingly using Rails code under /lib
- The Per Cent Used field changes color as disk space is consumed
- Users can opt to get e-mail when disk quotas exceed 90%
- For large lists, sort by Owner Name or Per Cent Used fields
- Custom searches or search by directory path

## USER DISK QUOTAS

## Notes:

- Please check [Program Status](#) before using this application.
- Use the New Disk button (at the bottom of the page) to add a new disk to the list.
- Numbers are updated every 5 minutes. Refresh your browser to see the changes.
- Click on the Update buttons for real time updates.
- Set the email flag to get mail when your disk quota exceeds 95%.

## Sort

[Per Cent Used](#)[By Owner](#)

## Disk Search

## Owner Search

## About

[Program Status](#)[Ruby](#)[Rails](#)

## View Source Code

[Dir Tree](#)[controllers](#)[views](#)



## Contact

Chris W. Lehman

lehman@us.ibm.com

T/L 656 - 3047

## All Disks Sorted by Per Cent Used

Owner	Dir path	Total quota	Quota used	Per cent used	Available space	E mail flag			
	/afs/rchland.ibm.com/usr1/jegross	500,000	450,733	90	49,267	0	<input data-bbox="1510 406 1608 454" type="button" value="e-mail?"/>	<input data-bbox="1619 406 1717 454" type="button" value="Update"/>	<input data-bbox="1727 406 1825 454" type="button" value="Delete"/>
lehman	/afs/rchland.ibm.com/usr4/lehman	1,000,000	811,785	81	188,215	0	<input data-bbox="1510 462 1608 510" type="button" value="e-mail?"/>	<input data-bbox="1619 462 1717 510" type="button" value="Update"/>	<input data-bbox="1727 462 1825 510" type="button" value="Delete"/>
	/afs/rchland.ibm.com/usr5/keford	500,000	142,028	28	357,972	0	<input data-bbox="1510 518 1608 566" type="button" value="e-mail?"/>	<input data-bbox="1619 518 1717 566" type="button" value="Update"/>	<input data-bbox="1727 518 1825 566" type="button" value="Delete"/>



# EDA Tool License Monitor

- Problem: EDA tool licenses are expensive, so we never have enough to go around. Users are locked out of tools and don't know why.
  - Solution: Monitor all the licenses in use on one screen
  - A cron job external to the Rails app periodically runs the EDA tool license manager to poll license usage. The results go to a text file. The Rails app contains Ruby code under /lib that is also run by cron to parse the text and update the database records.
  - Display licenses by vendor or display all licenses
  - Custom searches or sort by per centages
  - Display licenses that are 100% utilized
-



IBM.

# IBM CORPORATE-WIDE EDA LICENSES

Local Time Zone:  
-0600

License Groups

[CAD Enterprise](#)

[Denali](#)

[Magma](#)

[Mentor](#)

[Novas](#)

[Synopsys](#)

Search

[Show All](#)

[Maxed-Out](#)

[% Utilization](#)

Custom Search

About

[Program Status](#)

[Ruby](#)

[Rails](#)

View Source Code

[Dir Tree](#)

[controllers](#)

[views](#)

Contact

Chris W. Lehman

lehman@us.ibm.com

T/L 656 - 3047

## Magma Licenses

Note: File times shown are Eastern USA timezone

Dir name	File name	File date	File time	Licenses in use	Licenses total	Licenses available	Per cent in use
magma	QUARTZ_PV_Prot	2009-02-04	15:02:01	57	3680	3593	1.6
magma	QUARTZ_PV_Mat	2009-02-04	15:02:01	47	60000	59953	0.1
magma	QUARTZ_PV_Ext	2009-02-04	15:02:01	0	3680	3680	0.0

# IBM CORPORATE-WIDE EDA LICENSES

Local Time Zone:  
-0600

License Groups

[CAD Enterprise](#)

[Denali](#)

[Magma](#)

[Mentor](#)

[Novas](#)

[Synopsys](#)

Search

[Show All](#)

[Maxed-Out](#)

