Upgrading to NewNet Payment Transaction Products and the Benefits

A REPORT FROM NEWNET COMMUNICATION TECHNOLOGIES, LLC

NewNet
SECURE PAYMENT TRANSACTIONS

NewNet & Secure Payment Transaction Systems

NewNet is an industry first with unique solution of Secure Transaction Cloud (STC) application for the customers planning to migrate the payment infrastructure to cloud, which offers NFV based virtualized secure payment applications for transaction transport, routing, and switching with specific Virtual Network Functions (VNF) for security (TLS, IPSec, SSH, HTTPS), transaction protocols (ISO8583, TPDU, VISA, XML), Tokenization, Host Interfaces, Load Balancing, etc.

The NewNet Secure Transaction portfolio consists of secure, high-capacity, high-performance, highly-scalable and carrier grade solutions that have been deployed by major carriers worldwide. NewNet delivers:
• End-to-End secure payment solutions
• Mobile Smartphone POS Payment
• Mobile NFC Payment
• Mobile Wallet Solution
• Mobile SMS Payment
* Web Payments
• Single Payment platform enables all forms of Mobile & Internet payment services
• Feature rich Dial Payment platform

NewNet solutions leverage the in depth payment technology and industry standards expertise and service infrastructure knowhow gathered over the last two decades of payment processing systems deployed worldwide for carriers, payment acquirers and processors, financial institutions, banks etc.

NewNet's Total Control STG, AccessGuard payment systems and Secure Transaction Cloud (STC) virtualized application for public/private cloud, offers the advanced secure payment transaction transport, routing and switching platform for mobile, broadband and dial payments. The TransKrypt Security System Server Edition/ Cloud Edition for P2PE, Tokenization with HSM, AccessView(AV) Server Edition/Cloud Edition accounting server for billing and reporting, and Common Element Manager(CEM) for network management completes the total solution with capabilities for enhanced payment security, billing and remote management.

The AccessGuard 1000 System is a compact IP transaction switching and routing accelerator designed to process secure IP-based transactions in excess of one million per hour. The system consolidates various functions including security, routing, protocol handling, management and reporting into one condensed solution. The system minimizes the transaction time to help reduce the transaction cost and the network operation costs.

The Total Control Secure Transaction Gateway is a field-proven processing platform for carrier-class transaction network service providers and enterprises for dial-up connectivity. The gateway enables fast transaction processing of credit card authorizations, debit card fund transfers, health benefit authorizations, electronic benefits transfers, and other communications involving single session transfer of small amounts of data.

The Secure Transactions Cloud (STC) is a virtualized payment application with CloudHSM providing on demand access of secure payment network, compute and storage resources, and NFV based virtualized network functions for handling security, payment protocols, transaction routing. STC offers CloudHSM based secure Key, PIN, Token, Cryptographic function handling for EMV, P2PE, Tokenization etc for high capacity and highly scalable payment transaction routing and transport.

The AccessView Accounting Server captures statistics from the TC, STC and STG and AccessGuard 1000 System and processes and stores them in a database. The data captured supports subscriber billing, transaction recording, report generation, network performance monitoring, analytics, system modeling and measurements.

The Common Element Manager features an easy-to-use graphical interface that enables network operators to view system status and device availability at a glance. It is based on Java architecture and it interoperates with the service providers' network management platform of choice, thereby leveraging the existing equipment investment.

NewNet solutions enables a broad range of mobile and broadband based payment services covering an expanded list of emerging services for *person-to-person payments, remote deposit capture, e-wallets, QR codes based payment, mobile app based payments/money transfer services, mobile wallet payments, smart mobile commerce solutions, mobile web based payments* etc. with the unique capability to support these multitude of services in an integrated manner on common generic platform. This integrated payment solution platform from NewNet empowers payment acquiring and processing customers to offer these advanced services leveraging the existing payment authorization server infrastructure by interfacing with the newer TCP/IP based POS, smart phone/tabled based payment devices and subscriber mobile based wallet devices.

