



R2 Signaling Examples

This chapter provides examples of R2 signaling performed with the following:

- Impulse rules
- Outpulse rules
- Host commands and reports

Two examples discuss R2 digit collections on incoming trunks (calls coming into the VCO system); a third example describes R2 digit outpulsing on outgoing trunks (calls originating at the VCO system). Each example begins with a brief explanation of the scenario, followed by a graphic representation of the call flow. These diagrams illustrate system processing and information flow between the VCO and host, and between the VCO and connected equipment (network registers). Direction of the information flow is indicated by arrows under the message data.

Example #1 — Incoming Call Using Impulse Rules

Example #1 illustrates a simple R2 digit collection scenario after an incoming seize on the VCO E1 circuit at port address \$00 61. A default impulse rule is executed to perform R2 digit collection on this circuit.

The impulse rule performs the following general tasks:

- Collects the first three called party number digits and stores them in Field 1. A-1 (send next digit) signals prompt the network register for each new digit. When the third digit is received, the VCO sends an A-6 (send calling party digits).
- Collects the Group II signal and calling party's number and stores it in the Field 2. C-1 signals (send calling party's number) prompt the network register number) digit. When an I-15 digit is received, the VCO sends a C-5 (send called party number) digit.
- Collects the remaining called party number digits and stores them in Field 3. A-1 (send next digit) signals prompt the network register for each new digit. When I-15 digit is received, an A-3 (send category) digit is sent.
- Collects the Category signal (1 digit) and stores it in Field 4. After the Category signal is collected, the VCO sends a B-1 (set up speech conditions) digit.

At the end of this example, the VCO establishes speech conditions with the connected equipment (network register) and generates an Impulse Rule Complete (\$DD) report to the host. The processing flow for this example is shown in Figure 4-1. In this example, it is assumed that the default impulse rule for the incoming circuit has been defined as impulse rule #1 (shown below).

RULE #1

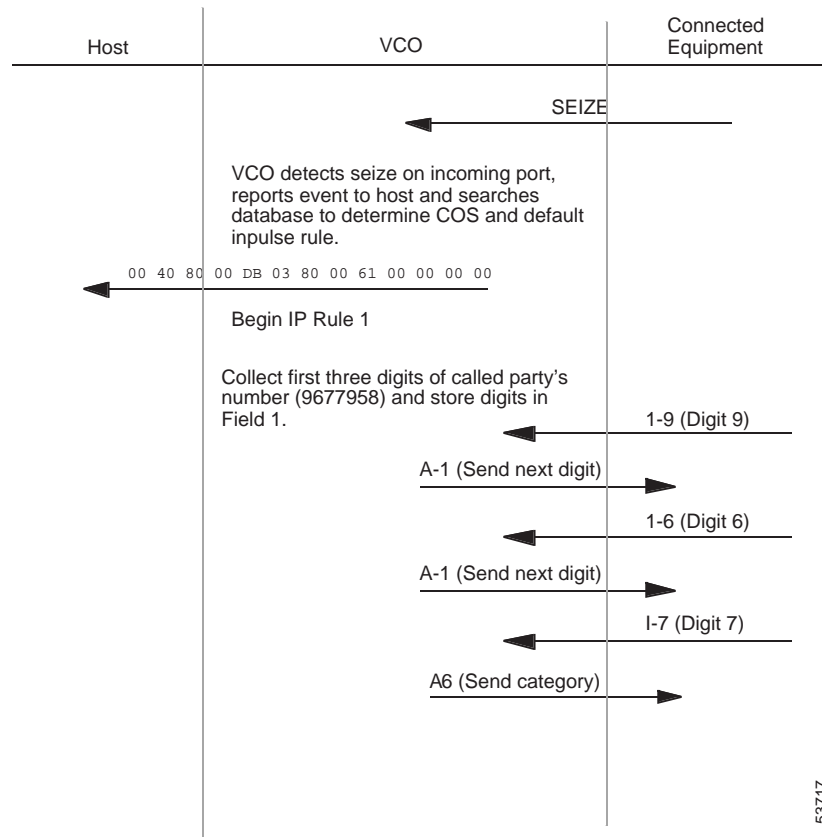
- REP EACH
- MFCR2
- END CHAR 6
- CLR CHAR 1
- DIGITS 3
- IP FIELD 1
- END CHAR 1
- CLR CHAR 1
- DIGITS 1
- IP FIELD 2
- END CHAR 1
- CLR CHAR 5
- IP ANI 0
- CLR CHAR 1
- END CHAR 3
- DIGITS 0
- IP FIELD 3
- END CHAR 1
- CLR CHAR 1

