# DMP COMMUNICATIONS OPTIONS

## *Application Note*

## INTRODUCTION

This document describes how to take advantage of the programming options for communication using the XR150/XR550 Series panels and provides examples of real-world communication techniques.

## THE PATH ADVANTAGE

A path is the programming option used to determine the routing and conditions needed to send a message to the central station receiver. Up to eight paths of communication may be programmed. There are two types of paths to choose from: A Primary path and a Backup path. The Primary path is the first path used to send messages. A Backup path is used if the preceding Primary path becomes unavailable. Once you have chosen the type for the path, the rest is easily configured.

Paths of communication offer a significant advantage because a panel may be programmed with multiple Primary paths each with their own Backup path. Programming each individual path from beginning to end allows you to visualize how the messages are routed and handled.

## COMMUNICATION PATHS

### SCS-1R

The example system shown below uses three communication paths.

- Path 1 is Primary and sends messages to the SCS-1R Central Station Receiver using NET communication.
- Path 2 is a Backup path that sends messages using CELL if the Primary path should be unavailable.
- Path 3 is also a Backup DD path that is only used if both paths 1 and 2 cannot successfully communicate messages.

Another Backup path could also be programmed to send duplicate alarms to a different SCS-1R.
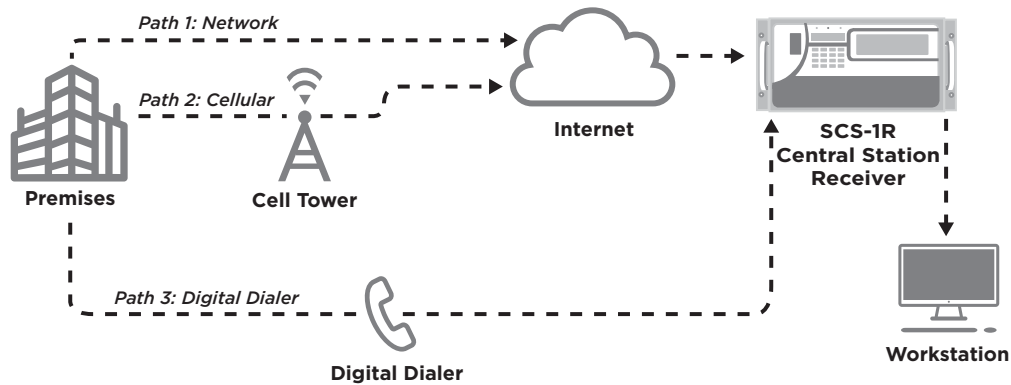


**Figure 1: Communication Paths with SCS-1R**

### SCS-VR

The example system shown below uses two communication paths.

- Path 1 is Primary and sends messages to the SCS-VR Central Station Receiver using NET communication.
- Path 2 is a Backup path that sends messages using CELL if the Primary path should be unavailable.
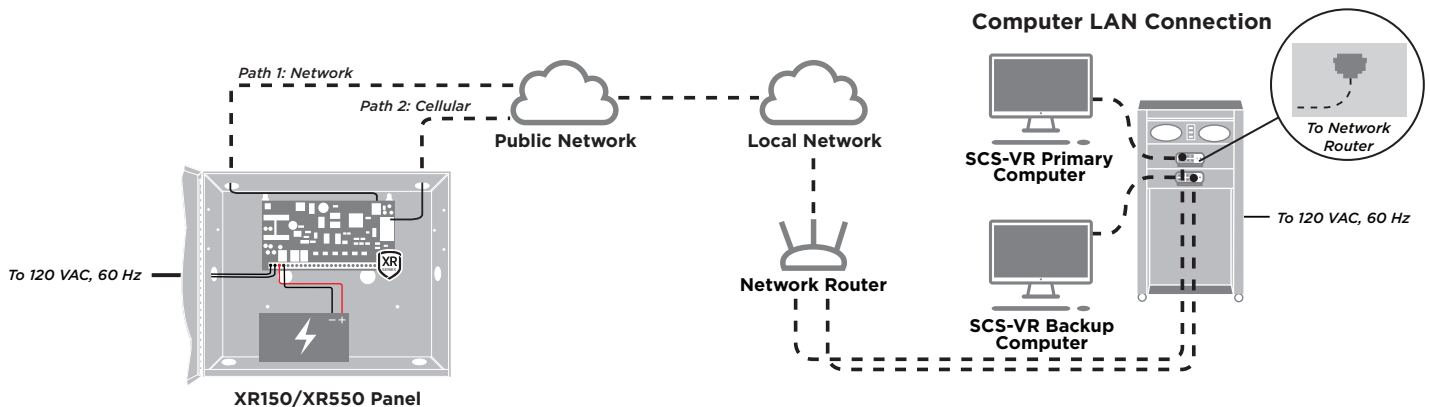


**Figure 2: Communication Paths with SCS-VR**

## PATH GROUPS

A path group is made up of the Primary path and its subsequent Backup paths. Each Primary path establishes a new path group. Communication takes place on the Primary path with Backup paths being used only when the primary path fails or when the Backup path is programmed to duplicate alarm messages.

