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**Clarus Systems**



ClarusIPC Operations

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# **System Evaluation Methodology (Cisco IP Communications Based Systems)**

**Date:**

November 7, 2006

**Document Purpose:**

Methodology for customer assessment and evaluation of ClarusIPC



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## General Document Information

### Revision History

Once this document has been released, all revisions are noted below.

Author	Date	Comments
Dale Smith	10/9/2006	Initial draft
Dale Smith	10/17/2006	Additional edits
Dale Smith	10/25/2006	Add ROI section
Doug Bailey	11/05/2006	Additional content and edits
Dave Roberts, John McCaffrey, others	11/07/2006	Additional content and edits

### Related Document Information

Document	Description
ClarusIPC Operations User Guide	ClarusIPC Operations user guide for detailed system configuration operations procedures

### References

Reference	Description

## Overview

Clarus Systems is the leading provider of Cisco IP Telephony application management, IP Communications feature and functionality testing & reporting, and IP Telephony service assurance software. ClarusIPC utilizes a unique approach to ensuring that the IP Telephony application functions properly and all aspects of the telephony experience are as expected by the telephony end-user.

Going beyond network infrastructure assessment, testing and monitoring, ClarusIPC tests, validates and verifies the features, functions, and application configurations using the actual handset or directory number (the end-user's perspective).

IP Telephony is one of the most complex applications with arguable the most demanding user base. After almost 100 years of reliable service, telephony has attained utility status with the well known 5-9's reliability expectation. The legacy telephony application was the result of hundreds of thousands of person years of proprietary development. The IP Telephony application, unlike proprietary legacy telephony, has exposed the complexity of telephony and is distributed among multiple servers, network gateway devices and intelligent, programmable end-points (IP phone). Every call, feature or telephony function is a synchronized effort of all aspects of the IP Communications application. This new distributed complexity has created a great challenge in both the deployment and ongoing operations of IP Telephony. ClarusIPC brings all aspects of the IP Telephony application together as a single, logical application, providing a business organization to the many disparate sources of information and ensuring the proper telephony functionality the end-user has come to expect!

ClarusIPC is designed to be the basis of best practices for the deployment, testing, validation, troubleshooting and documentation of the IP Telephony application during deployment. The same ClarusIPC application is also used as the basis for tiered IT Operations Help Desk to identify, isolate and resolve IP Communications problems. A robust set of daily reports are also available to proactively identify potential issues that may impact the end-user's telephony experience.

The plans and methodology described in this document are designed to ensure the effective evaluation of the capabilities of ClarusIPC Operations as they relate to business and business processes. The plan is aligned with best practices business processes and the phases/stages of a typical IP Telephony project. The processes begin with planning for a new IP Communications deployment and proceed through normalization of IP Communications into a tiered IT Operations & Support model.

## IP Telephony Life Cycle

Clarus Systems has gained a wealth of industry knowledge relating to IP Telephony deployments. An application Life Cycle approach to the deployment and ongoing operation and management of IP Communications systems provides a best practice methodology that enables an organization to meet its goals of predictable deployments and operational excellence.

The user experience of IP Telephony is based on the rich set of applications that comprise Cisco IP Communications such as IP Unity, CallManager call processing, directory services, and others that comprise Cisco's Voice and Unified Communications suite.

The Clarus Life Cycle approach to the deployment, support and operations of an IP Communications system is simply to take the user's perspective of the system and provide an

automated way of managing the IP Communications application environment to meet the user's expectations of usability, performance and availability.

ClarusIPC Operations meets these objectives with its suite of deployment and management applications that will allow a customer the ability to tailor the automation to meet a customer's business operations requirements. ClarusIPC Operations does this effectively during all phases of the IP Communications Life Cycle.

## ***IP Communications Early Adoption***

Many customers have made their initial evaluation decisions as to which IP Communications vendor they will choose and have already done small to medium sized deployments for evaluation.

Typically, these deployments run parallel to existing legacy PBX systems and are limited in their scope. Often, the central or headquarters site of an organization is first deployed because the IT and network staff are usually centrally located and can provide the necessary support required for the IP Communications trials or pilots. These IP Communications installations are almost always successful, assuming the vendor's solution performs as advertised, because there is often an almost unlimited amount of support resources applied either internally or from the vendor.