Payment Network System Upgrade With NewNet Solution

Customers worldwide are moving to the advanced payment systems from NewNet and adopting the advanced, secure and high speed transaction methodology utilizing the STG and AG systems for supporting Dial, Broadband and Mobile payment transactions or migrating to cloud based infrastructure for Mobile/Web transactions using STC. An example of a Leading Payment Service Provider Expanding their Services and Presence in the Middle East Region with NewNet Secure Transactions Solution is detailed here highlighting the upgrade process, benefits to customer and the top notch network advantages. To cope with the strong growth in the payment transaction business of the Middle East market, this leading payment service provider upgrades their existing networks with NewNet Communication Technologies' Secure Transactions payment processing solution to support their growth objective to offer newer service capabilities in the broader Middle East market.

Customer Profile

The customer is the leading "merchant acquiring" service provider and one of the top end-to-end payment service solution providers in the EMEA region. Being a technology leader in the region, they offer payment processing services to a significant proportion of merchant services over dial, IP and mobile payment devices/terminals. The customer designs, delivers and manages customized network solutions for ATM and Net Banking Connectivity, Mobile ATMs, Data Center Managed Services, etc. They also offer latest satellite and VSAT communication technologies for data, voice and video transmission. The network allows high speed, reliable, robust, cost-effective, scalable and secured communication across the region and can be availed by all industry segments especially the payment segment with POS and ATMs distributed across the country.

Situation: Need To Upgrade Current Network To Support More Traffic & Financial Institutions

The customer provided secure transaction services to 8 out of 12 available banks in a key Middle East country through monitory agency host. They planned to upgrade the existing network to provide secure transaction services to the rest 4 banks in the country. They had 4 x E1 lines serving dialup traffic and were planning to increase the capacity to 10 x E1 lines in the near future to support the traffic in a major city. The customer also planned to expand the dialup network to other cities.

Initial Network Design

Initially, the customer had 5 chassis belonging to 2 older models of third party systems carrying out both dialup and IP transaction traffics.

Requirements

In order to handle the increasing demand of mobile and Internet transactions, as well as to expand the secure transaction services to the rest 4 banks in the country, the customer's original network needed to be upgraded with a reliable solution to support secure mobile and Internet transactions.

Requirements for Secure Mobile, Internet Transactions

• Handles GPRS POS transactions with the ability to support ISO 8583 and TPDU
• Protocols with secure session handling using SSL along with Client Certificate verifications.
• Routes transactions originating from devices all over the country to over 12 processing banks.
• Aggregates the transaction data at multiple POPs and routes securely to the data centers for further routing to multiple authorization bank servers.

Requirements for a Reliable / Versatile Solution

• Transaction routing and processing systems are expected to route millions of transactions annually with the dollar value touching billions of dollars.
• High availability, alternate routing, always on solutions and so on were very critical.
• Need to support multiple transaction types with the ability to track the devices and perform additional capabilities for authentication, reporting of the transaction statistics, as well as monitoring the systems near real time for transaction completion and network availability.

Solution: Partner With NewNet To Upgrade Secure Payment Transaction Network

After reviewing current situation and available solutions in the market, the customer have decided to select the Secure Transactions solutions of NewNet Communication Technologies to enhance their payment network because the efficiency, security, flexibility and performance offered by NewNet's market leading payment processing systems will enable the customer to deliver advanced and superior m-commerce and e-commerce payment services.

Why NewNet ?

NewNet Communication Technologies is a market leader with proven track record: As a market leader in the payment processing industry, NewNet's Secure Transactions solutions process billions of transactions for over 30 customers across 44 countries, representing about 20% of the global annual transaction volume. Meanwhile, NewNet's technical teams are committed for rapid turnaround of new services based on over 30 years of industry experience.

Enable Integration into a Single Platform

NewNet Communication Technologies Secure Payment Transactions portfolio offers complex integration from multiple vendors with payment processing gateways, security processing and IP transaction processing integrated into a single platform, which significantly reduced the solution footprint and drive an overall reduction in OPEX.

Agnostic to all Payment Methods and Payment Types

NewNet Communication Technologies secure transaction processing solutions support various kinds of mobile payments, e-banking, transaction acquires, payment processing, retailers, educational networks, NFC, mobile wallets and service providers.

