A NEW CDMA ENCODING/DECODING **METHOD FOR ON CHIP COMMUNICATION** NETWORK.

Amol M. Deshmukh

PG Student.

Dr.R.K.Navandar

Associate professor Department of Electronics and Telecommunication, Department of Electronics and Telecommunication JSPM's Jayawantrao Sawant College Of Engineering, Pune-411028, India JSPM'S Jayawantrao Sawant College of Engineering Pune-411028, India

Abstract :

As a high performance on-chip communication. Method, the code division multiple access (CDMA) technique has recently been applied to networks On chip (NOCS). We propose a new standard-basis based Encoding/decoding method the performance and cost of CDMA NOCs in area, power assumption, and network Throughput. In the transmitter module, source data from different Senders are separately encoded with an orthogonal code Of standard basis & these coded data are mixed together By an XOR Operation. Then, the sums of data can be transmitted to their destination through the on chip communication infrastructure. In the receiver module, a sequence of chips is retrieved By taking an AND Operation betn the sums of data and The corresponding orthogonal code Our method achieves up to 67.86% power saving And 81.24% area saving together with 30% to 50

I. INTRODUCTION

With the rapid growth of the computational complexity, More and more processing elements (PES) are integrated On to a single chip, and this method has been proposed To address the scalability, throughput, and reliability issue Of on-chip communication.However,conventional packetSwitched method suffers from nondeterministic transmissionLatencyandlimited opportunities for parallel data transfer, Since multiple flows cannot get through a link at the same Time, to resolve the problem, the CDMA(Code divisionMultiple Access) technique effective method for implemented High performance encoding and decoding method.

II. METHODOLOGY

SB Encoder Α.



An original data bit from a sender is fed into an AND gate in a chip-by-chip manner, and it will Be spread to n-chip encoded data with anOrthogonal code of standard basis-Then the encoded data from different senders are mixed together through an XOR operation, and a binary sum signal is generated. Therefore the output signal is always a sequence of binary signal transferred to destination using one single wire.

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B. SB Decoder



(b)

When the binary sum signal arrives at theRx, an AND operation is taken betn th Binary sum and the correspondingOrthogonal code in chip-by-chip mannerThen, the result chips are sent to anAccumulator. After m-chips are accumulate (m-is the length of orthogonal code) The output value of the accumula Will be the corresponding original data.

LITERATURE SURVEY:-

Sr.no.	Title	Author	Methodology	Drawback
1	1 A New CDMA		In this method our	1)Design
	Encoding Method for On		2)Nayana Goal is to Encode the Source data From different Sanders	
	chipCommunication	3)M Durmi	separatelyWith an	2)Low code
	Network	4)Arshiya	OrthogonalCode.	umzution
		Simran	-These codedData can be Mixed	
		5) Mahadev	using	
		prasad	XOR operation	
			-in the receiver module the Data transmitted Through on	
			Chip communaction Infrastructure	
			Can be decoded using AND	
			Operation betn sums of	
			Data & corresponding	
			Orthogonal code.	
2	A New CDMA		1)An origina dataBit fromSender is	1)High area
	for on-chip communication		chip Manner & it Will be spread to n-	2)High Power.
	Network.		Chip encode data with	
			Anorthogonalcodeof	
			astandardbasisThenThe	
			encodeddataFromDifferent	
			TogetherThrough	
			XOROperation&a Binary Sum signal	
			Is generated.	
			2)IntheDecoding methodDecoding	
			operation takenBeth the binarySum &	
			Orthogonal code in chip	
			By chip manner.	

RESULTS AND DISCUSSION:-

ENCODER SIMULATION RESULT :-

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						4.000000 us
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	🖬 📲 sb_code 1[3:0]	ZZZZ		22	22	
0	🖬 🖬 sb_code2[3:0]	ZZZZ		22	22	
8	🖬 📲 sb_code3[3:0]	ZZZZ		22	22	
	🖬 📲 sb_code4[3:0]	ZZZZ		22	22	
	1 dock	1				
	1 reset_n	1				
12	🔤 📲 result1[3:0]	X0X0	xxxxx	00	00	x0x0
2	🖪 🔤 📲 result2[3:0]	X0X0	X000X	00	00	X0X0
a	🖬 📲 result3[3:0]	X0X0	X000X	00	00	хохо
E	🖬 📲 result4[3:0]	X0X0	X000X	00	00	X0X0
	🖬 🖏 binary_sum_temp[3:0]	1010	X000X	00	00	1010
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[] []	2222				2222		
	2222				2222		
	ZZZZ				2222		
N L dodk	1						
VI Usreset_n	1						
🗠 🖬 result1[3:0]	XXXXX				X000X		
21 🖬 📲 result2[3:0]	XXXXX				XXXXX		
	XXXXX				XXXXX		
	XXXXX				X000X		
📰 📲 binary_sum_temp[3:0]	1111		XXXX		(1111	
2							
(++)							
21							
1000							

DECODER SIMULATION RESULT: ---

bei	havioral Simulation - Functional - sim_1 - coma_er	ncoder									ň
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pject	→ D					2,000,000 ps					^
8	Name	Value	1,999,997 ps	1,999,998 ps	1,999,999 ps	2,000,000 ps	2,000,001 ps	2,000,002 ps	2,000,003 ps	2,000,00	
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ties	🔍 🔓 user2_data_in	1		-							
oper	🔍 🖓 user3_data_in	1									
4	👔 🖓 user4_data_in	1	1								
9	La clock	1									
	1 th reset_n	0									
g	▶ 1 cdma_out	1									
SCO	**** sb_code_1[3:0]	1000		1000							
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\$	ar 🖬 sb_code_3[3:0]	0010		0010							
	🖬 📲 sb_code_4[3:0]	0001		0001							
	E-W count_value[1:0]	00		00							
	Image: Strategy St	1000		1000							
	💀 🖬 📲 sb_encode_out_2[3:0]	0100		0100							
	Image: Strate	0010		0010							
	🚃 🖬 📲 sb_encode_out_4[3:0]	0001		0001							
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	1 reset_n									
	1 cdma_out									
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2	🖬 📲 sb_code_2[3:0]	0100			01	00				
-	🖬 📲 sb_code_3(3:0)	0010			00	10				
E.	Ⅲ-₩ sb_code_4[3:0]	0001			00	01				
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-	II- Visit sb_encode_out_1[3:0]	1000	XX	xx		10	00			
	III - Will sb_encode_out_2[3:0]	0000	××	ox	01	00	00	00		
31	II V sb_encode_out_3[3:0]	0010	××	ox.		00	10			
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CONCLUSION

CDMA encoding /decoding methods can be efficiently Used for on chip communication. As discussed it can be also efficient RTL Using verilog coded then it can result into less area, less power. In the proposed architecture we are planning to use Standard basis algorithm technique other than Walsh Code. This increases maximum throughput of NOC. The functional correctness of method can be proved by simulation result generated for the verilog RTL.

ACKNOWLEDGMENT

© 2019 JETIR June 2019, Volume 6, Issue 6

There have been many contributors for this to take shape and authors are thankful to each of them. I am highly indebted to Dr. R. K. Navandar for their guidance and constant supervision as well as for providing necessary information regarding the research.

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