

# Development and Performance Analysis of a Distributed Corner Turn using the AXIS Graphical Software System

Tom Litrenta

Radstone Embedded Systems/Part of GE Fanuc Embedded Systems

296 Concord Avenue

Billerica, Mass 01821

[Tom.Litrenta@radstone.com](mailto:Tom.Litrenta@radstone.com)

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# The Distributed 4k Complex 2D Corner Turn using the AXIS Software Development System

(1,1)	(1,2)	(1,3)	(1,4)
(2,1)	(2,2)	(2,3)	(2,4)
(3,1)	(3,2)	(3,3)	(3,4)
(4,1)	(4,2)	(4,3)	(4,4)

INPUT

Node A

Node B

Node C

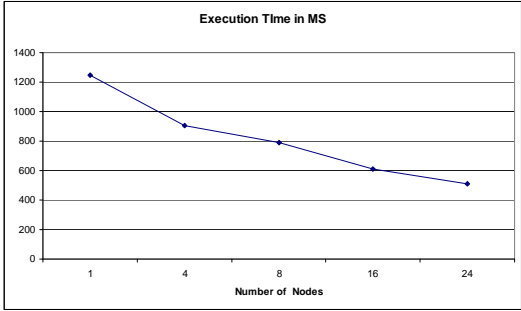
Node D

T(1,1)	T(2,1)	T(3,1)	T(4,1)
T(1,2)	T(2,2)	T(3,2)	T(4,2)
T(1,3)	T(2,3)	T(3,3)	T(4,3)
T(1,4)	T(2,4)	T(3,4)	T(4,4)

OUTPUT

## Considerations

- 1 - DMA Performance
- 2 - Cache Management
- 3 - AXIS Math Library Performance



Overall Performance PPC7447



# The AXIS Graphical Software System used to Develop this Corner Turn Application

The screenshot displays the configuration interface for the application. It includes a 'Task' table, a 'Channels' table, and a 'Dataflow Preview' diagram.

Task Name	Mapping	Instances	Task ID(s)	System ID(s)	IP Address	Source Code
Input	RPC7D (N=1)	1	0	16		
Rows	G4DSPXE (N=16)	N/2 = 8	1, 8	0, 1, 2, 3, 4, 5, 6, 7		distribute_image();
Columns	G4DSPXE (N=16)	N/2 = 8	9, 16	8, 9, 10, 11, 12, 13, 14, 15		row_processing();
Output	RPC7D (N=1)	1	17	16		column_processing();
						collect_image();

Channel Name	Channel ID	Channel Type	Source Tasks	Destination Tasks	Buffers	Bytes	Attributes
Scatter	0	RMP_BUFFER_SCATTER	Input	Rows	2	1024*1024*4 = 4194304	
CornerTurn	1	RMP_BUFFER_ALL_CALL	Rows	Column	2	1024*(1024/8)*4 = 524288	
Collect	2	RMP_BUFFER_GATHER	Column	Output	2	(1024/8)*(1024/8)*4 = 65536	
Feedback	3	RMP_BUFFER_FDBK	Output	Input	2	2	

The Dataflow Preview shows a network of nodes: 'Input' (green), 'Scatter' (green), 'CornerTurn' (blue), 'Collect' (orange), and 'Feedback' (purple). Arrows indicate the flow of data between these components.

ApplicationView

The HardwareView interface shows a detailed hardware architecture. On the left, a 'Details' table lists board information:

Item	Value
Board 0 (0-3)	
Board 1 (4-7)	
Board 2 (8-11)	
StarFabric	

The main diagram illustrates three boards (G4DSPXE 0, V4DSP 1, and PPCM2 2) connected to a VME Bus, which is in turn connected to a StarFabric network. The interface includes a menu bar, a toolbar, and a status bar at the bottom.

HardwareView



