CHAPTER 4

R2 Signaling Examples

This chapter provides examples of R2 signaling performed with 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/4K); a third example describes R2 digit outpulsing on outgoing trunks (calls originating at the VCO/4K). 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/4K and host, and between the VCO/4K 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 system E1 circuit at port address $00 41. A New Zealand specific inpulse rule is executed to perform R2 digit collection on this circuit. The rule generates a wink signal when an MFCR2 transceiver is enabled to alert the network register to send the R2 signals.

The inpulse rule performs the following general tasks:

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

At the end of this example, the system establishes speech conditions with the connected equipment (network register) and generates an Inpulse Rule Complete ($DD) report to the host. The processing flow for this example is shown in Figure 4-1 to Figure 4-3. In this example, the New Zealand specific inpulse rule for the incoming circuit has been defined as inpulse rule #1 (shown below).

Inpulse Rule #1

- REP EACH
- MFCR2
- WINK ENAB
- END CHAR 5
- CLR CHAR 1
- DIGITS 0
- IP FIELD 1
- END CHAR 5
- CLR CHAR 5
- DIGITS 1
- IP FIELD 2
- END CHAR 6
- CLR CHAR 5
- IP ANI 7

For information on inpulse rule tokens, refer to the *Cisco VCO/4K System Administrator's Guide*.

