

NUCLEUS OS Solutions

The **Nucleus OS PPC8349E Encryption Acceleration Platform** was developed to illustrate the vast difference in performance one can achieve by using hardware encryption acceleration technology as opposed to a software only solution. It also serves as a reference platform for building networked appliances that incorporate encryption and web-server capabilities.

The Nucleus OS PPC8349E Encryption Acceleration Platform can be easily extended to take advantage of the Nucleus OS wireless connectivity as well as other emerging technologies we develop.

We, at Mentor Graphics, are giving you a less expensive and time consuming way to get your products to market first. Designed to fit your budget, the Nucleus OS solution makes it possible to build cutting-edge applications quickly, without incurring per-unit royalty fees. Because we know the regulatory rigor that your devices must undergo, we also include complete source code at no additional cost. The EDGE Developer Suite extends these advantages with a complete, integrated development platform that was designed from the ground up for embedded development.

Security

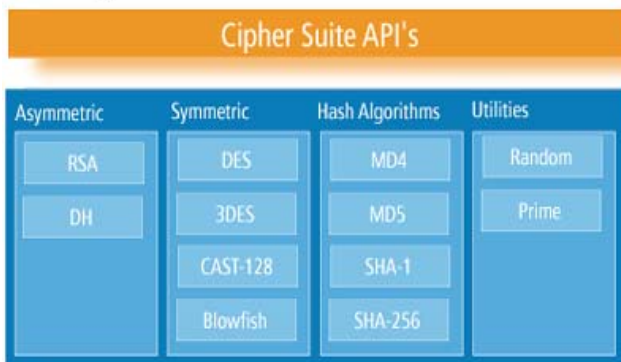


Figure 1 – Nucleus Cipher Suite APIs

BENEFITS

✓ Accelerated Encryption

When using the Nucleus OS Security Services, there is no need to “Super-Size” one’s

processor or settle for sub-par performance. For processor families like the PowerPC or Coldfire that support hardware acceleration the Nucleus OS security services support both software only and hardware acceleration.

There are no code changes that need to be done to implement this from an application standpoint. The Nucleus OS handles this under the hood.

✓ Integrated Solutions

Integration means different things to different people. While you may not need all of the capabilities of the Nucleus OS today, you’ll need them tomorrow. And there is comfort in knowing what you will need for tomorrow’s product is ready and already integrated today. Reliability, control, source code availability, the bill of material, budgets, schedules and regulatory requirements all play a part in the decision in getting a product to market. Mentor Graphics’ Nucleus OS and EDGE Developer Suite is the right combination of functionality, integration, price, security, reliability and ease of use that will give you the competitive advantage.

✓ Secure Multi-Application Environment

Developed for the real-time embedded environment, the secure Nucleus OS utilizes the latest in MMU, encryption hardware, and secure protocol stacks. The Nucleus OS software provides an out-of-box foundation for your security needs. The Nucleus OS MMU services enable a multi-application environment while totally isolating each application. Use Nucleus OS security services like encryption, IPsec and SSL to encrypt, transmit, exchange and protect sensitive data. For processors that support it, the Nucleus OS has drivers that take advantage of encryption hardware to increase processing speed. With the Nucleus OS there is no need to alter your code to enable hardware acceleration.

✓ Reduce Total Device Costs

Reduce product costs in three ways: staff, hardware and software. Maintaining a staff for products such as USB and 802.11 is expensive. Let Mentor Graphics do that for you. Large general purpose operating systems such as LINUX not only increase BOM costs



in the most obvious ways (such as the need for more RAM), but also in terms of performance. Its large size causes a greater number of cache misses and other overhead that leads to “super-sizing” your processor to compensate for its inefficiencies. Our no-royalties model means you know your costs up front and it minimizes your overall development costs.

