AT&T CTS

Test Coordination and Architecture

IPAG OVERVIEW

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What is IPAG?

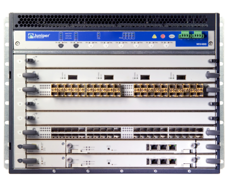
Next Generation IP Based Network

IPAG stands for Internet Protocol Aggregation and is the next generation at&t network architecture. IPAG is replacing legacy Cisco 7609 networks across the 22-state area. IPAG will provide a substantially more economical, scalable and reliable multi-service Ethernet platform. The new infrastructure will enable and support multiple business and consumer services including support for Cell Site Backhaul services. IPAG will be the network of choice for:

- Native Ethernet Metro Area Networks (MANs) including Ethernet over Copper
- Native Ethernet access to Managed Internet Service (MIS) and at&t Virtual Private Network (AVPN)
- Native Ethernet access to Long-haul Ethernet (OPT-E-WAN)
- DS3 Interface via Ethernet PIVOT
- Additional Applications of IPAG for future development include: Ethernet over TDM and IPDSLAM Ethernet Backhaul

IPAG will be substantially more cost effective than present operation on a per-GigE basis. IPAG network elements and network design are more scalable than the Cisco 7609 architecture, the Juniper MX960 has 3x the capacity of the Cisco 7609. IPAG Network Architecture is highly resilient with real time SLAs, making it suitable for Cell Site Back Haul. Common control plane (BGP) between Metro and IXC networks supports integrated Operations & IT support.

Juniper Routers



Juniper MX480

Juniper MX960

Adtran TA5000 and NTE (Copper)

TA 5000

NetVanta 838

Ciena NTE (Fiber)

Ciena CN 3960

Ciena LE 311V

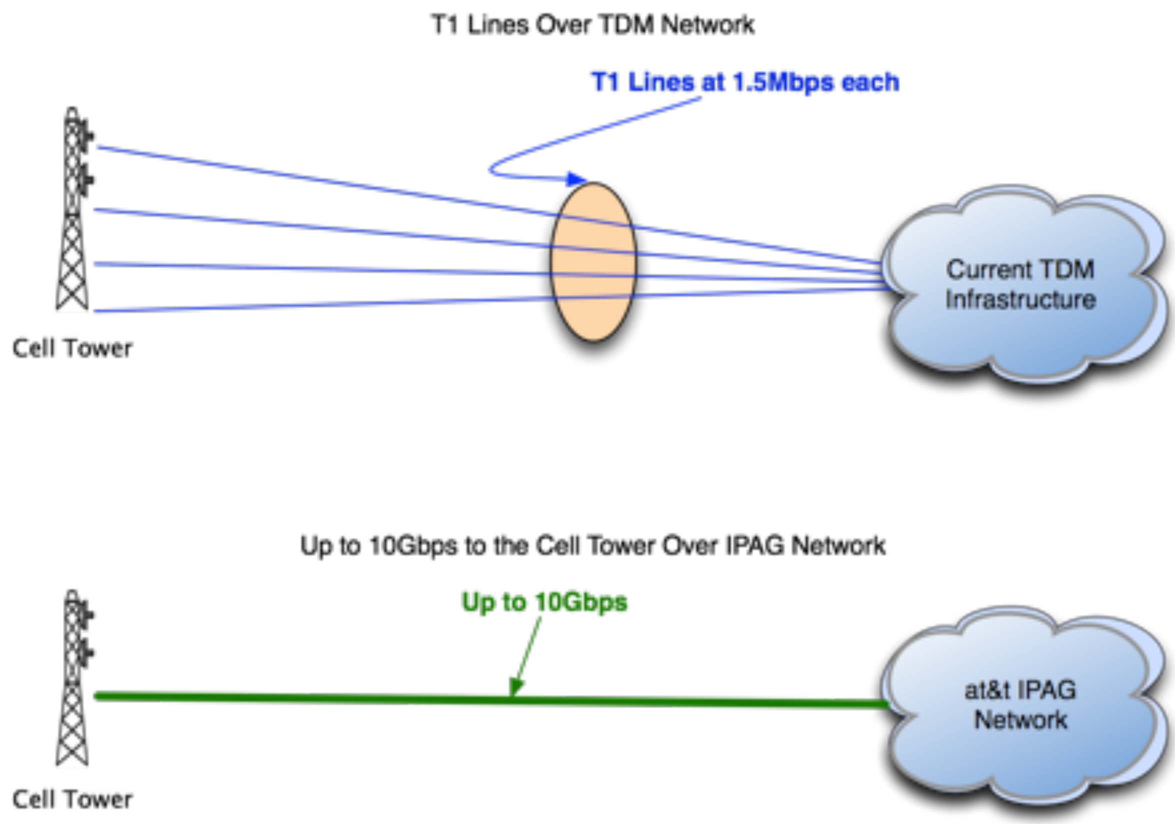
Ciena CN 3911

IPAG Network

IPAG is a network infrastructure supporting different products offered by at&t. Among those services are OEM-AC, OEW, MIS, PNT, AVPN as well as many others in the future. In the following section we'll take a deeper dive into these different services riding over the IPAG network.

One of the major benefits will be to the Wireless Industry. Today, a typical Cell Tower will have multiple T1 lines feeding it at 1.5Mbps each. The infrastructure supporting these T1 lines is expensive and bandwidth growth potential is very limited. The IPAG network can bring the Ethernet network much closer to the Cell Towers lowering cost of installation and maintenance as well as providing much needed bandwidth to the Cell Towers. Figure 1 shows an example of the amount of bandwidth and number of physical lines required by the existing infrastructure as well as the benefit of utilizing the IPAG network infrastructure. With today's demands on Wireless bandwidth IPAG is the perfect solution to backhaul these Cell Towers.