Figure 4-1 Processing Flow for Example #1, Part 1 of 3

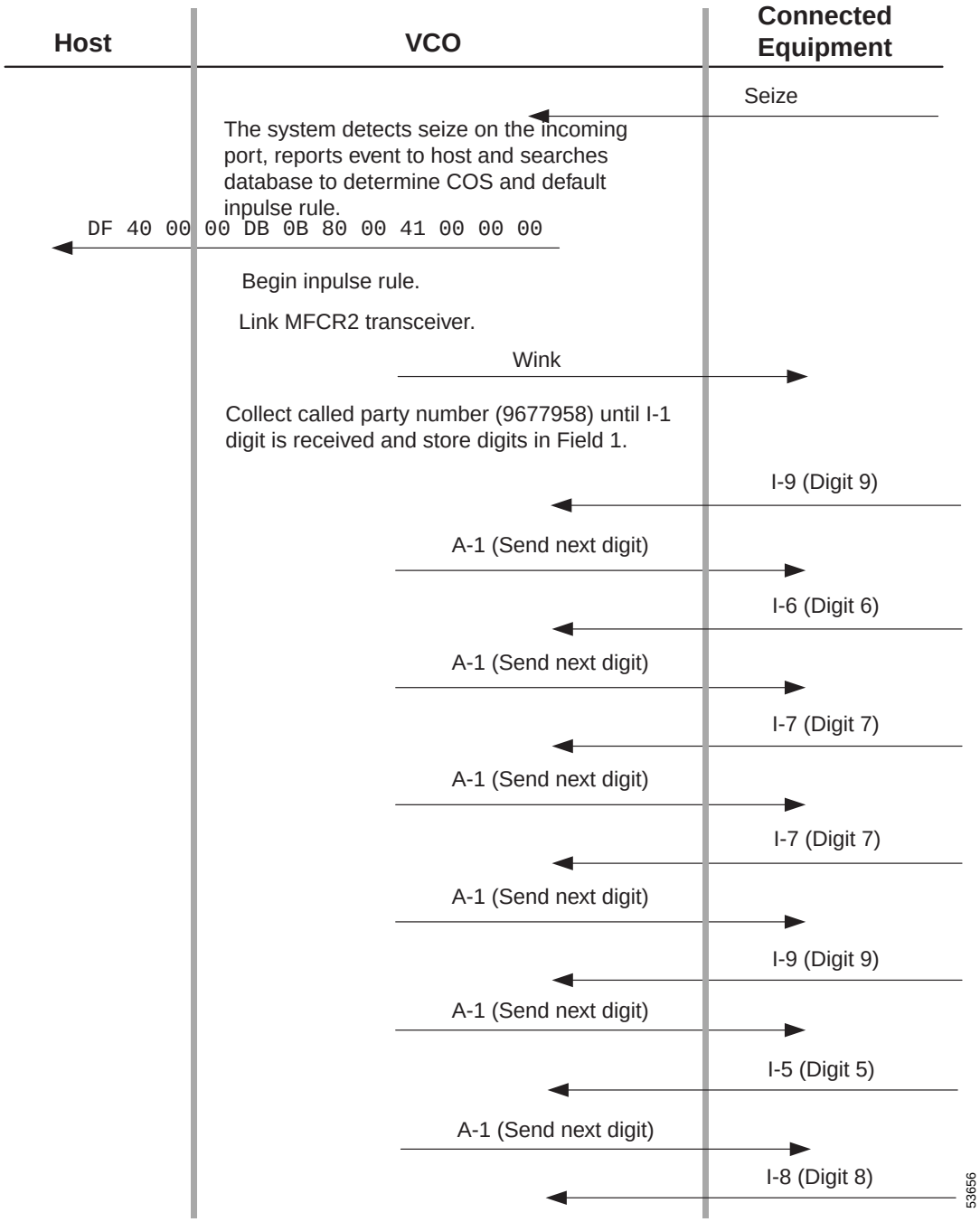


Figure 4-2 Processing