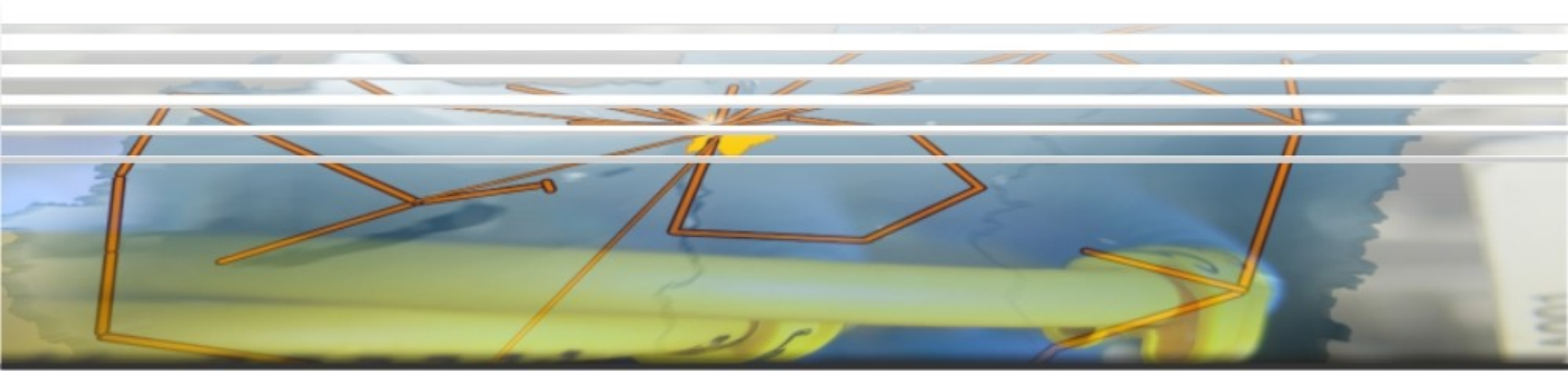
The process of dial-peer matching for Cisco SIP<=>ISDN Gateways