Figure 1 - Cell Tower TDM Verses IPAG

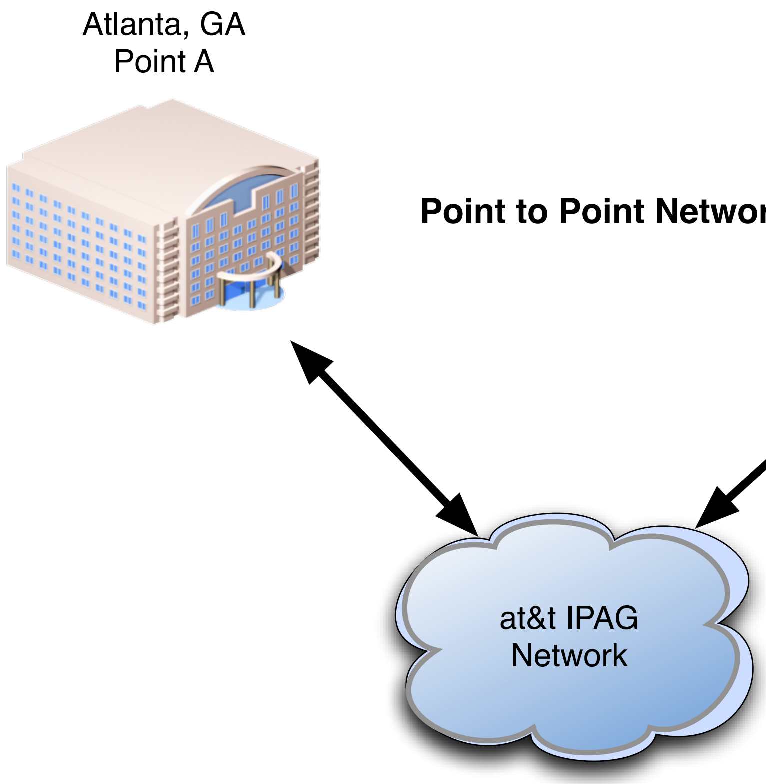


Current Services Offered on IPAG

OEM-AC

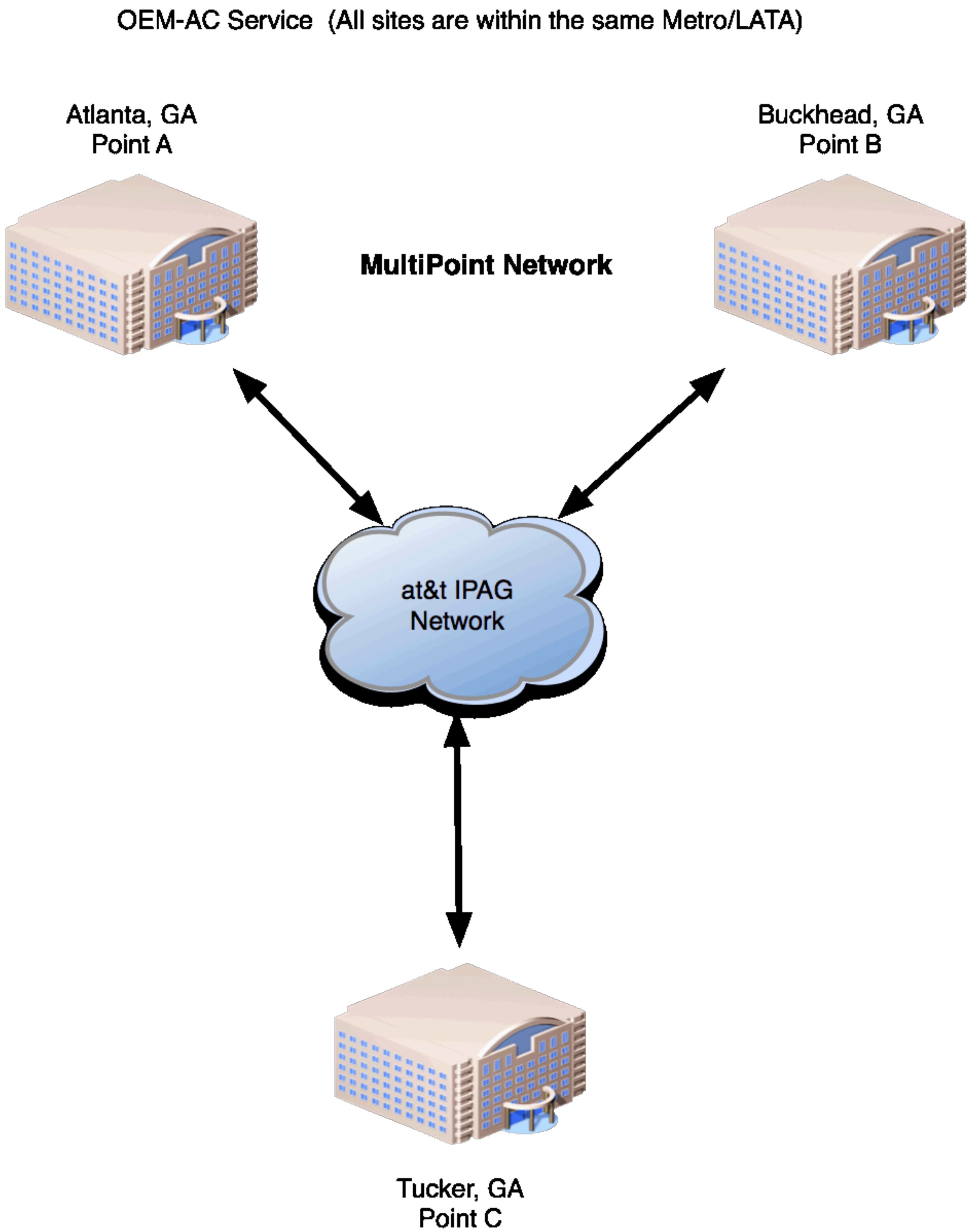
Optical Ethernet Metro Area Network Advanced Connection (OEM-AC) is a product mainly serving business customers. An example of an OEM-AC Point to Point Service is shown in Figure 2. In the example depicted in Figure 2 we have a customer with an office in Midtown Atlanta, GA and an office in Buckhead, GA. The customer would like to connect these two offices enabling each office to share documentation, presentations and server resources. The at&t OEM-AC service is a perfect fit for this customer. OEM-AC will provide the availability of a high speed network connection from Atlanta, GA to Buckhead, GA. The network topology deployed between the two sites is called a Point-to-Point network due to the network only needing connection between Point A and Point B.

Figure 2 - Point to Point Network (OEM-AC Metro Area / Same LATA for both sites)



Another example OEM-AC Service is shown in Figure 3. In the example depicted in Figure 3 we have a case where the customer has three sites that need to communicate with one another. The solution for this scenario would be to deploy OEM-AC Multipoint service. In a Multipoint Network each site is be able to communicate with all the other sites on the network.

Figure 3 - Multipoint Network (OEM-AC Metro Area / Same LATA for all sites)

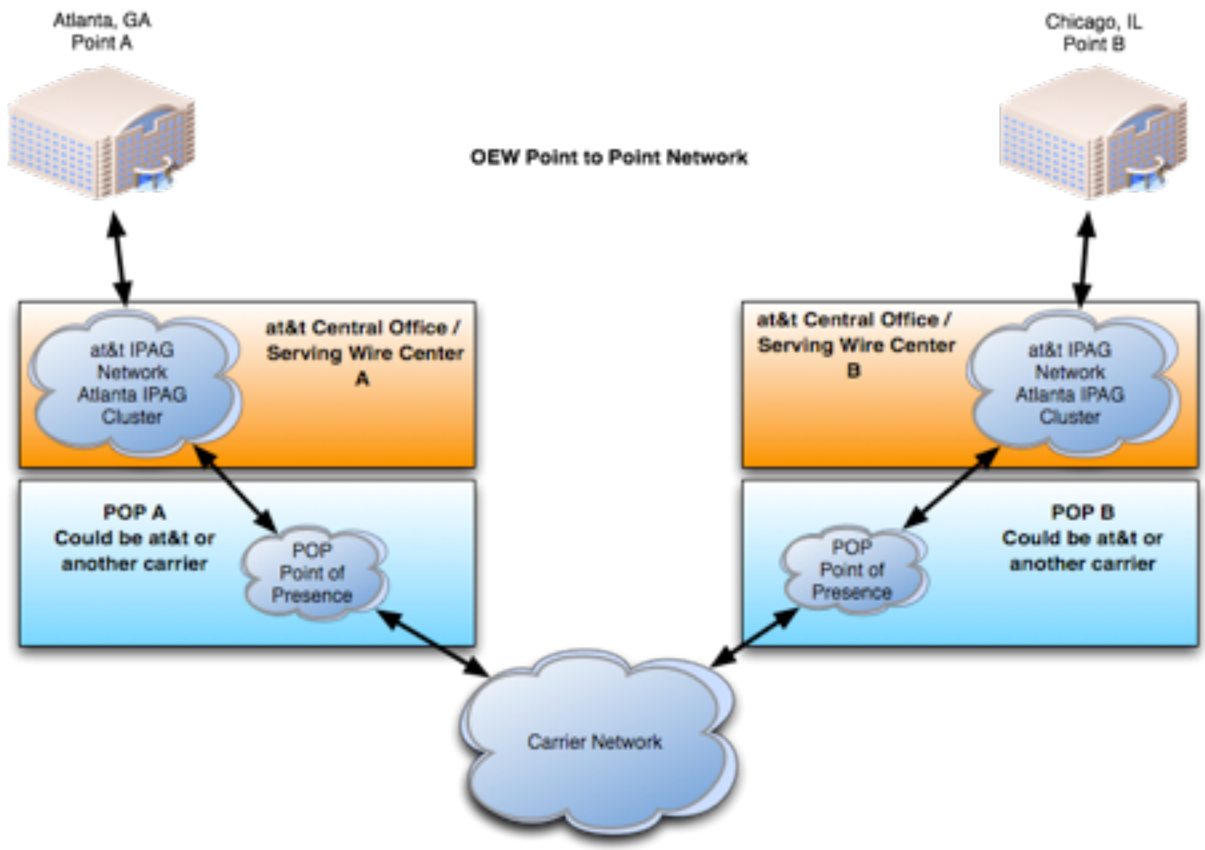


Seamless Control Plane (SCP)

SCP provides a means for OEW (Optical Ethernet Wide Area Network), AVPN (at&t Virtual Private Network), MIS (Managed Internet Service) and PNT (Private Network Transport) to be provisioned over the IPAG Network. The Seamless Control Plane comes from the way in which the customer's network traffic is handled once it hits the IPAG Network. Customer traffic entering the IPAG network is essentially routed directly to the POP/VPLS-PE hence the "seamless." Using this method saves costs to at&t by not having all the connections terminating at the POP/VPLS-PE but aggregating them on the "front-end" of the IPAG network and only having a small amount of connections to the POP/VPLS-PE.