Flow for Example #1, Part 2 of 3

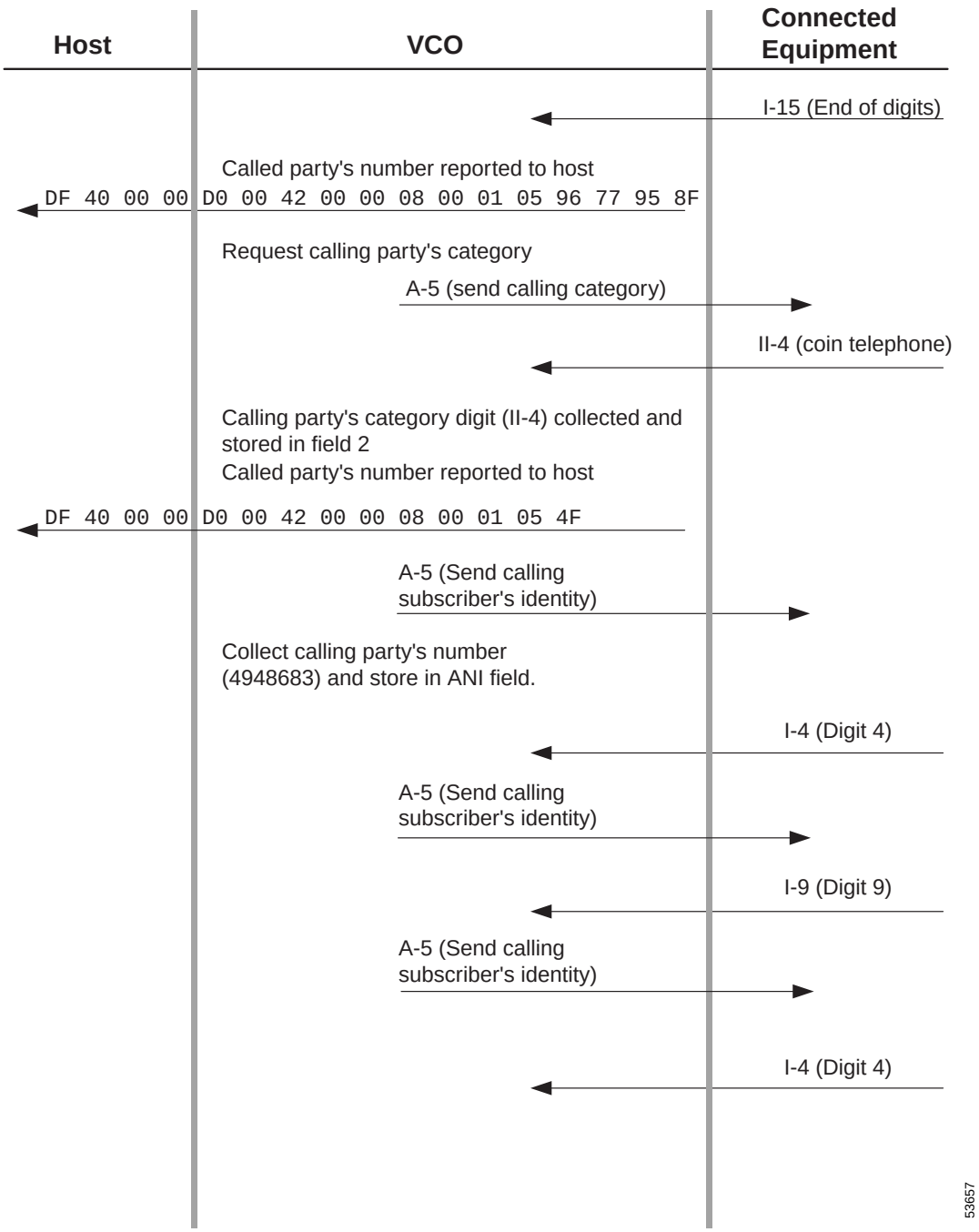
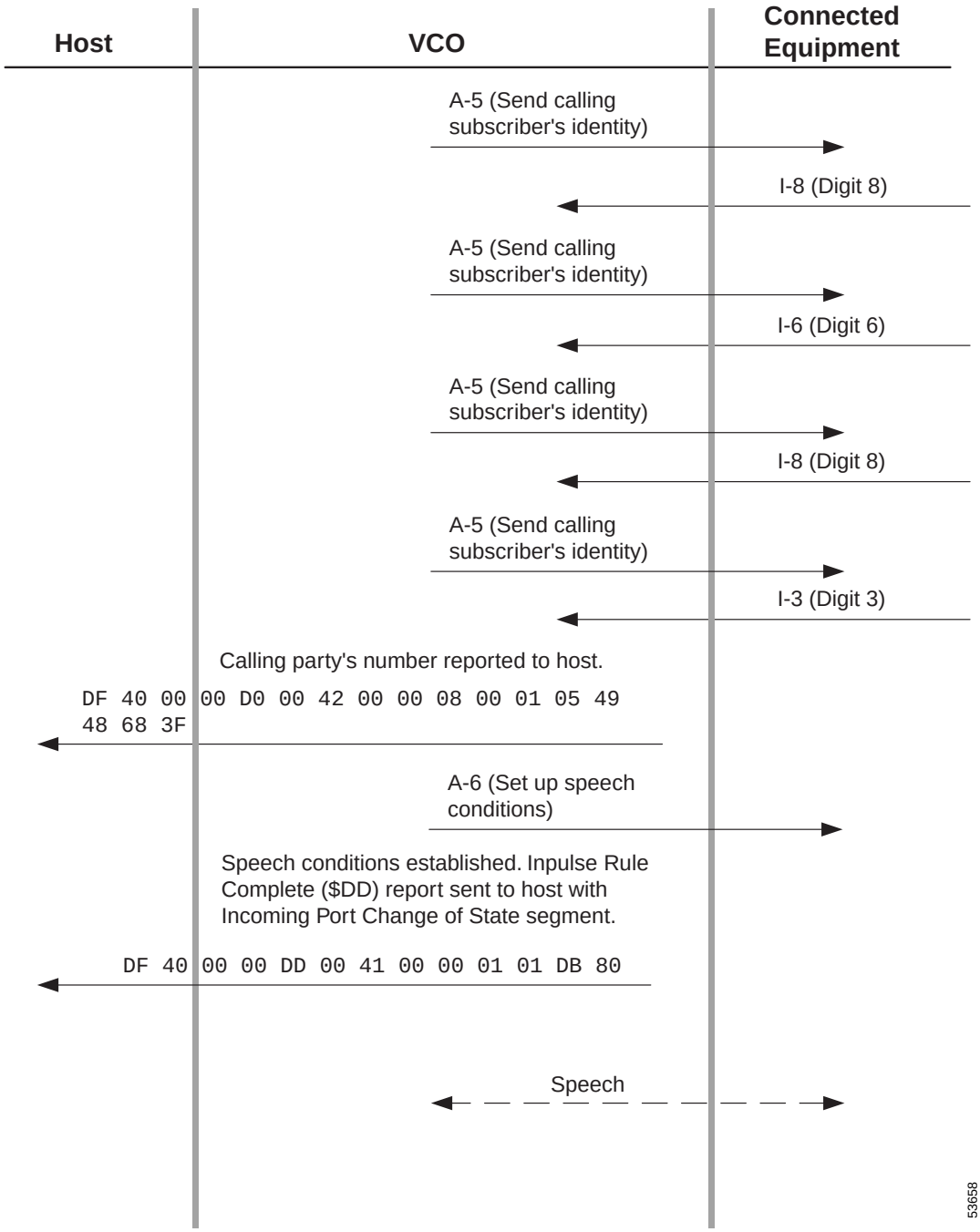


