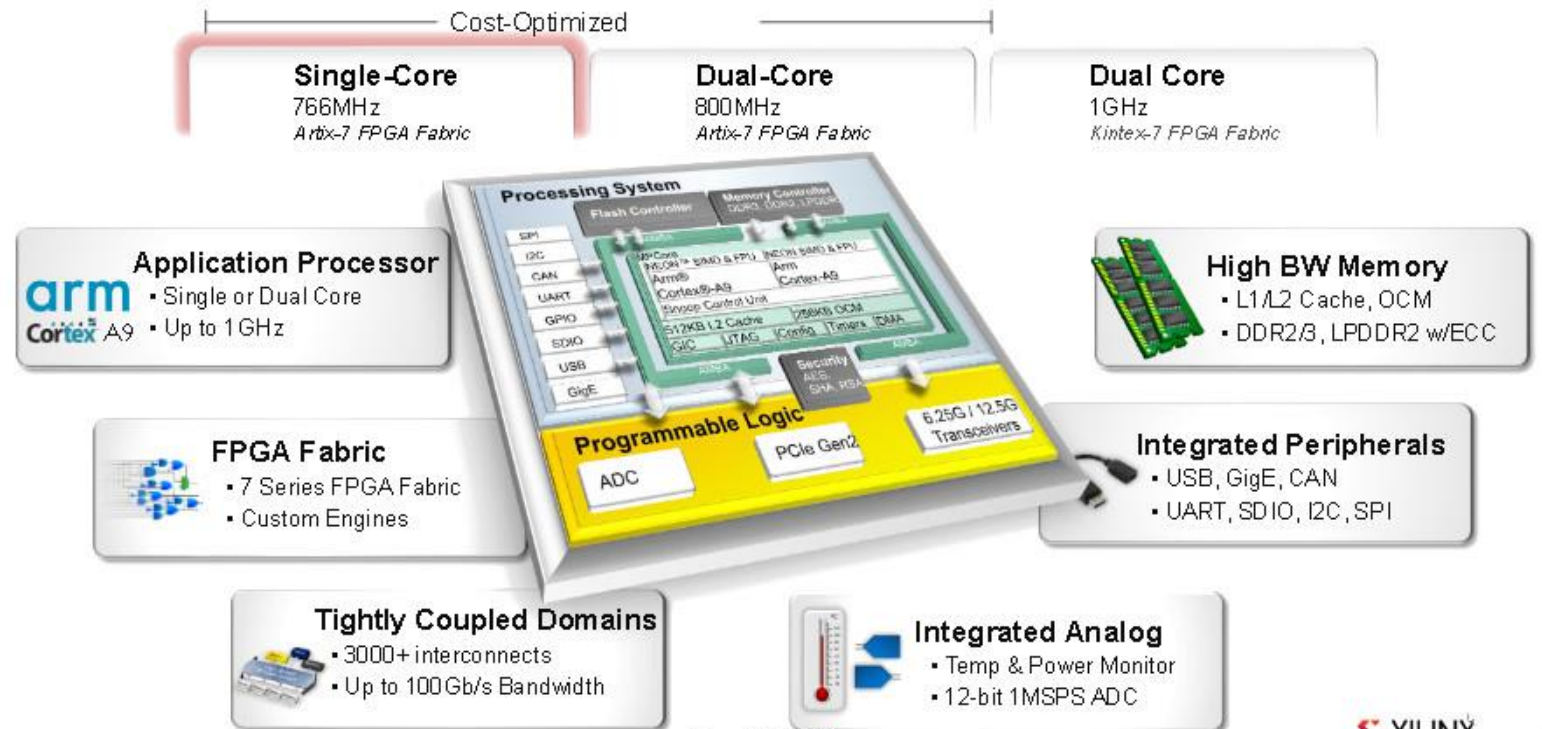# Zynq 7000: Linux start guide, AXI GPIO example

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```
sudo apt-get install -y gcc git make net-tools libncurses5-dev tftpd zlib1g-dev libssl-dev flex
bison libselinux1 gnupg wget diffstat chrpath socat xterm autoconf libtool tar unzip texinfo
zlib1g-dev gcc-multilib build-essential libsdl1.2-dev libglib2.0-dev zlib1g:i386 screen pax
gzip gawk


sudo -s
mkdir -p /opt/pkg/petalinux
chown <your_user_name> /opt/pkg/
chgrp <your_user_name> /opt/pkg/
chgrp <your_user_name> /opt/pkg/petalinux/
chown <your_user_name> /opt/pkg/petalinux/
exit
cd ~/Downloads
./petalinux-v2017.4-final-installer.run /opt/pkg/petalinux


source /opt/pkg/petalinux/settings.sh


petalinux-create --template zynq --type project --name test
cd test
petalinux-config --get-hw-description=project_vivado.sdk
petalinux-build
petalinux-package --boot --format BIN --fsbl ./images/linux/zynq_fsbl.elf --fpga
./images/linux/design_1_wrapper.bit --u-boot
```

FSBL	U-Boot
PL Bitstream	
BOOT.BIN	

1

zlImage 3   devicetree.dtb 2

ramdisk8M.image.gz 4

Boot Medium

Stage 0	BootROM	Detects boot mode and loads the First Stage Boot Loader
Stage 1	FSBL	Initializes processor resources so larger boot loader can be loaded
Stage 2	U-Boot	U-boot loads kernel and passes bootargs or a device tree to Linux
Operating System	Linux Kernel	Initialize system hardware and mount root file system
File System	Init Process	/sbin/init – 1st process execution by kernel
	Login Prompt	• Terminal console is usually one of first programs to run
	Startup Scripts	• Startup script launches application specific processes