- DIGITS 1
- IP FIELD 4

Refer to the *Cisco VCO/4K System Administrator's Guide* for more information about specific MFCR2 inpulse rule tokens.

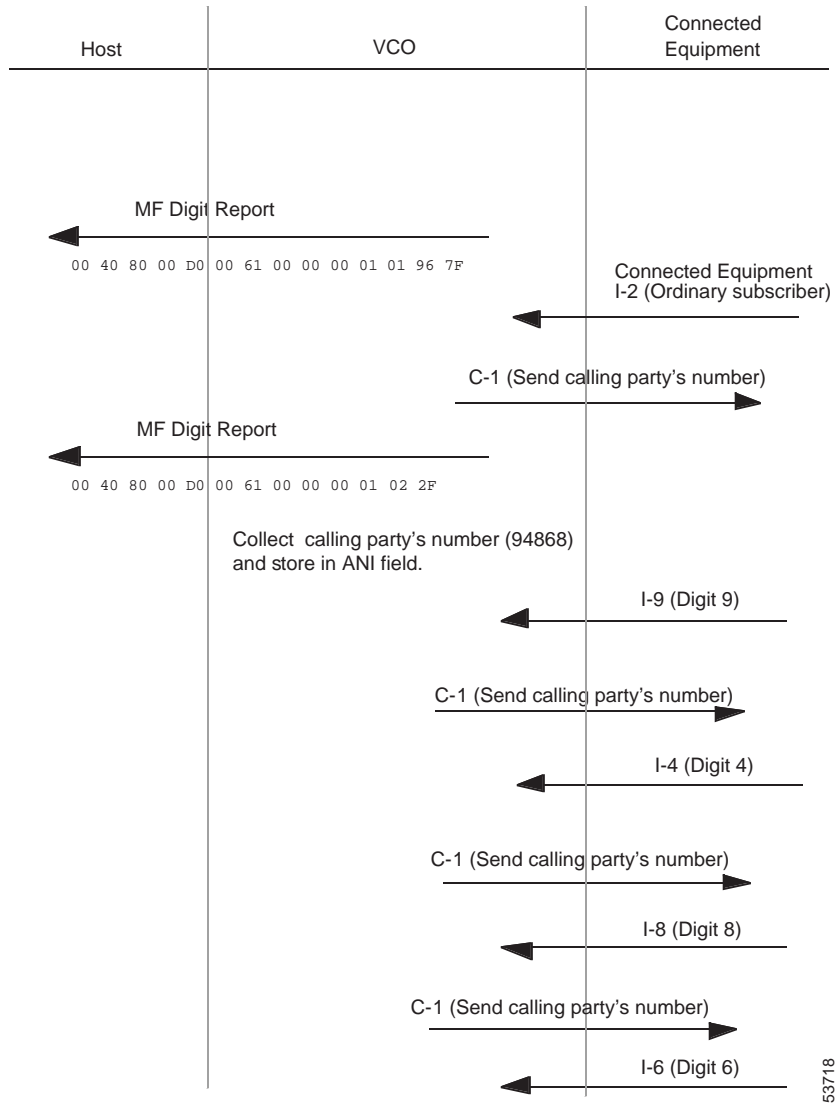
Once the \$DD report is generated, the inpulse rule collects the remaining called party number digits and stores them in Field 3. A-1 (send next digit) signals prompt the network register for each new digit. When an I-15 digit is received, an A-3 (send category) digit is sent.