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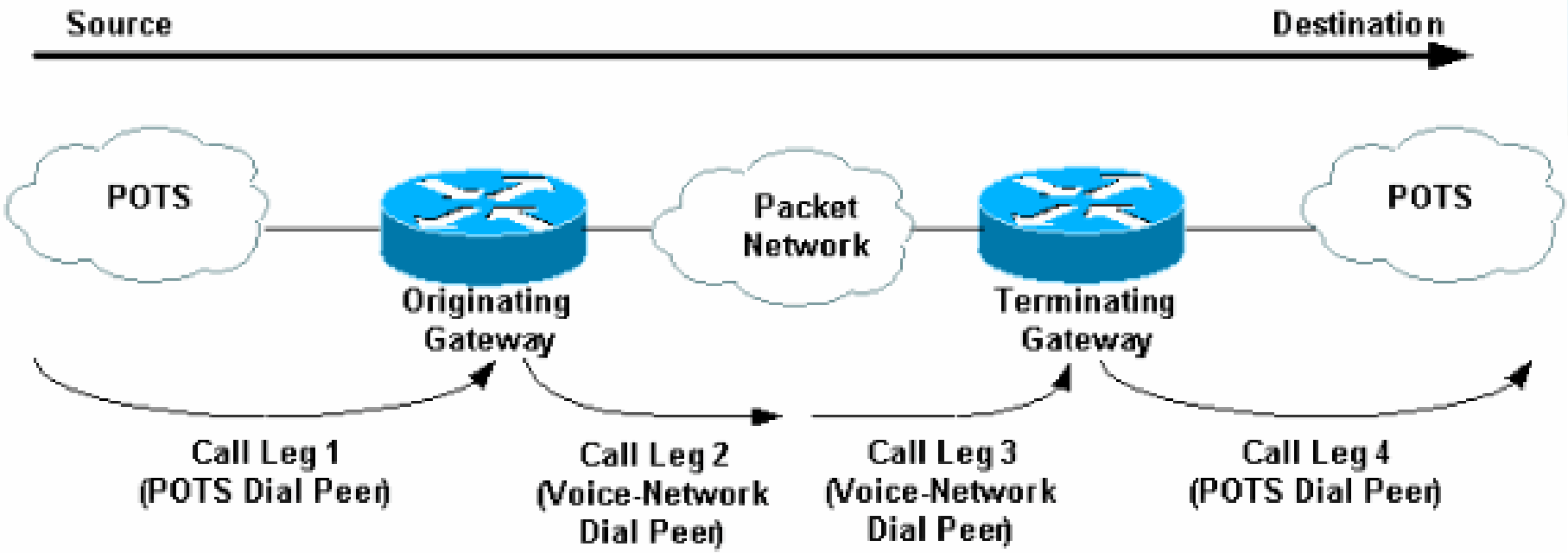
