PRODUCT BOOKLET

RAPTOR® SERIES

RAPTOR® - iMX350 & iMX950 (IEC 61850)

Intelligent 28 Port L2/L3 cyber secure platform
IEC 61850 Ed. 2, IEEE 1613 standards compliant

Slots #1-4 – supports 4x DB9 serial interfaces or 8x RJ45 serial interfaces RS232/422/485. Maximum 3 serial modules per switch.

Slots #1-4 – One iROC industrial computing module may be installed per RAPTOR in any slot.

Slots #1-3 – supports up to 8 x 10/100/1000 RJ45s, or 8 x 100/1000 SFPs, up to 24-ports may be configured to support PoE.

Slots #4 – supports up to 4 x 10GB Base-X or 4x1GB Base-X Uplinks.

*Micro*RAPTOR® (IEC 61850)

Compact 16 Port L2/L3 Substation Switch
IEC 61850 Ed. 2, IEEE 1613 standards compliant

The compact layer 3 switch supports up to 16-ports Ethernet.
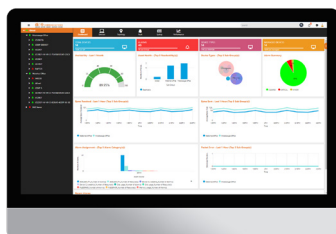Slot 1 supports: 8-ports Ethernet
Slot 2 supports: 8-ports Ethernet or up to 8-ports Serial
Ethernet Modules available (Slot 1 or 2):
1) 8-ports 100/1000Base-X SFP
2) 8-ports 10/100/1000BaseTX RJ45
3) 4-ports 100/1000Base-X SFP plus 4-ports 10/100/1000BaseTX RJ45
Serial Modules available (Slot 2 only):
1) 4-ports DB9 Interfaces RS232/422/485
2) 8-ports RJ45 Interfaces RS232/422/485

RAPTOR*Eye*®

Network Management System

Features Include:
Device Discovery
Topology Visualization
Alarms and Notifications
Chassis View for supported iS5Com devices
Customizable Dashboards
Open Street Maps and Google Maps Integration

iROC

Hot-swappable Industrial Computing Module

E3940 Intel Atom Processor with 8GB memory
256GB or 512GB Industrial SSD Storage
The iROC currently ships with either Microsoft® Windows® 10 Pro or Linux CentOS 8.2

ETHERNET SWITCHES

iES6-SFP
Industrial 6 Port Lite-Managed Ethernet Switch

4 x 10/100Base-T(X) RJ45 ports and
2 x 100Base-X SFP ports

iES8-S
Intelligent 8 Port Managed Ethernet Switch

Up to 8x 10/100Base-T(X) RJ45 ports and
up to 2 x 100 FX SM/MM SC/ST ports

iES8G
Intelligent 8 Port Managed Gigabit Ethernet Switch

Up to 8 x 10/100/1000BaseT(X) RJ45 Auto MDI/MDIX ports,
up to 6 x 10/100Base-T(X) RJ45 Auto MDI/MDIX ports,
up to 4 x100/1000Base-X SFP ports, and
up to 4 Combo 10/100/1000Base-T(X) RJ45 and 100/1000Base-X

iES10G-S
Intelligent 10 Port Managed Gigabit Ethernet Switch

7 x 10/100Base-T(X) RJ45 ports,
up to 3 x 10/100/1000Base-T(X) RJ45 ports,
up to 3 Combo 10/100/1000Base-T(X) RJ45 ports,
and up to 2 x 100/1000Base-X SFP ports

ETHERNET SWITCHES

iES10GF (IEC 61850)

Intelligent 10 Port Managed Gigabit Ethernet Switch
IEC 61850 and IEEE 1613 Compliant

7 x 10/100Base-T(X) RJ45 ports,
up to 3 x 10/100/1000Base-T(X) RJ45 ports,
up to 3 Combo of 10/100/1000Base-T(X) RJ45 and 100/1000Base-X ports,
and up to 2 x 100/1000Base-X SFP ports

iES20GF (IEC 61850)