## ***Broad IP Communications Deployment***

Once a decision is made and confidence in the business case for large scale deployment of IP Telephony is established, many are faced with the sometimes daunting task of a broad, enterprise-wide deployment.

In the traditional PBX world, the PBX vendor provided the majority of the system planning, site preparation and actual installation and testing of the telephony system. These systems obviously were based on dedicated wiring infrastructures that did not impact the converged environment of data networking and IP Telephony. At best "convergence" in these applications was the trunking interconnection between standalone systems using the IP protocol suite.

The legacy PBX provider handled the end-to-end planning and deployment of the telephony system typically through their support organization. With this type of support model, a customer rarely was exposed to the many details of a complex and large scale deployment. Customer involvement in the deployment was limited to the phone counts, feature requirements and scheduling of on-site resources.

With IP Telephony over a converged infrastructure, these details become critically exposed. The successful deployment is dependent on a number of factors that must work in a concerted effort to assure a success to include:

- Multiple internal support departments such as IT, Network, Customer Service
- Vendor supplied or internal deployment teams (centrally staffed and site resources)
- Multiple-disciplined teams (IP networking, telephony, applications, etc.)

With this varied number of parties involved with a deployment of even modest scale careful project management process and techniques must be employed to assure success.

## ***Life Cycle Maintenance and Operations***

Clarus Systems supports the notion of a Life Cycle for deployment and ongoing operations of an IP Communications system. By its nature IP Communications is dynamic. Once the system is deployed, change is inevitable – either by network entropy or normal user demand and adoption of the systems features.

Clarus Systems recommends the following phased approach to Life Cycle maintenance and operations of an IP Communications system:

- Project Planning and Management Phase
- Deployment Phase
- IP Communications Management and Operations

These phases are representative of the normal process a customer may go through whether it's an initial roll-out of IP Communications or the scaled deployment of branches and departments.

## **Project Planning and Management Phase**

Clarus Systems recommends a project management oriented discipline to all phases of IP Communications evaluation and deployment. The benefit of a project management methodology allows the customer a deterministic approach to the execution of the project and provides the ability to instrument the methodology for process improvement.

There are many tools and project methodologies. Clarus Systems does not advocate a specific tool or method, but will use Microsoft Project™ as a reference project management tool for plan documentation.

## ***Develop Representative Project Plan***

Part of an evaluation, trial, or proof of concept, should not only consider the software and hardware necessary to test the features and functionality of a system, but should also take into consideration the overall aspects of delivering the system to the end users.

In order to effectively evaluate ClarusIPC, the following is a typical sample project plan for a site deployment:

The project is divided into the following major tasks. The project plan in **Attachment A** details the project outline and timeline.

- Branch Resource Identification
- Branch Site Survey
  - IP network infrastructure
  - Phone and feature group audit
- Branch IP Communications design
- Branch key personnel system pre-training
- Branch IP network infrastructure preparation
- Branch PSTN access
- CallManager cluster preparation
  - ClarusIPC baseline auditing

- Branch deployment
  - ClarusIPC monitoring, testing and verification
- Branch end user training
  - ClarusIPC Remote Hands
- Branch operations support hand-off
  - ClarusIPC Help Desk and remote troubleshooting via ClarusIPC Remote Hands

Many of these project tasks can be performed well in advance of the actual branch site cutover. However with large sites, or ones with complex feature requirements, rigorous validation and testing would be impractical or impossible during the site cutover without the aide of an automated system such as ClarusIPC. The features within the ClarusIPC Operations application set allow a customer to perform complex validation and testing scenarios for large sites well within the cutover maintenance windows.

Typically a site cutover is only allowed during non-production hours such as during the evening, weekends or on holidays. The time available for large site deployments is scarce for the amount of available time. In an installation environment where manual testing techniques or limited automation is available, rigorous validation and testing is compromised in favor of servicing the physical aspects of the installation.

Additionally, as the project moves from deployment to an operational mode of the Life Cycle, the manual tests that were performed during the installation are rarely fully documented and represent only a snapshot of the operational state of the IP Communications system. The automated capabilities of ClarusIPC Operations will allow a customer to not only preserve the installation state of the IP Communications system, but to also provide the ability to do continual benchmarking and testing after the site is deployed.

## Deployment Phase

The deployment phase of an IP Communications system is of keen interest in the broader rollout of a telephony system. During this juncture of the IPT lifecycle, end users may experience IP Telephony for the first time and/or be exposed to the new features that a converged world will bring.

