

# *GL Communications Inc.*

## Packet / Ethernet Series Products Price List

Revised: Aug 9, 2018

Part Number	Description	Notes
	<b><i>Ethernet, IP &amp; VoIP Analysis Tools</i></b>	
PKV100	<b>PacketScan™ (Online and Offline)</b> Supported Codecs include G.711, G.726, G.729 A/B, GSM, iLBC, Speex, G.722.2, G.711 / G.726 Appendix 2,	VoIP Analysis Software (w/ dongle) Includes decodes for transport (TCP,UDP, IP), signaling (SIP, Megaco, MGCP, Diameter), and media (RTP, RTCP, Fax, Video), ROT; Additional Protocol Decode Support for – SIGTRAN, GSM over IP, UMTS over IP, and LTE available with purchase of licenses
PKV110	IMS Protocol Decodes (Optional with PacketScan™)	IMS (IP Multimedia Subsystem) protocol decodes
PKV120	PacketScan HD™ w/4 x 1GigE	High Density IP Traffic Analyzer w/ 4x1GigE Network Monitoring Appliance;2 Processor Xeon, 32 GB, 500 GB SSD – minimum configuration; includes 4 SM Optical SFPs, 4 MM Optical SFPs, 4 Electrical SFPs, 4 MM Optical Cables,4 SM Optical Cables, 4 RJ-45 Ethernet Cables
PKV120p	PacketScan HD™ w/4 x 1GigE - Portable	High Density IP Traffic Analyzer w/ 4x1GigE Network Monitoring Portable Version; includes 4 SM Optical SFPs, 4 MM Optical SFPs, 4 Electrical SFPs, 4 MM Optical Cables,4 SM Optical Cables, 4 RJ-45 Ethernet Cables, and Pelican Case
PKV122	PacketScan HD™ w/2 x 10GigE	High Density IP Traffic Analyzer w/ 2x10GigE Network Monitoring Appliance; 2 Processor Xeon, 32 GB, 500 GB SSD – minimum configuration; includes 2 SM Optical SFP+s, 2 MM Optical SFP+s, 2 MM Optical Cables, 2 SM Optical Cables
PKV122p	PacketScan HD™ w/2 x 10 GigE - Portable	High Density IP Traffic Analyzer w/ 2x10GigE Network Monitoring Portable Version; includes 2 SM Optical SFP+s, 2 MM Optical SFP+s, 2 MM Optical Cables, 2 SM Optical Cables, and Pelican Case
PKV124	PacketScan HD™ w/2 x 40GigE	High Density IP Traffic Analyzer w/ 2x40GigE Network Monitoring Appliance; available in portable platform – call, SFPs optional
PKV125	PacketScan HD™ w/1 x 100GigE	High Density IP Traffic Analyzer w/ 1x100GigE Network Monitoring Appliance; available in portable platform – call, SFPs optional
PKV121	PacketScan FB™	File Based IP Traffic Analyzer Server for near real-time processing of traces
PKV123	PacketRecorder HD™ & PacketRePlay HD™	High Density IP Traffic Recorder & RePlay Appliance with 4x1 Gbps or 2x10 Gbps Ethernet Interfaces - optional applications for PKV120 and PKV122
PKV301	LAN Switch w/ Mirror Port	NetGear GS105E - 5 Port 10/100/1000 LAN Switch with Mirror Port
PKV101	Offline PacketScan™ (Optional with PKV170 NetSurveyorWeb™)	VoIP Analysis Software without Real-time Capture Capability (w/dongle to enable Offline Version), ROT;

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		Optional with PKV170 Network Surveillance Base Software for SIP, Megaco, MGCP, H323, RTP Decode / Analysis; Additional Offline Protocol Decode Support for – SIGTRAN, GSMoIP, UMTSoIP, and LTE available with purchase of licenses
PKV105	SIGTRAN Analyzer (Optional with PacketScan™)	IP decode of SS7 and ISDN signaling (w/dongle to enable SIGTRAN, requires PKV100)
PKV106	Offline SIGTRAN Analyzer (Optional with PKV101 Offline PacketScan™ and PKV170 NetSurveyorWeb™)	Decode/Analyze pre-captured SIGTRAN files (w/dongle to enable Offline Analyzer), optional with PKV170 Network Surveillance Base Software for SS7 SIGTRAN Decode / Analysis;
PKV103	IP Based GSM and UMTS Analyzer (Optional with PacketScan™)	Decodes of GSM & UMTS protocols over IP transport (w/dongle to enable GSM & UMTS Analysis, requires PKV100)
PKV109	Offline IP Based GSM and UMTS Analyzer (Optional with PKV101 Offline PacketScan™ and PKV170 NetSurveyorWeb™)	Decodes of GSM & UMTS protocols over IP transport, (w/dongle to enable Offline Analyzer, optional with PKV170 Network Surveillance Base Software for GSM and UMTS Decode / Analysis;)
PKV104	Optional - FaxDDT38	Decodes Fax Images from PCAP files; Works with PacketScan™ or independently of PacketScan™ (on DOS Command Line); Also works with PacketScan™ Offline, ROC
PKV107	LTE (Long Term Evolution) Analyzer (Optional with PKV101 Offline PacketScan™ and PKV170 NetSurveyorWeb™)	Analysis/Decode of broadband wireless 4G protocols – (w/ dongle to enable LTE, requires PKV100)
PKV108	Offline LTE (Long Term Evolution) Analyzer (Optional with PKV101 Offline PacketScan™ and PKV170 NetSurveyorWeb™)	Decode / Analyze pre-captured LTE files – w/dongle to enable Offline Analyzer, optional with PKV170 Network Surveillance Base Software for LTE Decode / Analysis;)
PCD102	Optional Codec – iSAC	iSAC Codec (discontinued)
PCD103	Optional Codec – AMR – Narrowband	AMR Codec - narrowband, large annual fee
PCD107	Optional Codec – AMR - Wideband	AMR Codec – wideband, large annual fee
PCD104	Optional Codec - EVRC	EVRC Codec, annual fee
PCD105	Optional Codec – EVRC-B	EVRC–B Codec, annual fee
PCD106	Optional Codec – EVRC-C	EVRC-C Codec, annual fee
PCD108	Optional Codec - EVS	EVS Codec, annual fee
PCD109	Optional Codec – Opus	Opus Codec
	<b><i>Network Monitoring Software Options</i></b>	
PKV169	Network Surveillance Lite Software	Probe Level WebServer for all Protocol analyzers (T1 E1, OC-3/STM-1, OC12/ STM-4, T3 E3, and PacketScan™), can be used only Probe PC itself; includes Oracle 11g Express Edition; requires respective real-time protocol analyzer licenses on the Probe PC based on the protocol selection