Intelligent 20 Port Managed Gigabit Ethernet Switch
IEC61850 and IEEE1613 Compliant

Up to 20 x 10/100/1000Base-T(X) RJ45 ports, and
• up to 4 x 100/1000Base-X SFP or,
• up to 4 x 100Base-FX or,
• 4 x 1000Base-SX/LX ports

iES22GF (IEC 61850)

Intelligent 20 Port Managed Gigabit Ethernet Switch
IEC 61850 and IEEE 1613 Compliant

8 x 10/100/1000Base-T(X) RJ45 ports and up to 12 x 100/1000Base-X SFP ports

iES26GF (IEC 61850)

Intelligent 26 Port Configurable Gigabit Ethernet Switch
IEC 61850-3 and IEEE 1613 Compliant

24 x 10/100Base-T(X) RJ45 and
2 x 10/100/1000BASE-T(X) RJ45, or
2 x 1000BASE-X SFP, OR 100 FX SC/ST, or
2 x 1000SX MM ST/SC, OR 1000LX SM ST/SC

ETHERNET SWITCHES

iRBX6GF (IEC 61850)
Intelligent 6 Port HSR/PRP Ethernet Switch
IEC 61850 and IEEE 1613 Compliant

2 x 100/1000Base-X SFP (HSR/PRP–ports 1 & 2)
4 x 100/1000Base-X SFP (Ethernet–ports 3, 4, 5, & 6)

iTS12GP
Intelligent 12 Port Managed PoE Gigabit Card Type Ethernet Switch
NEMA TS 2 and IEEE 802.3az Energy-Efficient Ethernet compliant

8 x 10/100/1000Base-T(X) RJ45 PoE ports
4 x 100/1000Base-X SFP ports

iES28GF-L2 (IEC 61850)
Intelligent 28 Port Configurable Gigabit Ethernet Switch
IEC 61850, IEEE 1613, EN50155

Slot 1 - (PORTS 1-8) 8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100/1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
Slot 2 - (PORTS 9-16) 8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100/1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
Slot 3 - (PORTS 17-24) 8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100/1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
Slot 4 - (PORTS 25-28) 2 or 4 X 1000Base-X SFP Ports, 2 or 4 X 1000LX/SX Ports

iES28TG-L2 (IEC 61850)
Intelligent 28 Port Configurable Gigabit Ethernet Switch with 10G Uplink Ports
IEC 61850, IEEE 1613, EN50155

Slot 1 - (PORTS 1-8) 8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100 /1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
Slot 2 - (PORTS 9-16) 8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100 /1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
Slot 3 - (PORTS 17-24) 8 X 10/100/1000Base-T(X) RJ45 Ports, 8 X 100 /1000Base-X SFP Ports, 2 or 4 X 100FX Ports, 2 or 4 X 1000LX/SX Ports
Slot 4 - (PORTS 25-28) 2 or 4 X 1000Base-X SFP Ports, 2 or 4 X 1000LX/SX Ports, 2 or 4 X 10GBase-X SFP Ports

SECURE GATEWAYS

iSG18GFP

Intelligent 18 Port Compact Service-Aware Ethernet Switch
IEC 61850-3 and IEEE 1613 Compliant

Up to 16 X 10/100BASE T(X) ports RJ45,
up to 8 X 10/100BASE T(X) ports with optional PoE+,
up to 8 X 10/100BASE T(X) ports RJ45,
up to 2 X 100BASE-X SFP ports,
4 with 2kV Isolation RS-232 RJ45 serial ports (optional),
3G/LTE Dual Sim Cellular Modem (optional)

DEVICE SERVERS

iDS3-S

Industrial Single Port RS232/422/485 to Dual Port LAN Ethernet Serial
Device Server