Path groups are determined by path order; there is no need for a separate programming option to indicate a group. This is illustrated by the following programming scenario:

- Path 1 is Primary and path 2 is Backup
- Path 3 is Primary and paths 4-8 are Backup

There are therefore two Path Groups:

- The first Path Group consisting of paths 1 and 2
- The second Path Group consisting of paths 3-8

## ADAPTIVE TECHNOLOGY

Adaptive Technology allows a Backup communication path programmed to use network or cellular to automatically ADAPT to the faster check-in rate of the Primary path should the Primary path become unavailable. This creates a seamless transition for communication of messages. Select Adapt when programming the Checkin option. This allows a system to be fully supervised even if a path fails, while also keeping wireless charges low when the network is good.

## ADVANCED COMMUNICATION PROGRAMMING

The Advanced Communication section combines options that are not used as often into one area such as Substitution Code and Alarm Reports.

Advanced Communication programming also allows you to split out FIRE Alarm Messages, FIRE Supv/Trbl Messages and Door Access Denied messages and send them to separate receivers.

## UNDERSTANDING PATHS

To help you better understand the flexibility of paths, we have provided several scenarios on the next few pages that show different types of systems and the options programmed to meet the application.

## Scenario One:

### Supervised Network with Adaptive Cellular Backup using one SCS-104 Network Line Card

The following example shows a Primary path programmed for supervised Network (NET) communication with Cellular (CELL) Backup that adapts to the supervision checkin rate of the Primary path when it fails. Both paths are programmed to communicate to the same SCS-104 Network Line Card. By programming both paths to use the same SCS-104, it allows the Substitution Code and Adaptive Checkin messages to switch seamlessly from Primary to Backup.

**Path 1:**

| COMMUNICATION OPTIONS | |
|---|---|
| COMM TYPE | NET |
| PATH TYPE | PRIMARY |
| TEST REPORT | YES |
| TEST FREQUENCY | 1 DAY |
| TEST TIME | 3:45 AM |
| CHECKIN | YES |
| CHECKIN MINUTES | 3 |
| FAIL TIME | 6 |
| ENCRYPT | NO |
| RECEIVER IP | 175.15.10.8 |
| RECEIVER PORT | 2001 |

COMM TYPE NET ← Primary path using Network communication

CHECKIN YES ← Supervises this path

RECEIVER IP 175.15.10.8 ← Address for SCS-104 Network Line Card

| ADVANCED COMMUNICATION OPTIONS | |
|---|---|
| PROTOCOL | TCP |
| RETRY SECONDS | 6 |
| SUB CODE | YES (optional) |
| ALARM REPORTS | YES |
| SUPV/TRBL REPORTS | YES |
| O/C & USER | YES |
| DOOR ACCESS | DENY |
| SEND COMM TRBL | YES |

**Path 2:**

| COMMUNICATION OPTIONS | |
|---|---|
| COMM TYPE | CELL |
| PATH TYPE | BACKUP |
| TEST REPORT | YES |
| TEST FREQUENCY | 1 DAY |
| TEST TIME | 3:45 AM |
| CHECKIN | ADPT |
| ENCRYPT | NO |
| RECEIVER IP | 175.15.10.8 |
| RECEIVER PORT | 2001 |

COMM TYPE CELL ← Adaptive path using Cellular communication

TEST REPORT YES / TEST FREQUENCY 1 DAY / TEST TIME 3:45 AM ← Send daily test report to verify CELL path is good