Resolve Security Concern

NewNet Communication Technologies solutions enable and empower fraud prevention and transaction privacy by providing secure solutions that are PCI-DSS compliant with proven methods for ensuring data and network security. In fact, TraxcomSecure supports best in class encryption standards such as 3DES, AES, DUKPT.

Provide Transaction Intelligence

NewNet Communication Technologies advanced payment processing products satisfy the customer's demand for transaction intelligence. Detailed records for each transaction (CDR's) are gathered and made available to analytics tools for pattern determination.

NewNet is a Trusted Partner

NewNet Communication Technologies is committed to provide extensive integration and customization capabilities for localized solutions to better serve customers.

NewNet's Solution

NewNet Communication Technologies has offered its marketing leading payment processing systems to this Middle Eastern payment network services leader, including mobile/broadband payment gateway *AccessGuard* and dial payment system *Total Control Secure Transaction Gateway* to handle a complete range of payment transactions for dial services with IP connectivity, mobile smart phone/tablet based POS payment services, SSL IP services for HTTP and internet payment devices, as well as the ability to expand to mobile wallet services with NFC devices.

NewNet Communication Technologies solution has been designed to blend into the customer's existing network as smoothly as possible without forcing customer to deviate much. In terms of capacity, NewNet's processing platforms not only have sufficient capacity to handle current traffic, but also adequate enough to support the increasing traffic in the near future.

Most important, NewNet Communication Technologies solution has completed match with the customer's requirements for a reliable solution to support secure mobile and Internet transactions.

Secure Dial, Mobile, Internet Transactions

Dial Payment: Since the customer's transaction traffic volume has experienced excessive surge at the peak times with huge growth anticipated over the years, the ability to handle multiple millions of transactions per month was the key challenge. Industry proven and the highly rated Total Control Dial transaction processing platform enables the service delivery for this challenging requirement with capability to handle over 270,000 busy hour call transactions per chassis.

Mobile POS: NewNet Communication Technologies advanced payment processing capabilities on the AccessGuard payment platform support secure and standard based payment processing for all industry standard mobile POS terminals, multiple smart phones and tablets with faster completion of transactions. The solution offers additional encryption capabilities for securing the mobile based transaction with complete end-to-end encryption of transactions with full compliance to PCI standards. AccessGuard solution can also be expanded to support mobile wallet payments with NFC POS terminals, as well alternative payment models.

Internet Payment: High volume, high speed processing capability of AccessGuard platform offers HTTPS processing of ISO8583 and TPDU transactions encapsulated with HTTP. The platform supports SSL and stringent security requirements can be met. NewNet's unique ability to offer software customizations for rapid deployment of new SSL & HTTPS services for legacy server interfaces enables the rapid integration of the new solutions with existing infrastructure.