Nucleus OS Kernel Services

- Small footprint OS (*fully functional at 12 K*)
- Royalty free
- Source code provided free to reduce regulatory burdens
- Deployed in billions of devices worldwide

Nucleus OS Kernel Extensions

- MMU for memory protection and security
- DDL for dynamically adding features
- POSIX, C++, micro-ITRON support

Nucleus OS Graphical Services

- Windowing Toolkit for GUI design
- Rendering services for low-level drawing
- LCD, VGA, touch panel, keyboard, mouse
- International font support

Nucleus OS Networking Services

- Gigabit Ethernet
- Wireless 802.11x
- IPv4
- Standard networking stacks

Nucleus OS USB Services

- USB 2.0 and OTG compliant
- USB host, function, and OTG
- Overwhelming class driver support for POS devices
 - HID
 - Mass Storage
 - Printer
 - UPS

- Modem
- RS-232

For a complete list of Nucleus OS services please visit www.mentor.com/embedded

Nucleus OS File Services

- ISO 9660, FAT, and FLASH* support
- IDE, SD, PCMCIA, CompactFlash, SATA, USB
- Optimized for multitasking systems

Nucleus OS Encryption Services

- Multiple levels of security and encryption
- MD4, MD5, SHA-1, SHA-256, DES, 3DES, CAST-128, Blowfish, etc.
- Utilize AES for increased security
- Use Nucleus OS hardware acceleration services to support hardware encryption on the PPC 8349E

Secure Nucleus OS Connectivity

- IPv6
- SSL/SSH
- IPsec
- VPN
- Secure wireless (802.11i)

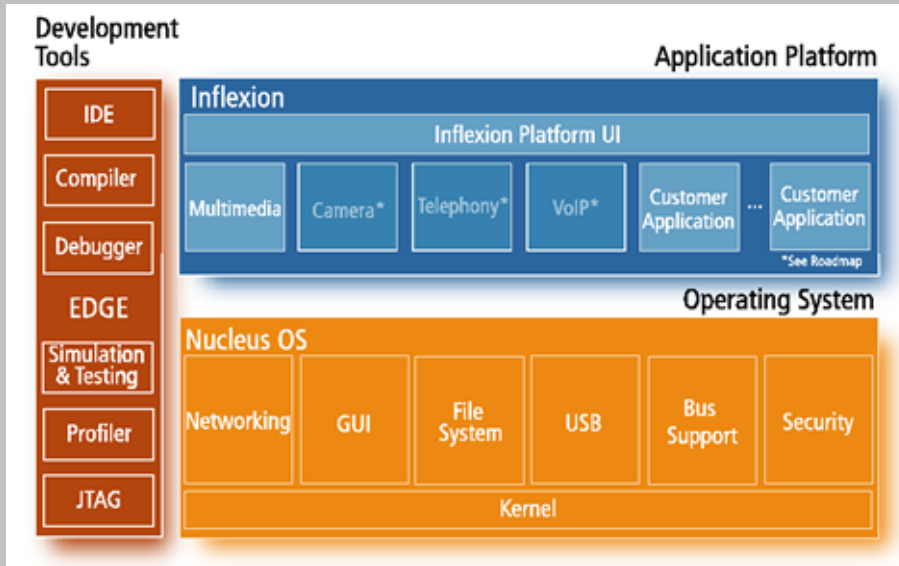
EDGE Developer Suite

- Eclipse-based IDE
- Simulation environment ideal for automation
- Customizable debugging environment (codelets)
- Industrial Strength, ALL for \$2,995 (USD)

Nucleus supports all major 32-bit processors. For more information visit us at:

http://www.mentor.com/products/embedded_software/cpu

For over 15 years, the Nucleus OS has evolved toward a single goal: empowering embedded software developers to do their work quickly and easily, with the best technology, the most confidence and the least hassle. Now EDGE Tools offer a new generation of design and development tools aimed at making embedded developers' lives easier.



Visit our website to learn more about EDGE Developer Suite, Nucleus OS and Inflexion Platform.

www.mentor.com/embedded

Figure 2- Complete Product Diagram