2 x 10/100Base-T(X) RJ45 ports
1 x RS-232/422/485 DB9 port

iDS6

Industrial 4 Port RS232/422/485 to 2 Port Ethernet Serial Device Server

2 x 10/100Base-T(X) RJ45 ports,
and 4 x RS-232/422/485 DB9 ports

iDS6P-S

Industrial 4 Port RS422/485 to 2 Port Ethernet Serial Device Server with PoE

1 x 10/100Base-T(X) RJ45 port
1 X 10/100Base-T(X) RJ45 PoE with isolation
4 X pluggable 5 Pin RS422/485 ports

POE

iPJ2G
Industrial Gigabit PoE Injector

2 X 10/100/1000BASE-T(X) RJ45 POE ports

MEDIA CONVERTERS

iMC2G
Industrial Gigabit 2 Ports Ethernet to Fiber Media Converter/
Unmanaged Switch

1 X 10/100/1000Base-T(X) RJ45 auto-negotiation and auto MDI/MDI-X port
1 X 1000Base-X SFP

iMC2S
Industrial 2 Ports Ethernet to Fiber Media Converter/Unmanaged Switch

1 x 10/100Base-T(X) RJ45 auto-negotiation and auto MDI/MDI-X port, and
1 x 100FX SC/ST port or 1 x 100Base-X SFP port

iMC4F (IEC 61850)
Industrial Ethernet to Fiber Ethernet Converter/ two pairs
IEC 61850 and IEEE 1613 Compliant

2 x 10/100Base-T(X) auto-negotiation and auto MDI/MDI-X ports and
2 x 100Base-X SFP ports

MEDIA CONVERTERS

iSC2F (IEC 61850)
Single Port RS232/RS422/RS485/Fiber Serial Media Converter
IEC 61850-3 and IEEE 1613 Compliant

1 x RS232/422/485 serial port (7-pole terminal block)
1 x 10FL Multimode ST fiber port

uES4F / uES4F-S
Industrial 4 Port Unmanaged Ethernet Switch
IEC 61850-3 and IEEE 1613 Compliant

2 x 10/100Base-T(X) auto-negotiation and auto MDI/MDI-X RJ45 ports,
and 2 X 100Base-X SFP ports

WIRELESS ACCESS POINT

iWAP75
Hardened IP67 Outdoor Wireless Bridge/Access Point

TECHNOLOGY SOLUTION INTEGRATIONS

F:RTINET®

Fortinet FortiGate
Next-Generation Firewall (NGFW)

iS5 Communications and Fortinet have established a strategic technology partnership to address the challenges of cyber threats by integrating Fortinet's FortiGate Next-Generation Firewall (NGFW) into RAPTOR iMX350 & iMX950 through the iROC module.

FortiGate VM

FortiGate virtual appliance provides an end-to-end security ecosystem that allows you to mitigate blind spots by implementing critical security controls within your virtual infrastructure. They also allow you to rapidly provision security infrastructure whenever and wherever it is needed. FortiGate virtual appliances feature all of the security and networking services. With the addition of virtual appliances from Fortinet, you can deploy a mix of hardware and virtual appliances, operating together and managed from a common centralized management platform.

<) FORESCOUT®

Active Defense for the Enterprise of Things™

Forescout eyeInspect

iS5Com and Forescout have established a strategic technology integration to address the challenges of cyber threats by integrating Forescout's OT network monitoring solution, eyeInspect, into iS5Com's leading edge RAPTOR series L2/L3 multi service platform. This solution will enable customers to provide a single appliance for OT Applications to enable communications and manage risk for their field devices.

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ACCESSORY LIST

SFP's to be ordered separately.