Reliability and Security

NewNet Communication Technologies systems offer highest levels of performance reliability and PCI DSS standards compliance for security. Additionally, the AccessView reporting and statistics solution offered capability to view the IP and dial transaction Call Data Records (CDRs) for complete end-to-end view of the payment transactions.
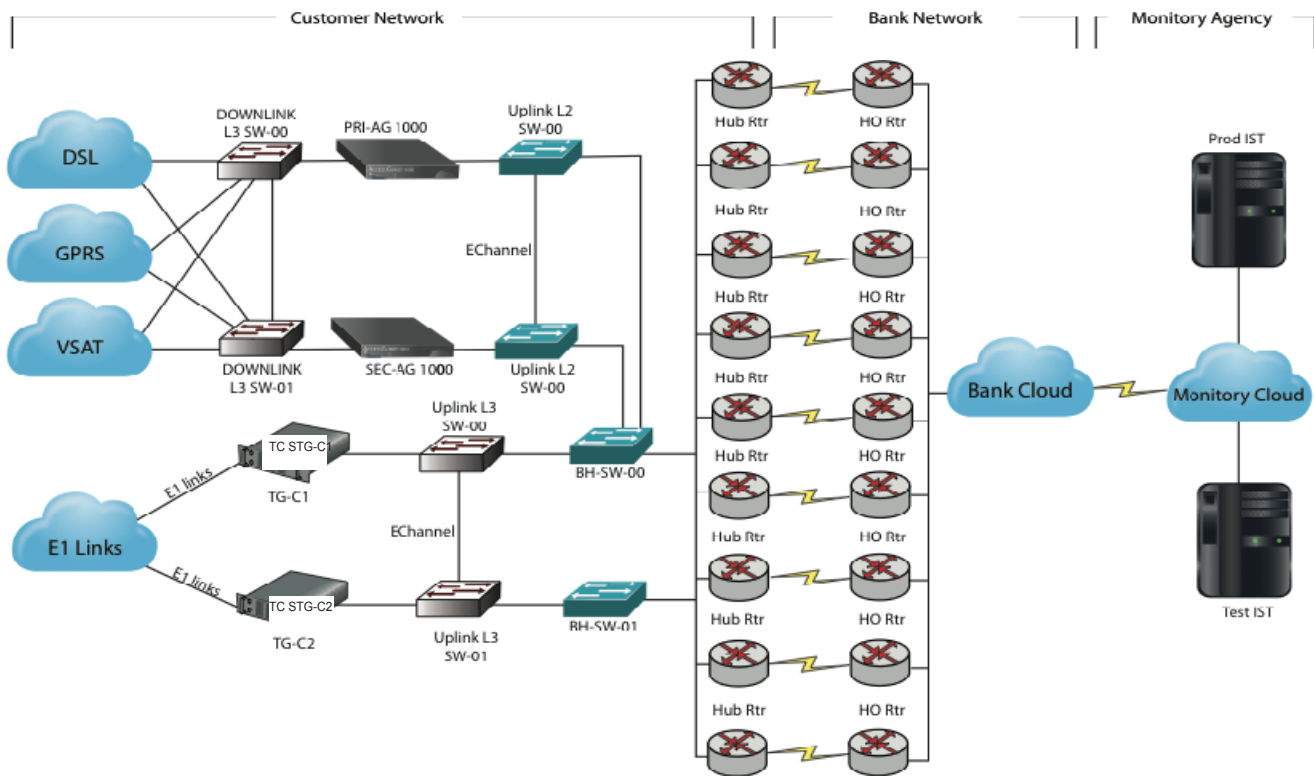
Network Design

NewNet Communication Technologies provided two systems, namely TC STG and AG1000, to handle dialup and IP traffic respectively. NewNet Communication Technologies has designed the upgraded network based on the following plan:

• 1 set of TC STG system with 6 E1 modem spans the current dialup traffic. If required, the capacity can be increased by just adding additional E1 span licenses. Customer will use the additional TC STG system for fail over purpose.

• 2 sets of AG1000 units will be implemented in the VRRP mode and will act as one virtual system and will be able to manage all the current non-SSL/TLS IP traffic.

• Another 2 sets of AG1000 units will be implemented in another VRRP group and will be ready for accepting the SSL/TLS IP traffic. Ultimately all the incoming IP traffic will be based on SSL/TLS and will be handled by these systems.

• Implement the CEM EMS in the network.

• Implement the AV 2.0 in the network.

NewNet Communication Technologies proposed diagrams for detailed network and back haul network.

Fig-1: NewNet Proposed Network Design Detail

Fig-2: NewNet Proposed Backhaul Network Design
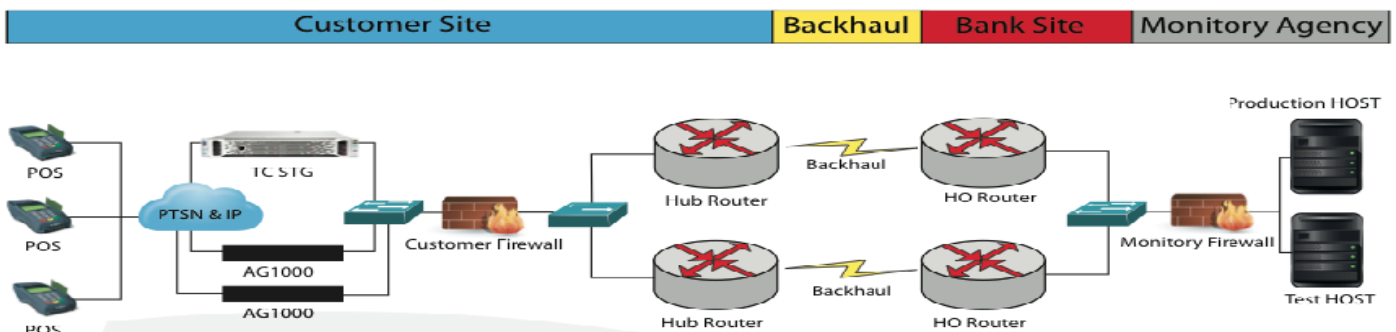
Actual Implementation

