SSL Offload Presentation

For more information, visit our website at

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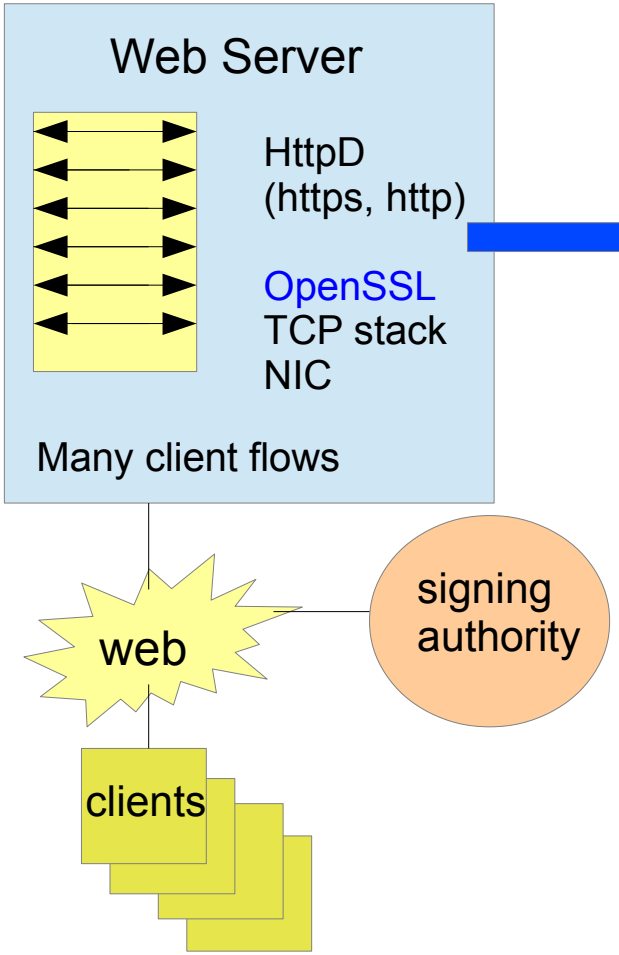
Contents:

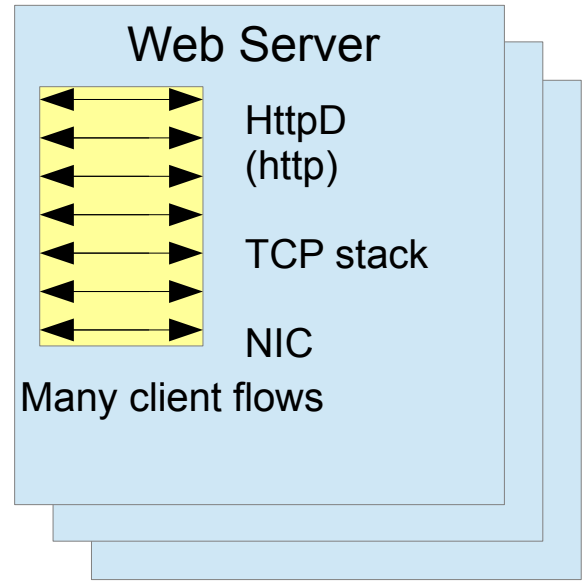
- SSL Monitoring vs. SSL Termination
- SSL Monitoring models: “Enterprise In” and “Enterprise Out”
- SSL Acceleration, connection, & bulk crypto
- Inline vs. Parallel SSL Hardware Acceleration
- Inline solutions & features for SSL monitoring solutions

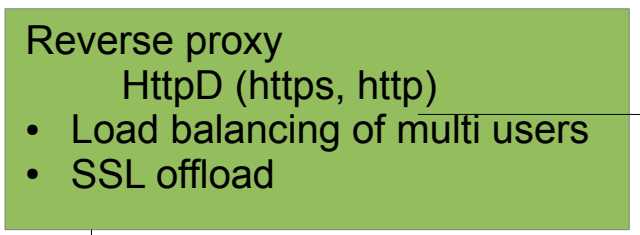
Termination – Standard Web Server Deployment

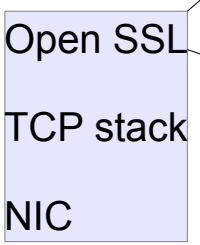


- Connection & crypto overhead for each https client flow.
- Server private key & certificate installed.