An example of an SCP service would be when a customer has locations in Atlanta, GA and Chicago, IL. The customer would like to connect these two sites to be able to share document and server resources. The at&t Optical Ethernet Wide Area Network solution would be a great fit for this scenario. Figure 4 depicts the OEW scenario utilizing the IPAG network to bring the customer's traffic from each site into the POP/VPLS-PE. Once the IPAG routers in Atlanta handoff to the POP/VPLS-PE the traffic is routed either via at&t IXC (Inter-Exchange Carrier) or from a non-at&t IXC to the IPAG network in Chicago.

Figure 4 - OEW Point to Point Network (Not in the Same Metro / LATA)



Putting it All Together

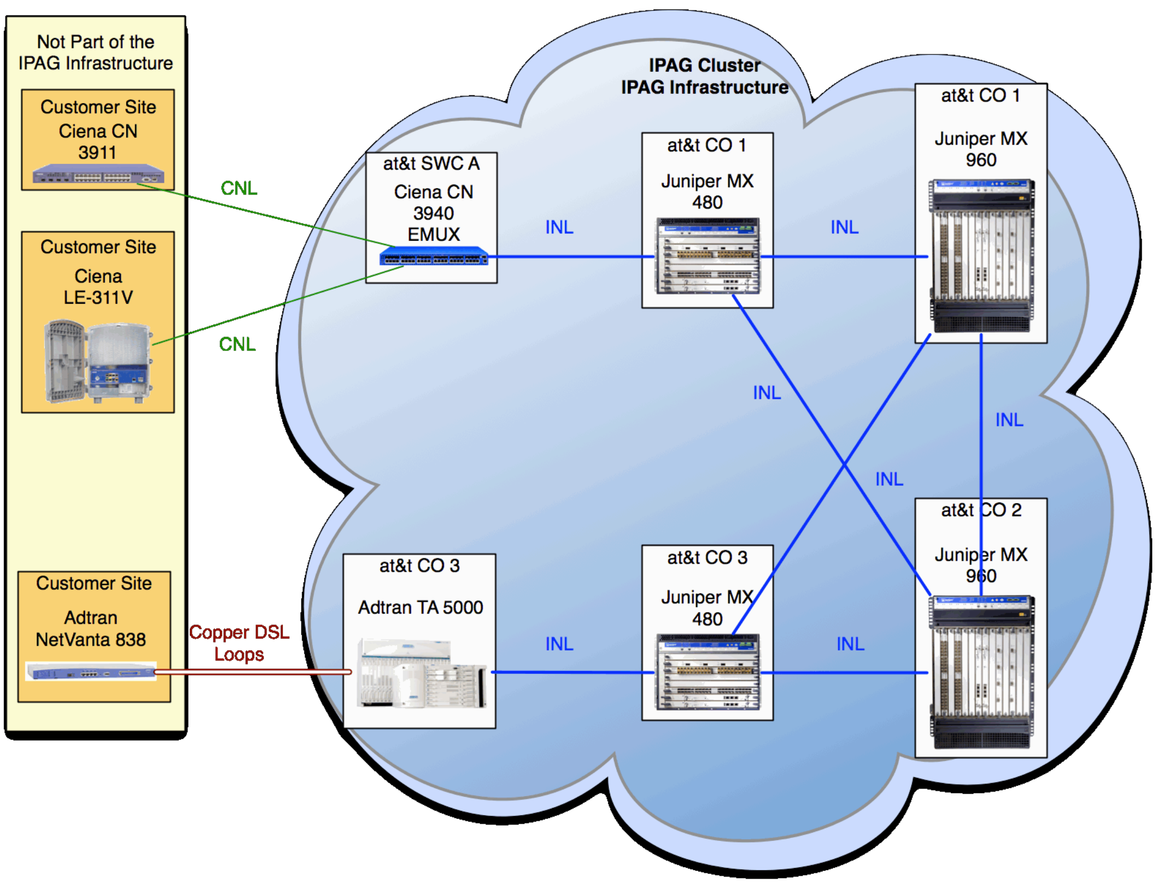
IPAG Infrastructure Inventory Build

Before any services can be sold the IPAG Network MUST be in place. The IPAG Network Infrastructure consists of the IPAG1, IPAG2, TA5000 and EMUX devices plus the links between them. To begin the process of the inventory build an IPAG **Cluster** is first built. The IPAG Cluster will then contain the IPAG Network and will contain devices ONLY within the same Metro Area or LATA (Local Access and Transport Area).

INL (Inter-Nodal Link)

The links between the infrastructure devices are called **INLs** (Inter Nodal Links). The INLs are Fiber connections and can be either in the same Serving Wire Center (SWC) or Central Office (CO) or in different SWCs/COs as long as they're in the same LATA.

Figure 5 - IPAG Infrastructure Cluster



Connecting the Customer into the IPAG Network

In order to offer a customer server via the at&t IPAG network we have to find a way to physically connect the customer into the network. Connectivity into the network is accomplished by bringing the network out to the customer site. Installed on the customer site is a device called Network Termination Equipment (NTE) or Network Channel Termination Equipment. Devices currently used by at&t to terminate the network at the customer site include: Fiber (Ciena CN LE 311V, CN 3911 and CN 3960) and Copper (Adtran NetVanta 838), see Picture on Page 1.

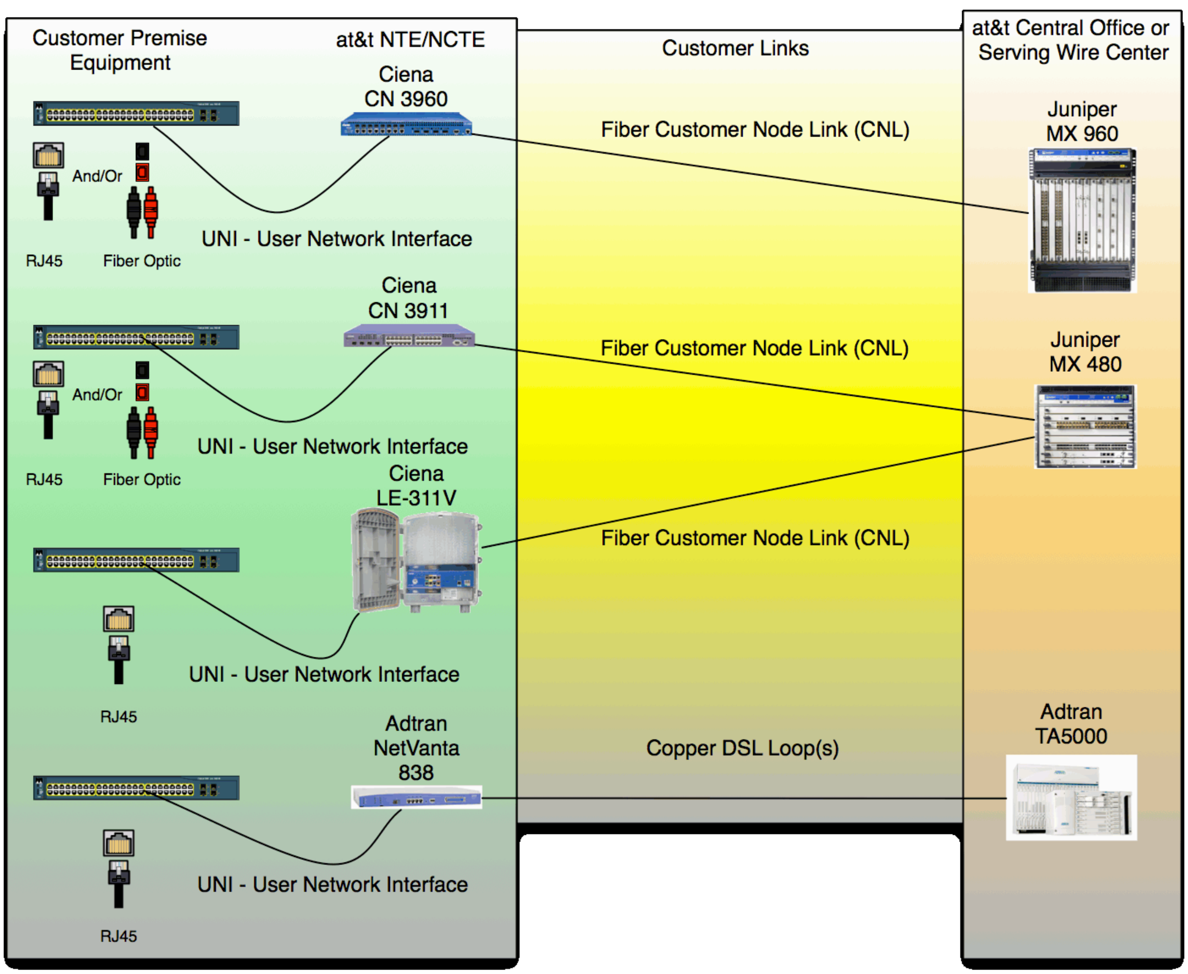
CNL (Customer Nodal Link - Fiber)

The links between the IPAG network (Can be MX480, MX960 or Ciena 3940) are called CNLs. The CNL will be a Fiber link between the NTE (Owned by at&t) and the IPAG network. For the Ciena CN 3960 the CNL is typically a 10Gbps link where as the Ciena CN 3911 and Ciena LE-311V CNLs are 1Gbps.

