


[ARTICLES](#) | [PRODUCTS](#) | [NEWSWIRE](#) | [VENDORS](#) | [E-LETTER](#) | [E-CAST SCHEDULE](#)
[Free Subscription >](#)

## High availability

### EDITORIAL

November 2008 [ [CPCI3657](#) ][DISCUSS](#) | [E-MAIL](#) | [PRINT](#) | [SAVE](#) | [LICENSE](#)

# Delivering high availability platforms in an open environment

OpenSAF Foundation President John Fryer outlines efforts to create an open environment for high availability middleware.

By [John Fryer](#)  
OPENSATF



**High Availability (HA) middleware is a critical element of telecommunications platforms that has traditionally been seen as a proprietary, differentiating technology. Recent economic and ecosystem changes have led to the recognition that the ability to support rapid application development and application portability across**

**platforms rather than base platform middleware is the key differentiator to service providers. To address this change, and embrace increasing requirements for high availability in other industries, a number of industry organizations have developed, and influenced, open specifications for HA middleware, and a range of implementations are becoming available to the market.**

The very stringent availability requirement for less than five minutes of downtime per year for a system (5-nines) can only be achieved with robust hardware, software, and system architecture in which HA middleware plays a critical role.

### NEWSWIRE

[\[more\]](#)

RELATED: [EMBEDDED SOFTWARE](#)  
[OPEN SOURCE](#)

**6WIND Offers 6WINDGate Networking Embedded Software to Simplify, Expedite Application Development for Freescale's QorIQ P4080 Multicore Processor**

07 October 2008

**NSA Releases Secure Software Project to Open Source Community**

06 October 2008

**McObject and G-Tek Target Turkey's Growing Embedded Software Sector**

29 September 2008

**Emerson Network Power Announces Industry's First Commercial Distribution of OpenSAF High Availability Middleware**

25 September 2008

**TEWS TECHNOLOGIES**



**Introduces Extended Temperature and High-Density Quad Serial Communication AMC Module**

24 September 2008

**Kontron and Astute Networks Sign Global Multi-Year Reseller Agreement**

16 September 2008

The task of creating an open environment for high availability middleware was begun in 2001 by the Service Availability Forum (SA Forum, [www.saforum.org](http://www.saforum.org)). The SA Forum has created a High Availability reference architecture and a series of interface specifications primarily in two areas. The Hardware Platform Interface (HPI) specifies a set of interfaces to manage hardware aspects of a platform, now a *de facto* industry standard, and whose success is demonstrated by the broad range of platforms that now incorporate this technology. Although there are no COTS offerings of the HPI implementation, several proprietary implementations from hardware platform manufacturers as well as OpenHPI, an open source implementation, are heavily leveraged in many of the commercial implementations.

The Application Interface Specification (AIS) is a broader and more complex specification which is aimed at abstracting the interface between HA middleware and the applications themselves. AIS supports a greater number of *services*, which extend beyond the basics of clustering, check pointing, event handling, and the like to include an availability management framework and information model management for manageability. Additional capabilities planned include Java interfaces and virtualization layers.

In fact, it is the very nature of the AIS layer and software applications in general that present challenges in moving from the specification stage to implementation. In the case of the AIS layer, success needs to be measured by having a robust ecosystem of applications and application developers using the underlying AIS interfaces. This inherently means that all implementations must be *interoperable* from an application perspective, or that there are a small number of implementations with known variations. Looking at the AIS specifications, they continue to evolve and add new services. A complete implementation of AIS is not sufficient by itself to create a high availability middleware implementation, additional services are still required. Indeed, it can be argued that because this is a software area, there is no such thing as a "complete" high availability middleware implementation.

Company proprietary, commercial, and open source implementations of the AIS specifications exist today. The commercial offerings closely follow the specifications from the SA Forum, although as implementations stabilize and are deployed it becomes challenging to implement new specifications that often replace "nonstandard" interfaces and services. Today most major Network Equipment Providers (NEPs) and computer companies have plans to migrate to and comply with a variant of SA Forum's specifications in their middleware roadmaps; however given that these implementations pick and chose subsets and versions of the specifications and enhance them with proprietary extensions, it is not possible to develop a portable plug-and-play application that supports more than one of these implementations.

