

January 15, 2008
S.D. Peckham
CCA-related Recommended Reading (version 2)

Publications

12-Page Paper on CCA

Bernholdt, D.E., W.R. Elwasif, J.S. Kohl and T.G.W. Epperly (2003) A component architecture for high-performance scientific computing, submitted to *Workshop on Performance Optimization for High-Level Languages and Libraries*, 12 pp., DOE/LLNL, preprint
<https://e-reports-ext.llnl.gov/pdf/241603.pdf>

77-Page Paper on CCA

Bernholdt, D.E., B.A. Allan, R. Armstrong, F. Bertrand, K. Chiu, T.L. Dahlgren, K. Damevski, W.R. Elwasif, T.G.W. Epperly, M. Govindaraju, D.S. Katz, J.A. Kohl, M. Krishnan, G. Kumfert, J.W. Larson, S. Lefantzi, M.J. Lewis, A.D. Malony, L.C. McInnes, J. Nieplocha, B. Norris, S.G. Parker, J. Ray, S. Shende, T.L. Windus and S. Zhou (2004) A component architecture for high-performance scientific computing, *Intl. J. High Performance Computing Applications, ACTS Collection Special Issue*, 75 pp.
<https://e-reports-ext.llnl.gov/pdf/314847.pdf>

(See ESMF section on p. 50, CCSM section on p. 54, MCT section on p. 55)

15-Page Paper on the Impact of CCA

Kumfert, G., D.E. Bernholdt, T. Epperly, J. Kohl, L.C. McInnes, S. Parker and J. Ray (2006) How the Common Component Architecture advances computational science, DOE/LLNL, UCRL-CONF-222279, 15 pp.
http://www.iop.org/EJ/article/1742-6596/46/1/066/jpconf6_46_066.pdf?request-id=7MMgjJLD3BG4R93m2wi7Kq

54-Page Paper on Parallel PDE-based Simulations Using CCA

McInnes, L.C., B.A. Allan, R. Armstrong, S.J. Benson, D.E. Bernholdt, T.L. Dahlgren, L.F. Diachin, M. Krishnan, J.A. Kohl, J.W. Larson, S. Lefantzi, J. Nieplocha, B. Norris, S.G. Parker, J. Ray and S. Zhou (2006 ???) Parallel PDE-based simulations using the Common Component Architecture, 54 pp.
<http://www.caip.rutgers.edu/~jaray/Presentations/pdepaper.pdf>
<https://www.cca-forum.org/download/doc/pde-chapter.pdf>

CCTTSS Proposal (written in 2000 ?, CCTTSS is now TASCs)

Center for Component Technology for Terascale Simulation Software (CCTTSS) Proposal, , 39 pp. (also see the numerous links in the References section)
<http://www.cca-forum.org/db/ccttss/ccttss-proposal.pdf>

Babel User's Guide and Other Docs (one of the main CCA tools)

Dahlgren, T., T. Epperly, G. Kumfert and J. Leek (2007) *Babel User's Guide*, March 23, 2007 edition, Center for Applied Scientific Computing, U.S. Dept. of Energy and University of California Lawrence Livermore National Laboratory, 269 pp,

<http://www.llnl.gov/CASC/components/babel.html> (Babel main page)
<https://computation.llnl.gov/casc/components/docs.html> (links to docs)
<https://computation.llnl.gov/casc/components/docs/Babel-SC04-Tutorial.pdf> (PPT tutorial)
<https://computation.llnl.gov/casc/components/docs/Babel-SC07-Tutorial.pdf> (PPT tutorial, broken link on 1/15/08)

Paper on Bocca (one of the main CCA tools, for RAD: Rapid Application Development)

Elwasif, W., B. Norris, B. Allan and R. Armstrong (2007) Bocca: A development environment for HPC components, submitted to *proceedings of HPC-GECCO/CompFrame 2007 Montreal, 21-22 October 2007*. PDF online at:

<http://portal.acm.org/citation.cfm?id=1297390> (final version)
ftp://info.mcs.anl.gov/pub/tech_reports/reports/P1430.pdf (draft version)

Bocca User's Manual

Not yet available, but some information is available in the SC07 Hands-On Guide for CCA at:

http://www.cca-forum.org/download/tutorial/guide-0.5.3_rc1.pdf

PETSc User's Manual

Balay, S., K. Buschelman, V. Eijkhout, W. Gropp, D. Kaushik, M. Knepley, L.C. McInnes, B. Smith and H. Zhang (2007) *PETSc Users Manual*, Argonne National Laboratory, Mathematics and Computer Science Division, May 23, 2007 edition, 190 pp.