[% Utilization](#)

Custom Search

About

[Program Status](#)

[Ruby](#)

[Rails](#)

View Source Code

[Dir Tree](#)

[controllers](#)

[views](#)

Contact

Chris W. Lehman  
lehman@us.ibm.com  
T/L 656 - 3047

## Maxed-Out Licenses

Note: File times shown are Eastern USA timezone

Dir name	File name	File date	File time	Licenses in use	Licenses total	Licenses available	Percentage in use
cad_enterprise	3D_FieldSolver_Engine.txt	2009-02-04	13:15:01	1	1	0	100
cad_enterprise	Allegro_Package_SI_620.txt	2009-02-04	13:25:01	1	1	0	100
cad_enterprise	Allegro_Package_SI_620_Suite.txt	2009-02-04	13:25:01	1	1	0	100
synopsys	APACM.txt	2009-02-04	14:15:00	1	1	0	100
synopsys	APATD.txt	2009-02-04	14:15:00	1	1	0	100
synopsys	APCS.txt	2009-02-04	14:15:00	2	2	0	100
synopsys	APPO.txt	2009-02-04	14:15:00	2	2	0	100
synopsys	Apollis.txt	2009-02-04	14:15:00	2	2	0	100
synopsys	APTime.txt	2009-02-04	14:15:00	2	2	0	100
synopsys	APXtalk.txt	2009-02-04	14:15:00	1	1	0	100
synopsys	Astro.txt	2009-02-04	14:15:00	2	2	0	100
synopsys	AstroExp.txt	2009-02-04	14:15:00	1	1	0	100
synopsys	AstroXtalk.txt	2009-02-04	14:15:00	1	1	0	100
mentor	qhsimv1.txt	2009-02-04	13:26:01	1	1	0	100
synopsys	Silicon.txt	2009-02-04	13:35:01	1	1	0	100



# Load Leveler Monitor

- This project was an entry to IBM Hack Day 2006 - create a new application in 4 hours or less. This app was a prototype to replace an existing monitor (launched from the unix command line) that was written in C and using X-based widgets
- Problem: You submit a long-running batch job to the server pool, and you want to check on its status
- Solution: Use a web app to filter through the machine pool to find your job
- A cron job issues load leveler commands to obtain job status - the output is parsed and the MySQL records are updated using Ruby code under /lib
- Sort by JobId, Owner, Class or machine Host Name fields
- Custom search or search for a specific owner

IBM.

## RCH LOAD LEVELER MONITOR

Local Time Zone:  
-0600

Sort

[By JobId](#)[By Owner](#)[By Class](#)[By Host Name](#)

Find Owner

Custom Search

About

[Program Status](#)[Ruby](#)[Rails](#)

View Source Code

[Dir Tree](#)[controllers](#)[views](#)

Contact

Chris W. Lehman  
lehman@us.ibm.com  
T/L 656 - 3047

## Find Jobs By Owner

Jobid	Owner	Submitted	Status	Priority	Load class	Host
mips01.1048834.0	ozgoner	01/2711:02	Run	50	4gnd	mips3017
mips02.1683805.0	zack	01/2912:08	Run	50	dsktp	mips6260
mips03.1069501.0	dewanz	02/0208:45	Run	50	unlimited	mips2012
mips03.1069509.0	dewanz	02/0208:47	Run	50	unlimited	mips2008
mips03.1075086.0	zack	02/0314:06	Run	50	4gnd	mips6015
mips03.1080632.0	zack	02/0413:00	Run	50	dsktp	mips2028
mips04.1695349.0	dewanz	02/0208:46	Run	50	unlimited	mips2021
mips05.1650531.0	zack	01/3006:35	Run	50	priority	auk900
mips05.1666487.0	dewanz	02/0208:46	Run	50	unlimited	mips2017
mips05.1666489.0	dewanz	02/0208:46	Run	50	unlimited	mips2026
mips05.1666490.0	dewanz	02/0208:46	Run	50	unlimited	mips2027
mips05.1666491.0	dewanz	02/0208:47	Run	50	unlimited	mips2012
mips05.1676833.0	zack	02/0410:57	Run	50	unlimited	mips2010
mips06.1620083.0	zack	01/2116:38	Run	50	dsktp	mips6108
mips06.1637283.0	dewanz	01/2714:37	Run	50	4gnd	mips6119
mips06.1666219.0	dewanz	02/0208:46	Run	50	unlimited	mips2013
mips06.1666222.0	dewanz	02/0208:46	Run	50	unlimited	mips2013
mips06.1675932.0	zack	02/0408:13	Run	50	4gnd	mips3007
mips06.1675999.0	zack	02/0408:43	Run	50	4gnd	auk533
mips07.1646757.0	zack	01/1911:32	Run	50	dsktp	mips6109
mips07.1658728.0	galleant	01/2704:32	Run	50	dsktp	mips6108
mips07.1689758.0	dewanz	02/0208:46	Run	50	unlimited	mips2017
mips07.1689815.0	dewanz	02/0209:01	Run	50	4gnd	mips6200
mips07.1694635.0	zack	02/0310:52	Run	50	priority	mips6310