Figure 4-1 Processing Flow for Example #1



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Figure 4-2 Processing Flow for Example #1



Example #2 — Incoming Call Using \$68 Host Command

Example #2 also illustrates a simple R2 digit collection scenario on an incoming E1 circuit (port address \$00 61). However, all R2 digit collections in this scenario are initiated by host command; no impulse rule processing is used. Three MF Collection Control (\$68) commands perform the following actions:

- Collect the first three digits of called party number digits until I-15 digit is received, then send an A-6 to get the Group II signal.
- Collect the Group II signal followed by an unspecified number of calling party's digits until the I-15 digit is received by sending back A-1, then send back C-5.
- Collect an unspecified number of called party's number digits until I-15 digit is received, then send an A-3 to get the Group II signal.
- Collect the Group II signal tone, then send a B-1 (set up speech conditions) digit.

An MF Digit (\$D0) report reports each digit collection to the host.

At the end of this example, the VCO establishes speech conditions with the connected equipment (network register). The processing flow for this example is shown in Figure 4-4.

Refer to the *Cisco VCO/4K Standard Programming Reference* and the *Cisco VCO/4K Extended Programming Reference* for more information about the \$68 command and the \$D0 report.

Figure 4-4 Processing Flow for Example #2

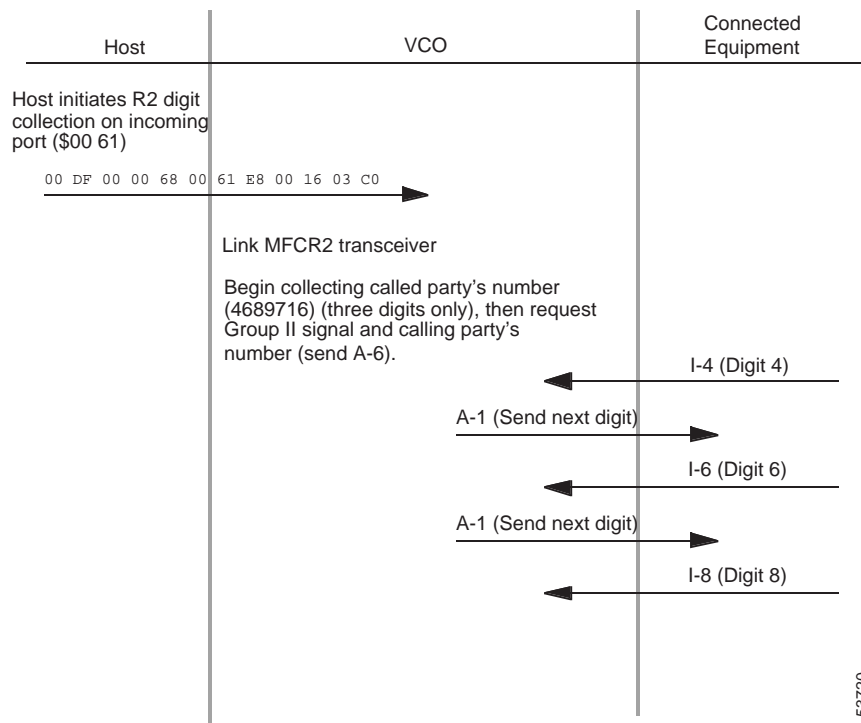


Figure 4-5 Processing Flow for Example #2

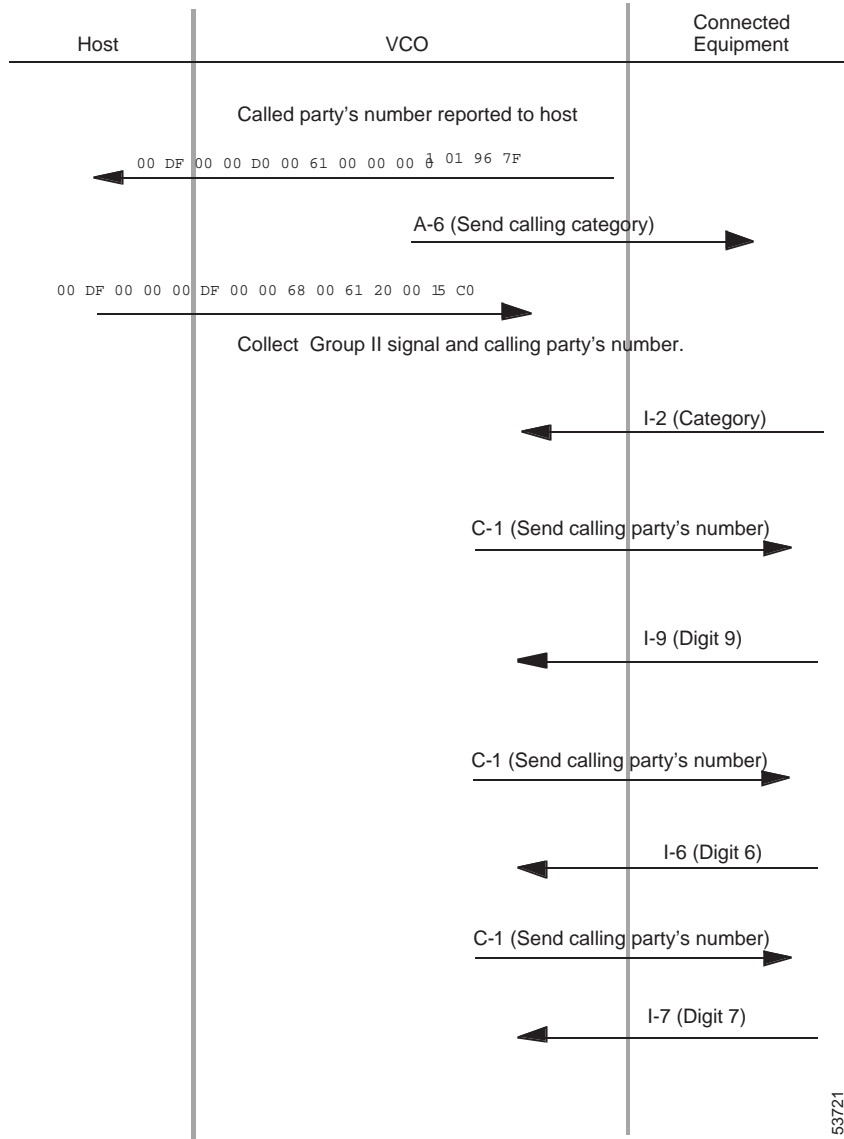


Figure 4-6 Processing Flow for Example #2

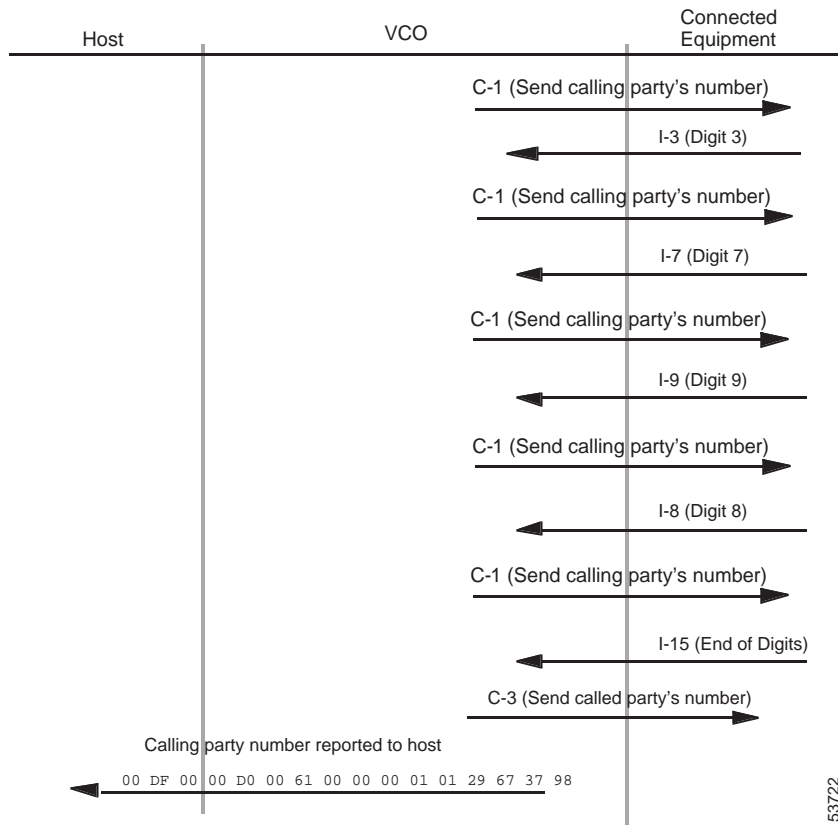
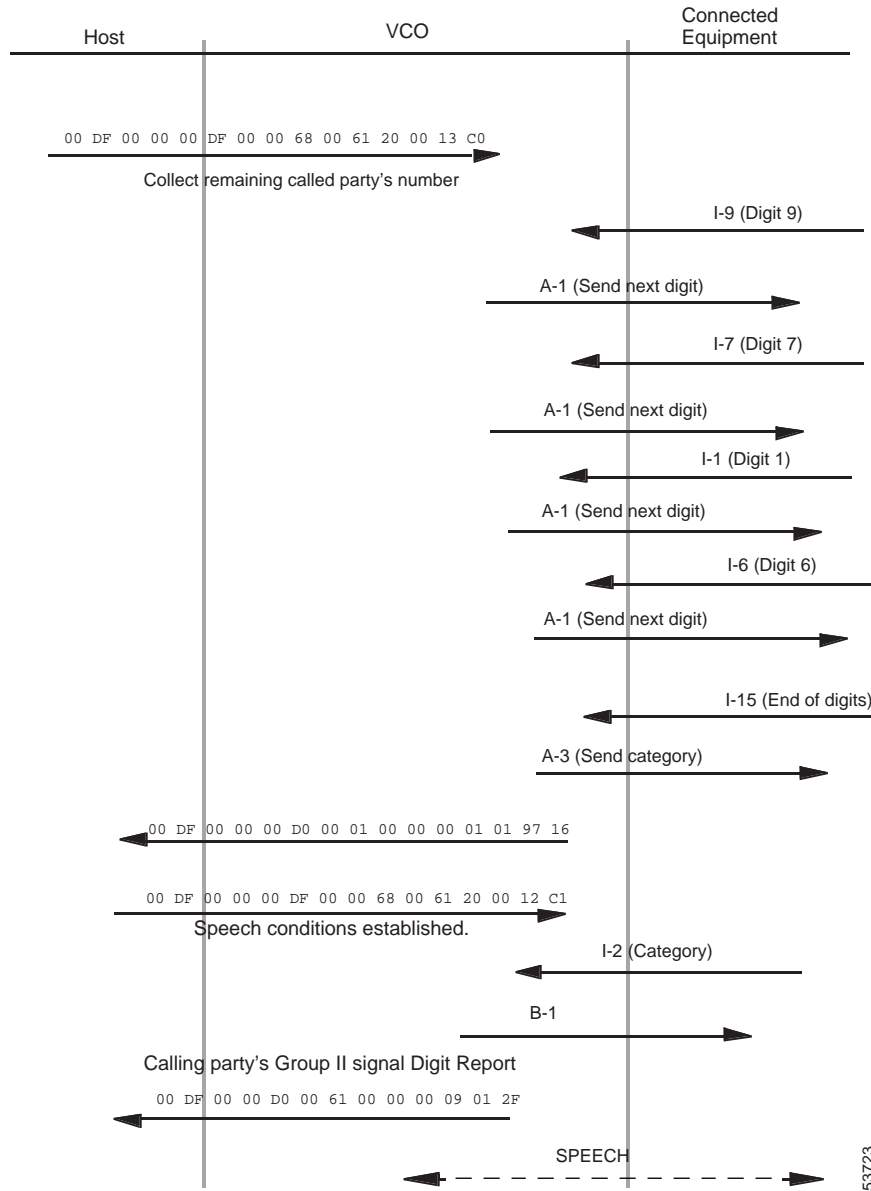


Figure 4-7 Processing Flow for Example #2



Example #3 — Outgoing Call

Example #3 describes R2 digit outpulsing on an E1 circuit at port address \$00 40. This scenario involves both host command and outpulse rule processing. The host initiates the outpulsing using an Outgoing Port Control (\$69) command that populates the digit fields and specifies the outpulse rule to execute (refer to the *Cisco VCO/4K Programming Reference* and *Cisco VCO/4K Extended Programming Reference* for a command description).