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PKV170	Network Surveillance Base Software (Perpetual License, Unlimited Users/Nodes) – Includes Standard Server-Grade Computing Platform	Centralized Database Engine and Client – works with Protocol Analyzers, includes Oracle 11g Standard Edition One and Standard Server-Grade Computing Platform; requires the following respective modules and offline protocol analyzer licenses based on the protocol selection (all on the NetsurveyorWeb™ System)
PKV175	T1 E1 Physical Line Monitoring Option for Network Surveillance	Provides T1 E1 Physical Layer Status with Network Surveillance Solution
PKV172	ISDN/SIGTRAN Call Detail Record (CDR) Option for Network Surveillance	Provides ISDN/SIGTRAN CDR option for Network Surveillance Base Software - requires OLV100 at the central site
OLV100	Offline / Remote ISDN Analyzer	Decode / Analyze ISDN option for Network Surveillance Base Software - requires PKV170 and PKV172
PKV173	SS7/SIGTRAN Call Detail Record (CDR) Option for Network Surveillance	Provides SS7 (ISUP and MAP) /SIGTRAN CDR option for Network Surveillance Base Software - requires OLV120 for SS7 and PKV106 for SIGTRAN at the central site
OLV120	Offline / Remote SS7 Analyzer	Decode / Analyze SS7 option for Network Surveillance Base Software - requires PKV170 and PKV173
PKV106	Offline / Remote SIGTRAN Analyzer	Decode / Analyze SIGTRAN option for Network Surveillance Base Software - requires PKV170 and PKV173
PKV092	CAS Call Detail Records (CDR) Option for Network Surveillance	Provides CAS CDR option for Network Surveillance Base Software – requires OLV092 at the central site
OLV092	Offline/Remote CAS Analyzer	Decode/Analyze CAS Option for Network Surveillance Base Software – requires PKV170 and PKV092
PKV174	GSM (TDM or IP) & TRAU Call Detail Record (CDR) Option for Network Surveillance	Provides GSM (TDM and IP) & TRAU (TDM) CDR option for Network Surveillance Base Software - requires PKV170 and OLV150 for GSM; requires OLV153 for TRAU at the central site
OLV150	Offline / Remote GSM Analyzer	Decode / Analyze GSM option for Network Surveillance Base Software - requires PKV170 and PKV174
OLV153	Offline / Remote TRAU Analyzer	Decode / Analyze TRAU option for Network Surveillance Base Software - requires PKV170 and PKV174
PKV176	Provides VoIP Protocol (SIP, MGCP, Megaco etc.) CDR option for Network Surveillance Base Software	Requires SIP, Megaco, MGCP, H323, RTP Specific Software at Probe Level; requires PKV101 at the central site
PKV101	Offline / Remote PacketScan Analyzer	Requires SIP, Megaco, MGCP, H323, RTP Protocol Decodes at Central Site (w/ dongle) - requires PKV170 and PKV176
PKV177	Provides UMTS Protocol (luCS and luPS) CDR option for Network Surveillance Base Software	Requires UMTS luCS, UMTS luPS Specific Software at Probe Level; requires PKV109 at the central site
PKV109	Offline IP Based GSM and UMTS Analyzer (Optional with PacketScan™)	Decode / Analyze UMTS option for Network Surveillance Base Software - requires PKV170 and PKV177

