



## Attachment A

Intergraph Customer Support Center

Subject to the modifications to the Maintenance Agreement as set forth in section 3.4 of the System Implementation Agreement between Intergraph and Customer which shall have precedence over any inconsistent terms set forth herein, the terms set forth herein shall govern the support described herein. Intergraph is committed to ensuring that the procedures are in place and available to provide maximum service delivery to our customers. As part of the ongoing, post-cutover support available to our customers through the Reliability Test Period, Intergraph Warranty and the Intergraph Maintenance Program, Intergraph provides several core infrastructures:

- Intergraph Customer Support Center
- Intergraph Software Upgrades
- Intergraph On-site Resident Engineers (if purchased)
- Intergraph Customer-specific On-site Support (if purchased)

### **The Intergraph Customer Support Center and Services Provided**

The Intergraph Customer Support Center is an integral part of the Warranty and Maintenance programs and is provided at no additional cost. As part of the standard support infrastructure available to our customers, outside of any resident or on-site support program that may be purchased and implemented, the Customer Support Center provides the following:

- Toll-free access to the Intergraph Customer Support Center resources
- *"Always-available"* support during the time period covered by Warranty and Maintenance programs.
- Monitored response times by priority
- A central single point-of-contact for all problems
- First level of direct support for all products purchased from Intergraph, including Intergraph software applications, third-party software/hardware, operating system software, database management system, development tools, report writers, productivity tools, networking software, and external interface software
- Problem resolution based on priority level

The main priority of the Intergraph Customer Support Center is to meet the needs of the customer when problems occur and assist in keeping the system in operation and running smoothly. The Customer Support Center works problems in a priority order and the more information that can be provided when a problem is reported; the quicker a solution can be found. For the Customer Support Center to be able to expeditiously resolve problems, it is important that the customer's System Administrator attempts to isolate the nature of the problem and determine if it is a hardware or software issue. It is also important that circumstances under which the problem occurs are thoroughly documented prior to reporting the problem.

When reporting an issue to Intergraph Customer Support, the customer initially determines the priority level of the problem and, in working with the Customer Support Center representative(s), mutual agreement may result in the priority level being raised or lowered depending on the findings during problem investigation. The Customer Support Center has established the following priority levels for reported problems:

### Customer Support Center Priority Levels, Response Times, and Resolution Targets

Priority	Problem Description	Response Time	Resolution
▶ Level One	<ul style="list-style-type: none"> <li>▶ Loss of data</li> <li>▶ Data corruption</li> <li>▶ Productive use prohibited</li> <li>▶ No workaround available</li> <li>▶ Aborts</li> </ul>	M-F, 7:00AM-7:00PM Central Time – Immediate* or within 30 minutes of notification	<ul style="list-style-type: none"> <li>▶ 12 hours – Program code correction or a procedural work around</li> </ul>
▶ Level Two	<ul style="list-style-type: none"> <li>▶ Primary purpose compromised</li> <li>▶ Productive use significantly impacted</li> <li>▶ Workaround generally not available</li> </ul>	M-F, 7:00AM-7:00PM Central Time – Immediate* or within one hour of notification	<ul style="list-style-type: none"> <li>▶ 48 hours – Program code correction or a procedural work around</li> </ul>
▶ Level Three	<ul style="list-style-type: none"> <li>▶ Productive, but incomplete operation</li> <li>▶ Workarounds generally available</li> </ul>	M-F, 7:00AM-7:00PM Central Time – Immediate* or within eight hours of notification during normal business hours	<ul style="list-style-type: none"> <li>▶ One week – Procedural workaround</li> <li>▶ Program code correction in a future software release</li> </ul>
▶ Level Four	<ul style="list-style-type: none"> <li>▶ Productive, mainly cosmetic in nature</li> <li>▶ Workarounds or configurable options generally available</li> </ul>	M-F, 7:00AM-7:00PM Central Time – Immediate* or within eight hours of notification during normal business hours	<ul style="list-style-type: none"> <li>▶ One week – Procedural workaround</li> <li>▶ Program code correction in a future software release</li> </ul>

\* Immediate - Without need to call back in most cases

Priority Level One and Two problems that have no discernible workaround are escalated when appropriate to Intergraph Customer Support Management who will participate in the decision-making and resolution process.

The Customer Support Center personnel are available 24 x 7 x 365 via a single toll-free phone number. Between the hours of 7:00 a.m. and 7:00 p.m. CDT, Monday through Friday the calls are answered immediately by the Call Center staff. All after-hours, critical calls are routed to on-call personnel through an automated message system and answered within 30 minutes of receipt, ensuring customers will have help available when needed. Regardless of the problem or the time of day, customers can reach Intergraph customer support through a single phone number.

In addition to telephone support, Intergraph offers electronic access to the Customer Support Center via the Intergraph Customer web site. Intergraph eService allows our customers to:

- Report a new issue
- Update or monitor an outstanding issue
- Report on issues previously reported
- Search the confirmed issues previously reported by other customers
- Search the Intergraph knowledge base
- Review Release Notes for products available to customers
- Review plans for upcoming releases
- Review Certified Environment information about the products available or those products which will be made available in the next 90 days.

The following table provides a list of possible actions that may be taken by Customer Support Center personnel to provide problem resolution:

If Intergraph determines that...	Then the Customer Support Representative will...
▶ Local Intergraph personnel must be involved	▶ Initiate involvement of those specialists
▶ On-site software support is necessary	▶ Initiate the request for on-site software support personnel

For many problems, support personnel can access the customer's system via VPN and quickly isolate, if not resolve, the problem. Intergraph system configurations can be accessed via VPN, allowing Intergraph personnel to connect into systems to perform remote diagnosis, verification, and correction of system problems. Remote access to the customer's system via VPN is completely under the security controls imposed by the customer. Intergraph agrees to work within the customer's security framework for all system access.

### SecureLink Virtual Support Network

In a continuing effort to deliver more effective customer service, Intergraph has chosen to standardize on SecureLink Virtual Support Network for remote customer connectivity. SecureLink is used by over 11,000 security conscious organizations serving high security markets including health care, government, public sector, legal, university, and financial institutions. SecureLink enables Intergraph to deliver faster, more secure and efficient support while providing superior security, audit, and control to our customers; thus enabling security and audit compliance with industry standards such as CJIS, FIPS, SOx, HIPAA and G-L-B.

### How does SecureLink benefit our customers?

In addition to the efficiencies gained by Intergraph's support and services organizations, there are numerous benefits for our customers as well.

Key benefits for Intergraph's customers using SecureLink include:

- Full control over access rules including anytime, scheduled or request-only settings
- Secure, fully encrypted communications between Intergraph and your network
- Configurable, real-time email notifications when Intergraph establishes a remote access session
- Control over all server or workstation ports/services that are available for use
- No expense is incurred for this SecureLink service for Intergraph customers on maintenance
- Identification of each individual analyst including audit trails recording the time, servers and services accessed on your network.
- Faster access for Intergraph analysts means faster times-to-resolution for our customers

SecureLink is a solution designed specifically for the purpose of enabling enterprise technology companies to provide secure, auditable and efficient remote support and services to our security-conscious customers. SecureLink operates from a dedicated server located within Intergraph's secure network. A small client application called a "Gatekeeper" is then downloaded from the Intergraph SecureLink server and installed on servers or workstations that require remote connectivity.

The Gatekeeper installation is a simple 2-click process. No further work or configuration is normally required. The Gatekeeper is then in direct communication with the Intergraph SecureLink server and available for remote connectivity by an analyst. All communications are established by your Gatekeeper to Intergraph's SecureLink server. The Gatekeeper sends a tiny outbound "ping" every 2 minutes to check in with the SecureLink server to see if an analyst is requesting access. When an analyst requests access, a secure, fully encrypted SSH tunnel is created

with 128-bit AES encryption by default. Once the tunnel is established the Gatekeeper forwards the available ports on your server (usually RDP, FTP and a command-prompt) to the Intergraph analyst to support your systems.

Ultimately, you have full control over the settings and rules within your Gatekeeper. The standard Gatekeeper does come pre-configured with all the standard settings we require to get started. Intergraph analysts will typically require the RDP and FTP services to be enabled within your Gatekeeper(s), and we strongly encourage customers to setup email notifications.

For more information, you can visit the following Intergraph's SecureLink site which includes several answers to frequently asked questions as well as a flash demo describing how the SecureLink technology works:

<http://securelink.intergraph.com/moreinfo.vm>

To get started with Intergraph's SecureLink technology or if you have any other questions, please email the Intergraph SecureLink team at: [securelink@intergraph.com](mailto:securelink@intergraph.com)

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### *INTERGRAPH SOFTWARE UPGRADES*

Intergraph provides two types of software releases: Major and Minor. A Major release is made available to customers approximately every 12 to 18 months and includes significant product enhancements and improvements. Major features releases may result in structural changes to the database management system schema. Minor releases are minor incremental releases of the software that contain a limited number of minor enhancements as well as corrections for problems that have been found internally or reported by customers. Minor releases generally occur three to four times per year and typically do not contain structural changes to the database management system schema. Minor releases are planned and scheduled for the most current version (n) and the previous version (n-1). Minor releases for versions n-2 and earlier versions are not available. Intergraph encourages our customers to stay current within two releases of the most current supported version of software (version "n" or "n-1"). By staying current, customers avoid encountering issues that have been reported by others. All Intergraph software releases have to pass a stringent quality assurance testing process before being released for customer use.

Occasionally, a customer requires a code change to address a critical P1 or P2 issue on their current release (n or n-1 version) and they cannot wait for the next scheduled base product Minor update release. In these cases, a software patch is created for the particular product on the customer's current n or n-1 version release. When software patches are supplied to the Customer, Intergraph will supply technical instructions on how to install and verify the patch. As with Minor releases, software patches are only available for the most current version (n) and the previous version (n-1).

During initial project kick-off Intergraph and the Customer teams will mutually agree upon which version of software will be implemented.

Examples of the numbering scheme for Major releases, Minor releases, and software patches are as follows:

- Major releases: 9.0.x, 9.1.x, 9.2.x
- Minor releases: 9.0.0, 9.0.1, 9.0.2
- Patches (by product build #): I/Dispatcher\_9.0.1.32, I/Dispatcher\_9.0.1.33

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## INTERGRAPH-SG&I COMPATIBILITY REQUIREMENTS

Intergraph-SG&I product lines are developed with certain compatibility requirements. These requirements identify the intended operating environment for our software. This environment includes third party technologies like operating systems, database software, virtualization platforms, interface products, network configurations, hardware, and versions of standard desktop tools like Internet Explorer. Intergraph-SG&I cannot certify its software against all possible platform combinations, for that reason the following information clarifies our support policy for **Certified**, **Viable**, and **Not Viable** configurations.

- **Certified** – The particular platform (i.e., 3rd party operating systems, database software, virtualization platforms, interface products, network configurations, hardware, and/or desktop software) has been tested as a standard scenario in SG&I's Development and Quality Assurance cycles. For a list of Certified platforms, please see the "Certified Environments" matrix as available by product on the Intergraph-SG&I Customer Support web: <http://support.intergraph.com/>
- **Viable** – The particular platform has **not** been tested, however the technology is similar enough to one of the Certified platforms that compatibility is practical. Although we expect our applications to be compatible with Viable platforms, contractual performance or high availability requirements cannot be guaranteed.
- **Not Viable** - The particular platform is known to have limits with Intergraph-SG&I software and/or is not similar to any Certified configuration covered in our standard test environment.

From a Customer Support viewpoint, Intergraph-SG&I will accept and actively work all application support calls for **Certified** and **Viable** platforms. If Intergraph cannot reproduce the issue on a Certified platform and we determine that the problem is directly related to the Viable platform configuration, Intergraph reserves the right to request that the customer submit a services change order to resolve the issue or as another option, request that the customer implement our applications on a Certified platform. For customers running our applications on virtualized platforms, Intergraph-SG&I support will presume that any logged problem is common to both standard hardware and virtual configurations. However if we believe the issue is directly related to the virtualization platform, Intergraph-SG&I reserves the right to request that customers recreate the problem with the virtualized platform removed. Intergraph-SG&I does not provide support or fixes for **Not Viable** platforms.



## PROJECT DELIVERABLE SIGN OFF FORM

Marin County Sheriff's Office

<INSERT DELIVERABLE/MILESTONE NAME HERE>

Submission Date:		Sign-Off Target Date:	
Submitted By:		Submitted To:	
Customer Contract #:		Customer/Project #:	

### TYPE OF DELIVERABLE

SOW Tasks       Payments       Plans/Designs       Training       Other

### DELIVERABLE INFORMATION

**Deliverable Description:**

**Dollar Amount of Payment:**

With the deliverable described above complete, the Customer shall have five (5) working days to either sign-off that the deliverable has been met or state in writing to Intergraph the reason the deliverable has not been met.

Sign-off of the deliverable shall be based solely upon the deliverable meeting the requirements stated in the Agreement between Intergraph and Customer dated <Insert Month/Day/Year> and shall be indicated by the Customer signing the Project Deliverable Sign-off Form. If the Customer does not provide such sign-off or rejection within the five (5) working day period, then the deliverable will be deemed to have been signed off.

The signature below acknowledges that the deliverable described in the Agreement and listed above meets all of the appropriate criteria and supersedes all prior requirements for this item.

If completion of the task is associated with a payment milestone, Customer acknowledges completion of this payment milestone according to the Contract Payment Milestone Schedule and provides authorization to invoice this milestone.

**Authorized Customer Representative**

**Customer Contact Name**

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

**Table of Contents**

- Page 1 – Primary Site Overview and Specifications
- Page 2 – Primary Site Virtual Server Software Environment
- Page 3 – Disaster Recovery Site Overview and Specifications
- Page 4 – Clients
- Page 5 – Notes

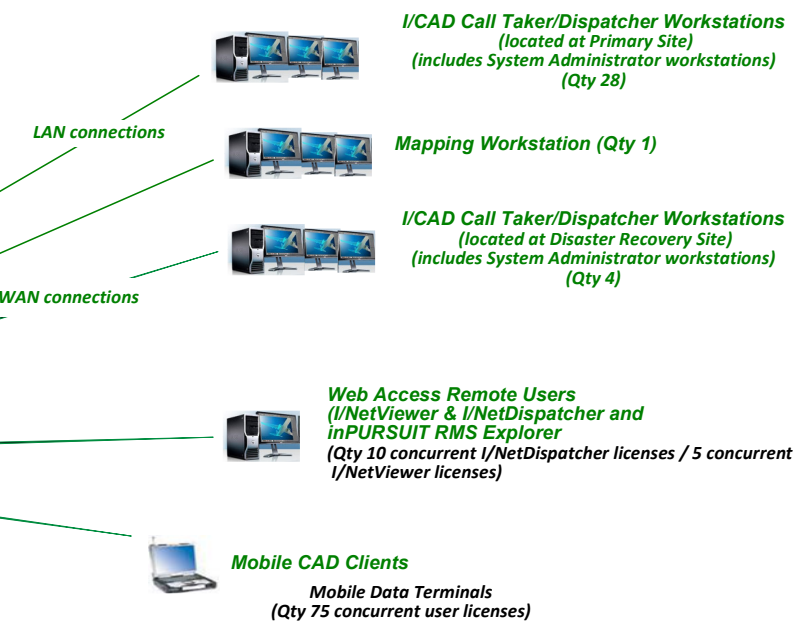
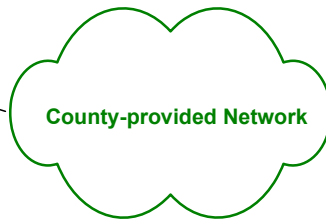
**Marin County, California  
CAD/Mobile  
Hardware / Software Configuration  
June 2014**

**Primary Site Overview and Specifications**

**Server Configuration in Computer Room  
(3 Rack Mounted Servers)**



Rack includes a common monitor, keyboard, and trackball



**VIRTUAL SERVERS LISTED BY SYSTEM:**

**I/CAD VIRTUALIZED SERVER ENVIRONMENT:**

- I/CAD Database Server #1
- I/CAD Database Server #2
- Interface/Communications Server #1
- Interface/Communications Server #2
- Mobile Computer System Server #1
- Mobile Computer System Server #2
- Archive/Report/CAD Web Application Server
- I/CAD Test/Training Server
- I/CAD Test/Training Interface/Communications Server
- I/CAD Training Server
- I/CAD Training Interface/Communications Server

**VIRTUAL SERVER AND STORAGE SPECIFICATIONS:**

**Host Server Specifications:**

**Dell PowerEdge R620**

- Two (2), 12-core processors
- 192GB RAM
- vSphere EnterprisePlus v5
- Dual 1GB SD internal cards for OS
- DVD-ROM combo drive
- Quad 1GB NIC
- Dual port 8GB Fiber HBA
- Dual power supplies

**Qty: 3**

NOTE: \*\*An additional host server will be needed if any of the Virtual Machines in the options are selected and moved to the base.

**SAN Specifications:**

**EMC VNX 5400 (with rack)**

- 70 300GB Drives for CAD
- 4 300GB Drives for Spares
- 74 Total 300GB Drives**
- 16 600GB Drives for VMWare
- 3 600 GB Drives for Spares
- 19 Total 600GB Drives**
- 3 SSD Drives for Fast Cache
- 2 Fibre Channel switches with **16** ports licensed

**Qty: 1**

**Rack**

**Recommended Rack:  
Dell 4220 42U Rack**

**Console** 1U KMM console with touchpad keyboard and 17-inch LCD

**KVM** 16-port analog switch

**PDU's (Qty 4)** 24A half-height PDUs with 14 C13 connectors and 2 C19 connectors. These require 1 L6-30 receptacle each. Part# 330-6420

**UPS** Intergraph recommends that an UPS be added to the final configuration and sized at that time.

**Qty: 1**

It is recommended that clustered virtualized servers or servers hosting mirrored databases do not reside on the same physical host server. If RMS virtual hosts are part of the virtualized CAD environment, it is recommended that all of the active database servers not reside on the same host. Using DRS and vMotion is encouraged to distribute the workload across virtual hosts.

**Windows Server OS Licenses**

Each proposed Windows Server OS license supports two virtual machines (VMs).

**Qty: 5 base  
2 optional**

**Legend**

- Base Bid Products
- Optional Products
- Customer Furnished Products

Cad install calculator	Site1	Site2	Site3	Site4	Site5	
Production numbers only						
# of I/Dispatcher Seats	28					28
# of I/CallTaker Seats						0
# of I/Mobile Clients	300					300
# of NetViewer Users						0
# of Net Dispatcher Users						0
Total # of Effective Seats						88





**SOFTWARE BY VIRTUAL SERVER COMPONENT**

**I/CAD Database Server #1**  
 Windows Server 2012 Standard Edition (SE)  
 Microsoft SQL Server 2012 EE  
 I/Executive – High Availability (includes ANI/ALI Interface)  
 #vCPUs – 12  
 Memory allocated – 64GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**I/CAD Database Server #2**  
 Windows Server 2012 SE  
 Microsoft SQL Server 2012 EE  
 Microsoft Visual Studio 2010 Professional Edition  
 #vCPUs – 12  
 Memory allocated – 64GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**Interface/Communications Server #1**  
 Windows Server 2012 SE  
 ANI/ALI Interface (included with CAD)  
 I/Telephone Device for the Deaf  
 Master Clock Interface (XNTP)  
 ProQA (included with CAD)  
 I/Informer  
 - Interface to SunRidge RMS (RIMS)  
 - I/CAD Message Suite for California State Switch  
 - DMV Photo Database  
 - CLETS/NCIC/CJIS  
 I/CADLink  
 - Tiburon RMS  
 - Amber Alerting System  
 - Patient Care Reporting (PCR)  
 I/Fire Station Alerting  
 I/Page  
 Voice Recorder (Vendor View)  
 I/FRMS-CADLink  
 - to FirePoint RMS  
 - to FIREHOUSE RMS  
 - to Vision Fire RMS  
 #vCPUs – 8  
 Memory allocated – 32GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**I/CAD Archive/Report/Web Application Server**  
 Windows Server 2012 SE  
 Microsoft SQL Server 2012 SE  
 I/Backup  
 I/NetViewer (10 concurrent Licenses)  
 I/NetDispatcher (5 concurrent Licenses)  
 #vCPUs – 12  
 Memory allocated – 64GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

Licenses listed on Interface/Communications Server #1 in the Primary Environment, but not listed on the optional Interface/Communications Server #2 in the Primary Environment, are available as Cold Backup licenses for the Disaster Recovery site at no cost.