A successful deployment of IP Communications is dependent on the system meeting the end user expectations and performing reliably in addition to as little interruption to productivity as possible.

The ClarusIPC Operations system allows a deployment team to iteratively test, monitor and validate the functionality of the IP Communications system during the installation process. The automated capabilities of ClarusIPC allows a customer to thoroughly test the newly deployed system with complex use case scenarios that exercise the features and functionality the same way end users would.

## ***IP Communications System Installation and Phone Deployment***

The following features of the ClarusIPC Operations system are typically utilized during the installation of an IP Communications site.

- ClarusIPC Real-time Monitoring Tool (CRMT) to monitor phone deployment and phone registration status

- ClarusIPC Automated testing to verify system and application operation & availability
- ClarusIPC Help Desk to assist with troubleshooting user configuration issues
- ClarusIPC Remote Hands to assist with troubleshooting and problem resolution
- ClarusIPC Remote Hands to perform detailed tests which are not covered with an automated test plan

## ***IP Communications System and End User Certification***

The following features of the ClarusIPC Operations system are typically utilized during the end user verification of an IP Communications installation.

- ClarusIPC Automated testing, performed on a significant sample (up to 100%) of end users, system elements, and applications
- Change Tracking Reports, used to determine changes made to system related phone and directory numbers

## ***Final Customer Acceptance***

The following features of the ClarusIPC Operations system are typically utilized during the acceptance phase of an IP Communications installation.

- ClarusIPC Configuration/Inventory Reports used as part of Final Customer “As Built” documentation, also used for internal technical support group documentation for future audits
- ClarusIPC Certification Reports, used to establish the level of testing and verification performed

## **IP Communications Management and Operations**

As IP Telephony is typically one of the most business critical applications, ongoing operational support of an IP Telephony system is vitally important to an enterprise. As with any application, it is crucial to ensure that the IP Communications application is fully functional and completely documented prior to support responsibilities being transferred from the deployment organization or System Integrator to the end-user IT Operations staff. The features within the ClarusIPC Operations which allow the performance of complex validation and testing scenarios ensures that the IP Communications application is fully functional tested and documented prior to passing support responsibility to IT Operations.

An IP network is a diverse set of network elements with multiple releases of operating systems that require frequent patches and upgrades. The IP Communications application is similarly comprised of multiple elements that also require frequent upgrades and patches. The requirements of this environment along with the mobility inherent in IP Telephony create unique challenges.

ClarusIPC Operations enables continual operational excellence by allowing the operations management team to maintain a high level of performance of the IP Communications system.

The Operations staff must be able to test and validate the ongoing functionality of the IP Communications application and identify and resolve issues when they occur. ClarusIPC provides a rich set of post-deployment applications that enable Operations staff to perform nightly predictive tests to both validate proper functioning of IP Communications, but also to identify changes that could create potential issues. Once an issue is identified or an end-user calls into Operations, ClarusIPC provides a set of IP Telephony optimized and specialized tools to quickly isolate and resolve issues.

Because ClarusIPC Operations operates at the IP Telephony application level, the system will continually allow an organization operational levels that represent the actual end user view of the IP Communications system.

## ***Configuration Change Tracking***

Change within an IP Communications system is inevitable and at times desirable. One of the key benefits of an IP Communications system is the ability to provide easy (typically end-user initiated) adds, moves and changes. However, with this flexibility there are inherent risks that can emerge as trouble calls to the help desk.

- ClarusIPC Sync and Change Tracking report generation is used to track user level changes on a daily basis and also can be used during monthly or quarterly customer meetings to review the level of user changes to the system

## ***Help Desk/Remote Hands***

End user problems will inevitably exist due to various reasons ranging from feature usage to actual device or network failures. ClarusIPC Operations allows a support organization the ability to efficiently resolve a user's operation problem from the end user's perspective of the IP Communications system.

Among the key benefits of ClarusIPC remote troubleshooting is preventing scope creep caused by configuration changes in the system after the systems integration or deployment handover. The systems integrator and/or the internal deployment team may be called back to fix the problem for no cost with no way to defend his work or to suggest that the problem was customer created.