<http://www.mcs.anl.gov/petsc>

XCAT Distributed/Grid Computing Framework for CCA

Krishnan, S. and D. Gannon (2004) XCAT3: A Framework for CCA Components as OGSA Services,

http://www.extreme.indiana.edu/xcat/publications/hips2004_xcat3.pdf

CCA Bibliography

<http://www.cca-forum.org/tutorials/archives/2004/tutorial-2004-11-08/cca-bib.pdf>

PowerPoint Presentations

Links to Latest CCA Tutorials (see main "Lecture slides" link to 190-slide PPT)

<http://www.cca-forum.org/tutorials/archives/2007/tutorial-2007-11-12/index.html>

Terascale Simulation Tools and Technologies Center (TSTT)

<http://www.tstt-scidac.org/talks/tstt2tops.ppt>

Indiana University, Extreme! Lab

The Common Component Architecture and XCAT

<http://www.extreme.indiana.edu/xcat/presentations/intro/cca-xcat-intro.ppt>

Govindaraju, M., A. Slominski, D. Gannon and S. Krishnan (2003)

Programming the Grid with Components

http://www.extreme.indiana.edu/xcat/presentations/jg02/tutorial_components.ppt

Links

The Common Component Architecture (CCA) Main Page

<http://www.cca-forum.org>

Links to CCA Tutorials

(Check out the Hand-On Guide and Tutorial Archives link to PPTs)

<http://www.cca-forum.org/tutorials>

Babel (one of the CCA tools)

<http://www.llnl.gov/CASC/components/babel.html>

<https://computation.llnl.gov/casc/components/docs.html>

Babel won the R&D 100 Award (Software category, design) in 2006

<http://www.rdmag.com/rd100ach/RD100SearchResults.aspx?strProduct=Babel&Type=P>

R&D 100 Award Main Page (follow link: R&D 100 Award Archive)

<http://www.rdmag.com/awards.aspx>

PETSc (Portable, Extensible Toolkit for Scientific Computation)

<http://www.mcs.anl.gov/petsc>

CCA and PETSc listed in “Top 10 DOE Office of Science Achievements in 2002”

http://www.sc.doe.gov/sub/Accomplishments/accomplishments/top_10.htm (number 6)

CCA and PETSc listed in “Top 10 DOE Office of Science Achievements in 2003”

http://www.sc.doe.gov/sub/Accomplishments/accomplishments/top_10_2003.htm

(number 2)

SciDAC (Scientific Discovery through Advanced Computing, DOE-funded program)

SciDAC 1 was active from 2001 to 2006 (incl. CCTTSS, TTST, TOPS)

SciDAC 2 goes from 2006 to 2011 (incl. TASCs, ITAPS, PERI)

<http://www.scidac.gov>

CCTTSS Home Page (the center behind development of CCA for SciDAC 1)

<http://www.cca-forum.org/scidac/index.html>

TASCs Home Page (the center behind development of CCA for SciDAC 2)

<http://www.tascscidac.org>

CCTTSS 2003 Annual Report

http://www.scidac.gov/ASCR/ASCR_CCTTSS.html

http://www.scidac.gov/ASCR/ASCR_CCTTSS/reports/CCTTSS2003Annual1.html

The SCIRun (“ski run”) Project (a CCA-compliant framework for both parallel and distributed)
(Now completely open source, see sidebar)
<http://software.sci.utah.edu/scirun.html>

The XCAT Project (a CCA-compliant framework for distributed/grid computing)
<http://www.extreme.indiana.edu/xcat/>
(Follow links to Publications and Presentations. Note: This project is no longer active.)

TSTT (Simulation Tools and Technologies Center, active during SciDAC 1)
http://www.scidac.gov/ASCR/ASCR_TSTT.html
ITAPS (Interoperative Technologies for Advanced Petascale Simulations Center)
(active during SciDAC 2)
<http://www.itaps-scidac.org>

TOPS (Terascale Optimal PDE Solvers, active during SciDAC 1, now PERI)
http://www.scidac.gov/ASCR/ASCR_TOPS.html
PERI (Performance Engineering Research Institute, active during SciDAC 2)
<http://www.peri-scidac.org>

CCA Technical Specification
<http://www.cca-forum.org/specification/cca-spec.txt>

Links to Other CCA Docs
<http://www.cca-forum.org/docs/index.html>

Alexandria Web Page (A component library project that did not get funded.)
<https://www-casc.llnl.gov/alexandria>

Other Component Architecture Links (Commercial, non-HPC, non-scientific computing)

CORBA (Object Management Group)
<http://www.omg.org/gettingstarted>
http://www.omg.org/gettingstarted/history_of_corba.htm

COM (Component Object Model, Microsoft, incl. COM+, DCOM & ActiveX Controls)
<http://www.microsoft.com/com/default.mspix>

.NET (Microsoft Corp.)
<http://www.microsoft.com/net>

JavaBeans (Sun Microsystems)
<http://java.sun.com/products/javabeans>

Enterprise JavaBeans (Sun Microsystems)

<http://java.sun.com/products/ejb>