Intergraph's CAD 9.3 system supports ProQA Paramount and Intergraph assumes that Marin County intends to procure ProQA Paramount prior to implementation of this project. Intergraph would be pleased to assist in obtaining a quote for the ProQA Paramount product for Marin County, if necessary.

**Interface/Communications Server #2**  
 Windows Server 2012 SE  
 ANI/ALI Interface (included with CAD)  
 I/Telephone Device for the Deaf  
 Master Clock Interface (XNTP)  
 ProQA (included with CAD)  
 I/Informer  
 - Interface to SunRidge RMS (RIMS)  
 - I/CAD Message Suite for California State Switch  
 - DMV Photo Database  
 - CLETS/NCIC/CJIS  
 I/CADLink  
 - Tiburon RMS  
 - Amber Alerting System  
 - Patient Care Reporting (PCR)  
 I/Page  
 Voice Recorder (Vendor View)  
 #vCPUs – 8  
 Memory allocated – 32GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**Mobile Communications Server #1**  
 Windows Server 2012 SE  
 I/Mobile Data Terminal (I/MDT) to Mobile for Public Safety (MPS)  
 I/Tracker for MPS  
 Mobile Responder for Public Safety Bundle (Qty: 1)  
 #vCPUs – 8  
 Memory allocated – 32GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**Mobile Communications Server #2**  
 Windows Server 2012 SE  
 I/Mobile Data Terminal (I/MDT) to Mobile for Public Safety (MPS)  
 I/Tracker for MPS  
 #vCPUs – 8  
 Memory allocated – 32GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**BI Direct Application Server**  
 Windows Server 2012 SE  
 BI Direct  
 #vCPUs – 6  
 Memory allocated – 64GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**Marin County, California  
 CAD/Mobile  
 Hardware / Software Configuration  
 June 2014  
 Primary Site Virtual Server Software Environment**

Intergraph allows no-cost training to be conducted on Test servers for a maximum of 30 days per year. Price and maintenance are \$0. Note that this does not apply to OS and SQL licenses.

**I/CAD Test/Training Server**  
 Windows Server 2012 SE  
 Microsoft SQL Server 2012 SE  
 I/Executive – High Availability (Test License)  
 I/NetViewer (10 concurrent Test Licenses)  
 I/NetDispatcher (5 concurrent Test Licenses)  
 #vCPUs – 12  
 Memory allocated – 64GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**I/CAD Test/Training Interface/Communications Server**  
 Windows Server 2012 SE  
 ANI/ALI Interface (included with CAD)  
 Master Clock Interface (XNTP)  
 ProQA (included with CAD)  
 I/MDT (Test License)  
 I/Tracker (Test License)  
 #vCPUs – 8  
 Memory allocated – 32GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**Note:** Test interface licenses are available for all proposed interfaces. However, implementation is subject to the customer's ability to provide connection to the applicable system.

#vCPUs – 8  
 Memory allocated – 32GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**I/CAD Training Server**  
 Windows Server 2012 SE  
 Microsoft SQL Server 2012 SE  
 I/Executive – High Availability (Training License)  
 I/NetViewer (10 concurrent Training Licenses)  
 I/NetDispatcher (5 concurrent Training Licenses)  
 #vCPUs – 8  
 Memory allocated – 32GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**I/CAD Training Interface/Communications Server**  
 Windows Server 2012 SE  
 ANI/ALI Interface (included with CAD)  
 Master Clock Interface (XNTP)  
 ProQA (included with CAD)  
 I/MDT (Training License)  
 I/Tracker (Training License)  
 #vCPUs – 8  
 Memory allocated – 32GB  
 OS disk space – 64GB  
 Apps disk space – 75GB

**Note:** Training interface licenses are available for all proposed interfaces. However, implementation is subject to the customer's ability to provide connection to the applicable system.

#vCPUs – 4  
 Memory allocated – 16GB  
 OS disk space – 60GB  
 Apps disk space – 75GB

**SAN Management Server**  
 Windows Server 2012 SE  
 Pull-out KVM equipped  
 #vCPUs – 2  
 Memory allocated – 16GB  
 OS disk space – 75GB

**vCenter Server**  
 Windows Server 2012 SE  
 Microsoft SQL Server 2008 R2 Express  
 vCenter Server  
 #vCPUs – 2  
 Memory allocated – 16GB  
 OS disk space – 75GB

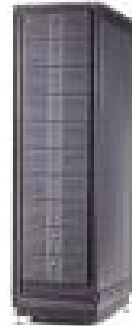
**Legend**  
 Base Bid Products  
 Optional Products  
 Customer Furnished Products



**Hot Backup – Disaster Recovery (DR) Server Environment**

Server Configuration in Computer Room

(1 Optional Rack Mounted Server)



**Marin County, California  
CAD/Mobile  
Hardware / Software Configuration  
June 2014**

**Disaster Recovery Site Overview and Specifications**

Licenses listed on Interface/Communications Server #1 in the Primary Environment, but not listed on the optional Interface/Communications Server #2 in the Primary Environment, are available as Cold Backup licenses for the Disaster Recovery site at no cost.

All licenses for the Disaster Recovery site are proposed as Cold Backup licenses at no cost. **Should Marin County desire Hot Backup licenses for the Disaster Recovery site, the licenses that are available as Hot Backup licenses have been optioned and are shown in Intergraph's pricing.**

**SOFTWARE BY VIRTUAL SERVER COMPONENT:**

**DISASTER RECOVERY VIRTUAL SERVER AND STORAGE SPECIFICATIONS:**

**Host Server Specifications:**

**Dell PowerEdge R720XD**

- Two (2), 8-core processors
- 128GB RAM
- vSphere EnterprisePlus v5
- Dual 1GB SD internal cards for OS
- DVD-ROM combo drive
- Quad 1GB NIC
- Dual power supplies
- 24 x 300GB 15K RPM SAS HDD

**Qty: 1**

**Rack**

**Recommended Rack:  
Dell 4220 42U Rack**

**Console** 1U KMM console with touchpad keyboard and 17-inch LCD

**KVM** 16-port analog switch

**PDU's (Qty 4)** 24A half-height PDUs with 14 C13 connectors and 2 C19 connectors. These require 1 L6-30 receptacle each. Part# 330-6420

**UPS** Intergraph recommends that an UPS be added to the final configuration and sized at that time.

**Qty: 1**

**DISASTER RECOVERY SERVERS:**

**I/CAD VIRTUALIZED SERVER ENVIRONMENT:**

- I/CAD Database Disaster Recovery Server
- Interface/Communications Disaster Recovery Server
- Mobile Computer Disaster Recovery Server

**Windows Server OS Licenses**

Each proposed Windows Server OS license supports two virtual machines (VMs).

**Qty: 2**

**I/CAD Database Disaster Recovery Server**

- Windows Server 2012 Standard Edition (SE)
- Microsoft SQL Server 2012 SE
- I/Executive – High Availability (includes ANI/ALI Interface)
- I/NetViewer (10 concurrent licenses)
- I/NetDispatcher (5 concurrent licenses)

#vCPUs – 12  
Memory allocated – 64GB  
OS disk space – 60GB  
Apps disk space – 75GB

**Mobile Communications Disaster Recovery Server**

- Windows Server 2012 SE
- I/Mobile Data Terminal (I/MDT) to Mobile for Public Safety (MPS) (cold backup)
- I/Tracker for MPS (cold backup)

#vCPUs – 8  
Memory allocated – 32GB  
OS disk space – 60GB  
Apps disk space – 75GB

**Interface/Communications Disaster Recovery Server**

- Windows Server 2012 SE
- ANI/ALI Interface (included with CAD)
- I/Telephone Device for the Deaf
- Master Clock Interface (XNTP)
- ProQA (included with CAD)
- I/Informer
  - Interface to SunRidge RMS (RIMS)
  - I/CAD Message Suite for California State Switch
  - DMV Photo Database
  - CLETS/NCIC/CJIS
- I/CADLink
  - Tiburon RMS
  - Amber Alerting System
  - Patient Care Reporting (PCR)
- I/Fire Station Alerting
- I/Page
- Voice Recorder (Vendor View)
- I/FRMS-CADLink
  - to FirePoint RMS
  - to FIREHOUSE RMS
  - to Vision Fire RMS

#vCPUs – 8  
Memory allocated – 32GB  
OS disk space – 60GB  
Apps disk space – 75GB

**Legend**

- Base Bid Products
- Optional Products
- Customer Furnished Products



**Marin County, California  
CAD/Mobile  
Hardware / Software Configuration**

June 2014

Clients

**CAD Calltaker / Dispatcher Workstations (Primary Site)  
Qty: 28**

(The 28 includes 4 dispatch supervisor workstations)



**CAD Calltaker / Dispatcher Workstations (Disaster Recovery Site)  
Qty: 4**



**Calltaker / Dispatcher Workstations (includes System Administrator Workstations)**

Windows 7 Professional, 64-bit  
I/Dispatcher (includes ProQA Interface)  
ProQA Licenses (Qty: 6)

**Calltaker / Dispatcher Workstations (includes System Administrator Workstations)**

Windows 7 Professional, 64-bit  
I/Dispatcher (backup licenses) (includes ProQA Interface)

**Map Maintenance Workstation  
Qty: 1**

1 Map Maintenance Workstation at Primary Site



**Map Maintenance Workstation**

Windows 7 Professional, 64-bit  
I/Dispatcher (Test License)  
I/Map Editor CC with GeoMedia Professional CC  
Map Administration Utility  
FME – Intergraph Edition  
I/Incident Analyst CC with GeoMedia Advantage CC

**I/NetViewer, I/NetDispatcher,  
Qty: 4**



I/NetViewer and I/NetDispatcher are server-based products accessed via the remote workstations.

**Web-Based Workstations**

Windows XP/Vista/Windows 7, 64-bit  
Internet Explorer  
I/NetViewer  
I/NetDispatcher

Intergraph's CAD 9.3 system supports ProQA Paramount and Intergraph assumes that Marin County intends to procure ProQA Paramount prior to implementation of this project. Intergraph would be pleased to assist in obtaining a quote for the ProQA Paramount product for Marin County, if necessary.

**Calltaker / Dispatcher Workstations (includes System Administrator Workstations)**

**Dell Precision T1650**

Quad-core Intel Xeon (3.1GHz) processor  
8GB RAM  
Single 16x DVD-ROM  
Single 500GB SATA disk drive  
512MB NVIDIA Quadro NVS 300, 4MON  
Broadcom NetXtreme 10/100/1000 Gigabit Ethernet controller-PCI Express card  
Three (3) Dell professional 19-inch monitors  
5-year ProSupport and 5-yr 4hr 7x24 onsite support

**Qty: 32**

**Map Maintenance Workstation  
Dell Precision T1650**

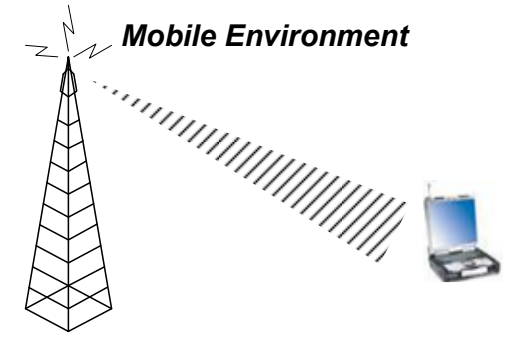
Quad-core Intel Xeon (3.1GHz) processor  
8GB RAM  
Single 16x DVD-ROM  
Single 500GB SATA disk drive  
512MB NVIDIA Quadro NVS 300, Broadcom NetXtreme 10/100/1000 Gigabit Ethernet controller-PCI Express card  
Two (2) Dell professional 19-inch monitors  
5-year ProSupport and 5-yr 4hr 7x24 onsite support

**Qty: 1**

**I/NetViewer and I/NetDispatcher Web-based Workstations**

Single, 2.66GHz quad-core Intel processor  
4GB RAM  
250GB hard drive  
Single, 1GB NIC card  
Single or double, 21" flat screen 1024 x 768 resolution monitor with 256 color display  
Sound bar or external speakers  
CD-ROM drive  
DVD drive

**Qty: 4**



**Mobile for Public Safety**

IBM PC-compatible  
Dual-core processor  
4GB RAM  
80GB hard drive  
1,024 x 768 resolution  
Centronics port for printing (if appropriate)  
Network connection (if to be docked on the network)  
Touch screen preferred

**Qty: 198**

**Mobile Data Computers and Smartphones**

For the Mobile Data Computers:

Windows 7  
Mobile for Public Safety Concurrent User Licenses (Qty: 75)  
The number of concurrent users is an estimate and can be modified during negotiations if necessary  
Easy Street Draw (site license)

For Smartphones:

Web Browser  
Mobile Responder Tablet CALs (Qty: 100)  
Mobile Responder Smartphone CALs (Qty: 10)

**Tablets or Smartphones**

Any commercially available mobile devices (tablet or Smartphone) running one of the following:

- Apple iOS 6.2 or later
- Android 4.2 or later (Android compatibility may be limited to a defined set of devices for v2.0. Other would be considered "viable" but not certified).

**Legend**

Base Bid Products  
Optional Products  
Customer Furnished Products



**Marin County, California  
CAD/Mobile  
Hardware / Software Configuration**

June 2014

Notes

1. Color representation in this configuration diagram is as follows:
  - **BLACK** represents equipment and software to be provided by the Intergraph or a subcontractor. Intergraph agrees to work with the Customer to determine and identify upgrades that may be applied to existing equipment, as well as to specify new hardware to be purchased directly by the Customer where necessary.
  - **GREEN** represents software, equipment, or hardware to be provided by the Customer.
  - **RED** represents optional software and hardware.
2. Intergraph assumes that the wide area network (WAN) will be provided by the Customer, and that the Local Area Network (LAN) will be implemented by Intergraph following a site survey, which is required for a firm, fixed bid.
3. Intergraph assumes that the wide area network (WAN) provided by the Customer and will support the following bandwidth requirements:
  - Each workstation running the I/Dispatcher client software requires a minimum bandwidth availability of 256Kbps.
  - Each mobile computer running the Mobile for Public Safety (MPS) application requires a minimum bandwidth availability of 128Kbps.
4. All workstations, PCs, laptops, and specified peripheral hardware provided by the Customer are assumed to meet the specifications delineated on this diagram.
5. During implementation, Intergraph implementation personnel build 5 CAD client workstations and 5 laptops while providing installation instructions so that the Customer's System Administrator(s) will have the knowledge required to install additional client software. Following this, Customer personnel will be expected to load all remaining client software. This approach ensures that, following the system implementation, Customer personnel will have the skill set necessary to build new client hardware.
6. Project management, implementation, and training quotes for this Request for Proposal (RFP) are based on the assumption that one version of software will be implemented, used for training, undergo all testing, and cutover to production.
7. Please note that Intergraph manipulates the mapping data into our system but does not create or edit source data.
8. Intergraph has assumed the following hardware/software is currently available and can be reused in the new system:
  - Web-based Workstation Clients (I/NetViewer and/or I/NetDispatcher clients) and associated client operating system software
  - Smartphone for Public Safety application clients and associated client operating system software
9. Intergraph assumes that the Customer will provide WAN communications, including wireless network communications, that will support the bandwidth cited in Item 3 above.
10. Any additional interface not specifically cited in the configuration will incur an additional cost. Intergraph is not responsible for costs associated with developing the third-party portion of any interface.
11. This Configuration Diagram illustrates the proposed hardware and software configuration at the time of Proposal submission. During implementation, the Intergraph Implementation Team, or an Intergraph subcontractor, may alter the original configuration to reflect the negotiated system or alter the location of software to take advantage of efficiencies determined following submission of the Proposal.
12. Unless specifically required by the RFP, Intergraph's configuration does not include furniture, client PCs, network services, firewalls, backup software, anti-virus software, or Active Directory implementation services.

\* Intergraph applications are provided at reduced cost for the Training environment.

\* Intergraph applications are provided at no cost for the Test environment.

\* Test and Training interface licenses are available for proposed interfaces. However, implementation is subject to customer's ability to provide connection to the applicable system.

\* Please note that all third-party external interface connections required for Training and Test Environments are the responsibility of the City and/or third-party vendor(s).

\* Network communications to remote sites: **minimum** 128Kbps per workstation for remote web-based sites

\* Optional products and services are included in the pricing for consideration.

Legend	
Base Bid Products	
Optional Products	
Customer Furnished Products	

 **INTERGRAPH**

## Table of Contents

<b>XNTP for Time Synchronization .....</b>	<b>2</b>
<b>I/Tracker .....</b>	<b>2</b>
<b>I/Page 4</b>	
<b>ANI/ALI (Included with I/Executive – HA).....</b>	<b>5</b>
<b>I/Telephone Device for the Deaf (I/TDD).....</b>	<b>7</b>
<b>I/Fire Station Alerting (I/FSA) .....</b>	<b>8</b>
<b>I/CADLink to RMS (Tiburon RMS, Amber Alerting System and Patient Care Reporting Interface)....</b>	<b>9</b>
<b>I/FRMS-CADLink to FireHouse RMS .....</b>	<b>10</b>
<b>I/FRMS-CADLink to FirePoint RMS .....</b>	<b>11</b>
<b>I/FRMS-CADLink to VisionFire RMS.....</b>	<b>12</b>
<b>I/Mobile Data Terminal (I/MDT) to MPS and Mobile Responder.....</b>	<b>13</b>
<b>Informer to CLETS Message Switch .....</b>	<b>14</b>
<b>Informer to SunRidge RMS .....</b>	<b>15</b>
<b>Informer to CAL Photo/DMV.....</b>	<b>17</b>
<b>CAD Nested Queries .....</b>	<b>18</b>
<b>Voice Recorder .....</b>	<b>18</b>

## XNTP for Time Synchronization

### Description

XNTP is a third-party freeware package developed by the University of Delaware that, when used in conjunction with the SpectraCom NetClock receiver, updates the servers' system clocks permitting time synchronization within the public safety environment.

### Proposed Approach:

As proposed, Intergraph will use the XNTP freeware, publically available from the University of Delaware, to synchronize the server environment using the existing City SpectraCom NetClock receiver hardware. Because timestamps are applied as data is written to or requested from the server environment, it is not necessary to synchronize individual client hardware. However, if desired, the City may use the native W32Time functionality, internal to the Windows® operating environment, to synchronize PSAP client hardware with the NetClock receivers.

### Assumptions:

None

### Constraints:

None

## I/Tracker

### Interface Description

The I/Tracker interface accepts incoming vehicle location data received from an Automatic Vehicle Location (AVL) device and/or from I/Mobile Data Terminal (I/MDT) when global positioning system (GPS) data is sent by an in-vehicle computer. This product enables unit location to be automatically updated on I/CAD System workstation and Mobile for Public Safety map displays.