Web Server Deployment with Reverse Proxy







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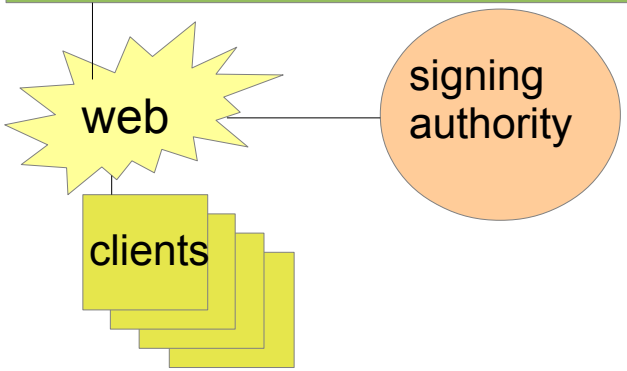
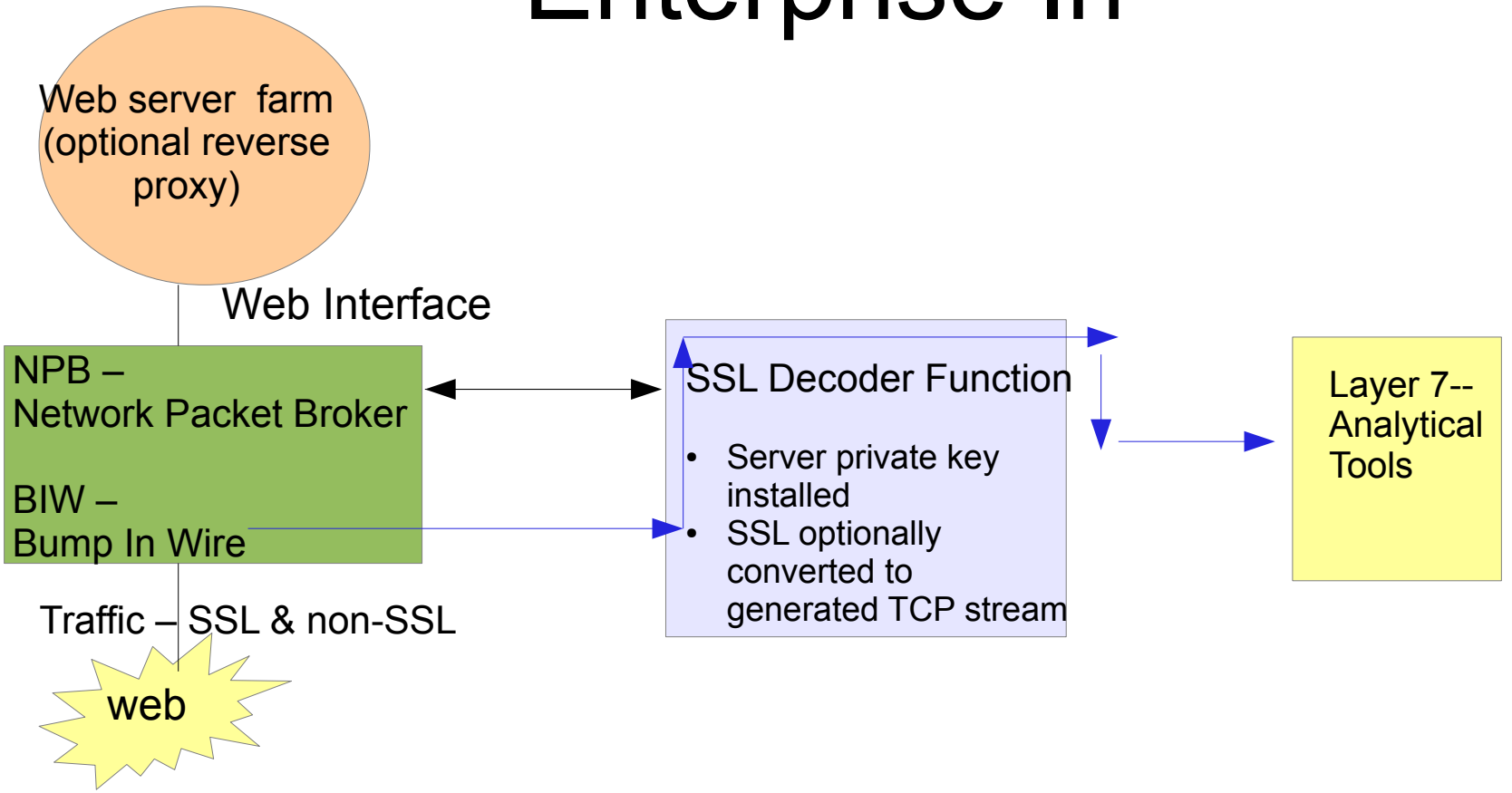
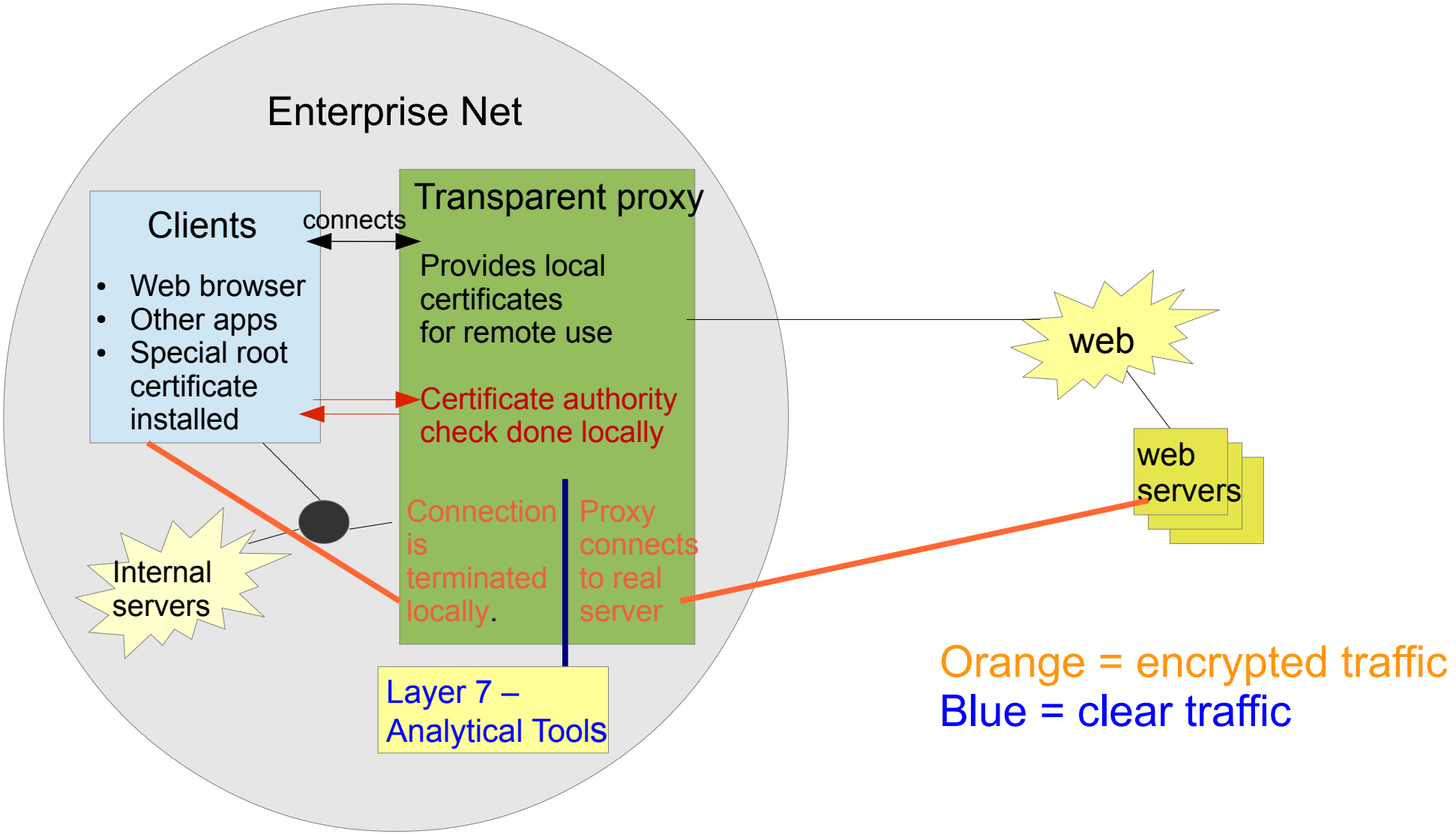


