



# Site Survey

## General IP Video Projects

### Revision History

<b>Version</b>	<b>Issued</b>	<b>Author</b>	<b>Description of Change</b>
1.0	11/07	Billy Smith	First Edition Draft
1.1	1/08	Billy Smith	ISDN GW Additions
1.2	4/08	Billy Smith	RVSN Elements & ATP
1.3	4/24	Billy Smith	MAC Address for servers
1.4	12/08	Billy Smith	V5.7 updates
1.5	3/09	Billy Smith	VMware clarification
1.6	7/09	Billy Smith	V7.0 Updates
1.7	10/09	Billy Smith	Large Deployment Questions

## Notice

© 2001 RADVISION Ltd. All intellectual property rights in this publication are owned by RADVISION Ltd. and are protected by United States copyright laws, other applicable copyright laws and international treaty provisions. RADVISION Ltd. retains all rights not expressly granted.

No part of this publication may be reproduced in any form whatsoever or used to make any derivative work without prior written approval by RADVISION Ltd.

No representation of warranties for fitness for any purpose other than what is specifically mentioned in this guide is made either by RADVISION Ltd. or its agents.

RADVISION Ltd. reserves the right to revise this publication and make changes without obligation to notify any person of such revisions or changes. RADVISION Ltd. may make improvements or changes in the product(s) and/or the program(s) described in this documentation at any time.

If there is any software on removable media described in this publication, it is furnished under a license agreement included with the product as a separate document. If you are unable to locate a copy, please contact RADVISION Ltd. and a copy will be provided to you.

Unless otherwise indicated, RADVISION registered trademarks are registered in the United States and other territories.

## Table of Content

1.	CUSTOMER INFORMATION.....	4
1.1	ADDRESS & LOCATION .....	4
1.2	SHIPPING INFORMATION (IF DIFFERENT THEN ABOVE) .....	4
1.3	HOURS OF AVAILABILITY.....	4
2.	SITE NETWORK INFORMATION .....	5
2.1	NETWORK DIAGRAM .....	6
2.2	NETWORK EQUIPMENT .....	7
2.3	USE CASES (ADMINISTRATIVE AND END USER) .....	7
3.	INTEROPERABILITY.....	8
3.1	CISCO IOS GATEKEEPER .....	8
3.2	CISCO CALL MANAGER .....	8
3.3	CISCO MEETING PLACE .....	8
3.4	3 <sup>RD</sup> PARTY VENDORS .....	9
4.	SAMPLE RADVISION IP VIDEO DEPLOYMENT .....	10
4.1	NETWORK DIAGRAM – LARGE CENTRALIZED .....	10
4.2	DESCRIPTION.....	10
5.	SERVER PREREQUISITES .....	11
5.1	IVIEW SUITE .....	11
5.2	ECS GK STAND ALONE.....	12
5.3	PATHFINDER CLIENT .....	13
5.4	SCOPIA DESKTOP .....	13
5.5	NETWORK GUIDELINES.....	14
5.6	PC PERIPHERALS.....	14
5.7	HARDWARE REQUIREMENTS .....	15
6.	ISDN/SERIAL GW REQUIREMENTS .....	20
7.	ACCEPTANCE TEST PLAN .....	22
8.	SIGNATURE SHEET.....	23

The purpose of this document is to outline the network prerequisites for a typical enterprise IP video deployment of the RADVISION solution. It is recognized that in today's complex networks there may be many groups or divisions of an organization that need to be aligned in order to have a successful deployment of our solution. These groups may consist of but are not limited to the Voice and Video Group, IT and Security. It is recommended that all groups review and offer any and all information as requested below. Specific network details relative to Firewalls and NAT's must be brought to our attention. Please fill out the sections that pertain to your network deployment.

## 1. Customer Information

### 1.1 Address & Location

<b>Company</b>	<b>Gila County</b>
Main Phone	<b>928-425-3231</b>
Street Address	<b>1400 E. ash st.</b>
City	<b>Globe</b>
State	<b>AZ</b>
Zip Code	<b>85501</b>
Country	<b>United States</b>
<b>Primary Contact</b>	<b>Darryl Griffin</b>
Phone	<b>928-402-8774</b>
Pager/Cell	<b>928-200-4524</b>
Email	<b><u>dgriffin@gilacountyaz.gov</u></b>
<b>Secondary Contact</b>	<b>Shaun Stevenson</b>
Phone	<b>928-402-8776</b>
Pager/Cell	<b>928-200-0761</b>
Email	<b><u>sstevenson@gilacountyaz.gov</u></b>

### 1.2 Shipping Information (if different then above)

<b>Company</b>	
Main Phone	
Street Address	
City	
State	
Zip Code	
Country	

### 1.3 Hours of Availability

M-F Office Hours	<b>8-5</b>
After Hours Access	<b>Yes</b>
Weekend Access	<b>Yes</b>

## 2. Site Network Information

### General information:

- What is your standard Windows version for desktop? xp-windows 7
- What is your standard Windows version for servers? 2003-2008
- What is your standard HW for desktop, laptop and servers? Dell
- What is your standard Browser model and version? IE 7-8
- What UC software are you using (Ex. OCS or SameTime)? How many users and how it is deployed? Unity
- What CAC (Call Admission Control) policies do you have today and how are you enforcing them? N/A
  - NOTE: The conferencing ratio is 1:10 out of the concurrent users

### Preexisting video equipment

- Do you have an existing Video network? H.323, SIP or other YES H323
- Make, Model, Version for preexisting MCU's, GW's, GK's/SIP servers (See section 3.4) Polycom V2iu 5200
- What is the breakdown of the video units, SD VS HD VS desktop (a full list attachment will be appreciated), polycom SD VSX 3000, VSX 7000, V 500, v700

### Video trends:

- What is the concurrency of video traffic?
- P2P calls
  1. Internal to Internal? Daily 3 -5hrs
  2. Internal to External? weekly
- Multi-party conference? No bridge currently
- ISDN (H.320)? N/A

### Preexisting audio equipment:

- Make, Model, Version for preexisting PBX's (See section 3.4)
- Is it TDM or VoIP or both? Call manager 7.0 VOIP
- Does it have video phones of any sort - HW or SW or combination (e.g. Cisco with VTA, CUVA)? VT vanatage
- Do you use internal voice bridges or a service? What type/who is the provider? Call manager meet me.