SFP Module #	Description
SFP100-MM-550	SFP 100Mbps Multimode LC Transceiver 550m, 850nm, -40°C to +85°C
SFP100-MM-2	SFP 100Mbps Multimode LC Transceiver 2km, 1310nm, -40°C to +85°C
SFP100-SM-20	SFP 100Mbps Singlemode LC Transceiver 20km, 1310nm, -40°C to +85°C
SFP100-SM-40	SFP 100Mbps Singlemode LC Transceiver 40km, 1300nm, -40°C to +85°C
SFP100-SM-60	SFP 100Mbps Singlemode LC Transceiver 60km, 1310nm, -40°C to +85°C
SFP100-SM-100	SFP 100Mbps Singlemode LC Transceiver 100km, 1550nm, -40°C to +85°C
SFP100-SM-120	SFP 100Mbps Singlemode LC Transceiver 120km, 1550nm, -40°C to +85°C
SFP100BIDI1-SM-20	SFP 100Mbps Bi-Directional Singlemode LC Transceiver 20km, TX1310nm, RX1550nm, -40°C to +85°C
SFP100BIDI2-SM-20	SFP 100Mbps Bi-Directional Singlemode LC Transceiver 20km, TX1550nm, RX1310nm, -40°C to +85°C
SFP100BIDI1-SM-40	SFP 100Mbps Bi-Directional Singlemode LC Transceiver 40km, TX1310nm, RX1550nm, -40°C to +85°C
SFP100BIDI2-SM-40	SFP 100Mbps Bi-Directional Singlemode LC Transceiver 40km, TX1550nm, RX1310nm, -40°C to +85°C
SFP100BIDI1-SM-60	SFP 100Mbps Bi-Directional Singlemode LC Transceiver 60km, TX1310nm, RX1550nm, -40°C to +85°C
SFP100BIDI2-SM-60	SFP 100Mbps Bi-Directional Singlemode LC Transceiver 60km, TX1550nm, RX1310nm, -40°C to +85°C
SFP100-TX	SFP 100Mbps TX RJ45 Transceiver 100m, -40°C to +85°C
SFP1000-TX	SFP 1000Mbps TX RJ45 Transceiver 100m, -40°C to +85°C
SFP1000-MM-550	SFP 1Gbps Multimode LC Transceiver 550m, 850nm, -40°C to +85°C
SFP1000-MM-2	SFP 1Gbps Multimode LC Transceiver 2km, 1310nm, -40°C to +85°C
SFP1000-SM-10	SFP 1Gbps Singlemode LC Transceiver 10km, 1310nm, -40°C to +85°C
SFP1000-SM-20	SFP 1Gbps Singlemode LC Transceiver 20km, 1310nm, -40°C to +85°C
SFP1000-SM-40	SFP 1Gbps Singlemode LC Transceiver 40km, 1310nm, -40°C to +85°C
SFP1000-SM-60	SFP 1Gbps Singlemode LC Transceiver 60km, 1550nm, -40°C to +85°C
SFP1000-SM-80	SFP 1Gbps Singlemode LC Transceiver 80km, 1550nm, -40°C to +85°C
SFP-CWDM-SM-120	SFP 1Gbps CWDM, Singlemode LC Transceiver 120km, 1610nm, -40°C to +85°C
SFP-CWDM-SM-160	SFP 1Gbps CWDM, Singlemode LC Transceiver 160km, 1550nm, -40°C to +85°C
SFP1000BIDI1-SM-10	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 10km, TX1310nm, RX1550nm, -40°C to +85°C
SFP1000BIDI2-SM-10	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 10km, TX1550nm, RX1310nm, -40°C to +85°C
SFP1000BIDI1-SM-20	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 20km, TX1310nm, RX1550nm, -40°C to +85°C
SFP1000BIDI2-SM-20	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 20km, TX1550nm, RX1310nm, -40°C to +85°C
SFP1000BIDI1-SM-40	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 40km, TX1310nm, RX1550nm, -40°C to +85°C
SFP1000BIDI2-SM-40	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 40km, TX1550nm, RX1310nm, -40°C to +85°C
SFP1000BIDI1-SM-60	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 60km, TX1310nm, RX1550nm, -40°C to +85°C
SFP1000BIDI2-SM-60	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 60km, TX1550nm, RX1310nm, -40°C to +85°C
SFP1000BIDI1-SM-80	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 80km, TX1310nm, RX1550nm, -40°C to +85°C
SFP1000BIDI2-SM-80	SFP 1Gbps Bi-Directional Singlemode LC Transceiver 80km, TX1550nm, RX1310nm, -40°C to +85°C
SFP10G-TX	SFP 10Gbps TX RJ45 Copper
SFP10G-MM-300	SFP 10Gbps Multimode LC Transceiver 300m, 850nm, -40°C to +85°C
SFP10G-SM-10	SFP 10Gbps Singlemode LC Transceiver 10km, 1310nm, -40°C to +85°C
SFP10G-SM-40	SFP 10Gbps Singlemode LC Transceiver 40km, 1310nm, -40°C to +85°C
SFP10G-SM-80	SFP 10Gbps Singlemode LC Transceiver 80km, 1310nm, 0°C to +70°C