SSL Monitoring Models: "Enterprise In"

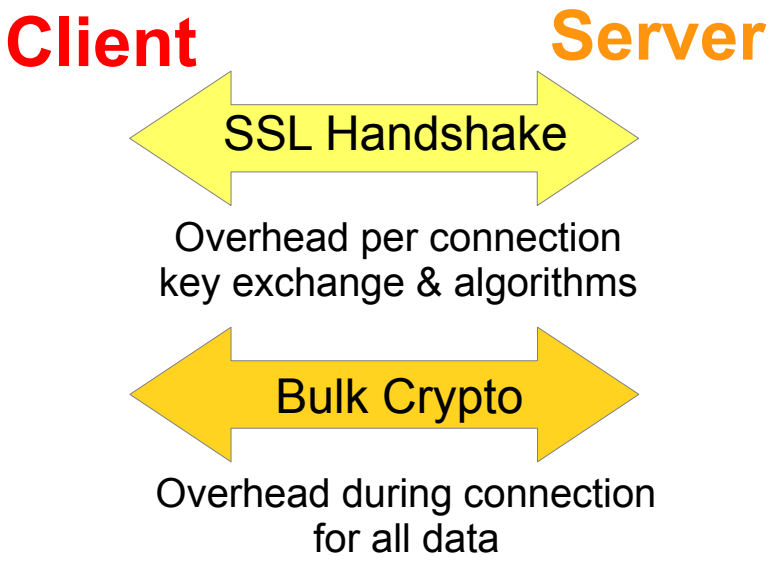


SSL Decoder Function could optionally be integrated into the NPB or Analytical Tools units.

SSL Monitoring Models: “Enterprise Out”



SSL Acceleration: connection, & bulk crypto



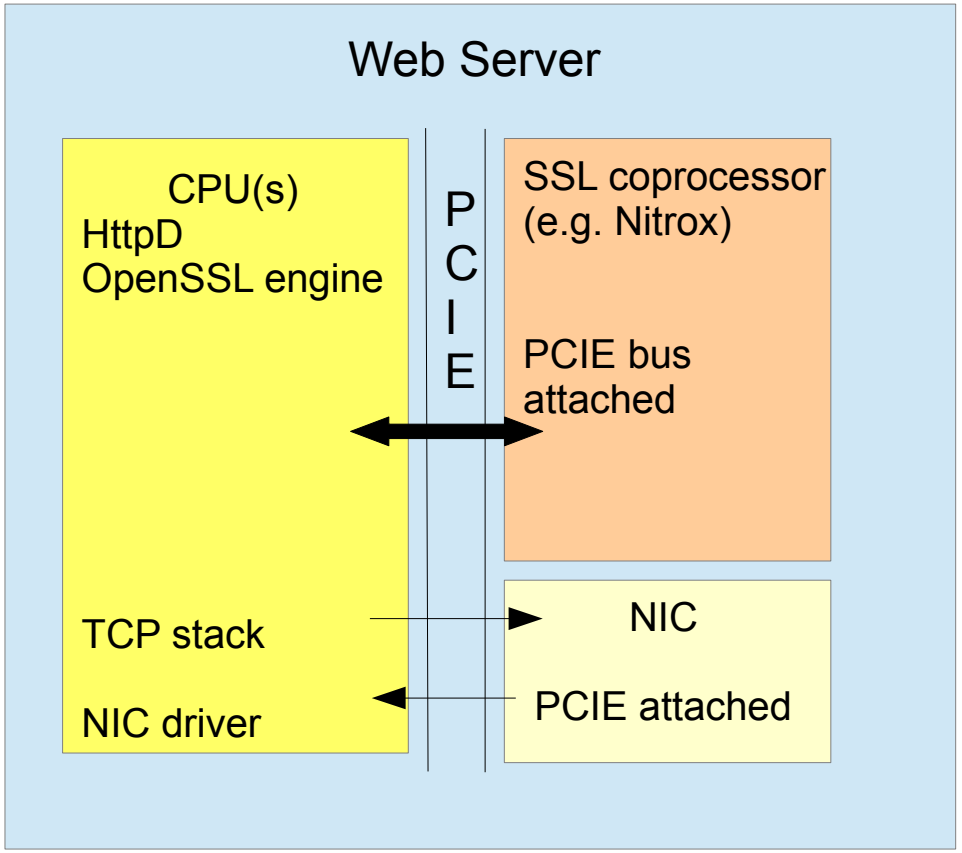
SSL Acceleration

- Connection
  - High software overhead
  - Significant software overhead even with hardware acceleration on some algorithms
- Bulk crypto
  - High software overhead
  - Hardware accelerators significantly help

Hardware Acceleration solutions may accelerate connection, bulk crypto, or both.

