



NORDIASOFT SCARI GT CORE FRAMEWORK 2016

Product_code: Nordiasoft_scariGT_4_4_0_Linux_3_11_10_ORBexpressX64_3_0_2_P31
Date: January 2016. **Target Operating System:** Linux distributions based on GCC version 3.11.10
Object Request Broker: OIS ORBexpress version 3.0.2 P31 for x64 processors

SCARI GT CORE FRAMEWORK

The SCA Core Framework is the central piece of the Component Based Development (CBD) infrastructure. It provides the overall software management functions of the embedded system. Residing on the target platform, it coordinates the deployment and configuration of the software components, ensuring that each one is loaded on the proper processor and connected to the other components as per the application mapping, wherever they may reside on the platform.

The SCARI-GT Core Framework is the most advanced SCA Core Framework available on the market. Tested for compliance against the SCA v2.2.2, it was used by the US Department of Defence JTRS Test and Evaluation Lab (JTEL) as part of their test bed to validate and improve the accuracy of its conformance tool (JTAP).

Deployed in thousands of high-performance radio systems around the world, the SCARI Core Framework (CF) is the commercial off-the-shelf (COTS) runtime environment of choice for platform providers and radio manufacturers, supporting the largest combination of operating systems, object request brokers, and processors

SCARI GT CORE FRAMEWORK 2016 NEW FEATURES AT A GLANCE

The SCARI GT Core Framework 2016 release contains the results of substantial R&D effort targeting deployment optimization. The new features include support for deployment channels, support for limited number of input arguments, support for data files, and support for file references.



MOST WIDELY USED

The SCARI Core Frameworks are used by over 40 organizations in 16 different countries. SCARI is also the Core Framework of choice for SCA development kit providers.

BATTLE-PROVEN

The only COTS Core Framework to have been through the rigorous operational testing required for military radios and to have been deployed in the battlefield on thousands of radios.

YEARS OF FEEDBACK

In 2002, the SCARI Software Suite was the first development kit to become available on the COTS market. The current suite implements years of feedback coming from a large number of customers working with a wide range of operating environments.

COMPLIANCE

The SCARI GT Core Framework, version 4.0 and up, is the only Commercial-Off-The-Shelf (COTS) product to have been fully tested with the official US DoD JTAP certification tool for SCA version 2.2.2. For backwards compatibility, SCARI GT can be configured to behave as SCA version 2.2 or 2.2.2.

MOST COMPREHENSIVE SUPPORT FOR OPERATING ENVIRONMENTS (OEs):

- SCARI GT has been ported to even more platforms: GHS INTEGRITY, Wind River VxWorks [both RTP and kernel modes], Lynx Software Technologies LynxOS, BlackBerry QNX, Linux, MontaVista and other embedded Linux flavors.
- Supports the most popular ORBs: ORBexpress is the defacto standard for SDR applications thanks to its great real-time performance. Also support TAO for research projects.
- Customizable SCA Devices can be provided: ExecutableDevice, LoadableDevice, JTRS MHALDevice, JTRS AudioDevice, and JTRS EthernetDevice.

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MOST COMPREHENSIVE SUPPORT FOR OPERATING ENVIRONMENTS (OEs):

- Only Core Framework development kit used in conjunction with FPGA reconfiguration.
- Has been used on a large variety of PowerPC processors, ARM and XScale processors, and x86 processors. It has also been integrated on System-On-a-Chip (SoC) solutions such as the TI DaVinci processors, the Xilinx FPGAs with PPC cores, and more.
- The Nordiasoft team has a proven track record of quickly adding support for other OE combinations.

FULL SCA FEATURE SET:

- Full DomainManager and DeviceManager implementations that support all the features of the SCA specifications including:
 - Resource factories,
 - Uses device relationships,
 - All type of connections (by naming service, by uses device, by device-that-loaded, by device-used-by, by supported interface),
 - Aggregate devices,
 - Device assignments and host-colocation restrictions,
 - Deploy-on restrictions for node components,
 - All types of SCA component properties (simple, simplesequence, struct, and structsequence),
 - Event channels
- Fully functional generic XML-driven DeviceManager which can be shut down without causing applications to crash while they are running.
- The DomainManager supports an extended API to allow orderly shutdown.
- Fully functional FileManager, FileSystem, File, and Log Service.
- Can be configured to behave as SCAv2.2 or SCAv2.2.2 with support for SCAv4.x on the roadmap.