SFP Module #	Description	Exceptions
SFP-SGMII-TX	SFP 10/100/1000Mbps TX RJ45, SGMII Transceiver 100m, -40°C to +85°C	Used on iRBX6GF Ports 1-2 & 3-4 Only
SFP100-SGMII-MM	SFP 100Mbps SGMII, Multimode LC Transceiver 2km, 1310nm, -40°C to +85°C	Used on iRBX6GF Ports 1-2 & 3-4 Only
SFP100-MM-2-SG	SFP 100Mbps Multimode LC Transceiver 2km, 850nm, -40°C to +85°C	Used on iSG18GFP
SFP100-SM-10-SG	SFP 100Mbps Singlemode LC Transceiver 10km, 1310nm, -40°C to +85°C	Used on iSG18GFP
SFP100-SM-40-SG	SFP 100Mbps Singlemode LC Transceiver 40km, 1310nm, -40°C to +85°C	Used on iSG18GFP
SFP100-SM-80-SG	SFP 100Mbps Singlemode LC Transceiver 80km, 1550nm, -40°C to +85°C	Used on iSG18GFP
SFP1000-MM-2-SG	SFP 1Gbps Multimode LC Transceiver 2km, 1310nm, -40°C to +85°C	Used on iSG18GFP
SFP1000-SM-10-SG	SFP 1Gbps Singlemode LC Transceiver 10km, 1310nm, -40°C to +85°C	Used on iSG18GFP
SFP1000-SM-40-SG	SFP 1Gbps Singlemode LC Transceiver 40km, 1310nm, -40°C to +85°C	Used on iSG18GFP
SFP1000-SM-80-SG	SFP 1Gbps Singlemode LC Transceiver 80km, 1550nm, -40°C to +85°C	Used on iSG18GFP
SFP-SGMI-TX-SG	SFP 10/100/1000Mbps TX RJ45, SGMII Transceiver 100m, -40°C to +85°C	Used on iSG18GFP

Additional Accessories	Description
Conformal Coating	
C1	DIN Rail Products & Rack Products
Antennas	
1900-0002	Antenna with 2m cable
1900-0003	Antenna with 5m cable
1900-0019	Antenna with 15m cable
1900-0030	GPS Antenna Kit, Applies to: SFPPTPGM"
Cables	
1900-0004	Type B plug A/C power cord
1900-0014	Ethernet Cable CAT5E 3ft
1900-0025	Shielded UV Cable 3ft
1900-0026	Shielded UV Cable 25ft
1900-0028	Shielded CAT6 Outdoor Cable 150ft
Mounting Kits	
1900-0007	19"" Rack mount tray for DIN products, Applies to: iES6-S, iES8-S, iES10G-S
1900-0009	DIN Rail Bracket Kit for DIN products V1, Applies to: iES6-S, iES8-S, iES8G, iES10G-S, iES10GF, iES12G, iES12GP, iES20GF, iES22GF, iDS6, iDS6P-S, iMC2G, iRBX6GF
1900-0008	DIN Rail Bracket Kit for DIN products V2, Applies to: iMC2G, iMC4F, iSC2F, iSG18GFP, uES4F
1900-0005	DIN Rail Clip Kit for DIN products, Applies to: uES4F-S, iPJ2G, iDS3-S
1900-0006	Panel Mount Kit for DIN Products, Applies to: iES6-S, iES8-S, iES8G, iES10G-S, iES10GF, iES12G, iES12GP, iES20GF, iES22GF, iDS6, iDS6P-S, iMC2G, iMC4F, iRBX6GF, iRBX6GF-S, iSC2F, iSG18GFP, uES4F
1900-0011	Rack Mount Kit for 19"" Rack products V1 (2 brackets), applies to: iES26GF
1900-0012	Rack Mount Kit for 19"" Rack products V2 (4 brackets), Applies to: iES28GF, iES28TG, iDS24GF, iMX350, iMX950
Power Supplies	
1900-0010	External 240W Power Supply: Input 90-350VDC or 100-240VAC, Applies to: iTS12GP
1900-0015	External 240W Power Supply: Nominal Input 24VDC, Applies to: iMXx50
1900-0016	External 240W Power Supply: Nominal Input 48VDC, Applies to: iMXx50
1900-0017	External 240W Power Supply: Input 110-250VDC or 100-240VAC , Applies to: iMXx50
1900-0018	External 480W Power Supply: Input 110-250VDC or 100-240VAC, Applies to: iMXx50