Other uses of the remote troubleshooting capabilities include:

- ClarusIPC Help Desk is used to support all levels of end user reported issues, from actual problems, to training, to configuration updates and verification
- ClarusIPC Remote Hands provides the ability to resolve the problem remotely using remote diagnostics. With the ability to remotely diagnose problems and to interactively provide remedial training, ClarusIPC Remote Hands will greatly aid the support organization in trouble resolution and repair time.
- Security auditing, making sure no unauthorized changes are made on a daily basis
- It provides a reduction or elimination of the participation by end user in troubleshooting process
- It enables troubleshooting to occur off-hours, behind locked offices
- ClarusIPC reduces the time to collect/analyze relevant data, resolve trouble tickets
- The Help Desk and Remote Hands applications empower tier 1 help desk personnel to troubleshoot and resolve more issues without escalation

- It allow the standardization of IPT trouble ticket information
- It allows the creation of trouble ticket at the time problem is encountered, not later when data is stale or the trouble conditions have changed

## ***System Upgrade***

Large Cisco IP Communications CallManager clusters are a complex combination of servers and applications and require careful planning before a system upgrade is performed. Historically, customers have been reluctant to perform any significant upgrades because of this complexity and the mission critical nature of the voice services provided on them.

The benefits of using ClarusIPC before, during and after the system upgrade are:

- ClarusIPC Configuration allows for the creation of a configuration baseline before a system upgrade is performed by allowing the operations group to capture and document the IP Communications system configuration state. Additionally, automated testing can be performed to establish the operational state of the system before it is upgraded.
- ClarusIPC Configuration reports and automated testing is used to verify that the changes have been implemented with the desired affect from an operational perspective.

## ***Periodic Health Check***

A disciplined routine of scheduled IP Communications system monitoring will allow for the quick detection and resolution of potential systems issues. Regularly scheduled system checks will also provide the early warning indications of capacity related issues and performance degradation.

- ClarusIPC scheduled tests are used to execute periodic nightly health checks to determine performance and availability of IP Communications system components.
- ClarusIPC can also perform an in depth certification on a regular basis to manage user and system level changes.
- ClarusIPC has ability to send SNMP traps and/or email notifications to an existing NMS system upon the event of failed test plans and errors.

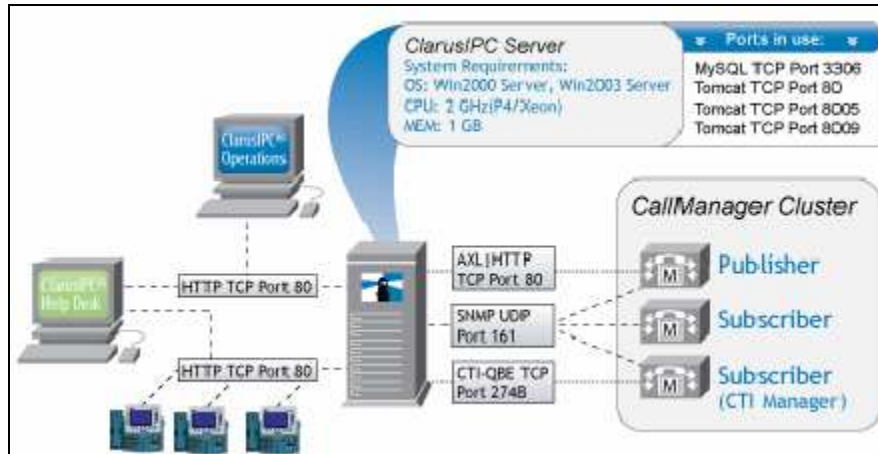
## **ClarusIPC Use Case Examples**

The following use case examples are recommended tests that can be performed during an initial site deployment and can be used for routine or periodic health checks. These use cases in conjunction with the reporting capabilities of ClarusIPC will allow the deployment, operations and support teams to have a clear indication of the operational state of the IP Communications system at all times.

## ***System Configuration Requirements***

The ***ClarusIPC Operations User Guide*** provides detailed system setup procedures and requirements for interfacing to a Cisco CallManager Cluster. The following diagram shows the

network connectivity requirements and the relationship of ClarusIPC Operations and ClarusIPC Help Desk to the IP Communications system.