CHECKIN ADPT ← Adapts to Path 1 check-in rate if Path 1 fails

RECEIVER IP 175.15.10.8 / RECEIVER PORT 2001 ← Same as Path 1 address for SCS-104 Network Line Card

| ADVANCED COMMUNICATION OPTIONS | |
|---|---|
| APN | SECURECOM |
| SUB CODE | SHARED |
| SEND COMM TRBL | YES |

SUB CODE SHARED ← Uses the same substitution code as Path 1

*Path 1 and Path 2 must report to the same SCS-104 Network Line Card*
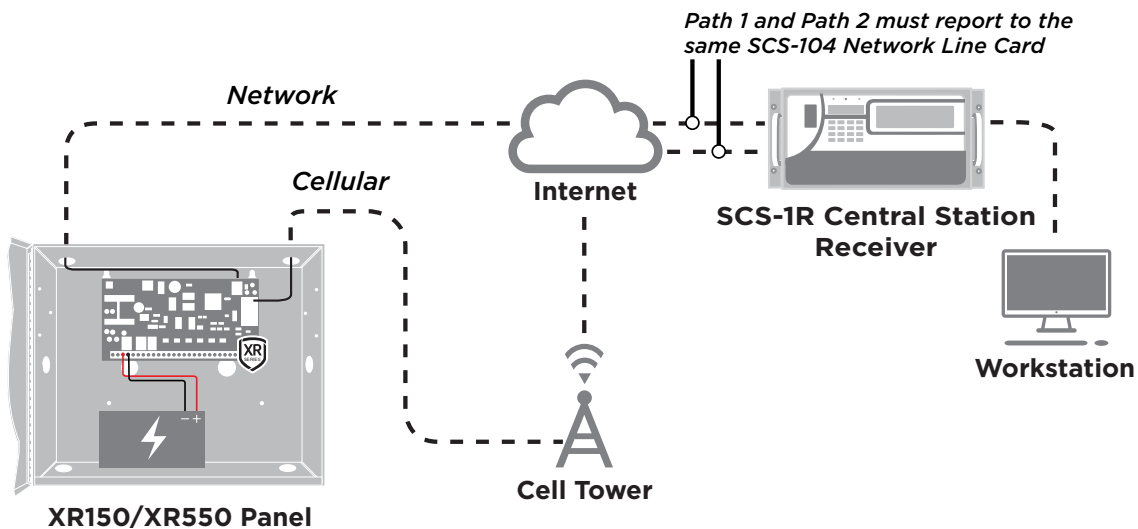


**Figure 3: Scenario 1 with Two Communication Paths to the Same Line Card**

## *Scenario Two*

### Supervised Network with Cellular Backup using Two SCS-104 Network Line Cards

The following example shows a Primary path programmed for supervised Network (NET) communication with Cellular (CELL) Backup. Each path is programmed to communicate to different SCS-104 Network Line Cards in the same SCS-1R Central Station Receiver. By programming the paths to use different SCS-104, Host Automation software should be configured to look for a test report from Path 2 every hour after receiving a Panel Not Responding (S16) message for Path 1.

**Path 1:**

| COMMUNICATION OPTIONS | |
|---|---|
| COMM TYPE | NET |
| PATH TYPE | PRIMARY |
| TEST REPORT | YES |
| TEST FREQUENCY | 1 DAY |
| TEST TIME | 3:45 AM |
| CHECKIN | YES |
| CHECKIN MINUTES | 3 |
| FAIL TIME | 6 |
| ENCRYPT | NO |
| RECEIVER IP | 175.15.10.8 |
| RECEIVER PORT | 2001 |

Primary path using Network communication

Test Report to Automation

Address for SCS-104 Network Line Card

| ADVANCED COMMUNICATION OPTIONS | |
|---|---|
| PROTOCOL | TCP |
| RETRY SECONDS | 6 |
| SUB CODE | YES (optional) |
| SEND COMM TRBL | YES |

**Path 2:**

| COMMUNICATION OPTIONS | |
|---|---|
| COMM TYPE | CELL |
| PATH TYPE | BACKUP |
| TEST REPORT | YES |
| TEST FREQUENCY | 1 DAY |
| TEST TIME | 3:45 AM |
| CHECKIN | NO |
| ENCRYPT | NO |
| RECEIVER IP | 175.15.10.9 |
| RECEIVER PORT | 2001 |

Backup path using Cellular communication

Send daily test report to verify CELL path is good

Checkins are never sent over CELL

Path 2 address for different SCS-104 Network Line Card

| ADVANCED COMMUNICATION OPTIONS | |
|---|---|
| APN | SECURECOM |
| FAIL TEST HOURS | 1 |
| SUB CODE | NO |
| SEND COMM TRBL | YES |