# LME Change Calendar

- Problem: The IBM Linux Managed Environment (LME) team is geographically diverse, and represents various groups of internal customers. We need to track bug changes and feature requests from one central location, and track release dates for all proposed changes.
- Solution: A web app that tracks proposed release dates for bugs and features
- Bugs and features are automatically updated from a separate web-based reporting system via cron using Ruby code under /lib
- Owners of bugs and features can edit records they own to change the Status, Notes and Release Date fields
- Designated Change Calendar administrators can edit and delete all records
- The Rails code uses IBM's LDAP database for authentication of users and administrators



# LME Change Calendar (Cont)

- Users can sort by Bugs or Features, and by Release Date, Owner, Category and Site fields
  - Custom searches available for the Notes, Owner, ID and Category fields
  - Clicking on a calendar date shows bugs and features scheduled for release on that day
  - Administrators are auto-emailed when changes are made to entries
-

[w3 Home](#)

[Show All Entries](#)

[Show Bugs](#)

[Show Features](#)

Sort All Entries By:

[Release Date](#)

[Owner](#)

[Category](#)

[Site](#)

Search Notes Field:

Search For Owner:

Search For IIOSB

Number:

Search For Category:

Search For Category:

[Sign In](#)

Contact

Chris W. Lehman

[lehman@us.ibm.com](mailto:lehman@us.ibm.com)

T/L 656 - 3047

Version: 1.1

## LME Change Calendar

< < Change Calendar View > >

2009

## February

Mon	Tue	Wed	Thu	Fri	Sat	Sun
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Click on a date to view entries for that day