### Voice trends:

- What is the concurrency of voice traffic? A lot
- P2P calls
  1. Internal to Internal? Lot
  2. Internal to External? Lot
- Multi-party conference? Medium

**Preexisting web collaboration equipment:**

- Do you have a service or on premise server (e.g. WebEx, live-meeting, meeting-place)?n/a
- What is the total and maximum concurrent port usage?n/a

**Architecture:**

- How many users? 500
- How many sites? 10
- How many users in each site? 20- 100
- What is the bandwidth between the sites (WAN links)? 10mb, 4.5mb, 3mb, 1.5mb
- Is the bandwidth from each site to a service provider cloud, or point to point/full meshed/partially meshed, hub and spoke, etc. link topology (a network diagram will be helpful)? Point to point T1's qwest, Metro Fiber 10mb Cableone,

**2.1 Network Diagram**

Please insert your network diagram on this page below. Include: LAN, WAN, ISDN, ATM circuits and the network backbone information. Identify the locations of routers, firewalls, NAT's, switches, Gateways, MCU's, Gatekeepers and Endpoints.

**2.2**

Shaun UpdatedGila  
County Network.vsd



### 3. Interoperability

#### 3.1 Cisco IOS Gatekeeper

IOS Version	
Memory	
IP Address	
Subnet Mask	
Default Router	
Copy of current IOS configuration	

#### 3.2 Cisco Call Manager

CCM Version	<b>7.0</b>
IP Address	<b>172.16.128.75 pub, 172.16.128.76 sub</b>
Subnet Mask	<b>255.255.252.0</b>
Default Router	<b>172.16.0.4</b>
Copy of current CCM configuration relative to H.323 and SCCP	

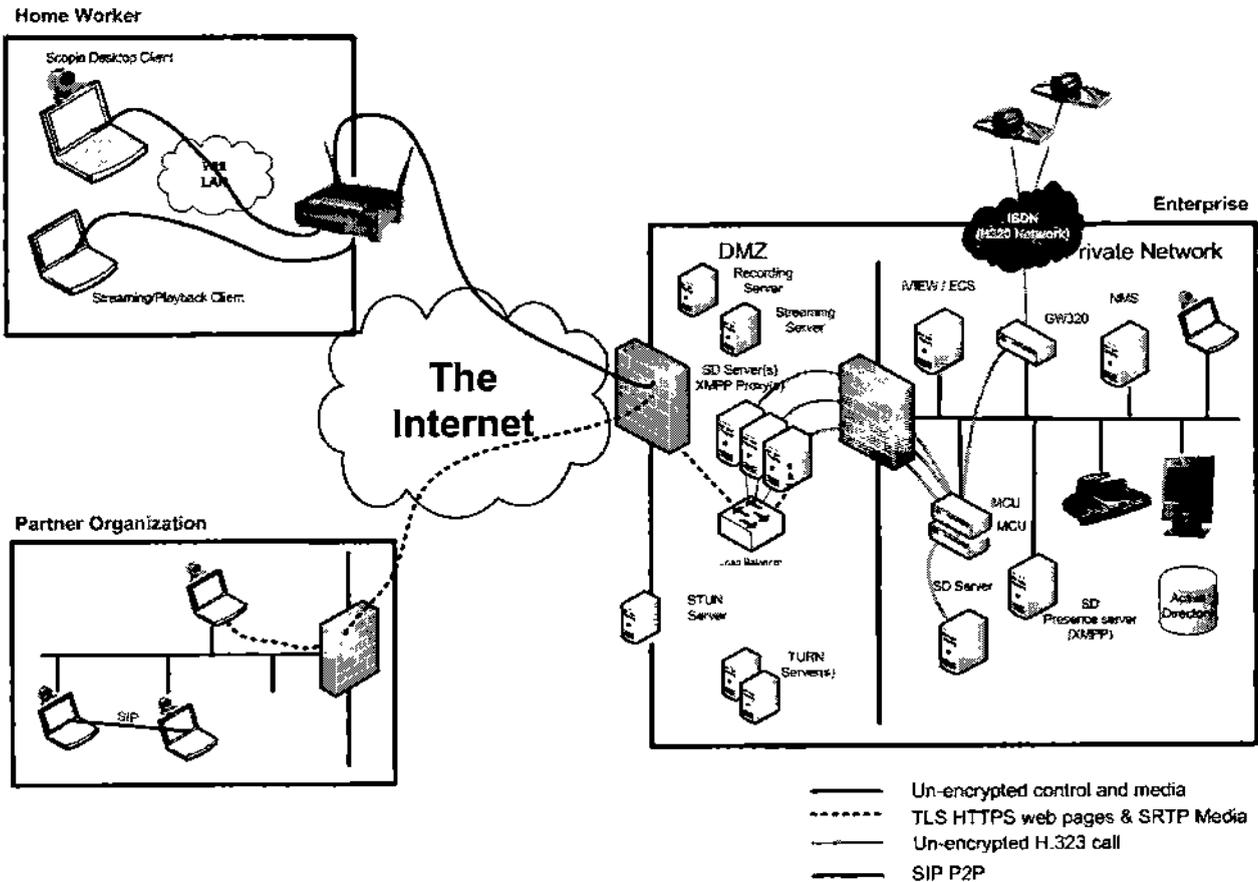
#### 3.3 Cisco Meeting Place

MP Version	
IP Address	
Subnet Mask	
Default Router	
Copy of current MP configuration relative to H.323 and SCCP	
MCU information if being used with MP	



## 4. Sample RADVISION IP Video Deployment

### 4.1 Network Diagram – Large Centralized



### 4.2 Description

- Targets medium/large enterprises SCOPIA72/Elite 5230 (smaller deployments can use a SCOPIA12/24/Elite 5110/5115)
- Supports multipoint conferencing through the use of single/multiple MCU
- Supports ISDN/PSTN networks through the use of H.320 GW
- Supports Desktops both inside and outside the corporate network through the use of SCOPIA Desktop
- Supports point to point and multipoint with presence (STUN/TURN/XMPP)
- Supports room systems both inside and outside the corporate network
- Supports streaming and recording
- Directory server integration, scheduling and virtual rooms support through iVIEW Suite
- H.323 FW Traversal and H.460 supported through the PathFinder Server/Client solution

