



Vipersat Circuit Scheduler v3.7.x

ArrangeLink

Schedule Instances | Schedules | **Details** | TimeZone: 3 Greenwich Time

My Network

Circuit: Any

Status: Any

Start Date: 11/17/2009

Start Time: 12 AM

End Date: 12/8/2009

End Time: 1 AM

View

Schedule Name	Type	Circuit Type	Status	Start Date
MONTHLY 11/17/2009 6:00:54 PM	MONTHLY	P2M_InBand	PENDING	12/8/2009 6:00:54 PM
WEEKLY 11/17/2009 5:02:41 PM	WEEKLY	P2P_InBand	PENDING	11/24/2009 5:02:41 PM
DAILY 11/17/2009 4:31:03 PM	DAILY	P2M_InBand	PENDING	11/19/2009 4:31:03 PM
DAILY 11/17/2009 4:31:03 PM	DAILY	P2M_InBand	PENDING	11/18/2009 4:31:03 PM
11/17/2009 6:22:04 PM	ONETIME	UpStream	RUNNING	11/18/2009 6:22:04 PM
11/17/2009 5:23:20 PM	ONETIME	P2P_InBand	COMPLETED	11/18/2009 5:23:20 PM
11/17/2009 2:50:14 PM	ONETIME	UpStream	COMPLETED	11/17/2009 2:50:14 PM
WEEKLY 11/17/2009 5:02:41 PM	WEEKLY	P2P_InBand	COMPLETED	11/17/2009 5:02:41 PM
DAILY 11/17/2009 4:31:03 PM	DAILY	P2M_InBand	COMPLETED	11/17/2009 4:31:03 PM
11/17/2009 3:45:50 PM	ONETIME	P2P_InBand	COMPLETED	11/17/2009 3:45:50 PM

User Guide

Vipersat Circuit Scheduler v3.7.x

ArrangeLink

User Guide

Part Number MN/22135
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Document Revision History

Revision	Date	Description
0	7/13/07	Initial Release. <i>Note:</i> This new document part number, MN/22135, supercedes the previous VCS User Guide part number, 22135. New functionality in v1.3.5: VMS N:1 Redundancy. This version has been upgraded to work with VMS version 3.5.x, in both single and redundant server configurations.
1	1/22/10	New functionality in v3.7.2: VMS Web Services Client. This version of Vipersat Circuit Scheduler is now fully integrated into the VMS code base. Out-of-Band switching and Forward Path switching are not supported. Analysis Report feature is removed.

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GENERAL

How to Use This Manual

This manual documents the features and functions of the *Vipersat ArrangeLink Circuit Scheduler* software application, and guides the user in how to install and use this product in a Vipersat network.

Network administrators and operators responsible for the configuration, operation, and maintenance of the Vipersat satellite network are the intended audiences for this document.

Manual Organization

This User Guide is organized into the following sections:

Chapter 1 — General

Contains ArrangeLink product description, customer support information, and manual conventions and references.

Chapter 2 — Installation

Covers the steps for installing the ArrangeLink software application on a web client PC workstation.

Chapter 3 — Using ArrangeLink

Describes using ArrangeLink in conjunction with the Vipersat Management System (VMS) to schedule and establish satellite network circuits automatically.

Appendix A — Glossary

A glossary of terms that pertain to Vipersat satellite network technology.

Conventions and References

The following conventions are utilized in this manual to assist the reader:



Note: Provides important information relevant to the accompanying text.



Tip: Provides complementary information that facilitates the associated actions or instructions.



Caution: Provides explanatory text that notifies the reader of possible consequences of an action.



Warning: Provides precautionary text that describes a potentially hazardous situation. Failure to take or avoid a specified action may result in damage to equipment.

The following documents are referenced in this manual, and provide supplementary information for the reader:

- *Vipersat Management System User Guide* (Part Number MN/22156).

Product Description

Introduction

ArrangeLink is a satellite communication scheduling system used to schedule network resources in support of a variety of critical applications including distance learning, telemedicine, video conferencing, news and sporting event video streaming, and scheduled broadcasting.

Using ArrangeLink, all users of the satellite network have visibility of both current and future network traffic including the network resources required by each scheduled use.

Both hardware and time resource conflicts are flagged automatically by ArrangeLink, allowing users to negotiate for resource allocation.

Each version of ArrangeLink is tailored to work with a specific version of the Vipersat Management System (VMS); it will not operate with prior or later versions of VMS. For that reason, these two applications are released together.

ArrangeLink Main Features

Schedule Setup

Schedules—onetime and recurring—are set up based on the Circuit Type, Start/End Date/Time, Transmission Data Rate, Transmitter Node, and Receiver Node. The recurrence setting is a powerful feature of the scheduler. Choices are for Daily, Weekly, and Monthly occurrences.

The Advanced Switching feature allows a specified modulation and FEC code rate to be incorporated into the scheduled switch, as well as assigning a Priority to the event.

Supported Circuit Types

The scheduler provides circuit type choices for InBand Point-to-Point or Point-to-MultiPoint, and UpStream Switch.

Schedule Tag

In addition to the schedule name, one or more Schedule Tags can be defined and attached to the schedule, providing an expanded range for filtering and finding a particular event or set of events.

Contention Verification

The system verifies the contention between schedules to make sure the new schedule is a valid one. Items of contention include Bandwidth and Hardware resources.

Schedule View

All schedules can be viewed either on a per instance basis or on a per name basis. Each of these views is controlled using a filter. The filter includes search fields such as:

- Circuit Type
- Start/End Date/Time
- Status
- Schedule Tag

Type	Schedule Name	Circuit Type	Start Date	End Date	Start Time	Duration	Recurrence
ONETIME	11/17/2009 2:50:14 PM	UpStream	11/17/2009	11/17/2009	2:52 PM	1 Hour(s)	N/A
ONETIME	11/17/2009 3:45:50 PM	P2P_inBand	11/17/2009	11/17/2009	7:50 AM	10 Minute(s)	N/A
DAILY	DAILY 11/17/2009 4:31:03 PM	P2M_inBand	11/17/2009	11/24/2009	8:35 AM	20 Minute(s)	Every weekd
WEEKLY	WEEKLY 11/17/2009 5:02:41 PM	P2P_inBand	11/17/2009	12/15/2009	9:10 AM	1 Hour(s)	Every week c
ONETIME	11/17/2009 5:23:20 PM	P2P_inBand	11/17/2009	11/17/2009	5:21 PM	10 Minute(s)	N/A
MONTHLY	MONTHLY 11/17/2009 6:00:54 PM	P2M_inBand	11/17/2009	4/20/2010	10:00 PM	1 Hour(s)	The third Wed Jan, Feb, Mar, Apr
ONETIME	11/17/2009 6:22:04 PM	UpStream	11/17/2009	11/17/2009	6:25 PM	20 Minute(s)	N/A

Figure 1-1 ArrangeLink Schedules View

The contents of a schedule table include:

- Schedule Name
- Type
- Circuit Type
- Start/End Date/Time and Duration

- Recurrence
- Status

Schedule View Details

Schedule details that can be viewed include assigned circuit:

- Channel, Data Rate, and Priority
- Frequency and Bandwidth
- Transmitter site and Receiver site(s)
- Mod/Demod Device list
- Power and Eb/No

Schedule Operations

Users are allowed to stop a Running schedule immediately, or change the End Date/Time. A Pending schedule can be deleted, modified, or started immediately.

Schedule Execution

Schedules are executed according to the detail requirement of the schedule, such as participating Nodes, Data Rate, Start/End Date/Time, and Circuit Type. All participating Nodes will be initiated, and satellite links will be established accordingly.

Time Zone Auto-Adjustment

When the local Date/Time (Pacific/Eastern/Greenwich) is input for the schedule, the system saves it as Universal Time Coordinates (UTC) Date and Time. When data is retrieved from the server, such as with schedule view, the local Date/Time is displayed for the client, regardless of location.

System Requirements

Please refer to the *Release Notes* (on the application CD) corresponding to this version of ArrangeLink for the recommended system requirement specifications.

ArrangeLink and VMS

ArrangeLink shares functionality with the VMS to create a seamless operating environment to control and manage a satellite communications system. This combination provides the system operator and user with system management and operation controls for all aspects of satellite communication system operation.

Using the real-time system configuration information from the VMS, the scheduler is able to display current network operating conditions and resource availability. At the time a scheduled event starts, any of the equipment required to establish the new circuit that are currently in STDMA mode will be automatically switched to SCPC mode, and remain in this mode for the duration of the event. At the conclusion of the event, the modem units that were used during the scheduled event are automatically switched back to their home states and once again become available resources under VMS management.

ArrangeLink works with either the VMS installed on a single stand-alone server, or with the VMS installed in the optional N:1 server redundancy configuration.

New in this Release (v3.7.2)

VMS Web Services Client

This version of Vipersat Circuit Scheduler is now fully integrated into the VMS code base. The VMS Web Services SOAP (Simple Object Access Protocol) Server offering provides an interface for VMS client applications such as ArrangeLink for communications with the VMS. The SOAP interface runs on a web services proxy server that also hosts the web applications using Internet Information Services (IIS). The user interface for these applications is accessed using a web browser from a client PC workstation.

For more information on VMS Web Services, including the SOAP Server installation procedure, refer to the *VMS User Guide* (Part Number MN/22156).

Event Priority

In previous versions of the Circuit Scheduler, an event created in the scheduler would always supercede any ongoing event that was in contention with the scheduled event. This is no longer the case. A priority attribute is now assigned to the scheduled event, and contention will be resolved by granting precedence to the event which has the higher priority.

Customer Support

Contact Information

Contact Comtech Vipersat Network Products Customer Support for information or assistance with product support, service, or training on any Vipersat product.

Mail: 3215 Skyway Court
Fremont, CA 94539
USA

Phone: 1+510-252-1462

Fax: 1+510-252-1695

Email: supportcvni@comtechefdata.com

Web: www.comtechefdata.com

Return Material Authorization

Any equipment or product returned to Vipersat must have a Return Material Authorization (RMA) issued prior to return. To return a Comtech Vipersat Networks product for repair or replacement:

- Obtain an RMA form and number from Vipersat Customer Support.
- Be prepared to supply the product model number and serial number of the unit or product.
- To ensure safe shipping of the product, pack the item in the original shipping carton.

Reader Comments / Corrections

If the reader would like to submit any comments or corrections regarding this manual and its contents, please forward them to a Comtech Vipersat Customer Support representative. All input is appreciated.

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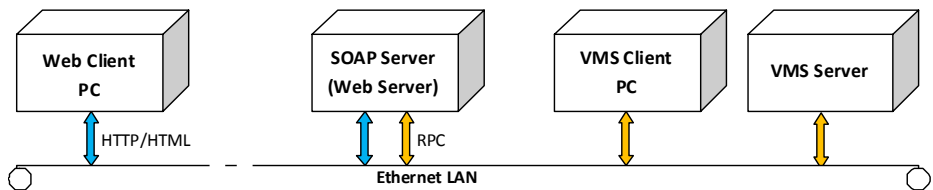
INSTALLATION

General

The ArrangeLink Circuit Scheduler application software can be installed on any workstation that will function as a web server and is either the host for the VMS Web Services (SOAP Server) or is local to the server that performs that function. This web server workstation must be local to the VMS Server.

The SOAP interface runs on a web services proxy server that hosts the web applications—such as *ArrangeLink* and *VNO*—using Internet Information Services (IIS). The user interface for these applications is accessed using a web browser from a client PC workstation.

The network component diagram shown in figure 2-1 reflects the recommended configuration for implementing the VMS Web Services. To minimize latency issues, the host platform for these services should be on the same LAN as the VMS Server. Should a network web server be locally available, it would serve as a logical platform for the SOAP server, as shown in the diagram.



* Note: the Web Client PC can be local or remote

Figure 2-1 VMS Web Services Components

If there is no local web server available to host these services, then the following alternative configurations can be utilized:

- If the VMS is *standalone*, then the VMS Server can host the Web services and applications.
- If the VMS is *redundant*, then another local server must host the Web services and applications in order to retain true redundancy.

Requests and responses transmitted between the web application and the web service use SOAP over HTTP protocol. The SOAP request is translated into an RPC call into the VOS and the response is then returned to the web application. This response is transformed into HTML and sent back to a web browser that presents the user interface to the operator.

Server Preparation

Server Prerequisites

Prior to installing the ArrangeLink Web service, the following items are required for the host server:

- Microsoft Windows Server 2003 operating system, with current Service Pack.
- Microsoft Internet Information Services (IIS), current version, to provide Web server capabilities over an intranet, the Internet, or an extranet. This allows client PC workstations to access the web services locally and remotely.
- Microsoft ASP.NET, current version.
- Full VMS Core program.
- If a firewall is installed on the server, it must be turned off or set correctly to allow HTTP.
- The SOAP server must be on the same LAN and have either direct access or an Ethernet connection to the VMS server(s).
- The SOAP server must be on the same domain as the VMS server(s).
- The installer must have administrator privileges on the server.



Caution: Running SOAP Services on a machine enables that machine to act as an HTML server which may increase its vulnerability when connected to the Internet.

IIS and ASP.NET

Verify that Internet Information Services (IIS) and ASP.NET are installed and activated (checked):

1. From the **Start** menu, open the Add or Remove Programs control panel. Click on the **Add/Remove Windows Components** button in the left panel of the window.

The *Windows Components Wizard* window will open (figure 2-2)

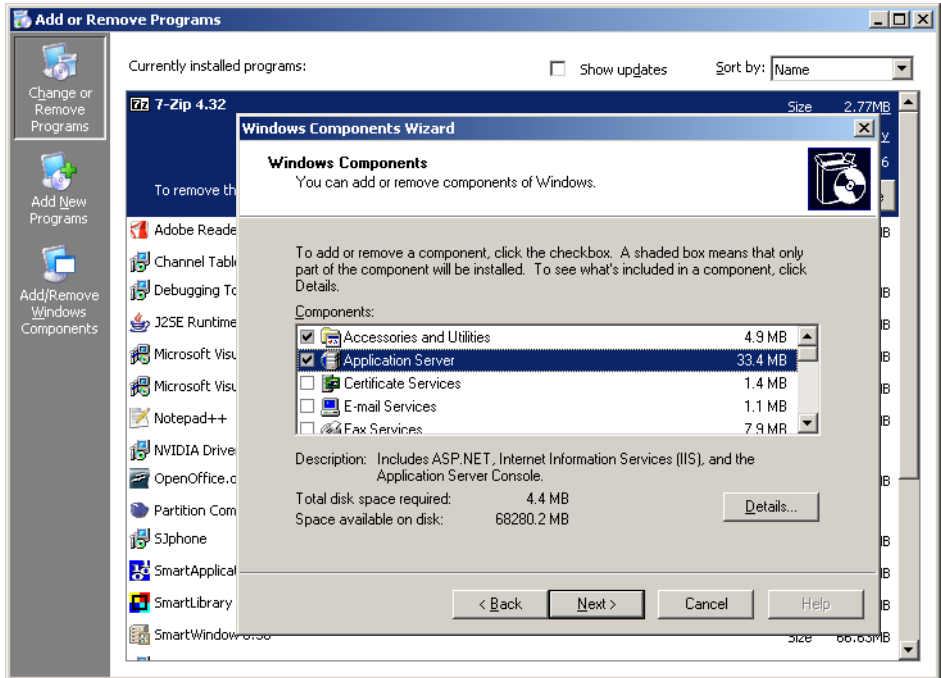


Figure 2-2 Add/Remove Windows Components

2. Click on **Application Server** and ensure that the check box is checked, then click on the Details button.

The *Application Server* window will open.

3. Ensure that the check boxes for ASP.NET and IIS are as shown in figure 2-3, below.

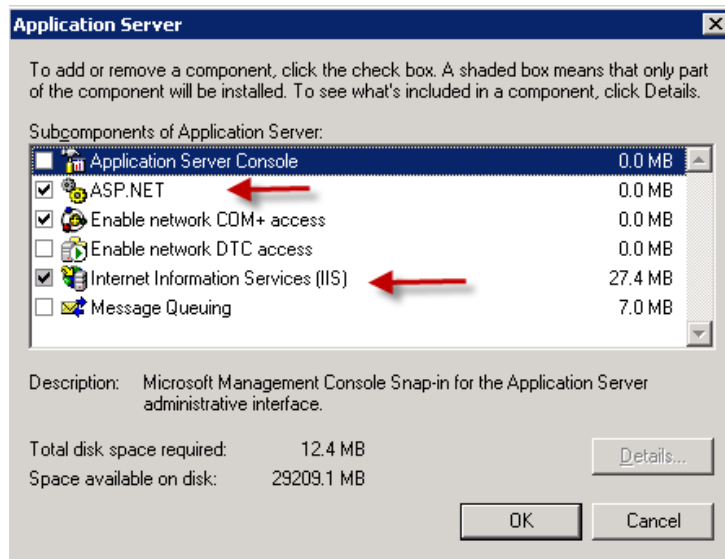


Figure 2-3 Configure Windows Application Server

4. Click on the **OK** button in the Application Server window to confirm the selections.
5. Click on the **Next** button in the Windows Components Wizard window to execute the component installations.

