



## R2 Signaling Examples

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The examples in this chapter provide demonstrations of R2 signaling that use the following call control elements:

- Inpulse rules
- Outpulse rules
- Host commands and reports

Two examples discuss R2 digit collections on incoming trunks (calls coming into the VCO); a third example describes R2 digit outpulsing on outgoing trunks (calls originating at the VCO). 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 Inpulse 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 inpulse rule is executed to perform R2 digit collection on this circuit.

The inpulse rule performs the following tasks:

- Collects an unspecified number of called party number digits and stores it in Field 1. A-1 (send next digit) signals prompt the network register for each new digit. When an I-15 digit is received, the VCO sends an A-5 (send calling category) digit.
- Collects the calling party category (1 digit) and stores it in Field 2. After the digit is received, the VCO sends another A-9 (send calling subscriber's identity) digit.
- Collects the calling party number (7 digits) and stores it in the ANI field. A-9 (send calling subscriber's identity) signals prompt the network register for each new digit. When an I-15 digit is received, the VCO sends an A-6 (set up speech conditions) digit.

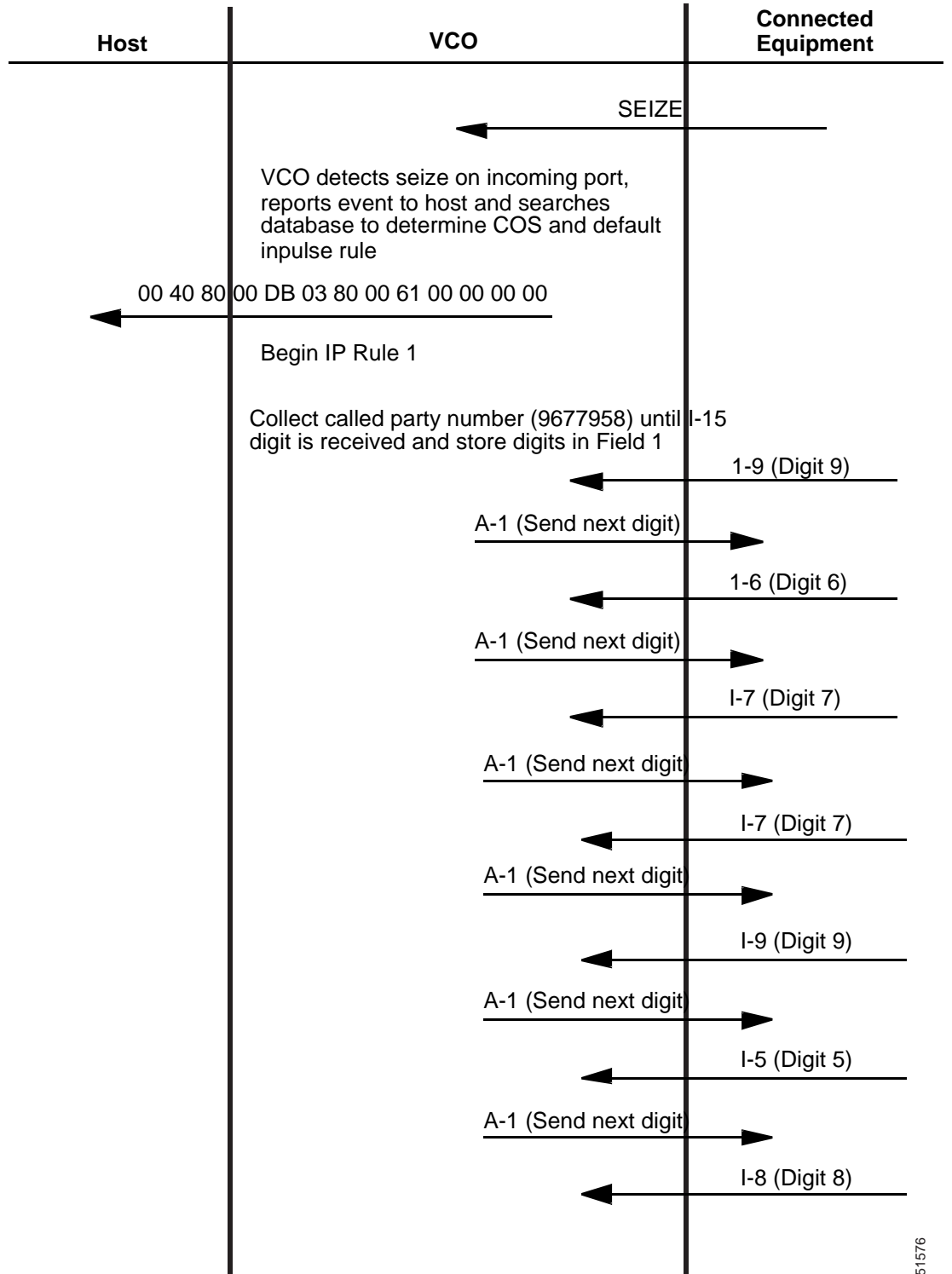
At the end of this example, the VCO establishes speech conditions with the connected equipment (network register) and generates an Impulse Rule Complete (\$DD) report to the host. The processing flow for this example is shown in Figure 4-1, Figure 4-2, and Figure 4-3. In this example, the default impulse rule for the incoming circuit was defined as Impulse Rule #1 (shown below).