## 5. Server Prerequisites

**Note: RADVISION does NOT support Virtual Server or VMware.**

*RADVISION does not support VMware in any deployments, all of our solutions require a dedicated server to work on with specifications given in our deployment guides.. The engineering team will not do troubleshooting on a solution which is installed on unsupported HW or SW.*

*Virtual machines are a great tool for database or application servers however they are not optimized for real time systems. Real time systems like SCOPIA Desktop use low level threading technologies to optimize the server throughput and require real time responsiveness from the server. This is not unique to SCOPIA Desktop but is common to all systems that handle real time data such as audio or video. Virtual IP that is normally associated to Virtual servers also can cause major connections issues with real time solution.*

### 5.1 iVIEW Suite

iVIEW Suite 25 to 100 standalone

- CPU: Intel Single Core 2.8 GHz
- RAM: 1 GB
- Disk: 20 GB
- NIC: 100 MBit

iVIEW Suite 100 to 500 standalone

- CPU: Intel Dual Core 3 GHz
- RAM: 2 GB
- Disk: 20 GB
- NIC: 100 MBit

iVIEW Suite 25, 50 or 100 with internal gatekeeper

- CPU: Intel Single Core 2.8 GHz
- RAM: 1 GB
- Disk: 20 GB
- NIC: 100 MBit

iVIEW Suite 25 with internal gatekeeper and SCOPIA Desktop 25

- CPU: Intel Single Core Duo 915, 2x2 MB Cache, 2.8 GHz, 800 MHz
- FSB
- RAM: 2 GB
- DISK: 20 GB
- NIC: 100 Mbit

iVIEW Suite 50 with internal gatekeeper and SCOPIA Desktop 50

- CPU: Dual Core Xeon 3.0 GHz
- RAM: 3 GB
- DISK: 20 GB
- NIC: Gigabit

iVIEW Suite 100 with internal gatekeeper and SCOPIA Desktop 100

- CPU: Quad Core Xeon 3.7 GHz
- RAM: 4 GB
- DISK: 20 GB
- NIC: Gigabit

iVIEW Suite requires a 32-bit Windows operating system. 64-bit operating systems are not supported at this time.

iVIEW Suite standalone and iVIEW Suite with internal gatekeeper have the following software requirements:

- Microsoft Windows 2003 Standard/Enterprise Edition SP2
- Microsoft Windows 2000 Server/Advanced Server Edition SP4
- Microsoft Windows 2008 Standard/Enterprise Edition
- Internet Explorer 6.0 or higher

#### **Web client requirements**

- Windows® Vista, 2000, 2003, XP or ME
- Microsoft Internet Explorer 6.0 or higher

#### **Outlook add-on requirements**

- Microsoft Exchange 2000/2003 Server®
- Microsoft Outlook XP on Windows XP
- Microsoft Outlook 2003 on Windows XP/2003
- Microsoft Outlook 2007 on Windows XP/2003
- Microsoft Outlook 2007 on Windows Vista

#### **Supported Database Types**

- MySQL internal database server
- Microsoft SQL Server 2000 Standard/Enterprise Edition SP4
- Microsoft SQL Server 2005 Standard/Enterprise Edition SP1
- Microsoft SQL Server 2008

**Note** Install external database servers on a separate machine before installing iVIEW Suite. Make sure that no database server is installed on the iVIEW Suite host server.

#### **LDAP Server Types**

- iVIEW Suite supports Microsoft Active Directory 2000 and 2003, and Lotus Domino Server.

## **5.2 ECS GK Stand Alone**

### **PREREQUISITES (STANDALONE SOFTWARE VERSION)**

To use the standalone software version of the ECS, you require the following:

- Pentium IV at 2 GHz with 512 MB memory (2 GB for 2,000 calls)
- Recommended disk space: 80 MB for installation + 5 GB for the CDR and log files
- Windows 2000 Professional, Windows 2000 Server or Windows 2003 Server or Windows 2008 Server.
- Ports 80, 1719 and 1720 must be free
- Microsoft IIS FTP server
- Need SNMP installed

### 5.3 PathFinder Client

#### MINIMUM HARDWARE/OS REQUIREMENTS

- Intel® Pentium® III 1 GHz processor
- 256 MB RAM
- 50 MB of hard disk space
- Microsoft Windows 2000 Professional
- Microsoft Windows XP
- Microsoft Windows Vista Business (Service Pack 1)
- Microsoft Windows Vista Ultimate (Service Pack 1)
- Microsoft Windows 2008 Server
- Linux (RedHat 9.0 is recommended)

### 5.4 SCOPIA Desktop

#### Operating Systems Requirements

##### Client *Live*

- Operating systems supported are Windows XP (with the latest Service Packs) and all variations of Windows Vista (including Vista 64 bit).
- Internet Explorer 6 and 7 are both supported.
- Standard Definition
  - Pentium 4 processor 3.0 GHz or faster
  - Centrino Mobile Processor 1.8 GHz or faster
  - 1 GB of RAM
- High Definition
  - Core 2 Duo 2.1 GHz or Better (2.4 GHz or above recommended)
    - Note: NOT the older Core Duo!
  - 2 GB RAM
  - Recommend HW accelerated Graphics card with own memory
  - Best platform is the i7
- Windows XP SP2 or above
- Vista SP1 or above
- Should use Microsoft Internet Explorer (IE) Version 7 or above

##### ***Streaming***

The streaming client supports the following operating systems:

- Windows XP, Windows Vista
- Mac OS X

The following browsers are also supported (see streaming section for the role of the browser in the streaming solution):

- Internet Explorer 6 and 7
- Firefox
- Safari

##### **Server**

- Server operating system supported:
- Windows 2003 Standard Edition

- Use the right duplex configuration on your Ethernet NIC card(s). It is essential for optimizing the videoconferencing experience.
- Use 100 MB full duplex NIC settings for the switch and the SCOPIA Solution server.
- If you use a Gigabit NIC and switch, set the duplex setting to auto-sense.
- Do not use the auto-sense setting if you are not using a Gigabit NIC and switch because auto-sense may cause significant packet loss.
- Verify that the server you intend to use meets the requirements listed in the tables below.