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PKV178	Provides LTE Protocol CDR option for Network Surveillance Base Software	Requires LTE Specific Software at Probe Level; requires PKV108 at the central site
PKV108	Offline LTE (Long Term Evolution) Analyzer (Optional with PacketScan™)	Decode / Analyze LTE option for Network Surveillance Base Software - requires PKV170 and PKV178
PKV171	Network Surveillance Agent Toolkit	Documentation, sample code (C++), and technical support for real-time connection to probes
<b>PKV201</b>	<b>PacketShark</b>	Handheld Wirespeed packet capture, filter, and aggregator
PKV202	Remote Option	Remote Option
<b>VBA032</b>	<b>Voice Band Analyzer</b>	Analyze voice band parameters e.g. speech level, echo, noise, etc. – requires PC and dongle
	<b><i>Ethernet, IP, VoIP Simulation Tools</i></b>	
<b>ETH100</b>	<b>PacketCheck™</b>	10 / 100 / 1000 Ethernet Interface Testing – BERT testing at MAC, IP, and UDP layers; uses PC NIC (requires dongle)
ETH200	Dual PacketCheck™	Two PacketChecks™
<b>PXE100</b>	<b>PacketExpert™</b>	Quad Port 10/ 100/ 1000 Wirespeed Packet Analyzer and Emulator, two with 10/100/1000 electrical, two electrical or optical 1 G, w/ RFC 2544, MPLS, Q-in-Q, and VLAN testing. Also MAC, IP, and UDP BERT Testing with Smart Loopback; SFPs extra and available (see below)
PXG100	PacketExpert 10G / 1G™	Quad Port – Two with 10/100/1000 Electrical or Two Optical 1G, and Two Optical 10G, with BERT, RFC 2544, and Smart Loopback, SFPs extra and available (see below)
PXN100	PacketExpert™ 10GX	Quad Port – Two with 10/100/1000 Electrical or Two Optical 1G, and Two Optical 10G, with BERT, RFC 2544, and Smart Loopback, SFPs extra and available (see below)
PXX100	PacketExpert 40G / 100G	Quad Port – Two 40G / 100G QSFP28 Optical Interfaces, Two 10G SFP+ Optical Interfaces; BERT, RFC 2544, and Smart Loopback; QSFP28 and SFP+ are extra and available (see below)
PXG101	PacketExpert 10G™ Tablet <b>(* Coming Soon)</b>	Touchscreen handheld PacketExpert 10G™, w/ Rechargeable Battery, includes PXG100, SFPs extra and available (see below)
PXE104	PacketExpert™ - SA (4-Port)	Quad (4) Port PacketExpert™ w/ Embedded Single

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		Board Computer (SBC). SBC Specs: Intel Atom CPU, 4GB RAM, Windows 7/32, MSATA SSD, 4 USB Ports If options, then x 1. Rackmount enclosure.
PXG104	PacketExpert™ 10G - Rackmount	Rackmount enclosure of PXG100 w/ Embedded Single Board Computer (SBC), Power Supply, SBC Specs: Intel Atom CPU, 4GB RAM, Windows 7/32, MSATA SSD, 4 USB Ports. SFPs extra and available.
PXE112	PacketExpert™ - SA (12-Port)	12-Port PacketExpert™ w/ Embedded Single Board Computer (SBC). SBC Specs: Intel Atom CPU, 4GB RAM, Windows 7, MSATA SSD, 4 USB Ports. 19" 1U Rackmount Enclosure. (If options, then x 3)
PXE124	PacketExpert™ - SA (24-Port)	24-Port PacketExpert™ w/ Embedded Single Board Computer (SBC). SBC Specs: Intel Atom CPU, 4GB RAM, Windows 7, MSATA SSD, 4 USB Ports. 19" 2U Rackmount Enclosure. (If options, then x 6)
PXE105	Wirespeed Record / Playback 1G	Wirespeed Ethernet frame capture & playback with timestamp & filter – up to 4 ports simultaneously
PXG105	Wirespeed Record / Playback – 10G / 1G	10G or 1G - Wirespeed Ethernet frame capture & playback with timestamp & filter – up to 2 ports
PXN105	Wirespeed Record / Playback	10G or 1G - Wirespeed Ethernet frame capture & playback with timestamp & filter – up to 2 ports
PXX105a	Wirespeed Record / Playback – 40G	40G - Wirespeed Ethernet frame capture & playback with timestamp & filter – up to 2 ports simultaneously
PXX105b	Record / Playback – 100G	100G – up to 90% Ethernet frame capture & playback with timestamp & filter – up to 2 ports simultaneously
PXE106	ExpertSAM – 1G	Single Port test to validate service-level agreements (SLAs) as per ITU-T Y.1564
PXG106	ExpertSAM – 10G / 1G	10G or 1G - Single Port test to validate service-level agreements (SLAs) as per ITU-T Y.1564
PXN106	ExpertSAM	10G or 1G - Single Port test to validate service-level agreements (SLAs) as per ITU-T Y.1564
PXX106	ExpertSAM – 40G / 100G	40G / 100 G - Single Port test to validate service-level agreements (SLAs) as per ITU-T Y.1564
PXE107	PacketBroker – 1G	Non-intrusive Wirespeed Ethernet Tap w/ advanced filtering for deep packet analysis
PXG107	PacketBroker – 10G / 1G	10G or 1G Non-intrusive Wirespeed Ethernet Tap w/ advanced filtering for deep packet analysis
PXN107	PacketBroker	10G or 1G Non-intrusive Wirespeed Ethernet Tap w/ advanced filtering for deep packet analysis
PXX107	PacketBroker – 40G / 100G	40G and 100G Non-intrusive Wirespeed Ethernet Tap w/ advanced filtering for deep packet analysis
PXE108	Multi-Stream UDP/TCP Traffic Generator and	ExpertTCP test methodology, based on the RFC 6349