TC STG and AG1000 systems have been deployed at several points of presence to replace the customer's existing network. This high-speed transaction network has the capability to handle several million transactions and enables the customer to deliver innovative payment solutions.

NewNet Communication Technologies has installed the TC STG transaction gateway and the AG1000 systems in the additional rack provided by the customer. It was placed next to the rack with the existing systems. The TC STGboxes were configured first and the egress path was connected to the same LAN switch that was having the egress connections from the existing gear. Then all the production NIIs and related information in the transaction gateway were configured.

Meanwhile, the AG1000 systems were configured in the VRRP mode and for transaction processing so that both sets of AG1000 are ready for taking over the incoming IP traffic.

NewNet Communication Technologies has also implemented the NewNet Common Element Manager in the Windows 2006 server provided by the customer and the AV 2.0 in the customer provided Oracle Solaris 10 server with the Oracle 11 Enterprise Database.

The NewNet Communication Technologies solutions team exceeded customer expectations in all phases of the network replacement project. From customer engagement, installation/configuration, to custom development needs, NewNet achieved considerably higher customer care and service ratings. The customer was very pleased with the efficient deployment and world class support from the NewNet Communication Technologies team.

NewNet System Features Offering Maximum ROI for Customers

1. HW Acceleration for SSL/TLS IP transactions with Cryptographic processor which is a basic requirement in high volume SSL processing.
2. Support for HTTP and HTTPS transaction from mobile/internet based POS/client devices which is a key requirement for supporting current and the emerging payment devices.
3. Ability to support 10Gbps Ethernet port and 8/12/24 Ethernet ports for uplink/downlink of IP/SSL IP transactions as this will provide extended capability to support multiple options for handling traffic in multiple directions including public/private networks without any limitations.
4. PCI compliant system with Operating System and Application hardened for PCI DSS which this is a major security requirement with PCI.
5. Performance capability to handle 1000s of SSL/TLS IP transactions with high speed completion
6. Stress capability with continuous 16 E1/system traffic handling with error free handling of transactions.
7. Increased E1/T1 density per cards, combined with less number of cards and small systems size all of which contribute to a huge value in the long run in terms of maintenance, power and space requirement.
8. Redundant processors, E1/T1 cards and Ethernet ports; load sharing systems with active standby mode of operations etc which ensures high availability of the payment transaction systems in all conditions including the peak traffic scenarios.
9. Load sharing of transactions among the systems along with load sharing across the Host Servers with multiple mechanisms to distribute the traffic based on priority, most idle or round robin mechanisms, which improves the overall payment network performance.
10. End to end security with options to support FIPS capable HSM solutions with ability to support advanced encryption including AES for strongest levels of data security.