Set the IIS Default Application Pool Identity:

1. Open the **Internet Information Services (IIS) Manager** from Administrative Tools.
2. In the left window panel, expand the local computer tree view down to DefaultAppPool and select the **Properties** command from the drop-down menu (figure 2-4).

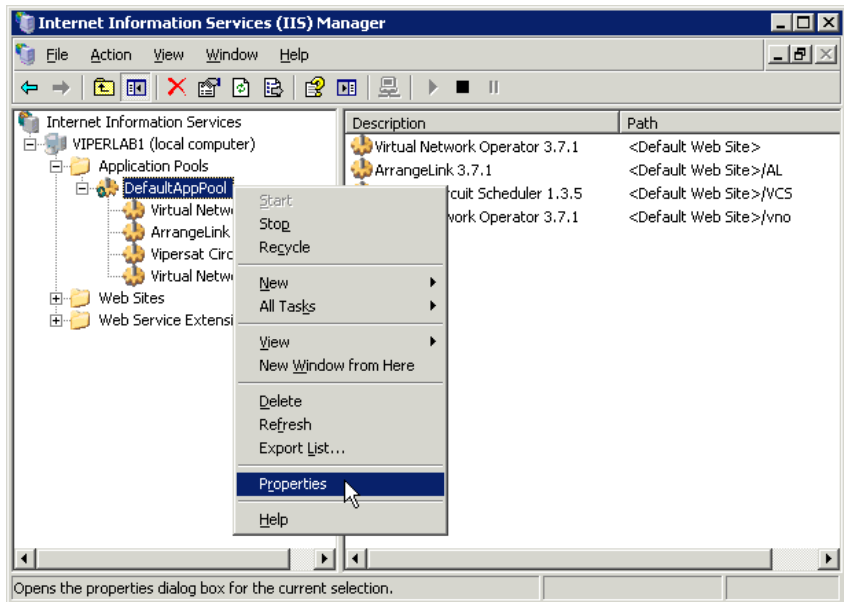


Figure 2-4 DefaultAppPool, IIS Manager

3. Open the Identity tab in the *Properties* dialog, select the **Predefined Network Service**, then click **OK**, as shown in figure 2-5.

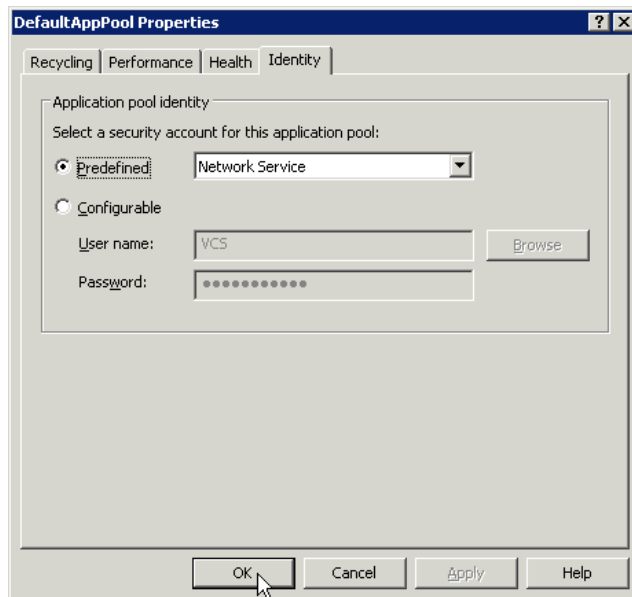


Figure 2-5 DefaultAppPool Identity

Uninstall Previous Version

If a previous version of VMS Web Services or VCS is installed on the server workstation, that software should be removed prior to installing the new version.

Remove ArrangeLink or VCS

1. From the Add or Remove Programs control panel, select the **ArrangeLink** (or VCS) program and click on the Remove button, as shown in figure 2-6.

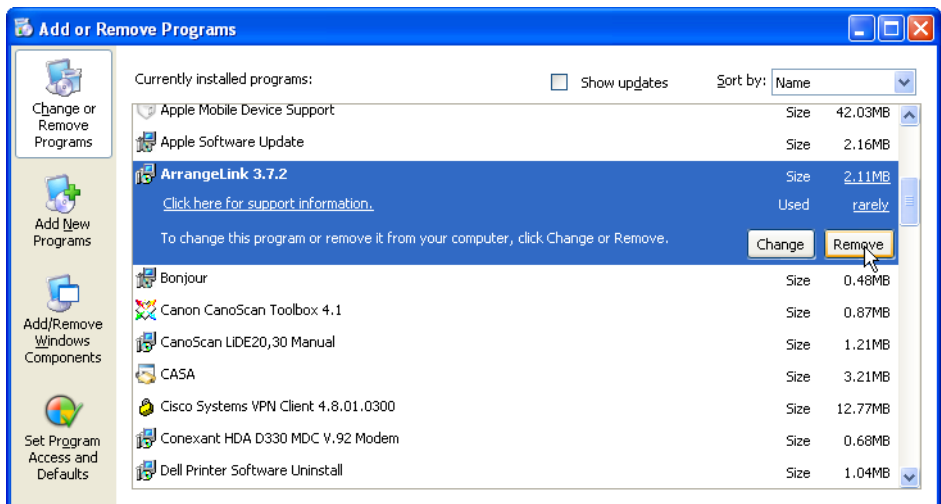


Figure 2-6 Remove ArrangeLink Program

2. A confirmation dialog window will appear. Click on the **Continue** button to remove the program.

Remove VMS SOAP Server

From the Add or Remove Programs control panel, select the **VMS SOAP Server** program and click on the Remove button.

Remove VMS

From the Add or Remove Programs control panel, select the **Vipersat Management System** program and click on the Remove button.

Install VMS

The VMS Web Services SOAP Server host machine must have a *VMS Full Install* performed; this is necessary in order to provide the required support files for proper operation of the SOAP interface. However, this copy of VMS is not used to manage the Vipersat network.



Note: The version number of the VMS Core software must match the version number of both the SOAP Server software and the ArrangeLink application software.

A VMS Crypto-Key is not required, and these files are not called upon to execute the client application.

To perform the VMS Full Install, follow the installation procedure in the section “VMS Server Installation” in Chapter 2 of the *Vipersat Management System User Guide*, then return here to continue with this procedure.

Installation Procedure

Use the following procedure to install the ArrangeLink Web Service on the SOAP Server.

Note that the installation and configuration must be done using an Administrator login.



Caution: This software must be installed on a platform that is running Windows Server 2003. Installing the SOAP Services on a computer that is not running Windows Server 2003 will void VMS product support.

Install SOAP Services

1. Locate the **VMS SOAP Setup.exe** file on the VMS program distribution CD and double-click on the file to start the installer.

This will open the *VMS SOAP Server Setup Wizard* (figure 2-7) that will install the SOAP services.



Figure 2-7 VMS SOAP Server Setup Wizard

2. Click the **Next** button to progress through the Setup process.
3. Specify the **Start Menu Folder** for locating the program shortcuts. This folder defaults to the folder that was specified for the VMS installation.

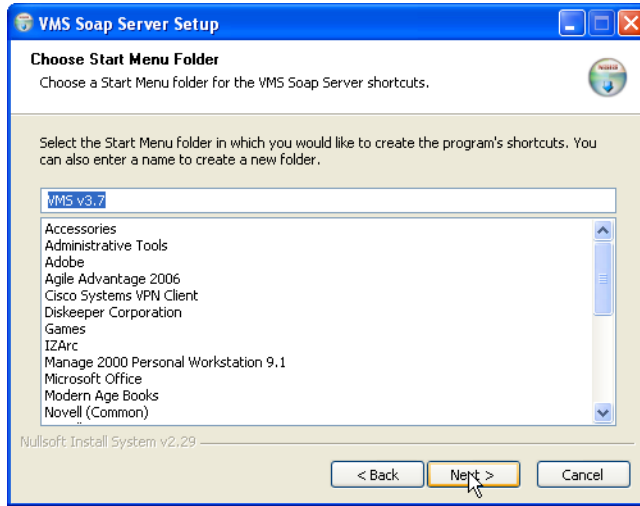


Figure 2-8 Choose Start Menu Folder

4. As shown in figure 2-9, the Installer will present a dialog requesting the VMS SOAP Server Configuration parameters.

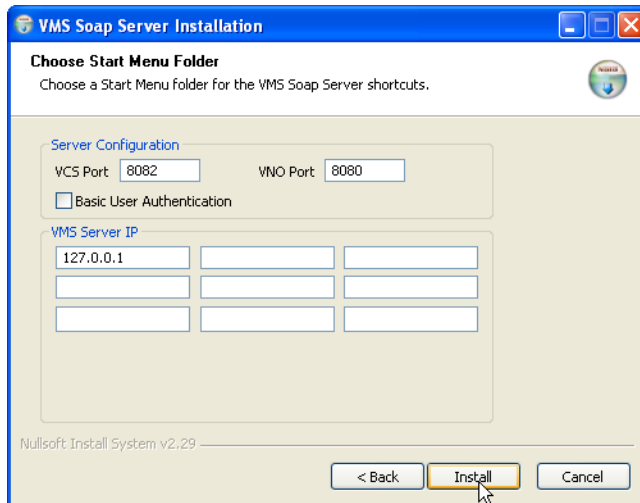


Figure 2-9 VMS SOAP Server Configuration

- **VCS Port**

This parameter specifies the TCP port used by the SOAP Server for the VCS ArrangeLink application. The default port is decimal 8082. Any

available port can be specified, provided that the client VCS applications send their request to this port.

- **VNO Port**

This parameter specifies the TCP port used by the SOAP Server for the VNO application. The default port is decimal 8080. Any available port can be specified provided that the client VNO applications send their request to this port.

- **Basic User Authentication**

This check box indicates whether the Basic User Authentication is enabled or not. If enabled, each client request contains a user name and password in the HTTP header. The SoapAdmin.exe utility is used to configure the user database and privilege levels. This utility is located in the VMS-installed directory Program Files\Vipersat\VMS\3.0\bin.

- **VMS Server IP**

This parameter specifies the IP address(es) of the VMS server(s). In a standalone VMS configuration, enter the one VMS server IP address. In a redundant VMS configuration, up to nine addresses can be entered (e.g., for all VMS servers in the same redundancy group).

5. Enter the parameters described above, then click on the **Install** button.

The installation progress will be displayed, ending with the “Installation Complete” notification.

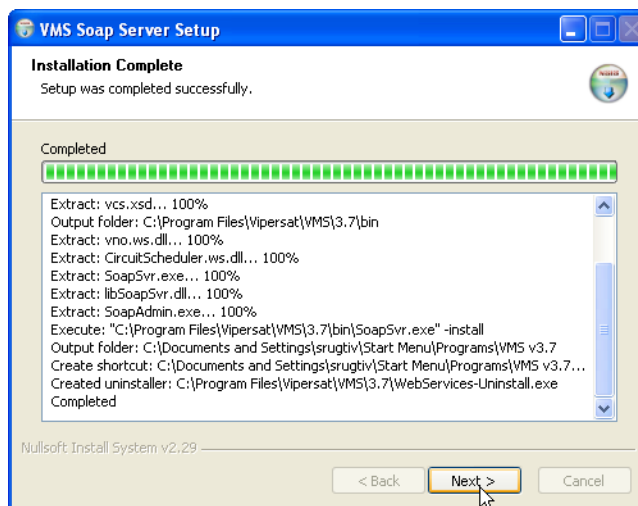


Figure 2-10 SOAP Server Installation Complete

6. Click on the **Next** button, then **Finish** to close the wizard.
7. Open the Services Control Manager and verify that the **VMS Web Services** appears in the list of services.

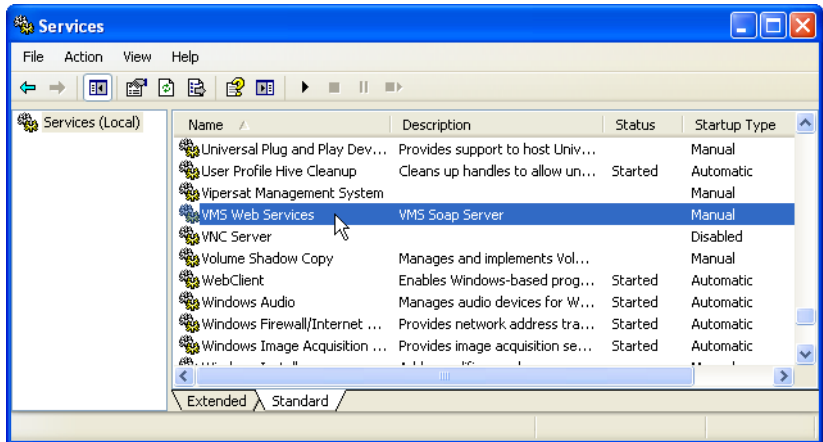


Figure 2-11 Services Control Manager, VMS Web Services

Install ArrangeLink Web Application

The version number of the ArrangeLink client application software must match the version number of both the VMS Core software and the SOAP Server software.

An Installation Wizard guides the user through the installation process and prompts for all necessary information to complete the Web application installation.

1. Copy the **ArrangeLink_Setup.zip** file to the local drive on the server workstation.

This file is included in the VMS release file set that is available either from the VMS distribution CD-ROM or as a download from the Comtech EF Data web site.

2. Double-click the ArrangeLink_Setup file and extract the program files, as shown in figure 2-12.

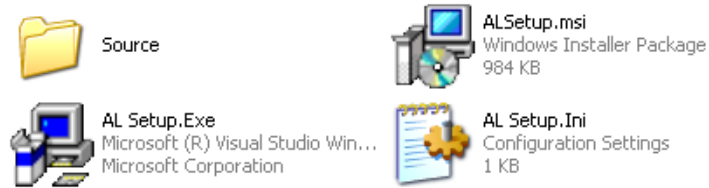


Figure 2-12 ArrangeLink Program Files

3. Double-click on the **AL Setup.exe** file to run the ArrangeLink Setup Wizard. The Welcome window will appear, as shown in figure 2-13.

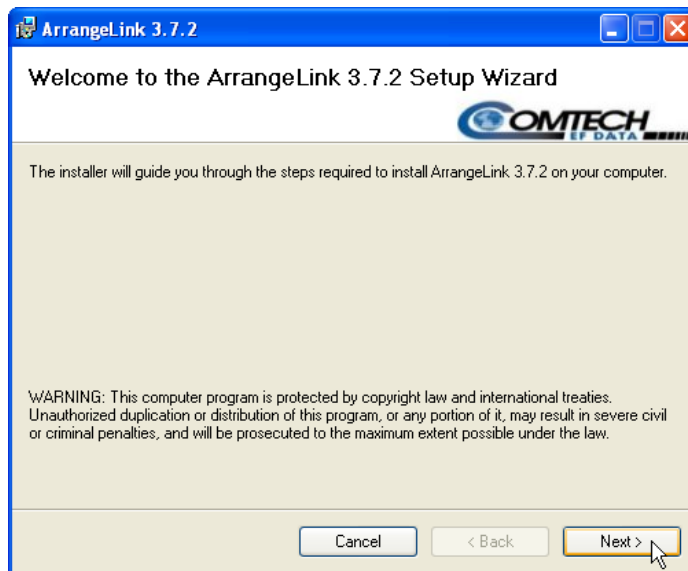


Figure 2-13 Welcome, Setup Wizard

4. Click on the **Next** button to progress to the License Agreement dialog (figure 2-14).

Carefully read the agreement. To proceed with the installation, click the “I Agree” radio button, then click on **Next**.



Figure 2-14 License Agreement, Setup Wizard

5. Specify the virtual directory to install the program into, as shown in figure 2-15. "AL" is used as the default directory on the local C: drive.