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	Analyzer	to measure TCP throughput, RTT and optimal window size. Also includes capability to Generate and Analyze up to 12 UDP streams of traffic of various packet lengths
PXG108	Multi-Stream UDP/TCP Traffic Generator and Analyzer 10G / 1G	ExpertTCP test methodology, based on the RFC 6349 to measure TCP throughput, RTT and optimal window size (1G Only). For 1G & 10G capability to Generate and Analyze up to 16 UDP streams of traffic of various packet lengths
PXN108	Multi-Stream UDP/TCP Traffic Generator and Analyzer	ExpertTCP test methodology, based on the RFC 6349 to measure TCP throughput, RTT and optimal window size (1G Only). For 1G & 10G capability to Generate and Analyze up to 16 UDP streams of traffic of various packet lengths
PXX108	Multi-Stream UDP/TCP Traffic Generator and Analyzer 40G / 100G	ExpertTCP test methodology, based on the RFC 6349 to measure TCP throughput, RTT and optimal window size. For 40G & 100G capability to Generate and Analyze up to 16 UDP streams of traffic of various packet lengths
IPN506	IPNetSim Option for PXG100 (1G and 10G)	Requires PXG100 basic hardware & software;  Imparts packet delay, errors, loss, duplication, reordering, throttling on two electrical 10/100/1000 copper or two optical 1 GigE, or two 10 GigE optical; up to 16 unique bidirectional streams for 1G; up to 4 unique bidirectional streams for 10G; available with rack option – see MT001
IPN507	IPNetSim Option for PXN100	Requires PXN100 basic hardware & software;  Imparts packet delay, errors, loss, duplication, reordering, throttling on two electrical 10/100/1000 copper or two optical 1 GigE, or two 10 GigE optical; up to 16 unique bidirectional streams for 1G; up to 4 unique bidirectional streams for 10G; available with rack option – see MT001
IPN1310	SFP Transceiver for <b>1 Gbps</b> Optical, Duplex LC, Single-Mode, 1310nm	Generic SFP for <b>1 Gbps</b> Optical, Duplex LC Connector, Single-Mode, 1310nm, 15km typical maximum range
IPN850	SFP Transceiver for <b>1 Gbps</b> Optical, Duplex LC, Multi-Mode, 850nm	Generic SFP for <b>1 Gbps</b> Optical, Duplex LC Connector, Multi-Mode, 850nm, 550m typical maximum range
IPN1310p	SFP+ Transceiver for <b>10 Gbps</b> Optical, Duplex LC, Single-Mode, 1310nm	Generic SFP+ for <b>10 Gbps</b> Optical, Duplex LC Connector, Single-Mode, 1310nm, 10km typical maximum range
IPN850p	SFP+ Transceiver for <b>10 Gbps</b> Optical, Duplex LC, Multi-Mode, 850nm	Generic SFP+ for <b>10 Gbps</b> Optical, Duplex LC Connector, Multi-Mode, 850nm, 300m typical maximum range
IPN801	SFP Transceiver for <b>1 Gbps, Electrical</b> , RJ45	Generic SFP for <b>1 Gbps, Electrical</b> w/ RJ45 Connector
IPN100m	QSFP28 Transceiver Multi-Mode 100G	QSFP28 Transceiver, Multi-Mode, 850nm, 100m, for 100G, FTLC9551REPM or equivalent

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IPN100s	QSFP28 Transceiver Single-Mode 100G	QSFP28 Transceiver, Single-Mode, for 100G, FTLC1151RDPL or equivalent
IPN040m	QSFP+ Transceiver Multi-Mode 40G	QSFP+ Transceiver for 40G, Multi-Mode, 850nm, 100m, FTL4C2QE1C or equivalent
IPN040s	QSFP+ Transceiver Single-Mode 40G	QSFP+ Transceiver for 40G, Single-Mode, FTL4C1QM1C or equivalent
SA019a	<b>1 Gbps / 10 Gbps</b> Fiber Optic Cable, Single-Mode, Duplex LC to Duplex LC	2m FO Jumper for <b>1 Gbps or 10 Gbps</b> , 9/125 Single-Mode, Ø2mm
SA019b	<b>1 Gbps / 10 Gbps</b> Fiber Optic Cable, Single-Mode, Duplex LC to Duplex SC	2m FO Jumper for <b>1 Gbps or 10 Gbps</b> , 9/125 Single-Mode, Ø2mm
SA019c	<b>1 Gbps / 10 Gbps</b> Fiber Optic Cable, Multi-Mode, Duplex LC to Duplex LC	2m FO Jumper for <b>1 Gbps or 10 Gbps</b> , 50/125 Multi-Mode, OM3, Ø2mm
SA019d	<b>1 Gbps / 10 Gbps</b> Fiber Optic Cable, Multi-Mode, Duplex LC to Duplex SC	2m FO Jumper for <b>1 Gbps or 10 Gbps</b> , 50/125 Multi-Mode, OM3, Ø2mm
SA019e	<b>40G / 100G</b> Fiber Optic Cable, Multi-Mode	20 feet MPO (Female) Fiber Cable, 12 Fibers, QSFP, Multimode, for connection between 2 QSFP+ or 2 QSFP28 transceivers
SA019f	<b>40G / 100G</b> Fiber Optic Cable, Single-Mode	20 feet MPO (Female) Fiber Cable, 12 Fibers, QSFP, Singlemode, for connection between 2 QSFP+ or 2 QSFP28 transceivers
SA019st	<b>1 Gbps / 10 Gbps</b> Fiber Optic Non-Intrusive T-tap, Duplex LC, <b>Single-Mode</b>	<b>1 Gbps / 10 Gbps</b> Fiber Optic T-tap for Non-Intrusive Monitoring, Duplex LC Connectors, 9/125 Single-Mode, 70/30 split – Should also order SA019sc or SA019sk2
SA019sc	Fiber Optic Analyzer Cable, (Special 'Y' Cable), <b>Single-Mode</b> , Duplex LC to Dual Duplex LC, 3m	3m FO Jumper, 9/125 SM, Duplex LC-Dual Duplex LC, Ø3mm, Special Analyzer Cable for use with SA019st
SA019mt	<b>1 Gbps / 10 Gbps</b> Fiber Optic Non-Intrusive T-tap, Duplex LC, <b>Multi-Mode</b>	<b>1 Gbps / 10 Gbps</b> Fiber Optic T-tap for Non-Intrusive Monitoring, Duplex LC Connectors, 50/125 Multi-Mode, 70/30 split – Should also order SA019mc or SA019mk2
SA019mc	Fiber Optic Analyzer Cable (Special 'Y' Cable), <b>Multi-Mode</b> , Duplex LC to Dual Duplex LC, 3m	3m FO Jumper, 50/125 MM, Duplex LC-Dual Duplex LC, Ø3mm, Special Analyzer Cable for use with SA019mt
SA019rt	Electrical Regeneration Tap for 10/100/1000Base-T (non-aggregation)	Wirespeed Non-aggregation replication and monitoring, passive access without packet tampering, traffic from all OSI layers available for analysis, no IP address, fail-safe bypass, redundant power option extra
SA019rta	Electrical Regeneration Tap for 10/100/1000Base-T (aggregation)	Wirespeed aggregation replication and monitoring, passive access without packet tampering, traffic from all OSI layers available for analysis, no IP address, fail-safe bypass, redundant power option extra
SA019sk2	<b>1 Gbps</b> Fiber Optic <b>Single-Mode</b> T-tap Kit with Required Cables and SFP Transceivers	Kit Includes: (1) SA019st, (1) SA019sc, (2) IPN1310, (2) SA019a, (2) SA019b
SA019mk2	<b>1 Gbps</b> Fiber Optic <b>Multi-Mode</b> T-tap Kit with	Kit Includes: (1) SA019mt, (1) SA019mc, (2) IPN850,