Comparison Between The NewNet AccessGuard 1000 System With Competitors

	NewNet	Verifone/Hypercom	Ingenico	F5
Product	AccessGuard 1000	IntelliNAC/MegaNAC8000/180	NCC	Big IP 2000
System Capacity	6000 concurrent sessions	1024 sessions	1200 sessions	2000 sessions
System HW	Single Unit	Multiple Cards per chassis for ingress and egress with 512 sessions per card	Multiple Cards per chassis for ingress and egress with 250 sessions per card	Single Unit
Processor	Dual processor with 4 cores, each @ 2.4GHz and additional crypto processor for SSL Acceleration	Single processor quad core 2.0 GHz/Single-core single processor @ <400MHz with no additional crypto processor for SSL acceleration	Single-core single processor @ <266MHz with no SSL acceleration	Dual Core processor with 2 core
Cryptographic Processor	Security processing accelerated and offloaded to Cryptographic processor	NO!!	NO!!	✓
High speed SSL	HW cryptographic processor capable of 17000 RSA Ops/Sec faciliating high speed secure transactions	NO!!	NO!!	✓
Minimum IP Addresses Required	Single system IP address required	Multiple IP addresses required for each card	Multiple IP addresses required for each card	Single system IP address
Network Routing	Support for RIP, OSPF, BGP	NO!!	NO!!	Support for RIP, OSPF, BGP
Session Capacity Expansion	Expansion using SW licenses on same HW with no additional HW in units of 500/1000 sessions	Incremental additions for 512 sessions requires additional 2 cards each; extra HW/chassis required for every 1024 sessions	Incremental additions for 250 sessions requires additional 2 cards each; extra chassis required for every 1500sessions	No Session capacity licenses and expansions
Protocol Emulation Support	✓	NO!!	NO!!	NO!!
Transaction Volume per Hour (avg 4/6 sec transaction)	5,400,000	614,400	720,000	Only packet routing, no end to end transaction session completion rating
Layer 7 Routing for Banking applications	VISA I/II, ISO8583, TPDU	ISO8583, TPDU	ISO8583, TPDU	NO!!
Secure Remote Access	Secure Shell (SSH)	NO!!	✓	✓
Gigabit Ethernet Traffic Ports (SFP) Copper & Optical	4-8 x 1/10 GE ports	4x 1 GE Ports(INAC)	NO!!	✓
Multiple mode Host side Loadbalancing	Roundrobin, host load based, host response based	NO!!	NO!!	NO!!
Software licensable	Licensable SW features for HTTP transactions, IPSec, SSL	NO!!	NO!!	NO!!
Dedicated Management ports	✓	✓	✓	✓
Redundancy/Failover	VRRP Based active/standby or active/active model	✓	✓	✓
HW Assisted Security	SSL 3.0/ TLS 1.0	NO!!	NO!!	✓
Load Balancing	Load balancing based on Round robin, Preference value, Outstanding traffic load, Lowest response delays etc	NO!!	NO!!	✓
Virtualization & Logical Seggregation	Virtualize and seggregate resources and traffic	NO!!	NO!!	No logical seggregation
DUKPT Encryption	P2PE support with FIPS certified key storage	NO!!	NO!!	NO!!
Secure Internet & Future Mobile Transactions Readiness	HTTPS for internet transactions, GGSN Interface for GPRS transactions authentication	NO!!	NO!!	NO!!
HTTPS Decapsulation & Transaction Protocol routing of payload	Secure web transaction with decapsulation/encapsulation of protocol based data for CNP and mobile app/browser based transactions	NO!!	NO!!	NO!!
Socket Persistence	✓	✓	✓	✓
Point to Point Encryption (P2PE) support	✓	✓	NO!!	NO!!
Transaction Data Records for volume/traffic reports	✓	NO!!	NO!!	NO!!
Always On IP Sessions with POS Terminals for connection tracking	✓	NO!!	NO!!	NO!!
PCI Compliant Hardened OS and application including hardware security	✓	NO!!	NO!!	NO!!
SW customization for client POS and Host Server interfacing with custom headers and fields	✓	NO!!	NO!!	NO!!