Clarus IPC Network Connectivity

Additional to the network connectivity requirements, the ClarusIPC system will require the following administrative credentials to allow access to the IP Communications system:

- Create one LDAP user for each customer.
- Create and configure an SNMP Community String for each CallManager Server
- Create an SQL user for each cluster
- Collect CallManager IP Addresses and Administrative Details
- Create a CDR SQL user (for the Help Desk Application)

## Use Case Preparation

Prior to executing the use cases, test numbers will be needed for evaluating calls outside of the IP Communications system. For example the following types of numbers will be required:

- Local off-net
- Domestic long distance
- International long distance
- Inbound/outbound toll free
- Inbound Direct Inward Dial (DID)

## Use Case Matrices

ClarusIPC can provide automated testing and reporting of the following sample use cases. This capability will allow for thorough and rigorous testing of an installation or system upgrade to reduce or eliminate the labor of manual system testing and to insure that the effort results in significant Day 2 trouble calls.

## Phase 1: Initial Phone Deployment/Upgrade

This phase starts just after phones are initially installed on user desks. Activities performed during this phase are designed to verify network readiness of voice traffic.

### Reports to Generate

- **Phone Registration** - Use this report to verify that all expected phones are installed and online
- **Phone Inventory** - Use this report to ensure that the correct phones are installed on the expected switchport.

Phase 1 Initial Deployment/Upgrade			
Use Case	Description	Expected Outcome	Pass/Fail
<b>1. Phone Registration</b>	Use this test to determine if there are any access control lists or firewalls preventing phones in network segments from registering with their primary CallManager.	Phones that are within the scope of the deployment or upgrade will register properly.	
<b>2. Signal Delay</b>	Use this test to verify that all network segments are able to provide a Dial Tone within a user-specified required time. This test may be run while a load is placed on the CallManager servers to ensure that peak loads do not inadvertently degrade Dial Tone delay.	Signal delay is within the recommended tolerance for the CallManager design (the ClarusIPC default is 1000ms).	
<b>3. Voice Protocol On Net</b>	Use this test to verify that different network segments can establish an RTP voice stream between one another. Access control lists or firewalls may be preventing the RTP protocol from flowing between all required segments.	Phones that are within the scope of the deployment or upgrade will be able to call each other.	
<b>4. Voice Protocol Off Net</b>	Similar to On Net, this test verifies an RTP voice stream between various network segments and their gateways. Any blocked traffic would potentially result in no audio or one-way audio for Off Net calls.	Phones that are within the scope of the deployment or upgrade will be able to reach their off net targets.	
<b>NOTES:</b>			

## Phase 2: User Feature-Functionality

This phase begins once all Phase 1 activities are successful and complete. Any required CallManager configuration changes have been made and are locked for the duration of this phase. Activities performed during this phase are designed to verify that end-user requirements are met. These include call handling and features available from the phone.

### Reports to Generate

- **Directory Number** - Verify that all Directory Number to Phone mappings are correct and that users are assigned correctly to their User Classes based upon DN attributes.
- **Phone Profile** - Verify that Phone configurations are as expected and that users are assigned correctly to their User Class based upon Phone attributes.

Phase 2 User Feature/Functionality			
Use Case	Description	Expected Outcome	Pass/Fail
<b>1. Softkey Functions</b>	Use this compound test to verify users have all the basic phone features that are required including Call Hold, Call Transfer, Corp Directory Access, Call Park, Redial, Ad-Hoc Conference, etc.	Soft keys perform the functions required for the site and meet the station review requirements.	
<b>2. Rollover</b>	Use this test in environments where a rollover type of call handling has been configured to verify that calls made to a busy first line roll to the second line.	Successful call rollover.	
<b>3. Forward to Voicemail</b>	This test may be performed in this phase or Phase 3 depending upon when the voice mail system is installed. Use this test to verify that unanswered calls route to voicemail for users who desire this call handling.	Successful transfer to voicemail. Target sample rate is met.	
<b>NOTES:</b>			

## Phase 3: Application Availability

This phase begins when all Phase 2 activities are successful and complete. Any required CallManager configuration changes have been made and are locked for the duration of this phase. Activities performed during this phase are designed to verify that user applications are available to end users.