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SA019skp2	Required Cables and SFP Transceivers <b>10 Gbps</b> Fiber Optic <b>Single-Mode</b> T-tap Kit with Required Cables and <b>SFP+</b> Transceivers	(2) SA019c, (2) SA019d Kit Includes: (1) SA019st, (1) SA019sc, (2) IPN1310p, (2) SA019a, (2) SA019b
SA019mkp2	<b>10 Gbps</b> Fiber Optic <b>Multi-Mode</b> T-tap Kit with Required Cables and <b>SFP+</b> Transceivers	Kit Includes: (1) SA019mt, (1) SA019mc, (2) IPN850p, (2) SA019c, (2) SA019d
<b>IP Network Simulators</b>		
IPN506	IPNetSim Option for PXG100 (1G and 10G)	Requires PXG100 basic hardware & software;  Imparts packet delay, errors, loss, duplication, reordering, throttling on two electrical 10/100/1000 copper or two optical 1 GigE, or two 10 GigE optical; up to 16 unique bidirectional multistreams for 1G, up to 4 unique bidirectional streams for 10G; available with rack option – see MT001, only one per rack
IPN507	IPNetSim Option for PXN100 (1G and 10G)	Requires PXN100 basic hardware & software;  Imparts packet delay, errors, loss, duplication, reordering, throttling on two electrical 10/100/1000 copper or two optical 1 GigE, or two 10 GigE optical; up to 16 unique bidirectional streams for 1G; up to 4 unique bidirectional streams for 10G; available with rack option – see MT001, up to three per rack
IPN505	IPNetSim 1G Tablet (* Coming Soon)	Touchscreen handheld, w/ Rechargeable Battery, includes IPNetSim 1G-MultiStream, uses PXG100 platform; optional SFPs or SFP+s
IPN701 IPN702	IPNetSim Handheld (* Coming Soon) Remote Option (* Coming Soon)	Portable Handheld IP Impairment with multi stream Remote Option
IPN900	Extended Hardware Warranty	Extended hardware warranty beyond 1 yr
PKS100	<b>PacketGen™ (includes PacketScan™)</b>	VoIP Simulation Software includes PKV100 PacketScan™ Software, Base PacketGen, SIP Core, and RTP SoftCore (w/ 1 or 2 dongles), ROT
PKG100	<b>PacketGen™</b>	VoIP Simulation Software, Base PacketGen, SIP Core, and RTP SoftCore (w/ dongle)
PKS101	SIP Core (additional)	2 <sup>nd</sup> and Additional Instances (w/ dongle)
<b>RTP Traffic Options (Requires MAPS Signaling Software)</b>		
PKS102	RTP Soft Core (additional)	2 <sup>nd</sup> and Additional Instances (w/dongle), ROT
PKS103	RTP luUP Softcore	RTP Voice Traffic Generation over luUP; requires PKS102 and PCD103 – Used in UMTS Network at