**Impulse Rule #1**

- REP EACH
- MFCR2
- END CHAR1 5
- CLR CHAR1 1
- DIGITS 0
- IP FIELD
- END CHAR1 9
- CLR CHAR1 5
- DIGITS 1
- IP FIELD 2
- END CHAR1 6
- CLR CHAR1 9
- IP ANI 12

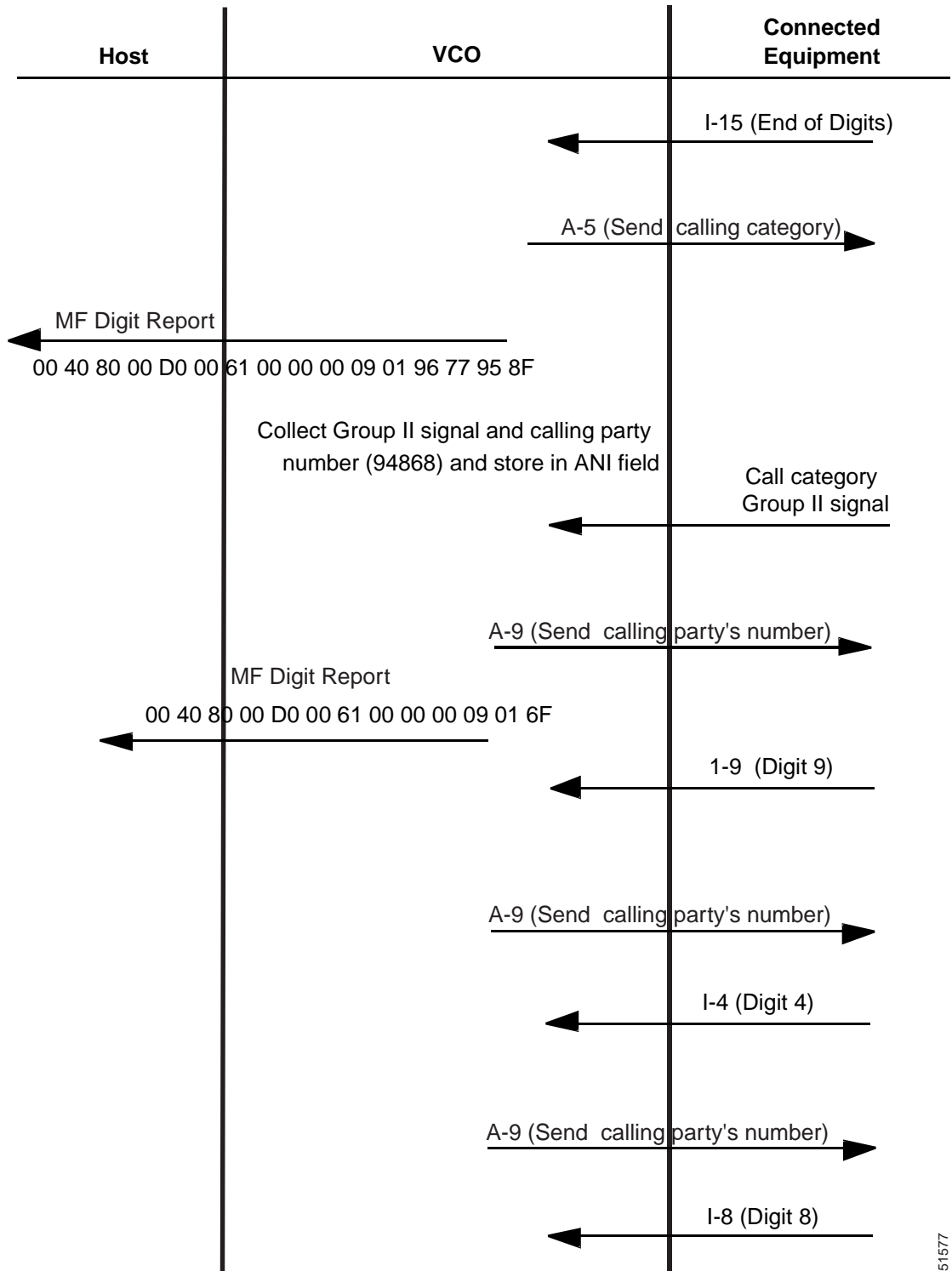
Refer to the *Cisco VCO/4K System Administrator's Guide* for more information about specific MFCR2 impulse rule tokens.