Figure 4-3 Processing Flow for Example #1, Part 3 of 3



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 42). However, all R2 digit collections in this scenario are initiated by host command; no inpulse rule processing is used. Three MF Collection Control ($68) commands perform the following actions:

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

Each digit collection is reported to the host via an MF Digit ($D0) report.

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

Refer to the *Cisco VCO/4K Standard Programming Reference* or the *Cisco VCO/4K Extended Programming Reference* for complete descriptions of the $68 command and $D0 report.

Figure 4-4 Processing Flow for Example #2, Part 1 of 3

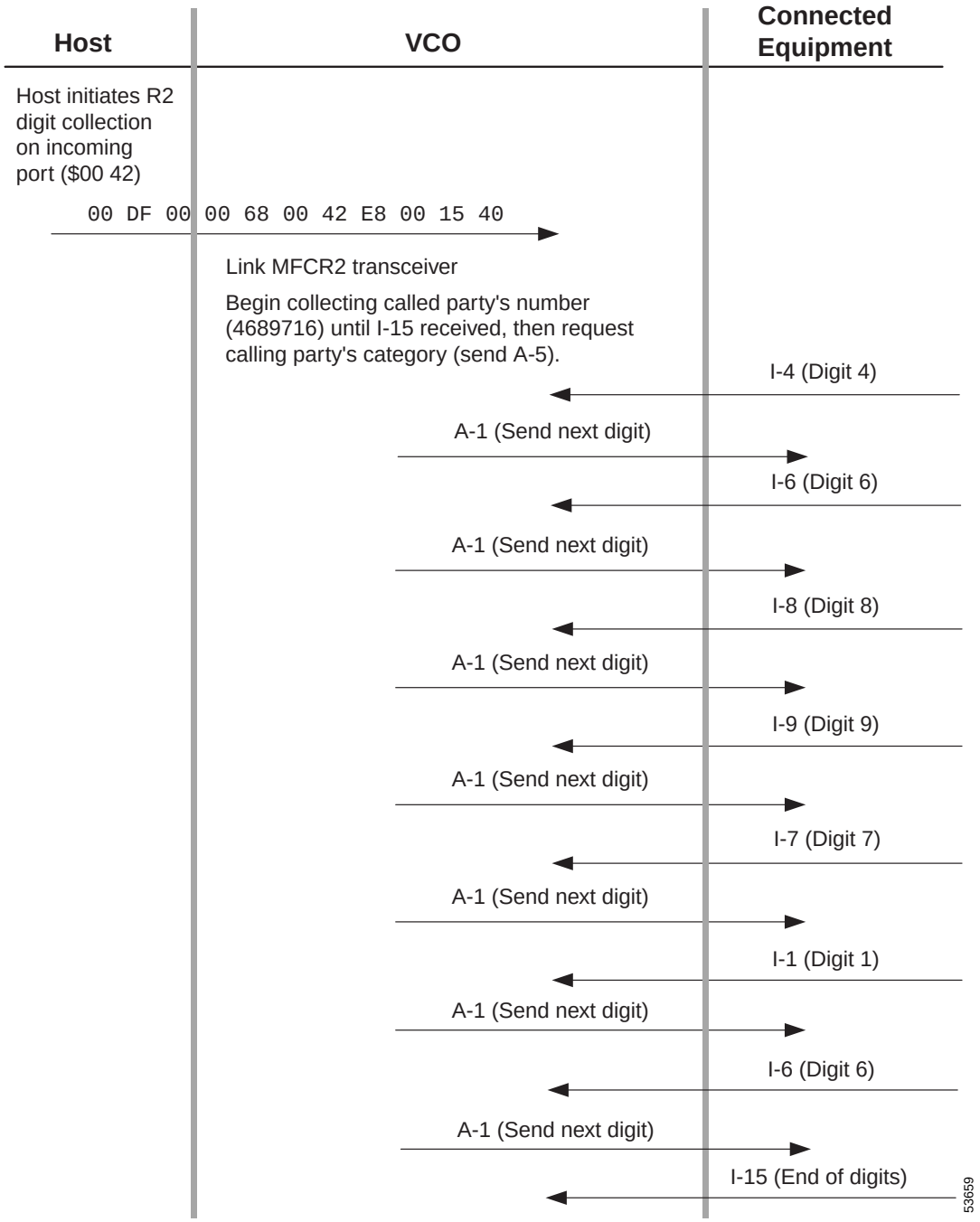


Figure 4-5 Processing Flow for Example #2, Part 2 of 3

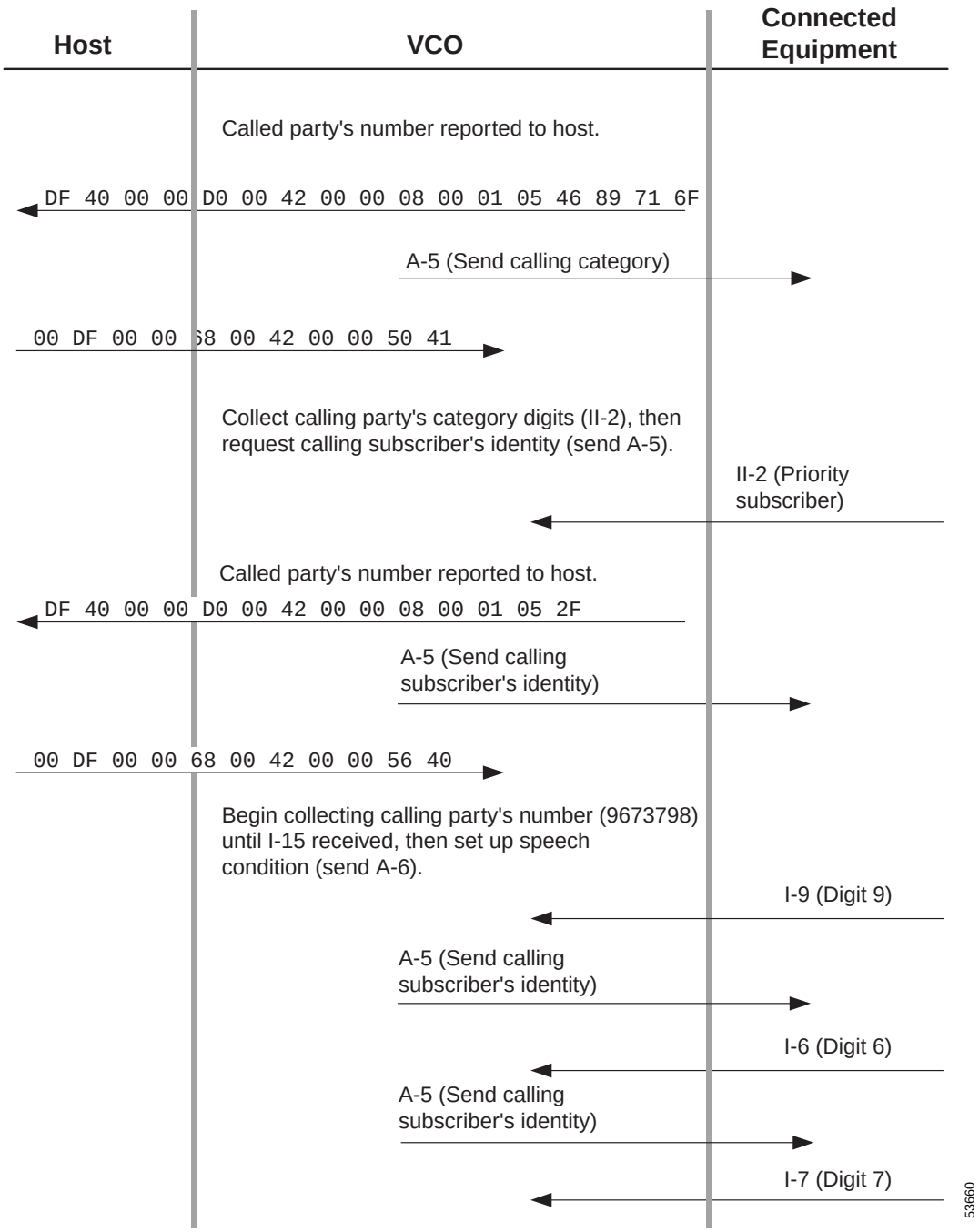
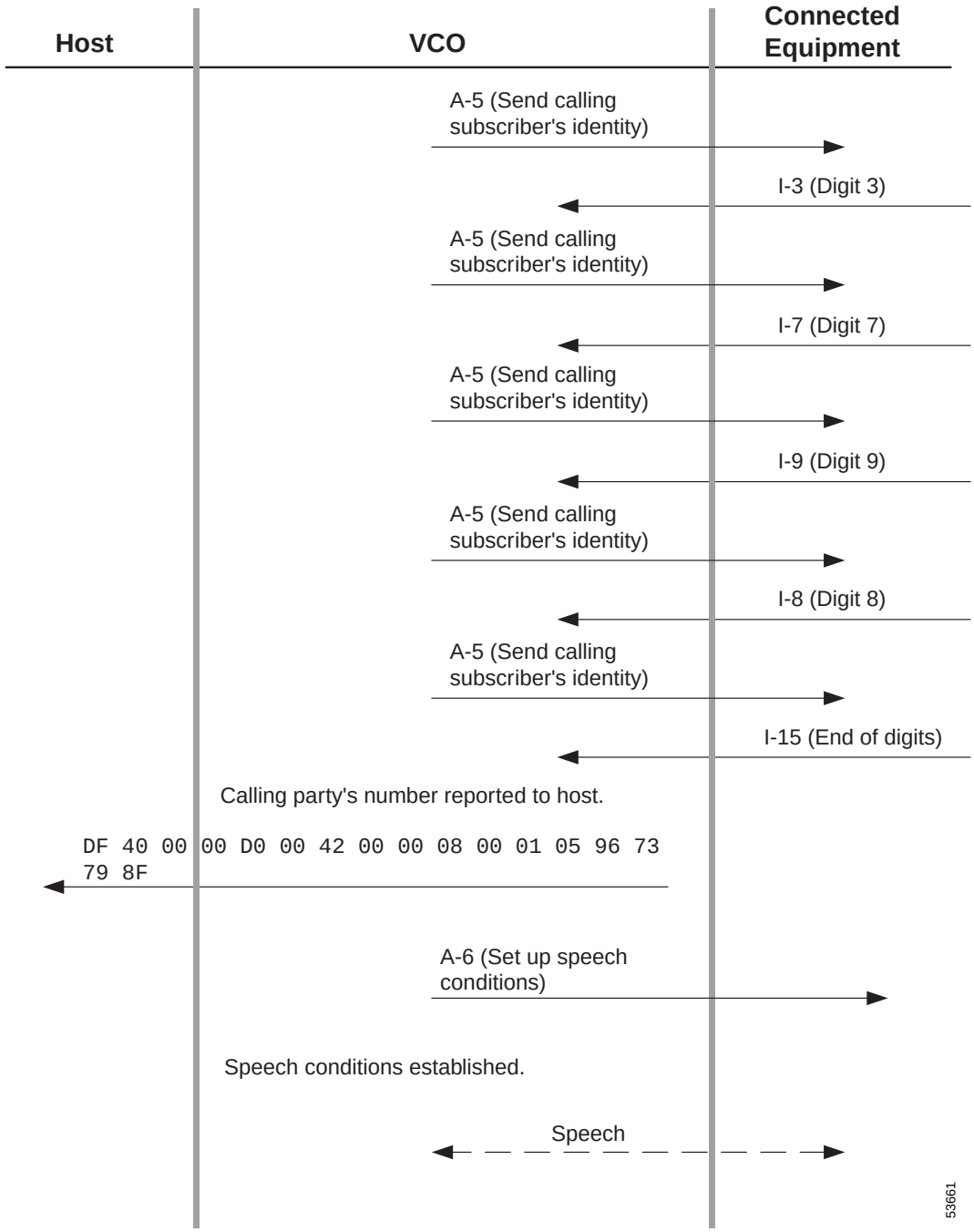