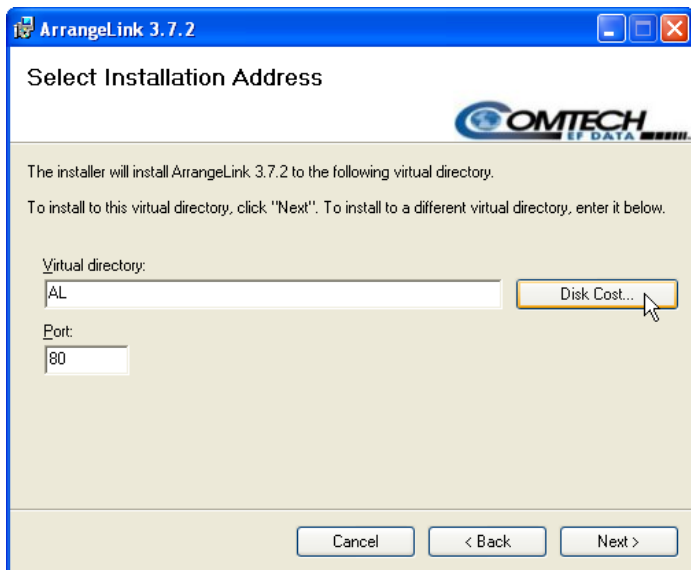


Figure 2-15 Select Installation Address, Setup Wizard

6. Clicking the **Disk Cost...** button displays the list of available drives with their available space, and the space required for the AL program, as shown in figure 2-16.

Select the desired drive and click the **OK** button.

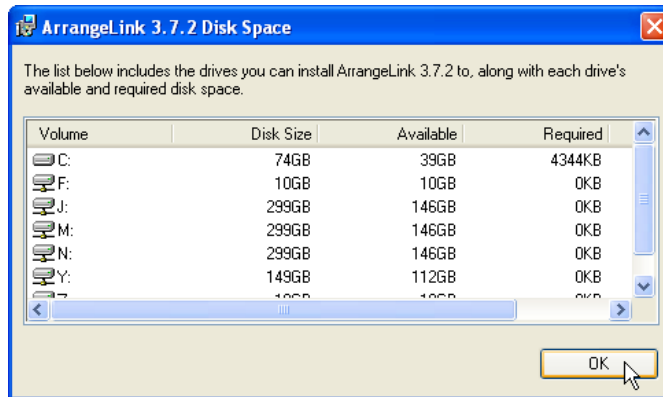


Figure 2-16 Select Disk Drive, Setup Wizard

7. Click the **Next** button to proceed to the Confirm Installation dialog, figure 2-17.

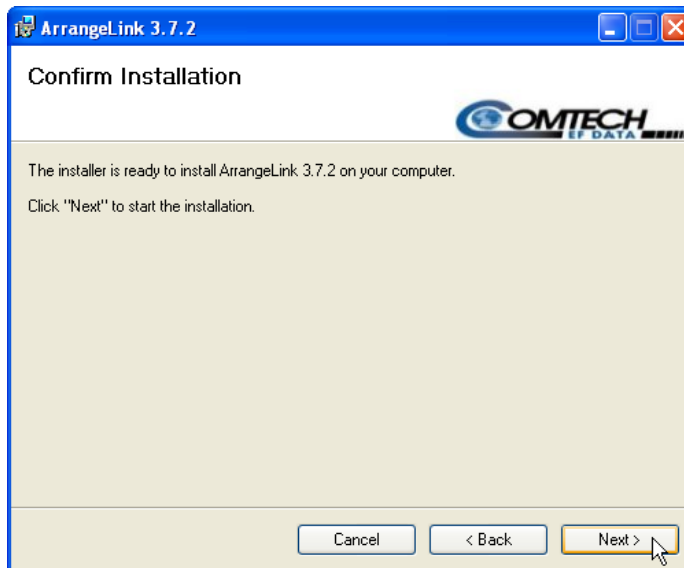


Figure 2-17 Confirm Installation, Setup Wizard

8. Click the **Next** button to initiate the program installation.

The Wizard will display the progress screen shown in figure 2-18, indicating software installation on the workstation. When this process is finished, click the **Next** button again.

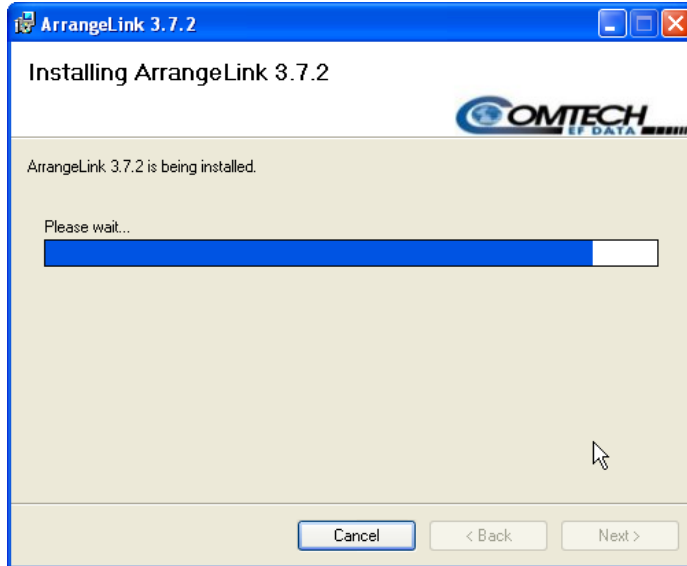


Figure 2-18 Installation Progress, Setup Wizard

9. The Wizard will display the Installation Complete screen shown in figure 2-19, confirming the successful installation of the ArrangeLink program.

Click the **Close** button to exit the Setup Wizard.

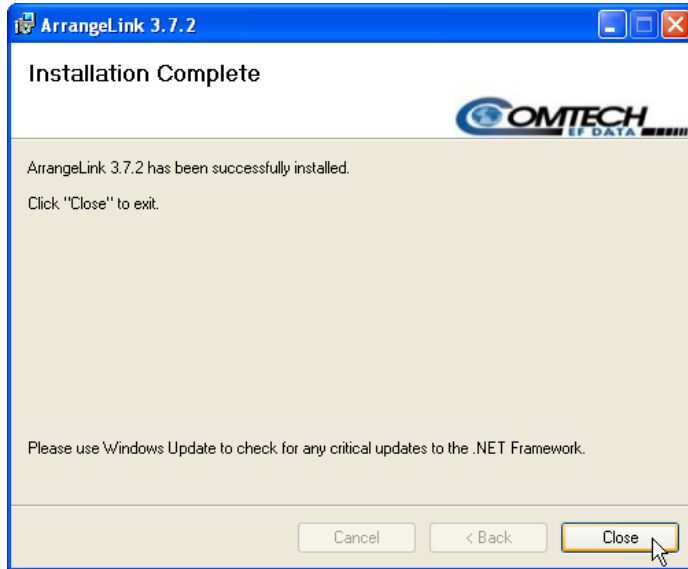


Figure 2-19 Installation Complete, Setup Wizard

This concludes the installation procedure for the VMS Web Services and the ArrangeLink program. Proceed to the next section for server configuration instructions.

Server Configuration

After successfully completing the “Installation Procedure” on page 2-9, it is necessary to perform some configuration steps on the server(s) to assure that the ArrangeLink program can be accessed via the client PC web browser.

Set Up Log On Account

1. In the Services window, right-click on the VMS Web Services and select **Properties** from the drop-down menu.
2. In the Properties dialog, click on the **Log On** tab, as shown in figure 2-20.

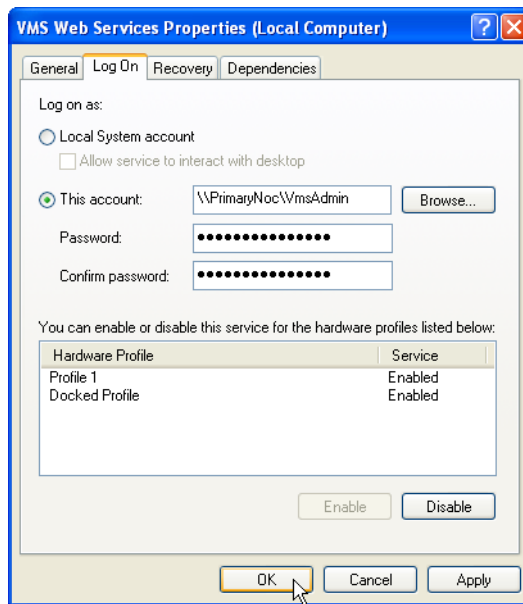


Figure 2-20 Account Set Up, VMS Web Services

3. Enter an account user name and password that matches the user account that is running the VMS Server.

This account must be identical to (or be in the same user group as) that used for running the VMS Server in order for the Web Services to communicate with the VMS. If these user credentials do not match, an “*Access Denied*” error will result when attempting to connect.

4. Click on **OK** to save this account and close the Properties dialog.

5. Start the VMS Web Services.

A single beep will indicate that the service started. Verify that the status has changed to *Running*.

Set Users Security

This procedure sets the AL Users permissions that allow access to the Web application.

1. From the **Local Disk (C:)** on the SOAP Server workstation, locate the **AL** directory that holds the ArrangeLink program files. This folder can be found using the path `C:\inetpub\wwwroot\AL`, as shown in figure 2-21.

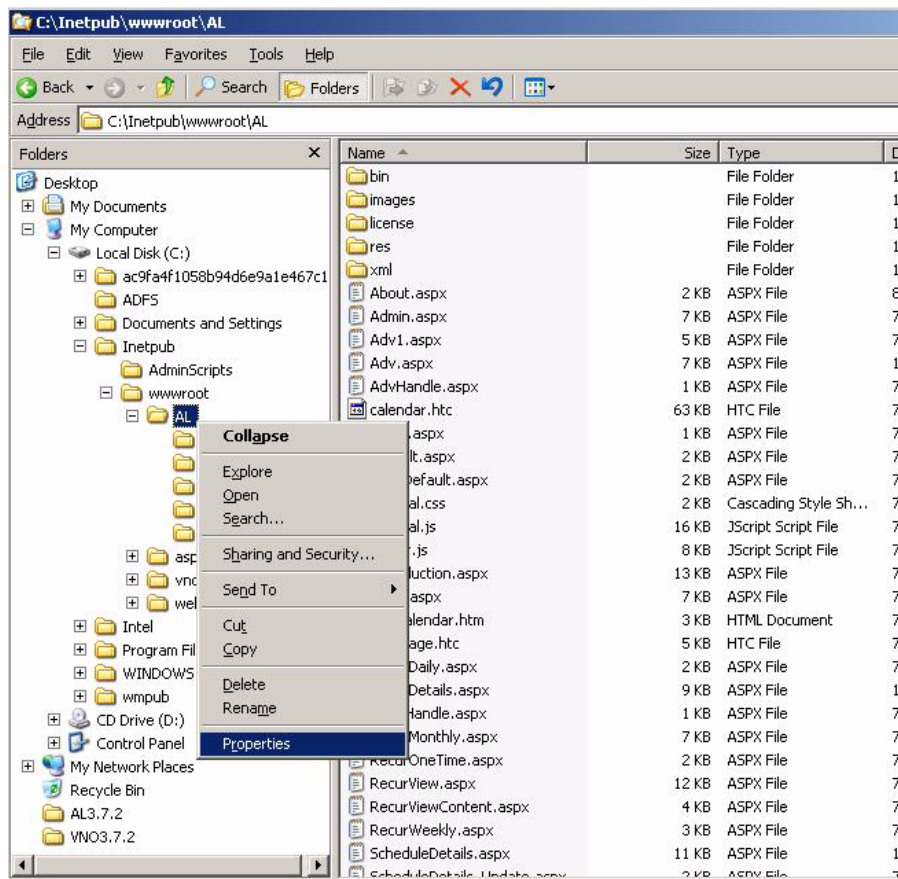


Figure 2-21 AL Directory, Properties Command

- Right-click on the AL folder and select **Properties** from the drop-down menu.

The **AL Properties** dialog window will open (figure 2-22).

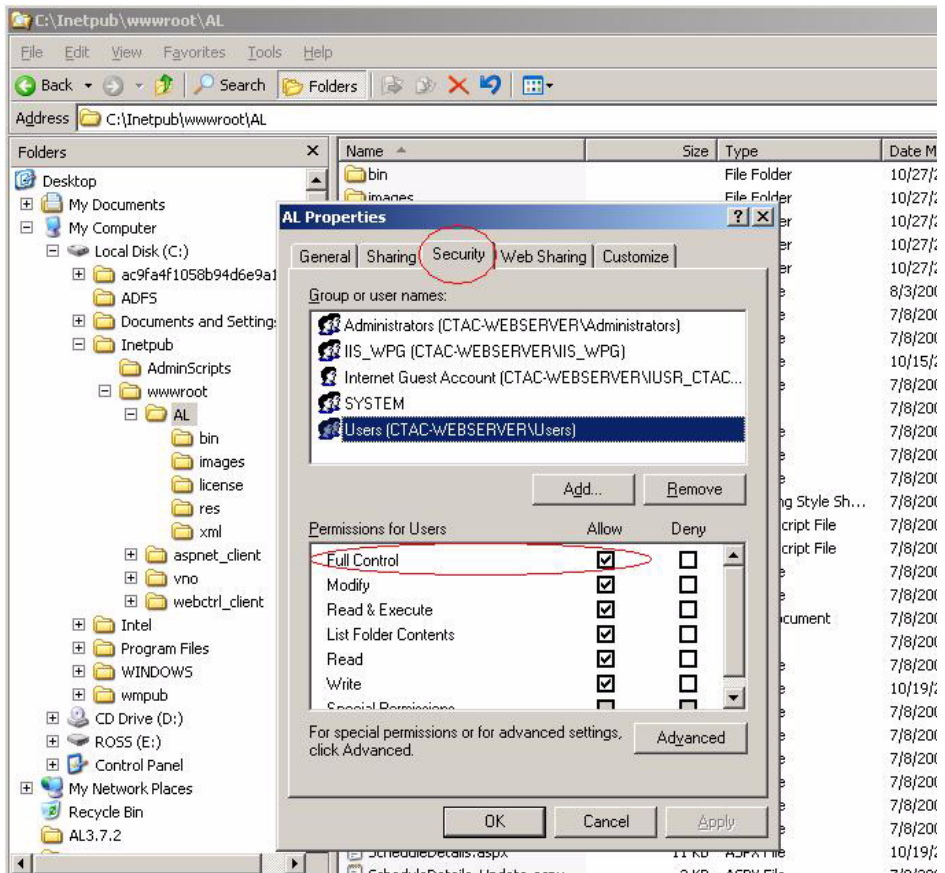


Figure 2-22 Security Permissions, AL Properties

- Open the **Security** tab and select the **Users** group for this server. Ensure that the Allow permissions are enabled as shown.
- Click the **OK** button to save this configuration.

Configure Firewall

If the Windows Firewall has been enabled, an exception must be added to allow access to ArrangeLink on the server through port 80 (the default Web server port) as described in the following procedure:

1. Open the **Windows Firewall** control panel, and select the **Exceptions** tab.
2. Click on the **Add Port...** button to display the **Add a Port** dialog (figure 2-23).

Enter the Name and Port number for enabling access to the ArrangeLink web service application.

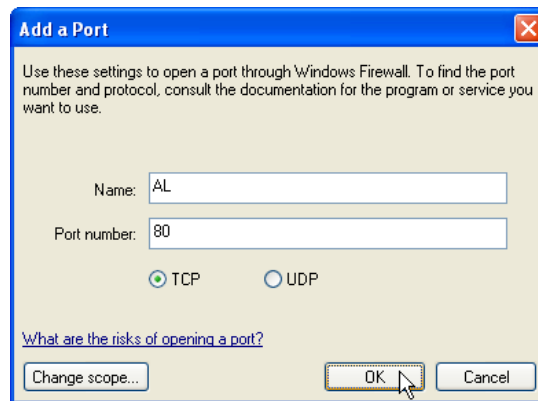


Figure 2-23 Add a Port dialog

The name entered in the **Name** field must be the same name assigned to the virtual folder (default is AL) during installation, and the port number entered in the **Port Number** field must be the same as the port number (default is 80) assigned during installation.

3. Click the **OK** button to create the exception in Windows Firewall.



Note: If other firewall software is being used, refer to the firewall software's documentation for instructions on allowing access to the ArrangeLink program.

Verifying Installation

After completing the installation of the ArrangeLink program and the configuration of the server, verify that the application is running correctly and is communicating with the VMS by using the following procedure.

Verification can be performed either from a local/remote PC workstation that has browser software (such as Internet Explorer) and network access, or from the local server that is hosting the web services.

1. Open the browser window and turn off the Pop-up Blocker function. With Internet Explorer, for example, this is done using the drop-down **Tools** menu as shown in figure 2-24.