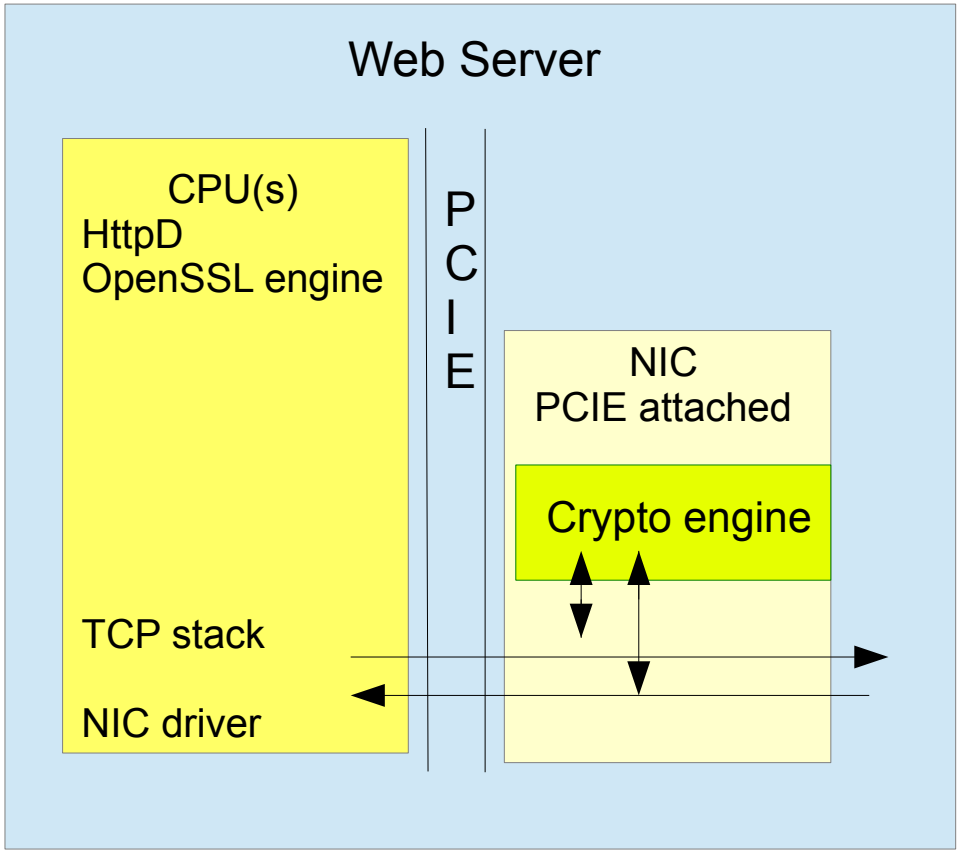
Many hardware solutions let software process connections while hardware accelerates bulk crypto.