Figure 4-1 Example 1 Call Flow (Part 1 of 3)



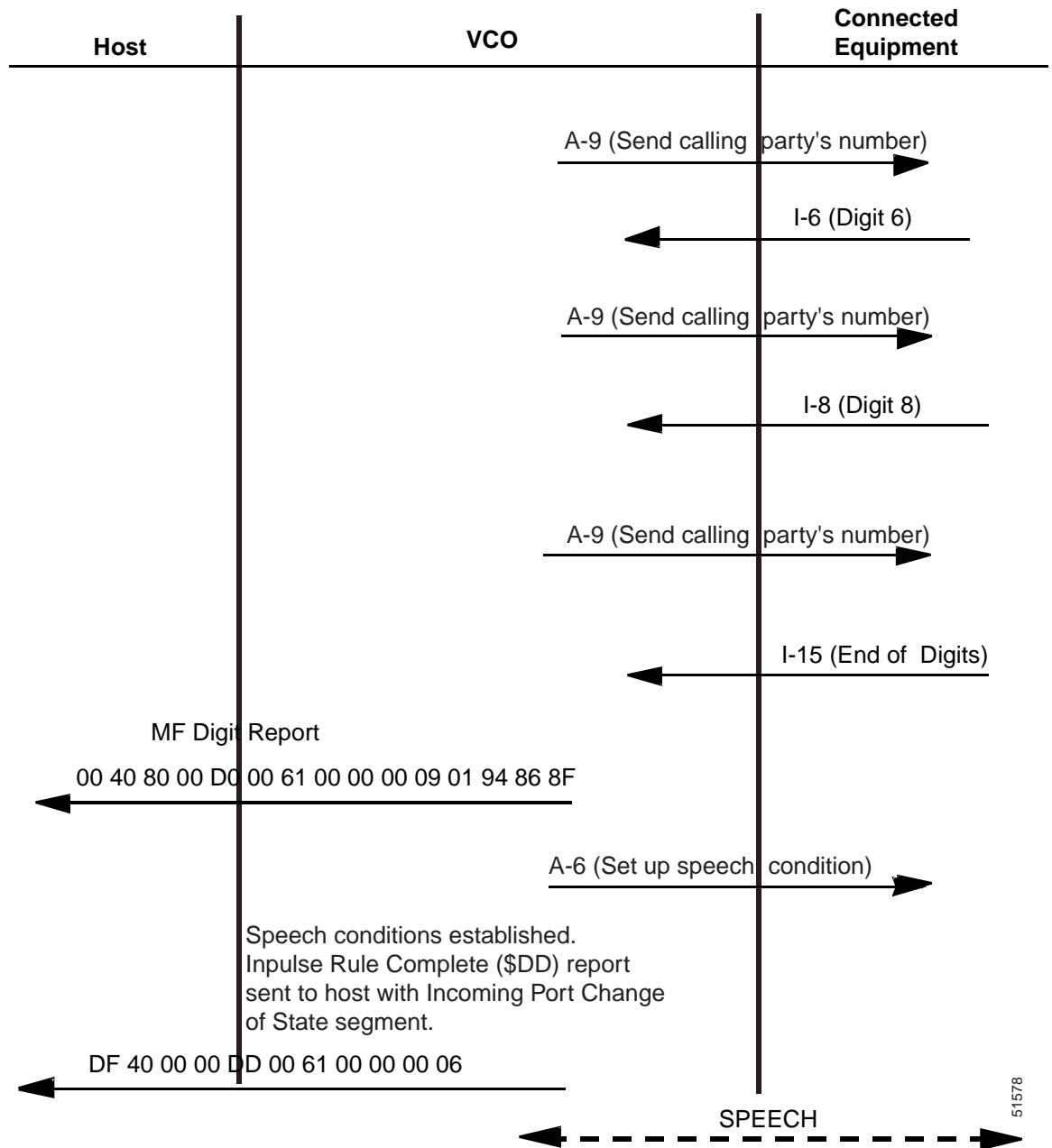
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Figure 4-2 Example 1 Call Flow (Part 2 of 3)