### Reports to Generate

- **Service Summary** - Review this report in advance to determine if there are any misconfigurations of Media Resources
- **Feature Summary** - Review this report in advance to determine if there are any misconfigurations of voice mail ports or Meet-Me patterns

Phase 3 Application Availability			
Use Case	Description	Expected Outcome	Pass/Fail
<b>1. Directory Handler Lookup</b>	Use this test in environments where an Auto-Attendant application is configured to answer main number calls. This test will verify that calls to the Directory Handler portion correctly routes to the expected user extension. It is also recommended to perform these tests again via the external PSTN number in Phase 4.	Successful directory routing via both on-net and off-net (DID) tests.	
<b>2. Meet-Me Conference</b>	Use this test to verify that your conference bridge can handle the minimum required simultaneous participants for a single Meet-Me conference call.	Successful test for configured call bridge number. Failure of N+1 bridge participants to test limiting by CallManager.	
<b>3. Voicemail Port Loading</b>	Use this test to verify that your voicemail system can handle the minimum required concurrent connections. These connections may be for leaving or retrieving voicemail.	Successful test for configured voicemail ports. Failure of N+1 ports to test limiting by CallManager.	
<b>NOTES:</b>			

## Phase 4: Cutover

This phase begins when you are ready to swing the facilities over to the new IP Communications system. When complete, all inbound and outbound calls will be routed using the IP Communications system. All prior activities from other phases should be completed, verified, and the configurations locked down.

### Reports to Generate

- **Route Plan Summary** - Review this report to make certain that all routing logic appears correct for call flow both inbound and outbound.

Phase 4 Cutover			
Use Case	Description	Expected Outcome	Pass/Fail
<b>1. Direct Inward Dial</b>	Use this test immediately following the cutover to ensure that call routing to user external DID numbers correctly reaches their internal extension. It is recommended to perform this test with a 100% sampling rate since DID numbers can be incorrect in the service provider database.	DID numbers correctly reach the configured extensions.	
<b>2. Call Permissions</b>	Use this test to verify that all User Classes are able to route out to the PSTN reaching their numbers in their Class of Service and not being able to connect to destinations in their Class of Restriction.	Successful test of "positive" call attempts that fall within the class of service. Failure indication if the call attempt can bypass the class of service and/or class restrictions.	
<b>3. Voicemail Port Loading</b>	Use this test to verify that your voice mail system can handle the minimum required concurrent connections. These connections may be for leaving or retrieving voicemail.	Successful test for configured voicemail ports. Failure of N+1 ports to test limiting by CallManager.	
<b>4. CCM Fail and Restore</b>	Execute a baseline report of phone registrations to verify proper configuration and that the phones are actually registered to their primary CallManager. Perform a primary CallManager failover for the set of phones at the site or group of phones that are being tested.	Successful test is that the phones will register with the backup CallManager. Additionally, the phones will re-register with their configured primary CallManager once it is restored.	
<b>NOTES:</b>			

## ***Phase 5: Final Certification***

This phase commences when all deployment verification (Phases 1-4) is complete and all tests have passed. The entire IP Communications configuration has been locked down with no additional changes allowed. Full Certification testing will ensure that nothing has changed to break previously passing tests.

### **Reports to Generate**

- **Certification Report** - generate this at the completion of all testing as proof that the system is certified at the time of delivery. Select the final Certification test plan(s) for this report.

Perform tests from Phases 2-4. If desired, sampling can be increased to provide more confidence in full test coverage.

## Post Evaluation ROI Analysis Example

The following example shows a Return on Investment (ROI) analysis of a typical large IP Communications system deployment:

### Site Parameters

Number of endpoints/phones	30,000
Number of locations	250
Number of clusters	8
Labor cost per hour	\$ 65.00
Labor cost Including overtime (25%)	\$ 81.25

### Application Testing & Documentation

Initial IP Communications test time (min per endpoint deployed):		
Retesting - 1(30%), 2(25%), 3(20%)		10.00
Average total test time (min) per endpoint:		17.50
% of Application test plan time automated:		85%
Time savings per endpoint (min):		14.88
Average test cost per endpoint:		\$ 23.70
Amount saved per endpoint		\$ 20.14
% Phones used for End-User testing		50%

## Application Troubleshooting Analysis

% of sites visited:		<b>75%</b>
Number of site visits:		<b>188</b>
Avg. cost per site visit:		
	Travel	<b>\$ 500.00</b>
	Labor:	
	hours	<b>8</b>
	labor cost	<b>\$ 650.00</b>
	Total cost per visit:	<b>\$ 1,150.00</b>
Average troubleshooting cost per site:		<b>\$ 862.50</b>
Total cost for troubleshooting:		<b>\$ 215,625</b>

## Deployment Savings Analysis

Labor savings from automated testing:	<b>\$ 302,148</b>
Documentation savings (.1 hour per endpoint):	<b>\$ 243,750</b>
Troubleshooting Costs avoided:	<b>\$ 215,625</b>
Total hard costs savings:	<b>\$ 761,523</b>
Savings per endpoint:	<b>\$ 25.38</b>

## System Platform Requirements

The following system requirements are listed in the table for ClarusIPC Operations. It is highly recommended that the system be configured to run on a standalone server.