Parallel or Co-processor Hardware Acceleration Model



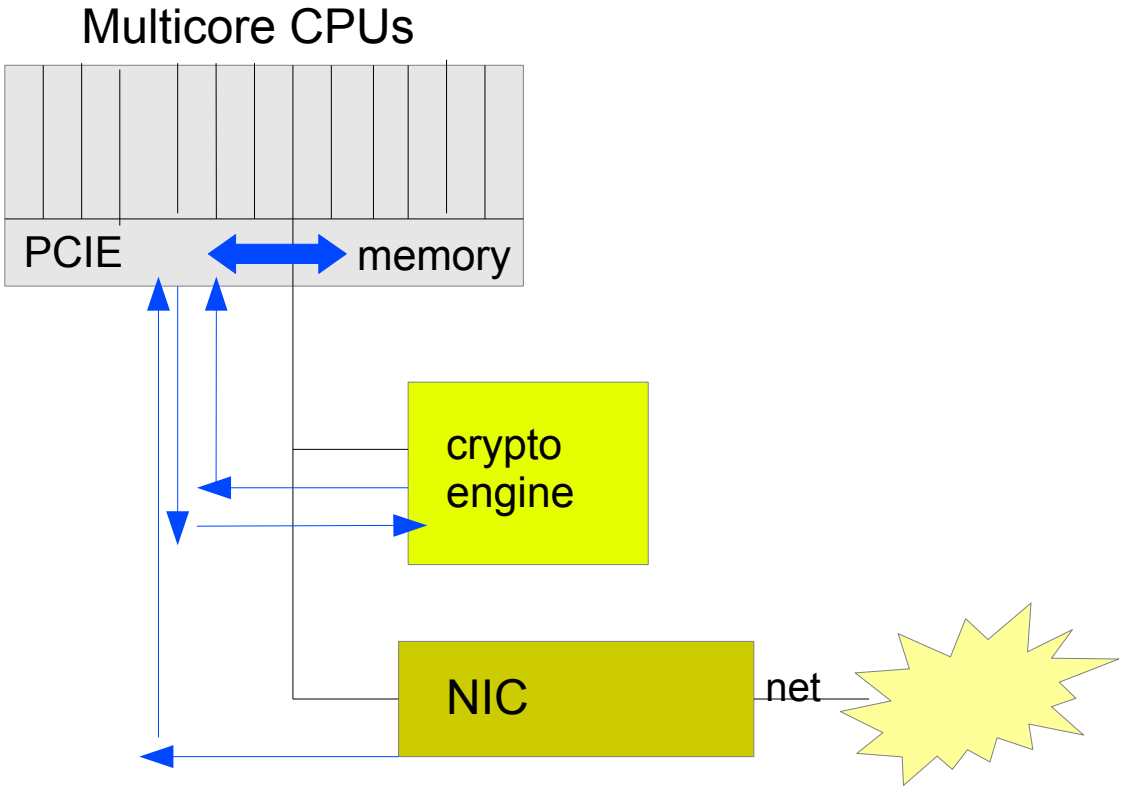
Typical Hardware SSL Acceleration in use Today

Inline Hardware Accleration Model



Inline Solution offers advantages for some applications.

Inline vs. Parallel SSL Offload: Parallel PCIE Attached Coprocessors



For each direction:

- Data crosses PCIE 2x (crypto engine), NIC 1x.
  - Significant bus & memory overhead with extra I/O operations.
- Still significant software/CPU overhead processing connections and interacting with crypto engine.

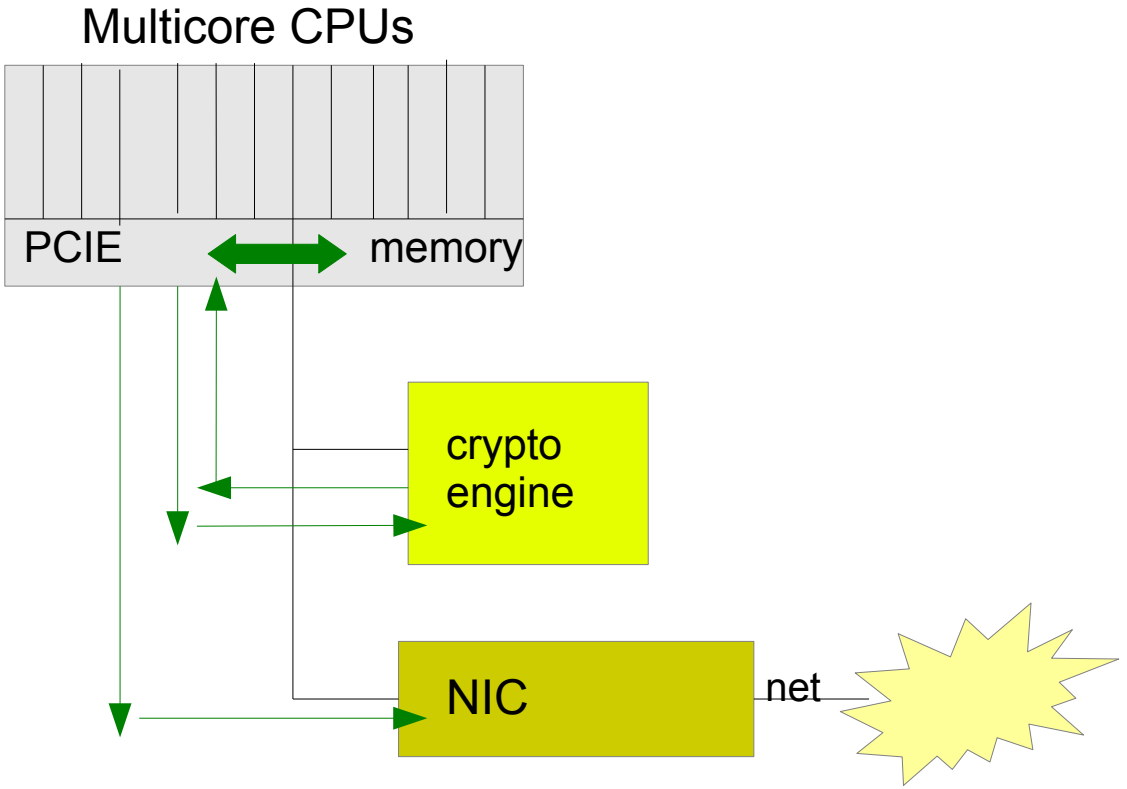
Recieve:

- 1) Load balance to a CPU
- 2) TCP stack
- 3) Open SSL
- a) To crypto engine
- b) Back from crypto engine
- 4) Application delivery and processing

Transmit:

- 1) App to open SSL
- 2) Open SSL
- 2a) To crypto engine
- 2b) Back to Open SSL
- 3) TCP stack
- 4) Out to NIC

Inline vs. Parallel SSL Offload: Parallel PCIE Attached Coprocessors



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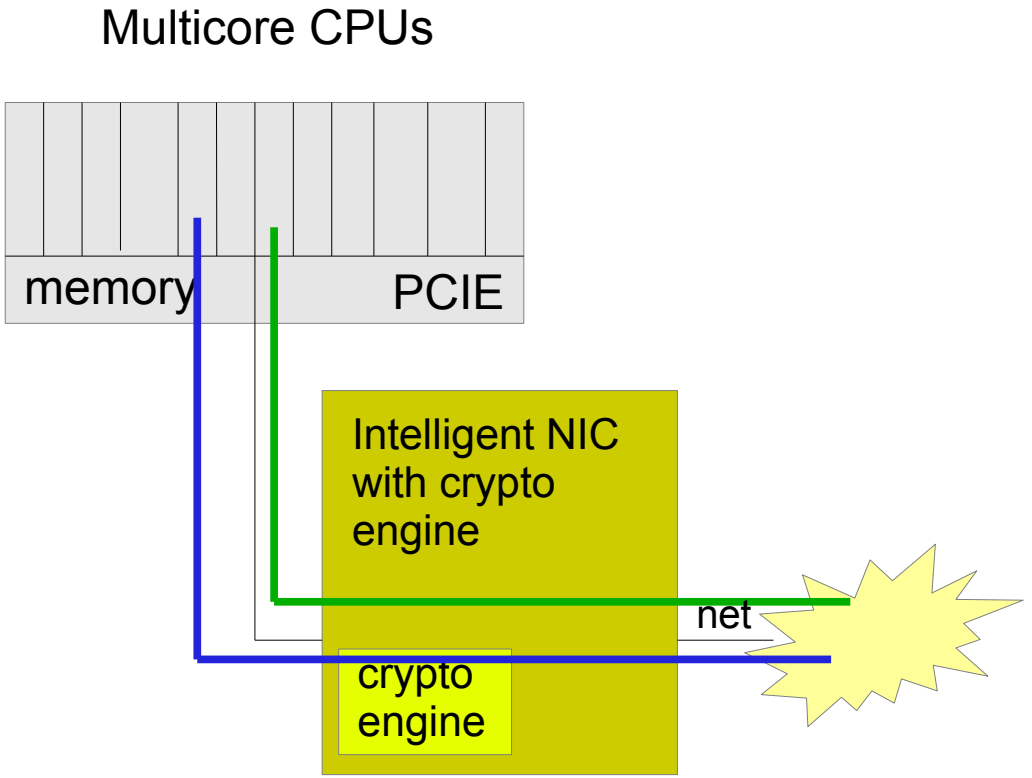
Inline vs. Parallel SSL Offload: Inline Solution



Recieve:

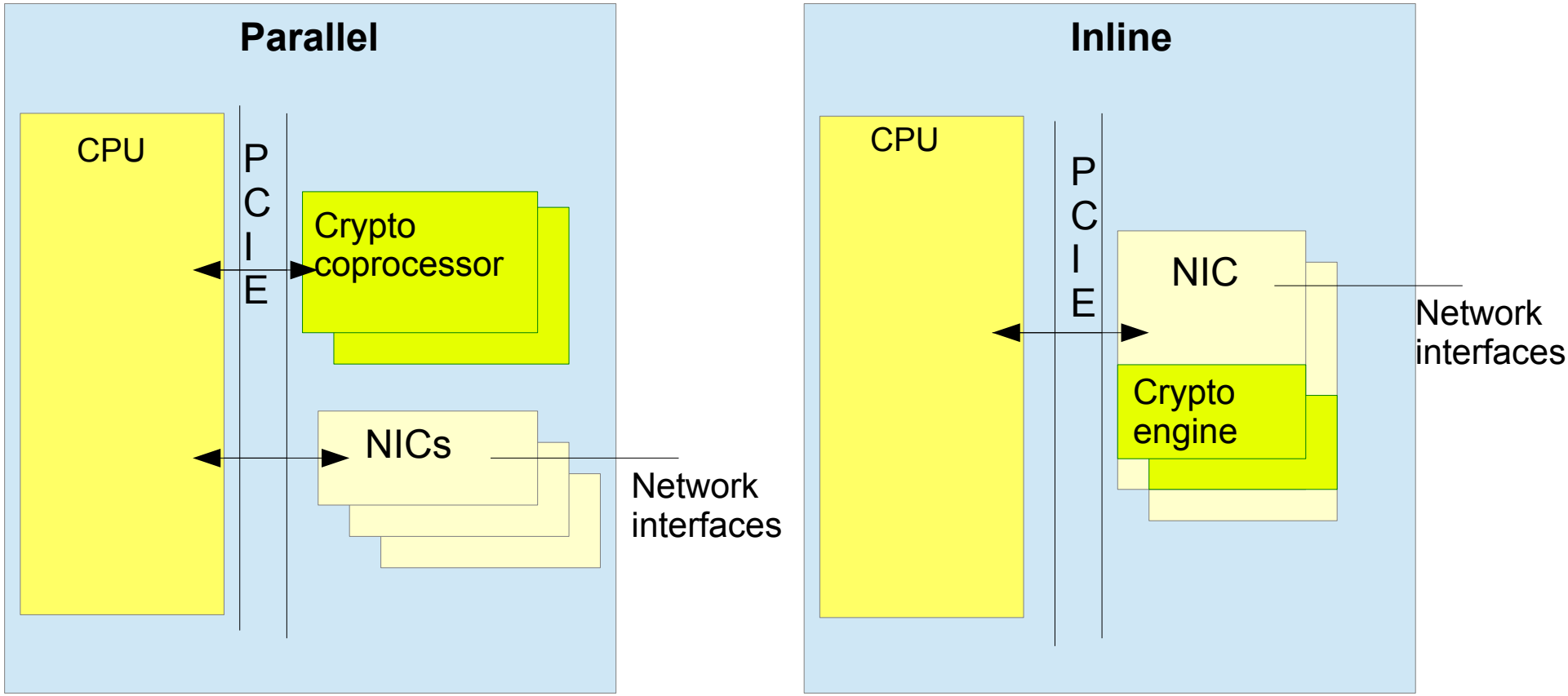
- 1) Load balance to a CPU
- 2) TCP stack
- 3) Application delivery and processing

Transmit:

- 1) App to TCP stack
- 3) TCP stack
- 4) Out to NIC

Extra bus transfers removed. All SSL software/CPU overhead offloaded to NIC

Parallel vs. Inline Scalability



- Coprocessors are a global resource.
- Multiple can be installed but require a software load balance implementation.
- Inline crypto acceleration is per NIC.
- Multiple can be installed with load balance across interfaces.

Inline Solutions & Features for SSL Monitoring Solutions

Monitoring solution desired features:

1. Option to “cut-through” non-SSL traffic.
   - Out BIW port
   - To host for normal analytics
2. 2-way NPB (Network Packet Broker) interface for host to decide to forward or drop a packet (as opposed to a simple Tap interface).
3. Option for SSL traffic to be delivered as “payload-only” or “generated TCP streams”.
4. Support for multiple Tap ports to prevent oversubscription.

Additional MPS Inline SSL Monitoring Features:

1. Traffic can be delivered with zero-copy, kernel bypass drivers, directly to user-space applications.
2. Host application interface can be customized to meet customer requirements.
3. “Cut-through” options can be configurable.

MPS Inline SSL Monitoring Solution can provide these features to meet customer requirements.

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