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Figure 4-3 Example 1 Call Flow (Part 3 of 3)



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

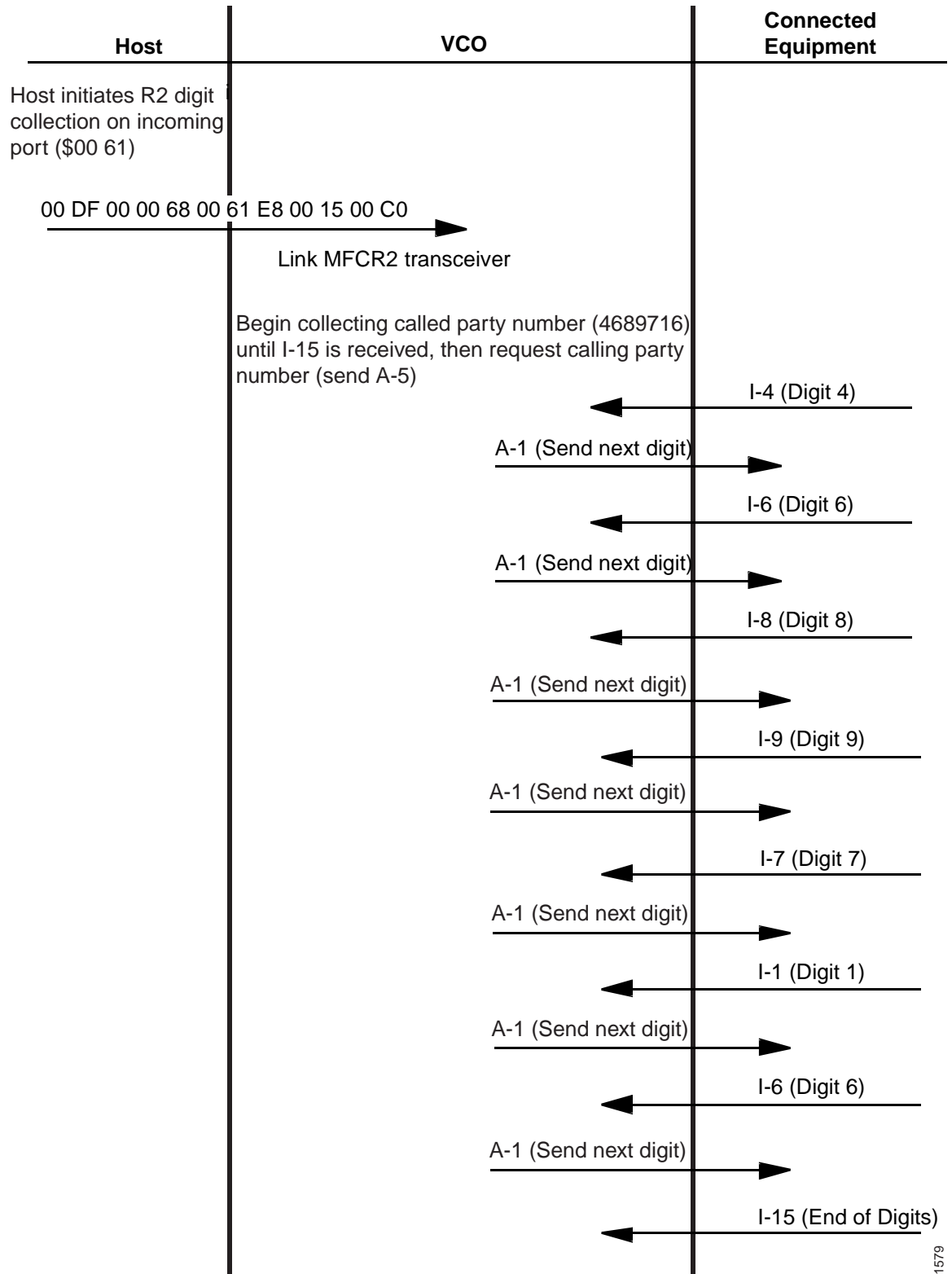
Example 2 also illustrates a simple R2 digit collection scenario on an incoming E1 circuit (port address \$00 61). However, all R2 digit collections in this scenario are initiated by host command; no impulse rule processing is used. Three MF Collection Control (\$68) commands perform the following actions:

- Collects an unspecified number of called party number digits until I-15 digit is received, then sends an A-5 (send calling category) digit.
- Collects the calling party category (1 digit) and then requests the calling subscriber's identity by sending another A-9 (send calling party's number) digit.
- Collects an unspecified number of calling party number digits until I-15 digit is received, then sends an A-6 (set up speech conditions) digit.

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

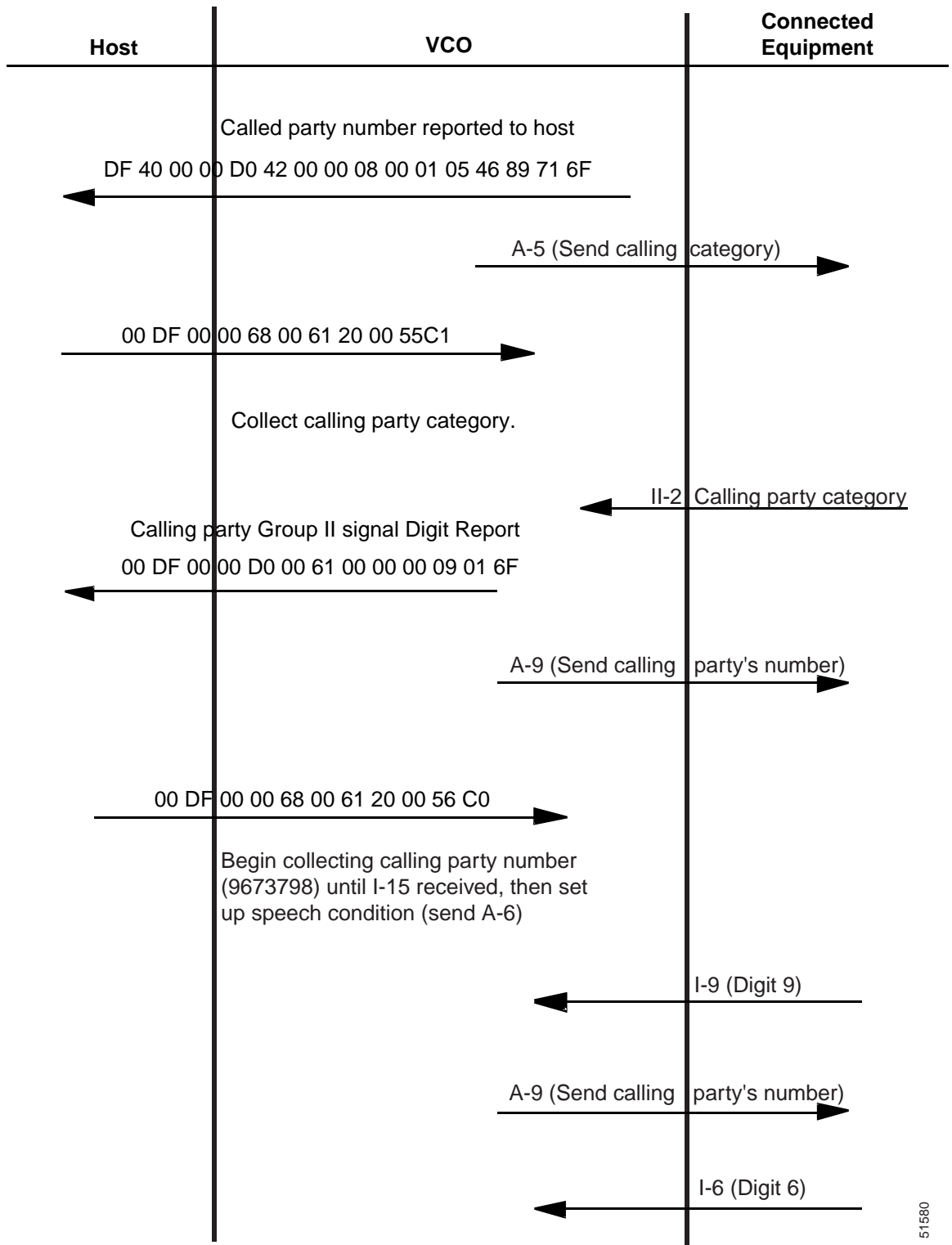
At the end of this example, the VCO establishes speech conditions with the connected equipment (network register). The processing flow for this example is shown in Figure 4-4, Figure 4-5, and Figure 4-6.