A number of open source initiatives have been created around AIS high availability implementations. These range from dual source licensing models backed by a commercial vendor to initiatives such as OpenAIS ([www.openais.com](http://www.openais.com)) and the latest Open Source project, OpenSAF ([www.opensaf.org](http://www.opensaf.org)). OpenSAF is backed by the overall

#### SDR Forum Experiences Rapid Growth with the Addition of Eight New Members

03 September 2008

#### MontaVista Linux Enables Carrier/Telco Industry to Leverage High Performance of Cavium OCTEON Processors

31 July 2008

#### National Instruments Introduces 1 GHz Bandwidth PXI Digitizer New Module Delivers Optimized Performance for High-Bandwidth Measurements in Automated Test Applications

28 July 2008



#### Eurotech Announces A3pci8024 Embedded Computer Platform Based on Intel EP80579 Integrated Processor

24 July 2008

#### GE Fanuc Intelligent Platforms Targets New Opportunities With Range Of Embedded Computing Solutions

22 July 2008



#### MontaVista Linux Carrier Grade Edition First to Comply with Three Key Specifications for Telecom Industry

15 July 2008

#### Enea Adds Advanced System Analysis and Profiling Capabilities to Eclipse-Based Enea Optima Tool Suite

02 July 2008

#### Coverity Acquires Software Readiness Management Vendor Solidware

01 July 2008

#### 6WIND Intros Multi-Core Market-First Designing

ecosystem including major NEPs and computing companies, and it is based on a field proven implementation as a starting point.

The choice of what path to take really depends both on short and long-term requirements. Products from commercial vendors have well-defined roadmaps and follow developments in the SA Forum. It must be recognized however that the "nonstandard" services implemented by a commercial vendor represent a significant degree of "lock-in" and therefore a barrier to broad adoption, as it may be difficult to change from one middleware implementation to another. Also, any applications will be specific to that vendor.

The driving force behind the OpenSAF initiative is to remove barriers to broaden industry adoption. With an open source implementation using the LGPL V2.1 license, anyone can leverage the code base and is free to contribute extensions and improvements. Further, there is substantial expertise within the telecom and computing sector and an open source model enables major equipment manufacturers to contribute to the project without fear that competitors and distributors will take direct commercial advantage of their work and expertise. Indeed, an open source environment offers the ability to create best of breed practices.

The success of open source projects is derived from many areas, but the two most critical are perhaps the license and the development community. OpenSAF uses the standard LGPL v2.1 license. The key attributes of this license are that code linking to the library is not subject to the LGPL license, but any changes to the code base must be distributed under LGPL v2.1; this has enabled a powerful development community to be established with contributors from major telecom equipment companies, computing equipment vendors, and embedded computing companies in addition to the open source community at large. Participants in OpenSAF have deployed the code with plans to implement it on a variety of platforms, and distributors are offering commercial products using Linux-type business models.

The OpenSAF code base implements the core AIS specifications from the 2005/2006 timeframe. A set of additional services is necessary for the deployment and management of the initial code base. The code base is currently deployed in live carrier networks, and it represents a stable starting point for enhancements. Quality of the code base is a key requirement for the OpenSAF community in general. The current phase of development is focused around education of the rapidly growing development community and the current release R2 includes full 64-bit support.

The next phase of OpenSAF development is expected to replace some of the "nonstandard" services of the code base with SA Forum based services. It will also include an expansion of operating system support to move beyond a variety of Linux implementations to include Solaris. Longer term objectives include support for virtualization, through the upcoming SA Forum Platform Layer Management (PLM) specification, and the implementation of Java interfaces, enabling both C/C++ applications and Java applications to be supported by a common high availability

#### Software

30 June 2008

#### Emerson Unveils Containerized Computing Solution Designed to Meet Growing Consumer Demand for Wireless Networks and Broadband

23 June 2008

infrastructure.

High availability middleware is increasingly important as the underpinning for making applications continuously available. Initially driven by the requirements of the telecom industry, these requirements are increasingly necessary in a broad range of industries. By driving high availability through an open specification organization and focusing on an industry driven open source implementation, broad acceptance of a common mechanism will drive a robust development ecosystem and a healthy application development community.

*John Fryer is Director of Technology Marketing for the Embedded Computing business of Emerson Network Power, President of the OpenSAF Foundation and represents Emerson Network Power on the board of directors for the Service Availability Forum. Previously he was responsible for the worldwide product marketing of AdvancedTCA platforms at Motorola. Pryor to joining Motorola, he was Vice President of Marketing for control plane and data plane software applications at NetPlane Systems, John has more than 25 years of experience in the communications industry, in a variety of marketing and engineering positions. Fryer holds a B.Sc. with Honors in mathematics from the University of Nottingham, England.*

#### OpenSAF

[www.opensaf.org](http://www.opensaf.org)

[John.Fryer@Emerson.com](mailto:John.Fryer@Emerson.com)

[close\(\)](#)

[status via twitter](#)

[recent comments \(follow comments\)](#)

[View Profile »](#)

[Powered by Disqus · Learn more](#)

[closeReblog this comment](#)

[Powered by Disqus · Learn more](#)

[DISQUS COMMENT](#)

#### Add New Comment

Type your comment here.