## 5.5 Network Guidelines

- Conferencing experience will only be as good as your network
- For the Server remember you can quickly get over 100 Mbits of data
  - Use a Gigabit NIC Card
  - Use multiple 100 Mbit Full Duplex NIC Cards.
- For Client or Server
  - Prefer 100-Mbit full duplex NIC settings
    - Do not use mismatched Half and Full Duplex settings (Switch and PC NIC)
    - Do not use Auto-sensing – can get high packet loss issues
  - Use Switches not Hubs
  - If you do not have a managed switch or can not set the switch from auto-sense or have to use a Hub then use 100-Mbit Half duplex on your PC NIC
  - If you are using a Gigabit NIC and switch use auto-sense only in this case, as most NICS only have this for Gigabit

## 5.6 PC Peripherals

- Logitech cameras are great for USB Video
  - Be careful of the cheaper ones they have lower quality video and use more CPU.
  - We recommend Pro 9000 to get HD level Video up to 960x720
- Need Windows XP SP2 or greater
- Even though it is optional, use headsets when performing remote demos
  - Greatly reduces audio issues (feedback, keyboard noise, etc.)
- Onboard laptop microphone and speakers usually of low quality, better to use an external microphone or headset
- Usually better to NOT use camera embedded microphone – but they work better now
- Camera built in microphones are usually very sensitive and noisy
- Hardware Echo Cancellation peripherals are great like:
  - ClearOne's Chat50 (for desktop), Chat150 (for rooms)
  - Phoenix Audio's Duet

## 5.7 Hardware Requirements

Table 5.7.1 describes server requirements for deployments where SCOPIA Desktop Server and iVIEW Suite including Enhanced Communication Server (ECS) are installed on the same server.

**Table 5.7.1** SCOPIA Solution Server Requirements for Basic and Small Centralized Deployments

Deployment	SCOPIA Desktop 25	SCOPIA Desktop 50	SCOPIA Desktop 75	SCOPIA Desktop 100
Maximum number of connections	25 interactive 75 streaming and playback 1 recording	50 interactive 150 streaming and playback 3 recording	75 interactive 225 streaming and playback 3 recording	100 interactive 300 streaming and playback 5 recording
SCOPIA Desktop Server and iVIEW Suite including Enhanced Communication Server on the same server	RAM: 2G Disk: 20G CPU: Intel Single Core Duo 915 or equivalent. 2.8GHz, 800MHz FSB, 2x2MB Cache NIC: 100 Mbit	RAM: 2G Disk: 20G CPU: Intel Single Quad Core 915, 2.8GHz, 800MHz FSB, 2x2MB Cache NIC: Gigabit NIC	RAM: 3GB DDR II SDRAM, 400 MHz (PC23200) Disk: 20G CPU: 2xIntel Xeon*, 2.6GHz 800MHz FSB. NIC: 1 NIC configured for GB/Full Windows 2003 Server Standard Edition	RAM: 3GB - DDR II SDRAM - 400 MHz (PC23200) Disk: 20G CPU: 2xIntel Xeon*, 3.2GHz 800MHz FSB, NIC: 1 NIC configured for GB/Full Windows 2003 Server Standard Edition

\* - Configured with hyperthreading.

Table 5.7.2 describes server requirements for deployments where SCOPIA Desktop Server and iVIEW Suite including Enhanced Communication Server (ECS) are installed on separate servers.

**Table 5.7.2** SCOPIA Solution Server Requirements for Large Centralized Distributed Single-Zone Deployments

Deployment	SCOPIA Desktop 150	SCOPIA Desktop 200	SCOPIA Desktop 300/10	SCOPIA Desktop 600/10
Maximum number of connections	150 interactive	200 interactive	300 streaming or playback 10 recording	600 streaming and playback 10 recording
SCOPIA Desktop Server and iVIEW Suite including Enhanced Communication Server on separate servers	RAM: 3GB - DDR II SDRAM - 400 MHz (PC23200) CPU: 2xIntel Xeon*, 2.6GHz, 800MHz FSB, NIC: 1 NIC configured for GB/Full OS: Windows 2003 Server Standard Edition	RAM: 3GB - DDR II SDRAM - 400 MHz (PC23200) CPU: 2xIntel Xeon*, 3.2GHz, 800MHz FSB, NIC: 1 NIC configured for GB/Full OS: Windows 2003 Server Standard Edition	RAM: 3GB - DDR II SDRAM - 400 MHz CPU: 2xIntel Xeon*, 3.2GHz, 800MHz FSB, NIC: 1 NIC configured for GB/Full OS: Windows 2003 Server Standard Edition	RAM: 5GB SDRAM - 400 MHz CPU: 4xIntel Xeon*, 3.66GHz, 800MHz FSB, NIC: 1 NIC configured for GB/Full OS: Windows 2003 Data Center

\* - Configured with hyperthreading.

## Video - CPU / Resolution / FPS Chart

### CPU Estimation

- Based on the number of Physical Cores available (Virtual CPU core are not counted)
- Estimated CPU = Number Physical Core \* Speed of Each Core

### Video Size Chart – Encoding Chart

- Based on the Estimated CPU, the frame rate allowed for each resolution apply
- HD is only available for a system with an Estimated CPU of  $\geq 4\text{Ghz}$

CPU	QCIF	CIF	480P & 4CIF & NTSC	HD – 720P
6Ghz	30	30	30	30
4Ghz	30	30	15	15
3Ghz	30	30	5	
2Ghz	30	15	5	
<2Ghz	30	15	1	

This is an Encode Chart if set to Automatic we allow HD Conferences only for a minimum of 4 GHz processor clock speed

**NOTE** Automatic mode for video will only do HD calls (send or receive 480P or 720P) if you have 4Ghz or better, but you can force HD and get the FPS shown for the lower CPU rates.

## Providing Sufficient Bandwidth

SCOPIA Desktop Server acts as a SCOPIA Gateway between the desktop PC and the SCOPIA MCU. Table 5.4.3 shows the bandwidth resources required to enable between 50 and 100 users to connect through the system and initiate hundreds of streaming sessions.