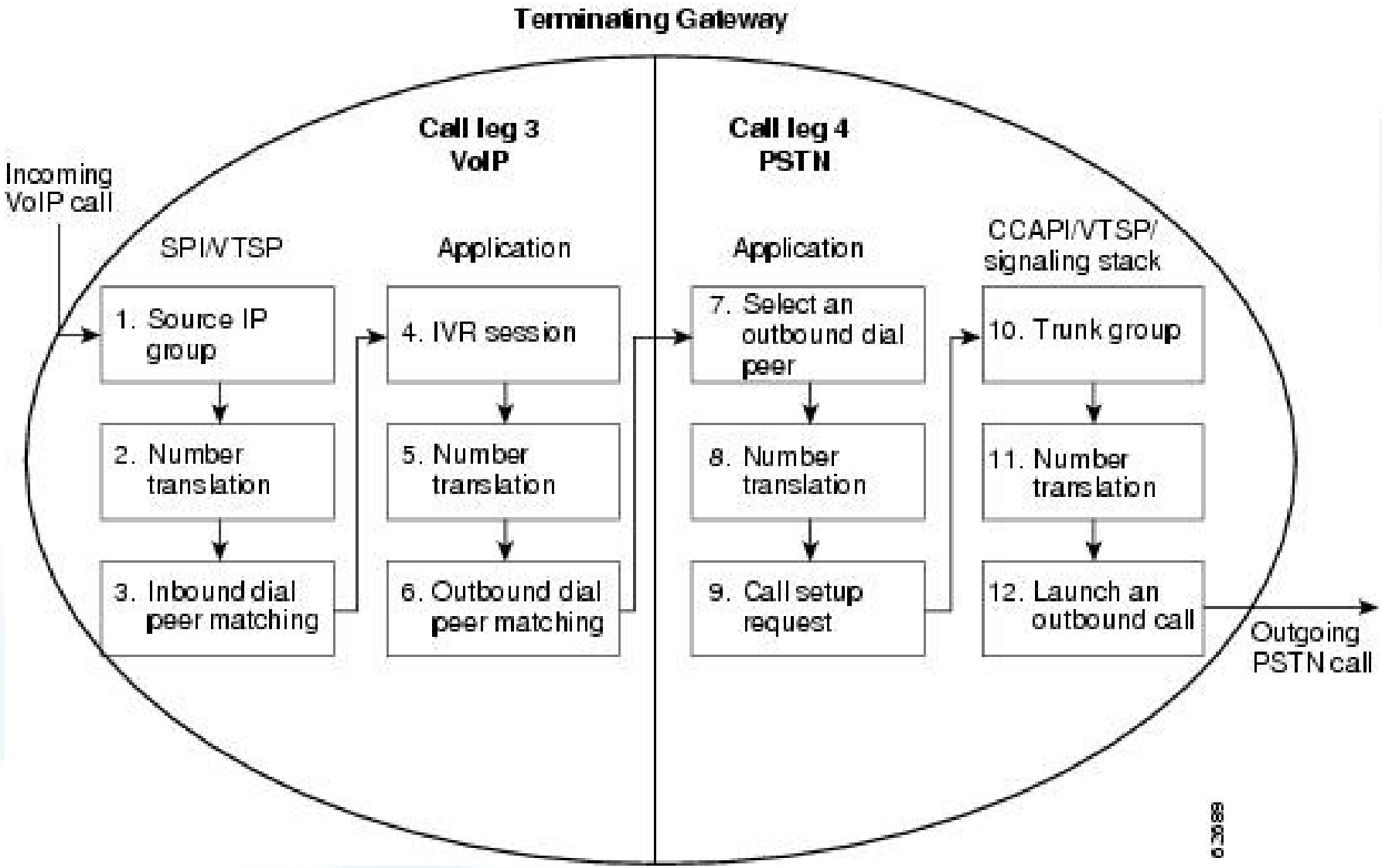
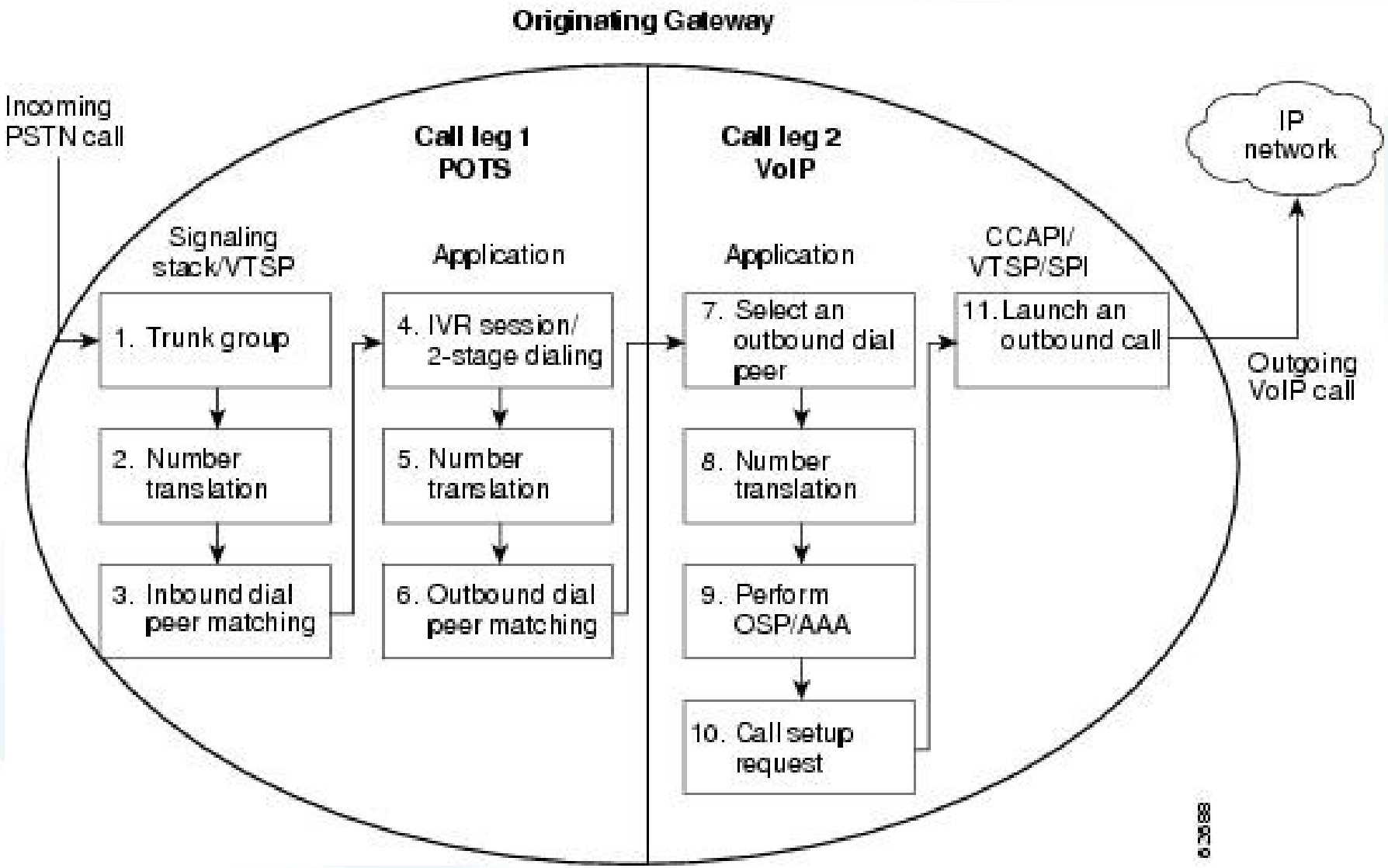
In-Out dial Peers