Figure 4-4 Example 2 Call Flow (Part 1 of 3)



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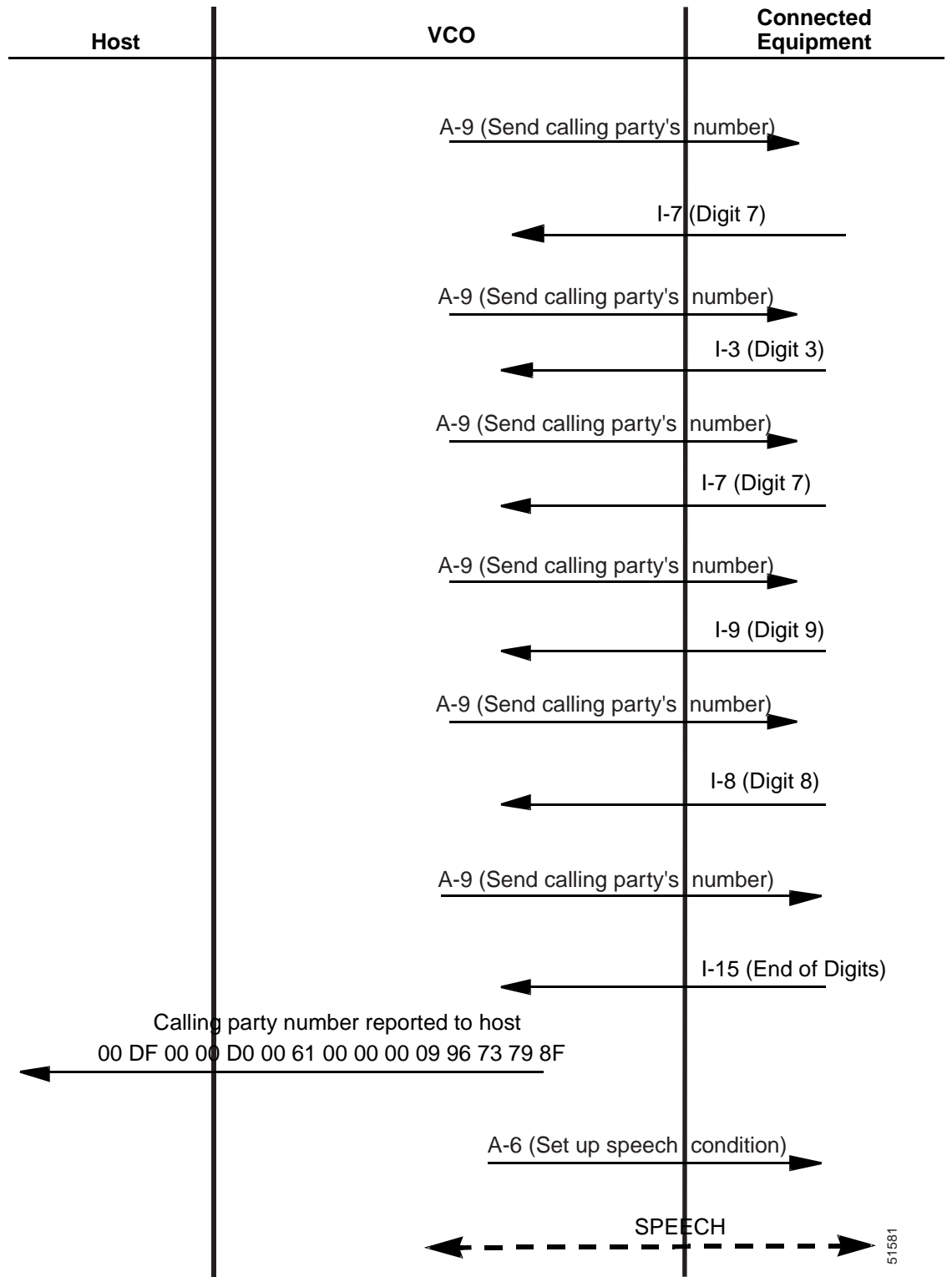
Figure 4-5 Example 2 Call Flow (Part 2 of 3)



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Figure 4-6 Example 2 Call Flow Part 3 of 3)



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## 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 Standard Programming Reference* and the *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 the first three 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 calling party category specified in the rule when an A-5 (send calling category) digit is received.
- Outpulses the calling party number stored in the ANI field when an A-9 (send calling subscriber's identity) digit is received. The VCO responds to A-9 signals that request each new digit.

