

## Solarflare Onload

### Application Acceleration Middleware

Solarflare® Onload™ is a Linux-based, high-performance kernel-bypass network stack that provides acceleration of TCP- and UDP-based applications. Onload is ideal for applications that benefit from low latency and/or high message rates, including financial services, web and cloud applications, geosciences, weather and other High-Performance Computing (HPC) applications.

### Application Network Acceleration

Onload is a user-space network stack for Linux that was created by Solarflare. Onload comprises a user-level shared library that implements the protocol stack, and a supporting kernel module. By operating in user space, Onload dramatically reduces CPU interrupts, data copies and context switching — resulting in reduced latency and higher message rates.

- Direct connection between applications and networks
- Reduces latency by 80%
- Improves message rate by 20x
- Near zero jitter
- Efficient CPU utilization
- Compatible with TCP/IP and existing applications
- Massive scalability



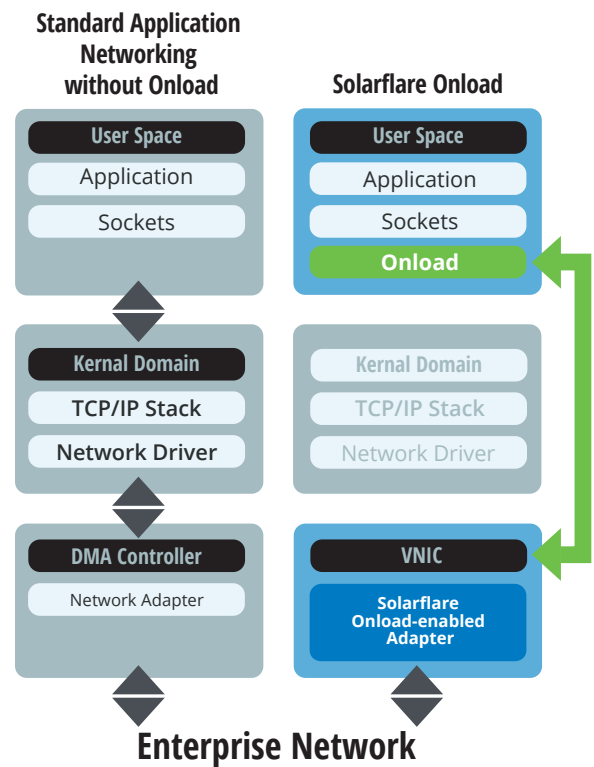
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### Binary Compatible with Existing Applications

Onload is binary compatible with the industry standard BSD Sockets API, thereby providing acceleration of TCP/UDP applications with no need to run a new protocol on the wire. In contrast, RDMA, iWARP and other Infiniband protocols require modifications to user applications and support for new protocols on the wire. Both the Linux kernel stack and Onload can coexist on a server, allowing different applications to be optimized for bandwidth or low latency simultaneously. Applications can choose at run-time to run either Onload or the standard Linux kernel stack.

### Leveraging the Custom ASIC within Solarflare Server Adapters

Solarflare Flareon 10GbE and 40GbE Ethernet adapters contain several unique hardware optimizations that support Onload – such as dedicated vNICs, protected memory and extremely efficient frame and packet switching. By taking advantage of specialized features within the Solarflare server adapter hardware, Onload delivers the lowest latency with the minimum jitter and the highest possible throughput at minimal CPU utilization.



## Configure with Accurate Hardware Timestamps

When running on Flareon Ultra Adapters equipped with the Precision Time license, Onload can be configured to provide applications with extremely accurate hardware timestamps associated with incoming and outgoing network packets on SFN8000 products. On all ports of SFN7000 series adapters, Precision Time enables hardware timestamping of received packets. This allows applications to track the timing of important network events for regulatory purposes for example.

## Onload in a Virtualized Environment

The SFN7000 and SFN8000 Flareon adapter ASICs contain unmatched support for virtualized environments. More vNICs, SR-IOV and overlay hardware acceleration (VxLAN, NVGRE – SFN8000) provide the perfect platform for virtualized applications requiring the best possible network performance. Hypervisors may therefore be configured for VM PCIe Passthrough providing near-bare-metal Linux kernel network performance to virtualized Linux guests. When used within a Linux guest, Onload delivers the same acceleration benefits adding Linux Kernel Bypass to Hypervisor bypass providing virtualized applications with the same sub-2 microseconds of latency.



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## Hardware Requirements

Industry standard off-the-shelf single or dual-socket x86-based server with PCIe slot.

## Software Requirements

The following major O/S releases are supported:

- Red Hat Enterprise Linux 6, 7
- Red Hat Messaging Realtime and Grid 2.4, 2.5
- Red Hat Enterprise Linux for Realtime 7
- SuSE Linux Enterprise Server 11
- SuSE Linux Enterprise Realtime Extension 11
- SuSE Linux Enterprise Server 12 base release
- Canonical Ubuntu Server LTS 14
- Canonical Ubuntu Server 15
- Debian 7 "Wheezy" 7
- Debian 8 "Jessie" 8
- Linux kernels 2.6.18 - 4.4

## Ordering Information

- SFS-OOL can be enabled on any Solarflare 7000 series adapters
- SFN6122F (comes standard with SFS-OOL)
- SFN8522-PLUS (comes standard with SFS-OOL)
- SFN8542-PLUS (comes standard with SFS-OOL)