	Minimum Requirement	Recommended
Processor	Pentium 4 processor, 2 GHz	Pentium 4 processor, 3 GHz
Memory available for ClarusIPC Operations	1024 MB	2 GB
Operating System	Windows 2000 SP 4 or higher Windows 2003 server	Windows 2000 SP 4 or higher Windows 2003 server
Hard Disk Available for ClarusIPC Operations	40 GB	120 GB



## Attachment A: Sample Project Plan

ID	Task Name	Duration	Start	Finish	Sep 3 '06									
					T	F	S	S	M	T	W	T	F	
1	<b>Branch Resource Identification</b>	2 days?	Tue 10/10/06	Wed 10/11/06										
2	Identify Site Project Coordinator	1 day?	Tue 10/10/06	Tue 10/10/06										
3	Initial Planning meeting	1 day?	Wed 10/11/06	Wed 10/11/06										
4	<b>Branch Site Survey</b>	6 days	Tue 10/10/06	Tue 10/17/06										
5	IP Network Infrastructure	0.5 days	Tue 10/10/06	Tue 10/10/06										
6	Phone Inventory	0.5 days	Tue 10/10/06	Tue 10/10/06										
7	Feature Requirements	2 days	Wed 10/11/06	Thu 10/12/06										
8	Branch Site IPT Documentation	3 days	Fri 10/13/06	Tue 10/17/06										
9	<b>Branch IPT Design</b>	1 day?	Tue 10/10/06	Tue 10/10/06										
10	LAN/WAN Resource Impact Assessment	1 day?	Tue 10/10/06	Tue 10/10/06										
11	Branch LAN Design	1 day?	Tue 10/10/06	Tue 10/10/06										
12	Branch Physical Plant Design	1 day?	Tue 10/10/06	Tue 10/10/06										
13	<b>Branch System Pre-Training</b>	1 day?	Tue 10/10/06	Tue 10/10/06										
14	Select Site Trainer	1 day?	Tue 10/10/06	Tue 10/10/06										
15	Select Pilot User	1 day?	Tue 10/10/06	Tue 10/10/06										
16	Perform Pre-training	1 day?	Tue 10/10/06	Tue 10/10/06										
17	<b>Branch PSTN Access</b>	31 days?	Fri 9/1/06	Fri 10/13/06										
18	Order PSTN Circuits	30 days	Fri 9/1/06	Thu 10/12/06										
19	Install PSTN Circuits	1 day?	Fri 10/13/06	Fri 10/13/06										
20	<b>Branch IP Infrastructure Preparation</b>	1 day?	Tue 10/10/06	Tue 10/10/06										
21	Install Branch Networking Equipment	1 day?	Tue 10/10/06	Tue 10/10/06										
22	Configure and Test LAN/WAN	1 day?	Tue 10/10/06	Tue 10/10/06										
23	<b>CallManager Cluster Preparation</b>	2 days?	Tue 10/10/06	Wed 10/11/06										
24	Baseline Audit CallManager Cluster (Manual)	2 days	Tue 10/10/06	Wed 10/11/06										
25	Baseline Audit CallManager Cluster (ClarusIPC)	0.25 days	Tue 10/10/06	Tue 10/10/06										
26	Configure Branch Users	1 day?	Tue 10/10/06	Tue 10/10/06										
27	<b>Branch Site Deployment</b>	4 days?	Tue 10/10/06	Fri 10/13/06										
28	Install Phones	2 days	Wed 10/11/06	Thu 10/12/06										
29	Perform Continual Monitoring (ClarusIPC Monitoring)	2 days	Tue 10/10/06	Wed 10/11/06										
30	Perform Test and Verification Suite (ClarusIPC Certification)	1 day?	Fri 10/13/06	Fri 10/13/06										
31	<b>Branch End User Training</b>	1 day?	Tue 10/10/06	Tue 10/10/06										
32	Introductory Training	1 day?	Tue 10/10/06	Tue 10/10/06										