## Results of Owner Search

IIOsb num	IIOsb date	Owner	Sites	Category	Entry type	Note	Release date	<a href="#">Edit</a>	<a href="#">Status</a>
75528	2007-06-08	Michael Burman	ALL	Accepted	Bug	Why is /local linked to /tmp?		<a href="#">Edit</a>	<a href="#">Status</a>
86744	2007-11-01	Michael Burman	ALL	Accepted	Bug	kernel panic during reboot after install		<a href="#">Edit</a>	<a href="#">Status</a>
87604	2007-11-16	Michael Burman	ALL	Testing in Dev	Bug	Update 64bit GSA rpm to use /lib64 instead of /lib		<a href="#">Edit</a>	<a href="#">Status</a>
89385	2007-12-21	Michael Burman	ALL	Accepted	Bug	update cluster -m cross site fills machine_cfg with broken links		<a href="#">Edit</a>	<a href="#">Status</a>
89806	2008-01-09	Michael Burman	ALL	Accepted	Bug	openssh-server 4.7p1-afs.4 rpm problem when installing a new server		<a href="#">Edit</a>	<a href="#">Status</a>
90841	2008-01-28	Michael Burman	ALL	Testing in Dev	Bug	add expect to the loadl common images		<a href="#">Edit</a>	<a href="#">Status</a>
51890	2006-01-27	Michael Burman	ALL	Accepted	Feature	Customize partition sizes during install		<a href="#">Edit</a>	<a href="#">Status</a>
56325	2006-06-28	Michael Burman	ALL	Accepted	Feature	protect the install images		<a href="#">Edit</a>	<a href="#">Status</a>
61260	2006-11-15	Michael Burman	ALL	Accepted	Feature	Alert site reps when root password is about to expire		<a href="#">Edit</a>	<a href="#">Status</a>
87086	2007-11-07	Michael Burman	ALL	Accepted	Feature	update clusterupdate emails		<a href="#">Edit</a>	<a href="#">Status</a>
87087	2007-11-07	Michael Burman	ALL	Accepted	Feature	log changes in updatecluster		<a href="#">Edit</a>	<a href="#">Status</a>
90720	2008-01-24	Michael Burman	ALL	Accepted	Feature	Add image difference webpage into GSA docs		<a href="#">Edit</a>	<a href="#">Status</a>
90722	2008-01-24	Michael Burman	ALL	Accepted	Feature	create cluster specific yum channels		<a href="#">Edit</a>	<a href="#">Status</a>
90850	2008-01-28	Michael Burman	ALL	Accepted	Feature	sync the site dirs after creating a new cluster		<a href="#">Edit</a>	<a href="#">Status</a>

[Terms of use](#)



# LME Change Calendar - Admin View

Search w3

GO

IBM.

☐ Search this site only

[w3 Home](#) [BluePages](#) [HelpNow](#) [Feedback](#)

[w3 Home](#)

Logged in as  
CHRISTOPHER W.  
LEHMAN

[Show All Entries](#)

Sort All Entries By:

[Release Date](#)

[Owner](#)

[Category](#)

[Site](#)

Search Notes Field:

[Search](#)

Search For Owner:

[Search](#)

Search For IIOSB  
Number:

[Search](#)

Search For Category:

[Search](#)

[Log Out](#)

Contact  
Chris W. Lehman

[lehman@us.ibm.com](mailto:lehman@us.ibm.com)

T/L 656 - 3047

[Run Email Test](#)

Version: 1.1

## LME Change Calendar - Admin View

[<< Change Calendar View >>](#)

2009

## January

Mon	Tue	Wed	Thu	Fri	Sat	Sun
29	30	31	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>
<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>
<u>19</u>	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>
<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>1</u>

Click on a date to view entries for that day

## Results of IIOSB Number Search

Iiosb num	Iiosb date	Owner	Sites	Category	Entry type	Note	Release date	Edit	Status	Destroy
91503	2008-02-08	Michael Hawthorne	ALL	Testing in Dev	Bug	Global Print printer installer broken on LME / RHEL4				
91514	2008-02-08	Nobody	ALL	Accepted	Bug	ksh file tests [ -nt -ot ] give wrong results on files created in AFS				
91551	2008-02-11	Nobody	ALL	Accepted	Feature	add lme defaults to sysctl.conf				

[Terms of use](#)