VoIP => POTS


Terminating Gateway
Call leg 3
VoIP
Call leg 4
PSTN
Incoming
VoIP call
SPI/VTSP
Application
Application
CCAPI/VTSP/
signaling stack
1. Source IP group
2. Number translation
3. Inbound dial peer matching
4. IVR session
5. Number translation
6. Outbound dial peer matching
7. Select an outbound dial peer
8. Number translation
9. Call setup request
10. Trunk group
11. Number translation
12. Launch an outbound call
Outgoing
PSTN call

POTS => VoIP


Originating Gateway
Incoming PSTN call
Call leg 1 POTS
Call leg 2 VoIP
IP network
Signaling stack/VTSP
Application
Application
CCAPI/ VTSP/SPI
1. Trunk group
2. Number translation
3. Inbound dial peer matching
4. IVR session/ 2-stage dialing
5. Number translation
6. Outbound dial peer matching
7. Select an outbound dial peer
8. Number translation
9. Perform OSP/AAA
10. Call setup request
11. Launch an outbound call
Outgoing VoIP call
63988

Incoming

Table 29 Dial-Peer Matching Rules for Inbound URI in SIP Calls

Match Order	Cisco IOS Command	Incoming Call Parameter
1	**incoming uri request**	Request-URI
2	**incoming uri to**	To URI
3	**incoming uri from**	From URI
4	**incoming called-number**	Called number
5	**answer-address**	Calling number
6	**destination-pattern**	Calling number
7	**carrier-id source**	Carrier-is associated with the call

H.323

Table 30 Dial-Peer Matching Rules for Inbound URI in H.323 Calls

Match Order	Cisco IOS Command	Incoming Call Parameter
1	**incoming uri called**	Destination URI in H.225 message
2	**incoming uri calling**	Source URI in H.225 message
3	**incoming called-number**	Called number
4	**answer-address**	Calling number
5	**destination-pattern**	Calling number
6	**carrier-id source**	Source carrier-id associated with the call

ISDN

1. Called number (DNIS) with the **incoming called-number** command

   First, the router or gateway attempts to match the called number of the call setup request with the configured **incoming called-number** of each dial peer. Because call setups always include DNIS information, it is recommended to use the **incoming called-number** command for inbound dial peer matching. This attribute has matching priority over the **answer-address** and **destination-pattern** commands.

2. Calling Number (ANI) with the **answer-address** command

   If no match is found in step 1, the router or gateway attempts to match the calling number of the call setup request with the **answer-address** of each dial peer. This attribute can be useful in situations where you want to match calls based on the calling number (originating).

3. Calling Number (ANI) with the **destination-pattern** command

   If no match is found in step 2, the router or gateway attempts to match the calling number of the call setup request to the **destination-pattern** of each dial peer. For more information about this, see the first bullet in the Dial Peer Additional Information section of this document.