Figure 4-6 Processing Flow for Example #2, Part 3 of 3



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* or 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's number (stored in Field 1) after wink signal is detected. The system responds to A-1 (send next digit) signals that request each new digit.
- Outpulses the calling party's category specified in the rule when an A-5 (send calling category) digit is received.
- Outpulses the calling party's number stored in the ANI field when another A-5 (send calling subscriber's identity) digit is received. The system responds to A-1 (send next digit) signals that request each new digit.
- Outpulses the remaining digits of the called party's number (stored in Field 1). The system responds to A-1 (send next digit) signals that request each new digit. An I-15 digit is sent once all digits have been outpulsed.

This rule is shown below.

Outpulse Rule #1

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

At the end of this example, the system establishes speech conditions with the connected equipment (network register) and generates an Outgoing Port Change of State ($DA) report to the host. 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 on MFCR2, OP ANUM, OP FIELD [xx], and OP CAT [xx] outpulse rule tokens.

Figure 4-7 Processing Flow for Example #3, Part 1 of 3

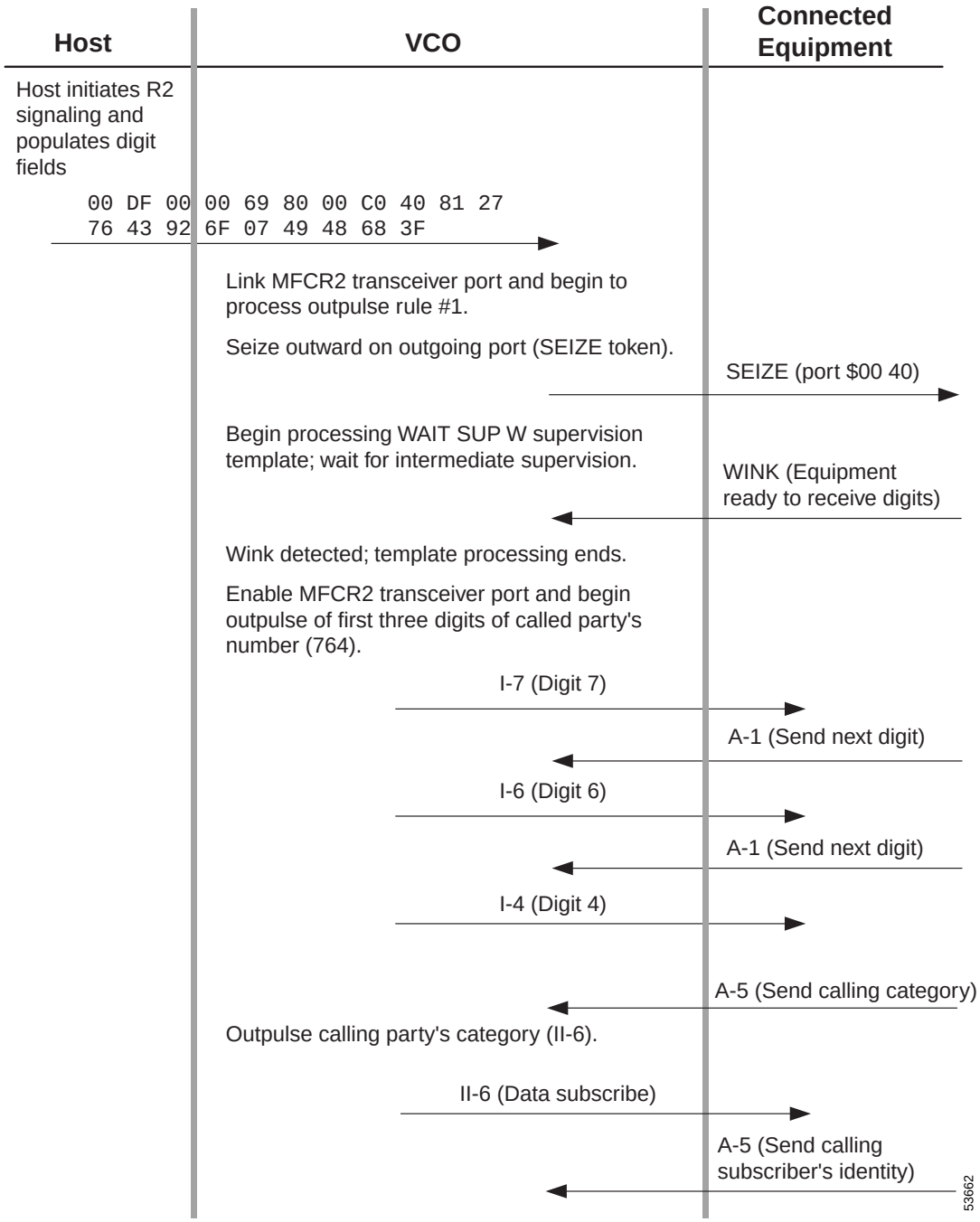


Figure 4-8 Processing Flow for Example #3, Part 2 of 3

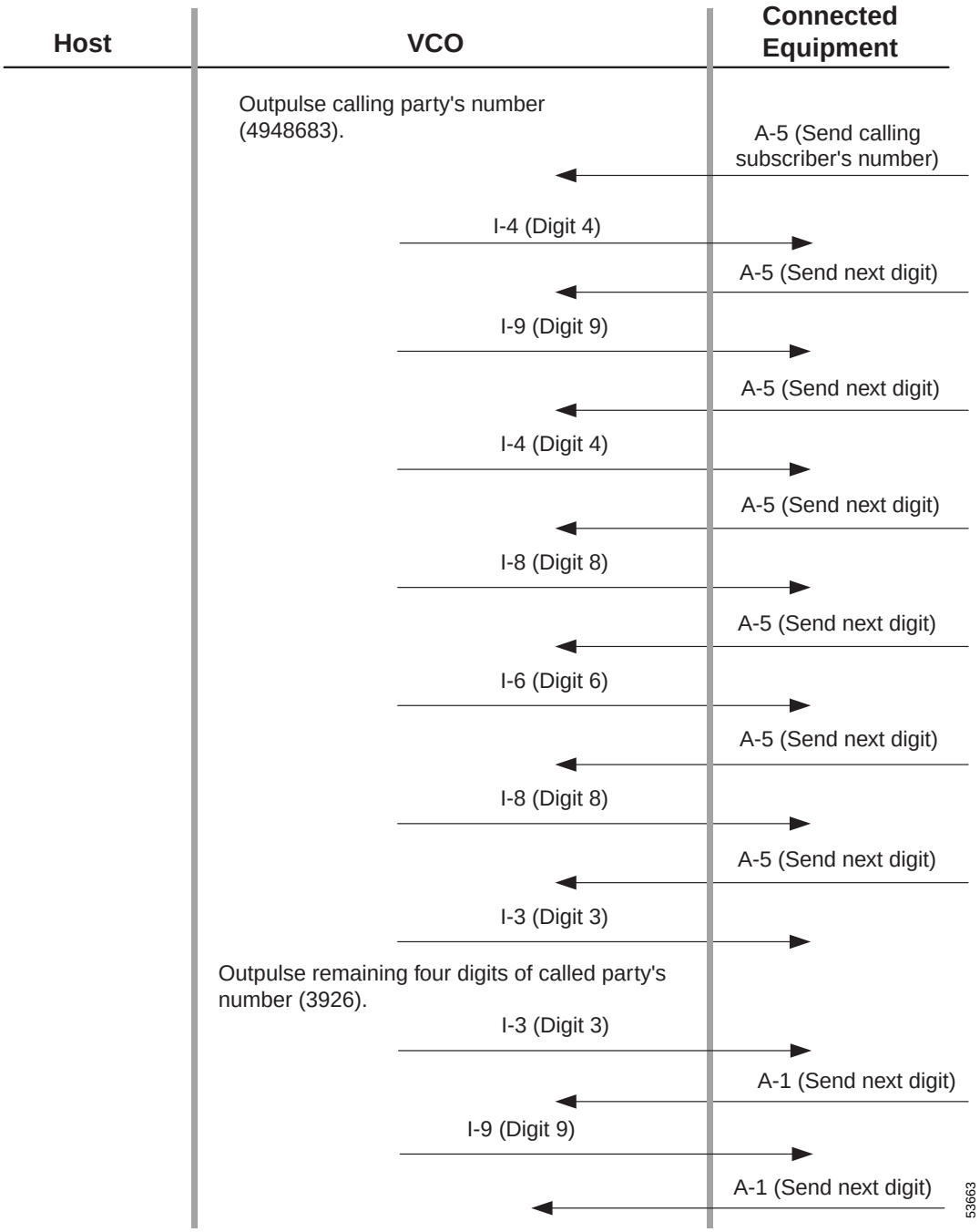
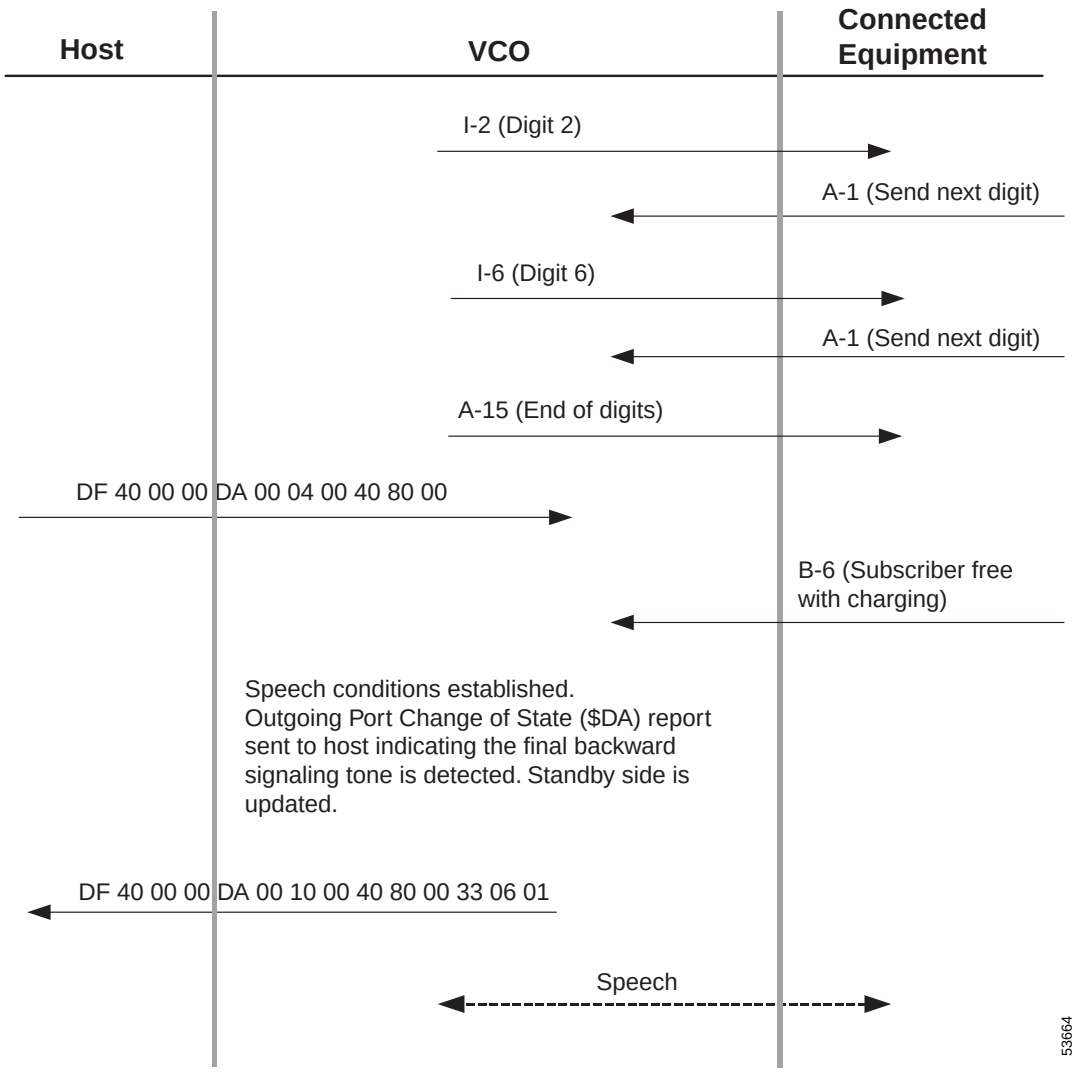



Figure 4-9 Processing Flow for Example #3, Part 3 of 3