DSL Loops

The links between the TA5000s and the NetVanta 838s are Copper Loops called DSL Loops. The total available bandwidths of all the DSL Loops (Copper Pairs) provide the total bandwidth available to the NetVanta NCTE device. Therefore, the more DSL Loops available the higher the available bandwidth available to the customer.

Figure 6 - Customer Connections



Providing Services Over the IPAG Network

In order to provide service to a customer we must physically connect a customer into the at&t IPAG network (UNI Circuit) and setup an Ethernet Virtual Circuit (EVC) to package the customer's network. The physical connection from the customer's Customer Premise Equipment (CPE) to the at&t NTE/NCTE is called the UNI Circuit. The virtual network representing the customer's network is called an EVC (Ethernet Virtual Circuit).

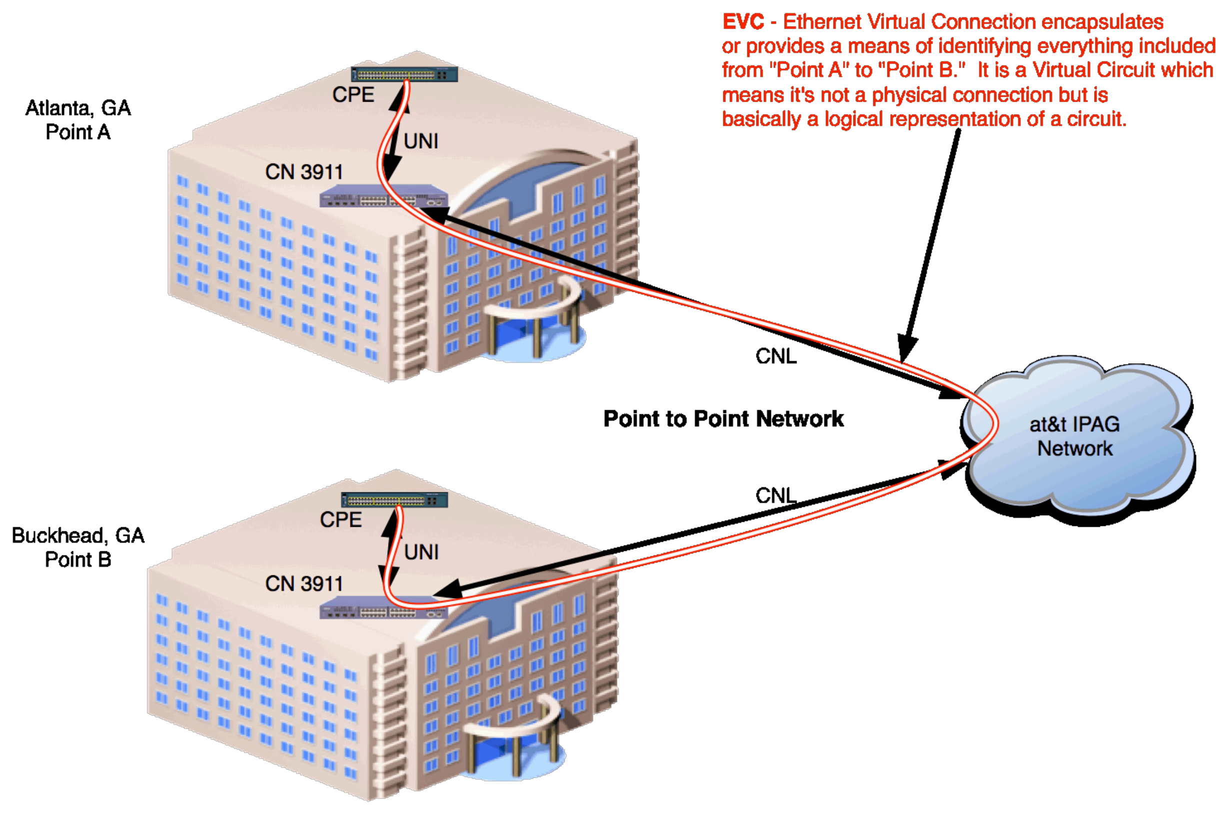
UNI - User Network Interface

In Figure 6 the UNI circuit is the circuit connecting the Customer Premise Equipment (CPE) to the at&t Network Termination Equipment (NTE). The Physical connection of the UNI is either via standard Cat 5 cable (Consisting of copper wires feeding RJ45 Connectors on each end) or Fiber Optic Cable. Each customer site requires a UNI to connect the customer into the network.

EVC - Ethernet Virtual Circuit

An EVC (Ethernet Virtual Circuit) is created to establish the customer network topology. The EVC encapsulates the UNIs created for the service as well as updating all the network elements (IPAG Routers, NTE, etc...) with the customer's EVC information. The EVC is uniquely identified by a VLAN ID supplied by the customer or else by at&t. Once the EVC is completed the customer is able to access the network to send/receive data between sites. From the customer's perspective it appears as though there's a dedicated network when in reality there's a "virtual" network created within the at&t IPAG network.

Figure 7 - Ethernet Virtual Circuit (EVC)

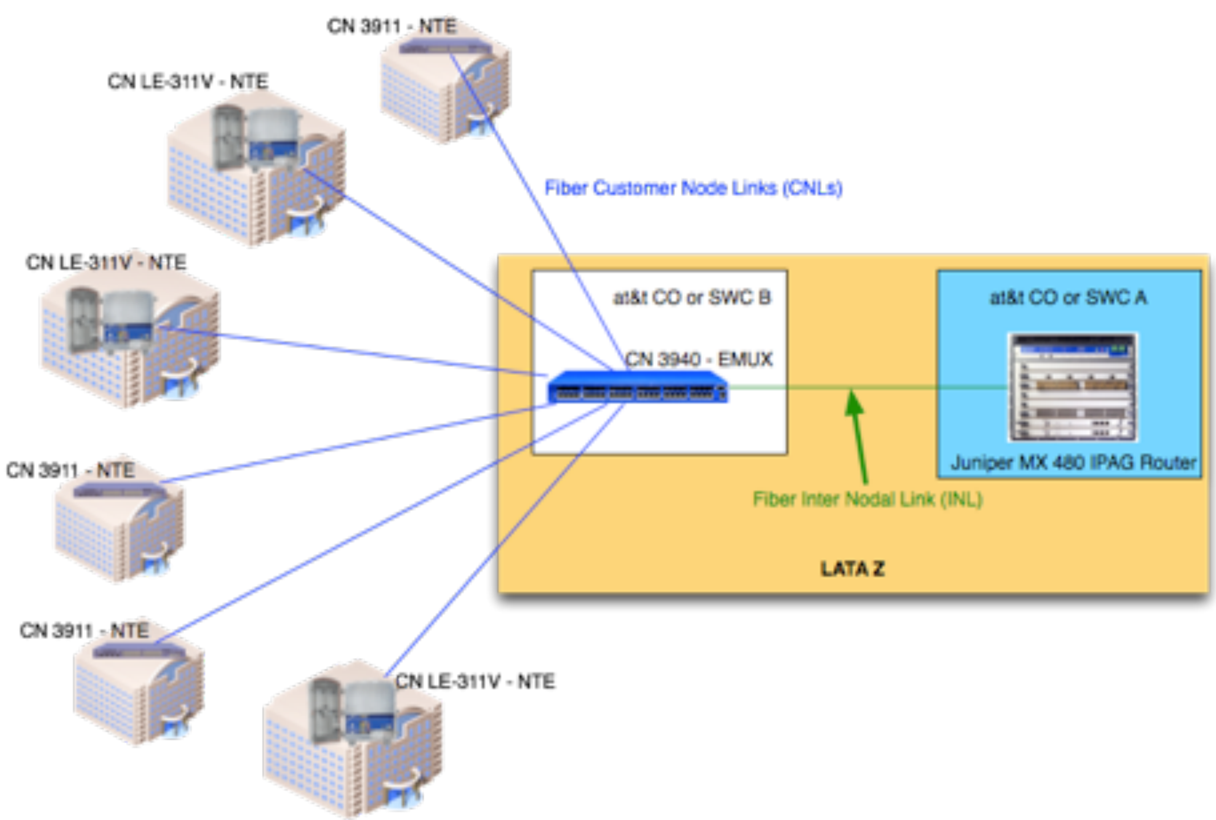


Additional IPAG Infrastructure Devices (Added Oct/Nov 2009)