When used in concert with the proposed optional I/Incident Analyst product, I/Tracker allows playback of routes taken by units equipped with AVL hardware.

### Proposed approach

I/Tracker accepts incoming vehicle location data from an Automatic Vehicle Location (AVL) device and/or from I/Mobile Data Terminal (I/MDT) when global positioning system (GPS) data is sent by an in-vehicle computer. This product enables unit location information to be updated automatically on workstation and Mobile for Public Safety map displays.

When AVL systems accept commands that control the frequency of location updates from an external system, I/Tracker interfaces with the AVL system to define the frequency of location reporting based on unit type and status and on event type. AVL data may be used within the I/CAD System Recommend Unit functionality.

Depending on the existing AVL solution, the I/Tracker interface supports three different modes of operation: passive, dynamic, and poll group.

In the passive mode, I/Tracker interfaces to the radio data system and receives AVL position reports directly from in-vehicle GPS receivers. Passive mode minimizes processing and provides a reasonable solution for relatively small numbers of vehicles and reduced radio system bandwidth.

In dynamic mode, GPS receivers must be programmable by an external source. This allows I/Tracker to control the reporting behavior of the GPS receiver so that parameters, such as delta distance and delta time, may be varied.

In poll group mode, I/Tracker interfaces to an AVL controller, a software/hardware solution that performs the actual polling of vehicles. The AVL controller may also perform other functions, such as differential correction.

### **Assumptions**

Intergraph assumes that MCSO-provided mobile data terminals meet all hardware/software requirements on the Configuration Diagram.

The I/Tracker interface establishes communications between a third-party AVL controller/message switch and the I/CAD System. Intergraph assumes that communications between these systems will be achieved via TCP/IP or RS-232.

Intergraph assumes that all mobile units run the same application level protocol.

The I/Tracker interface supports NMEA 0183, OpenSky, BlueTree, and TAIP protocols and devices that support these protocols should be compatible with I/Tracker. If MCSO is currently running AVL hardware that I/Tracker does not support, additional services must be purchased to develop a custom AVL interface.

### **Constraints**

MCSO is responsible for providing complete and accurate documentation on the interface to the AVL controller/message switch, on any MCSO-provided GPS hardware and on the radio system.

This is a software only interface. GPS hardware and associated installation services for each vehicle, as well as a referential GPS base station for differential correction if desired, are assumed to be provided by MCSO. The infrastructure necessary to support the AVL bandwidth requirement must also be provided by MCSO.

Use of an IPStack limits the mobile environment to one network protocol at a time. To access multiple wireless communication systems will require MCSO to implement a middleware product, such as NetMotion or RadiolP. Intergraph assumes MCSO currently has the middleware infrastructure in place.

Intergraph cannot be held accountable for incompatibilities that occur in this interface as the result of changes to input/output formats or data requirements associated with the third-party vendor's product.

Please note that each distinct implementation of the I/Tracker interface to a different AVL controller, radio system, or direct AVL solution that does not require an AVL controller requires a separate copy and implementation of the I/Tracker product.

If MCSO has AVL hardware that I/Tracker currently does not support, Intergraph reserves the right to bid additional services to develop a custom AVL interface.

## I/Page

### **Description:**

I/Page interfaces to a third-party paging controller, enabling alphanumeric messages or tonal pages to be transmitted to destination pagers from I/CAD clients.

#### Proposed Approach:

Using TAP, SNPP Level 1, SMPP, SMTP, or WCTP protocol, I/Page interfaces to a third-party paging controller to enable alphanumeric messages or tonal alerts to be transmitted to destination pagers from I/CAD clients. Using the I/CAD System Messaging functionality, pages may be addressed to individuals or groups of pagers, and pages are logged by the I/CAD System. I/CAD can also be implemented to send standard pages to designated pagers in response to a unit dispatch. Message length is limited to the capabilities supported by the pager.

Because most paging systems only support one-way communications, I/Page cannot confirm receipt of a message, but can confirm that the paging controller acknowledged the message, unless the paging system uses TAP protocol. If a message cannot be sent, designated users receive notification indicating the nature of the problem.

### **Assumptions:**

Each distinct paging controller type requires a separate license of I/Page. However, MCSO may use multiple paging providers using the same protocol, and these would be considered a single paging controller for licensing purposes. Intergraph's current bid assumes use of a single paging controller type. If additional controller types are used, Intergraph's bid must be re-evaluated. Each license of the I/Page interface supports any number of pagers.

Intergraph assumes that one of the protocols listed above will be used. If not, Intergraph's proposal for this interface is null and void.

Connection to the paging controller is assumed to be via TCP/IP or RS-232.

### **Constraints:**

I/Page does not support bi-directional communications. However, page acknowledgement is supported if the paging controller used supports the SNPP Level 1, SMPP, WCTP, or SMTP protocol. TAP protocol does not support acknowledgement.

MCSO is responsible for providing any Software Development Kits (SDKs), phone lines, modems, or internet connections necessary to implement the interface to the paging controller.

MCSO is responsible for providing complete and accurate documentation for the paging system interface.

Intergraph cannot be held accountable for incompatibilities that occur in this interface as the result of changes to input/output formats or data requirements associated with the third-party vendor's product.



## ANI/ALI (Included with I/Executive – HA)

### **Description:**

The ANI/ALI interface downloads telephone company information and both lights the ANI/ALI button on the Event Information dialog box and emits an audible alert to indicate that an E-911 call has been received. When the operator selects the ANI/ALI button, the software populates the Location, Phone, and Address fields of the I/CAD System Event Information dialog box. If the event location is different than the caller's address, the operator can override the incorrect address by typing in the correct one.

### Proposed Approach:

The proposed ALI interface is a COTS interface that transfers data from an incoming ALI packet to the I/CAD Event Information form. By default, when the interface initially receives telephone company information, the Event Information ANI/ALI button lights, indicating that an E9-1-1 call has been received. By selecting the lit ANI/ALI button, the operator signals the I/CAD System to populate the relevant Event Information dialog box fields with ALI data. Alternately, the I/CAD System may be configured to automatically populate the Event Information dialog box with the ALI data without requiring the operator to select the ANI/ALI button.

For cases where the event location differs from the caller's address, the operator may override the ALI location data. However, both the original ALI address and the manually entered address are retained in the Event History.

In addition to landline calls, Intergraph's ALI interface supports FCC Phase II requirements for cellular 911 calls, which mandates that geographical coordinates associated with caller location be added to the ALI packet received by emergency communications centers. Using these coordinates, the I/CAD System displays the caller's location on the I/CAD Map. If desired, the nearest civic address may also be estimated and displayed.

The following commands are used to implement geographic representation of a wireless caller's location:

- **Locate Call** – Because a lag of as much as 20 seconds can occur prior to the availability of geographical coordinate data from the wireless provider, initial ALI data does not typically include coordinate information. Consequently, the I/CAD System initiates a "re-bid" to pick up geographic coordinates. The I/CAD System Event Information dialog box signals the availability of re-bid data by lighting a Locate Call button, and the operator downloads the data to the appropriate Event Information fields by selecting the highlighted button
- **Automatic Address Estimation** – To enhance the usability of coordinate data in the I/CAD environment, when coordinate data populates the Event Information dialog box Location field, the Location Verify functionality automatically estimates the nearest address and cross streets and adds the estimated address as a comment in the Event Information dialog box Remarks field

### **Assumptions:**

Intergraph assumes that MCSO's ANI/ALI controller supports one of the following standard NENA format versions: Versions 1 and 2 (Fixed Length ASCII), NENA version 3 (Tagged Delimited) and NENA version 4 (XML). These Formats are documented in NENA documents NENA 02—010 v9 now "Legacy Data formats for ALI, MSAG & GIS" and NENA 04-001 v2, now "E9-1-1 PSAP Equipment."

The ANI/ALI interface component of the I/CAD System will provide the interface to an ANI/ALI controller. It will accept ANI/ALI packets containing ASCII data via an Ethernet Network (TCP/IP) or an RS-232 connection.

Intergraph assumes that the ANI/ALI protocol packet provides the Number, Address, and answering position of the call when answered.

Implementation assumes the location data will be delivered to the I/CAD System by the Positron/Intrado 911 Telephone System using one of the NENA-approved formats listed above. Intergraph has proposed services to implement the interface to the Production System, and the Hot Backup System.

Intergraph assumes that 10-digit administrative calls, outgoing calls, and one-button transfer calls are handled by the existing telephone system.

The exact format of data in the ALI packet, including formats used by wireless carriers, must be provided to Intergraph by MCSO.

Intergraph assumes that ALI interfaces and implementations are required for the I/CAD Production System, and the Backup System.

Intergraph assumes that this interface will require implementation of our COTS ALI interface and will not require development. If this is not a valid assumption, Intergraph reserves the right to re-bid the interface to include development costs.

As of June 3, 2005, the FCC requires that all VoIP vendors route 911 VoIP calls through the E9-1-1 infrastructure. Therefore, Intergraph assumes that the MCSO PSAP infrastructures are capable of handling the ALI database lookup for these calls. Once implemented, ALI packets for VoIP calls will be processed by the I/CAD System in the same manner as landline or cellular calls: VoIP calls that include a caller's address will be handled like landline calls; and VoIP calls that include a coordinate location will be handled like Phase II cellular calls. If MCSO requires an interface that receives ALI or other data for VoIP calls outside of the current infrastructure, Intergraph will bid a custom interface at additional cost.

**Constraints:**

MCSO must provide a complete and accurate description of the current telephonic infrastructure, and MCSO assumes responsibility for the maintenance and support of hardware and software, and of cabling required to provide the physical interface between Interface/Communications Server(s) and the infrastructure. Intergraph's demarcation point for responsibility of the ALI stream is at the port or socket on the Interface/Communications Server(s)

## I/Telephone Device for the Deaf (I/TDD)

### **Description:**

I/Telephone Device for the Deaf (I/TDD) interfaces to telecommunications hardware/software for the hearing or speech-impaired to facilitate communications between incoming TDD calls and TDD-enabled workstations. Once implemented, the I/TDD interface automatically detects TDD calls and opens a TDD form, allowing the operator to communicate with the caller via the workstation keyboard.

### **Proposed Approach:**

As proposed for MCSO, the I/TDD software interfaces to TDD hardware, will use the Positron "External TDD/TTY Interface with Power 911 Intelligent WorkStation - rev 2 May 31, 2004,"

When a call begins, if the call taker suspects it is a TDD call, she/he answers the call by click *Answer* button on I/TDD Client GUI to send an interrogate message. If P911 detects the call is a TDD call, it notifies I/TDD Server through *Connected in Baudot Mode* or *Connected in ASCII Mode* command, and then the caller and call taker begins conversation. If P911 can't detect a TDD call after a timeout period, the call is terminated. *Interrogation Timeout* and *Line Disconnect/Reset* commands are sent to I/TDD Server.

When the AutoDetect mode is enabled on Positron side, if the TDD Call is in Baudot mode, a *Connected in Baudot Mode* command is sent to I/TDD automatically from Positron. A prompt message will be shown the message gadget in I/TDD Client GUI to ask the operator to answer the call. The operator must click the *Answer* button to active the call. The Auto Answer feature of I/TDD is not supported.

During a TDD call, the call-taker can click the *Voice Mode* button to switch from TDD mode to Voice mode; can also click the *TDD Mode* button to switch back. When switch from TDD mode to Voice mode, the Reset command is sent to Positron P911; when switch from Voice mode to TDD mode, the Interrogate command is sent to Positron. Since I/TDD server couldn't distinguish if the Reset from Positron is for a Voice mode switch or for a call termination, it is recommended the operator always use the I/TDD Client GUI to hang up a call.

### **Assumptions:**

Intergraph assumes MCSO will use the Positron Viper system.

#### For the Positron System:

MCSO's Positron system must support the Positron "External TDD/TTY Interface with Power 911 Intelligent WorkStation - rev 2 May 31, 2004," and MCSO is responsible for determining that their Positron system supports this interface. If interface upgrades or SDKs are necessary, MCSO is responsible for providing these.

### **Constraints:**

Intergraph cannot be held accountable for incompatibilities that occur in this interface as the result of changes to input/output formats or data requirements associated with the third-party vendor's product.

MCSO will be responsible for soliciting and procuring the cooperation and services of the third-party vendor to produce its side of the interface.

MCSO is responsible for providing complete and accurate documentation on the TDD interface.

MCSO is responsible for purchasing any software or hardware necessary to interface with Intergraph's I/TDD interface application.

Per discussions with Positron about the TDD interface, the Positron Power911 TDD interface for 9.0 will also work with the Viper controller. This bid assumes that MCSO will use the Positron Viper system. If MCSO has another system, Intergraph reserves the right to re-evaluate this bid.

## I/Fire Station Alerting (I/FSA)

### **Description:**

I/Fire Station Alerting (I/FSA) consists of a COTS interface to provide remote fire station turnout when units are dispatched and to perform operations, such as ringing alarms and enabling public address systems, as supported by the FSA system in place.

### **Proposed Approach:**

I/Fire Station Alerting (I/FSA) provides support for remote fire station turnout when unit(s) are dispatched within the I/CAD System. This interface communicates with alerting devices located inside the fire station to perform operations such as ringing alarms and enabling public address systems. Fire station operators can also change the status of vehicles from the station, providing updates, such as Enroute and Available in Station. The actions available in the fire stations are implementation dependent upon the alerting controller with the functionality of the interface limited to enabling switches upon unit dispatch, disabling switches on a unit status change, and setting unit status.

The alerting controllers to which the I/Fire Station Alerting interface communications are as follows:

- Motorola: MOSCAD 6.0, 6.2, 7.0, 7.25 and 7.34 of the Motorola MOSCAD API – Implementation to the MOSCAD assumes that MCSO has the MOSCAD Front End Processor (FEP), which provides connectivity to the alerting system for I/CAD
- WestNet: ZIR command set protocol v8, v10, and v11
- CADVoice Locution: CADVoice revision 4.0
- Zetron: Zetron Model M26/M6
- Zetron25: Tone paging support
- Zetron: 4000
- Motorola: CentraComm Gold Elite (MCGE)
- Motorola : MCC7500

### **Assumptions:**

Intergraph's proposal assumes that this is a standard implementation with no product enhancements to the native functionality described above.

One implementation of I/Fire Station Alerting interface is required for each distinct Turnout Controller. Intergraph has assumed that all stations will use the same controller. If not, the pricing associated with this bid must be re-visited.

MCSO has one of the existing Fire Station Alerting systems currently supported.

### **Constraints:**

Intergraph cannot be held accountable for incompatibilities in its interface which are due to changes in input/output formats or data requirements of the vendor's product.

MCSO is responsible for providing complete and accurate documentation on the devices to be interfaced.

MCSO is responsible for providing any specific SDK necessary to implement the interface to the Turnout Controller. Please note the station alerting systems that we support are listed above and the I/Fire Station Alerting interface currently interfaces with those systems.

## I/CADLink to RMS (Tiburon RMS, Amber Alerting System and Patient Care Reporting Interface)

### **Description:**

Intergraph's generic I/CADLink product delivers I/CAD event data collected during a call for service to a mutually agreed upon location to enable a third-party (RMS, ePCR, etc) vendor to upload the data and populate relevant fields/tables within their database.

### **Proposed Approach:**

The I/CADLink interface supports the automatic transfer of I/CAD event data generated during a Call for Service to the to a third-party database. The designated third-party vendor (or MCSO) is then responsible for importing the information into their database.

I/CADLink will push call for services information to an agreed location where the other system- can retrieve the file data. This will require additional services from the other vendor to consume and distribute the calls for service information provided via the I/CADLink application.

### **Assumptions:**

Intergraph assumes that the other vendor will cooperate with Intergraph in designating a mutually agreeable location for delivery of the event data and will import the ASCII (fixed length or comma-delimited) or XML file data to the relevant fields/tables to populate their database.

I/CADLink will transfer data to the appropriate LERMS. The LERMS will then send the calls for service information to their respective FBR systems. If this is not the case, then the LERMS vendor(s) will need to write an interface from their FBR systems to retrieve data that is stored in the MPS archive directories.

### **Constraints:**

Note that I/CAD events do not have to be closed before they are candidates for export by I/CADLink however if the file is not closed, any updated files that are published will contain all of the event data again. I/CADLink does not provide a delta report. It will be the responsibility of the other system to determine the differences between each report.

I/CADLink does not provide features or I/CAD interfaces for obtaining "next available case numbers," "location verification," or any other I/CAD-related functionality or interfaces; it only provides functionality for export of specified event data for closed I/CAD events.

Intergraph cannot be held accountable for incompatibilities in its interface which are due to changes in input/output formats or data requirements of the vendor's product.

## I/FRMS-CADLink to FireHouse RMS

### **Description:**

Intergraph's I/FireRMS-CADLink product delivers I/CAD event data collected during a call for service to a mutually agreed upon location to enable FireHouse RMS to upload the data and populate relevant fields/tables within their database.

### **Proposed Approach:**

The I/FireRMS CADLink interfaces to various Fire RMS applications to support the automatic transfer of I/CAD Event data generated during a Call for Service. The designated third-party RMS vendor (or MCSO) is then responsible for importing the information into the target database. I/FRMS-CADLink interfaces to various Fire RMS systems, facilitating the automatic transfer of I/CAD event data.

I/FireRMS-CADLink automates data transfers using INC0 transactions, as described below:

- The interface generates an INC01 transmission when the first unit belonging to a defined I/CAD Agency and Dispatch Group clears an event. The INC01 transmission contains event information
- The interface generates an INC02 transmission each time a unit belonging to a defined I/CAD Agency and Dispatch Group clears an event. The INC02 transmission provides unit-level information
- The interface generates an INC03 transmission when the last unit clears the event and the event is closed. This transmission contains updated event data that has occurred since the initial INC01 transmission

### **Assumptions:**

I/FRMS-CADLink to FIREHOUSE RMS interfaces to a single database via ASCII File transfer.

If MCSO has multiple FIREHOUSE databases, then additional copies of the CUSTOM INTERGRAPH CAD MONITOR provided by FIREHOUSE are required.

If MCSO requires different configuration of the FRMS-CADLink, additional licenses of I/FRMS-CADLink are required.

FIREHOUSE will need to provide the CUSTOM INTERGRAPH CAD MONITOR to interface Intergraph's FRMS-CADLink application.

I/FRMS-CADLink will transfer data to the appropriate FireRMS. The FireRMS will then send the call for service information to their respective FBR systems. If this is not the case, then the FRMS vendor(s) will need to write an interface from their FBR systems to retrieve data that is stored in the MPS archive directories.

### **Constraints:**

MCSO is responsible for acquiring and installing a data import capability into their current Fire RMS(s).

Intergraph cannot be held accountable for incompatibilities in its interface which are due to changes in input/output formats or data requirements of the vendor's product.

MCSO is responsible for providing the FireHouse RMS system communications and associated equipment. MCSO is also responsible for acquiring and installing the CUSTOM INTERGRAPH CAD MONITOR data import capability into their current Fire RMS system.

## I/FRMS-CADLink to FirePoint RMS

### **Description:**

Intergraph's generic I/FireRMS-CADLink product delivers I/CAD event data collected during a call for service to a mutually agreed upon location to enable the third-party FirePoint RMS vendor to upload the data and populate relevant fields/tables within their database.

### **Proposed Approach:**

The I/FireRMS CADLink interfaces to various Fire RMS applications to support the automatic transfer of I/CAD Event data generated during a Call for Service. The designated third-party RMS vendor (or MCSO) is then responsible for importing the information into the target database. I/FRMS-CADLink interfaces to various Fire RMS systems, facilitating the automatic transfer of I/CAD event data.