Tests this path hourly if Primary fails

No substitution code used in this scenario

*Path 1 and Path 2 must report to different SCS-104 Network Line Cards*
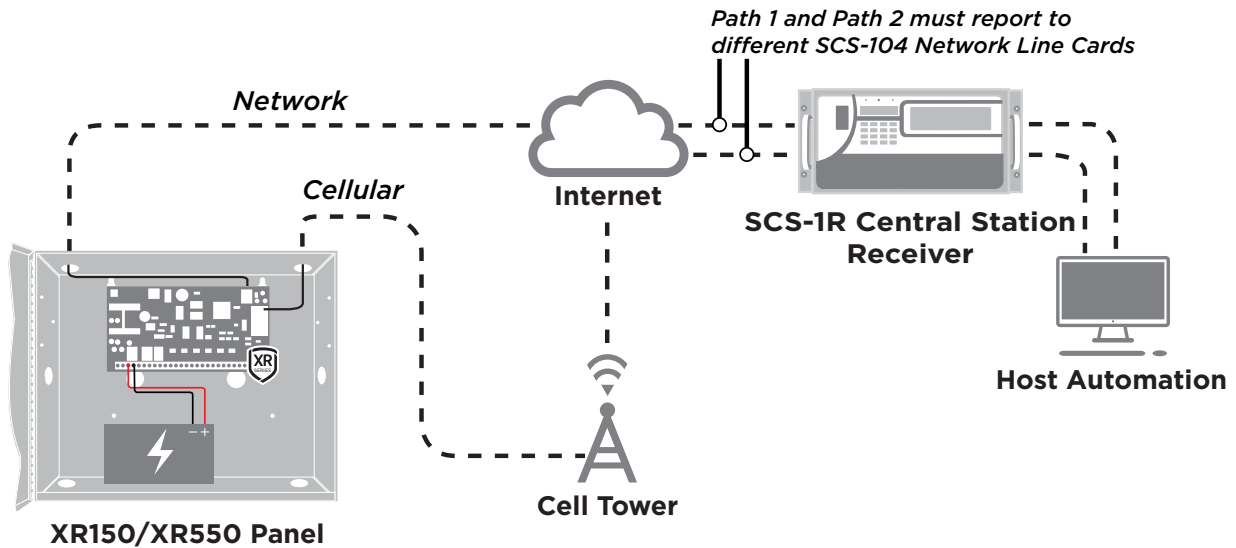


**Figure 4:  Scenario 2 with Two Communication Paths to Two Different Line Cards**

## Scenario Three

**Supervised Network with Cellular Backup using two SCS-1R Central Station Receivers**

The following example shows a Primary path programmed for supervised Network (NET) communication with Cellular (CELL) Backup. Each path is programmed to communicate to SCS-104 Network Line Cards in different SCS-1R Central Station Receivers. By programming the paths to use different SCS-1R Receivers, Host Automation software should be configured to look for a test report from Path 2 (CELL) on the second receiver every hour after receiving a Panel Not Responding (S16) message for Path 1 on the first receiver.

**Path 1:**

| COMMUNICATION OPTIONS | | ADVANCED COMMUNICATION OPTIONS | |
|---|---|---|---|
| COMM TYPE | NET | PROTOCOL | TCP |
| PATH TYPE | PRIMARY | RETRY SECONDS | 6 |
| TEST REPORT | YES | SUB CODE | NO |
| TEST FREQUENCY | 1 DAY | SEND COMM TRBL | YES |
| TEST TIME | 3:45 AM | | |
| CHECKIN | YES | | |
| CHECKIN MINUTES | 3 | | |
| FAIL TIME | 6 | | |
| ENCRYPT | NO | | |
| RECEIVER IP | 175.15.10.8 | | |
| RECEIVER PORT | 2001 | | |

*Primary path using Network communication*

*Address for first SCS-1R Central Station Receiver*

**Path 2:**

| COMMUNICATION OPTIONS | | ADVANCED COMMUNICATION OPTIONS | |
|---|---|---|---|
| COMM TYPE | CELL | APN | SECURECOM |
| PATH TYPE | BACKUP | FAIL TEST HOURS | 1 |
| TEST REPORT | YES | SUB CODE | NO |
| TEST FREQUENCY | 1 | SEND COMM TRBL | YES |
| TEST TIME | 3:45 AM | | |
| CHECKIN | NO | | |
| ENCRYPT | NO | | |
| RECEIVER IP | 209.148.52.12 | | |
| RECEIVER PORT | 2001 | | |