Ethernet Multiplexer - EMUX

Ethernet Multiplexer (EMUX) is a Ciena CN 3940 device that takes multiple NTE connections and aggregates them via a Fiber connection back to the IPAG Router. The basic idea is to get the EMUX as close to the customers as possible limiting the amount of Fiber needed. Thus, saving Outside Plant costs from having to run multiple fiber cables and aggregating all the data from multiple NTEs over one fiber cable. IPAG Router Port capacity is also saved because multiple NTEs are being connected to the EMUX ports instead of directly to the IPAG router. The IPAG Solution only supports orders with a CIR (Committed Information Rate) of less than 400Mbps. All orders with a CIR of greater than 400Mbps are connected directly to the IPAG router. Figure 6 shows a typical scenario where an EMUX would be deployed.

Figure 8 - EMUX CN 3940



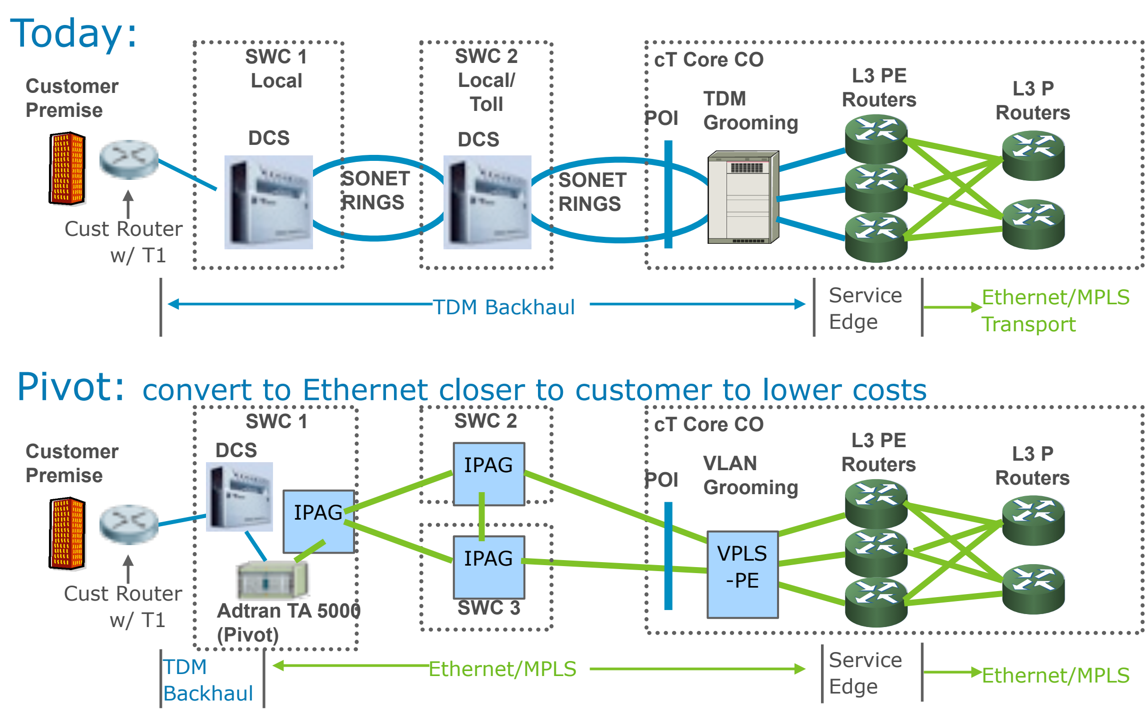
PIVOT

PIVOT provides a method for interfacing DS3/1 signals (TDM Service) into the IPAG network (NEW Network) via Channelized DS3 cards installed in the Adtran TA5000 device. PIVOT converts the current L3 service access transport TDM format to Ethernet transport in order to utilize the IPAG network. IPAG replaces the old TDM infrastructure which is more costly and is being phased out by vendors.

PIVOT is not a customer offering and is therefore not ordered like the OEM-AC and SCP services. Engineering makes the determination on when to convert or place a TDM service on PIVOT. The PIVOT "Order" begins in the IDIS application, flows to TIRKS for the circuit design, to WFA for circuit install and turn up, to LPP for IPAG Router configuration and back to IDIS for PIVOT Card activation.

The benefit of using PIVOT cards is at&t saves costs on hardware and it brings the Ethernet transport closer to the customer site. An additional benefit is network capacity and reliability due to the increased capacity of the IPAG network. Figure 9 depicts the "today" view and the "PIVOT" view. For example, if a cell tower is currently utilizing DS3s for its network uplinks, PIVOT could could be utilized to replace the two SONET rings below and bring the IPAG IP based network closer to the cell tower. In the future, if more capacity is needed the cell tower could provision more DS3s or perhaps utilize either a NetVanta 838 (Copper) or Ciena NTE (Fiber) to provide higher bandwidth to the tower as well as eliminate the need for multiple DS3 lines

Figure 9 - PIVOT Overview (Taken from Ethernet Pivot Infrastructure/ 176181A Solution Approach)



February 2010 Major Features Coming to IPAG

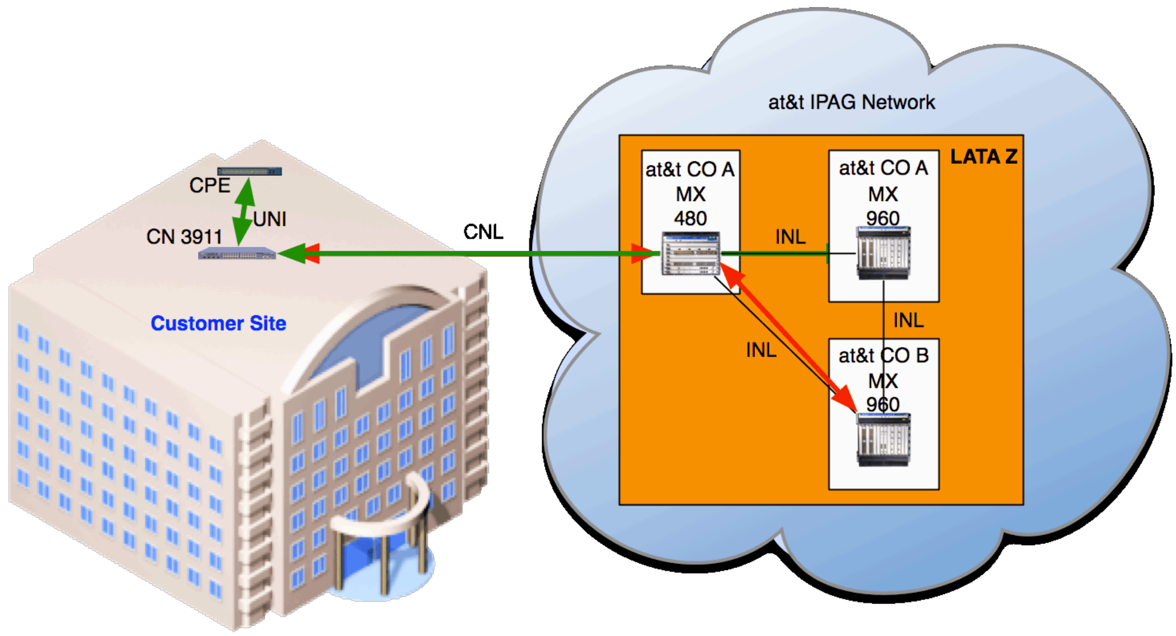
Dual VLAN Diversity (DVD)

DVD provides redundancy for the customer. In the case of DVD the customer will have two NTEs onsite connected to two different IPAG Routers. The purpose of DVD is to provide fault protection in case the primary network path goes down. The Primary NTE and route through the network is called the Green Tunnel. The Secondary NTE and route through the network is called the Red Tunnel.