I/FireRMS CADLink automates data transfers using INC0 transactions, as described below:

- The interface generates an INC01 transmission when the first unit belonging to a defined I/CAD Agency and Dispatch Group clears an event. The INC01 transmission contains event information
- The interface generates an INC02 transmission each time a unit belonging to a defined I/CAD Agency and Dispatch Group clears an event. The INC02 transmission provides unit-level information
- The interface generates an INC03 transmission when the last unit clears the event and the event is closed. This transmission contains updated event data that has occurred since the initial INC01 transmission

### **Assumptions:**

This bid assumes that the other vendor will write their side of the interface to consume the XML data. Bid implementation services and trips on a separate PCR.

I/FRMS-CADLink allows incident information to be sent to the remote Fire RMS through the exchange of well-formed XML (extensible markup language) documents. The transmission protocol between I/FRMS-CADLink and the remote Fire RMS is assumed to be TCP/IP.

MCSO is responsible for acquiring and installing data import capability into their current Fire RMS system.

### **Constraints:**

IPS cannot be held accountable for incompatibilities in its interface which are due to changes in input/output formats or data requirements of the vendor's product.

## I/FRMS-CADLink to VisionFire RMS

### **Description:**

Intergraph's generic I/FireRMS-CADLink product delivers I/CAD event data collected during a call for service to a mutually agreed upon location to enable the third-party VisionFire RMS vendor to upload the data and populate relevant fields/tables within their database.

### **Proposed Approach:**

The I/FireRMS CADLink interfaces to various Fire RMS applications to support the automatic transfer of I/CAD Event data generated during a Call for Service. The designated third-party RMS vendor (or MCSO) is then responsible for importing the information into the target database. I/FRMS-CADLink interfaces to various Fire RMS systems, facilitating the automatic transfer of I/CAD event data.

I/FireRMS CADLink automates data transfers using INCO transactions, as described below:

- The interface generates an INC01 transmission when the first unit belonging to a defined I/CAD Agency and Dispatch Group clears an event. The INC01 transmission contains event information
- The interface generates an INC02 transmission each time a unit belonging to a defined I/CAD Agency and Dispatch Group clears an event. The INC02 transmission provides unit-level information
- The interface generates an INC03 transmission when the last unit clears the event and the event is closed. This transmission contains updated event data that has occurred since the initial INC01 transmission

### **Assumptions:**

This bid assumes that the other vendor will write their side of the interface to consume the XML data. Bid implementation services and trips on a separate PCR.

I/FRMS-CADLink allows incident information to be sent to the remote Fire RMS through the exchange of well-formed XML (extensible markup language) documents. The transmission protocol between I/FRMS-CADLink and the remote Fire RMS is assumed to be TCP/IP.

MCSO is responsible for acquiring and installing data import capability into their current Fire RMS system.

### **Constraints:**

IPS cannot be held accountable for incompatibilities in its interface which are due to changes in input/output formats or data requirements of the vendor's product.



## I/Mobile Data Terminal (I/MDT) to MPS and Mobile Responder

### Description:

The proposed I/Mobile Data Terminal (I/MDT) interface supports communications between the dispatch environment and the mobile data terminals (MDTs) running the proposed Mobile for Public Safety.

### Proposed Approach:

Used in conjunction with the Mobile for Public Safety (MPS) application, the I/Mobile Data Terminal (I/MDT) interface supports communications between the mobile user, the I/CAD System, including users running I/NetViewer or I/NetDispatcher, and other mobile data terminals (MDTs) running the MPS or optional Smartphone for Public Safety applications. To this end, the combination of I/MDT and MPS application or Smartphone product extend the range of the I/CAD System, empowering remote personnel with client access to information maintained in the I/CAD Database and to a subset of I/CAD commands. Furthermore, because the I/MDT and mobile applications are specifically developed to work within the I/CAD environment and are designed to use the data structure of the I/CAD Database, the flow of data between the proposed mobile data communications system and the existing I/CAD System is seamless.

For MPS, Intergraph recommends:

EDGE, EVDO, 3G or 4G connection.

802.11 g or b

Intergraph's Mobile Responder for Public Safety (if purchased in options) provides support for mobile handheld devices within the I/CAD environment, offering a subset of the functionality available in the Mobile for Public Safety application. Functions available include the ability to: initiate I/Informer queries and view responses; send short text messages; receive dispatch reports; receive unit status updates; and send officer emergency requests.

You must have:

- A commercially available mobile device (smart phone or tablet) that is running
  - Apple devices (iPhone and iPad) with iOS 6.0 and up
  - Android devices with OS versions 4.2 and up

Certification has been done on a limited number of devices due to the extreme diversity in the Android market. Testing has been done with the Samsung Galaxy S3, Asus Nexus 7 tablet, and Asus Nexus 10 tablet. While other devices are certainly viable, Intergraph advises customers to test with a single device before purchasing large quantities.

- Purchase a Windows Server Client Access License
- A separate license of I/MDT for Mobile Responder interface
- I/Exec
- I/CAD Net
- I/MDT

- I/Informer
- Intergraph CAD database configuration

The following I/Informer transactions are supported:

- RQ - vehicle registration query
- QW- person warrant query
- DQ - driver's license query
- QA – query article
- QG – query gun

**Assumptions:**

Intergraph assumes that MCSO will use one of the commercially mobile phone vendors that supports the specified devices above.

Intergraph assumes that all of the mobile devices will use the same application level protocol otherwise the effort will have to be re-scoped and a change order for the additional cost will be issued.

Intergraph assumes that any CJIS transactions will comply with the FBI Security Policy related to encryption.

**Constraints:**

For Mobile Responder you must use a commercially available mobile phone vendor which supports the phones specified above.

Per US CJIS security policy, customers who wish to access US national databases using mobile devices must use data encryption that is FIPS 140-2 certified and meets other CJIS requirements. MCSO is responsible for ensuring that their data communications infrastructure and devices comply with these requirements.

## Informer to CLETS Message Switch

**Description:**

I/Informer provides an interface to external data sources such as the CLETS message switch. This product can be customized to interface to a variety of data sources using a variety of protocols, including TCP/IP, MQ Series, ODBC, ADO and RS232.

**Proposed Approach:**

The Informer interface is in the form of a link control process connected to the external system, a server process routing all queries and responses, and a graphical user interface. The user interface drives the forms and does the queuing of responses local to each workstation. It reads all input from the forms and builds the query string. Responses from queries are returned in a form that allows them to be viewed, printed, or attached to an event. The ability to attach the response to an event, and print the response to a local printer is provided through the user interface process.

I/Informer is the primary tool for allowing I/CAD to participate in enterprise application integration architectures. As mentioned earlier, I/Informer acts as the 'data broker' between I/CAD, I/Leads and external data sources. I/Informer can be configured to use and display HTML forms on its front-end

Client application. I/Informer can display HTML, XML/XSL or plain ASCII text responses on that same Client.

MCSO has the ability to develop their own HTML forms. Using these forms and VB scripting tools, MCSO can create a query transaction in the exact format the external data source is expecting. I/Informer will then submit (deliver) that query transaction to the external data source and wait for a response. When I/Informer receives that response, it is routed back to the Client workstation/MDC where the query was originally submitted.

**Assumptions:**

Any costs associated with a formal certification of the interface (if required by the host) are to be borne by MCSO.

Intergraph assumes that the interface to NCIC will be a peer-to-peer network packet exchange, based on the TCP/IP protocol.

Intergraph assumes that a CLETs test line will be made available at the time the system is staged.

Intergraph assumes this is a straight connection to the state and not through a county or custom message switch.

Intergraph assumes that the queries to CLETS/NCIC are through the same message switch.

Intergraph proposes the utilization of their California State Suite of queries and any additional queries not specified in the state suite will require additional services. Additional transactions may be purchased in groups of 5.

**Constraints**

I/Informer is licensed per Site. Additional services will be required and quoted for any additional API, message switch or external data source not already quoted in Exhibit B – Project Deliverables (Pricing).

I/Informer currently supports XML responses in TCP/IP packets.

MCSO is responsible for providing a complete and accurate description of the connection method and query data model. MCSO is responsible for any software/hardware required to implement the communication interface to each.

## Informer to SunRidge RMS

**Description:**

I/Informer provides an interface to external data sources such as the SunRidge RMS. This product can be customized to interface to a variety of data sources using a variety of protocols, including TCP/IP, MQ Series, ODBC, ADO and RS232.

**Proposed Approach:**

The interface is in the form of a link control process connected to the external system, a server process routing all queries and responses, and a graphical user interface. The user interface drives the forms and does the queuing of responses local to each workstation. It reads all input from the forms and builds the query string. Responses from queries are returned in a form that allows them to be viewed, printed, or

attached to an event. The ability to attach the response to an event, and print the response to a local printer is provided via the user interface process.

**Assumptions:**

Intergraph assumes no nested queries, image support, and XML to clipboard functionality are bid.

Intergraph assumes this is the same SOAP/WINHTTP interface currently deployed by Intergraph/SunRidge at Clark County Washington.

Intergraph assumes that MCSO and SunRidge will manage the required User Logins and the SSL certificates required for the web service connection.

Intergraph assumes that Marin County will use the existing transactions. If not, additional transactions can be purchased.

- Assign Case Number
- Get Case
- Get Case Photo
- Get Narrative
- Get Photo
- Get Premise Photo
- Search Person
- Get Person (returns more detail from Search Person inquiry)
- Search Vehicle
- Get Vehicle (returns more detail from Search Vehicle inquiry)

Intergraph assumes that the connection method will be SOAP/WINHTTP and that the exact specifications will be provided to Intergraph by MCSO.

Intergraph assumes that MCSO will coordinate meetings with SunRidge to:

- Identify what data is required from the database.
- Identify the format needed to retrieve that data.
- Ensure that they provide a test connection and access to a technical expert.
- Provide any documentation 60 days prior to the delivery of the interface.

Intergraph assumes Informer can make one open connect string into this system to access all databases, run all queries and generate responses. If more than one open connect string is needed to access the databases in this system, then multiple licenses of I/Informer may be required.

**Constraints**

MCSO is responsible for providing a complete and accurate description of the FDM system's connection method and query data model. MCSO is responsible any software/hardware required to implement the communication interface to each System.

Any costs associated with a formal certification of the interface (if required by the host) are to be borne by MCSO.

The standard product offering comes with 5 user-specified transactions. Additional transactions may be purchased in groups of 5.

## Informer to CAL Photo/DMV

### **Description:**

I/Informer provides an interface to external data sources such as the CAL Photo/DMV. This product can be customized to interface to a variety of data sources using a variety of protocols, including TCP/IP, MQ Series, ODBC, ADO and RS232.

### **Proposed Approach:**

The interface is in the form of a link control process connected to the external system, a server process routing all queries and responses, and a graphical user interface. The user interface drives the forms and does the queuing of responses local to each workstation. It reads all input from the forms and builds the query string. Responses from queries are returned in a form that allows them to be viewed, printed, or attached to an event. The ability to attach the response to an event, and print the response to a local printer is provided via the user interface process.

Informer responses that contain image data will be returned as xml-tagged responses and will contain a hyperlink that, when clicked, will retrieve the image from the server share and display it. This could affect how responses are currently displayed at this site: If certain responses contain appended text-based data and an image is associated with one of those responses, then multiple responses will be generated.

### **Assumptions:**

Intergraph assumes the SDN interface will use SOAP, WinNet or ODBC APIs to access the DMV data.

For MPS clients, the application requires that I/Informer server store the images in the database so that MPS can pull the image from the database.

MCSO is responsible for providing a complete and accurate description on how the image is returned and that CAL-Photo/DMV will provide a technical contact and access to test connection for the duration of the implementation.

Intergraph assumes that for the state returns the image data in one of two ways:

- Image data is returned using a web-based interface that returns XML responses and the images will be returned as base64 .jpg data. OR:
- DSEO-2020 (Datamaxx Standard Embedded Object) and the image data will be returned as binary .jpg data

### **Constraints**

Informer will convert the state messages with images in them to XML if the message format is not native HTML or XML already

MCSO needs to have enough disk space on their database server, com server, and workstations to store the images.

If the state returns the images in something other than the above then this bid will need to be revisited and additional services development to create a new remote to support images required.

MCSO's wireless infrastructure will need to have the bandwidth necessary to support the retrieval and display of the images. If not, they may not be able to retrieve the images.

## CAD Nested Queries

### **Description:**

Nested queries may happen when a traffic stop occurs:

1. a license plate, will generate the vehicles registration and any wants for the vehicle
2. One of the responses returned (vehicle registration most likely) will be parsed for registered owner information. From this the following inquiries/systems will be accessed (assuming that the vehicle response contains the necessary information for these):
  - a. Registered Owner DL status
  - b. Registered Owner Warrant Check

### **Proposed Approach:**

#### **Assumptions:**

MCSO will provide documentation/response formats

MCSO will define the transactions required in the nested inquiries

The responses contain proper field tags/format that enables the nest inquiry parsing

The information will be provided 60 days prior to delivery.

#### **Constraints**

If the State changes a response used in a nested/super query, that query may no longer be supported.

## Voice Recorder

### **Description:**

Intergraph will provide vendor views into the database for the voice recorder vendor.

### **Proposed Approach:**

Intergraph will provide vendor views into the database for the voice recorder vendor. The vendor views will allow the voice recorder vendor to have access to the I/CAD tables needed to query the data their application needs.

**Assumptions:**

Intergraph assumes the voice recorder vendor will query the created views for the data required and that no transformation or processing of data is required by Intergraph.

**Constraints:**

Intergraph will not provide any services or application to process or export the data.

Intergraph assumes that the views will be read only and the voice recorder vendor will not write any data to the Intergraph database.

Any additional functionality or services will be quoted and agreed to via a change order to the contract.



Statement of Work Attachment E  
Training Curriculum



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## Training

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### Training Overview

Each Intergraph project includes the training necessary to ensure that personnel operating the Intergraph software and systems have a full understanding and working knowledge of the installed systems. Training also ensures the success of daily operations within the Communications Center and throughout the MCSO agencies. Both informal and formal training courses are provided to the appropriate personnel. Course durations are listed in days, assuming an 8-hour day.

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### System Preparation Training

Before the initial hardware installation when training typically begins, Intergraph personnel will begin the education and configuration process by conducting introductory workshops. These workshops are structured to begin the data and information gathering process with the intent of expediting system installation. Using an apprenticeship approach, Intergraph introduces MCSO's System Administrator(s) and other key personnel to system data requirements, data management, configuration tools, and the steps necessary to organize and gather the data needed for the System. This data is then used to setup and maintain all applications.

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### Operations Training

Operations training includes courses that are designed to teach the proper use of a particular application. Two options are available for this training—the Train-the-Trainer approach or the Train-the-User approach. These training programs are conducted at a mutually agreed upon location and facility. If the hardware has been installed on-site, and the necessary MCSO data prepared, the usual approach is to teach these courses onsite. For MCSO, Intergraph has proposed the Train-the-Trainer approach for CAD users (Call Takers, Dispatchers and Supervisors) and MPS users. All other administrative training will be taught using a Train-the-User approach.

Class size should not exceed a total of 12 persons with each student allocated one workstation for the duration of the class. If this specification cannot be accomplished at MCSO's site, please consult MCSO's Project Manager and Trainer before the class begins.

#### Train-the-User

To ensure full understanding of the system as a whole, MCSO may choose to have all users go through full end-user training (Train-the-User) provided by Intergraph training personnel. The CAD user training program designed for Train-the-User training, as performed by Intergraph instructors, is entitled I/CAD Essentials for User. This 4-day program is comprised of content designed with the intent that the program be designed to provide instruction in the basic and essential functions which every operator should know before cutting over to live operations with the Intergraph I/CAD system. Focus is given to those commands and workflows that are used most frequently in the Communications Center. Each course outlines its intention for either training of the trainers, or training of the users. Changes can be accommodated where required. Changes would be governed by the change order process and would result in a review of the scope, level of effort, duration and overall cost impacts.

## Train-the-Trainer

The Train-the-Trainer approach is often the most logical training solution for public safety projects. This method seeks to train the most computer-literate and supervisor-level employees who learn all functions of each Intergraph application, as well as new techniques for the best way to teach user-level employees.

Having completed the Train-the-Trainer program and having a full understanding of the system, MCSO's trainers will be prepared to provide their own agency-specific training, which may include some policy or procedural changes in addition to application functionality. Due to the vast functionality of the system, there may be some commands or functions of the application that may not be of benefit to MCSO's operation. The Train-the-Trainer approach permits the Core Team, System Administrator(s), and Trainers to learn the full capabilities of the System while determining which commands and/or functions within the System will be used as part of their operation.

A soft copy of Intergraph user documentation will be provided to MCSO's trainers that can be modified and customized to meet site-specific training needs.

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## System Administration Training

Several System Administrator-level courses are offered to provide the necessary training to persons responsible for system configuration and maintenance. Operating system-level courses are provided to ensure the low-level knowledge needed to support and maintain the system configuration. There are also courses designed to teach the use of available configuration tools and techniques, as well as a site-specific administration session designed around MCSO's configuration.

Class size for these highly technical sessions usually does not exceed six persons, unless prior arrangements are made with the instructor. It is preferred that each student be allocated one workstation for the duration of the class; however, the maximum number of trainees per workstation should not exceed two.