Project: IPT Branch Plan Example Date: Tue 10/10/06	Task		Milestone		External Tasks	
	Split		Summary		External Milestone	
	Progress		Project Summary		Deadline	

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ID	Task Name	Duration	Start	Finish	Sep 3, '06									
					T	F	S	S	M	T	W	T	F	
33	Real Time Remedial Training (ClarusIPC Help Desk)	0.1 days	Tue 10/10/06	Tue 10/10/06										
34	<b>Branch Operations Support Hand-off</b>	<b>5.5 days</b>	<b>Tue 10/10/06</b>	<b>Tue 10/17/06</b>										
35	Final End User Functional Testing (ClarusIPC Nightly Reports)	5 days	Tue 10/10/06	Mon 10/16/06										
36	Branch Site As Built Documentation (ClarusIPC Configuration and Test Reports)	0.25 days	Tue 10/17/06	Tue 10/17/06										
37	Branch Site Final Certification Report (ClarusIPC Reports)	0.25 days	Tue 10/17/06	Tue 10/17/06										

Project: IPT Branch Plan Example Date: Tue 10/10/06	Task  Split  Progress 	Milestone  Summary  Project Summary 	External Tasks  External Milestone  Deadline 
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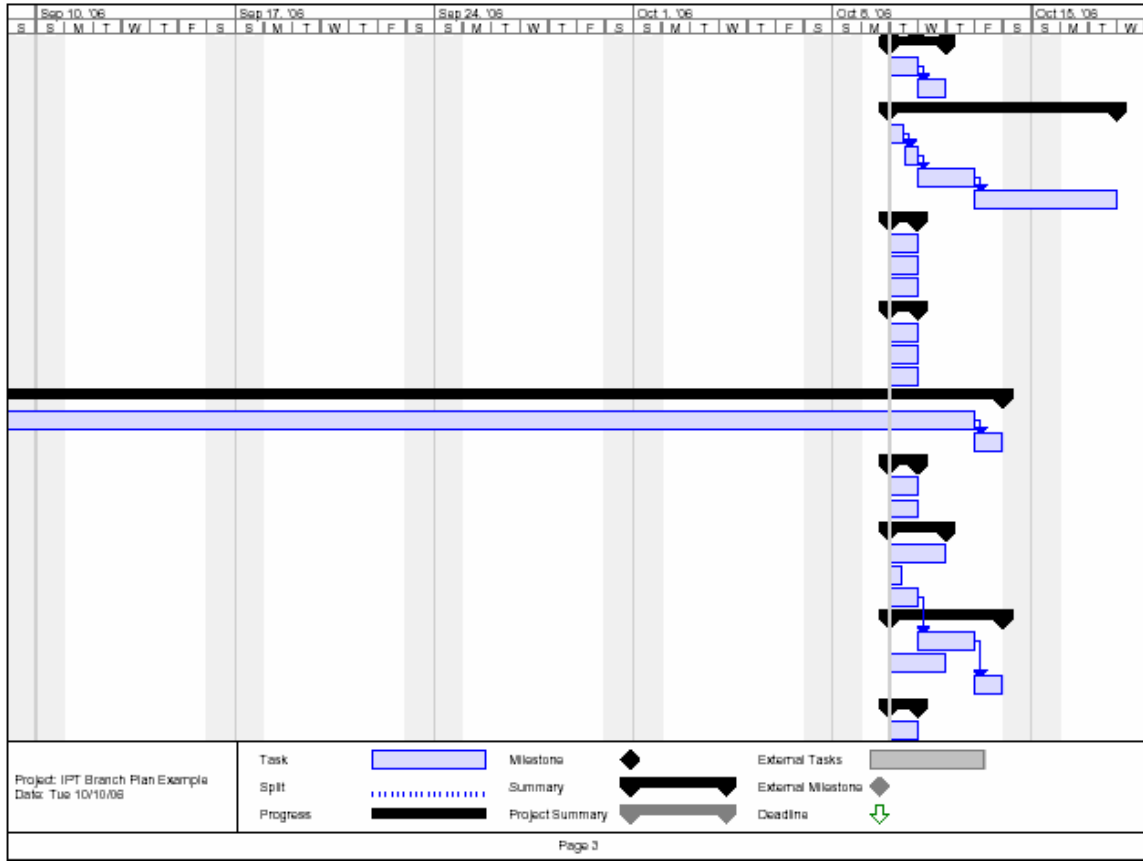
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