Single Homed - Single NTE with Single Access

In Single Homed mode the customer gets one NTE with CNLs to two different IPAG routers. In this mode the customer will have redundancy with the IPAG routers and tunnels.

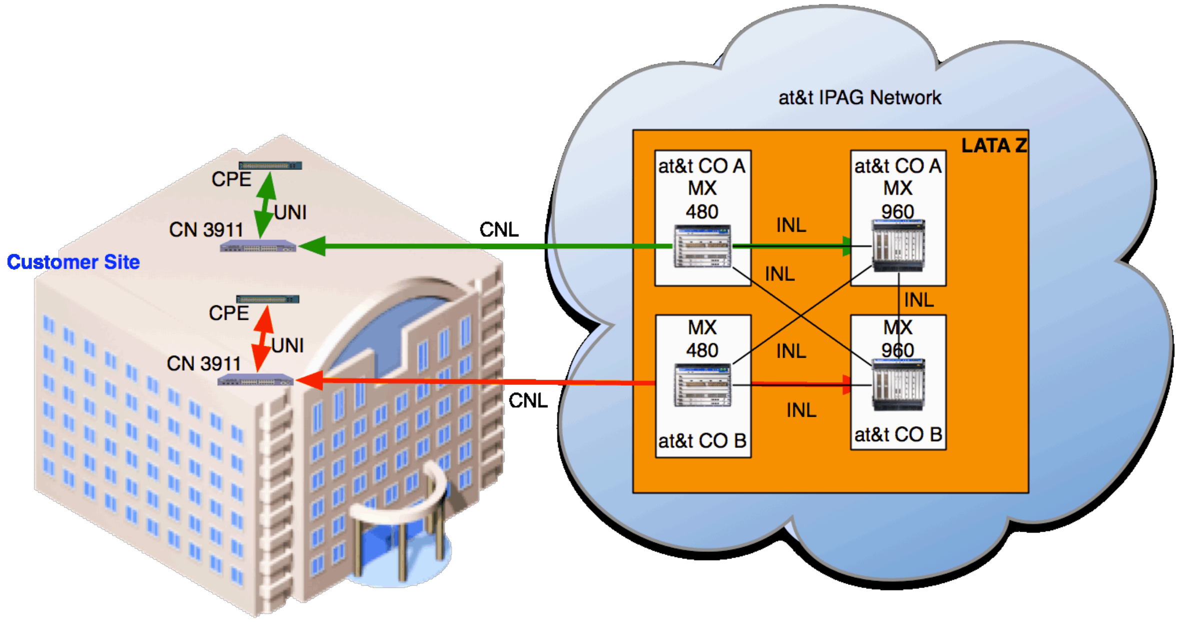
Figure 10 - Single Homed - Single NTE with dual access provisioned on diverse IPAGs



Dual Homed - Dual NTE with dual access provisioned on diverse IPAGs

In Dual Homed mode the customer gets two NTEs with CNLs to two different IPAG routers. In this mode the customer will have redundancy with both the IPAG routers as well as NTE and tunnels. Dual Homed provides the greatest level of diversity and reliability for the customer.

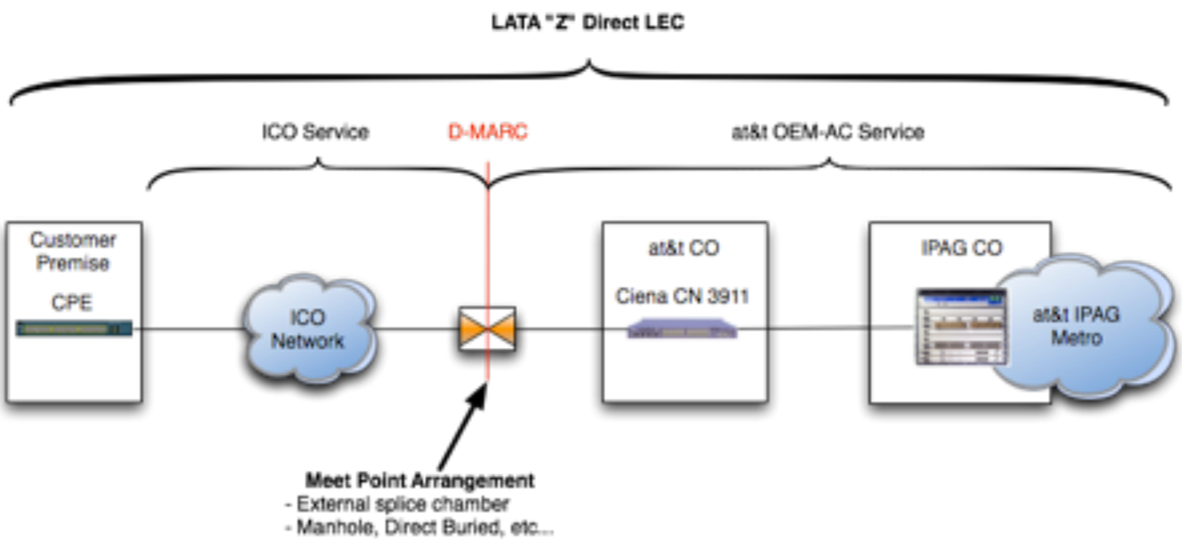
Figure 11 - Dual Homed - Dual NTE with dual access provisioned on diverse IPAGs



Meet Point Arrangement (MPA)

MPA is deployed when at&t utilizes an Independent Carrier Office (ICO: Such as Windstream) network to complete the connectivity to the customer site. The interface for MPA could be in a an external splice chamber, manhole, direct buried, etc... At times it is necessary to utilize another carrier's facilities in order to provide the customer with service. In this arrangement the at&t NTE will connect to the ICO D-MARC (Could be External Splice Chamber, Manhole, Direct Burial, etc...).

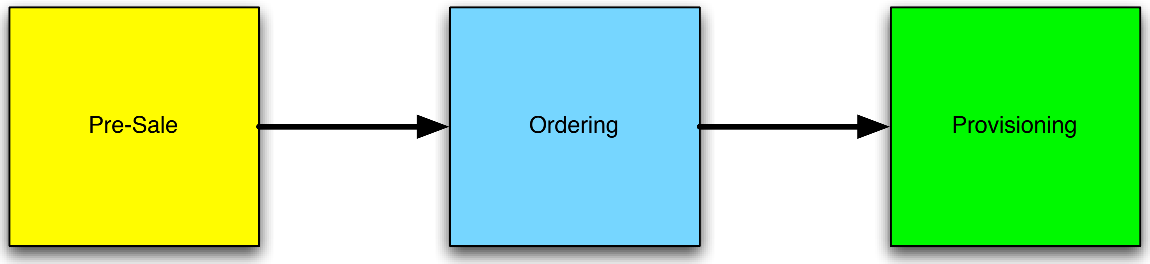
Figure 12 - Meet Point Arrangement (MPA)



IPAG Service Delivery

As the name implies IPAG Service Delivery is a set of applications containing the functionality necessary to deliver service to the customer. IPAG Service Delivery consists of Pre-Sales, Ordering and Provisioning of services on the IPAG Network. Service Delivery includes all the steps necessary to actually sell and turn up the customer's service: service qualification, ordering, provisioning and activation.

Figure 13 - IPAG Service Delivery (NOTE - The bullets under each are not necessarily in flow order)



- Gather Customer Information (I.e. Customer Number, Credit, etc...)
- Customer Site Address Validation
- Fiber / Copper Loop Qualification
- IPAG Router Qualification
- Sales Order Request (SOR) Creation

- Create Access Service Requests (ASRs) and Subsequent Service Orders
- Setup line records for billing
- Create UNI and EVC orders
- Create Provisioning Orders

- Create/Design UNI Circuits
- Create EVC Circuit
- Dispatch Technicians to Install and Turn Up Circuits
- Configure IPAG Routers to recognize the customer's network
- Configure EMUX and TA5000 devices
- NTE Activation

Pre-Sale

Pre-Sales consists of gathering all information necessary to create an order for a service being provisioned over the IPAG network. An IPAG Service Delivery Order begins in the eCRM application where eCRM leads are created for the customer. Next, eCRM begins calling different applications in order to gather enough information to create a solution for the customer. Information such as Address Qualification, Service Availability (IPAG Router qualification) and Fiber/Copper Loop qualification. Additionally, eCRM communicates with applications such as PCGlobes and IGLOO to obtain pricing details for the customer's solution. Once all the Pre-Sale information is gathered a Sales Order Request (SOR) is created in eCRM. The SOR is then used by Order Entry to create the necessary Access Service Requests (ASRs), Service Orders and Provisioning Orders.