The outpulse rule performs the following actions:

- Seizes out on the E1 trunk at port address \$00 40 and waits for a wink signal (executing the WAIT SUP W preconfigured answer supervision template documented in the *Cisco VCO/4K System Administrator's Guide*).
- Outpulses five digits of the called party number (stored in Field 1) after wink signal is detected. The VCO responds to A-1 (send next digit) signals that request each new digit.
- Outpulses the Group II signal and calling party's number stored in the ANI field when an A-6 digit is received.
- Outpulses the Group II signal digit specified in the rules OP CAT token in response to an A-3.

This rule is shown below.

RULE #1

- REP END
- SEIZE
- WAIT SUP W
- OP MFCR2
- OP ANI
- OP CAT 6
- OP FIELD 1

At the end of this example, the VCO establishes speech conditions with the connected equipment (network register) and generates an Outgoing Port Change of State (\$DA) report to the host indicating the final backward digit. The processing flow for this example is shown in Figure 4-8.

Refer to the *Cisco VCO/4K System Administrator's Guide* for more information about OP MFCR2, OP ANI, OP FIELD [xx], and OP CAT [xx] outpulse rule tokens.

Figure 4-8 Processing Flow for Example #3

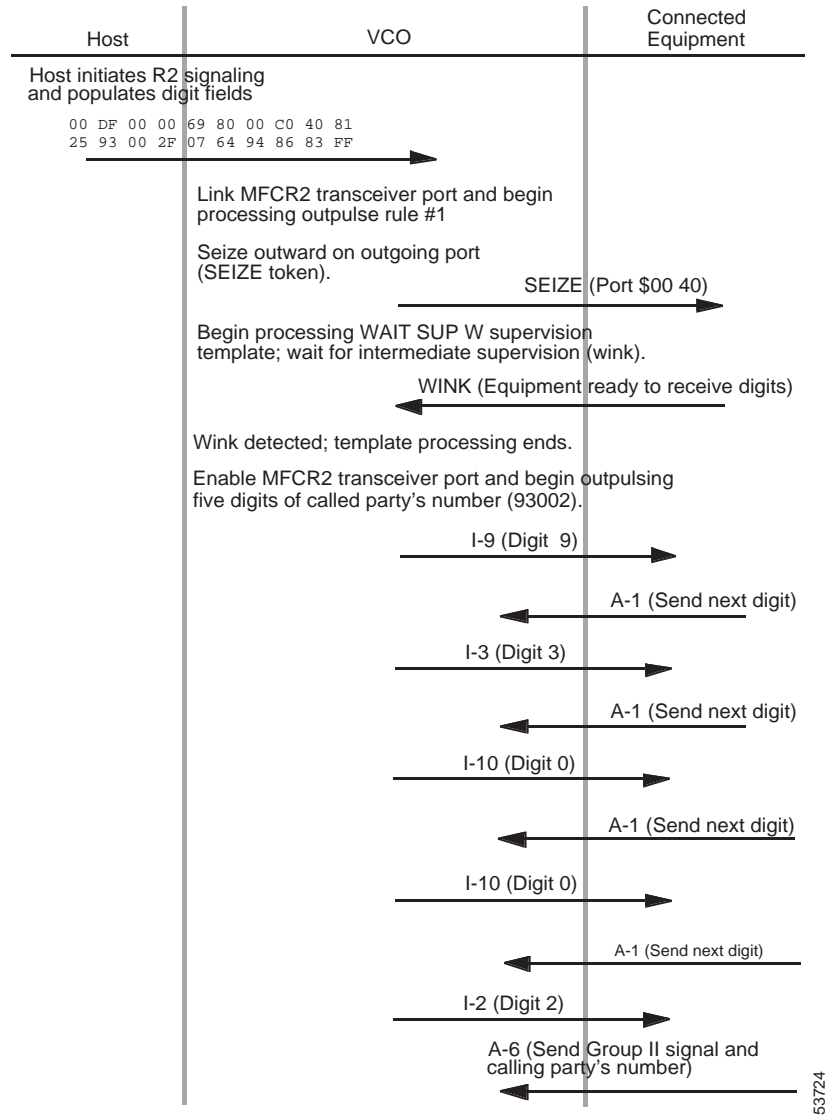


Figure 4-9 Processing Flow for Example #3

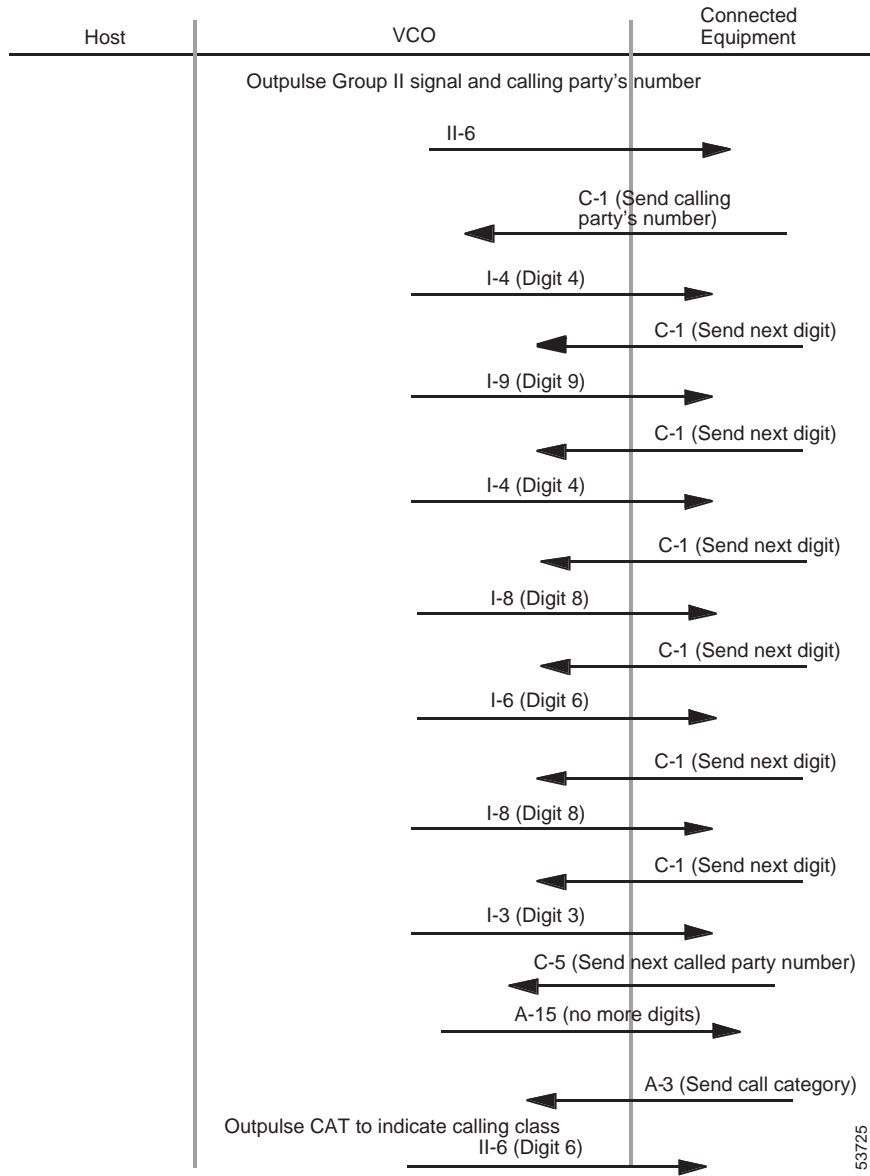


Figure 4-10 Processing Flow for Example #3