Figure 2-24 Disable Pop-up Blocker

2. Enter the ArrangeLink target address in the Address field as:

http://<IP_address>/AL

Here, <IP_address> corresponds to the IP address of the hosting server. When running the program from another workstation, the specific IP address of the hosting server must be used (figure 2-25). When running the program directly from the server, **localhost** can be substituted.

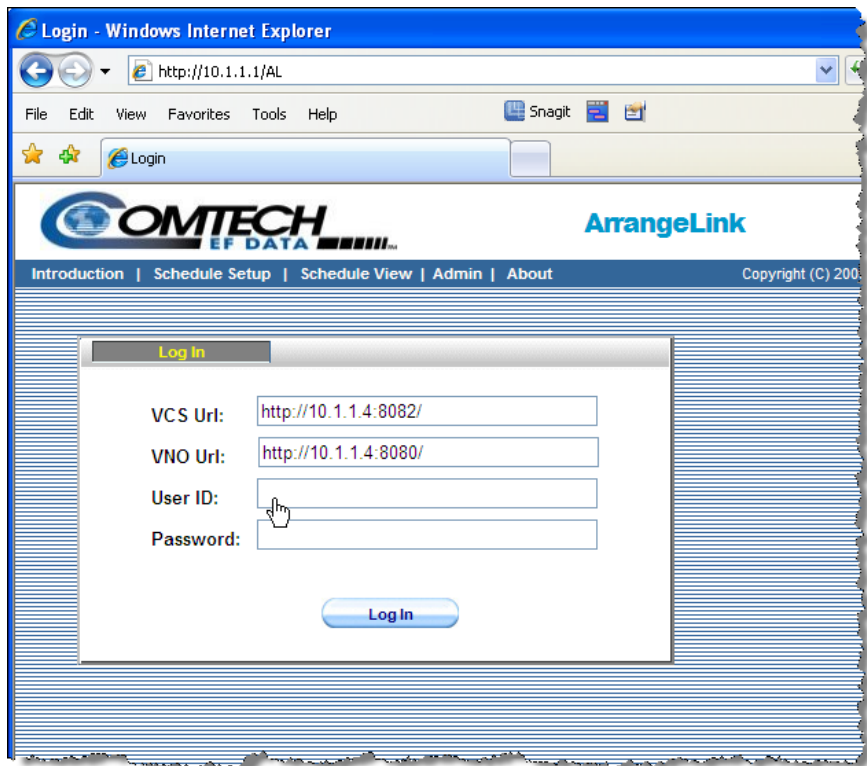


Figure 2-25 Log In dialog

3. ArrangeLink is installed with a default user ID and password which must be used to log in:
User ID: **admin**
Password: **Comtech**
4. After a brief period, the ArrangeLink Introduction screen, shown in figure 2-26, will be displayed.

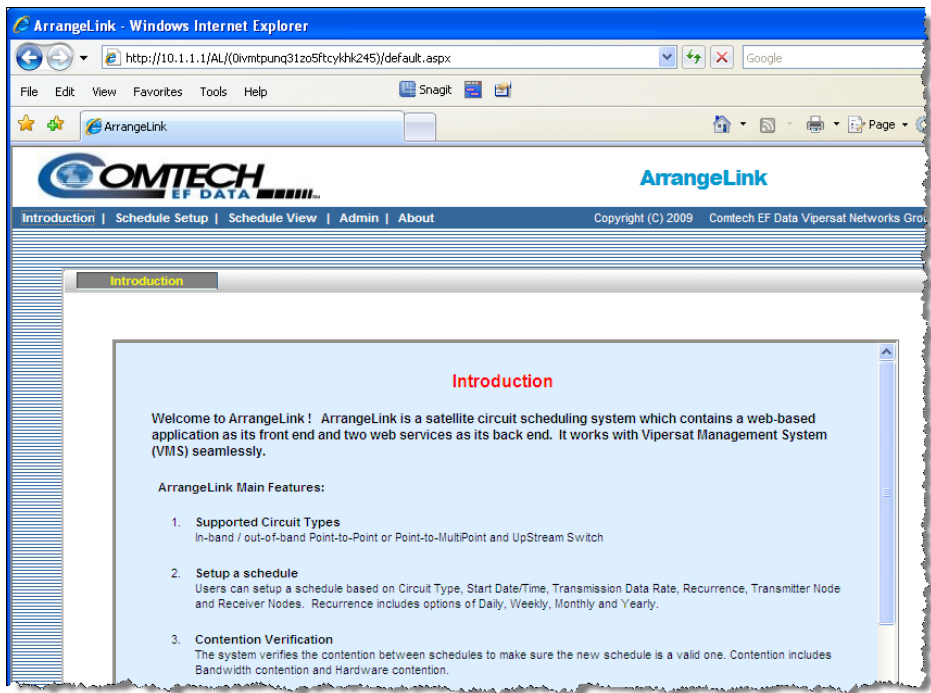


Figure 2-26 ArrangeLink Introduction Screen

This concludes the ArrangeLink Installation section.

USING ARRANGELINK

General

The Vipersat ArrangeLink Circuit Scheduler is a satellite circuit scheduling system which works with the Vipersat Management System (VMS) to establish satellite network circuits automatically based on predefined time and date settings. ArrangeLink supports both point-to-multipoint (broadcasting) and point-to-point InBand satellite circuits.

ArrangeLink capabilities include:

- Support for InBand point-to-point, point-to-multipoint, and upstream switch circuits.
- Schedules based on the circuit type, start/end date/time, transmission data rate, transmitter node and receiver node circuit types.
- Viewing schedules by user-configured filters. Filter parameters include circuit type, schedule type, start/end date/time, status, and tags. The contents of a schedule include schedule name, circuit type, transmitter, receiver, start/end date/time, data rate, and status.
- Operator control of a running event such as immediate termination, or modification of the end date and time. For a pending scheduled event, the user can start immediately, modify, or delete the event.
- Viewing a schedule's details of assigned circuit channel, reserved bandwidth slot, Modulator/Demodulator list, and link quality (E_b/N_o).
- Executing a scheduled event based on the detailed requirements for the event, such as participating nodes, data rates, start date and time, end date and time, and circuit type. All participating nodes are automatically

General

initiated and satellite links established at the scheduled start time and maintained for the specified duration.

- Creating and viewing schedules in UTC (Universal Time Coordinates). Thus, the user always sees event schedules expressed using local date and time.

Accessing ArrangeLink

ArrangeLink, being a web-based program, can be accessed from any location on the LAN/WAN network using a web browser, such as Microsoft's Internet Explorer.

SOAP Server

When working directly from the hosting server workstation where the ArrangeLink web service is installed, the program is accessed using the URL:

http://localhost/AL

Local/Remote PC

When working from a local or remote client PC workstation, ArrangeLink is accessed using the URL:

http://<server_IP_address>/AL

Log In



Note: ArrangeLink access is password protected. The user must have an account on the server and enter the exact account name and password for the server account when logging in to ArrangeLink.

A successful connection to ArrangeLink through the internet browser will result in the Log In screen appearing (figure 3-1). Log in using the **User ID** and associated **Password** that is provided by the system administrator. The default settings are:

User ID: **admin**

Password: **Comtech**

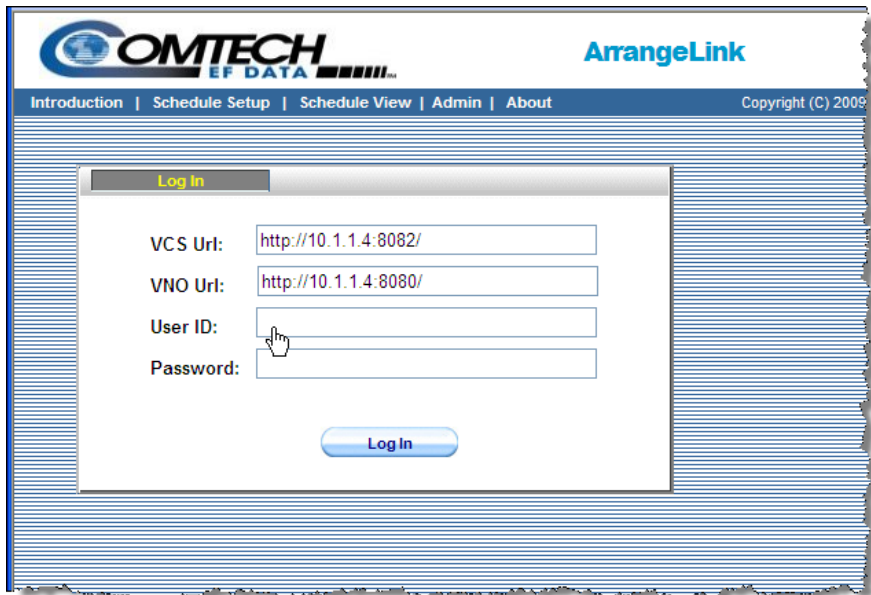


Figure 3-1 ArrangeLink Log In Prompt

Note that, should there be a problem with the SOAP Service or an incorrect URL address for either the VCS or VNO, the log in attempt will fail and an error message will be displayed, as shown in figure 3-2.

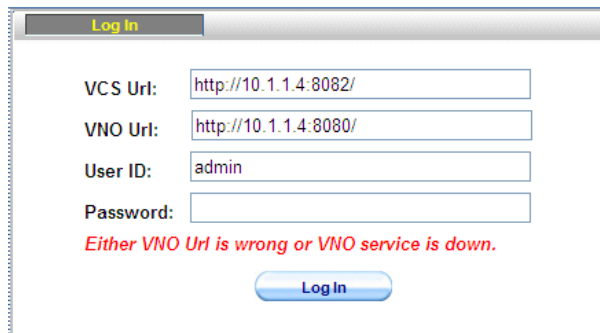


Figure 3-2 Log In Failure

Should a log in attempt fail, contact the network system administrator for assistance.

Introduction

When a client logs in to the ArrangeLink server, the Introduction screen, shown in figure 3-3, is displayed.

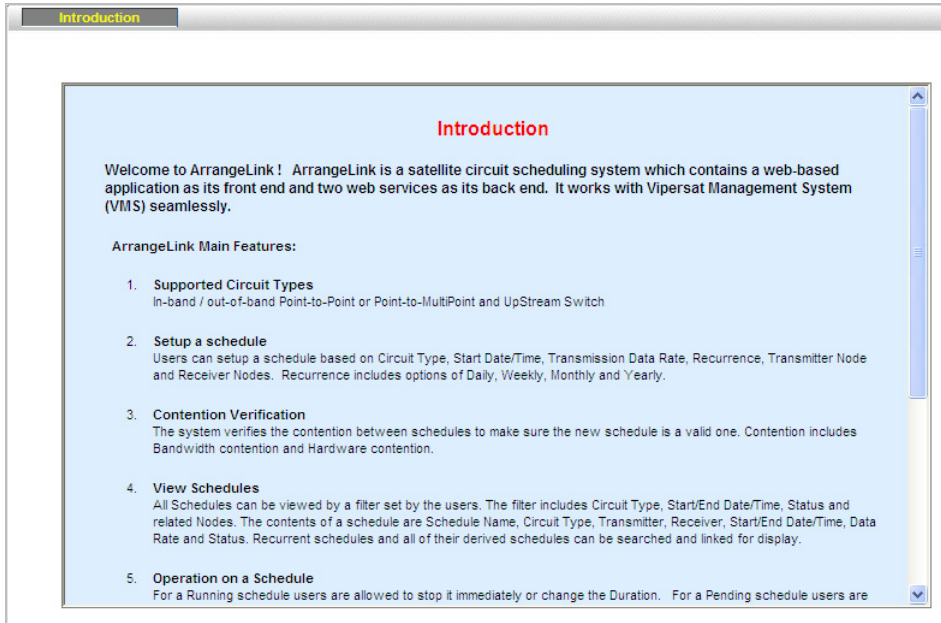


Figure 3-3 Introduction Screen

After reviewing the main program features, use the command bar, shown in figure 3-4, to move to the next screen. Clicking on **Schedule Setup**, the next item on the command bar, for example, will bring up the Schedule Setup screen shown in figure 3-7.

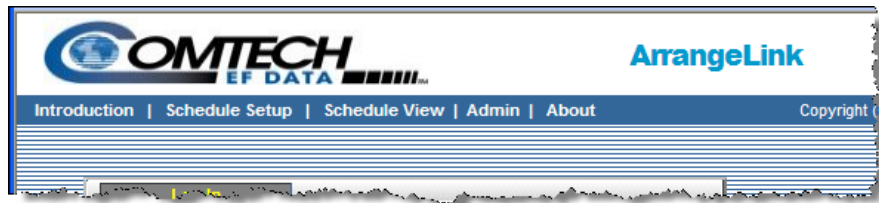


Figure 3-4 Command Bar



Tip: Before attempting to set up a schedule, select the **Schedule View** option to determine what equipment, bandwidth, and times are available before attempting to establish a new schedule.

This will prevent creating a new schedule that is in conflict with an existing schedule.



Note: If there is a VMS managed event that is ongoing at the time of a scheduled event, assigned priorities will determine whether or not the scheduled event will supersede the ongoing event and take over the SCPC circuit.

See the section “Advanced Switching” on page 3-22 regarding the setting of the Priority level for a scheduled event.

Schedule Setup

Before attempting to schedule events on a circuit, a valid image of the VMS database must be reflected in the ArrangeLink database.

To download a current image of the VMS database into the ArrangeLink database, click on **Admin** in the command bar. Then click on the **Synchronize Now** button.

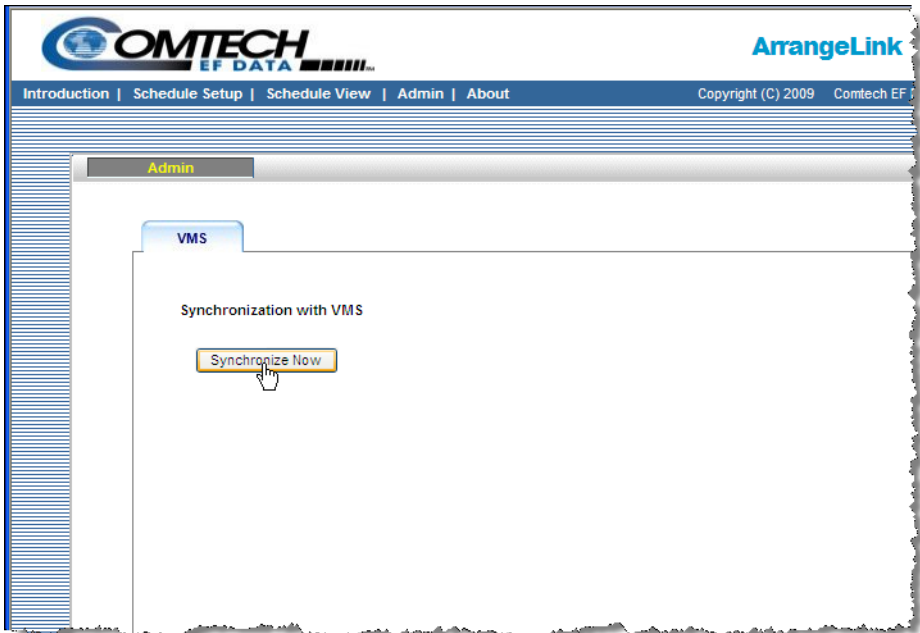


Figure 3-5 Synchronization with VMS

Following the synchronization command, a confirmation pop-up window will appear indicating that the process was successful.

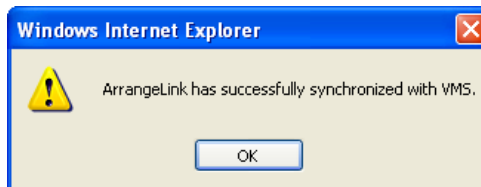


Figure 3-6 Successful Synchronization Message



Note: If ArrangeLink is unable to find a valid VMS database on the server while attempting the synchronization, an error message will be displayed.

Schedule Setup Sub-Screens

Click on **Schedule Setup** in the command bar.

The Schedule Setup screen has four tabbed sub-screens: *Generic Options*, *Scheduling Options*, *Circuit Specific Options*, and *Advanced Switching*, as shown below in figure 3-7.

The screenshot shows the 'Schedule Setup' window with the 'Generic Options' tab selected. The 'Schedule Name' field contains '11/11/2009 6:26:35 PM'. The 'Time Zone Profile' dropdown is set to '1 Pacific Time'. The 'First Occurrence' dropdown is set to 'Yes'. The 'Exclusion Profile' dropdown is currently empty. The 'Max. Execution Delay' field is set to '600' with the unit 'Seconds' next to it. On the right side, the 'Schedule Tag' section includes an empty text input field, 'Insert' and 'Remove' buttons, and a larger empty text area. A 'Continue' button is located at the bottom center of the form.