Highlights of information types gathered during Pre-Sale:

- Gather Customer Information (I.e. Customer Number, Credit, etc...)
- Customer Site Address Validation
- Fiber / Copper Loop Qualification
- IPAG Router Qualification
- Sales Order Request (SOR) Creation

Ordering

The Ordering process consists of taking the information gathered during Pre-Sale (SOR) and creating orders in all the appropriate systems (Such as EXACT and GIOM). Ordering systems engage all the different systems as well as personnel to build out everything necessary to Order, Bill and Provision customer orders.

Ordering begins in EXACT where an ASR is created. The ASR gathers all the information necessary to create Service Orders in the appropriate Service Order Processing System (SOPS: SORD-W, SORD-SW, ASON, SONAR and SOCS). The Service Order is then distributed via SOAC to create Line Records in WFA/NSDB as well as sending the circuit design for Copper (Copper ONLY) DSL Loops to TIRKS. The Information returned on the completed ASRs is used to create a spreadsheet to be imported into the GIOM application. GIOM then compiles all the information gathered during Pre-Sale as well as all the information from the ASR and sends an Order Ready Notification to IDIS via EFMS (Workflow Management Application). NOTE: This flow changes for February 2010 as the flow will be to have a new interface from EXACT directly to IDIS bypassing GIOM.

- Create Access Service Requests (ASRs) and Subsequent Service Orders
- Setup line records for billing
- Create UNI and EVC orders
- Create Provisioning Orders

Provisioning

The Provisioning process consists of performing all activities to design and install circuits, activate devices and configure all network elements according to the Provisioning Order/Request. The Provisioning Order begins in the IDIS application where IDIS parses the UNI and EVC orders sent from GIOM (The order information is actually stored and retrieved from the GCP (Global Computing Platform) application. Again, NOTE: the flow will change February 2010 such that the order will come from EXACT directly to IDIS.

UNI Fiber Provisioning Orders

IDIS takes the Fiber UNI order and sends a design request to TIRKS. TIRKS performs the design and sends a Work Order Request Document (WORD) to WFA to engage the technicians to perform the necessary steps to turn up the UNI circuit. Once the TIRKS design and WFA work are complete the two respective applications send completion notification back to IDIS via the MMI (Mass Media Interface) application. IDIS then sends the circuit and port request details to LPP (Logical Provisioning Platform) to configure the IPAG routers. Next step is to activate the NTE port.

UNI Copper Provisioning Orders

UNI Copper Orders are a bit different than the Fiber Orders in that the design for the link(s) between the SWC or CO to the NTE at the Customer Site is not completed through IDIS. Instead, the design for the Copper DSL Loops between the SWC/CO TA5000 and the NTE is completed during ASR creation. During the ASR creation an ASR is created in EXACT, EXACT hands off to Flextuf which in turn formats the Service Order into the regional SOPS. The SOPS send the Service Order(s) down SOAC which distributes the Service Order to NSDB/WFA as well as the design into TIRKS (For the FIber flow the Service Order design request does not get distributed to TIRKS). Upon TIRKS design and WFA completion these respective applications send completion notifications via MMI to IDIS. IDIS then pulls the DSL Loop design information from TIRKS and inventories the DSL Loops. IDIS will now have the information needed to complete the UNI order. When IDIS receives (From GIOM through Oct/Nov 2009 and from EXACT

Feb 2010) the Copper UNI order it matches up the UNI Circuit ID to the DSL Loop Circuit IDs. The base Circuit ID for the UNI order must match the base Circuit ID of the DSL Loops (For example, UNI Circuit ID **58/KQGN/700100//SB** would need to match the sequence of DSL Loops beginning with Circuit ID **58/KQGN/700100/001/SB**). The details from the DSL Loops are used to determine the available bandwidth for the Copper UNI. The Copper UNI then goes through the same flow as the Fiber UNI above.

EVC Provisioning Orders

EVC orders are logical orders and have no physical design needed. Therefore, unlike the Fiber and Copper UNI orders EVC orders do not go to TIRKS and WFA. Once IDIS parses the EVC order it gathers the information from the completed UNI orders and sends an Activation Request to LPP. LPP will then return information back to IDIS (SVLAN information) and download configuration information for the EVC order to the IPAG routers. The IPAG routers need to know about the customer EVC so the "virtual" network can be established in IPAG routers for the customer's virtual network. After the Activation Request is completed IDIS then sends the Activation information down to the NTE. The customer should now be able to connect equipment to the NTE via the UNI circuit and send data across the completed virtual network.

Highlights for the Provisioning Order:

- Create/Design UNI Circuits
- Dispatch Technicians to Install and Turn Up Circuits
- Create EVC Circuit
- Configure IPAG Routers to recognize the customer's network
- Configure EMUX and TA5000 devices
- NTE Activation

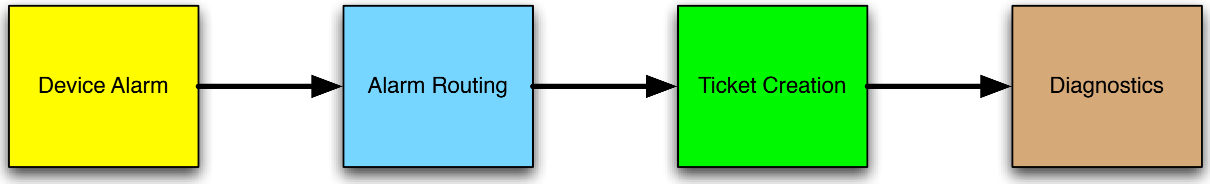
IPAG Service Assurance

IPAG Service Assurance consists of monitoring the IPAG network for faults as well as to properly maintain service levels.

Fault Monitoring

An example of fault monitoring would be a card failing in one of the IPAG routers. The fault would need to be addressed by the appropriate resources based on a certain priority. Therefore, the monitoring applications must figure out what type alarm is being sent, determine priority, open a trouble ticket and determine which group to route the trouble ticket.

Figure 14 - Fault Monitoring (NOTE - The bullets under each are not necessarily in flow order)



- Devices generate alarms
- Alarms are forwarded to GFP-Data

- GFP-Data determines the functionality of the device based on where it's located in the network topology
- Alarm is forwarded to appropriate RUBY module with device information such as IP Address, Port Number, etc...

- Ticket is opened
- Device information is gathered on the ticket
- Ticket is placed in appropriate work center queue
- Diagnostics are initiated

- Test commands are ran on the device
- Results are returned and stored on the ticket

Device Alarms

Device Alarms are generated from the device itself whether it's an IPAG Router (Juniper MX480 or MX960), Adtran TA5000, EUMX (Ciena CN 3940), NTE (Ciena CN 3960, CN 3911 or LE-311V), PIVOT Cards or NCTE (Adtran Net-Vanta 838). An example of an alarm would be a failed Card in a Juniper MX480. The MX480 would create an alarm that would be sent to the GFP-Data Application. GFP-Data determines where the device is located within the IPAG Topology in order to figure out where to route the alarm.

Depending on the device, alarms can be generated at the Device, Card or Port level. Device level a

Highlights for Device Alarms:

- Devices generate alarms
- Alarms are forwarded to GFP-Data

Alarm Routing

Alarm Routing is necessary in order to determine which RUBY module to send the alarm. Each RUBY module has specific rules setup to handle the different alarms. For instance, the MX480 alarm is an IPAG router alarm and considered an infrastructure alarm. Infrastructure alarms would be handled by RUBY-Data. RUBY-Data would process the alarm according to the rule set configured and send the alarm on to the appropriate ticketing system. In the case of the MX480 alarm the ticketing system will be AOTS (at&t One Ticketing System).

Highlights for Alarm Routing:

- GFP-Data determines the functionality of the device based on where it's located in the network topology
- Alarm is forwarded to appropriate RUBY module with device information such as IP Address, Port Number, etc...