*Backup path using Cellular communication*

*Send daily test report to verify CELL path is good*

*Checkins are never sent over CELL*

*Address for second SCS-1R Central Station Receiver*

*Tests this path hourly if Primary fails*

*No substitution code used in this scenario*
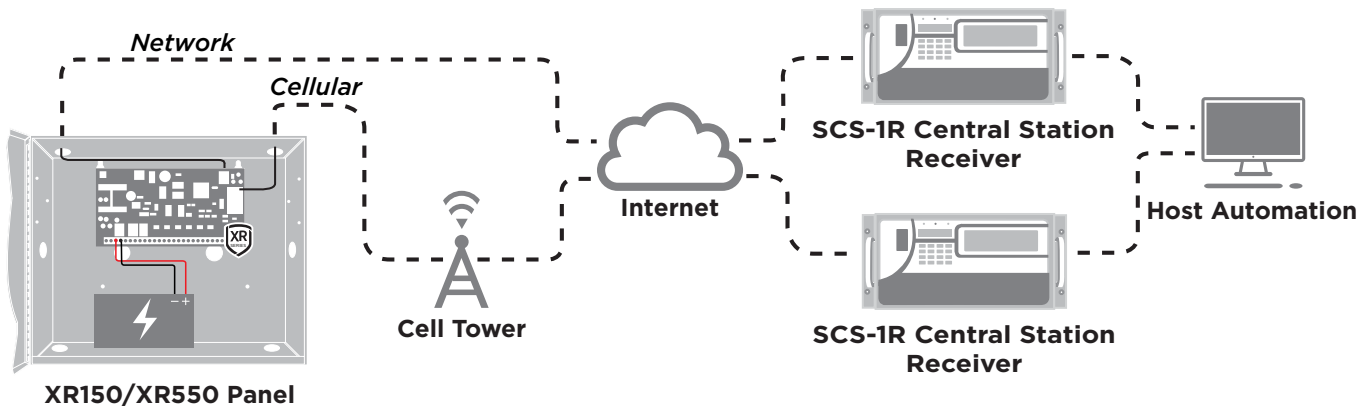


**Figure 5: Scenario 3 with Two Communication Paths to Two Receivers**

## *Scenario Four*

**Supervised Network with Dual Supervised Primary Paths**

The following example shows two Primary paths programmed for supervised Network (NET) communication. The second path has Digital Dialer (DD) backup. Each Primary path is programmed to communicate to SCS-104 Network Line Cards in different SCS-1R Central Station Receivers.

**Path 1:**

| COMMUNICATION OPTIONS | | ADVANCED COMMUNICATION OPTIONS | |
|---|---|---|---|
| COMM TYPE | NET | PROTOCOL | TCP |
| PATH TYPE | PRIMARY | RETRY SECONDS | 6 |
| TEST REPORT | YES | SUB CODE | YES (optional) |
| TEST FREQUENCY | 1 DAY | ALARM REPORTS | YES |
| TEST TIME | 3:45 AM | SUPV/TRBL REPORTS | YES |
| CHECKIN | YES | O/C & USER | YES |
| CHECKIN MINUTES | 3 | DOOR ACCESS | NO |
| FAIL TIME | 6 | SEND COMM TRBL | YES |
| ENCRYPT | NO | | |
| RECEIVER IP | 175.16.10.5 | | |
| RECEIVER PORT | 2001 | | |

COMM TYPE NET — *Primary path using Network communication*

RECEIVER IP 175.16.10.5 — *Address for first SCS-1R Central Station Receiver*

**Path 2:**

| COMMUNICATION OPTIONS | | ADVANCED COMMUNICATION OPTIONS | |
|---|---|---|---|
| COMM TYPE | NET | PROTOCOL | TCP |
| PATH TYPE | PRIMARY | RETRY SECONDS | 6 |
| TEST REPORT | YES | SUB CODE | YES (optional) |
| TEST FREQUENCY | 1 DAY | ALARM REPORTS | YES |
| TEST TIME | 3:45 AM | SUPV/TRBL REPORTS | YES |
| CHECKIN | YES | O/C & USER | YES |
| CHECKIN MINUTES | 3 | DOOR ACCESS | NO |
| FAIL TIME | 6 | SEND COMM TRBL | YES |
| ENCRYPT | NO | | |
| RECEIVER IP | 209.143.26.7 | | |
| RECEIVER PORT | 2001 | | |

COMM TYPE NET — *Duplicate Primary path using Network communication*

CHECKIN YES — *Supervises second path*

RECEIVER IP 209.143.26.7 — *Address for second SCS-1R Central Station Receiver*

**Path 3:**

| COMMUNICATION OPTIONS | | ADVANCED COMMUNICATION OPTIONS | |
|---|---|---|---|
| COMM TYPE | DD | FAIL TEST HOURS | 1 |
| PATH TYPE | BACKUP | 893A | NO |
| TEST REPORT | YES | ALARM SWITCHOVER | NO |
| TEST FREQUENCY | 1 DAY | DUPLICATE ALARMS | NO |
| TEST TIME | 3:45 AM | SEND COMM TRBL | YES |
| 1ST PHONE NUMBER | 800-555-1212 | | |
| 2ND PHONE NUMBER | 868-2122 | | |