We recommend that you use statistics provided in Table 5.4.3 to plan your deployment and NIC card requirements.

**Note** Use bonded 100 MB NICs or a Gigabit NIC. Default settings are 384 Kbps (interactive), 256 Kbps (streaming).

For each SCOPIA Desktop Client the following traffic is handled by a single SCOPIA Desktop Server:

- SCOPIA Desktop Client sends media to SCOPIA Desktop Server.
- SCOPIA Desktop Server forwards media to SCOPIA MCU.
- SCOPIA MCU returns media to SCOPIA Desktop Server.
- SCOPIA Desktop Server sends media to SCOPIA Desktop Client.

Therefore, the formula for calculating bandwidth required for interactive session is as follows:

Bandwidth = bandwidth required for one connection × 4 × number of connections

Thus, for a 384 Kbps call there is 1536 Kbps of media going through the SCOPIA Desktop Server for each client.

Streaming connections are used to send media from the SCOPIA Desktop Server to SCOPIA Desktop Clients. The formula for calculating the bandwidth required for streaming session is as follows:

Bandwidth = bandwidth required for one connection × number of connections

**Table 5.7.3** Required Bandwidth Resources

Interactive Connections	Streaming Connections	Bandwidth for Interactive Connections	Bandwidth for Streaming Connections	Total Bandwidth
		<b>384 Kbps</b>	<b>256 Kbps</b>	
10	30	15360	7680	23040
25	75	38400	19200	57600
50	150	76800	38400	115200
100	300	153600	76800	230400
150	450	230400	115200	345600
200	600	307200	153600	460800

**Note** Using SCOPIA Desktop Clients in HD mode requires larger bandwidth as well as a more powerful SCOPIA Desktop Server.



## 6. ISDN/Serial GW Requirements

**Note** Some configuration options described are unavailable in Gateways which support only one PRI port.

### ISDN NETWORK DIRECTORY NUMBERS (PRI GATEWAYS ONLY)

#### PRI Service Provider

Service Provider: \_\_\_\_\_

Type of service: \_\_\_\_\_

#### PRI Directory Numbers

How many Directory Numbers are there (4, 7, 10, DNIS)? \_\_\_\_\_

Directory Number range: \_\_\_\_\_ - \_\_\_\_\_. For consecutive directory numbers, fill in the digits that indicate the range.

NOTE: The PRI's need to be installed and ready for us to connect the GW and to know the ISDN signaling protocol (we support National ISDN, 5ESS Custom/Multipoint, DMS100 or 4ESS), Line Coding (typically B8ZS), Framing format (typically ESF) and the PRI lines to be configured as clear channel 64k for voice and data. ANY DN's (Directory Numbers) can route to ANY B channels at ANY time and we'll need to know if you have a block of DN's (preferably contiguous) or just one and what it/they are.

### ISDN NETWORK PHYSICAL INTERFACE (PRI GATEWAYS ONLY)

#### Channel Rate

**PRI**        **E1**     56 Kbps  64 Kbps

**Port 1**    **T1**     56 Kbps  64 Kbps

**PRI**        **E1**     56 Kbps  64 Kbps

**Port 2**    **T1**     56 Kbps  64 Kbps

#### Carrier/Switch Signaling Protocol

**PRI**        **E1**     Euro ISDN  VN6  5ESS

**Port 1**    **T1**     DMS100  NatISDN  5ESS  4ESS

**PRI**        **E1**     Euro ISDN  VN6  5ESS

**Port 2**    **T1**     DMS100  Nat ISDN  5ESS  4ESS

#### Network Access

**PRI Port 1**         TE  NT

**PRI Port 2**         TE  NT

**Line Coding****PRI** **E1**  AMI  CMI  HDB3  NRZ**Port 1** **T1**  B8ZS  AMI-B7  NRZ**PRI** **E1**  AMI  CMI  HDB3  NRZ**Port 2** **T1**  B8ZS  AMI-B7  NRZ**Line Framing****PRI** **E1**  CRC4  Double framing  Extended CRC4**Port 1** **T1**  ESF no CRC  ESF  F4**PRI** **E1**  CRC4  Double framing  Extended CRC4**Port 2** **T1**  ESF no CRC  ESF  F4**SERIAL PORT PHYSICAL INTERFACE (SERIAL GATEWAYS ONLY)****DTE/DCE Interface Configuration Options Network Addressing****Interface Terminal Adaptor Options Signaling Protocol Options**

- DTE
  - Common  RS-366
  - Manual Control
  - Data Triggered
  
  - KG-Device  RS-366
  - Manual Control
  - Data Triggered
  
- DCE
  - Common  RS-366

## 7. Acceptance Test Plan

1. Make IP to IP Point to Point calls (H.323)
  - a. Point to Point (Desktop) (SVC)
  - b. Point to Point (H.323)
  - c. Point to Point (SIP)

Pass/Fail	Comments:
-----------	-----------

2. Escalate from Desktop Point to Point to Multipoint (SVC)

Pass/Fail	Comments:
-----------	-----------

3. Make ISDN to IP call (Dial in using GW)
  - a. Video
  - b. Voice

Pass/Fail	Comments:
-----------	-----------

4. Make IP to/from ISDN calls (Dial in/out using GW)
  - a. Video
  - b. Voice

Pass/Fail	Comments:
-----------	-----------

5. Create a conference with 2 IP EPs and 2 ISDN EPs (through GW).
  - a. Dial Out
  - b. Dial In
  - c. Adhoc
  - d. Scheduled – iVIEW Suite
    - i. Outlook Plug In
  - e. Virtual Room (VR) – iVIEW Suite

Pass/Fail	Comments:
-----------	-----------

6. Dial into Virtual Room from SCOPIA Desktop client
  - a. Invite H.320 room system
  - b. Invite PSTN/cell phone
  - c. Invite H.323 room system
  - d. Dial into VR via H.320 room system via GW
  - e. Dial into VR via H.323 room system via GW

Pass/Fail	Comments:
-----------	-----------

The purpose of these test cases is to check the basic functionality of the RADVISION deployed video architecture.

