

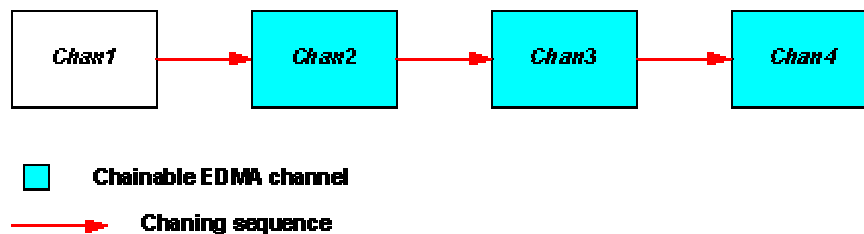
Extend EDMA capability on C 671x DSPs

C6x1x DSPs offer EDMA (Enhanced Direct Memory Access) for highly configurable data transfers. Two of the important features that EDMA offers are Linking and Chaining the data transfers. Linking EDMA channels is a characteristic that allows the application developer to reload the channel configuration parameters for the next transfer. Linking does not trigger the next transfer; it only reloads the new configuration. Chaining EDMA channels is a characteristic that allows the application developer to configure two channels such that the transfer completion event of one channel triggers another channel transfer.

Only 4 channels (channel nos. 8,9,10 & 11) out of total 16 EDMA channels on the C671x DSPs are chainable. This can be a limitation in a system where automatic triggering of multiple data transfers is needed in a sequence.

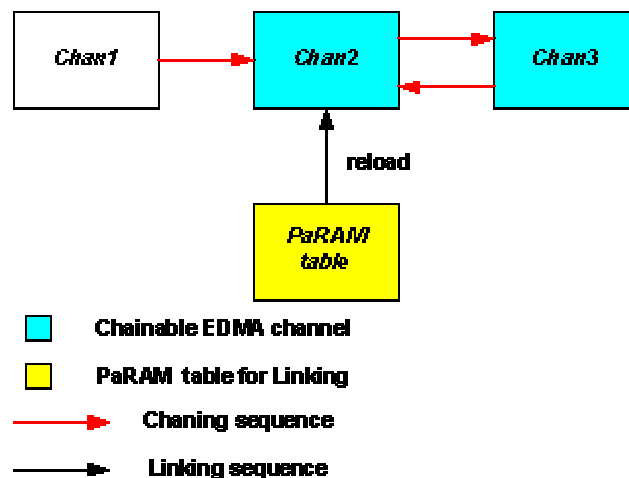
Consider that 4 EDMA transfers need to be triggered by a single call. Using 4 EDMA channels out of which 3 are chainable, as shown in the figure below can do this:

Chan2 chained to Chan1,
Chan3 chained to Chan2, and
Chan4 chained to Chan3,



However, using only 2 chainable EDMA channels and one PaRAM table entry, as shown in the figure and the accompanying code below can also do this:

Chan2 is chained to Chan1,
Chan3 chained to Chan2, Chan2 parameters gets reloaded with new configuration parameters in the PaRAM table, and
Chan2 chained to Chan3,



```
// Allocate 2 Parameter RAM tables from the PRAM
EDMA_allocTableEx(2, hEdmaRId);

// Allocate any EDMA channel. This channel will start the transfers
hChan1 = EDMA_open( EDMA_CHA_ANY, EDMA_OPEN_RESET);

// Allocate the Transfer Complete Code for the Chainable EDMA channels
chan8Tcc = EDMA_intAlloc(8);
chan9Tcc = EDMA_intAlloc(9);

// Open the 2 Chainable EDMA channels
hChan2 = EDMA_open( chan8Tcc, EDMA_OPEN_RESET);
hChan3 = EDMA_open( chan9Tcc, EDMA_OPEN_RESET);

// Configure all the 4 EDMA channels, the Cfgx structures are filled already
EDMA_config( hChan1, &Cfg1);
EDMA_config( hChan2, &Cfg2);
EDMA_config( hChan3, &Cfg3);
EDMA_config( hEdmaRId[0], &Cfg4);
EDMA_config( hEdmaRId[1], &CfgNull);

// Setup the links for reload tables
EDMA_link(hChan2, hEdmaRId[0]);
EDMA_link(hEdmaRId[0], hEdmaRId[1]);

// Chain the EDMA channels
EDMA_chain(hChan1, hChan2, EDMA_TCC_SET, 0);
EDMA_chain(hChan2, hChan3, EDMA_TCC_SET, 0);
EDMA_chain(hChan3, hChan2, EDMA_TCC_SET, 0);

// Enable the Chain the EDMA channels
EDMA_enableChaining(hChan2);
EDMA_enableChaining(hChan3);

// This function will start the first EDMA transfer
EDMA_setChannel(hChan1);
```