DEVELOPMENT AND DEBUGGING:

- **TRACING FACILITY:** provides detailed tracing facility which helps solve difficult-to-find deployment problems.
- **TIMING INFORMATION:** provides precise node and application timing information used to determine where time is being spent and help optimize boot-up time.
- **PRE-CONNECTION LOGGING:** provides a way to save crucial logging messages produced before a connection to the Log service is established. These messages are otherwise lost with other products.
- **EXTRA DEPLOYMENT INFORMATION:** provides information regarding where components have been deployed, which connections have been established and which connections are still pending.
- **FULLY CONFIGURABLE:** many aspects of the CF behavior (file system paths, logging and debugging levels, SCA v2.2 vs v2.2.2 behavior, time-related deployment parameters) can be configured.

DEPLOYMENT OPTIMIZATIONS:

The SCARI GT Core Framework contains a number of optimization features that allows for faster boot-up times in smaller memory footprints. And the best thing is that those features are implemented in a way that provides transparent interoperability with third party SCA-compliant systems.

- **ULTRA FAST XML PARSING:** SCARI GT uses a handcrafted lightweight and ultra-fast XML parser to improve node and application launching times which directly translates into faster system boot-up.
- **DEVICE MANAGER MASS REGISTRATION:** This feature allows the SCARI GT Device Manager to register with the SCARI-GT Domain Manager in less than 10% of the time normally required. This feature relies on a specialized API for mass registration which prevents re-parsing of XML profiles or unnecessary file transfers.



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DEPLOYMENT OPTIMIZATIONS (CONT):

- **DYNAMIC DEVICES AND SERVICES:** This feature allows Devices and Services running on different processors to register to a same Device Manager. This enables a multi-processor system to have a single Device Manager which translates into memory footprint savings. Also, this feature allows several Devices to be launched in a single address space which requires less memory.
- **SMART LOADING:** SCARI GT can avoid making unnecessary copies of files while launching an application. In most systems, the performance bottleneck is the slow speed of the file system. Avoiding duplication when possible can tremendously accelerate the boot-up of a platform.
- **FAST CONNECTIONS:** SCARI GT optimizes the process of establishing connections between components. Indirect connections are transparently converted into direct connections to avoid additional lookups. Also, SCARI GT uses a caching system for ports and components involved in connections.
- **MANAGER COMBO:** With SCARI GT, developers have the option of running both the DomainManager and the DeviceManager in a same address space. This provides significant memory footprint improvements.
- **ROBUSTNESS AND STABILITY:** SCARI GT can meet the most stringent operational scenarios. SCARI GT has been deployed on several radios worldwide and as such, it has been subjected to third party testing.
- **DEPLOYMENT FLEXIBILITY FOR ADDRESS SPACES:** Communication performances is at the heart of the SCARI products. This Core Framework supports the possibility of co-locating SCA components in a same address space without the use of a component factory. In fact, SCARI GT even allows application components to be deployed in the same address space as a device component. This deployment ability can easily provide one order of magnitude faster communications between components. This feature relies on the support for shared libraries from the operating systems and on ORBexpress, the Object Request Broker (ORB) from Objective Interface Systems (OIS).
- **INSTANTIATION INFORMATION:** Provides extra APIs to allow an external user interface to learn characteristics of an application to be instantiated. It provides information like the resolved values of properties, the list of ports of an application, and the list of devices on which application components can be deployed.
- **SUPPORT FOR LIMITED NUMBER OF INPUT ARGUMENTS:** the deployment engine is aware of the maximum number of input arguments an operating environment supports (e.g. VxWorks). When a component requires more input arguments than the limit, the deployment engine will automatically create a file to store all the input arguments and then provide the file name to the component being launched. The file name is provided as an executable parameter.
- **SUPPORT DEPLOYMENT CHANNELS:** The deployment engine supports the standard SCA channel feature which provides the ability to restrict the deployment of an application to Devices that are part of a specific channel. This is implemented via the support for the Deployment Platform Descriptor (PDD) file and the standard property named DEPLOYMENT_CHANNEL.
- **SUPPORT FOR DATA FILES:** Support an additional code file type "Other" for data files that simply need to be loaded on the target alongside the main component binary. This code file type allows the deployment engine to avoid special handling associated with SCAv2.2.2 code file types (executable, shared library, kernel module, driver). The code file type can be used for data input files, configuration files, etc.
- **SUPPORT FOR FILE REFERENCES:** The deployment engine can provide a file reference to a component that is being launched. The file reference must be defined in the model as a SCA software dependency. The file reference is provided as an executable parameter that can take the form of a fully qualified SCA path or an IOR to an opened SCA File.



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