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PKS200	RTP Pass Through Fax Emulation	luCS Interface RTP T.30 Pass-Through Fax Emulation, requires one of the licenses below, (w/dongle):
PKS202	Fax Port Licences	2 Fax Ports, RO
PKS203	Fax Port Licences	8 Fax Ports, RO
PKS204	Fax Port Licences	30 Fax Ports, RO
PKS205	Fax Port Licences	60 Fax Ports, RO
PKS206	Fax Port Licences	120 Fax Ports, RO
PKS211	T.38 Fax Simulation	T.38 Fax Simulation over UDPTL (up to 120 channels)
PKS107	RTP EUROCAE ED-137B	RTP Traffic Generation as per ED-137B – Interoperability Standards for VoIP ATM (Air Traffic Management) Components - PKS102 required
PKS108	RTP Voice Quality Measurements	RTP Based Voice Quality (MOS and R-Factor) measurement for the received stream – PKS102 required, ROT
PKS106	RTP Video Traffic Generation	RTP Video Traffic Generation – up to 500 simultaneous video streams using H.264 codecs. Requires PKS102 RTP Softcore
PCDxxx	See descriptions of Codecs under PacketScan	Two Codec licenses required – one for PacketGen + PacketScan
<b><i>RTP Toolbox</i></b>		
<b>PKB100</b>	<b>RTP ToolBox™</b>	VoIP / RTP Simulation and Analysis with SIP signaling (w/dongle), ROT
PCDxxx	See descriptions of Codecs under PacketScan	See descriptions of Codecs under PacketScan
PKB105	G.168 Echo Canceller Test Compliance Suite	Manual G.168 Echo Canceller Test Compliance Procedures and Codec Files (w/dongle to enable GLCView); includes PKB070
PKB110	Client / Server for RTP Toolbox w/ C++ Client w/ TCL Client	Remote Control of RTP Traffic over IP Networks, uses TCP/IP (w/dongle), requires PKB100
PKB067	Automated Echo Canceller Testing – All IP Version	Fully Automated EC testing per G.168 from the VoIP side – includes PKB110 – call for details and limitations (w/dongle version); includes PKB070 and AEC001
PKB080	Automated Echo Canceller Testing – TDM-VoIP	Fully Automated LEC Compliance Testing per G.168 for combined TDM-VoIP Interfaces, requires dongle (includes PKB100, PKB110, xx600, xx610, xx630 and requires additional PKV100, T1 E1 Card with xx062 and xx105); includes PKB070 and AEC001
PKB081	Automated <b>Acoustic</b> Echo Canceller Compliance Testing (Partial Tests)	Fully Automated AEC Compliance Testing per G.167 and P.340 for combined TDM –TDM and TDM-VoIP Interfaces, includes xx600, xx610, xx630, xx631; may require PKB100, PKB110, and Level Adjustment Unit ;

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AEC001	AutoECTest Viewer	xx062 and xx020 recommended; includes PKB070
PKB070	Audio Processing Utility	Offline Viewing of AutoECTest Files / Results; included with PKB067 and PKB080  Adds noise, creates line or acoustic echo, analyzes speech level and other useful functions; included with EMU037, PKB105, PKB081, PKB067, PKB080, and VBA032
<b>MAPS (Message Automation and Protocol Simulation)</b>		<b>Protocol Simulation &amp; Conformance Tools for IP (all Products in this Section are Dongle Licensed)</b>
PKS109	MAPS High Density RTP Generator	High Density RTP Call Generator w/ 4x1GigE Network Appliance, emulates greater than 20,000 endpoints; requires companion MAPS PKSXXX signalling product; includes PKS102; for other traffic options e.g. fax, codecs, video, refer "RTP Traffic Options" section; SFPs optional; Also 8x1GigE variant available at an additional \$ 8K
PKS111	MAPS Remote Controller	MAPS GUI client to control single or multiple MAPS instances
PKS112	Message Session Relay Protocol for MAPS-SIP	MSRP protocol emulation for supporting session based instant messaging capability over SIP sessions. Requires PKS120
PKS170	CLI Support for MAPS	CLI Support for MAPS Products, includes TCL, Java, Python, and C#
PKS117	MAPS for ED137 Recorder	MAPS for ED137 Recorder Emulation. Emulates Recorder interface as per ED-137B volume 4 defined by EUROCAE Working Group 67 (includes PKS102). Permits emulation of Recorder Interface at CWP/VCS, GRS, and Recorder elements.
PKS118	MAPS SIP for ED137 Radio	MAPS SIP for ED137 Radio Emulation. Emulates Air-to-Ground calls in Air Traffic Management defined by EUROCAE Working Group 67, volume discounts available for 2,3,4,5 units (includes PKS102 and PKS107); Not included, but required platform - Win 7/64, i7,8 GB, Gigabit NIC, with Administrative Level Privilege to Install and Run Application, USB Port Dongle
PKS119	MAPS SIP for ED137 Telephone	MAPS SIP for ED137 Telephone Emulation. Emulates Ground-to-Ground calls in Air Traffic Management defined by EUROCAE Working Group 67, volume discounts available for 2,3,4,5 units (includes PKS102); Not included, but required platform - Win 7/64, i7,8 GB, Gigabit NIC, with Administrative Level Privilege to Install and Run Application, USB Port Dongle
PKS120	MAPS - SIP	SIP Protocol Emulation; For traffic options refer "RTP Traffic Options" section;