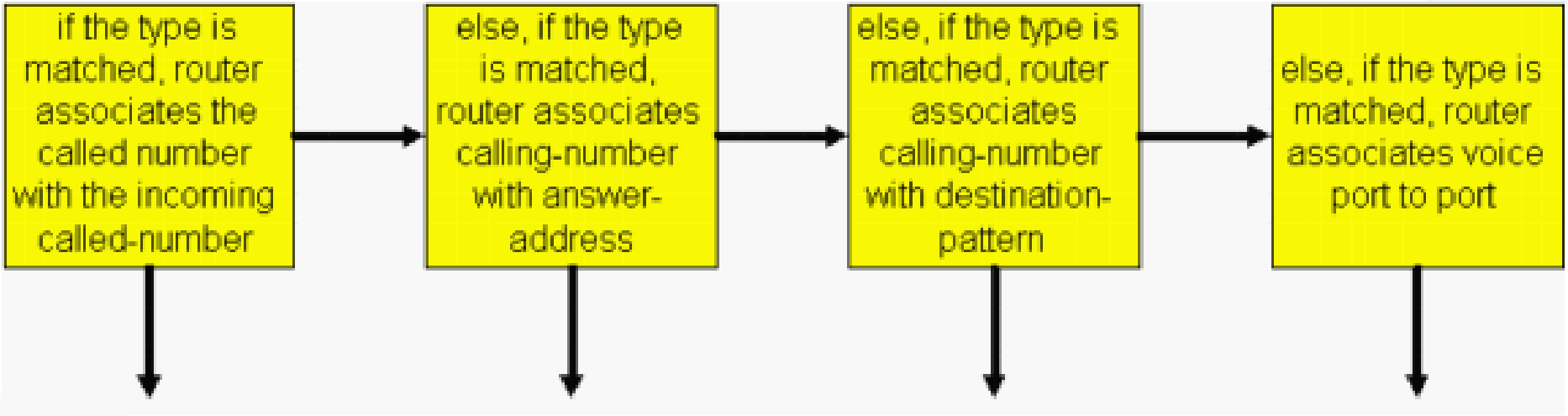
4. Voice-port (associated with the incoming call setup request) with configured dial peer **port** (applicable for inbound POTS call legs)

   If no match is found in the step 3, the router or gateway attempts to match the configured dial peer **port** to the voice-port associated with the incoming call. If multiple dial peers have the same port configured, the dial peer first added in the configuration is matched.

5. If no match is found in the first four steps, then the **default dial peer 0 (pid:0)** command is used.

Note: Step 4 is *not* applicable to voice or dial platforms such as AS5300, AS5350, AS5400, AS5800 and AS5850. If any one of the first three steps is not used, then match dial peer 0, and the call is treated as a dial modem call. This means that customers can get modem tones as opposed to dial tones for inbound calls.

Incoming dial-peer ISDN/H.323 Flowchart



Outbound

Table 16 Dial-Peer Matching Rules for Outbound URI

Match Order	Cisco IOS Command	Outgoing Call Parameter
1	**destination uri** and **carrier-id target**	Application-provided URI and target carrier ID associated with the call
2	**destination-pattern** and **carrier-id target**	Called number and target carrier ID associated with the call
3	**destination uri**	Application-provided URI
4	**destination-pattern**	Called number
5	**carrier-id target**	Target carrier ID associated with the call

Dial-Peer 0

The Default Dial-Peer 0 peer_tag=0, pid:0

If no incoming dial peer is matched by the router or gateway, the inbound call leg is automatically routed to a default dial peer (POTS or Voice-Network). This default dial peer is referred to as **dial-peer 0** or *pid:0*.

