

FreeRTOS PORTING KIT

OS Changer FreeRTOS™ Porting Kit is a C/C++ source-level virtualization technology that allows you to easily re-use your software developed using FreeRTOS APIs on another OS, while providing real-time performance. It eliminates the manual porting effort, saves money and shortens the time to market. OS Changer can also be used to simulate the FreeRTOS Interface on a host machine. OS Changer Interface connects to your existing application that was developed on FreeRTOS while the OS Abstractor Target Specific Module (specific to your target OS) provides the connection to the OS you are moving to.

OPTIMIZED CODE GENERATION: OPTION ONE

- Legacy porting tool to easily import your FreeRTOS applications into AppCOE
- Perform your porting & simulation on Windows/Linux host machine with the provided GNU tools for x86
- Generate optimized FreeRTOS Interface code for your target, specific to your application
- Generate project files for your target IDE/tools environment
- Enable target profiling of the FreeRTOS Interface and of the application functions to collect valuable performance data and generate comparative performance reports
- Selectively optimize each FreeRTOS Interface function for performance based on its usage in your application
- Automatically generate initialization and configuration code based on the settings you chose in the GUI-based wizard

FULL SOURCE PACKAGE GENERATION: OPTION TWO

- Use with your preferred IDE/tools instead of the AppCOE development environment
- Provides a Porting Kit in a source code format which contains all the FreeRTOS Interface functions for a specific target OS
- Requires manual configuration and initialization instead of using the AppCOE GUI-based wizard

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STEP ONE • Choose an option

Option One Optimized Code Generation

Your FreeRTOS App:
Import using the legacy
porting tool in AppCOE

Porting steps:
Replace headers, Combine main ()

Run/debug application
using emulator on host

Configure target OS, Profiler,
Interface Optimizer & system settings

Generate code
for target OS

Output:
• Unmodified application source
• FreeRTOS Interface source

Native compiler

Output:
• OS Abstractor API objects/library
• FreeRTOS API objects/library
• Application objects/libraries

Continue to STEP TWO

Option Two Full Source Package Generation

Your
FreeRTOS App

Porting steps:
Replace headers,
Combine main ()
and Initialize app

Native
compiler

Generate source
package from AppCOE
and perform manual
configuration

Output:
• OS Abstractor API library
• FreeRTOS API library
• Application objects/libraries

Continue to STEP TWO

STEP TWO

Linker

Your
FreeRTOS App
executable

Download/run
on your target OS

Generated Profiler
data (optional)

View data using
AppCOE Profiler

Technical Highlights

Includes a Process Feature

- > Port your application to a single or multiple processes utilizing the user shared region provided for your global variables
- > Create a new process by compiling the application separately or by launching it from your main application
- > Provides software-based process features, even if the underlying target OS does not offer support
- > Applications can pre-allocate heap memory during process creation
 - * Set maximum limits regarding the amount of heap memory each application can use to prevent applications from using up all of the system memory and impacting other applications

API Flexibility

- > OS Abstractor APIs also available for use in your FreeRTOS application
- > OS Changer FreeRTOS Interface can be used within a single or across multiple applications

FreeRTOS Pooling

- > Applications can pool threads to increase platform robustness and performance by eliminating the overhead associated with actual task creation and task deletion at run-time

Mission Critical Features

- > Applications have the ability to asynchronously recover from fatal software errors through a soft reset by rolling the stack back to the start of the application

Highly Scalable

- > The AppCOE GUI-based wizard reads your application to custom generate optimized FreeRTOS Interface code that is specific to your application resulting in increased performance and reduction of memory footprint

Target Hardware Independence

- > Products support any target hardware supported by your target OS architecture, including 32/64 bit & SMP/UP architectures

In-house OS Support

- > Can easily be extended to support your in-house OS

FreeRTOS Interface API Coverage & Target OS Support

You can find the supported FreeRTOS APIs here:

https://www.mapusoft.com/wp-content/uploads/documents/Release_Notes-Freertos-APIs.pdf

Below are the target operating systems supported by the OS Changer FreeRTOS Porting Kit:

Android®	LynxOS-178®	Nucleus®	µC/OS III™
eCOS®	micro-ITRON®	QNX Neutrino RTOS®	Unix®
Linux/POSIX	Freescale MQX®	RT Linux®	VxWorks®
LynxOS®	NetBSD®	Solaris®	In-House
LynxOS-SE®	ThreadX®		

- A free evaluation can be downloaded here:
<http://mapusoft.com/downloads/>
- You can contact MapuSoft to request a license key for evaluation here:
<http://mapusoft.com/contact>
- User manuals & technical documentation can be found here:
<http://www.mapusoft.com/techdata/>
- For any technical or sales questions please submit a ticket at the MapuSoft support site here:
<http://mapusoft.com/support/>