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PKS126	MAPS SIP - I	SIP – I Protocol Emulation, Similar to MAPS SIP but can carry ISUP content as MIME body; For traffic options refer “RTP Traffic Options” section;
PKS127	MAPS SIP - IMS	Additional SIP Features for IMS Support
PKS121	SIP Conformance Test Suite	SIP Conformance Test Scripts, includes PKS120
PKS128	MAPS – H.323	H.323 Protocol Emulation
PKS122	MAPS - Megaco	Megaco Protocol Emulation, For traffic options refer “RTP Traffic Options” section;
PKS123	Megaco Conformance Test Suite	Megaco Conformance Test Scripts, requires PKS122
PKS124	MAPS – MGCP Protocol Emulation with Conformance Test Suite	MGCP Protocol Emulation (Bulk Calling) with MGCP Conformance Test Scripts, For traffic options refer “RTP Traffic Options” section;
PKS149	MAPS – Skinny Emulation	Emulation of Skinny Signaling for Cisco VoIP Phones and Routers - SCCP – Skinny Call Control Protocol; For traffic options refer “RTP Traffic Options” section;
PKS130	MAPS – SIGTRAN SS7 over IP	SIGTRAN Protocol Emulation – SS7(ISUP) over M3UA, M2UA and M2PA IP transport layers; optional xx610 and xx620 for TDM traffic generation (refer T1 E1 price list); TDM Fax emulation supported (Optional - Refer XXXFT0) (refer T1 E1 price list)
PKS135	MAPS – SIGTRAN ISDN over IP	SIGTRAN Protocol Emulation – ISDN over IUA IP transport layer; optional xx610 and xx620 for TDM traffic generation (refer T1 E1 price list); TDM Fax emulation supported (Optional - Refer XXXFT0) (refer T1 E1 price list)
PKS136	MAPS – SIGTRAN SS7 INAP	SIGTRAN Protocol Emulation – SS7 INAP (CS1 and CS2) over M3UA, and M2PA IP transport layers
PKS152	MAPS – SIGTRAN ANSI MAP	SIGTRAN Protocol Emulation - IS-41 over IP on B, C, E, F, H, Q, and N interfaces
PKS300	MAPS Multi-Interface MGC	Media Gateway Controller Emulation with SIGTRAN, MGCP, and Megaco interfaces; includes MAPS licenses for ISUP SIGTRAN (PKS130) for SG and MGCP (PKS124) or Megaco (PKS122) licenses for MG simulation; Does not include RTP Licenses*;  *GL recommends purchasing additional MG simulation using PKS124 or PKS122 with appropriate RTP licenses for traffic simulation. For traffic options refer “RTP Traffic Options” section
PKS132	MAPS - MAP	Mobile Application Part (MAP) Protocol Emulation over M3UA, and M2PA IP transport layers; interfaces supported -- B, C, D, E, F, G, H, Gc, Gr, Gf and Gd
PKS147	MAPS Lb Interface Emulator	Emulates BSC & SMLC over Lb Interface

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PKS148	MAPS SLs Interface Emulator	Emulates MME & E-SMLC over SLs Interface
PKS153	MAPS IuPC Interface Emulator	Emulates SRNC & SMLC over IuPC Interface
PKS151	MAPS – CAP Emulation over IP	Customized Application for Mobile Network Enhanced Logic – CAMEL Application Part (CAP) over M3UA, and M2PA IP transport layers
PKS155	MAPS – BICC Emulator	BICC Protocol Emulation, optional PKS102 for traffic emulation over M3UA and M2PA IP transport layer; For traffic options refer “RTP Traffic Options” section
PKS134	MAPS – Abis Emulator over IP	BSC to BTS Abis Emulation over TCP transport layer; For traffic options refer “RTP Traffic Options” section
PKS137	MAPS – GSM A Emulation over IP	BSC to MSC A interface emulation over M3UA IP transport layer; For traffic options refer “RTP Traffic Options” section
PKS131	MAPS – Gb Emulator over IP for BSC & SGSN	Gb interface emulation between BSC & SGSN; For traffic options refer “GTP Traffic Options” section
PKS139	MAPS – Diameter Emulation	Emulates Diameter protocol (Supports S6a, Cx, Rx, Gx, Sh, S13 etc interfaces over TCP and SCTP transport layer)
PKS140	MAPS LTE – S1 Interface Emulation	MAPS LTE – S1 Interface Emulation, between eNodeB and MME; For traffic options refer “GTP Traffic Options” section
PKS142	MAPS LTE – eGTP Emulation (S5 / S8 & S11 Interfaces)	MAPS LTE – eGTP Emulation (S5 / S8 and S11 Interfaces), between SGW and PGW or between MME and SGW; For traffic options refer “GTP Traffic Options” section
PKS141	MAPS LTE – X2AP Emulation	X2AP Interface Emulation between eNodeBs
PKS146	MAPS SGs Interface Emulation	SGs Interface Emulation support for CS fallback features
PKS143	MMS Server	MMS Server – 10 simultaneous messages / min
PKS144	Central Control Center for GSM	Central Control Center for GSM Networks
PKS145	MSC / BSC Media Gateway	Media Gateway (within BSC or MSC) for conversion between E1 and IP
PKS160	MAPS UMTS – IuCs and Iuh Interface Emulation	MAPS UMTS – IuCs and Iuh Interface Emulation, between RNC and MSC or between HNB-GW and HNB; For CS (Circuit Switch) traffic options refer “RTP Traffic Options” section; For PS (Packet Switch) traffic options refer “GTP Traffic Options” section
PKS164	MAPS UMTS – IuPs Interface Emulation	MAPS UMTS – IuPs Interface Emulation, between RNC and SGSN; For traffic options refer “GTP Traffic Options” section
PKS166	MAPS UMTS – Gn Interface Emulation	MAPS UMTS – Gn Interface Emulation; For traffic options refer “GTP Traffic Options” section