Note: There is an exception to this statement. Cisco voice and dial platforms, such as the AS53xx and AS5800, require that a configured inbound dial peer is matched for incoming POTS calls to be accepted as voice calls. If there is no inbound dial peer match, the call is treated and processed as a dial-up (modem) call.

Dial-peer 0 (pid:0) has a default configuration that cannot be changed. The default *dial-peer 0* fails to negotiate non-default capabilities, services, and applications such as:

- Non-default Voice-Network capabilities: **dtmf-relay**, **no vad**, and so forth.
- Direct Inward Dial (DID)
- TCL Applications

Dial-peer 0 for inbound VoIP peers has this configuration:

- any codec
- vad enabled
- no rsvp support
- fax-rate voice

  Note: The default DSCP for voice is EF codepoint 101110 (RFC 2598), and the default DSCP for signaling is AF31 codepoint 011010 (RFC 2597). The default dial peer does not mark packets to DSCP 0. All voice packets on the routers are marked by default (this can be overridden by the dial peer), signaling with AF31 and media with EF. Calls that match the default dial peer 0 should also have this behavior.

Dial-peer 0 (pid:0) for inbound POTS peers has this configuration:

- no ivr application

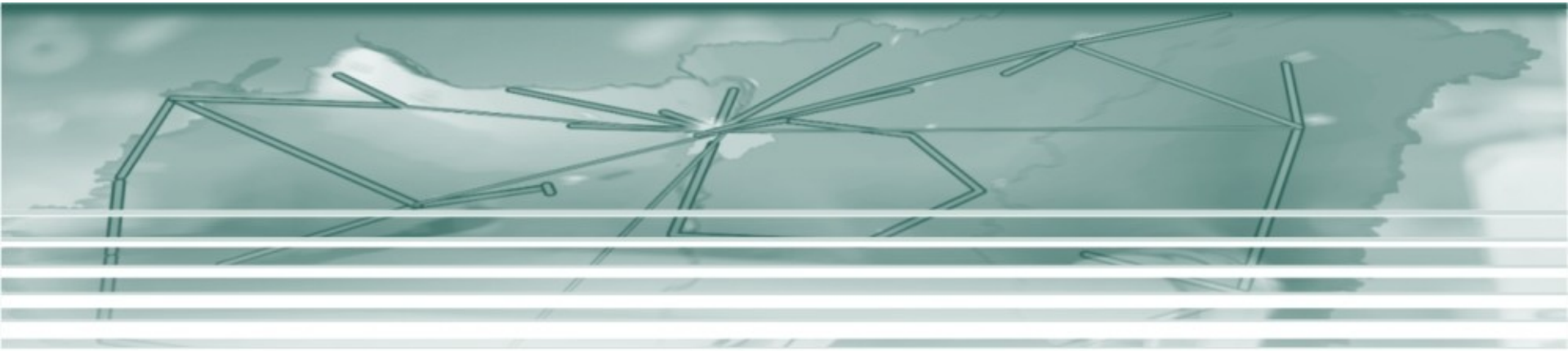
voice source-group

- access-list Configure access list
  - 1-99 standard
  - SIP: It matches the first “Via” header, not the connection source IP address!!
- carrier-id Configure carrier id
- description Configure description
- destination-pattern Configure a full E.164 telephone number prefix
- disconnect-cause Configure disconnect-cause
- h323zone-id H323 source zone id
- incoming Incoming called number
- translation-profile Configure translation profile
- trunk-group-label Configure trunk group label
  - Source
  - Target

References

- http://www.cisco.com/application/pdf/paws/14074/in_dial_peer_match.pdf
- http://www.cisco.com/application/pdf/paws/12164/dialpeer_call_leg.pdf
- https://wiki.voip.niif.hu/index.php/VoIP
- http://www.cisco.com/en/US/docs/ios/voice/command/reference/vr_cr.pdf
- http://www.cisco.com/en/US/docs/ios/12_2t/12_2t11/feature/guide/ftgwrepg.html

Thank You! / Questions?



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