COMM TYPE DD — *Backup path using Digital Dialer communication*

893A NO — *One phone line used*

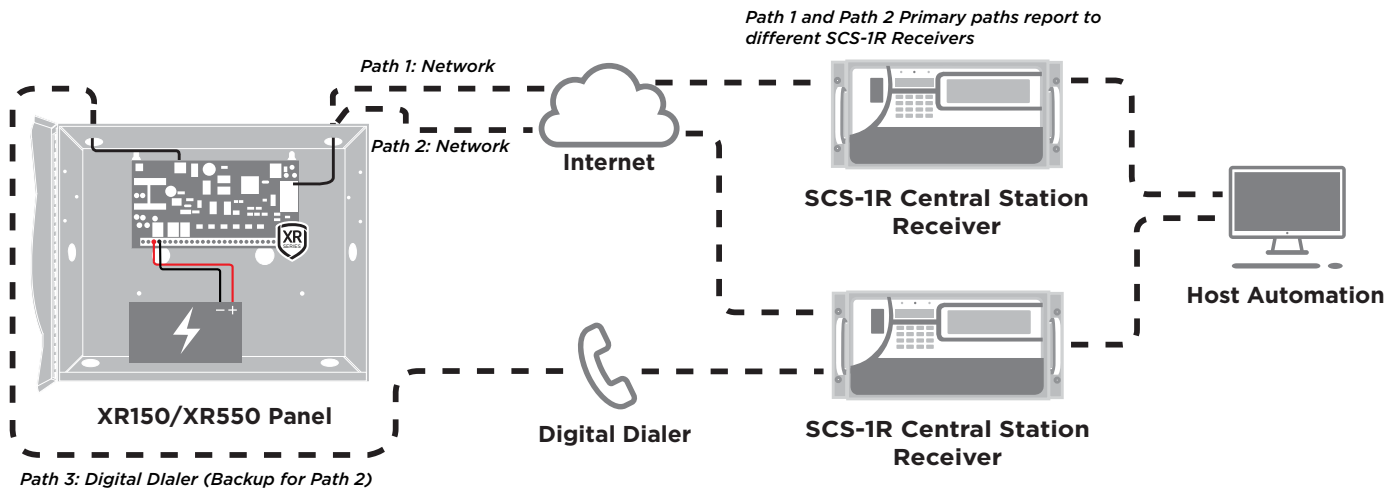1ST PHONE NUMBER 800-555-1212 — *Phone numbers for SCS-1R Central Station Receiver*

**Figure 6: Scenario 4 with Three Communication Paths**

## *Scenario Five*

### Basic Dialer Panel

The following example shows a Primary path programmed for supervised Digital Dialer (DD) communication with an 893A. The path is programmed to communicate to the same SCS-1R Central Station Receiver using two different phone lines. By programming the path to use DD, the panel dials the 1st phone number two times, then dials the second phone number two times. The panel continues to alternate between the two programmed phone numbers until the ten dialed attempts have been made.

**Path 1:**

| COMMUNICATION OPTIONS | |
|---|---|
| COMM TYPE | DD |
| PATH TYPE | PRIMARY |
| TEST REPORT | YES |
| TEST FREQUENCY | 1 DAY |
| TEST TIME | 3:45 AM |
| 1ST PHONE NUMBER | 800-555-1212 |
| 2ND PHONE NUMBER | 838-2122 |

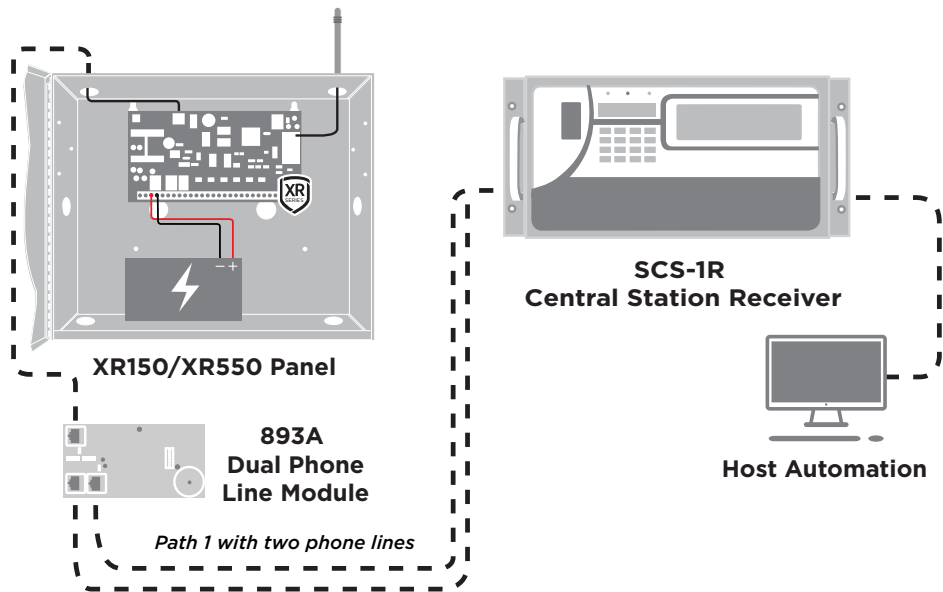| ADVANCED COMMUNICATION OPTIONS | |
|---|---|
| 893A | YES |
| ALARM REPORTS | YES |
| SUPV/TRBL REPORTS | YES |
| O/C & USER | YES |
| DOOR ACCESS | DENY |
| SEND COMM TRBL | YES |