Figure 3-7 Schedule Setup, Generic Options Tab

Generic Options

The first sub-screen, *Generic Options*, shown in figure 3-7, is used for giving a **Name** to the scheduled event, selecting the profile for a **Time Zone** reference, setting an **Execution Delay** interval, and creating optional **Schedule Tags** to be associated with this event.

Configure the parameters for this sub-screen as described below.

Schedule Name

Enter a name for the event that is being scheduled in the **Schedule Name** box. The name entered is used to identify this event. This field entry defaults to a name consisting of the current date and time.

Time Zone Profile

The time reference for this event can be specified from the pull-down menu as one of the following:

- 1 Pacific Time
- 2 Eastern Time
- 3 Greenwich Time

First Occurrence

Select either **Yes** or **No** from the pull-down menu, depending on whether or not this is a first occurrence for a recurring event.

Exclusion Profile

Although this feature appears as a settable option, *it is not supported in v3.7.2 of the VMS.*

Max. Execution Delay

The time interval specified for the **Maximum Execution Delay** parameter ensures that an event will still be executed, even if a delay should occur beyond the scheduled start time—caused by the VMS being temporarily unavailable, for example. However, if the delay exceeds this interval, the event will **not** be executed.

The default value for this parameter is 600 seconds (10 minutes). This entry should be set to an interval that is less than the specified duration of the event.

When the scheduled start time for the event occurs, the VMS will attempt to set up the defined circuit and will continue to do so for the delay time interval until either a connection is made or the event's time allocation is exceeded

Schedule Tag

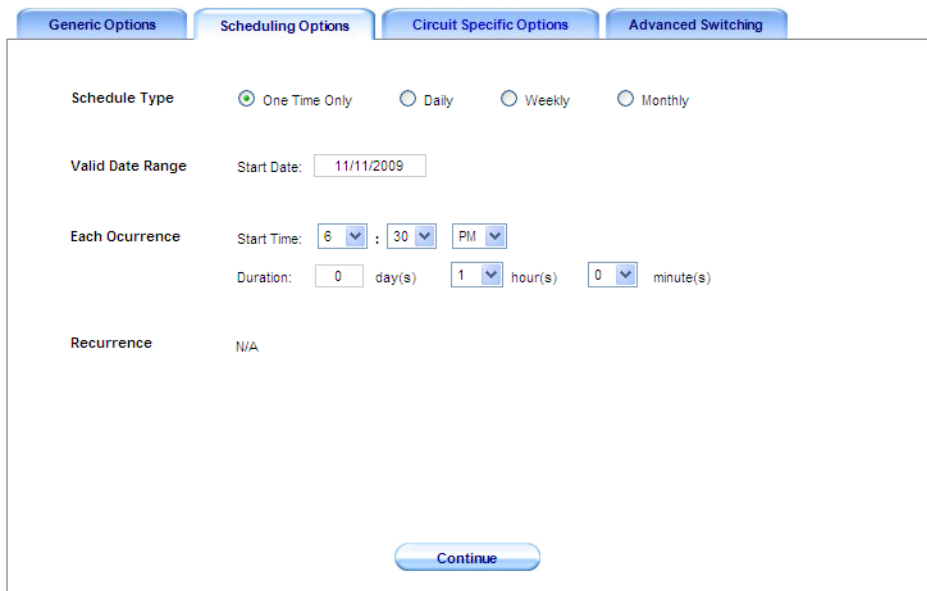
In addition to the Schedule Name, one or more **Schedule Tags** can be associated with an event, or a group of common events. This provides another means for filtering events with the search function when viewing scheduled events (see the section “Schedules” on page 3-28).

Enter any desired combination of characters to insert a Tag for the event.

After completing the configuration of the parameters in the *Generic Options* screen, click the **Continue** button to proceed to the *Scheduling Options* tab.

Scheduling Options

The second Schedule Setup sub-screen, *Scheduling Options*, displays the configuration parameters shown in figure 3-8. From this screen, parameter settings are made for the Schedule Type, Start and End Dates, Start Time and Duration, and any Recurrence of the event.



The screenshot shows the 'Scheduling Options' tab of the 'Schedule Setup' screen. At the top, there are four tabs: 'Generic Options', 'Scheduling Options' (selected), 'Circuit Specific Options', and 'Advanced Switching'. The main content area contains the following fields:

- Schedule Type:** Radio buttons for 'One Time Only' (selected), 'Daily', 'Weekly', and 'Monthly'.
- Valid Date Range:** 'Start Date:' followed by a text box containing '11/11/2009'.
- Each Occurrence:** 'Start Time:' followed by three dropdown menus showing '6', '30', and 'PM'. Below this is 'Duration:' followed by three input fields: '0' day(s), '1' hour(s), and '0' minute(s).
- Recurrence:** 'N/A'.

At the bottom center, there is a blue 'Continue' button.

Figure 3-8 Schedule Setup, Scheduling Options Tab

Schedule Type

The **Schedule Type** can be specified for One Time Only, Daily, Weekly, or Monthly. The screen appearance for the Recurrence field will vary for each type, as described below.

Valid Date Range

This section of the screen allows the **Start Date** and **End Date** of the event to be specified. Clicking on the Start/End Date box activates the calendar, as

shown in figure 3-9. Use the calendar to select the desired date for the event, which will then appear in the box.

Note that only the Start Date field appears when the schedule type is set to One Time Only.

The screenshot shows the 'Scheduling Options' tab in a software interface. The 'Schedule Type' is set to 'One Time Only'. The 'Valid Date Range' section has 'Start Date' set to '11/11/2009'. A calendar is open, showing the month of November 2009, with the 11th highlighted. The 'Each Occurrence' section has 'Start Time' and 'Duration' fields. The 'Recurrence' field is set to 'N/A'.

Figure 3-9 Calendar Selection, Start Date

Each Occurrence

In this section of the screen, the **Start Time** and **Duration** of the event are specified. From the drop-down list boxes shown in figure 3-10, select the Start Time hour, minute, and AM or PM for the scheduled event.

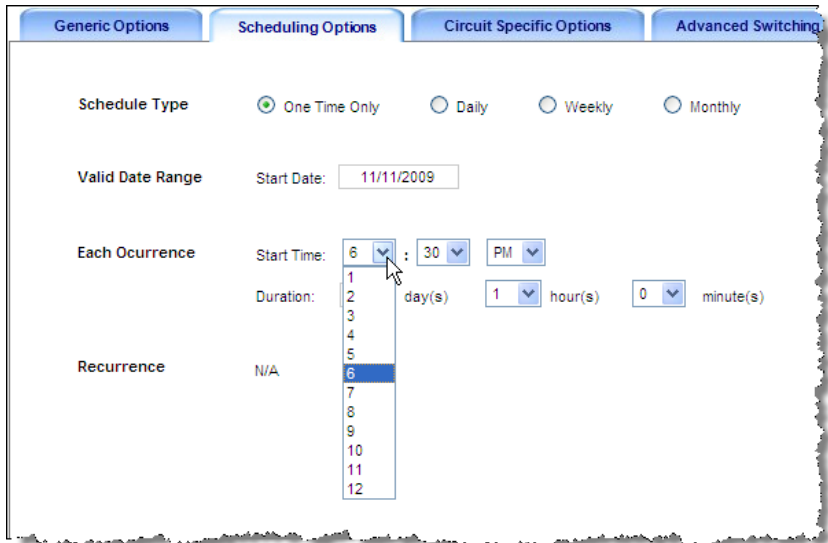


Figure 3-10 Time Selection, Each Occurrence

Select the Duration of the event in day(s), hour(s), and minute(s).



Note: If a required parameter is not specified, or is of an inappropriate range, an alert message for that parameter is displayed when the Continue button is clicked. The user must make the required corrections prior to proceeding to the next screen.

An example of an incorrect Duration specification is shown in figure 3-11.

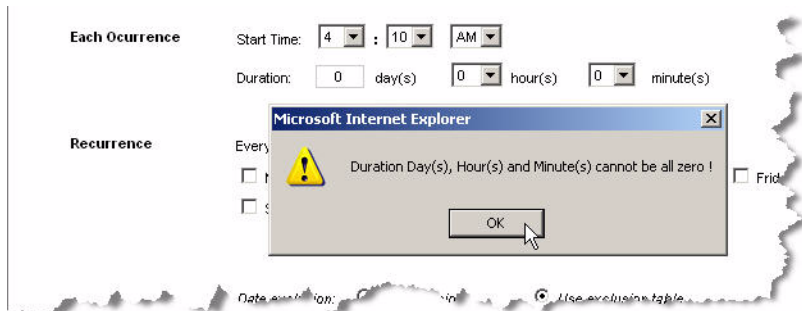


Figure 3-11 Duration Parameter, Alert Message

Recurrence

The Recurrence parameter settings appear when the Schedule Type is Daily, Weekly, or Monthly. There are no recurrence settings for One Time Only.

Daily

When **Daily** is chosen as the Schedule Type, the screen appearance for the Recurrence section changes to reflect this type, as shown in figure 3-12.

Figure 3-12 Daily Schedule Type

Select either Every Day(s), Every Weekday, or Every Weekend for the Recurrence. Note that the Duration of the event must be less than the Recurrence period.

Weekly

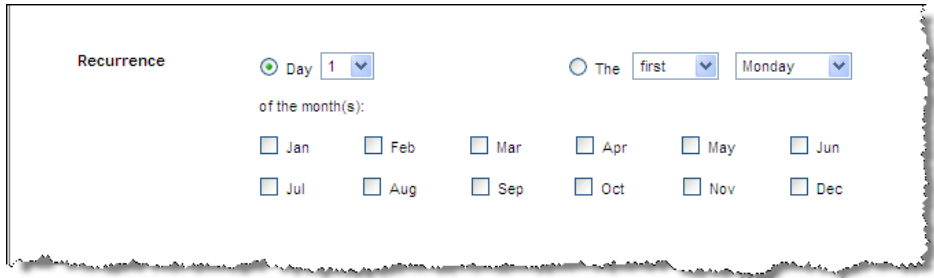
When **Weekly** is chosen as the Schedule Type, the screen appearance for the Recurrence section changes to reflect this type, as shown in figure 3-13.

Figure 3-13 Weekly Schedule Type

Specify the number of **Weeks** and the **Day** of the week that this event will be recurring.

Monthly

When **Monthly** is chosen as the Schedule Type, the screen appearance for the Recurrence section changes to reflect this type, as shown in figure 3-14.



The screenshot shows a 'Recurrence' section with two radio buttons: 'Day' (selected) and 'The'. The 'Day' option has a dropdown menu showing '1'. The 'The' option has two dropdown menus: 'first' and 'Monday'. Below these is the text 'of the month(s):' followed by a grid of 12 checkboxes for the months: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, and Dec.

Figure 3-14 Monthly Schedule Type

Specify the **Day** of the month by selecting either the numeric date or the week-day and its week in the month, then select the **Month** that this event will be recurring.

When configuration of the *Scheduling Options* is completed, click on the **Continue** button to proceed to the *Circuit Specific Options* tab.

Circuit Specific Options

The third Schedule Setup sub-screen, *Circuit Specific Options*, presents the equipment and circuit type to be used by the scheduled event. Clicking the **Circuit Specific Options** tab displays the information shown in figure 3-15. From this screen the user can:

- Choose the circuit type to be used for the scheduled event.
- Select the devices to be used in the circuit from the tree display of devices available on the network.

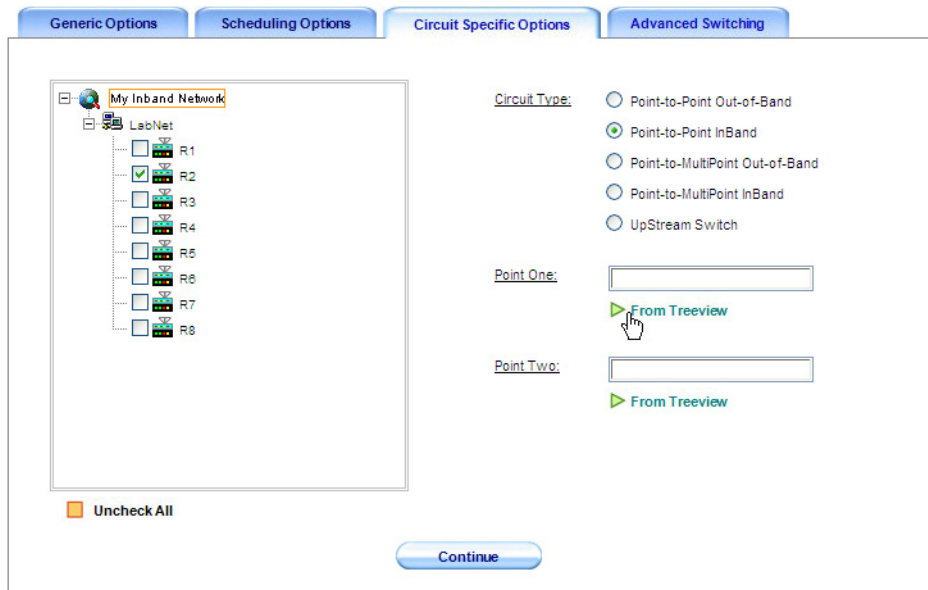


Figure 3-15 Schedule Setup, Circuit Specific Options Tab

The device selection boxes will change to accommodate the **Circuit Type** selected using the **InBand**, **Out-of-Band** or **UpStream Switch** radio buttons shown in figure 3-15.

Circuit Type

The type of circuit selected for an event will be chosen by the traffic type. The following sections contain brief descriptions of each of the available circuit types. The schedule information, once entered into ArrangeLink, is stored in a data base on the hosting web server.

The current satellite network configuration is retrieved from the VMS and is used whenever hardware and bandwidth resources are allocated for a scheduled event.

ArrangeLink allows scheduling events using InBand circuits for:

- Point-to-Point
- Point-to-MultiPoint
- UpStream Switch



Note: Although non-Vipersat modems can be monitored by the VMS (via the SNMP Modem Manager), Out-of-Band switching of these modems is not supported in version 3.7.2. Do not attempt to select Circuit Types for either *Point-to-Point Out-of-Band* or *Point-to-Multipoint Out-of-Band*.

InBand Circuit

An InBand circuit refers to a circuit which has its control channel within the same band as the communication channels. In figure 3-16, SCPC and STDMA In-Band circuits are shown for a Vipersat network using CDM-570L modem/routers.

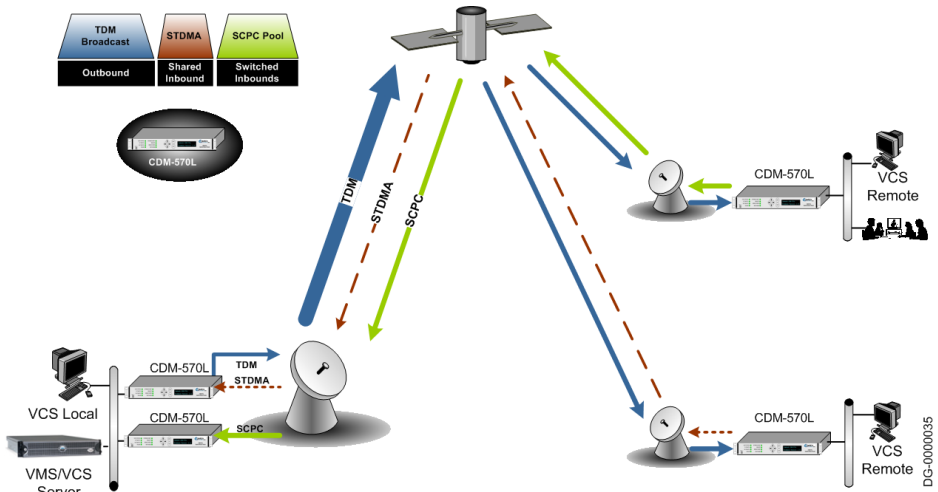


Figure 3-16 InBand Circuit diagram

This type of connection applies to circuits which utilize Comtech EF Data modem devices containing an integral IP router (*Viperized*).

Out-of-Band Circuit

An Out-of-Band circuit applies when a configuration similar to the one shown in figure 3-17 is used to establish a high-speed data link between non-Vipersat units such as the CDM-600L and its companion CiM-25 IP module. The management and control commands from the VMS are transmitted and received InBand by the CDM-570L circuit. These commands are then routed by the CDM-570L over Ethernet to the CDM-600L modem.