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## Training Courses

Detailed Training Curriculum

<b>I/CAD System Administration &amp; Maintenance Essentials (IPST9003)</b>	
<p>The I/CAD System Administration &amp; Maintenance Essentials course provides an overview of administration and maintenance tasks to individuals responsible for the technical administration, management, and/or support of the I/CAD System. Students receive both classroom training and hands-on experience enabling them to perform the basic functions associated with the day-to-day operation and support of an I/CAD System. Please note the stated prerequisites and student capacity, as strict adherence is essential to the successful completion of this course.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ I/CAD System Overview</li> <li>⇒ Configuration Maintenance and the Registry</li> <li>⇒ Basic Configuration of Parameters and Command Line</li> <li>⇒ Database Client &amp; Application Components</li> <li>⇒ Listener Overview</li> <li>⇒ Redundancy and Recovery</li> <li>⇒ Clock Synchronization</li> <li>⇒ Regular Maintenance Tasks</li> <li>⇒ Troubleshooting</li> <li>⇒ Logging/Support Process</li> <li>⇒ Customer Care Center Procedures</li> <li>⇒ Documentation/Change Log and Other Maintenance Log Generation</li> </ul>	
<b>Prerequisites</b>	
<p>Strong adherence to the following prerequisites is absolutely mandatory:</p> <ul style="list-style-type: none"> <li>⇒ Responsibility for the administration, support, and maintenance of the I/CAD System</li> <li>⇒ Sound knowledge of the Communications Center Call Taker/Dispatcher processes and the I/Dispatcher application</li> <li>⇒ Working knowledge of Windows. This includes major networking components, including clients, servers, local area networks, network adapter cards, drivers, protocols, and network operating systems. Also requires comfort in the ability to use Windows Explorer to locate, create, and manipulate folders and files, create shortcuts, map network drives, and configure the desktop environment</li> </ul>	
<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator and other support personnel
<b>Project Phase</b>	After the I/CAD Data Workshop, with adequate time before I/CAD Essentials training commences
<b>Duration</b>	4 days
<b>Student Capacity</b>	6

<b>I/CAD Essentials for Core Team (IPST2001)</b>	
<p>The I/CAD Essentials for Core Team training course is presented directly to the Core Team personnel, and is intended to give a complete overview of the I/CAD and I/Net applications. It familiarizes the Core Team with the basic features of CAD including event processing, dispatching, as well as map utilization and inquiries so that analysis of workflows and testing of data can begin in earnest. This course is a combination of the Calltaking Essentials, the Dispatching Essentials, Advanced I/CAD Functions (where appropriate) and NetViewer/NetDispatcher.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Call Creation and Update</li> <li>⇒ Map View Control</li> <li>⇒ Event and Personnel Inquiries</li> <li>⇒ Sending Messages</li> <li>⇒ Recommending and Dispatching Units</li> <li>⇒ Updating Unit Statuses</li> <li>⇒ Modifying Unit Properties</li> <li>⇒ Updating Unit Related Event Information</li> <li>⇒ Querying Unit and Event Data</li> <li>⇒ Performing Fire Specific Operations – Update Alarm, Relocate (Move Up) Units</li> <li>⇒ Performing Law Enforcement Specific Operations – Traffic Stop, Subject Stop</li> <li>⇒ Performing EMS Specific Operations – Divert Hospital</li> <li>⇒ Supervisor Specific Commands</li> <li>⇒ Advanced I/CAD Commands</li> <li>⇒ Interfaces for Users (I/Informer, I/Page, I/FST, and I/MDT for example)</li> <li>⇒ Interfaces for Users (as needed, if installed interfaces are applicable for Calltakers)</li> <li>⇒ NetViewer/NetDispatcher Basics</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Assignment to the project Core Team</li> <li>⇒ An Introduction to Windows course or equivalent knowledge and familiarity with the Windows user interface</li> </ul>	
<b>Method</b>	Conducted on-site or at an Intergraph Certified Training Facility by Intergraph Personnel
<b>Task Classifications</b>	CAD Dispatcher, CAD Supervisor, System Administrator, and Training Personnel
<b>Project Phase</b>	Should be complete with adequate time to prepare for cutover
<b>Duration</b>	5 days

<b>MPS Workflow and Configuration Workshop (IPST2502) (x3)</b>	
<p>During MPS implementation, accomplishing certain parts of MCSO's workflow with MPS may not be immediately evident to the users. This session dedicates Intergraph consultants to helping MCSO define their workflows using IMPS. Before and during this process, specific configuration needs will become apparent, including graphical user interface adjustments, report formats, and other special configuration tasks that may be required to accomplish MCSO's operational requirements. These configuration tasks will be designed and possibly completed during this session. Upon completion, the intent is for MCSO to proceed with their MPS user training with the configuration and workflow definition as close as possible to the final, to ensure their users are comfortable and competent with the system.</p> <p>It will be necessary during this session to have at least one Dispatcher who is familiar with I/CAD and its use present to perform dispatching and other I/CAD tasks as necessary.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Overview of MPS Features and Functions</li> <li>⇒ MPS Workflow Definition</li> <li>⇒ Graphical User Interface Design and Configuration</li> <li>⇒ Report Format Design and Configuration</li> <li>⇒ MPS Administrative Functions</li> <li>⇒ Other Configuration Settings as Needed</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Responsibility for mobile computing operations</li> <li>⇒ Completion of I/CAD Essentials (for Trainers) training</li> <li>⇒ Identification and documentation of all MPS workflows requiring special attention</li> </ul>	
<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator, Senior Field User and/or Supervisor, Field Training, and Management Personnel
<b>Project Phase</b>	<p>During initial project implementation, best after I/CAD Essentials for Trainers is complete, but with adequate time to accomplish all necessary configuration changes before MPS user training commences</p> <p>If done during an upgrade implementation, early in the upgrade process before the Delta training is best, so that any identified configuration changes may be incorporated into the upgrade</p>
<b>Duration</b>	5 days per workshop. (4 days, plus 1 additional day will be used on site by Implementation Engineer to perform configuration tasks)
<b>Student Capacity</b>	Based on the MCSO's requirements and available hardware

<b>I/CAD Database Schema and Reports Overview (IPST2009)</b>	
<p>I/CAD Database Schema and Reports Overview is presented to personnel responsible for collecting CAD statistics including call center, event, and unit history information. This intensive course familiarizes MCSO-selected staff with features of the I/CAD schema and the skills required to create custom reports for data collection.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Understanding the I/CAD database schema</li> <li>⇒ Creating Reports using Microsoft Access and/or SQL Plus</li> <li>⇒ Queries and Reports</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Responsibility for CAD system administration and/or training</li> <li>⇒ Familiarity with CAD and associated functions</li> <li>⇒ Knowledge of Microsoft Access and/or SQL</li> </ul>	
<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator and Data Analysts
<b>Project Phase</b>	Should be complete with adequate time to create and customize needed reports for live operations
<b>Duration</b>	3 days
<b>Student Capacity</b>	6, with a maximum of one student per workstation

<b>Map Fundamentals Workshop for I/CAD Systems (IPST1002)</b>	
<p>The Map Fundamentals Workshop typically takes place alongside the I/CAD Project and Workflow Analysis workshop, but may be held independently if required. This seminar focuses on the building of the land base used in I/CAD, as well as identifying the participation and relationship of Intergraph personnel in this activity. It also identifies the geometrical map needs and database structure necessary to run the I/CAD System. Address verification methods and requirements, response area (beat/zone/district) definition, and the quality of MCSO's intended source map data are all topics introduced and discussed in this session. This workshop is customized to each system's map source and may require site visits and pilot data from the current map source, though no map translation or hands-on map work is actually performed during this time.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Database Design and Setup as it Relates to Address Verification</li> <li>⇒ Map Requirement Definition</li> <li>⇒ Translation (if necessary) of Data to the Necessary Format</li> <li>⇒ Definition of Personnel, Resource, and Scheduling Requirements</li> <li>⇒ Identification of Data Workflow and Map Validation Routines</li> <li>⇒ Future Enhancements</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Beat/Zone/District and dispatch understanding</li> <li>⇒ System Administration responsibility or responsibility for map creation/editing</li> <li>⇒ Possible site visits and pilot data</li> </ul>	
<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator, Mapping Support, Database Support, and Project Management Personnel for all involved agencies
<b>Project Phase</b>	Immediately after design acceptance; typically conducted in conjunction with the Project and Workflow Analysis workshop
<b>Duration</b>	3 days; however, if scheduled in conjunction with Project and Workflow Analysis, one day is conducted with entire workshop audience, and the other day will focus on mapping support staff only and may include an off-site visit to review map source and data
<b>Student Capacity</b>	Based on MCSO requirements, available hardware, and projection system availability

## Map Basics for I/CAD Systems (IPST8001)

The Map Basics for I/CAD Systems User course is presented to personnel responsible for the creation and maintenance of the I/CAD street map. The class is split into two sections, with the first being more workflow/schema based and the second part being map creation. As part of training, students will use actual data from their agency to receive hands-on practice in map creation and display options.

Note: This is not a full GeoMedia Pro or I/MapEditor training class.

### Major Topics

- ⇒ Street Map Overview
- ⇒ Map-related Database Structures
- ⇒ Address Verification Explanation
- ⇒ Polygon-based Deployment Plans
- ⇒ Mapping Workflow Options
- ⇒ GeoMedia Pro Introduction
- ⇒ GeoMedia Pro Demo
- ⇒ I/Map Editor Introduction
- ⇒ Centerline Data and Network Creation
- ⇒ Point Address data and Table Population
- ⇒ Special Address Manipulations
- ⇒ Enhancements, Aesthetics and Map File Options
- ⇒ Showmap Application
- ⇒ CAD, Mobile and Other Map Designs

### Prerequisites

- ⇒ Responsibility for data entry and/or map editing
- ⇒ Knowledge of basic I/CAD terminology and mapping data tables
- ⇒ Familiarity with area geography and operational requirements
- ⇒ Familiarity with GeoMedia Professional to aid in the understanding and retention of Map Basics concepts

<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator, Mapping Support, Database Support, and Training personnel
<b>Project Phase</b>	After the map is ready for operations
<b>Duration</b>	5 days
<b>Student Capacity</b>	6, with a maximum of two students per workstation



### Map Maintenance for I/CAD Systems (IPST8003)

The Map Maintenance course familiarizes and emphasizes the map maintenance workflow to be carried out at the particular MCSO site. It will be a highly customized class, with subject matter depending on several important variables, such as whether the agency is maintaining its own map data, whether a local GIS provider is maintaining the map (and in what format), whether translation software is needed to make the workflow easier, and the frequency with which updates will be completed. It is expected that during this session MCSO will modify the relevant MapEditor Training documentation where needed, to conform to their data and site conditions (share names, feature class names, attribute names colors, custom SQL scripts etc). At the end of the week, attendees of the class will update this document to include a complete description of the mapping process used to produce their map data for CAD. This helps to ensure that MCSO has good understanding of their map production process and that the final documented process is specific to MCSO rather than a generic one. The class will be conducted using the designated map maintenance workstation, and all required mapping software must be installed and functional.

#### Major Topics

- ⇒ Collection and Entry of Data
- ⇒ Format of Source Data
- ⇒ Mapping Workflow Details
- ⇒ GeoMedia Pro Warehouse Connections
- ⇒ Projections and Units of Measurement
- ⇒ Map Data Validation and Manipulation
- ⇒ Street Network Building
- ⇒ Address Point Table Population
- ⇒ Quality Control
- ⇒ Map Publishing
- ⇒ Map Data Deployment Discussion

#### Prerequisites

- ⇒ System Administration and/or responsibility for map creation/maintenance
- ⇒ Complete familiarity with the process of map creation as it relates to the MCSO's data, including knowledge of basic terminology and data tables
- ⇒ Familiarity with relevant software, such as GeoMedia Pro, I/Map Editor, ESRI, FME, MicroStation

<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator and Mapping Support (Possible involvement by Database Support, and Project Management Personnel)
<b>Project Phase</b>	After the method and theory of the MCSO's actual map maintenance has been resolved
<b>Duration</b>	4 days, dependent on MCSO needs
<b>Student Capacity</b>	6, with a maximum of one student per workstation (though only the designated maintenance machine can be used for certain workflows, in which case a projector would be required)

## Map Roll Consulting for I/CAD Systems (IPST8004)

The map roll consulting is conducted on-site in the presence of the relevant mapping personnel (responsible for the creation and maintenance of the I/CAD street map). As part of the consulting participants will witness the map roll procedure using source data from their GIS provider to create new map data and a CAD-ready map file. The consulting will involve little to no MCSO hands-on and will be mostly focused on design discussions, working through MCSO specific data issues and evaluating the use of various applications and tools in the map roll process. Due to the time available and the size of MCSO's map data it is not guaranteed that a full map dataset will be processed during the class. If the mapping/admin machine is configured this should be utilized, otherwise the work will be performed using Intergraph machine, preferably with a projector.

### Major Topics

- ⇒ Map Data Conversion Using New Source Data
- ⇒ Data Validation
- ⇒ Street Network Creation
- ⇒ Special Address Point Table Population
- ⇒ Polygon-based ESZ's (as needed)
- ⇒ Map Publishing
- ⇒ Showmap Application
- ⇒ Alter appearance of CAD Map for Agency Specific Uses (can include creation of a mobile map)
- ⇒ Copy Map Files to MCSO System
- ⇒ Roll Map Tables to MCSO Server(s)
- ⇒ Deployment of Map Data and Files to User Workstations and Databases

### Prerequisites

- ⇒ Responsibility for data entry and/or map editing
- ⇒ Knowledge of basic I/CAD terminology and data tables
- ⇒ Familiarity with GeoMedia Pro recommended
- ⇒ Familiarity with area geography and operational requirements

<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator, Mapping Support, Database Support, and Training Personnel
<b>Project Phase</b>	Second Intergraph map roll, normally prior to end user CAD training
<b>Duration</b>	5 days
<b>Student Capacity</b>	6

**I/CAD Essentials for Trainers (IPST2011) (x2)**

The I/CAD Essentials for Trainers course is presented directly to personnel responsible for training public safety calltaking and dispatching. This course includes all topics from I/CAD Essentials for Users with an emphasis placed on gaining expertise, perfecting knowledge, and acquiring confidence with the material. Upon completion of this course, attendees will be prepared to train users in I/CAD Essentials.

**Major Topics**

- ⇒ Call Creation and Update
- ⇒ Map View Control
- ⇒ Event and Personnel Inquiries
- ⇒ Sending Messages
- ⇒ Recommending and Dispatching Units
- ⇒ Updating Unit Statuses
- ⇒ Modifying Unit Properties
- ⇒ Updating Unit Related Event Information
- ⇒ Querying Unit and Event Data
- ⇒ Performing Fire Specific Operations – Update Alarm, Relocate (Move Up) Units
- ⇒ Performing Law Enforcement Specific Operations – Traffic Stop, Subject Stop
- ⇒ Performing EMS Specific Operations – Divert Hospital
- ⇒ Supervisor Specific Commands
- ⇒ Interfaces for Users (I/Informer, I/Page, I/FST, and I/MDT for example)
- ⇒ Advanced I/CAD Functions as needed
- ⇒ Trainer Guidelines and Techniques for I/CAD

**Prerequisites**

- ⇒ Knowledge of basic public safety terminology
- ⇒ Responsibility for training of calltaking and/or dispatching personnel
- ⇒ An Introduction to Windows course or equivalent knowledge and familiarity with the Windows user interface

<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	CAD Training Personnel
<b>Project Phase</b>	Should be complete with adequate time to prepare for cutover
<b>Duration</b>	5 days (3 days for Calltaker trainers only)
<b>Student Capacity</b>	12, with a maximum of one student per workstation

<b>Mobile for Public Safety for Trainers (IPST2503) (x2)</b>	
<p>Mobile for Public Safety training is designed to train field trainers in the use and training of the Mobile for Public Safety product.</p> <p>(<b>Note:</b> Mobile for Public Safety Administration is included during the System Administrator training. This session is designed for field trainers.)</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Use of Mobile for Public Safety on MDCs, or laptops</li> <li>⇒ Unit Status Changes</li> <li>⇒ Inquiries</li> <li>⇒ Sending and Receiving Messages</li> <li>⇒ Updating Unit Properties</li> <li>⇒ Updating Events</li> <li>⇒ Trainer Guidelines and Techniques for Mobile for Public Safety</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Responsibility for mobile computing training</li> <li>⇒ Assignment of at least one person who has been through I/CAD Essentials training, to perform necessary dispatching and other I/CAD functions</li> <li>⇒ Availability of MCSO specific Mobile configuration</li> <li>⇒ Availability of test or training Mobile PCs for use in class</li> </ul>	
<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	Field User Trainers
<b>Project Phase</b>	After I/CAD Essentials training is complete, and before cutover
<b>Duration</b>	2 days, but could be changed dependent on MCSO needs
<b>Student Capacity</b>	12, with a maximum of one student per workstation

<b>I/NetViewer-I/NetDispatcher for Trainers (IPST2404)</b>	
<p>I/NetViewer and I/NetDispatcher training is presented directly to personnel responsible for training those personnel who will be accessing CAD information remotely. It familiarizes training personnel with the commands used in the I/NetViewer and/or I/NetDispatcher application during event entry and inquiry operations. Laboratory exercises are included with each module to provide additional experience in workstation operation.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Event Entry Operations</li> <li>⇒ Inquiry Commands</li> <li>⇒ Unit or Crew Operations</li> <li>⇒ Setting User Preferences</li> <li>⇒ Other Utilities</li> <li>⇒ Trainer Guidelines and Techniques</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Knowledge of appropriate public safety terminology</li> <li>⇒ Knowledge and familiarity with Windows user interface</li> <li>⇒ Knowledge and familiarity with latest version of Internet Explorer</li> </ul>	
<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	Training Personnel
<b>Project Phase</b>	Should be complete with adequate time to prepare for cutover
<b>Duration</b>	2 days
<b>Student Capacity</b>	12, with a maximum of one student per workstation

<b>I/CAD Reassessment (IPST2006)</b>	
<p>The I/CAD Reassessment session is designed to bring the users and managers of the I/CAD system together with Intergraph system consultants experienced in center operations. The consultant will conduct structured group sessions to clarify the original goals of the project and will then review present operations on-site and assess how goals and objectives are being met. This information is the core of additional group sessions and helps to determine if progress is satisfactory or if adjustments must be made to goals and priorities. Recommendations will be made as to any configuration changes that should be performed to accomplish the goals and objectives, or other requests as they arise. These recommended system modifications may be accomplished during the week, depending on the scope and complexity of each item. Further implementation work may be required to perform more complicated configuration tasks, and these will be part of follow-on work provided during subsequent visits or contact.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Review of Existing Utilities</li> <li>⇒ Instruction on New Utilities</li> <li>⇒ Use of Existing Functionality to Optimize the Operation of the Center</li> <li>⇒ Creation of a Current and Functional Computer Utilization Plan</li> <li>⇒ GUI, Command Line, or Other Configuration Changes</li> <li>⇒ Customized Training or Retraining of Specific Areas</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ I/CAD System in live operation for a minimum of two months</li> </ul>	
<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator, Key I/CAD Users, Training, and Management Personnel
<b>Project Phase</b>	<p>If done during an initial implementation, three to six months after cutover is ideal</p> <p>If done during an upgrade implementation, early in the upgrade process before the Delta training is best, so that any identified configuration changes may be incorporated into the upgrade</p>
<b>Duration</b>	4 days
<b>Student Capacity</b>	N/A

<b>Mobile for Public Safety Reassessment (IPST2007) x2</b>	
<p>The Mobile for Public Safety Reassessment session is designed to bring the users and managers of the Mobile for Public Safety system together with Intergraph system consultants experienced in field Mobile operations. The consultant will conduct structured group sessions to clarify the original goals of the project and will then review present operations on-site and assess how goals and objectives are being met. This information is the core of additional group sessions and helps to determine if progress is satisfactory or if adjustments must be made to goals and priorities. Recommendations will be made as to any configuration changes that should be made to accomplish the goals and objectives, or other requests as they arise. These recommended system modifications may be accomplished during the week, depending on the scope and complexity of each item. Further implementation work may be required to perform more complicated recommendations, and these will be part of follow-on work provided during subsequent visits or contact.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Review of Existing Utilities</li> <li>⇒ Instruction on New Utilities</li> <li>⇒ GUI or Other Configuration Changes</li> <li>⇒ Customized Training or Retraining of Specific Areas</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Mobile for Public Safety in use in live operations for a minimum of two months</li> </ul>	
<b>Method</b>	Conducted on-site by Intergraph Personnel
<b>Task Classifications</b>	System Administrator, Key Mobile for Public Safety Users and/or Supervisors, Training, and Management Personnel
<b>Project Phase</b>	<p>If done during an initial implementation, one to two months after cutover is ideal</p> <p>If done during an upgrade implementation, early in the upgrade process before the Delta training is best, so that any identified configuration changes may be incorporated into the upgrade</p>
<b>Duration</b>	5 days
<b>Student Capacity</b>	N/A

**Business Intelligence Direct (BI Direct): System Administration Training (IPST7008)**

Business Intelligence Direct (BI Direct) offers the ability to perform powerful and interactive reporting and analysis on data available in I/CAD databases. BI Direct provides capabilities for the user to view and modify reports as per needs and conduct ad-hoc queries through a secure web portal. With minimal knowledge of underlying database structures, users can create custom formulas and reports and analyze data with pre-configured Universes designed for easy reporting use and built with industry terminology.

This course is designed for System Administrators and DBAs to familiarize them with the setup and maintenance of Intergraph's BI Direct product. It will provide instructions on the setup, site-specific configurations and installs, and administrative tasks needed to maintain the Business Intelligence system.