## 8. Signature Sheet

The signatures below represent the acknowledgement of both organizations of this Site Survey. This document will be used as a baseline foundation moving forward for this RADVISION solution implementation. This will stand as an acceptance of the deployment scenario described with in this document.

### Customer Representative

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

### RADVISION Representative

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_



**Sales Order**

Document Date:	06/11/2010
Document #:	001-00-1583313
Expires On:	07/11/2010

Rep: Wade Price  
 Email: wade.price@quagga.com  
 Phone: 8662336876x5059

**Video Bridge and Firewall**

**Bill To Information**

Gila County  
 Attn: Darryl Griffin  
 1400 East Ash Street  
 Jeff Baer  
 Globe AZ, 85501  
 USA  
 Customer PO#: 2010-00000362

**Ship To Information**

Gila County  
 Attn: Darryl Griffin  
 1400 East Ash Street  
 Gila County  
 Globe AZ, 85501  
 USA

Misc. Item	Price	Qty	Extended Price
54546-00004 RadVision Scopia Elite 5510 bundle	\$52,500.00	1	\$52,500.00
55678-00602 RadVision PathFinder Firewall 10/60	\$8,500.00	1	\$8,500.00
56005-00001 Onsite Installation Services	\$2,300.00	2	\$4,600.00
56004-00031 Csil Support L3&L4 8x5	\$1,000.00	1	\$1,000.00
56004-00050 Call Support L3&L4 8x5	\$4,400.00	1	\$4,400.00
HDL1&L2 Call Support Level 1 & 2	\$2,600.00	1	\$2,600.00
			\$73,800.00
		<b>Sub Total:</b>	<b>\$73,800.00</b>
		<b>Grand Total:</b>	<b>\$73,800.00</b>

**Comments**

Bundle Containing  
 - SCOPIA Elite 5110 MCU  
 - Increased capacity license included  
 - MIEW Suite w/ internal GK adds:  
 - 40 ports of multipoint calls  
 - 80 gatekeeper/B2BUA ports  
 - 400 registrations  
 - SCOPIA Desktop - 40 ports of interactive web access  
 - SCOPIA Desktop Pro  
 - 5 Desktop Pro client licenses  
 Additional software provided with the bundle needs to be installed on an external server.  
 List price: \$102,000.  
 Firewall Traversal Appliance. Supports 10 traversal calls / 60 registrations. Traversal client distribution is included in the server pricing.  
 List price: \$19,000

## Sales Order

*Continued from previous page....*

Document Date:	06/11/2010
Document #:	001-00-1583313
Expires On:	07/11/2010

For product only purchases, net 30 terms are available upon credit approval. If terms are being requested, client authorizes Quagga to obtain credit information prior to accepting the order. For purchases requiring implementation services, our terms are 50% deposit for product and services/remaining 50% for product upon delivery/balance due upon completion. Client's signature below acknowledges the client has read and accepted Quagga's general terms and conditions. Please see addendum for term and conditions language.

Buyer understands that software and/or systems are customer configured and cannot be cancelled upon order going firm (24 hours) to Avaya Communications, Inc.

Above quote may include annual software support pricing based on a three year term.

This quote is valid for 30 days.

Authorized Acceptance: \_\_\_\_\_

Date: \_\_\_\_\_

Customer Name: Gila County  
 End Customer Name: Gila County

Attention: Darryl Griffin @ Gila County.

Address  
 Address

Quoted by Wade Price @ Queega Corp

From: Wade Price  
 Quote #: 5110 Elite + PF- Gila Co.  
 Date: May 17th, 2010



Mericopa County SAVE Contract Serial #0030 S

Proposal type:

SCOPIA Elite 5110 Solution	54546-00004	Package	Containing - SCOPIA Elite 5110 MCU - Increased capacity license included - iVIEW Suite w/ internal GK add: - 40 ports of multipoint calls - 80 gatekeeper/22BVA ports - 400 registrations - SCOPIA Desktop - 40 ports of interactive web access - SCOPIA Desktop Pro - 5 Desktop Pro client demo licenses	iView and SCOPIA Desktop software provided with the solution needs to be installed on an external server  This bundle requires silver bundle or silver plus bundle support.  List price: \$192,000. RADVISION.	\$ 102,000	1	\$ 52,500
PathFinder - Basic Package	56678-00602	Standalone 1U chassis	Firewall Traversal Appliance. Supports 10 traversal calls / 60 registrations.	Traversal client distribution is included in the server pricing. Dimensions: Height: 1.68" (4.27 cm), Width: 17.60" (44.70 cm), Depth: 21.50" (54.61 cm)	\$ 19,000	1	\$ 6,500

Total HW items:

Total SW items:

Total Bundle items:

SYSTEM PRICE \$ 61,000  
 DISCOUNT  
 TOTAL \$ 61,000

**Notes:**

Quote based on RADVISION Price Configurator V16  
 Offer is Valid for 30 Days.

Onsite Service	56005-00001		Automatically calculated in proposal by entering quantity of 1	T&E is included within continental United States, T&E will be charged for all travel outside of the Continental US.	\$ 2,900	2	\$ 4,600
Silver	56004-00031		Call Center Gx2 (level 3 & 4 to reseller) Software update & upgrade Remote diagnostic	For all standalone HW based products		1	\$ 1,000
Silver Bundle	56004-00050		Call Center Gx2 (level 3 & 4 to reseller) Software update & upgrade Remote diagnostic	For all BUNDLED HW and SW base products This package is for SCOPIA Elite only.		1	\$ 4,400
Level 1&2	HDL1&L2		Direct support to END user			1	\$ 2,800

Total Service \$ 12,800

Total Items+Service \$ 73,800

## Strategic Alliance for Volume Expenditures

### S.A.V.E. --- Cooperative Purchasing Agreements

The following agencies (230) have signed the Cooperative Purchasing Agreement with the S.A.V.E. association as of April 1, 2010.