Since the management and control signals are handled by the CDM-570L within its allocated bandwidth and do not occupy any of the CDM-600L's bandwidth, these command circuits are considered Out-of-Band with respect to the CDM-600L circuit.

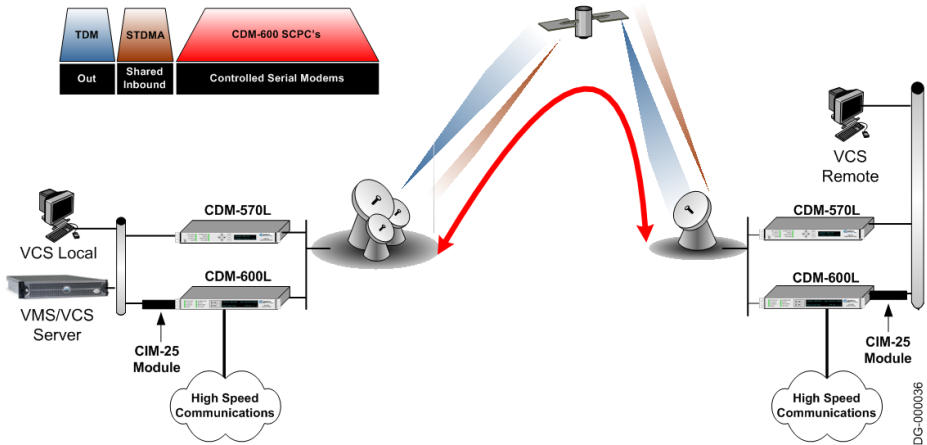


Figure 3-17 Out-of-Band Circuit diagram

Use one of the following procedures—*Point-to-Point InBand*, *Point-to-Multi-Point InBand*, or *Upstream Switch*—to select the circuit options to be used for an event that is being scheduled.



Note: The circuit type that can be used for a scheduled event may be limited by the available satellite network hardware and bandwidth.



Tip: Click on the **Uncheck All** button located below the network device list to remove checks from all boxes in the dialog.

Point-to-Point Out-of-Band

Although this Circuit Type appears as a selection option, *it is not supported in v3.7.2 of the VMS.*

Point-to-Point InBand

In figure 3-18, the **Point-to-Point InBand** circuit type has been selected using the **Circuit Type** radio button. Use the following procedure to select the equipment to be used during the scheduled event.



Note: Notice in figure 3-18 that all of the Out-of-Band devices have been suppressed and only InBand devices are shown as available for this scheduled event.

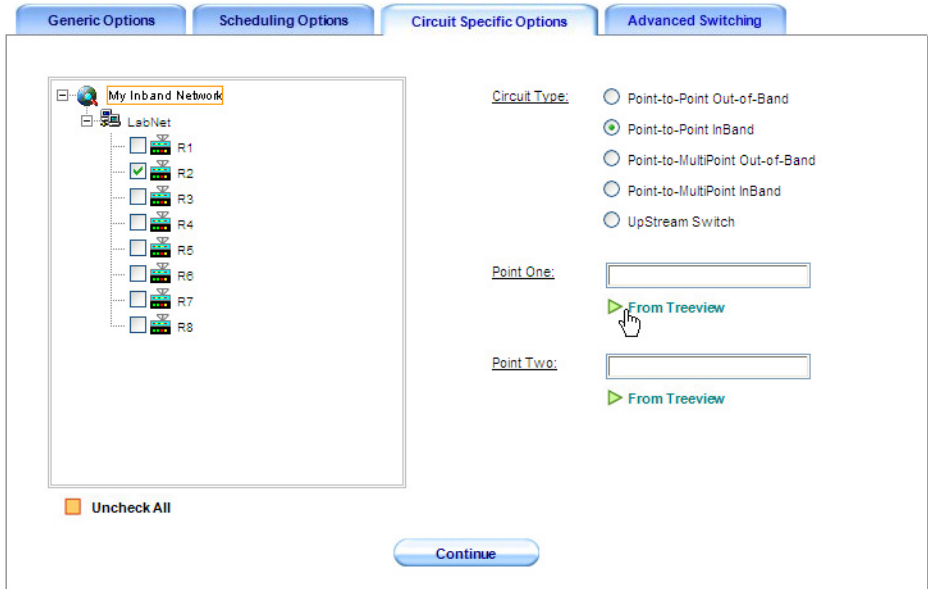


Figure 3-18 Point-to-Point InBand Circuit, Point One

To set up the scheduled event, select the **Point One** and **Point Two** sites as follows:

1. Select the Point One device to be used from the network tree by clicking in the box next to the Remote site icon, as shown in the figure.
2. Click the **From Treeview** item under the **Point One** box. The selected site will automatically be entered in the Point One box, as shown in figure 3-19.
3. Select Point Two by selecting the second Remote site from the network tree.
4. Click the **From Treeview** under the **Point Two** box to automatically enter the second site into the Point Two box, as shown in figure 3-19.

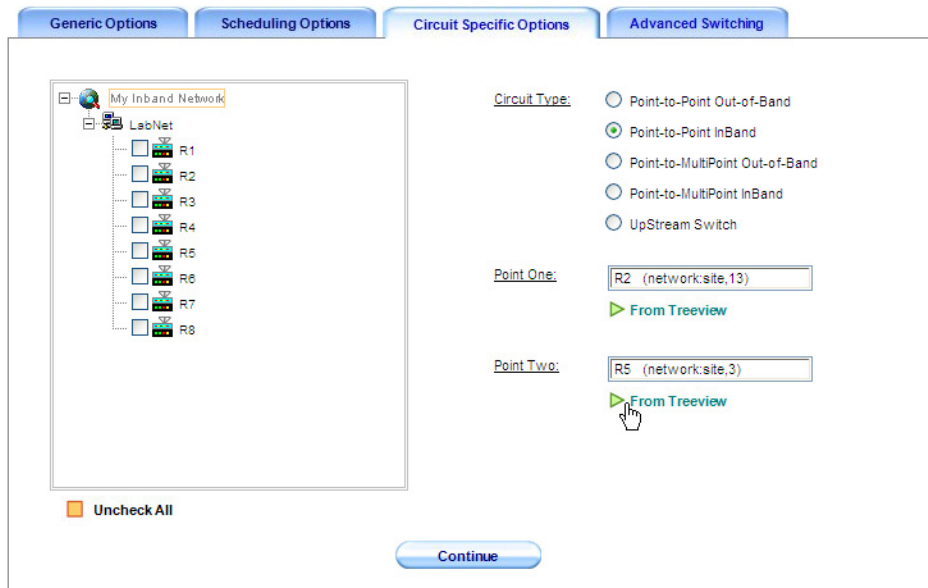


Figure 3-19 Point-to-Point InBand Circuit, Point Two

When configuration of the *Circuit Specific Options* is completed, click on the **Continue** button to proceed to the *Advanced Switching* tab.

Point-to-MultiPoint Out-of-Band

Although this Circuit Type appears as a selection, *it is not supported in v3.7.2 of the VMS.*

Point-to-MultiPoint InBand

In figure 3-20, the **Point-to-Multipoint InBand** circuit type has been selected using the **Circuit Type** radio button. Use the following procedure to select the equipment to be used for this circuit during the scheduled event.

1. Select the Remote site to be used as the transmitter for the scheduled event from the network tree view, as shown in the figure.

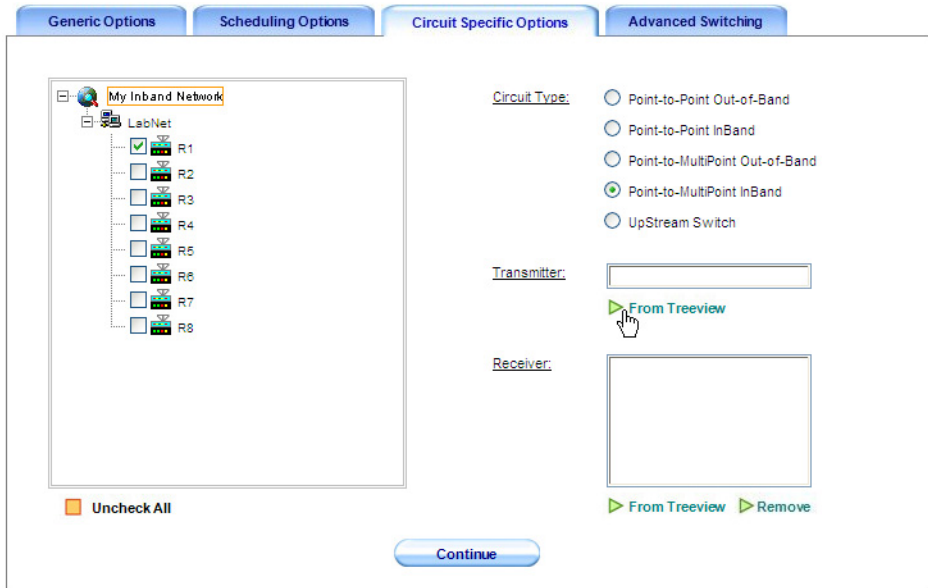


Figure 3-20 Point-to-Multipoint InBand Transmitter

2. Click the **From Treeview** button to transfer the selected transmitter to the **Transmitter** box.

The identification parameters are displayed in the **Transmitter** box and stored in the database for this event.

3. Select the sites to be used as the receivers during the scheduled event from the network tree.
4. Transfer the selected receivers to the **Receiver** box by clicking the **From Treeview** button (figure 3-21).

Additional receiver sites can be selected and transferred at any time.

5. If a transferred receiver site is not to be included in the scheduled event, that receiver can be removed from the list by selecting it in the **Receiver** box, then clicking the **Remove** button (figure 3-22).

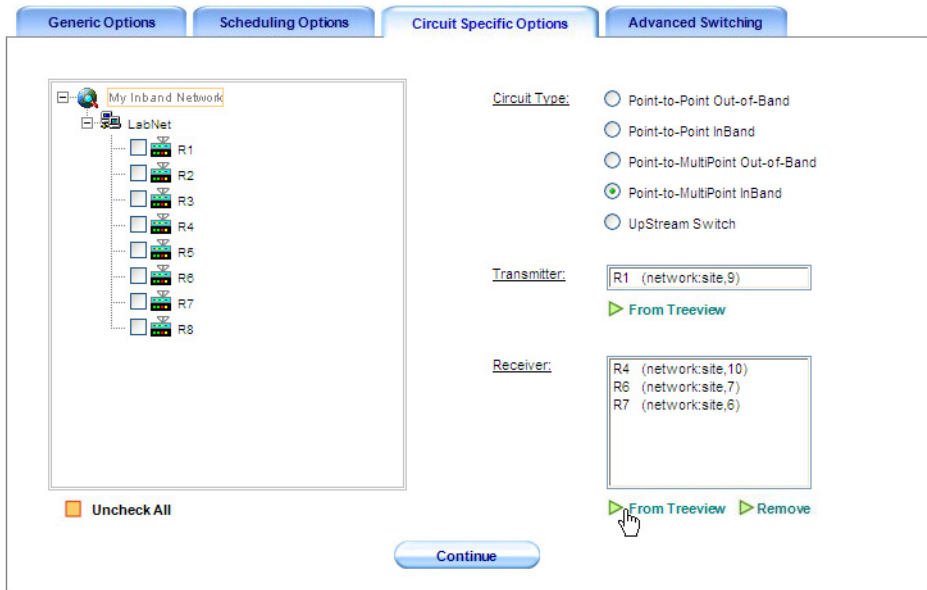


Figure 3-21 Point-to-Multipoint InBand Receivers

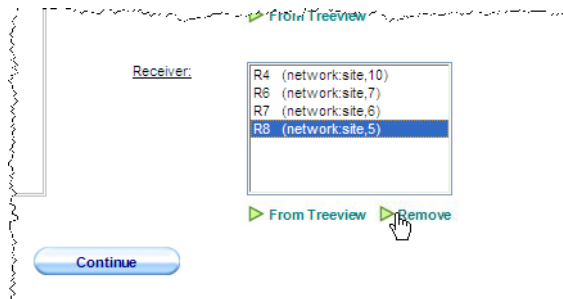


Figure 3-22 Remove Receiver from List

When configuration of the *Circuit Specific Options* is completed, click on the **Continue** button to proceed to the *Advanced Switching* tab.

Upstream Switch

Because an Upstream Switch is always between a Remote and the Hub, only a single Point has to be specified—the Remote site. An Upstream Switch event can be scheduled using the following procedure:

1. Select the **Upstream Switch** Circuit Type radio button, as shown in figure 3-23.

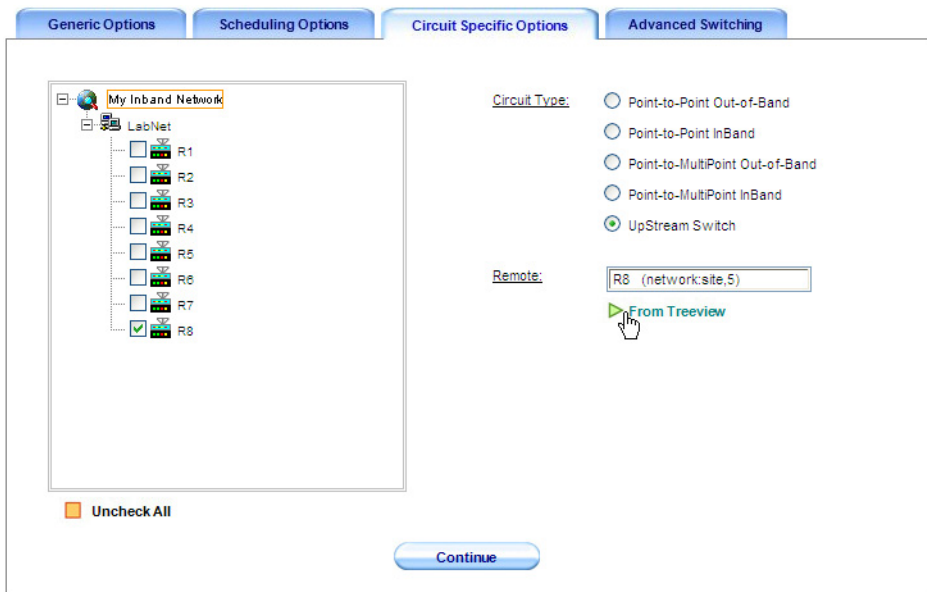


Figure 3-23 Upstream Switch, Remote Selection

2. Select the Remote site to be switched for this event from the network tree view.
3. Click the **From Treeview** button to transfer the selected site to the **Remote** box.
4. The identification parameters are displayed in the **Remote** box and stored in the database for this event.

When configuration of the *Circuit Specific Options* is completed, click on the **Continue** button to proceed to the *Advanced Switching* tab.

Advanced Switching

The fourth Schedule Setup sub-screen, *Advanced Switching*, presents the carrier channel Mod/Code settings to be used by the scheduled event. Clicking the

Advanced Switching tab displays the information shown in figure 3-24. From this screen the user can:

- Choose the combination of Modulation Type, and FEC Code Rate and Type to be used for the scheduled event.
- Specify the channel Data Rate for the event.
- Set a Priority level for the event.

Channel A: R1 (network:site,9)

Name	Default	Value
Modulation	QPSK	8PSK
FEC Rate	3/4 Rate	7/8 Rate
FEC Type	Turbo	Turbo

Data Rate (kbps): Priority:

[Add Schedule](#)

Figure 3-24 Schedule Setup, Advanced Switching Tab

1. Set the required **Mod/Code** parameters using the pull-down menus that appear under each table entry under the **Value** column.
The defaults for these settings are displayed in the second table column.
2. Enter the required channel **Data Rate** (kbps). The default setting for this parameter is **256**.
3. Set the **Priority** level for this event. The default setting is **0** (this equates to no priority).

Note that a *lower* number corresponds to a *higher* priority level. Thus, priority 1 is the highest level. The lowest level is 2,147,483,646.

In a VMS managed network, resource allocation preference is based on the highest priority among contending sites, application policies, and/or scheduled events. If there is a VMS managed event that is ongoing at the

Schedule Setup

time of a scheduled event, assigned priorities will determine whether or not the scheduled event will supersede the ongoing event and take over the SCPC circuit.

Click the **Add Schedule** button to complete the scheduling of this event and add the event to the ArrangeLink database.

Schedule View

Clicking **Schedule View** from the command bar (see figure 3-4) displays the Schedule View screen shown in figure 3-25. This screen is used to view pending, starting, running, as well as completed, failed, and expired events, and is comprised of three tabbed sub-screens:

- **Schedule Instances** – displays all event category types that match the view filter inputs, with a listing of all instances of recurring events.
- **Schedules** – displays all event category types that match the view filter inputs, with a single listing of each recurring event.
- **Details** – displays additional information for an event that has been selected in either the *Schedule Instances* tab or the *Schedules* tab.