# SOAR

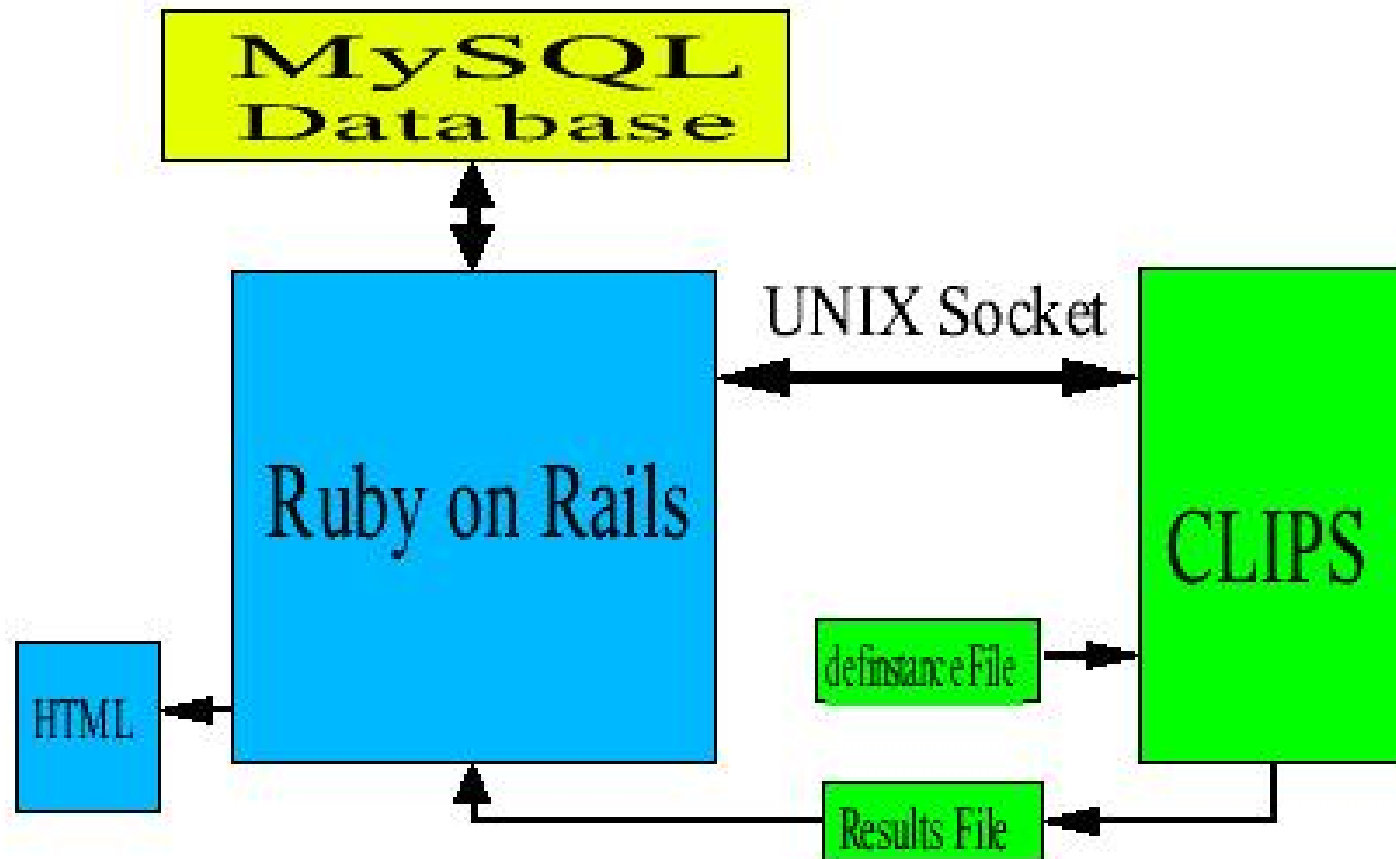
- Problem: Circuit simulations often fail to find a solution (non-convergence), and the debug process is complex and time-consuming
- Solution: Encapsulate circuit design experience into an expert system. Examine the circuit data and make appropriate recommendations. Use a web application to make the tool globally available to all users.
- The Rails framework handles all user input and renders the output from the expert system
- The expert system deployed was CLIPS, an open source C program originally developed by NASA. Expertise obtained from experienced circuit designers was collected and transformed into a CLIPS rule set.
- Information about the failed circuit simulation is extracted from the simulation log files, and key parameters are transformed into MySQL database records



# SOAR (Continued)

- Control is passed to CLIPS, the CLIPS rules perform queries on the simulation database, and inferences are made based upon the results. The results are collected in a file. When CLIPS processing is complete, control is passed back to Rails, and Rails renders the output from CLIPS into appropriate HTML format.
- The communications link between Rails and CLIPS is done via UNIX sockets

# SOAR (Continued)





---

# Thanks for your interest!

Questions? Comments? Please contact me:

[chris@thecwlzone.com](mailto:chris@thecwlzone.com)

---