#### Municipalities

City of Apache Junction  
City of Avondale  
City of Bullhead City  
City of Casa Grande  
City of Chandler  
City of Cottonwood  
City of Douglas  
City of Eloy  
City of Flagstaff  
City of Glendale  
City of Goodyear  
City of Maricopa  
City of Mesa  
City of Page  
City of Peoria  
City of Prescott  
City of Safford  
City of Scottsdale  
City of Sierra Vista  
City of Somerton  
City of Surprise  
City of Tempe  
City of Tucson  
City of Winslow  
City of Yuma  
Town of Buckeye  
Town of Camp Verde  
Town of Cave Creek  
Town of Florence  
Town of Fountain Hills  
Town of Gila Bend  
Town of Marana  
Town of Oro Valley  
Town of Paradise Valley  
Town of Prescott Valley  
Town of Queen Creek  
Town of Sahuarita  
Town of Superior

#### Counties

Apache County  
Cochise County  
Coconino County

#### Gila County

La Paz County  
Maricopa County  
Mohave County  
Navajo County  
Pima County  
Pinal County  
Santa Cruz County  
Yavapai County  
Yuma County

#### Higher Education

Arizona State University  
Arizona Western College  
Central Arizona College  
Central Arizona Valley Institute of Technology (CAVIT)  
Cochise County Community College District  
Coconino County Community College District  
Maricopa Community College District  
Mohave Community College  
Northern Arizona University  
Pima Community College  
University of Arizona  
Yavapai College

#### Political Agencies

Arizona Supreme Court  
Central Arizona Project  
Central Arizona Water Conservation District (CAWCD)  
Central Yavapai Fire District  
Maricopa Integrated Health System  
Mt. Lemmon Fire District  
North Country Community Health Center  
Pima County Joint Technology District #11 (JTED)  
Superior Court of Arizona, Maricopa County  
Superstition Mtn Community Facilities District  
Tucson Airport Authority  
Valley Metro Regional Public Transit Authority  
Phoenix-Mesa Gateway Airport Authority

#### School Districts

Agua Fria Union High School District # 216  
Alhambra Elementary School District # 68  
Altar Valley School District #51  
Amphitheater Unified School District #10  
Antelope Union High School #50  
Apache Junction Unified School District # 43  
Arlington Elementary School District #47  
Avondale Elementary School District #44  
Balsz Elementary School District #31  
Beaver Creek School District #26  
Benson Unified School District #9  
Bisbee Unified School District #2  
Blue Ridge Unified School District #32  
Bonita School District #6  
Buckeye Elementary School District #33  
Buckeye Union High School District #201  
Bullhead City Elementary School District #15  
Camp Verde Unified School District #28  
Cartwright Elementary School District #83  
Casa Blanca Middle School dba Vah Ki Middle School  
Casa Grande Elementary School District  
Casa Grande Union High School District  
Catalina Foothills Unified School District #16  
Cave Creek Unified School District #93

Cedar Unified School District #25  
Chandler Unified School District # 80  
Chinle Unified School District #24  
Chino Valley Unified School District #51  
Clarkdale-Jerome School District #3  
Coconino County Regional Accommodation District #99  
Colorado River Union High School District  
Continental Elementary School District #39  
Coolidge Unified School District #21  
Cottonwood-Oak Creek School District #6  
Crane Elementary School District # 13  
Deer Valley Unified School District #97  
Double Adobe Elementary School District #45  
Douglas Unified School District #27  
Dysart Unified School District # 89  
East Valley Institute of Technology  
Eloy Elementary School District #11  
Elfrida Elementary School District #12  
Flagstaff Unified School District # 1  
Florence Unified School District # 1  
Flowing Wells Unified School District #8  
Fort Huachuca Accommodation School District  
Fort Thomas Unified School District #7  
Fountain Hills Unified School District #98  
Fowler Elementary School District #45  
Gadsden Elementary School District # 32  
Ganado Unified School District #20  
Gila Bend Unified Schools  
Gilbert Unified School District #41 (Gilbert Pub. Schools)  
Glendale Elementary School District #40  
Glendale Union High School District  
Grand Canyon Unified School District #4  
Hackberry Elementary School District #3  
Heber-Overgaard Unified School District #6  
Higley Unified School District #60  
Holbrook Unified School District #3  
Humboldt Unified School District #22  
Hyder Elementary School District #6  
Indian Oasis-Baboquivari School District #40  
Isaac Elementary School District # 5  
J.O. Combs Elementary School District #44  
Joseph City Unified School District #2  
Kayenta Unified School District #27  
Kingman Unified School District #20  
Kyrene Elementary School District #28  
Lake Havasu Unified School District # 1  
Laveen Elementary School District #59  
Liberty Elementary School District #25  
Litchfield Elementary School District #79  
Littleton Elementary School District #65  
Madison Elementary School District #38  
Mammoth-San Manuel Unified School District #8  
Marana Unified School District #6  
Maricopa Regional School District #509  
Maricopa Unified School District  
Mayer Unified School District #43  
Mesa Unified School District # 4  
Mobile Elementary School District #86  
Mohawk Valley School District # 17  
Morenci Unified School District #18  
Murphy Elementary School District #21

Naco Unified School District #9  
Nadaburg Elementary District #81  
Nogales Unified School District # 1  
Northeast AZ Tech Institute of Voc Ed  
Osborn Elementary School District #8  
Page Unified School District #8  
Paradise Valley Unified School District #69  
Parker Unified School District #27  
Patagonia Elementary School District #6  
Patagonia Union High School District #92  
Payson Unified School District #10  
Peach Springs Unified School District #8  
Pendergast School District #92  
Peoria Unified School District #11  
Phoenix Elementary School District # 1  
Phoenix Union High School District #210  
Picacho Elementary School District #33  
Pima Unified School District #6  
Pine Strawberry Elementary School District #12  
Pinon Unified School District #4  
Prescott Unified School District #1  
Quartzsite Elementary School District #4  
Queen Creek Unified School District # 95  
Riverside Elementary School District #2  
Roosevelt Elementary School District # 66  
Round Valley Unified School District #10  
Sacaton Elementary School District #18  
Saddle Mountain Unified School District #90  
Safford Unified School District #1  
Sahuarita Unified School District #30  
Santa Cruz Valley Unified School District #35  
Santa Cruz Valley Union High School District #840  
Scottsdale Unified School District # 48  
Sedona-Oak Creek Unified School District #9  
Sentinel Elementary School District #71  
Show Low Unified School District #10  
Sierra Vista Unified School District # 68  
Snowflake Unified School District #5  
Somerton Elementary School District #11  
Stanfield Elementary School District #24  
St. David Unified School District #21  
St. Johns Unified School District  
Sunnyside Unified School District #12  
Tanque Verde Unified School District #13  
Tempe Elementary School District # 3  
Tempe Union High School District # 213  
Thatcher Unified Schools  
Toltec Elementary School District #22  
Tolleson Elementary School District #17  
Tolleson Union High School District # 214  
Tombstone Unified School District #1  
Tuba City Unified School District #15  
Tucson Unified School District  
Union Elementary School District #62  
Vail Unified School District #20  
Valley Union High School District #22  
Washington Elementary School District # 6  
Wellton Elementary School District #24  
West-MEC District #402  
Whiteriver Unified School District #20  
Wickenburg Unified School District #9