[?]  Unclaimed  Register  Login DISQUS

[OPTIONS +](#)

#### Articles related to the topic **High availability**:

- [SA Forum enhances platform management and integration](#)

DR. ASIF NASEEM – The next generation of enhanced specifications from the Service Availability Forum (SA Forum) will help hardware platform suppliers –

tackle the challenge of delivering fully integrated, tested, application-ready systems.

- **Middleware tackles high availability DSP management for the data plane**

MIKE CHRISTOFFERSON – As highly available and high-performance real-time processing becomes ever more critical, Telecom Equipment Manufacturers are seeking fine-grain monitoring, control, debug, and fault management capabilities.



- **Make my platform continuously available**

DR. ASIF NASEEM – A technology partnership has resulted in a system that integrates their respective hardware and software components into a carrier-grade, application-ready platform that can be readily employed in a variety of network applications.



- **Achieving high availability and management with the latest standard COTS technologies**

DR. ASIF NASEEM – Building proprietary systems in-house to meet service availability goals is giving way to an approach that takes advantage of a broad COTS ecosystem.

- **AdvancedTCA fits high availability interactive voice and video needs**

R. BROUGH TURNER – Why AdvancedTCA scalability serves IP Multimedia Subsystems

- **The Service Availability Forum solution for High Availability**

L. E. MOSER AND P. M. MELLIAR-SMITH – This article discusses the interface specifications for high availability being developed by the Service Availability (SA) Forum.... (continues)

- **Developing a high availability solution using the SA Forum Hardware Platform Interface (HPI)**

DAVID FICK – This article will cover the ins and outs of using COTS components for high availability (HA), a common requirement for many products today. ... (continues)



- **High availability system architectures**

TONY ROMERO AND SEAN O'BRIEN – Manufacturers are creating new, always-on, high-availability (HA) designs that will ultimately reduce operational expenses and revenue loss due ... (continues)

- **Economics of High Availability**

JASON BAILIS – Which high availability configuration is appropriate for a specific service provider is a question that requires additional analysis unique to the particular business model and IT infrastructure. This article was designed to identify and compare and contrast the eight high availability configurations that can be implemented. The take away for the reader is to be able to make a more knowledgeable and informed choice on which path they elect to proceed.

- **Open architecture for high availability**

JAMES G. LAWRENCE – The ability to meet customer expectations for highly available, dependable services without interruption is an absolute requirement for packet... (continues)

- **A new approach to scaling high availability: High Availability Architecture HA2 combines scalable HA features across architectures in a new way for multiple levels of system complexity**

NATHIAS RENNEN – High availability (HA) and system scalability are often required as applications are converted to network-centric architectures. However, softw... (continues)

- **Rapid and transparent failover for high-availability systems**

ADAM STEVENSON – Rapid and transparent failure is an essential element of any high-availability system as all hardware and software, no matter how reliable, even... (continues)

- **High Availability Solutions - Embedded processor brings high availability to CompactPCI VoIP board Dual bus CPCI high availability solution**

PAUL FLAGG AND TARUM SONI – There are two separate articles with different authors.... (continues)

- **Unique NEBS telecom chassis enables a scalable HA system strategy**

KEN GROB – This article discusses the purpose and requirements of a carrier grade platform and the advantages and cost effectiveness.... (continues)

- **High Availability design for embedded systems**

JOHN FOGELIN, MAARTEN KONING, GERRY KUHN – This article examines the market dynamics that drive the requirements of an “HA-enabled” embedded operation system; shows how these ... (continues)

**Next**

**More related articles, matching keywords *embedded software open source*:**

- **Virtualization software addresses new demand for MicroTCA in industrial applications**

DIDIER IRLANDE – Industrial, medical, and other applications can employ virtualization to take advantage of MicroTCA systems and migrate software to new multicore architectures such as the Intel Core Microarchitecture.



- **White Paper: Virtualization: State of the Art**

SCOPE ALLIANCE – This document presents the state-of-the-art of virtualization as a foundation for further work of the SCOPE Alliance Virtualization Working Group. It also provides a glossary of virtualization terminology that will be used in further work of the SCOPE Alliance Virtualization Working Group.

- **Open standards enable system-level application development**

MARK SKALABRIN – Today, OEMs can afford neither the time nor the money involved in this long, drawn-out technology evaluation process. They are looking for sour... (continues)

**See also: [Latest articles](#), [Search all articles](#)**

**[Return Home](#)**



Search All



©MMVIII *CompactPCI and AdvancedTCA Systems*. An OpenSystems Publishing, LLC publication.



[ARTICLES](#) | [PRODUCTS](#) | [PREFERRED VENDORS](#) | [NEWSWIRE](#) | [EMBEDDED FORUM](#) | [eLETTER](#) | [SUBSCRIBE FREE >](#)  
[About this Magazine and Website](#) | [Contact Us](#) | [Media Kits](#)