Ticket Creation

The appropriate RUBY module opens a ticket in AOTS where the ticket is then routed to the appropriate work group. AOTS gathers the device information such as IP address and device configuration placing it on the created ticket. Once the ticket is created AOTS will initiate diagnostics to be executed against the alarmed device placing the diagnostics on the trouble ticket. The ticket is also placed in the appropriate work queue to be picked up by the respective work center. If the ticket is determined to be a circuit fault the ticket will be referred to WFA to engage a technician to troubleshoot the circuit.

Highlights for Ticket Creation:

- Ticket is opened
- Device information is gathered on the ticket
- Ticket is placed in appropriate work center queue
- Diagnostics are initiated

Diagnostics

AOTS initiates device diagnostics via the RUBY modules. RUBY then communicates with CTP (Common Test Platform) to run test commands on the respective devices. Diagnostic results are returned from CTP to RUBY to AOTS for ticket update.

- Test commands are run on the device
- Results are returned and stored on the ticket

Once the alarm has been diagnosed and cleared the ticket is closed out.

Glossary

Acronym	Definition	Acronym	Definition
ABR	Area Border Router	M&P	Methods & Procedures
ACNA	Access Carrier NameAbbreviation		
AOTS	AT&T One Ticketing System	MACD	Move, Add, Change and Disconnect
APS	Automatic Protection Switching	ME	Metro Ethernet
ASA	Aggregator Serving Area	MEF	Metro Ethernet Forum
ASBR	Autonomous System Border Router	MEOC-CPSC	Metro Ethernet Operations Center
ASOC	Automated Service Order Configurator	MES	Metro Ethernet Service
ATAS	Automated Test Access System	MIBs	Message Information Block
BAN	Billing Account Number		
BBNA	Broadband Network Architecture Center	MIC	Mechanized Inventory Creation
BCTS	Broadband Capacity Tracking System	MOP	Methods Of Procedures
BGP	Border Gateway Protocol	MPLS	Multi-protocol Label Switching
BIDW	Business Intelligence Data Warehouse	MTU	Multi-Tenant Unit
BNES	Broadband Network Element System	MTU	Maximum Transmittable Unit
BSS	Billing Support Systems	NEAM	Network Element Activation Manager
BD	Business Direct	NCTE	Network Chanel Terminating Equipment
CARE	Customer Account Record Exchange	NGOSP	Next Generation Outside Plant
CBB	Common Backbone	NMS	Network Management System
CCM	Circuit Capacity Mgmt.	NOP NGOSS	Next Generation OSS
CIR	Committed Information Rate	NPE	Network Planning and Engineering
CLEI	Common Language Equipment Identifier	NSS	Network Sales Support
CLFI	Common Language Facility Identifier	NTE	Network Terminating Equipment
CLLI	Common Language Location Identifier		
CNMS	Customer Network Management System	OBF	Order Billing Form
CNSS	Client Network Sales Support	OCO	Overall Control Office
CoS	Class of Service	OEM	Optical Ethernet Metropolitan Area Network
CPC	Circuit Provisioning Center	OIL	Offer Information Library
CPNI	Customer Proprietary Network Information	ONT	Optical Network Terminal
CRIS	Customer Records Information System Billing – SWBT	OPT	OEM Provisioning Tool
CSBH	Cell Site Back Haul	OPT NSS	OEM Provisioning Tool Network Sales Support
CSDC	Customer Service Design Center	OPTEMAN CNSPE Filter	OEM CNS-PE Filter for SLA AND WBCM
CSME	Customized Switched Metro Ethernet	OSMINE	Operations Systems Modification of Intelligent Network Elements
CSPC	Customer Service Provisioning Center	OSS	Operational Support Systems
CTP	Common Test Platform	PDR	Packet Delivery Rate
CTT	Common Topology Tool	PICS	Plug-In Inventory Control System
CvoIP	Consumer Voice over IP	PLANET	Planning and Loop Network Engineering Tool
CWDM	Course Dense Wave Division Multiplexing	PLS	Project Lightspeed
GCP	Database of Record	PMO	Present Method of Operation
DCN	Data Communications Network	PMOSS	Performance Management OSS's
DLR	Design Layout Record	PNT	Provider Network Transport

Glossary

Acronym	Definition	Acronym	Definition
DPC	Dense Port Concentrator	PON	Passive Optical Network
DPPCO	Design Price Propose Contract Order (part of GCP/DBOR)	POR	Plan of Record
DBOR	Data Base Of Record (aka GCP)	PVC	Private Virtual Circuit
DSLAM	Digital Subscriber Line Access Multiplexer	Q in Q	Queue in Queue
DWDM	Dense Wave Division Multiplexing	QoS	Quality of Service
EFMS	End-to-end Flow through Management System	RAO	Revenue Accounting Office
EMS	Element Management System	ROADM	Reconfigurable Optical Add/Drop Multiplexer
EMUX	Ethernet Multiplexer	RR	Route Reflectors
ePRO	eProcurement	RUBY	RUBY
ERS	Ethernet Relay Service	SAA	Service Assurance Agent
EVC	Ethernet Virtual Connection	SFP	Small Form Factor Pluggable 1
EWS	Ethernet Wire Service	SCP	Single/Seamless Control Plane
FCAPS	Faults, Configuration, Accounting, Performance, Security	SLA	Service Level Agreement
FDP	Fiber Distribution Panels	SLO	Service Level Objective
FMO	Future Method of Operation	SNMP	Simple Network Management Protocol
GCP	Data Base Of Record (fka DBOR)	SOAC	Service Order Analysis & Control-SE UNISYS
GFP-Data	Global Fault Platform-Data	SOP-P	Signaling Operations Platform for Provisioning
GFP-IP	Global Fault Platform – Internet Protocol	SPORT	Service Provider Outside Regular Territory
GFP-Netscope	Global Fault Platform – Netscope	SSDAC	Special Services Dispatch Administration Center
GIOM	Global Integrated Order Manager (GIOM).	SSIM	Special Services Installation & Maintenance
GNFO – CO	Global Network Field Operations – Central Office	TA	Target Architecture
GNO	Global Network Operations organization	TCA	Threshold Crossing Alert
GNO-TPC	Global Network Oprs.-Transport Provisioning Center	TDM	Time Division Multiplexing
GoS	Grade of Services	TID	Target ID
GRANITE	Granite/XngRC	TIRKS	Trunk Integrated Record Keeping System
GSST	General Services Subscribers Tariff	TM/BIS	Trouble Ticket Management BIS
HSIA	High Speed Internet Access	TSP	Telecommunications Service Priority
ICBPS	Individual Case Basis Pricing System	TTM OSS	Time To Market Operational Support Systems
ICO	Independent Telephone Company	TWAMP	Two Way Active Measurement Protocol
IDIS	Integrated Design and Inventory System	USRP	Universal Service Request Platform
IEEE	Institute Of Electrical And Electronic Engineers	VLAN	Virtual Local Area Network
IETF	Internet Engineering Task Force	VoIP	Voice over IP
ILEC	Incumbent Local Exchange Carrier	VPLS	Virtual Private LAN Service
INSIGHT	Integrated Network Status Indicator & Growth Highlighting Tool Set	VPWS	Virtual Private Wire Service
IP NRC	IP Network Reliability Center	WBCM	Web Based Capacity Management
IPAG	IP Aggregation Gateway	WCS	WCS Service Delivery
IPAG1	IP Aggregation Gateway1	WFA Web	Work Force Administration Web
IPAG2	IP Aggregation Gateway2	WFA/C	Work Force Administration/Control
IPDSLAM	Internet Protocol-enabled DSLAM	WFM/BIS	Work Force Management BIS
ISC	IP Solution Center	WIPM	Worldwide Internet Performance Monitoring

Glossary			
Acronym	**Definition**	**Acronym**	**Definition**
ISO	International Standardization Organization	WWP	World Wide Packet (part of Ciena)
JUNOS	Juniper Operating System	XFP	10G Form Factor Pluggable
LATA	Local Access and Transport area	INL	Inter Nodal Link
LFACS	Facilities Assignment Control System-SE UNISYS		
LFO	Line Field Organization		
LGX	Light Guide Cross Connect		
LOGIC	Logistics & Inventory Control		
LPP	Logical Provisioning Platform		
LS	Lightspeed		