CDH/AMLS Version 3.2.r159T2, 3.2.r239 and 4.0.r48

Release Notes

November 24, 2008

This release note pertains to two new versions of CDH/AMLS, V3.2.r239 and V4.0.r48. In addition some comments will be made regarding the previous version 3.2.r159.

AMLS Directory

Before describing the two new versions of AMLS, a brief description of the amls ftp site, ftp://amls:2befast@ftp.cdh-ag.com, will be given. The AMLS ftp site has been completely reorganized. The main directory, amls, contains the following:

```
amls_del
amls_exe
documentation
flexlm
readme.txt
release_notes
```

The documentation directory contains the AMLS User's Manual, amls_user_manual.pdf.

The release_notes directory contains the release notes for all the versions of AMLS that have been released since its inception.

The flexlm directory contains the necessary license processing flexlm files.

readme.txt is the file that gives some information regarding the proper license setup.

The amls_exe directory contains the current production amls executable code [3.2.r159(t2), 3.2.r239, and 4.0.r48, all others have been removed] and associated scripts for various computer types as shown below:

```
10846676 Apr 10  2007 amls_pack_3.2.r159_hp_parisc.tar.gz
 4972095 Nov 23 21:24 amls_pack_3.2.r159_linux_x86.tar.gz
11803071 Nov 23 20:19 amls_pack_3.2.r159T2_altix.tar.gz
```

```
 7124898 Nov 23 20:28 amls_pack_3.2.r159T2_hp_ia64.tar.gz
14268775 Nov 23 20:16 amls_pack_3.2.r159T2_ibm_aix.tar.gz
10255560 Nov 23 20:11 amls_pack_3.2.r159T2_Linux_ia64.tar.gz

10126513 Nov 23 19:55 amls_pack_3.2.r239_altix.tar.gz
 7033425 Nov 23 20:30 amls_pack_3.2.r239_hp_ia64.tar.gz
14408301 Nov 23 19:50 amls_pack_3.2.r239_ibm_aix.tar.gz
 9593716 Nov 23 20:14 amls_pack_3.2.r239_Linux_ia64.tar.gz
 5051676 Nov 23 21:25 amls_pack_3.2.r239_linux_x86.tar.gz

 9670498 Nov 23 19:58 amls_pack_4.0.r48_altix.tar.gz
 6692336 Nov 23 20:32 amls_pack_4.0.r48_hp_ia64.tar.gz
14234012 Nov 23 19:54 amls_pack_4.0.r48_ibm_aix.tar.gz
 9671438 Nov 23 20:17 amls_pack_4.0.r48_Linux_ia64.tar.gz
 5102231 Nov 23 21:27 amls_pack_4.0.r48_linux_x86.tar.gz
```

The amls_del directory contains machine dependent directories, i.e.,

```
hp_ia64
hp_parisc
ibm_aix
linux_ia64
linux_x86_64
sgi_altix
```

which in turn contain Delivery Data Bases (DDB) for different versions of MSC and NX NASTRANs, e.g.,

```
nx5_del.tar.gz
nx5.1_del.tar.gz
nx6_del.tar.gz
v2001_del.tar.gz
v2005_del.tar.gz
v2007_del.tar.gz
v2008_del.tar.gz
```

It is important to note that the above DDB will work with AMLS V3.2.r159(T2), V3.2.r239, and 4.0.r48.

Thus, the users are strongly encouraged to download the appropriate DDB for whichever of the above version of AMLS are being used. There are a number of improvements in the latest iteration of DDB.

a) Improved enforced motion handling and warning messages.
b) When requesting panel participation (or other similar requests in coupled analysis), param, ahh, yes is no longer required.
c) A number of efficiency improvement have been added.
d) Improved interface to the CDH/FastFRS program.
e) Improved handing of Component Modal Synthesis (CMS) with AMLS.

AMLS 3.2.r159T2

This version was created specifically to address a single error in 3.2.r159. This error sometimes occurred when the data returned from AMLS to NASTRAN exceeded ~10GB. The run would finish successfully, but the results could be wrong. This error was also corrected in 3.2.r232.

AMSLS 3.2.r239

This version was also generated to correct a single error in 3.2.r232. The error could occur in SOL 111 when there are residual vectors and rigid body modes whose frequency is not very low, i.e., greater than 0.05 Hz. The run concludes successfully, but the frequency response results in the higher frequency range are incorrect. The error could also be avoided in 3.2.r232 by specifying param, rbmeig, xx where xx is slightly larger than the largest rigid body mode eigenvalue. See Enhancements item 10) in AMLS Release Notes for 3.2.r232.

There will be small difference in the FRF results when compared to 3.2.r159T2 in the presence of residual vectors owing to an improved accuracy in the handing of residual vectors.

AMLS 4.0.r48

This is the latest AMLS version which is almost complete rewrite of the code. It is an intermediate step to a fully Distributed Memory Parallel AMLS version. All of the AMLS phases have been significantly improved. From the users perspective, there is nothing new to learn.

The most important feature of 4.0.r48 is the improved performance in the elapsed time, as well as the reduction in memory requirements, disk space, and the amount of I/O data transfer. This fact is best illustrated by the following table which gives a summary of the elapsed run times for 8 different analysis for two different computers, IBM Power5 and Linux X86. The five items in the first column of the table are:

1 Number of G-set DOFs.
2 Number of A-set DOFs.
3 Number of output DOFs
4 Number of structure modes / number of fluid modes
5 Number of subcases / number of excitation frequencies

The elapsed times are shown in seconds. The improvements are significant, with the minimum ratio of 3.2.r159 vs. 4.0.r48 of ~1.3 to a maximum of ~5.4.

1 2 3 4 5	IBM Power6		159/4.x	X86		159/4.x
	3.2.r159	4.0.r48		3.2.r159	4.0.r48	
6642211 5745858 43 8633/729 3/481	4672	3633	1.29	9282	5039	1.84
9061748 6813747 26 10349/854 1/218	11673	5641	2.07	17174	7794	2.20
6174738 442253 356 8888/0 177/1001	4867	3067	1.59	7086	3527	2.01
13551297 12429057 126 3406/249 102/301	20704	5382	3.85	42279	7754	5.45
14048202 12542968 210 11961/0 93/681	19806	8325	2.38	33406	14958	2.23
20155457 15859846 534 6549/871 150/401	15725	7082	2.22	29250	11036	2.65
6336354 4124342 6 19066/3550 3/241	17997	12189	1.48	19250	13552	1.42
18673618 11360735 66 10121/0 18/581	10355	5497	1.88	9250	6764	1.37