This rule is shown below.

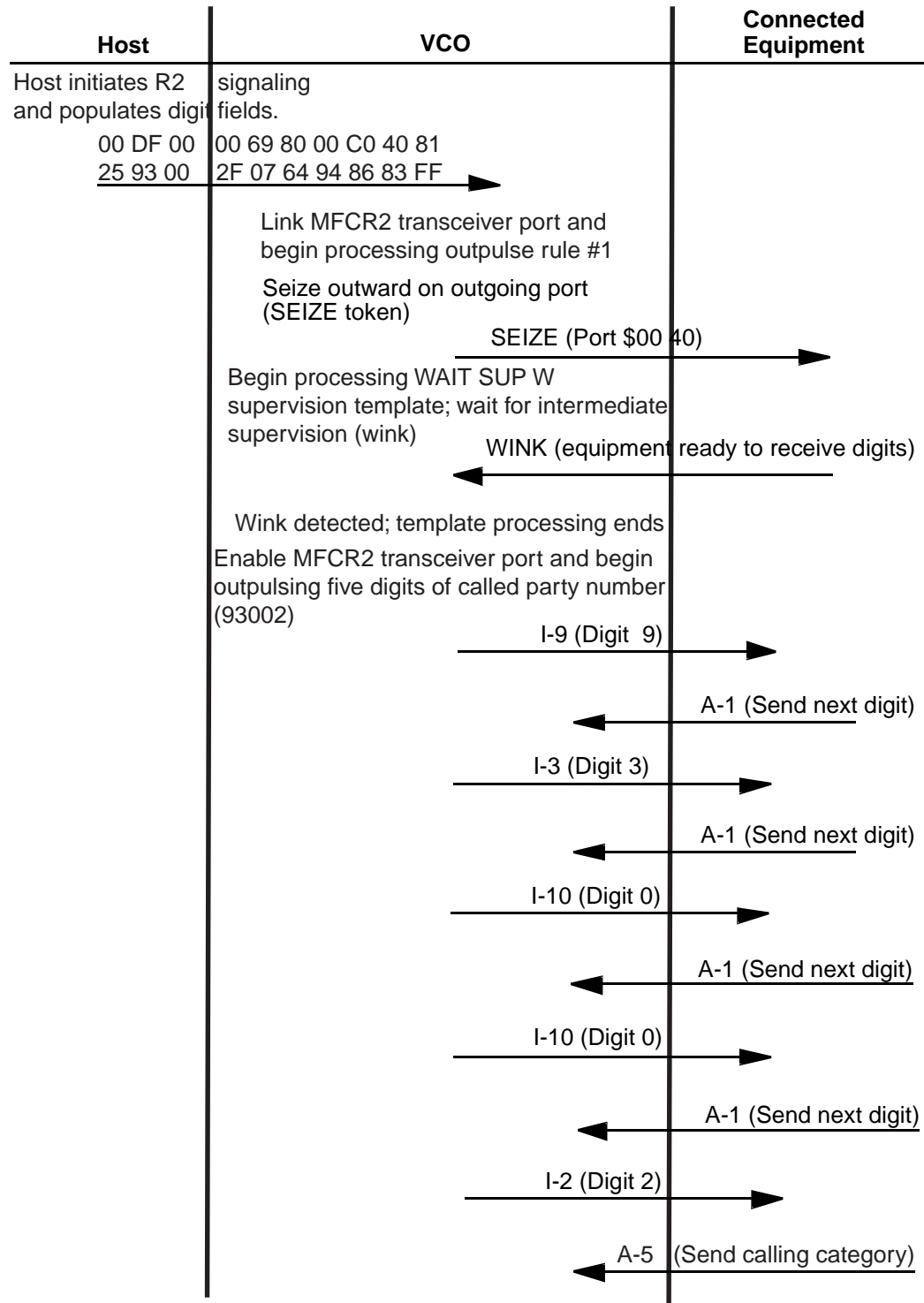
### Outpulse Rule #1

- 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 4-7, Figure 4-8, and Figure 4-9.