The screenshot shows the 'Schedule View' window with the 'Schedule Instances' tab selected. The 'TimeZone' is set to '1 Pacific Time'. The network diagram on the left shows 'My Network'. The filter controls are set to: Circuit: Any, Status: Any, Start Date: 11/17/2009, Start Time: 12 AM, End Date: 12/8/2009, End Time: 1 AM. The 'View' button is highlighted in green. The table below shows the schedule instances:

Schedule Name	Type	Circuit Type	Status	Start Date
MONTHLY 11/17/2009 6:00:54 PM	MONTHLY	P2M_InBand	PENDING	12/8/2009
WEEKLY 11/17/2009 5:02:41 PM	WEEKLY	P2P_InBand	PENDING	11/24/2009
DAILY 11/17/2009 4:31:03 PM	DAILY	P2M_InBand	PENDING	11/19/2009
DAILY 11/17/2009 4:31:03 PM	DAILY	P2M_InBand	PENDING	11/18/2009
11/17/2009 6:22:04 PM	ONETIME	UpStream	STARTING	11/17/2009
11/17/2009 5:23:20 PM	ONETIME	P2P_InBand	COMPLETED	11/17/2009
11/17/2009 2:50:14 PM	ONETIME	UpStream	COMPLETED	11/17/2009
WEEKLY 11/17/2009 5:02:41 PM	WEEKLY	P2P_InBand	COMPLETED	11/17/2009
DAILY 11/17/2009 4:31:03 PM	DAILY	P2M_InBand	COMPLETED	11/17/2009
11/17/2009 3:45:50 PM	ONETIME	P2P_InBand	COMPLETED	11/17/2009

At the bottom of the table are buttons for 'Start', 'Stop', 'Modify', and 'Delete'.

Figure 3-25 Schedule View, Schedule Instances Tab

In order to have the most current information displayed, it may be necessary to perform a VMS Synchronization. Click on the **Admin** tab in the command bar, then from the **VMS** tab, click on the **Synchronize Now** button.



Clicking the **Refresh** icon, located at the top of the schedule list table, updates all displayed information for the schedules in this view.



The **Expand** icon (arrow pointing to the left) is used to remove the filter selection panel and expand the report display to fill the screen, providing a larger

area to view the schedule list table. This minimizes horizontal scrolling. When the table view is in the expanded mode, this icon changes to a **Contract** function (arrow pointing to the right).

Use the following procedures to filter, view, and act on event schedules stored in the ArrangeLink database.

Schedule Instances

The first Schedule View sub-screen, *Schedule Instances*, provides a means of searching for and viewing defined instances of scheduled events. The View filter panel appears on the left of the screen and a panel to the right of the filter displays the event listing table. The View filter is a flexible tool that controls what listings appear for past, current, and pending scheduled events.

The events to be viewed can be as specific or as general as desired based upon the combination of parameters that are chosen. The particular selection of circuit type, status, start date and time, and end date and time determines what events will appear in the table listing. In this view screen, all occurrences for a recurring event during the defined date/time period are displayed as separate listings.

The screenshot shows the 'Schedule Instances' sub-screen. At the top, there are three tabs: 'Schedule Instances' (selected), 'Schedules', and 'Details'. A 'TimeZone' dropdown menu is set to 'Greenwich Time'. On the left, a filter panel titled 'My Network' contains several fields: 'Circuit' (Any), 'Status' (Any), 'Start Date' (11/17/2009), 'Start Time' (12 AM), 'End Date' (12/8/2009), and 'End Time' (1 AM). A 'View' button is at the bottom of the filter panel. The main area displays a table of event instances with the following data:

Schedule Name	Type	Circuit Type	Status	Start Date
MONTHLY 11/17/2009 6:00:54 PM	MONTHLY	P2P_InBand	PENDING	12/8/2009 6:00:54 PM
WEEKLY 11/17/2009 5:02:41 PM	WEEKLY	P2P_InBand	PENDING	11/24/2009 5:02:41 PM
DAILY 11/17/2009 4:31:03 PM	DAILY	P2P_InBand	PENDING	11/19/2009 4:31:03 PM
DAILY 11/17/2009 4:31:03 PM	DAILY	P2P_InBand	PENDING	11/18/2009 4:31:03 PM
11/17/2009 6:22:04 PM	ONETIME	UpStream	RUNNING	11/18/2009 6:22:04 PM
11/17/2009 5:23:20 PM	ONETIME	P2P_InBand	COMPLETED	11/18/2009 5:23:20 PM
11/17/2009 2:50:14 PM	ONETIME	UpStream	COMPLETED	11/17/2009 2:50:14 PM
WEEKLY 11/17/2009 5:02:41 PM	WEEKLY	P2P_InBand	COMPLETED	11/17/2009 5:02:41 PM
DAILY 11/17/2009 4:31:03 PM	DAILY	P2P_InBand	COMPLETED	11/17/2009 4:31:03 PM
11/17/2009 3:45:50 PM	ONETIME	P2P_InBand	COMPLETED	11/17/2009 3:45:50 PM

At the bottom of the table, there are four buttons: 'Start', 'Stop', 'Modify', and 'Delete'.

Figure 3-26 Schedule Listing Table

In the schedule listing example shown in figure 3-26, all events for the next three week period are displayed by setting the filter parameters as follows:

- **Circuit** and **Status** are set to Any.
- The **Start Date** is set to 11/17/2009 (defaults to the current date), and the **Start Time** is set to 12 AM (also the default).
- The **End Date** is set for three weeks later (12/8/2009), and an **End Time** of 1 AM has been chosen.

Alternative filter choices for Circuit and Status are:

- **Circuit** – P2P InBand, P2M InBand, Upstream
- **Status** – Pending, Running, Completed, Failed, Expired

After setting the desired filter parameters, clicking the **View** button displays all of the scheduled events in the right panel which meet the conditions set in the filter.

Note that the events are presented with their date and time based on the current setting of the **Time Zone** field (Pacific, Eastern, or Greenwich) located in the upper right of the screen.

Each of the displayed events can be acted upon by first selecting the event and then clicking on one of the action command buttons that appear below the schedule listing table:

- **Start** – starts the event immediately, overriding the scheduled start time.
- **Stop** – stops a running event immediately, overriding the scheduled stop time.
- **Modify** – allows the parameters of the scheduled event to be edited. *Only applies to Pending events.*
- **Delete** – removes the event from the ArrangeLink and VMS database.

Past schedules

ArrangeLink stores past (Completed/Failed/Expired) scheduled events in its database so that historical records can be retrieved whenever required.

Use the same process as described in the example above to select a circuit and status type, then specify the past time period with the start and stop date and time settings to retrieve the desired past scheduled events. All past events for the specified period will be displayed by selecting the Any Status. More selective displays will result by setting the Status to Completed, Failed, or Expired.

Additional information for an event listing can be displayed by first selecting the event in the table and then opening the *Details* tab (see the section “Selected Schedule Details” on page 3-30 for more information).

Schedules

The second Schedule View sub-screen, *Schedules*, displays events based on the specified Schedule **Type**, the **Start Date**, and the **End Date**, as shown in figure 3-27. The View filter panel and action command buttons appear at the top of the screen, and a large panel below the filter displays the event listing table.

Similar to the *Schedule Instances* screen, there are filter controls for displaying past, current, and pending scheduled events. However, this screen has a different set of View filter parameters and action commands, and displays only one listing for a recurring event, even if multiple occurrences of that event fall within the defined date period.

Type	Schedule Name	Circuit Type	Start Date	End Date	Start Time	Duration	Recurrence
ONETIME	11/17/2009 2:50:14 PM	UpStream	11/17/2009	11/17/2009	2:52 PM	1 Hour(s)	N/A
ONETIME	11/17/2009 3:45:50 PM	P2P_InBand	11/17/2009	11/17/2009	7:50 AM	10 Minute(s)	N/A
DAILY	DAILY 11/17/2009 4:31:03 PM	P2M_InBand	11/17/2009	11/24/2009	8:35 AM	20 Minute(s)	Every week
WEEKLY	WEEKLY 11/17/2009 5:02:41 PM	P2P_InBand	11/17/2009	12/15/2009	9:10 AM	1 Hour(s)	Every week
ONETIME	11/17/2009 5:23:20 PM	P2P_InBand	11/17/2009	11/17/2009	5:21 PM	10 Minute(s)	N/A
MONTHLY	MONTHLY 11/17/2009 6:00:54 PM	P2M_InBand	11/17/2009	4/20/2010	10:00 PM	1 Hour(s)	The third Wed Jan, Feb, Mar,
ONETIME	11/17/2009 6:22:04 PM	UpStream	11/17/2009	11/17/2009	6:25 PM	20 Minute(s)	N/A

Figure 3-27 Schedule View, Schedules Tab

In the schedule listing example shown in figure 3-27, all events that are scheduled to occur over a six month period are displayed by setting the Type to Any together with a Start Date of November and an End Date of May.

Alternative settings for Type are: Onetime, Daily, Weekly, and Monthly.

Additionally, there is a **Tag** filter parameter that is used to display only those events that have a matching schedule tag associated with them (figure 3-28). These tags are assigned to an event in the *Generic Options* screen when performing a Schedule Setup.

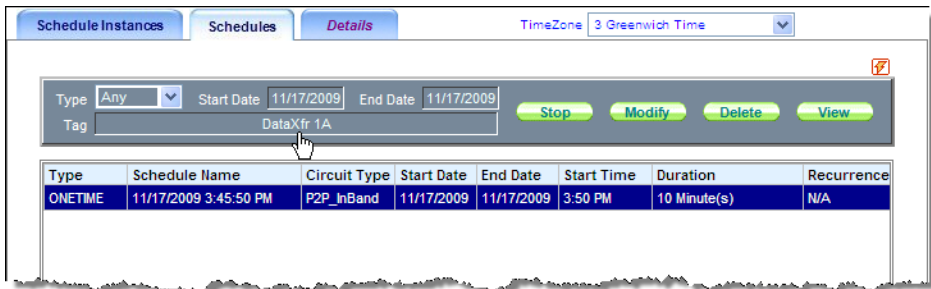


Figure 3-28 Schedules Tag Filter Parameter

After making the desired filter settings, clicking the **View** button displays all of the scheduled events that meet this criteria. Note that the events are presented with their date and time based on the current setting of the **Time Zone** field (Pacific, Eastern, or Greenwich) located at the top right of the screen.

Each of the displayed events can be acted upon by first selecting the event and then clicking on one of the action command buttons that appear in the upper right panel above the schedule listing table:

- **Stop** – stops a running event immediately, overriding the scheduled stop time.
- **Modify** – allows the parameters of the scheduled event to be edited. *Only applies to Pending events.*
- **Delete** – removes the event from the ArrangeLink and VMS database.

Additional information for an event listing can be displayed by first selecting the event in the table and then opening the *Details* tab (described in the following section).

Selected Schedule Details

The third Schedule View sub-screen, *Details*, works in conjunction with both the *Schedule Instances* screen and the *Schedules* screen. Selecting a scheduled event from one of these two screens and then opening the *Details* tab will provide additional information pertaining to that specific event.

The screenshot shows the 'Details' tab of the Schedule View interface. At the top, there are three tabs: 'Schedule Instances', 'Schedules', and 'Details'. To the right, there is a 'TimeZone' dropdown menu set to '3 Greenwich Time'. Below the tabs is a table with the following data:

Schedule Name	11/17/2009 6:22:04 PM	Status	RUNNING
Circuit Type	UpStream	Mobile	No
Data Rate/Priority	256 kbps 5	Transmitter	R5
Start Date/Time	11/18/2009 2:24 AM	Receiver	
End Date/Time	11/18/2009 2:44 AM		

Below this table is another table with the following data:

Channel	Frequency(MHz)	Bandwidth(KHz)	Device	Device Name	Power(dBm)	Eb/No(dB)
1	1376.610900	170.67	MOD	Modulator 1 on Remote-5-Data		
			HUB_DEMOD	Demodulator 2 on HUB Pt-to-Pt#2	9.60	11.90

Figure 3-29 Schedule View, Details for Schedule Instance

Schedule Instances Details

The details for the Onetime Upstream Switch event that is selected in the *Schedule Instances* screen example (figure 3-26) is shown in figure 3-29, above.

This screen has an upper panel that presents the following details:

- Schedule Name – the name assigned to this schedule.
- Circuit Type – the type of circuit for this schedule.
- Data Rate/Priority – the specified data rate (kbps) and priority level.
- Start Date/Time – the date and time for this event to start.
- End Date/Time – the date and time for this event to end.
- Status – pending, starting, running, completed, failed, or expired.

- Mobile – indicates if this schedule is for a mobile application.
- Transmitter – identifies the Remote site ID of the transmitter for this event.
- Receiver – identifies the Remote site ID(s) of the receiver(s) for this event.

Resource allocation details for a **Running** event are presented in the lower panel.

- For the **Transmitter** (top row of the table):
 - Channel – the assigned channel for transmitting.
 - Frequency (MHz) – the assigned transmit frequency.
 - Bandwidth (kHz) – the allocated bandwidth for transmitting.
 - Device type – the assigned transmit modulator.
 - Device Name – the name of the modulator.
- For the **Receiver(s)** (lower row(s) of the table):
 - Device type – the assigned receive demodulator(s).
 - Device Name – the name(s) of the demodulator(s).
 - Power (dBm) – the received power level.
 - E_b/N_0 (dB) – the received signal quality level.

Schedules Details

In comparison, the details for the Daily Point-to-Multipoint event that is selected in the *Schedules* screen example (figure 3-27) is shown in figure 3-30, below.

The upper panel of this screen presents the following details:

- Schedule Name – the name assigned to this schedule.
- Schedule Type – the type of event for this schedule.
- Circuit/Rate/Priority – the specified circuit type, data rate (kbps), and priority level.
- Date Range – the start date and end date for this event or set of events.
- Max. ExecDelay – the time interval specified for the Maximum Execution Delay parameter.
- Recurrence – the recurrence interval established for this schedule type.

Schedule View

- Per Occurrence – the date of the first occurrence and the time duration for each occurrence.
- Transmitter – identifies the Remote site ID of the transmitter for this event.
- Receiver – identifies the Remote site ID(s) of the receiver(s) for this event.

The screenshot shows the 'Details' tab for a schedule. The top table provides the following information:

Schedule Name	DAILY 11/17/2009 4:31:03 PM	Recurrence	Every weekday
Schedule Type	DAILY	Per Occurrence	From 11/17/2009 for 20 Minute(s)
Circuit/Rate/Priority	P2M_InBand 512 kbps 10	Transmitter	R2
Date Range	11/17/2009 - 11/24/2009	Receiver	R4 R5 R7
Max. ExecDelay	600 sec		

The bottom table lists the occurrences:

Start Date / Time	End Date / Time	Status
11/19/2009 4:35 PM	11/19/2009 4:55 PM	PENDING
11/18/2009 4:35 PM	11/18/2009 4:55 PM	PENDING
11/17/2009 4:35 PM	11/17/2009 4:55 PM	COMPLETED

Figure 3-30 Schedule View, Details for Schedule

The details for each occurrence of a Recurring event are presented in the lower panel.

- Start Date / Time
- End Date / Time
- Status – pending, starting, running, completed, failed, or expired.

Admin

The Admin screen is used to synchronize ArrangeLink with the VMS. To download a current image of the VMS database into the ArrangeLink database, click on **Admin** in the command bar to open the VMS tab (figure 3-31). Click on the **Synchronize Now** button.