893A used for two phone lines



**Figure 7: Scenario 5 with Dual Phone Line Module**

## *Scenario Six*

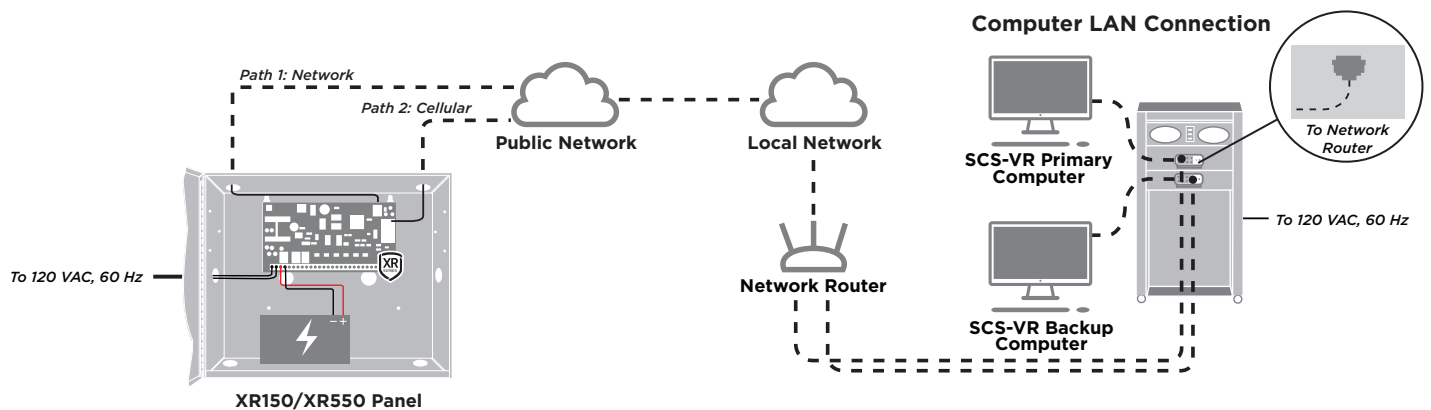### Supervised Network with Adaptive Cellular Backup using SCS-VR Virtual Receiver

The following example shows a Primary path programmed for supervised Network (NET) communication with Cellular (CELL) Backup that adapts to the supervision checkin rate of the Primary path when it fails. Both paths are programmed to communicate to the consist of two completely duplicated computers running SCS-VR and designated as SCS-VR Primary and SCS-VR Backup.

**Path 1:**

| COMMUNICATION OPTIONS | |
|---|---|
| COMM TYPE | NET |
| PATH TYPE | PRIMARY |
| TEST REPORT | YES |
| TEST FREQUENCY | 1 DAY |
| TEST TIME | 3:45 AM |
| CHECKIN | YES |
| CHECKIN MINUTES | 3 |
| FAIL TIME | 6 |
| ENCRYPT | NO |
| RECEIVER IP | 175.15.10.8 |
| RECEIVER PORT | 2001 |

Primary path using Network communication

Supervises this path

Address for SCS-VR

| ADVANCED COMMUNICATION OPTIONS | |
|---|---|
| PROTOCOL | TCP |
| RETRY SECONDS | 6 |
| SUB CODE | YES (optional) |
| ALARM REPORTS | YES |
| SUPV/TRBL REPORTS | YES |
| O/C & USER | YES |
| DOOR ACCESS | DENY |
| SEND COMM TRBL | YES |