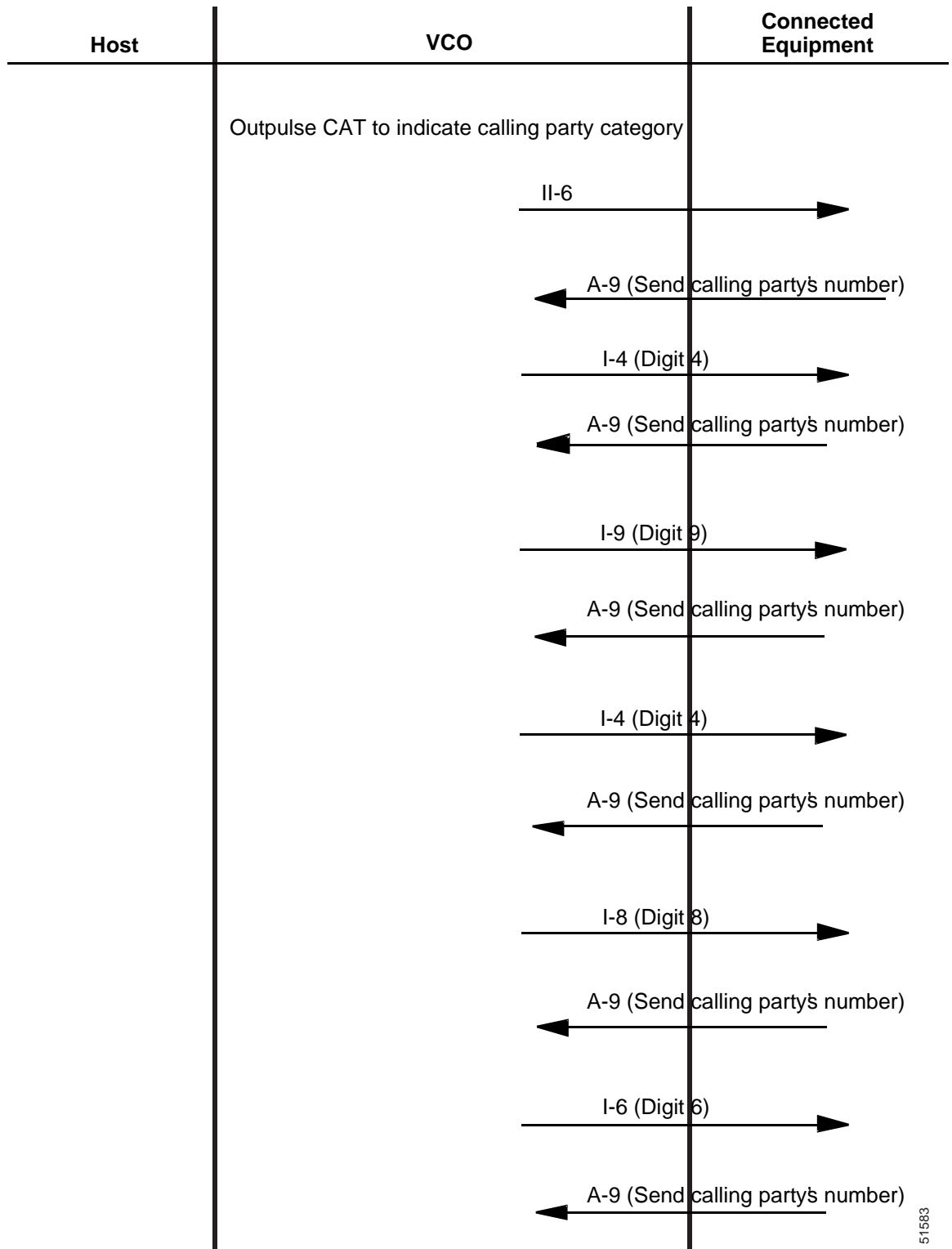
Refer to the *Cisco VCO/4K System Administrator's Guide* for more information about OP MFCR2, OP ANI, OP FIELD [xx], and OP CAT [xx] outpulse rule tokens.

Figure 4-7 Example 3 Call Flow (Part 1 of 3)



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Figure 4-8 Example 3 Call Flow (Part 2 of 3)



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Figure 4-9 Example 3 Call Flow (Part 3 of 3)