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BTS001_S	Real BTS GSM Cell for 2G and 2.5 G	Real BTS hardware with Abis over IP; up to 8 Tx/Rx channels (approx)
BTS001_B	Real Node B for 3G Systems	Real Node B hardware for 3G systems (approx.)
BTS001_e	Real eNodeB for 4G (LTE) Systems	Real eNodeB hardware for 4G (LTE) systems (approx.)
<b><i>GTP Traffic Options</i></b>		
ETH101	MobileTrafficCore - GTP	Generates and Verifies User Mobile Data Traffic over GTPv1 and GTPv2 (Used with UMTS and LTE) (for simulated HTTP traffic generation over GTP)
ETH102	MobileTrafficCore - Gateway	Emulate SGSN / SGW (GTP to GTP) and GGSN / PDN-GW (GTP to IP) (acts as a real gateway)
ETH103	MobileTrafficCore for Gb Interface	Generates and verifies hundreds to thousands of sessions of http, ftp, etc. user mobile data traffic over GPRS Gb interface (for simulated HTTP traffic generation over IP)
<b><i>Data Traffic Generators</i></b>		
PKS172	PacketLoad™ 4 x 1Gig, Data Traffic Generator	Data Traffic Generator - 1U Rack Appliance, 4 x 1Gbps, Wirespeed TCP/HTTP Statefull Traffic Generator with 445 K Transactions / Sec, 20M+ Concurrent TCP Flows, HTTP Payload Control using Custom Payload Files, PCAP Replay.  Emulates Mobile Infrastructure Test Traffic with GTP-U Encapsulation while 10K+ Subscribers Add/Delete per Second along with MAPS System.
PKS174	PacketLoad™ 4 x 10Gig, Data Traffic Generator	Data Traffic Generator - 2U Rack Appliance, 4 x 10Gbps, Wirespeed TCP/HTTP Statefull Traffic Generator with 2M+ Transactions/Sec, Up to 100M Concurrent TCP Flows, HTTP Payload Control using Custom Payload Files, PCAP Replay.  Emulates Mobile Infrastructure Test Traffic with GTP-U Encapsulation while 10K+ Subscribers Add/Delete per Second along with MAPS System.
<b><i>Miscellaneous Tools</i></b>		
FXT001 FXT002	GL Insight - Single Fax Analysis – TDM GL Insight - Single Fax Analysis – IP	Offline fax protocol and image analysis of captured PCM files from TDM and IP networks w/dongle – requires T1 E1 cards or PacketScan™

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MDT001 MDT002	GL Insight - Single Modem Analysis – TDM GL Insight - Single Modem Analysis - IP	Offline modem protocol and data analysis of captured PCM files from TDM and IP networks w/dongle requires T1 E1 cards or PacketScan™
VQT035	Voice Recorder (FXO RJ11 Hardware Tap / 2-Wire Capture Software)	Used for capturing Audio files from RJ11 connections for GL Insight Fax / Modem Analysis, requires Dual UTA or USB T1E1 unit; includes FXO RJ11 Hardware Tap
MT001	mTOP 1U Rack Mount Enclosure w/SBC	1U 19" Rack Mount Enclosure w/Rails, Multiple Interface TDM/Optical/Packet w/Single Board Computer (SBC) (Specs: 240 GB SSD, 8GB RAM, i3 Equivalent, Win 10/64), USB 3.0 Hub, ATX Power Supply, Can house any combination of three (3) USB based units - PacketExperts, tProbes, Dual UTAs, and LightSpeeds; Optional VGA to mini DP interface cable
MT002	mTOP 1U Rack Mount Enclosure w/o SBC	w/o SBC, but for use with MT001 for Daisy Chain or other Rack PCs
MT003	mTOP 2U Rack Mount Enclosure w/SBC	2U 19" Rack Mount Enclosure w/Rails, Multiple Interface TDM/Optical/Packet w/Single Board Computer (SBC) (Specs: 240 GB SSD, 8GB RAM, i3 Equivalent, Win 10/64), USB 3.0 Hub, ATX Power Supply, Can house any combination of three (3) USB based units - PacketExperts, tProbes, Dual UTAs, T3/E3 units and LightSpeeds; Optional VGA to mini DP interface cable
MT004	mTOP 2U Rack Mount Enclosure w/o SBC	w/o SBC, but for use with MT003 for Daisy Chain or other Rack PCs
<b>Others</b>		
PKA001	600 ohm to Sound Card Transformer/Adapter	Adapts Sound Card Interface to 600 Ohms
PKA006	VoIP Hub for testing and configuration purposes	Useful for connecting multiple PacketGens™ and PacketScan's™
SA051	2U 19" Rackmount Kit for PXE104	One Hardware Kit for Rackmounting One PXE104. 19" Rackmount Kit occupying 2U
PKS150a PKS150b PKS150c	TDM / VoIP Gateway w/ Single T1 E1 TDM / VoIP Gateway w/ Dual T1 E1 TDM / VoIP Gateway w/ Quad T1 E1	Gateways with TDM and VoIP Interfaces – supports T1 E1 PRI ISDN, Megaco, SIP, H.323, T.38 Fax, and Modem
PKX002	Packet Series Configuration, Setup, Testing (per day)	Exclusive of travel
PKX003	Software, Hardware Warranty and Support	Warranty and Comprehensive Support for Hardware and Software = 10% of PO – All Packet Ethernet Products
PKX104	Interrupted One Year Software Upgrade Extensions	Warranty and Comprehensive Support for Hardware and Software = 12% of PO – All Packet Ethernet Products

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PKX100	VoIP Training (per day, exclusive of travel)	VoIP Training (PacketGen™, PacketScan™, RTP Toolbox™, PacketCheck™, IPNetSim™, MAPS™)
PKX101	Professional Services (per day, exclusive of travel)	Development or Testing Services (per day)

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