**Major Topics**

- ⇒ Overview of Site Setup & Configuration
- ⇒ Client installs and requirements
  - BusinessObjects Administration
    - Central Management Console
    - User Security and Administration
    - Access rights and managing reports and folders.
- ⇒ Universes
  - Configuration, and customizations
- ⇒ BI Reports
  - Configuration, Scheduling and Security
- ⇒ Site specific configuration
- ⇒ Systems Backups and Troubleshooting techniques

**Prerequisites**

- ⇒ Familiar with Windows-based applications, administrative tasks and agency workflows
- ⇒ Familiar with I/CAD databases and familiar with Oracle or SQL Server databases

<b>Method</b>	Conducted on-site or at an Intergraph Certified Training Facility by Intergraph Personnel
<b>Task Classifications</b>	System Administrators, Database Administrators and other Personnel responsible for administering and maintaining the Business Intelligence Direct system.
<b>Project Phase</b>	When BI Direct is setup and when sufficient I/CAD data is available for obtaining good sample reports
<b>Duration</b>	2 days for I/CAD customers
<b>Student Capacity</b>	6 students



## Business Intelligence Direct (BI Direct): User Training (IPST7009)

Business Intelligence Direct (BI Direct) offers the ability to perform powerful and interactive reporting and analysis on data available in I/CAD databases. BI Direct provides capabilities for the user to view and modify reports as per needs and conduct ad-hoc queries through a secure web portal. With minimal knowledge of underlying database structures, users can create custom formulas and reports and analyze data with pre-configured Universes designed for easy reporting use and built with industry terminology.

This course is designed for the end user or administrator to familiarize them with the use of BI Direct product and will provide training on creating and editing reports and performing ad-hoc queries and data analysis using BI Direct.

### Major Topics

- ⇒ Overview of BI Direct
- ⇒ BI Launch Pad
  - Accessing BI Launch Pad
  - Navigating BI Launch Pad
    - Workspace and user settings
    - I/CAD Reports
    - Collaborating on Reports
- ⇒ BI Direct Universes
- ⇒ Web Intelligence (WEBI)
  - Navigate and view Web Intelligence Reports
  - Perform ad hoc queries, reports and analysis
  - Create Reports
  - Modifying Reports
  - Formatting Reports
  - Schedule Reports
  - Filters, alerts, ranking and drilling operations in reports
- ⇒ BI Client tools – Use BI with Rich Client, Widgets, Live Office.

### Prerequisites

- ⇒ Familiar with Windows based applications
- ⇒ Familiarization of I/CAD data
- ⇒ Familiar with agency workflows

<b>Method</b>	Conducted on-site or at an Intergraph Certified Training Facility by Intergraph Personnel
<b>Task Classifications</b>	Business Intelligence operators or Personnel responsible for reporting and analysis, Trainers
<b>Project Phase</b>	When sufficient CAD data is available for obtaining good sample reports
<b>Duration</b>	2 days for I/CAD customers.
<b>Capacity</b>	6-8 students, with one student per workstation

I/Incident Analyst Configuration and Administration (IPST6001)	
<p>Incident Analyst Configuration and Administration is presented to personnel responsible for the administration and support of the Incident Analyst application. The course familiarizes administrative personnel with the installation, maintenance, support, and customization of the Incident Analyst product. An overview of GeoMedia application and report/map creation is also provided to allow the admin personnel to test the application in preparation for end-user training.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Installation and Setup of Incident Analyst</li> <li>⇒ Establishing data source connections</li> <li>⇒ Customization/Extensibility to meet customer's reporting/mapping needs</li> <li>⇒ Creating Map, Chart, and Spreadsheet Outputs</li> <li>⇒ Setting up client workstations</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Familiarization of database model and data</li> <li>⇒ Training in or equivalent knowledge of I/CAD or I/CAD System Administrator</li> <li>⇒ Familiar with SQL</li> <li>⇒ Familiar with GeoMedia Pro</li> </ul>	
<b>Method</b>	Conducted on-site or at an Intergraph Certified Training Facility by Intergraph Personnel
<b>Task Classifications</b>	System Administrator, Database Support, or other Personnel responsible for reporting and analysis requirements definition and management
<b>Project Phase</b>	When sufficient data is available for obtaining good sample reports
<b>Duration</b>	4 days
<b>Student Capacity</b>	6, with a maximum of one student per workstation

I/Incident Analyst User Training (IPST6002)	
<p>I/Incident Analyst provides an intuitive, user-friendly GIS based environment for analyzing incident locations and has various spatial analysis tools that help in identifying spatial patterns from point locations. Resultant analysis from Incident Analyst allows decision makers to target areas to effectively deploy resources and create intelligence products that detect spatial patterns to aid tactical analysis. I/Incident Analyst can create both simple and complex maps for end users.</p> <p>This course is designed for the analyst or administrator to make them familiar with the use of the I/Incident Analyst application. It will provide an overview of the GeoMedia application that I/Incident Analyst uses as its foundation and progress through the creation of queries and various map output options.</p>	
<b>Major Topics</b>	
<ul style="list-style-type: none"> <li>⇒ Overview of the GeoMedia Pro application</li> <li>⇒ Incident Analyst commands <ul style="list-style-type: none"> <li>▪ Incident Query</li> <li>▪ Incident Counts</li> <li>▪ Repeat Incidents</li> <li>▪ Journey to Incidents</li> <li>▪ Hotspots</li> <li>▪ Change over time</li> <li>▪ Temporal Reporting</li> <li>▪ AVL analysis and playback</li> </ul> </li> <li>⇒ Map outputs &amp; Tabular data outputs</li> </ul>	
<b>Prerequisites</b>	
<ul style="list-style-type: none"> <li>⇒ Familiar with Windows based applications</li> <li>⇒ Familiarization of database model and data</li> <li>⇒ Familiar with agency workflows</li> <li>⇒ Familiar with building queries and reports for analysis of data</li> </ul>	
<b>Method</b>	Conducted on-site or at an Intergraph Certified Training Facility by Intergraph Personnel
<b>Task Classifications</b>	System Administrator, Database Support, or other Personnel responsible for reporting and analysis requirements definition and management

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<b>Project Phase</b>	When sufficient data is available for obtaining good sample reports
<b>Duration</b>	3 days
<b>Student Capacity</b>	6, with a maximum of one student per workstation



Attachment F

Public Safety System Specifications

CAD, Mobile, RMS, WebRMS, BI

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## Table of Contents

<b>General Notes .....</b>	<b>4</b>
<b>I/CAD Virtual Environment Requirements .....</b>	<b>4</b>
<b>CAD Storage Requirements .....</b>	<b>4</b>
<b>CAD Specifications .....</b>	<b>6</b>
CAD Database Servers (Including Web and Archive/Report Servers) .....	6
Small Configuration: 1-50 Effective Seats .....	6
Medium Configuration: 51-250 Effective Seats .....	8
Large Configuration: 251-500 Effective Seats .....	9
CAD Archive Server .....	10
CAD Standalone BI Direct Server .....	10
CAD Interface-Communication Servers .....	10
I/NetViewer and I/NetDispatcher Communications Servers .....	11
Communications Controller Servers .....	11
Off Site Backup CAD Servers .....	12
Test / Training CAD Database Servers .....	12
Test and/or Training Interface Communications Servers .....	12
Interoperability Framework / BizTalk Servers .....	13
Non High Availability / Single Server Configuration .....	13
High Availability – Dual BizTalk Servers and Dual Database Servers .....	13
CAD Dispatcher / Calltaker Workstations .....	14
Mapping Workstation Specifications .....	15
General Map Dataset Size Guidelines .....	15
Mobile Specifications .....	18
Mobile Data Computers / Laptops and Tablets .....	18
Mobile Responder .....	19
GPS Units .....	19
Video Responder System Specifications .....	20
Workstation Components for Video Responder .....	20
<b>I/LEADS Specifications .....</b>	<b>21</b>
I/LEADS RMS and Report Servers .....	21
I/LEADS / Records Explorer Workstations .....	21
<b>inPURSUIT Client/Server RMS Hardware Overview .....</b>	<b>23</b>
FBR and Explorer Servers .....	24
inPURSUIT Client/Server RMS Database Servers .....	25
inPURSUIT RMS Application Servers (1 for small, 2 for medium, 2 or more for large) ...	25
inPURSUIT Client/Server Interface Server .....	26
inPURSUIT Report Server .....	26

---

<i>in</i> PURSUIT FBR/Xplorer Server .....	27
<b>WebRMS Specifications .....</b>	<b>28</b>
WebRMS DB Server <sup>2</sup> .....	28
FBR\WebRMS Application Servers Small Configuration .....	28
WebRMS Application Server Medium and Larger Configuration .....	29
WebRMS Apache\FBR Server Medium and Larger Configuration Only <sup>1</sup> .....	30
WebRMS Interface-Communication Servers .....	30
WebRMS Standalone BI Direct Server .....	31
<i>in</i> PURSUIT RMS and RCAGIS Workstation Hardware Specifications .....	31
<i>in</i> PURSUIT FBR Computer / Laptop Hardware Specifications .....	32
<b>BI Premium for Public Safety – Server Requirements .....</b>	<b>34</b>
BI Premium for Public Safety Data Services.....	35
BI Premium for Public Safety Business Objects Enterprise / Web Server .....	35
BI Premium for Public Safety Database Server .....	36
BI Premium for Public Safety – Specifications for a Small System .....	36
BI Premium for Public Safety – Specifications for a Medium System .....	36
BI Premium for Public Safety – Specifications for a Large system.....	37
<b>System Software Specifications.....</b>	<b>38</b>
<b>Appendix A - Operating System Best Practices .....</b>	<b>39</b>
Overview .....	39
Machine Names .....	39
Domain	39
User Accounts.....	40



## General Notes

This document provides the specifications for hardware and software required to support the Intergraph I/CAD System, Intergraph inPURSUIT System, and BI Premium. This document is available online through the Knowledge Management System at: <https://sgisupport.intergraph.com/>. To retrieve the specifications, enter the article ID “6706” or “Public Safety System Specification” in the Knowledge Search field. Before you proceed, make sure you have the most up-to-date version of this document for your software version. This document is specific to I/CAD 9.3.

The below specifications reflect technology that is currently considered standard and is routinely available from hardware vendors and should be used when purchasing new equipment. For those customers with existing hardware and planning on a software upgrade, these specifications are intended to serve as a guide for determining whether existing equipment should be upgraded or replaced to support a mission-critical configuration. These specifications apply to servers in any form factor, including rack mounted, blade, or standalone tower servers.

## I/CAD Virtual Environment Requirements

All I/CAD servers have been tested in a virtual environment with VMware vSphere 5.1, and are supported as long as the dedicated resources meet or exceed the hardware CPU, memory, and disk space requirements detailed in this document. Intergraph recommends dedicated resources, meaning that the host resources should not be over-subscribed. If the recommendations listed below for VMs totals 50 cores then you should not run those VMs on a dual 10 core host with Hyper-threading enabled because that only provides 40 virtual cores for assignment. The same policy applies to memory and disk. These specifications apply to servers in any form factor, including rack mounted, blade servers, or standalone servers.

Licensing of the Windows Server OS, SQL Server, and especially Oracle have unique licensing requirements under VMware.

The recommended disk configuration for the Operating System and Applications of the Virtual Machines (VMs) is RAID10 and should be on separate disks from any database disks.

For communication / interface servers, virtualizing the interface/ communication server is supported. If there are any serial RS232 interfaces on the communication / interface server, then a serial-to-IP conversion device will be required since a virtualized interface server has no RS232 port. For a Serial-over-IP device Intergraph has tested with the Digi PortServer® TS serial server.

[http://store.digi.com/index.cfm?fuseaction=category.display&category\\_id=116](http://store.digi.com/index.cfm?fuseaction=category.display&category_id=116)

There are currently no plans to certify I/CAD clients with virtualization.

## CAD Storage Requirements

It is very important to keep in mind that Intergraph developed the following hardware requirements with the best possible performance and safety in mind. We also kept at the forefront of our mind that the systems we provide support a life safety software application and need to be of the quality and heft to support the tasks for which they are designated. The very nature of the business in which our software operates does not tolerate average or sub-standard performance. When the outside world is at its worst our applications and their hardware platforms need to be at their best. Intergraph understands the requirements listed below may seem excessive. These requirements are meant to provide the required

performance during a large incident when time is most critical. The hardware requirements outlined below were created to meet these goals.

I/CAD and its associated interfaces are database write intensive applications. The single point of most likely bottleneck in a database server is the disk sub-system. When viewing our disk storage requirements focus on the performance more than on the disk space. Think of the overall spindle count available for the database related files on the disk. Performance has driven the requirements for database storage system. The database vendors have stated that using a S.A.M.E. approach (Stripe And Mirror Everything) to disk storage is the best way to ensure adequate performance of the disk subsystem. We have heeded their advice and present the following requirements for the I/CAD system.

With regard to disk space requirements, consider how much historical data you want to keep on the live system. In particular, I/CAD features such as attachments, GPS tracking data and Informer results can increase the space requirements. Since the tables containing the attachments, GPS tracking, and Informer results can become large, Intergraph recommends that you segregate this data onto separate disk. For Oracle and SQL Server, the tables are specifically designed to be placed into separate tablespaces (Oracle) or filegroups (SQL Server) for performance and storage reasons.

Important: The size of your storage is dependent on several factors:

1. Storing attachments, images, video, and tracking data in your database or a separate database
2. How often you archive the data

For all customers, Intergraph requires implementing dedicated LUNs and RAID10 groups specifically for the database files with as many fast spindles as your storage subsystem will allow. Please see the hardware configuration specifications on the following pages for the required number of disks.

The database servers each have their own database files which must be on separate LUN groups if they are within the same storage array to insure optimal system availability and performance. Customers should not implement RAID5 or RAID6 for the database servers.

## CAD Specifications

### CAD Database Servers (Including Web and Archive/Report Servers)

The specifications are organized by I/CAD System size in effective seats. Effective seats are computed via the following formula:

Effective seats = # of I/Dispatcher Clients + # of I/Calltaker Clients + (# of Mobile Clients)/5 + (# of I/NetViewer Clients and I/NetDispatcher clients)/5

As an example, a customer site with:

- 10 - I/Dispatcher Seats
- 5 - I/Calltaker Seats
- 100 – Mobile Clients
- 50 - NetViewer and NetDispatcher Clients

Would equate to:  $(10+5) + (100)/5 + (50)/5 = 45$  Effective Seats

The customer’s hardware must meet the required specifications below in order for the CAD System to meet the published Intergraph performance standards.

#### Small Configuration: 1-50 Effective Seats

ITEM	SPECIFICATION
Processors	8 cores
Memory	32GB
Disks - OS	(2) -146GB 15K disks RAID1 <sup>1</sup> OR 2 SSDs
Disks - Database and Logs	(10) – 146GB 15K disks RAID10 <sup>1</sup>  OR  2 SSDs RAID1 meeting specs similar to - Intel DC S3500 240GB SSDs <sup>2</sup>  OR  SAN Space of 250GB and 5000 IOPS (Per DB)

ITEM	SPECIFICATION
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit <sup>3</sup>	2008 R2 Enterprise Edition or 2012/2012 R2 Standard or DataCenter
RDBMS 64bit	Enterprise Edition
Example Hardware	Dell R620 or HP DL380

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks as may customers with longer data retention policies.

<sup>2</sup> [http://ark.intel.com/products/75680/Intel-SSD-DC-S3500-Series-240GB-2\\_5in-SATA-6Gbs-20nm-MLC](http://ark.intel.com/products/75680/Intel-SSD-DC-S3500-Series-240GB-2_5in-SATA-6Gbs-20nm-MLC)

<sup>3</sup> If you are using Windows Server 2008 R2, you will need Windows Server Enterprise Edition for server memory greater than 32GB. You can use Windows Server 2012 or 2012 R2 Standard Edition.

Medium Configuration: 51-250 Effective Seats

ITEM	SPECIFICATION
Processors	12 cores
Memory	64GB <sup>2</sup>
Disks - OS	(2) -146GB 15K disks RAID1 <sup>1</sup> OR 2 SSDs
Disks - Database and Logs	(14) – 146GB 15K disks RAID10 <sup>1</sup>  OR  2 SSDs RAID1 meeting specs similar to - Intel DC S3500 480GB SSDs <sup>2</sup> or Intel® SSD DC S3700 Series 400GB SSDs <sup>3</sup>  OR  SAN Space of 400GB and 10000 IOPS (Per DB)
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit <sup>4</sup>	2008 R2 Enterprise Edition or 2012/2012 R2 Standard or DataCenter
RDBMS 64bit	Enterprise Edition
Example Hardware	Dell R720 or HP DL380

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks as may customers with longer data retention policies.

<sup>23</sup> [http://ark.intel.com/products/75680/Intel-SSD-DC-S3500-Series-240GB-2\\_5in-SATA-6Gbs-20nm-MLC](http://ark.intel.com/products/75680/Intel-SSD-DC-S3500-Series-240GB-2_5in-SATA-6Gbs-20nm-MLC)

<sup>34</sup> [http://ark.intel.com/products/71915/intel-ssd-dc-s3700-series-400gb-2\\_5in-sata-6gbs-25nm-mlc](http://ark.intel.com/products/71915/intel-ssd-dc-s3700-series-400gb-2_5in-sata-6gbs-25nm-mlc)

<sup>4</sup> If you are using Windows Server 2008 R2, you will need Windows Server Enterprise Edition for server memory greater than 32GB. You can use Windows Server 2012 or 2012 R2 Standard Edition.

Large Configuration: 251-500 Effective Seats

ITEM	SPECIFICATION
Processors	16 cores
Memory	64GB <sup>2</sup>
Disks - OS	(2) -146GB 15K disks RAID1 <sup>1</sup> OR 2 SSDs
Disks - Database and Logs	(24) – 146GB 15K disks RAID10 <sup>1</sup>  OR  2 SSDs RAID1 meeting specs similar to - Intel® SSD DC S3700 Series 400GB <sup>2</sup> or 800GB SSDs <sup>3</sup>  OR  SAN Space of 400GB and 20000 IOPS (Per DB)
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit <sup>4</sup>	2008 R2 Enterprise Edition or 2012/2012 R2 Standard or DataCenter
RDBMS 64bit	Enterprise Edition
Example Hardware	Dell R720xd or HP DL380

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks as may customers with longer data retention policies.

<sup>23</sup> [http://ark.intel.com/products/71915/intel-ssd-dc-s3700-series-400gb-2\\_5in-sata-6gbs-25nm-mlc](http://ark.intel.com/products/71915/intel-ssd-dc-s3700-series-400gb-2_5in-sata-6gbs-25nm-mlc)

<sup>34</sup> [http://ark.intel.com/products/71916/Intel-SSD-DC-S3700-Series-800GB-2\\_5in-SATA-6Gbs-25nm-MLC](http://ark.intel.com/products/71916/Intel-SSD-DC-S3700-Series-800GB-2_5in-SATA-6Gbs-25nm-MLC)

<sup>4</sup> If you are using Windows Server 2008 R2, you will need Windows Server Enterprise Edition for server memory greater than 32GB. You can use Windows Server 2012 or 2012 R2 Standard Edition.

The usable storage capacity of a RAID 1+0 array is  $(N/2) \cdot S_{\min}$ , where  $N$  is the total number of drives in the array and  $S_{\min}$  is the capacity of the smallest drive in the array. It is recommended to use same size drive in the array.

Storage capacity examples:

24 - 146 GB drives with RAID 10 = 1752 GB total storage

### CAD Archive Server

An archive database can be used to store years of data for reporting, while keeping the live system pruned down to a smaller size, to improve performance. The I/CAD BI Direct software typically reads data from an archive database and dependent on the site may run on the same server. If you are running BI Direct on the archive server it is recommended that you increase CPU, memory and storage by 8 cores, 64GB of memory and 300GB of space on the apps drive.