Comparison Between The NewNet Total Control STGd System With Competitors

	NewNet	Verfione/Hypercom	Ingenico
Product	Total Control STGd	IntelliNAC/MegaNAC 8000/180	NCC
Chassis Specifications	2U Rack Servers, redundant units	6/16/8 slots, hot-swappable cards	13 slots, hot-swappable cards
Port Density	8 E1s per Modem card per 1U Space	4E1/2E1/1E1 per Card	Single E1 per Card
Concurrent Transaction Ports Per Chassis/4U Space	960	480/360/180	180
Transaction Volume/Hour (avg 10 sec)	345,600	172,800	64,800
Capacity Expansion	Expandable on need basis by adding extra 2U Rack serverss for 8 E1-16E1 modem cards	Maximum of 6/12/16 E1s only with 1 modem/cards for M180/8000/INAC	Maximum of 6 E1s only with 6 modem cards
Transaction Protocols (End-User)	Visa I/II, ISO 8583 (sync), TPDU routing, SDLC, HDLC, Asynchronous, Transparent, full or partial protocol emulation; custom variants for Terminal authentication, intelligent routing	Visa I/II, Apacs, SDLC, HDLC, Asynchronous, ISO8583, TPDU, Transparent	Visa I/II, SDLC, HDLC, PPP
Modem Support	V.90,V.34,V.32, V.32bis,V.22,V.21,bell 103,Bell 212, ISDN V110,120, Async, SDLC	V.21, V.22, V.29, V.34, V.90, V.92 Autodial 300/1200/2400 Async & SDLC, V.110	V.21, V.22, V.29, V.34, Async & SDLC
Ingress Protocol	Dial-Up, PPP, Async/Sync, X.25 PAD	TCP/IP, SNA/SDLC, X.25, Dial-Up, Async/Sync	TCP/IP, Dial-Up, Async/Sync
Egress Ports (WAN)	IP, PPP, X.25	IP, Frame Relay, X.25	IP
Technology Ownership	Patented technology along with HW partner for modem card	Use of 3rd Party for Modem	Use of 3rd Party for Modem
Internal Bus for high speed communication	High speed 1GB packet bus, serial channel bus (TDM) and PCI bus	Parallel packet, serial and PCM highway	Parallel packet, serial and PCM highway
Radius Call Data Records for Reporting & Analytics	CDRs generated per transaction	None	None
Time Synchronization	NTP	None	None
System HW	Single Unit	Multiple Cards per chassis for ingress and egress with 512 sessions per card	Multiple Cards per chassis for ingress and egress with 250 sessions per card
Processor	Dual processor with 4 cores, each @ 2.4GHz	Single processor quad core 2.0 GHz/Single-core single processor @ <400MHz	Single-core single processor @ <266MHz
Minimum IP Addresses Required	Single system IP address required	Multiple IP addresses required for each card	Multiple IP addresses required for each card
Network Routing	Support for RIP, OSPF, BGP	NO!!	NO!!
Session Capacity Expansion	Expansion using SW licenses on same HW with no additional HW in units of E1/T1; additional Rack units for further expansion	Incremental additions for 512 sessions requires additional 2 cards each; extra chassis required for every 1024 sessions	Incremental additions for 250 sessions requires additional 2 cards each; extra chassis required for every 1500sessions
Secure Remote Access	Secure Shell (SSH)	✓	✓
Gigabit Ethernet Traffic Ports (SFP) Copper & Optical	4 GE ports	4 GE ports(INAC)	NO!!
Multiple mode Loadbalancing	Roundrobin, host load based, host response based	NO!!	NO!!
Software licensable	Licensable SW features for HTTP transactions, IPSec, SSL	NO!!	NO!!
Redundancy/Failover	VRRP Based active/standby or active/active model	✓	✓
Secure Internet & Future Mobile Transactions Readiness	Add-on cryptographic processor for support of additional HW security with 3DES, AES 256	Optional HW with limited capability for encryption	NO!!
Socket Persistence	✓	✓	✓

Conclusion

NewNet is an industry first with unique solution of Secure Transaction Cloud (STC) application for the customers planning to migrate the payment infrastructure to cloud, which offers NFV based virtualized secure payment applications for transaction transport, routing, and switching with specific Virtual Network Functions (VNF) for security (TLS, IPSec, SSH, HTTPS), transaction protocols (ISO8583, TPDU, VISA, XML), Tokenization, Host Interfaces, Load Balancing, etc.

About NewNet Communication Technologies, LLC

Headquartered in Chicago, IL, NewNet Secure Transactions is a recognized global provider of secure transaction routing and transport.

NewNet delivers reliable and scalable transaction transport from consumer initiated devices and tokenization of sensitive data. Reliable and scalable transaction transport and routing systems ensure the security of transaction data flowing through the public dial, broadband and mobile networks around the world. NewNet focuses solution delivery to FinTech, Cloud Services and Telco enterprises.

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