

操作指南 • 11/2014

# SCALANCE X 交换机如何实现 MRP 多重环网?

SCALANCE X

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SCALANCE X-414 固件版本 V3.10 开始支持 MRP 的多重环网,最多可以组态 4 个环 到中央的 MRP 冗余管理器中。

# 组态步骤

 只能通过 STEP7 Profinet 组态 SCALANCE X-414 MRP 的多重环。如图 1,在 STEP7 中的硬件目录中找到 SCALANCE X-414 V3.10 的组态文件,拖拽到 Profinet 网络;或者下载 V3.10 的GSDML文件组态。

<i>ਫ਼</i> ਃ੶੶੶੶੶₩;; ⊴\$;  ®a @.   <b>8</b> 0	<u>Profile</u> :     Standard
Image: Second system         Ethemet (2): PROFINET-IO-System (100)           1         MPUDP           X2         Propu           X2 P1 R         Pont 1           X2 P2 R         Pont 2           Solution         Pont 1           X2 P1 R         Pont 1           X2 P2 R         Pont 1           X2 P2 R         Pont 2           Solution         Pont 3           X2 P1 R         Pont 1           X2 P2 R         Pont 2           Solution         Pont 2           Solution         Pont 2	

2. 如图 2,双击模块属性,分配唯一的"Device name"和"IP address"。

Short description:	SCALANCE VALA 2E				
onor description.	Managed switch with copper ports and additional extended module (15 slots) ; supports RT; PROFINET interface; MRP; firmware V3.10				
Order no./ firmware:	6GK5 414-3FC00-2AA2 / V3.10				
Family:	SCALANCE X-400				
Device name:	SCALANCE-X414-3E				
GSD file:	GSDML-V2.31-Siemens-002A-SCALANCE_X400-20140311.xml				
	Change Release Number				
- Node in PROFINET	IO system				
Node in PROFINET	IO system       IO     PROFINET-IO-System (100)				
- Node in PROFINET Device number: IP address:	IO system 1 PROFINET-IO-System (100) 192.168.0.17 Ethemet				
Node in PROFINET Device number: IP address: IV Assign IP addres	IO system       IO system       1       PROFINET-IO-System (100)       192.168.0.17       Ethemet   ss via IO controller				
- Node in PROFINET Device number: IP address: I✔ Assign IP addres Comment:	IO system       IO system       1       9ROFINET-IO-System (100)       192.168.0.17       Ethemet   ss via IO controller				
- Node in PROFINET Device number: IP address: IV Assign IP addres Comment:	IO system       IO system       1       192.168.0.17       Ethemet   ss via IO controller				

## 图 2

3. 如图 3,双击 PN-IO 属性,"instance"下选择不同的环网。

MRP Configuration -		
Instance		
Domain:	2 yain-1	<b>•</b>
Role:	3 er	•
Ring port 1:	(PN-IO)\Port 3 - RJ45 (R-/S9/X1 P3)	•
Ring port 2:	(PN-IO)\Port 4 - RJ45 (R-/S9/X1 P4)	•
	Diagnostic interrupts	



4. 如图 4, "Domain" 下为不同环网选择不同的域。

MRP Configuration -		
Instance	1 💌	
Domain:	mpdomain-1	- N
Role:	mpdomain-4	43
Ring port 1:	mpdomain-2	
Ring port 2:	(PN-IO)\Port 4 - RJ45 (R-/S9/X1 P4)	<u> </u>
	Diagnostic interrupts	

### 图 4

5. 如图 5, " Role" 选择交换机在 MRP 环中的角色, SCALANCE X-414 多重 MRP 环组态, 必须组态为 " Manager" 。

neral   Addresses	O Cycle Media Redundancy	
MRP Configuration -		
Instance	1 💌	
Domain:	mmpdomain-1	•
Role:	Manager	•
Ring port 1:	Not node in the ring	
Ring port 2:	Manager Client Manager (Auto) Diagnostic interrupts	