**Path 2:**

| COMMUNICATION OPTIONS | |
|---|---|
| COMM TYPE | CELL |
| PATH TYPE | BACKUP |
| TEST REPORT | YES |
| TEST FREQUENCY | 1 DAY |
| TEST TIME | 3:45 AM |
| CHECKIN | ADPT |
| ENCRYPT | NO |
| RECEIVER IP | 175.15.10.8 |
| RECEIVER PORT | 2001 |

Adaptive path using Cellular communication

Send daily test report to verify CELL path is good

Adapts to Path 1 check-in rate if Path 1 fails

Same as Path 1 address for SCS-VR

| ADVANCED COMMUNICATION OPTIONS | |
|---|---|
| APN | SECURECOM |
| SUB CODE | SHARED |
| SEND COMM TRBL | YES |

Uses the same substitution code as Path 1

**Computer LAN Connection**

Path 1: Network

Path 2: Cellular

**Public Network**

**Local Network**

SCS-VR Primary Computer

To Network Router

To 120 VAC, 60 Hz

To 120 VAC, 60 Hz

**Network Router**

SCS-VR Backup Computer

**XR150/XR550 Panel**

# COMMUNICATION PATH MESSAGES EXPLAINED

Below are examples of the DMP communication path messages that XT Series and XR Series panels send, as well as the message definitions and how they are supposed to be interpreted by the central station/automation.

## S07 Automatic Recall Test OK

This indicates that the panel is communicating properly. It is an automatic communication test message sent at the Test Time programmed in Communications for the path. Examples:

- 31 12345 Zs\040\t 007\**c 01"LP**\bc103\es042\ee"NO\<CR>
- 31 12345 Zs\040\t 007\**c 02"LP**\bc103\es042\ee"NO\<CR>

## S88 Automatic Recall Test (Unrestored System)

This message is sent in place of the S07 message. It indicates that the panel has detected that one of its circuits has not restored to normal at the time the automatic recall test is generated. The possible circuits are: Unrestored 24-Hour Zones, AC Power, Standby Battery, and Communication Paths. Examples:

- 31 12345 Zs\040\t 088\**c 01"LP**\bc101\es042\ee"NO\<CR>
- 31 12345 Zs\040\t 088\**c 02"LP**\bc101\es042\ee"NO\<CR>

## S72 Warning: Network or Communication Path Trouble

The panel hasn't received a proper acknowledgement from the central station receiver. This message is transmitted if it is a failure to communicate over dialer, cellular, or network as either the main or backup communication. Examples:

- 31 12345 Zs\040\t 072\**cf02"LP**\bc083\es042\ee"NO\<CR>
- 31 12345 Zs\040\t 072\**cf01"LP**\bc077\es042\ee"NO\<CR>

## S73 Network or Communication Path Restored

The panel has received a proper acknowledgment from the central station receiver. This message is a restoral for S72. Examples:

- 31 12345 Zs\040\t 073\**cf02"LP**\bc101\es042\ee"NO\<CR>
- 31 12345 Zs\040\t 073\**cf01"LP**\bc061\es042\ee"NO\<CR>

The path information sub-message is highlighted in each of the strings above. This is important to note because the message will indicate if it is a Cell, Digital Dialer, Wi-Fi, Network, or Contact ID Trouble. S72/S73 should not be interpreted as "Network Trouble" or "Network Restore" unless the string contains an N.

See character explanations on the following page.

## XR Series Panels

| | |
|---|---|
| **c with a space** before the 01/02 | indicates that the message was sent on the receiver number that follows |
| **cf** | indicates the event occurred on the receiver number that follows |
| **01-08** | Communication Path number |
| **L** | Cell |
| **N** | Network |
| **W** | Wi-Fi |
| **D** | Digital Dialer |
| **C** | Contact ID |
| **P** | Primary |
| **B** | Backup |
| **bc** | Cell Signal Strength |

Whereas this document is specific to the XR 150/550 panels, here are the panel communication options for the XT Series panels.

## XT Series Panels

| | |
|---|---|
| **c with a space** before the 01/02 | indicates that the message was sent on the receiver number that follows |
| **cf** | indicates the event occurred on the receiver number that follows |
| **01** | Receiver 1 |
| **02** | Receiver 2 |
| **L** | Cell |
| **N** | Network |
| **W** | Wi-Fi |
| **D** | Digital Dialer |
| **P** | First IP / Phone number |
| **B** | Second IP / Phone number |
| **bc** | Cell Signal Strength |

Here's what it would look like if a communication trouble were received on a Wi-Fi path:

- 31 12345 Zs\028\t 072\**c 01"WP**\ee"NO\<CR>