Keep in mind that adding additional cores to the Archive server will increase the licensing costs of the Database software. Each customer is encouraged to weigh their options. For a virtual environment a separate server is usually best.

### CAD Standalone BI Direct Server

ITEM	SPECIFICATION
Processors	8 cores
Memory	64GB
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files	(2) -300GB 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell R620 or HP DL360

### CAD Interface-Communication Servers

ITEM	SPECIFICATION
Processors	8 cores
Memory	32GB
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files	(2) -146GB 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended

ITEM	SPECIFICATION
Windows Server 64bit	Standard Edition
Example Hardware	Dell R620 or HP DL360

### I/NetViewer and I/NetDispatcher Communications Servers

The I/NetViewer and I/NetDispatcher clients require Microsoft Internet Explorer 9.0 or later. The Workstation used to access the application should be on a network with a minimum of 1Mbps or higher of bandwidth per client.

ITEM	SPECIFICATION
Processors	8 cores
Memory	32GB
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files	(2) -146GB 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell R620 or HP DL360

### Communications Controller Servers

Intergraph Communications Controller is SG&I's support for Next Generation 911/112. This encompasses portfolio wide support for handling Next Generation calls and call data that will be received by the PSAP as they transition to Next Gen 911/112. This includes a Call Control module and multimedia handling in the I/CAD, NetViewer/NetDispatcher, Mobile, and Security products.

ITEM	SPECIFICATION
Telephone System	Intrado
Processors	8 cores
Memory	32GB



ITEM	SPECIFICATION
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files	(2) -146GB 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell R620 or HP DL360

### Off Site Backup CAD Servers

If the Off Site CAD system performance is expected to match the system performance of the Production CAD system, then the Off Site system must be configured identically to the customer's Production system.

### Test / Training CAD Database Servers

If the Test/Training system performance is expected to match the system performance of the Production CAD system (i.e. used for load testing), then the Test/Training system must be configured identically to the customer's Production system. The Test I/CAD System is used to test new functionality or updates prior to deployment on the customer's live system. A Training system is a copy of the customer's live system that is used to train new employees without impact to the live system. In addition to the hardware, if the customer requires an I/CAD system for Test/Training and wants that system performance to be identical to their Production system, then all software licenses must also be the same.

If test will not be utilized for load testing follow the guidelines for a small site for server specifications. Usage of Standard edition for the database software is acceptable.

If a separate training environment will be utilized (Training licenses are required if training more than 30 days per year but can still exist on the test servers.) follow the guidelines for a small site for server specifications. Usage of Standard edition for the database software is acceptable.

### Test and/or Training Interface Communications Servers

Configure the test/training servers identically to their production counterparts.

## Interoperability Framework / BizTalk Servers

Non High Availability / Single Server Configuration

ITEM	SPECIFICATION
Processors	4-8 cores
Memory	32GB
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files (4) RAID 10 for Database	(2) -146GB 15K disks (4) – 146GB or larger 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell R620 or HP DL360

High Availability – Dual BizTalk Servers and Dual Database Servers

**BizTalk servers**

ITEM	SPECIFICATION
Processors	4-8 cores
Memory	32GB
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files	(2) -146GB 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell R620 or HP DL360

BizTalk Database servers – configured in a Microsoft Failover Cluster

ITEM	SPECIFICATION
Processors	4-8 cores
Memory	32GB
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files	(2) -146GB 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	2012 or 2012 R2 Standard Edition or Datacenter
External Shared Storage (Attached to both servers)	(6) – 146GB 15K Disks <sup>1</sup>
Example Hardware	Dell PowerEdge R620 + MD3220 or HP DL360 + MSA2000

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

CAD Dispatcher / Calltaker Workstations

ITEM	SPECIFICATION
Processors	i5-3340 Processor or better (3 <sup>rd</sup> Gen) 64 bit OS
Memory	8GB
Internal Disk	80GB or greater
OS	Windows 7 or Windows 8.1
Monitors	Dual 21" or larger recommended <sup>1</sup>
Speakers	Yes

ITEM	SPECIFICATION
NIC	Single 1Gb required
Example Hardware	Dell Optiplex 7010, Precision T1700, or HP Z420

<sup>1</sup> The monitor and Video card in the CallTaker/Dispatcher workstations should be based on the customer's needs. The mapping workstation's Monitor and Video card should match those specified for the CallTaker and Dispatcher workstations to avoid visual discrepancies.

## Mapping Workstation Specifications

For Mapping, the best practice is to have the map staging database reside on a high powered map workstation for the following reasons:

- Much better performance; not impacted by slow networks
- There is no impact to the network during the map build processes
- A map build can still be done if the network is down or if IT is working on the network

It is not recommended that the map workstation be a server primarily due to the lack of a graphics card and this usually requires remote connections which limit the user to one monitor. These two factors severely impact the true colors, line widths, and look of the map file which makes it extremely difficult for the user to generate a map that will look and function properly in I/Dispatcher.

### General Map Dataset Size Guidelines

#### Small to Medium dataset

- Small to medium city or rural county
- Estimated street centreline count is less than 200,000 and address point count is less than 200,000

#### Large dataset

- Highly urbanized city/county, multi-county, or state
- Estimated street centreline count is greater than 200,000 or address point count is greater than 200,000

Type I Configuration – Small to Medium Dataset; database is local on map workstation

ITEM	SPECIFICATION
Processors	Quad Core Intel 2.4GHz or better
Memory	8GB or better
Internal Disk	250GB SSD w/Sustained Read/Write > 500 or better
OS	Windows 7 Professional or Windows 8.1 Professional
Monitors	Same as dispatch
Video Card	Same as dispatch
NIC	Single 1Gb required
Example Hardware	Dell Precision

Type 2 Configuration – Small to Medium Dataset; database is on networked server

ITEM	SPECIFICATION
Processors	Dual Core Intel 2.4GHz or better
Memory	8GB or better
Internal Disk	250GB or better
OS	Windows 7 Professional or Windows 8.1 Professional
Monitors	Same as dispatch
Video Card	Same as dispatch
NIC	Single 1Gb required
Example Hardware	Dell Precision

Type 3 Configuration – Large Dataset; database is local on map workstation

ITEM	SPECIFICATION
Processors	Quad Core Intel 2.4GHz or better
Memory	16GB or better
Internal Disk	(1) - 128GB SSD w/Sustained Read/Write > 500 or better (1) - 256GB SSD w/Sustained Read/Write > 500 or better
OS	Windows 7 Professional or Windows 8.1 Professional
Monitors	Same as dispatch
Video Card	Same as dispatch
NIC	Single 1Gb required
Example Hardware	Dell Precision

Type 4 Configuration – Large Dataset; database is on networked server

ITEM	SPECIFICATION
Processors	Quad Core Intel 2.4GHz or better
Memory	16GB or better
Internal Disk	500GB or better
OS	Windows 7 Professional or Windows 8.1 Professional
Monitors	Same as dispatch
Video Card	Same as dispatch
NIC	Single 1Gb required
Example Hardware	Dell Precision

<sup>2</sup> The monitor and Video card should be the same as the I/Calltaker and I/Dispatcher workstations to avoid visual discrepancies.

## Mobile Specifications

### Mobile Data Computers / Laptops and Tablets

ITEM	SPECIFICATION
Processors	i3-2350M Processor or greater (Not ARM)
Memory	4GB
Internal Disk	80GB or greater(Solid State recommended but not required)
OS	64-bit Windows 7 or Windows 8.1 <sup>1</sup>
Video	1024X768 resolution display Touch screen recommended
Ports	RS-232 Serial\USB

ITEM	SPECIFICATION
Optical Drive	Recommended but not required
NIC	1GB physical and Wireless (WiFi and/or Cellular) 3G or 4G recommended of Cellular wireless data connectivity – either built-in or attached via USB port.
Example Hardware	Panasonic, Dell, or Samsung

<sup>1</sup>MPS has not been tested on Windows 8. MPS does not support Android/Apple iOS/Etc. It is a Windows-only product. Windows RT (Windows using ARM Processor) is not supported.

## Mobile Responder

A commercially available mobile device (a smart phone or tablet) that is running

- Apple iOS 6.2 or later
- Android 4.2 or later (may be limited to a defined set of devices for v2.0 – other would be “Viable”)
- Blackberry OS 10.2 or later

As well as a Windows Server 2008 R2 or later to host the Mobile Responder Web Service

For the servers, use the standard database server and CAD Interface Communication Server specifications defined above. Intergraph highly recommends that Mobile Responder back office communications reside on a separate server. See the Customer Support Web Page at <http://support.intergraph.com/documents/Third%20Party%20Platform%20Support.pdf> for a definition of “Viable.”

## GPS Units

**Note:** Intergraph AVL products only support the protocols listed below. Devices that support one of these protocols should be compatible with the Intergraph I/Tracker product.

### Protocols supported

- NMEA (National Marine Electronics Association)
- TAIP (Trimble ASCII Interface Protocol)
- OpenSky Subscriber Application Interface (M/A-COM Tyco Electronics – Revision 1.3)
- BlueTree (IO Management and Event Reporting for the BlueTree 4000 and 5000 Series – Version 1.0)
- OMA/MLP



## Video Responder System Specifications

The workstation specifications for your system are dependent on the video system provider. For example, they may require a specific video card. The workstation specifications below are provided as a guideline and the customer should always check with their video system provider. For the servers, use the standard database server and communication server specification defined above.

### Workstation Components for Video Responder

ITEM	SPECIFICATION
<b>Operating System</b>	Genuine Windows® 7 Professional, with Media, 64-bit, English
<b>Processor</b>	i7, quad- core, 2.4 GHz, 8 MB cache
<b>Memory</b>	16GB
<b>Graphics</b>	NVIDIA Quadro 4000 (2GB GDDR5 PCI Express Gen 2 x16 DVI-I DL, Dual DisplayPort and Stereo OpenGL, DirectX, CUDA, and OpenCL Profesional Graphics Board, VCQ4000-PB
<b>Hard Drive</b>	250GB SATA 3.0Gb/s
<b>Optical Devices</b>	16X DVD-ROM
<b>Hard Drive Internal Controller Option</b>	Integrated Intel chipset SATA 3.0Gb/s controller
<b>Multi Select Monitors</b>	21 inch monitors

## I/LEADS Specifications

### I/LEADS RMS and Report Servers

ITEM	SPECIFICATION
Processors	8 cores <sup>1</sup>
Memory	32GB
Disk Qty: All RAID1\10	(2) -146GB 15K disks <sup>2</sup> (OS) (6) – 146GB 15K disks <sup>2</sup> (4 for DB 2 for Logs)
Network	Dual 1Gb required
Windows Server 64bit	Standard Edition
RDBMS 64bit	Enterprise Edition
Example Hardware	Dell R620 or HP DL380

<sup>1</sup>Number of processors required will vary based on the number of users accessing the RMS database – customers with large user counts may require additional processors

<sup>2</sup>Hard drive size depends on call/report volume and data retention plans – high volume customers may require more and/or larger capacity disks.

### I/LEADS / Records Explorer Workstations

ITEM	SPECIFICATION
Processors	Dual Core Processor
Memory	8GB
Internal Disk:	1-250GB
OS	Windows 7
Monitors	17" or larger Single and Dual displays are recommended

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ITEM	SPECIFICATION
NIC	Single 1Gb required
Example Hardware	Dell Precision or HP Z400 series

## inPURSUIT Client/Server RMS Hardware Overview

This section is meant to give a short overview of the hardware required for *inPURSUIT* Client/Server based on the size of the customer. The environment is meant to scale and therefore the number and types of servers needed for a smaller customer are different than for a larger customer.

Also *inPURSUIT* only supports Oracle as the database engine at this time.

A small customer with less than 50 concurrent users will require the following servers: (The services running on each server are listed for reference.)

- A Database server: , if HA is desired then the DB should be implemented using DataGuard
  - Oracle Enterprise
- RMS Application Server
  - RMS Application
  - Address Server
  - Report server (with ad hoc reporting)
  - Dulls
  - Interfaces (If a large quantity then can be on its own server)

A Medium customer with 51-250 concurrent users will require the following servers: (The services running on each server are listed for reference.)

- A pair of Database servers: , should be implemented using DataGuard
  - Oracle Enterprise
- RMS Application Server
  - RMS Application
  - Address Server
  - Report server (with ad hoc reporting)
  - Dulls
- RMS Interface Server
  - Interfaces (If a large quantity then can be on its own server)

A Large customer with 251-500 concurrent users will require the following servers: (The services running on each server are listed for reference.)

- A pair of Database servers: , should be implemented using DataGuard
  - Oracle Enterprise
- RMS Application Server Pair implemented as a Microsoft Failover Cluster
  - RMS Application
  - Address Server
- Report Server

- Report server (with ad hoc reporting)
- Dulls
- RMS Interface Server
  - Interfaces (If a large quantity then can be on its own server)

## FBR and Explorer Servers

FBR and Explorer server sizing should be done separate from regular RMS sizing. The number of FBR and Explorer users should **NOT** be included in the total user count.

A single FBR Server can support up to 250 FBR users. If HA is desired add an additional server and configure as a Microsoft NLB group. If more than 250 users and HA is desired add 1 additional server for every 3 primary servers.

100 or less FBR and Explorer users:

- FBR\Explorer Server (This server is only needed if these applications are included in the bid)
  - FBR
  - SQL Express
  - Que (IIS based)
  - Import (IIS based)
  - SyncServices (IIS based)
  - Explorer (TomCat based)
  - WorkFlow (TomCat based)

1 FBR Server for every 250 FBR Users configured as an IIS NLB group and 1 Explorer Server for every 150 Explorer Users configured as an TomCat NLB group

- FBR (This server is only needed if these applications are included in the bid)
  - FBR
  - SQL Express
  - Que (IIS based)
  - Import (IIS based)
  - SyncServices (IIS based)
- Explorer (This server is only needed if these applications are included in the bid)
  - Explorer (TomCat based)
  - WorkFlow (TomCat based)

## inPURSUIT Client/Server RMS Database Servers

ITEM	SPECIFICATION
Processors	Small & Medium 12 cores, Large 16 cores
Memory	Small 32 GB, Medium 64 GB, Large 64 GB
Disk Qty: All RAID1\10	(2) -146GB 15K disks <sup>1</sup> (OS) (8) – 300GB 15K disks <sup>1</sup> (2 for Logs, 6 for DB)
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Small – Standard Edition Medium\Large - Enterprise Edition
RDBMS 64bit	Standard Edition Enterprise Edition if using DataGuard
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

- Available Disk Space (minimum storage)
  - Small 2TB
  - Medium 4TB
  - Large 6TB
- RAID10 configuration

## inPURSUIT RMS Application Servers (1 for small, 2 for medium, 2 or more for large)

ITEM	SPECIFICATION
Processors	16 cores
Memory	64 GB
Disk Qty: All RAID1\10	(2) -146GB 15K disks <sup>1</sup> (OS)
(4) – 300GB 15K disks <sup>1</sup> (Application Files	

ITEM	SPECIFICATION
and Logs)	
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

### inPURSUIT Client/Server Interface Server

ITEM	SPECIFICATION
Processors	8 cores
Memory	32 GB
Disk Qty: All RAID1\10	(2) -146GB 15K disks <sup>1</sup> (OS)
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on number and type of interfaces and log retention plans – high volume customers may require larger capacity disks.

### inPURSUIT Report Server

ITEM	SPECIFICATION
Processors	16 cores
Memory	32 GB

ITEM	SPECIFICATION
Disk Qty: All RAID1\10	(2) -146GB 15K disks <sup>1</sup> (OS) (4) – 300GB 15K disks <sup>1</sup> (Apps &DB)
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

- Available Disk Space (minimum storage)
  - Small 2TB
  - Medium 4TB
  - Large 6TB
- RAID10 configuration

### inPURSUIT FBR/Xplorer Server

ITEM	SPECIFICATION
Processors	16 cores
Memory	32 GB
Disk Qty: All RAID1\10	(2) -146GB 15K disks <sup>1</sup> (OS) (2) – 300GB 15K disks <sup>1</sup> (Application Files and Logs)
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
RDBMS 64bit	SQL Express
Example Hardware	Dell PowerEdge R620 or HP DL360



## WebRMS Specifications

The WebRMS Database may be Oracle or SQL Server. When bid by Intergraph a secondary\Redundant DB should always be included for redundancy. In addition a third Database for BI Direct is required. The BI Direct Database should use the same specifications as the production Database at this time.

### WebRMS DB Server<sup>2</sup>

ITEM	SPECIFICATION
Processors	16 cores
Memory	Small 64 GB, Medium 96GB, Large 128GB
Disk Qty: (2) RAID1 15K RPM SAS for OS and log files (4) RAID10 15K RPM SAS for DB	(2) -146GB 15K disks <sup>1</sup> (4) – 300GB 15K disks <sup>1</sup>
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Enterprise Edition
RDBMS 64bit	Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

<sup>2</sup> If HA is desired then 2 DB Servers are required:

- SQL Server requires shared storage configured as a Microsoft Failover Cluster
- Available Disk Space (minimum storage)
  - Small 2TB
  - Medium 4TB
  - Large 6TB
- RAID10 configuration

### FBR\WebRMS Application Servers Small Configuration

ITEM	SPECIFICATION
Processors	8 cores
Memory	32 GB

ITEM	SPECIFICATION
Disk Qty:	(2) – 300GB 15K RPM disks RAID1
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

The application servers (Minimum of 2) in the small configuration receive all of the WebRMS application components, including BI, and FBR configured as in an NLB group. Each application server should be configured with Apache, IIS and 4 instances of TomCat, jobserver, CAGIS and SQL Express.

## WebRMS Application Server Medium and Larger Configuration

ITEM	SPECIFICATION
Processors	Medium - 8 cores Large - 16 cores <sup>1</sup>
Memory	32 GB
Disk Qty:	(2) – 300GB 15K RPM disks RAID1
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> It is always an option of having more, smaller servers versus having fewer larger servers. This may be the preference in a virtual environment. If redundancy is desired it is recommended to add one server for every three required servers. So to support 1000 users you could have 2 servers in the large configuration or 4 Medium servers. You could then add one server for redundancy.

The application servers (Minimum of 2) in the medium and large configuration receive all of the application WebRMS components, including BI, configured as in an NLB group. Each application server should be configured with 4 instances of TomCat, jobserver, and CAGIS. FBR and Apache are installed on the Apache\FBR Server.

## WebRMS Apache\FBR Server Medium and Larger Configuration Only<sup>1</sup>

ITEM	SPECIFICATION
Processors	Medium – 4 cores, Large 8 cores
Memory	Medium 8GB, Large 16GB
Disk Qty:	(2) – 146GB 15K RPM disks RAID1
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> It is always an option of having more, smaller servers versus having fewer larger servers. This may be the preference in a virtual environment. If redundancy is desired it is recommended to add one server for every three required servers. So to support 1000 users you could have 2 servers in the large configuration or 4 Medium servers. You could then add one server for redundancy.

The WebRMS Apache\FBR Servers (Minimum of 2) in the medium and large configuration receive all of the application for FBR as well as SQL Express and Apache. FBR can also be pointed to the primary SQL Server if desired. The FBR servers are configured as an NLB. The small configuration can handle 250 users, the medium 500 and the large 1000.