## 图 5

6. 如图 6, "Ring port 1"/"Ring port 2"选择交换机在不同 MRP 环中的环网端口。

eral   Addresses   10 Cycle	Media Redundancy	
MRP Configuration		
Instance	1 💌	
Domain:	mmpdomain-1	•
Role:	Manager	•
Ring port 1:	(PN-IO)\Port 3 - RJ45 (R-/S9/X1 P3)	•
Ring port 2:	(PN-IO)\Port 4 - RJ45 (R-/S9/X1 P4)	•
Redundancy parameters a	(PN-IO)\Port 4 - RJ45 (R-/S9/X1 P4) (PN-IO)\Port 1 - RJ45 (R-/S10/X1 P1) (PN-IO)\Port 2 - RJ45 (R-/S10/X1 P2) (PN-IO)\Port 3 - RJ45 (R-/S10/X1 P3) (PN-IO)\Port 4 - RJ45 (R-/S10/X1 P4) (PN-IO)\Port 1 - RJ45 (R-/S11/X1 P1)	*



7. 组态完成后,项目编译下载,通过"PLC"-"Ethernet"-"Assign device name" 为 SCALANCE X-414 分配设备名称,如图 7。

evice name:	SCALANCE-X414-3E		Device	e SCALANCE X-400
vailable device	s: MAC address	Device type	Device name	Assign name
192.168.0.18 192.168.0.200	00-1B-1B-9D-3A-00 00-1B-1B-9B-98-00	SCALANCE X-400 SCALANCE X-400	scalance-xm408	Node flashing test
92.168.0.19 192.168.0.22	00-0E-8C-99-20-91 00-0E-8C-9A-02-DF	SCALANCE X-400 SCALANCE X-400	scalance-x414-3e	Duration (seconds): 3
•				Rashing on Flashing off
Show only de	evices of the same typ	e 🥅 Display only de	evices without names	8.
	Expo	rt		
Update	10.12			

#### 图 7

8. 至此, SCALANCE X-414 MRP 的多重环组态完成,当通讯正常后,在 SCALANCE X-414 组态好的不同环网端口可以连接各自的环网设备。网络连接 示意图如图 8。



图 8

#### 9. 通过 SCALANCE X-414 的 WEB 页面可以查看环网的状态。

Console Support	nsole 🖷 Support 🖷 Logout						SIMATIC NET		
Power         Input         CPU         Status         Status	Image: Status         Status					SIMATIC NET SIMATIC NET Industrial Et SCALANCE 192.10			
X414-3E	X-400 Ring	Redundanc	y Inform	ation					
<sup>⊕</sup> <u>System</u> ∃	Ring Redundancy Information								
	Enabled yes yes yes yes	Admin Role MRP-Mgr MRP-Mgr MRP-Mgr MRP-Mgr	Oper Role MRP-Mgr MRP-Mgr MRP-Mgr MRP-Mgr	RM Status passive active passive Standb	Admin Ring Port 1 9.3 10.1 10.3 11.3 y Information	Admin Ring Port 2 9.4 10.2 10.4 11.4	Oper Ring Port 1 9.3 10.1 10.3 11.3	Oper Ring Port 2 9.4 10.2 10.4 11.4	
Ellin Aggregation     IEEE 802.1x     Unicast Filter (ACL)     Multicast Groups     Broadcast Mask	s	tandby Function Standby Statu Standby Port	n: disabled s: - s: none						
		Observer Statu	5: <mark>-</mark>	RM Obse	rver Informati	on			

# 注意

•SCALANCE X-414 仅有 V3.10 以上的固件版本支持 MRP 的多重环,在实现该功能前,确保交换机固件满足要求。

•SCALANCE X-414 MRP 的多重环组态在环网中角色必须作为"Manager",则其 它环网设备必须组态为"client",否则会导致环网里有多个管理器存在,交换机会 报警。

•SCALANCE X-414 MRP 的多重环任何一个环网发生了故障, RM 指示灯会闪烁; 所有的环都正常的情况下, RM 恢复常亮。