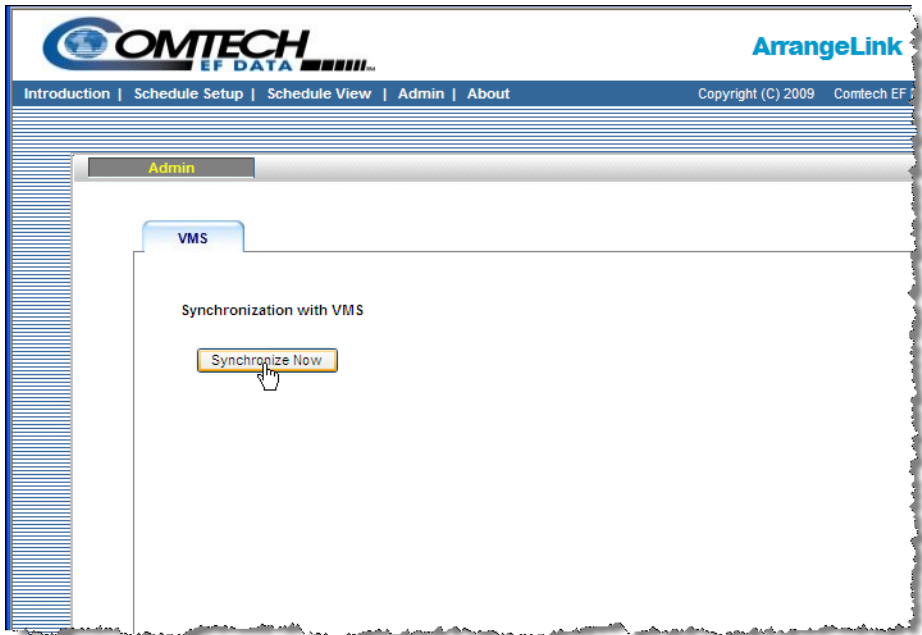


Figure 3-31 Admin Screen, VMS Tab

Following the synchronization command, a confirmation pop-up window will appear indicating that the process was successful.

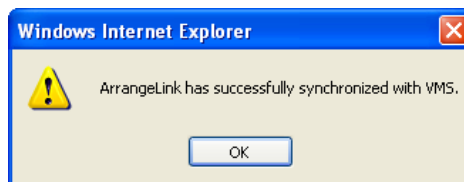


Figure 3-32 Successful Synch with VMS



Note: If ArrangeLink is unable to find a valid VMS database on the server while attempting the synchronization, an error message will be displayed.

About

The About command is used to display the ArrangeLink program information, including version and copyright. Click on **About** in the command bar to open the dialog window shown in figure 3-33.

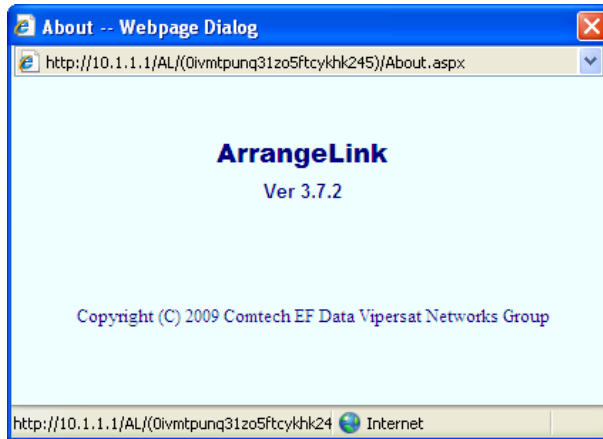


Figure 3-33 About ArrangeLink dialog



Note: In order for this dialog to be displayed, the browser Pop-ups feature must be set to "allowed".



GLOSSARY

A

- ACK** A signal used in computing and other fields to indicate **acknowledgement**, such as a packet message used in TCP to acknowledge the receipt of a packet.
- ARP** **Address Resolution Protocol** – A protocol for a LAN device to determine the MAC address of a locally connected device given its IP address. See also MAC.
- ASR** **Automatic Switch Request** – A switch request message generated by older Vipersat modems (e.g., CDM-570/L) that is sent to the VMS to establish a new satellite link or adjust bandwidth between source and destination IP addresses.

B

- Base Modem** The main component in a satellite communications modem that consists of a circuit board with the modem hardware and firmware and the associated interfaces.
- BER** **Bit Error Rate** (sometimes **Ratio**) – A measure of the number of data bits received incorrectly compared to the total number of bits transmitted.
- BPS** **Bits Per Second** – A measure of transmission speed. See also Kb/s & Mb/s.

- BPSK** **B**inary **P**hase-**S**hift **K**eying – A digital modulation technique in which the carrier is phase shifted +/-180 degrees (two phases). The most robust of all PSKs, but unsuitable for high data-rate applications when bandwidth is limited due to encoding just one bit per symbol.
- BUC** **B**lock **U**p **C**onverter – An upconverter so called because it converts a whole band or “block” of frequencies to a higher band. The IF is converted to final transmit frequency for satellite communications. The BUC is part of the satellite ODU/transceiver.

C

- C-Band** A frequency band commonly used for satellite communications (and sometimes terrestrial microwave). For terrestrial earth stations, the receive frequency band is 3.7–4.2 GHz and the transmit band is 5.925–6.425 GHz. See also Ku-band.
- CDD** **C**omtech **D**ata **D**emodulator
- CDM** **C**omtech **D**ata **M**odem
- CIR** **C**ommitted **I**nformation **R**ate – The guaranteed minimum bandwidth assigned to a remote terminal.
- CLI** **C**ommand **L**ine **I**nterface – A mechanism for interacting with a computer operating system or software by typing commands to perform specific tasks.
- Codecast** A network coding based ad hoc multicast protocol well-suited for multimedia applications with low-loss, low-latency constraints. Because data is streamed with no verification, high delivery ratios are obtained with very low overhead.
- CRC** **C**yclic **R**edundancy **C**heck – A method of applying a checksum to a block of data to determine if any errors occurred during transmission over communications links.
- CXR** **C**arrier – A radio frequency transmission linking points and over which information may be carried.

D

- DAMA** **D**emand **A**ssigned **M**ultiple **A**ccess – A process whereby communications links are only activated when there is an actual demand.
- dBm** **D**ecibel referenced to 1 milliwatt.

- DES** **Data Encryption Standard** – A federal standard method for encrypting information for secure transmission. The Vipersat system offers 3xDES (Triple DES) for encrypting traffic.
- DHCP** **Dynamic Host Configuration Protocol** – An Internet protocol for automating the configuration of computers that use TCP/IP.
- DLL** **Dynamic Link Library** – The implementation of the shared library concept in the Microsoft Windows system.
- DPC** **Dynamic Power Control**
- DSCP** **Differentiated Services Code Point** – The 6-bit field in an IP packet header that is used for packet classification purposes and is the portion of ToS that is detected by Vipersat modems.
- DVB** **Digital Video Broadcast**
- DVP** **Digital Voice Processor** – Used in packet voice applications.

E

- E_b/N_o E_b/N_o is the ratio of E_b (energy per bit) and N_o (noise power density per Hz). The bit error rate (BER) for digital data is a decreasing function of this ratio. E_b is the energy of an information bit measured in Joules or, equivalently, in Watts per Hertz.

F

- FAST Code** **Fully Accessible System Topology Code** – Designation for feature code used by Comtech EF Data for their satellite modems. The FAST method makes it easy to quickly upgrade the feature options of a modem while it is running live in the network, either on site or remotely.
- FEC** **Forward Error Correction** – A process whereby data being transmitted over a communications link can have error correction bits added which may be used at the receiving end to determine/correct any transmission errors which may occur.
- Flash** Non-volatile computer memory that can be electrically erased and reprogrammed.
- Forward Path** Transmission path from the Hub site to a Remote site.

FTP **File Transfer Protocol** – An application for transferring computer files over the Internet. See also TFTP.

G

G.729 ITU standard for LD-CELP (**L**ow **D**elay – **C**ode **E**xcited **L**inear **P**rediction) voice encoding at 8 kb/s.

GIR **Guaranteed Information Rate**

Group ID A number assigned to equipment which defines it as a member of a group when addressed by the VMS burst controller.

GUI **Graphical User Interface** – A form of graphical shell or user interface to a computer operating system or software application.

H

H.323 A protocol standard for multimedia communications designed to support real-time transfer of audio (such as voice over IP) and video data over packet networks. Quality of Service is a key feature of H.323. An alternative to SIP.

HDLC **High Level Data Link Control** – A standard defining how data may be transmitted down a synchronous serial link.

HPA **High Power Amplifier** – The amplifier used in satellite communications to raise the transmit signal to the correct power level prior to transmission to satellite.

HTTP **Hyper Text Transfer Protocol** – The Internet standard for **World Wide Web (WWW)** operation.

Hub The central site of a network which links to a number of satellite earth sites (remotes).

I

ICMP **Internet Control Message Protocol**

IDU **Indoor Unit** – In a VSAT system, the satellite modem is referred to as the IDU.

- IF **I**ntermediate **F**requency – In satellite systems, IF frequencies are usually centered around 70 or 140 MHz (video/TV), or 1200 MHz (L-band).
- IFL **I**ntra-**F**acility **L**ink – The coaxial cabling used to connect the satellite ODU to the IDU. Carries the inbound and the outbound signals, and the 24 VDC for the LNB.
- Image A binary firmware file that provides the operational code for the processor(s) in a network unit.
- IP **I**nternet **P**rotocol – A format for data packets used on networks accessing the Internet.
- ISP **I**nternet **S**ervice **P**rovider – A company providing Internet access.
- ITU **I**nternational **T**elecommunications **U**ion

K

- Kb/s **K**ilo **b**its per second – 1000 bits/second. A measure of transmission speed. See also bps & Mb/s.
- Ku-Band A frequency band used for satellite communications. For terrestrial earth stations the receive frequency band is in the range 10.95–12.75 GHz and the transmit frequency band is 13.75–14.5 GHz. See also C-band.

L

- L-Band A frequency band commonly used as an IF for satellite systems using block up/down conversion. Typically 950–1450 MHz Rx, 1250–1750 MHz Tx.
- LAN **L**ocal **A**rea **N**etwork
- LLA **L**ow **L**atency **A**pplication
- LNA **L**ow **N**oise **A**mplifier – An amplifier with very low noise temperature used as the first amplifier in the receive chain of a satellite system.
- LNB **L**ow **N**oise **B**lock – A downconverter so called because it converts a whole band or “block” of frequencies to a lower band. The LNB (similar to an LNA) is part of the satellite ODU/transceiver.
- LNC **L**ow **N**oise **C**onverter – A combined low noise amplifier and block down converter, typically with an L-band IF.

LO Local Oscillator – Component used in upconverters, downconverters, and transponders for frequency translation (heterodyne) of the carrier signal.

M

M&C Monitor & Control

MAC Media Access Control – A protocol controlling access to the physical layer of an Ethernet network.

Mb/s Mega Bits per Second – 1 Million bits/second. A measure of transmission speed. See also bps & kb/s.

Modem Modulator and Demodulator units combined.

Multicast Transmitting a single message simultaneously to multiple destinations (group) on the IP network.

Multi-command A command that allows multiple input choices in a single command execution..

N

NAT Network Address Translation – An Internet standard that enables a LAN to use one set of IP addresses for internal (private) traffic and a second set of addresses for external (public) traffic.

NIC Network Interface Controller – The network interface for a PC/workstation that provides Ethernet connectivity. Depending on the computer, the NIC can either be built into the motherboard, or be an expansion card. Some computers (e.g., servers) have multiple NICs, each identified by a unique IP address.

NMS Network Management System

NOC Network Operation Center – Has access to any earth station installed using the VIPERSAT Management System (VMS). A NOC can remotely interrogate, control, and log network activities.

NP Network Processor

O

ODU **Outdoor Unit** – In a VSAT system, the RF components (transceiver) are usually installed outdoors on the antenna structure itself and are thus referred to as an ODU. The ODU typically includes the BUC and LNB, and is connected to the IDU/modem by the IFL cabling.

P

PLDM **Path Loss Data Message** – A packet message that is sent by older Vipersat modems (e.g., CDM-570/L) to the VMS every sixty seconds, providing status update and operating parameter information.

PSK **Phase-Shift Keying** – A digital modulation scheme that conveys data by changing the phase of a base reference signal, the carrier wave. Different PSKs are used, depending on the data rate required. Examples are binary phase-shift keying (BPSK or 2-PSK) which uses two phases, and quadrature phase-shift keying (QPSK) which uses four phases.

PSTN **Public Switched Telephone Network** – The world's public circuit-switched telephone network, digital and analog, and includes mobile as well as land-line voice and data communications.

Q

QAM **Quadrature Amplitude Modulation** – A digital modulation technique in which the amplitude of two carrier waves is changed to represent the data signal. These two waves are 90 degrees out of phase with each other.

QoS **Quality of Service**

QPSK **Quadrature Phase-Shift Keying** – A digital modulation technique in which the carrier is phase shifted +/- 90 or +/-180 degrees. With four phases, QPSK can encode two bits per symbol—twice the rate of BPSK. However, it also uses twice the power. Also known as 4-PSK or 4-QAM.

R

- Remote** Satellite earth site that links to a central network site (Hub).
- Return Path** Transmission path from a Remote site to the Hub site.
- RF** **Radio Frequency** – A generic term for signals at frequencies above those used for baseband or IF.
- RFC** **Request For Comment** – The official publication channel for Internet standards (such as communication protocols) issued by the Internet Engineering Task Force (IETF).
- RIP** **Routing Information Protocol**
- ROSS** **Roaming Oceanic Satellite Server**
- RS-232** A common electrical/physical standard issued by the IEEE used for point to point serial communications up to approximately 115 kb/s.
- RTP** **Real-time Transport Protocol** – A standardized packet format for delivering real-time applications such as audio and video over the Internet. Frequently used in streaming media systems, videoconferencing, and VoIP.
- Rx** **Receive**

S

- SCPC** **Single Channel Per Carrier** – A satellite communications technique where an individual channel is transmitted to the designated carrier frequency. Some applications use SCPC instead of burst transmissions because they require guaranteed, unrestricted bandwidth.
- SIP** **Session Initiation Protocol** – A general purpose protocol for multimedia communications, commonly used for voice over IP (VoIP) signaling. An alternative to the H.323 protocol.
- SNG** **Satellite News Gathering** – A satellite uplink van/truck with television crew on location conducting a live report for a newscast.
- SNMP** **Simple Network Management Protocol** – A protocol defining how devices from different vendors may be managed using a common network management system.
- SOTM** **Satcom On-The-Move** – The ability of a mobile remote terminal to roam across satellite beams to preserve link integrity and to automatically transition from one satellite and/or hub to another in a global network.

Star Topology	A network topology which, if drawn as a logical representation, resembles a star with a hub at the center.
STDMA	Selective T ime D ivision M ultiple A ccess – A multiple access technique where users time-share access to a common channel with variable-sized time slots allocated on usage.
Streamload Protocol	A proprietary Vipersat data streaming protocol.
SUM	Status Update M essage – A packet message that is sent by newer Vipersat modems (e.g., SLM-5650A) to the VMS every sixty seconds, providing status update and operating parameter information.

T

TCP/IP	T ransmission C ontrol P rotocol / I nternet P rotocol – A standard for networking over unreliable transmission paths. See also UDP.
TDM	T ime D ivision M ultiplexing – A method of multiplexing that provides the transmission of two or more signals on the same communication path or channel, but at different times by utilizing recurrent timeslots.
TFTP	T rivial F ile T ransfer P rotocol – A simple file transfer protocol used over reliable transmission paths. See also FTP.
ToS	T ype of S ervice
Tx	T ransmit.

U

UDP	U ser D atagram P rotocol – A standard for networking over reliable transmission paths.
UDP multicast	A multicast transmission using the UDP protocol.
Unicast	Transmitting information/data packets to a single destination on the IP network.
Upstream	In the direction of the network Hub site.

V

- VESP** Vipersat **External Switching Protocol** – A switch-request protocol that allows external VPN equipment and Real-time proprietary applications to negotiate bandwidth requests between any two subnets on a Vipersat network. VESP is used by newer Vipersat modems (e.g., SLM-5650A) to send a switch request to the VMS to establish a new satellite link or adjust bandwidth for an existing link.
- VCS** Vipersat **Circuit Scheduler** – A proprietary satellite communication scheduling system used to schedule Vipersat network resources in support of a variety of high-priority applications such as video conferencing and scheduled broadcasting.
- VFS** Vipersat **File Streamer** – A file transfer application utilizing UDP and a proprietary Streamload protocol to transmit data across the Vipersat network.
- VLoad** Vipersat **Load Utility** – A comprehensive tool for managing and distributing application, configuration, and identification information for the modem/routers in Vipersat satellite networks.
- VMS** Vipersat **Management System** – A comprehensive M&C tool providing rapid and responsive control of Vipersat satellite networks. Comprised of client and server components.
- VNO** **Virtual Network Operator** – A provider of management services that does not own the telecommunication infrastructure. The Comtech Vipersat Network Products' VNO solution allows satellite space segment operators to selectively expose resources in their satellite network to other service providers, customers, or partners.
- VoIP** **Voice over IP** – The routing of voice communications over the Internet or through any IP-based network.
- VOS** Vipersat **Object Service** – The main software service of the VMS application.

W

- Wizard** A specialized program which performs a specific function, such as installing an application.
- WRED** **Weighted Random Early Detection** – A queue management algorithm with congestion avoidance capabilities and packet classification (QoS) providing prioritization.

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