Hardware SLA's

Components	iCare Bronze	iCare Silver	iCare Gold	iCare Premium
Software Upgrades	✓	✓	✓	✓
User Guides	✓	✓	✓	✓
Knowledge Base	✓	✓	✓	✓
Release Notes	✓	✓	✓	✓
Application Notes	✓	✓	✓	✓
Data Sheets	✓	✓	✓	✓
Email Forms	✓	✓	✓	✓
Hardware Support				
Five Year Warranty	✓	✓	✓	✓
Repair Returns	✓	✓	✓	✓
Advance Replacements		✓	✓	✓
Advance Replacements - 24hrs			✓	✓
Extended Warranty				✓
Remote Phone Support				
5x12	✓	✓	✓	✓
24x7		✓	✓	✓
Dedicated Support Contact			✓	✓
Priority Escalation			✓	✓
Bi-weekly Status Reports				✓

Fortinet SLA's

FG-ATP1	Advanced Threat Protection (IPS, Advanced Malware Protection Service, Application Control, and 24x7 FortiCare) – 1 year
FG-ATP3	Advanced Threat Protection (IPS, Advanced Malware Protection Service, Application Control, and 24x7 FortiCare) – 3 year
FG-ATP5	Advanced Threat Protection (IPS, Advanced Malware Protection Service, Application Control, and 24x7 FortiCare) – 5 year
FG-ISS1	FortiGuard Industrial Security Service – 1 year

WARRANTY

PRODUCT WARRANTY

- 5 years standard
- Up to 10 additional years of hardware protection

EXTENDED WARRANTY

- Same terms and conditions as standard warranty
- Must be purchased at order time

BENEFITS

- Fixed and known costs upfront
- No limitation on hardware replacements

iS5COM
TRUSTED & VETTED

5 YEAR

WARRANTY

EDUCATIONAL SERVICES

iS5 Communications Inc. is committed to developing a world class training program which combines the theoretical aspects of underlying technologies & protocols along with configuration examples, and it is delivered through practical hands on lab exercises. iS5Com's Domain Experts will provide every customer with the necessary training, utilizing examples and case studies specifically developed for industrial, critical infrastructure and SCADA applications.

In addition to iS5Com's standard training package, iS5 Communications Inc. offers tailored programs at its corporate office or at customer facilities ensuring accommodation of all training requirements in the most cost effective and efficient way.

SUPPORT SERVICES

iS5 Communications Inc. cares about customers and strives to ensure their Return on Investment is a top priority. Let our Technical Support group of experienced domain experts provide you with end-to-end solutions for any mission critical networks, or select one of the options from our iCare Service Level Agreements (SLA).

iS5 Communications Inc. offers four levels of iCare Support packages: Bronze (Default), Silver, Gold, and Platinum.

PROFESSIONAL SERVICES

Our Professional Services group of experienced domain experts will provide you with end-to-end solutions for any mission critical networks. Our top-notch consultants will work with you to ensure that your communication network is designed with the highest level of performance, security, reliability, and scalability.

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For more information, visit: is5com.com