## WebRMS Interface-Communication Servers

ITEM	SPECIFICATION
Processors	8 cores
Memory	16GB
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files	(2) -146GB 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition

ITEM	SPECIFICATION
Example Hardware	Dell PowerEdge R620 or HP DL360

### WebRMS Standalone BI Direct Server

ITEM	SPECIFICATION
Processors	8 cores
Memory	64GB
Internal Disk Qty: (2) RAID1 15K RPM SAS for OS and log files	(2) -300GB 15K disks
Network	Single 1Gb required, Teamed redundant NICs recommended
Windows Server 64bit	Standard Edition
Example Hardware	Dell R620 or HP DL360

### inPURSUIT RMS and RCAGIS Workstation Hardware Specifications

The customer's hardware must meet the required specifications below in order for the inPURSUIT System to meet the published Intergraph performance standards.

ITEM	PERFORMANCE SPECIFICATIONS
Processors	Quad Core processor or better
Memory	8GB
Internal Disk	80GB
Network	Single 1Gb required, Teamed redundant NICs recommended
OS	Windows 7 64bit
Example Hardware	Dell or HP compatible

\* The *inPURSUIT* system does not require a serial port. However, if the agency has equipment that requires a serial port, they will need to purchase hardware that includes the necessary serial ports.

Installed applications:

- Oracle Client for RMS and RCAGIS
- MS Office-Word and Excel needed at Minimum
- Adobe Professional for Redaction
- Crystal Reports v. 10.x
- Silverlight for Ad-Hoc Report Writer Standard Web-Browser for WebRMS
- *inPURSUIT* RMS, and RCAGIS Workstation Hardware Specifications
- The customer’s hardware must meet the required performance specifications below in order for the *inPURSUIT* System to meet the published Intergraph performance standards.

ITEM	PERFORMANCE SPECIFICATIONS
Processors	Quad Core processor or better
Memory	8GB
Internal Disk	80GB
Network	Single 1Gb required, Teamed redundant NICs recommended
OS	Windows 7 64bit
Example Hardware	Dell or HP compatible

The *inPURSUIT* system does not require a serial port. However, if the agency has equipment that requires a serial port, they will need to purchase hardware that includes the necessary serial ports.

### *inPURSUIT* FBR Computer / Laptop Hardware Specifications

ITEM	PERFORMANCE SPECIFICATIONS
Manufacturer	Dell XFR, Panasonic Toughbook or Datalux Tracer Ruggedized w/Touchscreen
Operating System	Windows 7 64bit
Processor	Intel or AMD Dual-Core processors

ITEM	PERFORMANCE SPECIFICATIONS
RAM	8GB
Hard Drive Space Available	40GB
Serial Ports (RF Systems)	1
Network Cards	Wireless g/N Cellular 4G
Installed Applications	Latest Service Pack, .NET 4.0, M/S SQL CE, Adobe Reader, Active Reports

## BI Premium for Public Safety – Server Requirements

There are three main server functionalities for BI.

- **Database Server**

This server runs either SQL Server or Oracle, and hosts the Landing Zone, Data Warehouse, and the BOE and DS Repositories. (Note that SAP recommends against hosting the CMS on a shared database server as we typically install.)

- **Web Server**

(Business Objects Enterprise)- This machine serves the Web access to Business Objects.

- **Data Services**

This machine extracts the data from the CAD/RMS server to the Landing Zone, and then processes the data from the Landing Zone to the Data Warehouse.

Using our original size division, we provide three hardware configurations:

- Small: Up to 20 active users
- Medium: 21 – 50 active users
- Large: 51 or more active users

A small configuration typically consists of two servers, one combined Database and Data Services machine, and a BOE web server.

A medium configuration splits the Database and Data Services onto dedicated machines, and increases capacity in all servers.

A large configuration again ups the specs, and adds an additional BOE application server for each 50 additional active users. (100 users would require a Database server, a Data Services server and two BOE servers.)

All servers should have Dual NIC cards (1Gb minimum), and standard peripherals.

## BI Premium for Public Safety Data Services

A small system does not have a separate Data Services machine.

ITEM	SPECIFICATION
Processors	Medium – 6 cores, Large 12 cores
Memory	Medium 64GB, Large 64GB
Disk Qty:	(2) – 300GB 15K RPM disks RAID1
Network	Dual 1Gb required
Windows Server 64bit	Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

## BI Premium for Public Safety Business Objects Enterprise / Web Server

ITEM	SPECIFICATION
Processors	Small – 8 cores Medium\Large – 12 cores
Memory	Small – 32GB Medium\Large – 64GB
Disk Qty:	(2) – 300GB 15K RPM disks RAID1
Network	Dual 1Gb required
Windows Server 64bit	Small - Standard Edition Medium\Large – Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

*Note: For a large system, we recommend adding an additional server for each additional group of 50 active users.*



## BI Premium for Public Safety Database Server

The BI Database Server must match the Database platform (Oracle\SQL Server) of the source system.

### BI Premium for Public Safety – Specifications for a Small System

ITEM	SPECIFICATION
Processors	8 cores
Memory	32GB
Disk Qty:	2-300GB (OS) 6-300GB (DB & Logs) <sup>1</sup>
Network	Dual 1Gb required
Windows Server 64bit	Standard Edition
RDBMS 64bit	Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

### BI Premium for Public Safety – Specifications for a Medium System

ITEM	SPECIFICATION
Processors	12 cores
Memory	64GB
Disk Qty:	2-300GB (OS) 8-300GB (DB & Logs) <sup>1</sup>
Network	Dual 1Gb required
Windows Server 64bit	Enterprise Edition

ITEM	SPECIFICATION
RDBMS 64bit	Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

## BI Premium for Public Safety – Specifications for a Large system

ITEM	SPECIFICATION
Processors	16 cores
Memory	64GB
Disk Qty:	2-300GB (OS) 12-300GB (DB & Logs) <sup>1</sup>
Network	Dual 1Gb required
Windows Server 64bit	Enterprise Edition
RDBMS 64bit	Enterprise Edition
Example Hardware	Dell PowerEdge R620 or HP DL360

<sup>1</sup> Hard drive size selection and total storage needs are dependent on call/report volume and data retention plans – high volume customers may require larger capacity disks.

## System Software Specifications

For information on the System Software requirement see the Supported Environments documentation on the Customer Support page. To access the supported environments document from the support page

1. Go to the [SG&I Support page](http://support.intergraph.com/) at <http://support.intergraph.com/>

The first time you select this link, it displays the Intergraph Support page, and you need to select **Security, Government & Infrastructure Division** to display the SG&I Support page. When you select this link the next time, it will go directly to the SG&I Support page. If you later want to change the division, click [**Change Support Division**] at the bottom of the left panel on the Support page.

2. Under **Product Support**, select I/Dispatcher from the **Products** drop-down list; then click **Go**.
3. On the **Customer Log In** page, enter your user ID and password; then click **Log In**. If you do not have a user login, click the link to request one.
4. On the **I/Dispatcher** page, scroll down to the **Product Versions** table and click the download icon for the **Supported Environments**.

## Appendix A - Operating System Best Practices

### Overview

How the operating system is configured can greatly impact the installation and setup of the Intergraph applications downstream. Taking steps early in the setup of the server to ensure a proper configuration will make later software installation and configuration far easier.

### Machine Names

Every computer is given a name that can be used to access resources on that computer. This is often referred to as the node name, NetBIOS name, or machine name. This is probably the one aspect of standard server configuration that is likely to be dictated by the customer. It is not uncommon for large IT organizations to have naming conventions in place (Called UNC – Universal Naming Convention) that they want applied to all devices within the span of their control.

The following table shows the desired server name conventions for a standard I/CAD installation should the customer have no preference:

PURPOSE	SUGGESTED NODE NAME	NOTES
Active CAD Database	CAD01	
Standby CAD Database	CAD02	
Primary Com/Interface	CADCOM01	
Additional Com/Interface	CADCOM02	Increment number as needed (CADCOM03, etc.)
CAD Training Server	CADTRAIN01	
CAD Test Server	CADTEST01	
Mapping Server	CADMAP01	

Machine names should be finalized before the database applications are installed. This is far more important in an Oracle or Cluster setup than in SQL Server but is best to have the names cemented before application installation and setup occurs.

### Domain

If the customer is using an existing domain, the machines will have to be joined to the domain by a customer who has a domain administrator account. Intergraph does not generally provide domain setup for customers. If your site is standing up a domain for the first time, and Intergraph is responsible for its configuration, work closely with your Intergraph implementation consultant to insure domain best practices are followed.

Important: If you are going to use SQL Server AlwaysOn Availability Groups as your high availability solution, the database servers must be part of the same Windows domain, and part of the same shared-nothing Windows cluster.

If you are going to use SQL Server Database Mirroring as your high availability solution, it is important to obtain a domain login that can be used as a service account for running the database related services. The account will need administrator privileges on the local machines running the database applications, but does not need to be a domain administrator account. The passwords should be set to never expire.

It is recommended but not required that a domain controller and DNS server be collocated with the Public Safety Servers. If these services are provided from a remote location and the connection is lost it will impact functionality.

## User Accounts

To allow all Intergraph staff working on the project to know a definitive way to access administrator privileges on the machine, a user account called "Intergraph" should be configured on the server as a local administrator account. The password should be conveyed to Intergraph services staff.

If the customer has a domain and the machines are joined to the domain, the customer may choose to create domain level logins for Intergraph personnel. If this is the case, then each Intergraph domain account should be added to the local administrator user group on each server and workstation in the I/CAD system. Intergraph personnel should not accept a domain administrator account from a customer. These accounts carry significant ability to alter core parts of the customers active directory structure, and we should avoid being in a position to have those responsibilities.



## SOW Attachment G

# Acceptance Test Plan Overview

# Acceptance Testing

## Acceptance Test Plan Overview

Intergraph has included multiple levels of formal testing to include:

- Functional Acceptance Test
- Non-Production Environment Test
- Reliability Test
- Availability Test

These tests are conducted both pre-cutover and post-cutover of the System. Before the System cuts over to live operations, Intergraph will work in conjunction with Customer to conduct the Functional Acceptance Test, the CAD Stress Test, the Non-Production Environment Test, and an initial Performance Test. Following cutover of the System, Intergraph and the County will conduct the Performance, Reliability, and Availability Tests.

### Functional Testing

Functional Testing occurs both informally and formally. Intergraph informally tests the System throughout implementation prior to the beginning of the formal Functional Acceptance Test. In addition, Intergraph encourages the County to conduct informal testing of the System as well. the County can begin informal System testing on the COTS products following the configuration workshops. Each system component will be tested individually and then in an integrated environment to ensure that all components work together as intended. All informal testing must be completed prior to the formal Functional System Test.

During the formal Functional Testing process, a command-by-command test of the system to ensure the system functions as indicated herein and the Intergraph Response to the County's RFP.

Intergraph and the County mutually agree upon the final Functional Acceptance Test.

At the conclusion of Functional Acceptance Test development and prior to the formal on-site Functional Testing Process with Intergraph, the County uses the Functional Tests to perform independent testing of the System,. Intergraph recommends that the County perform the independent testing to validate the Functional Test scenarios and submit any potential changes to Intergraph before beginning formal testing.

With assistance from Intergraph, the County will conduct a formal Functional Acceptance Test on the System to verify that the commands work as intended within the County-developed test scenarios. Intergraph will test and track each specific system function agreed to as part of the Agreement from original documentation (i.e., proposal to contract to acceptance testing) over a 5-day, on-site testing period. Intergraph will demonstrate the operation of each proposed or required feature, function, and interface based on approval of this test plan by the County prior to execution of the Agreement.

During formal Functional System Test, Intergraph and the County track whether requirements pass or fail a test. If a requirement fails a test, it is classified as a "Failure" and Intergraph has up to ten (10) business days to correct any Failure or work with the County to develop a mutually agreeable workaround or date for when the Failure will be corrected. Once a Failure is corrected, Intergraph and the County conduct additional testing of that requirement to verify compliancy.

The System will be deemed to have passed the Functional System Test when the completion criteria stated in Task 22 of the Statement of Work has been satisfied.

### **Non-Production Environment Test**

Once each Subsystem has been demonstrated to operate in accordance with the Functional Tests, the configuration is "frozen" and Intergraph replicates the production environment in the remaining environments (Training, Test, Hot Backup/Disaster Recovery, Cold Backup).

Intergraph and the County will test the Backup/Disaster Recovery and Cold Backup environments to verify that each functions as intended. Subsystem Cutover cannot occur until Intergraph and the County mutually agree that all tests are passed and the Subsystem works in the environment as intended or mutually acceptable remedies for the Failures have been developed. This is not an additional Acceptance Test performed by Intergraph. the County may test specific functionality, if desired.

### **I/CAD Subsystem**

For the I/CAD subsystem, performance standards are based on the following assumptions:

- The I/CAD System is configured and maintained according to Intergraph recommendations for workstation, system, and application configuration, as well as for database maintenance
- Anti-virus scanning software installed by the County on the CAD system must be configured according to Intergraph's Best Practice Guide for Anti-Virus Settings for CAD
- Minimum network speed between I/CAD Database Server #1 and I/CAD Database Server #2 = 100Mb/sec
- A maximum average round-trip latency exists (as measured by "ping") of  $\leq 10\text{ms}$  between I/CAD Database Server #1 and I/CAD Database Server #2, and  $\leq 30\text{ms}$  between call taker/dispatcher workstations and the database servers

Subject to the County meeting these performance assumptions, Intergraph commits to the following CAD subsystem response times:

- Less than 1 second for 90 percent of the following Dispatcher commands:
  - Accept Event
  - Unit Status Change
  - Add Event Comment
  - Dispatch Unit
  - Close Event
- Less than 2 seconds for 90 percent of the CAD transactions that require geographic validation
- Less than 5 seconds for 90 percent of amplifying information:
  - Unit and incident history queries
  - Premise history queries
  - Status queries
- Less than 5 seconds for 90 percent of queries performed as background operations
- Seconds to minutes for reports performed as background operations

Many factors can impact response time, including network latency, complexity of the map display, and



interaction with external systems and data volumes retained on the production database servers. For example, Intergraph recommends the County retain a maximum of 30 days of NCIC query response text on the Production database and move NCIC response data older than 30 days to a separate archive server.

The majority of I/CAD application commands will meet the criteria stated above. However, commands requiring responses from external data sources, such as queries to external systems, may take longer based on the responsiveness of the external system and network speed/traffic.

Compound commands that perform multiple operations for the Call Taker or Dispatcher upon selection of a single command might not meet the stated response times. An example of a compound command is a Traffic Stop command configured to automatically spawn Create Event, Dispatch Unit, and Add Supplemental Information commands.

With regard to external database queries, the System will meet the performance requirement in most cases. However, due to factors such as network latency and external system responsiveness, among others, it is not possible to commit to the response time for all ad hoc external database query requests.

Please note that Intergraph cannot guarantee response times where that response time depends on the performance of the network, system load, and any external systems (i.e., queries to state databases).

### **Mobile for Public Safety Subsystem**

The Mobile for Public Safety performance standards are based on the following assumptions:

- The Mobile for Public Safety (MPS) network runs on a commercial or managed IP-based wireless network with minimum network speed between MPS application and the Interface/Communication Server of at least 128kb/sec per laptop
- Acceptable performance for mobile transactions shall be defined as achieving two-way (query and response) transactions on a channel without congestion (i.e., no delay for channel access due to traffic contention)

Subject to the County meeting the MPS performance assumptions, Intergraph commits to the following response times:

- Typically less than 30 seconds for 90 percent of the mobile dispatch reports and queries
- Seconds to minutes for reports performed as background operations, such as Location of Interest and Unit History reports

Note that the Mobile for Public Safety response time does not apply to:

- Files with images or attachments, such as mug shots
- I/Informer transactions
- Queries to external systems
- Functions that are size and complexity dependent, such as report generation

Please note that Intergraph cannot guarantee response times where that response time depends on the performance of the network, system load, and any external systems.

### **System Reliability Test**

Upon cutover to production, the System will enter a thirty (30) day Reliability Test by which the system will perform in a live environment. Intergraph commits that the System will operate in material conformity with

Product Specifications. Should the System fail to be in conformity with Product Specifications as set forth in Attachment G of the Statement of Work, Intergraph will take appropriate steps to bring the System back into compliance by correcting the problem in the manner and within the resolution time specified below. At the successful completion of this Reliability Test period, the System will be deemed accepted and payment will be made as outlined in the Agreement. Successful completion of the Reliability Test period will be achieved thirty (30) calendar days from Subsystem cutover based on the stipulations outlined below. Final Acceptance of the System will not be withheld for errors noted below as P3 and P4.

**Error Level 1 (P1)** – Critical system errors that are defined as Loss of Data, Corruption of Data, or Loss of Productive Use of the System. In the event this type of error occurs, the County will immediately notify Intergraph and if determined to be an Error Level 1 issue, the Reliability Test period will be cancelled. Intergraph personnel shall promptly resolve the problem at no additional cost to the County and a new Reliability Test period will begin. Upon receipt of a P1 software correction the County has 24 hours to test the software correction and place it into production. If the County does not place the software correction into production within 24 hours, the new Reliability Test period will begin. Once the system operates for thirty (30) consecutive days without an Error Level 1, the Reliability Test will be completed.

**Error Level 2 (P2)** – Critical errors, which compromise the primary purpose of the Intergraph Application Software (or Module), significantly impacting productive or operational use of the System and for which a procedural workaround is not immediately and readily available. In the event this type of error occurs, the County will immediately notify Intergraph and if determined to be an Error Level 2 issue, the Reliability Test period will be suspended. Should 5 or more P2 errors occur, the Reliability Test period will be cancelled. Intergraph personnel shall resolve the problem at no additional cost to the County and the Reliability Test period will recommence at the point where it was suspended (unless five or more P2 errors occur, at which point Intergraph shall promptly resolve the problem at no additional cost to the County and a new Reliability Test period will begin). Upon receipt of a P2 software correction, the County has 24 hours to test the software correction and place it into production. If the County does not place the software correction into production within 24 hours, the Reliability Test period will resume. Once the system operates for a total of thirty (30) calendar days without an Error Level 2, the Reliability Test will be completed.

**Error Level 3 (P3)** – Non-critical errors defined by incomplete operation of system where a procedural workaround is readily available, and productive use of the system is not significantly impacted. In the event this type of error occurs, the County will immediately notify Intergraph, but the Reliability Test period will continue. If possible, Intergraph shall resolve the problem during the Reliability Test period, but if necessary, resolution will be provided in a future release of the product.

**Error Level 4 (P4)** – Cosmetic errors that are defined as configuration issues that can be corrected by the County, data integrity issues that must be addressed by the County, help file documentation errors, or enhancements that can be made in the future to the presently released version.

### **System Availability Test**

During the 30-Day Reliability Test Period, the CAD applications shall be available 99.999 percent of the time as measured by the criteria defined below.

The System will be considered available for use only when each of the following conditions is met:

1. Installed hardware and software have power applied and are operating correctly based on manufacturer specifications
2. All functions and interfaces necessary for the processing and management of calls for service and the management of resources are operating correctly per Product Specifications
3. All functions necessary for creating, editing, or searching for a record maintained by the

Systems are operating correctly

4. System availability will be expressed as a percentage of the maximum expected availability over a given period. The System must be available 7 days per week, 24 hours per day
5. Scheduled down time for System upgrades will not be construed as Hours System Unavailable
6. The percentage availability for any period will be calculated as follows:

$$\frac{(\text{Total Hours in Period} - \text{Hours System Unavailable}) \times 100}{\text{Total Hours in Period}}$$

Total Hours in Period

If availability degradation is discovered, the County may choose to stop using the application or use whatever operational portion may be available. The County and Intergraph will determine a mutually acceptable error level and remedy as per Error Level P1 – P4 listed above.