Willcox Unified School District  
Williams Unified School District #2  
Wilson Elementary School District #7  
Window Rock Unified School District #8

Winslow Unified School District #1  
Young Public School District  
Yuma Elementary School District # 1  
Yuma Union High School District # 70

**Ship To**  
 GILA COUNTY  
 1400 E. Ash St.  
 GLOBE, AZ 85501

**Bill To**  
 GILA COUNTY  
 1400 E. Ash St.  
 GLOBE, AZ 85501

**Purchase Order**  
 No. 2010-00000362

DATE 08/23/2010

VENDOR NO. 14010

**Changed Purchase Order**

PURCHASE ORDER NUMBER MUST APPEAR ON ALL INVOICES, SHIPPERS, BILL OF LADING AND CORRESPONDENCE

**Vendor**  
 QUAGGA  
 90 BLUE RAVINE ROAD  
 FOLSOM, CA 95630

**DELIVER BY**  
**SHIP VIA**  
**FREIGHT TERMS**  
 PAGE 1 of 1  
**ORIGINATOR:** Misti Williams

REFERENCE #

QUANTITY	UNIT	DESCRIPTION	STATUS	UNIT COST	TOTAL COST
1.0000	Each	A201 - Video Conferencing Bridge	To Be Removed	73,800.0000	\$73,800.00
		1005.201.140_4500.36 - Capital Outlay Communications \$5000 & over 6,300.00			
		1005.301_4500.36 - Capital Outlay Communications \$5000 & over 15,000.00			
		1005.702_4500.36 - Capital Outlay Communications \$5000 & over 15,000.00			
		1008.404_4500.36 - Capital Outlay Communications \$5000 & over 7,500.00			
		6500.341.514.000_4500.36 - Capital Outlay Communications \$5000 & over 15,000.00			
		7143.120_4500.36 - Capital Outlay Communications \$5000 & over 15,000.00			
		<b>Total Cost</b>		<b>\$73,800.00</b>	
		<b>Amount Voided</b>		<b>\$73,800.00</b>	
		<b>Amount Expensed</b>		<b>\$0.00</b>	
		<b>Amount Encumbered</b>		<b>\$0.00</b>	
		<b>Amount Discounted</b>		<b>\$0.00</b>	
		<b>Amount Remaining</b>		<b>\$0.00</b>	
<b>SUBTOTAL</b>					<b>\$0.00</b>
<b>SALES TAX</b>					<b>\$0.00</b>
<b>TOTAL DUE</b>					<b>\$0.00</b>

Special Instructions

BOS 6-22-10 MISTI WILLIAMS/PURCHASING

**Ship To**  
 GILA COUNTY  
 1400 E. Ash St.  
 GLOBE, AZ 85501

**Bill To**  
 GILA COUNTY  
 1400 E. Ash St.  
 GLOBE, AZ 85501

**Purchase Order**  
 No. 2010-00000362

DATE 06/24/2010

VENDOR NO. 14010

PURCHASE ORDER NUMBER MUST APPEAR ON ALL INVOICES, SHIPPERS, BILL OF LADING AND CORRESPONDENCE

**Vendor**  
 QUAGGA  
 90 BLUE RAVINE ROAD  
 FOLSOM, CA 95630

**DELIVER BY**  
**SHIP VIA**  
**FREIGHT TERMS**  
 PAGE 1 of 1  
**ORIGINATOR:** Kaycee Stratton

REFERENCE #

QUANTITY	UNIT	DESCRIPTION	UNIT COST	TOTAL COST
1.0000	Each	A201 - Video Conferencing Bridge 1005.201.140_4500.36 - Capital Outlay Communications \$5000 & over 6,300.00 1005.301_4500.36 - Capital Outlay Communications \$5000 & over 15,000.00 1005.702_4500.36 - Capital Outlay Communications \$5000 & over 15,000.00 1008.404_4500.36 - Capital Outlay Communications \$5000 & over 7,500.00 6500.341.514.000_4500.36 - Capital Outlay Communications \$5000 & over 15,000.00 7143.120_4500.36 - Capital Outlay Communications \$5000 & over 15,000.00	73,800.0000	\$73,800.00
			SUBTOTAL	\$73,800.00
			SALES TAX	\$0.00
			TOTAL DUE	\$73,800.00

Special Instructions  
 BOS 6-22-10 MISTI WILLIAMS/PURCHASING



GILA COUNTY  
PURCHASE REQUISITION

2010-0362

Requisition No. 54950

P.O. No.

Fund No. \_\_\_\_\_ Budget Unit No. \_\_\_\_\_ Dept. No. \_\_\_\_\_ Object No. \_\_\_\_\_  
Dept. Name I.T. Date 6-17-10

QTY.	ITEM & DESCRIPTION	UNIT PRICE	TOTAL PRICE	VENDOR
	Video Conferencing Bridge			Quagga
	County Attorney - 1005.301.4500.36	15,000.00		90 Blue
	Public Work - 6500.341.514.00 - 4500.36	15,000.00		Ravine
	Finance - 1005.201.146 - 4500.36	6,300.00		Rd.
	Assessor - 7143.120.4500.36	15,000.00		Folsom, CA
	Schools - 1005.702.4500.36	15,000.00		95630
	Health - 1008.404.4500.36	7,500.00		
			73,800.00	

*Kaycee Swette* *Michael Porter*  
SIGNATURE OF AUTHORIZED PERSONNEL

PURCHASING DEPT.