

The applications
need a memory,
networking chip such



**ASSIGN
BUSTER**

The important design challenges of IoT are power efficiency, incompatible interferences and compatibility with new processors. These design constraints can be addressed with a Field Programmable gate array (FPGA). FPGA provide smooth interface with the outside world, low power solutions and lowest latency which are ideal for IoT applications. FPGA can connect with storage devices such as memories which also allow for Bluetooth communication, Ethernet and wireless components.

Most of the IoT applications need a memory, networking chip such as BLE, Wifi, Zigbee, processor core and a controller to actuate external devices. An FPGA can interact with memory/storage devices through serialiser/deserialiser interfaces (SERDES)¹². FPGA take HTTP request packet received from a wireless Ethernet component and decode its request, fetch/get required information from memory and send back the requested result back through the Ethernet devices. The FPGA can be a replacement for the processor core in the IoT .

If we require higher level of processing , the FPGA can be coupled with Advanced RISC Machines (ARM) processors to get advantage of high level software functions such as web servers. FPGA is a programmable special purpose processors. It can handle signals at its input pins, process this signals and send the signals on its output pins. The sensor nodes may rely on FPGAs, either based upon standalone platforms or as a combination of FPGA and microcontroller. The low power optimized FPGAs can improve the computation of several types of algorithms in terms of power consumption and speed if we compare with the microcontrollers of commercial sensor nodes. Moreover the architectures based on the <https://assignbuster.com/the-applications-need-a-memory-networking-chip-such/>

combination of microcontrollers andFPGA can play a major role in the future of sensor networks.

They showoutstanding results in the processing capabilities like strong cryptography, data compression 13, and self-testing. 14