Interactive Voice Response (VRU) Systems

Cisco provides an option for running an interface to Interactive Voice Response (VRU) systems. The VRU interface software allows VRU's to take advantage of Unified ICM call routing features. For example, an VRU can use post-routing capabilities to select targets for calls it needs to transfer. The VRU interface software runs on a standard PG hardware platform. It allows the Unified ICM to route calls to targets on an VRU and collect data from an VRU for use in call routing, real-time monitoring, and historical reporting. The VRU interface is not specific to a particular VRU system or manufacturer. It is based on an open VRU model. Many VRU systems support Cisco's Open VRU Interface Specification, including Unified CVP. For a list of VRU's that support this interface, contact your Cisco representative.

To plan for this VRU option:

- Review the options for integrating VRU's into the Unified ICM system.
- Determine if any VRU programming or application development is necessary.
- Review the Peripheral Gateway platform requirements.

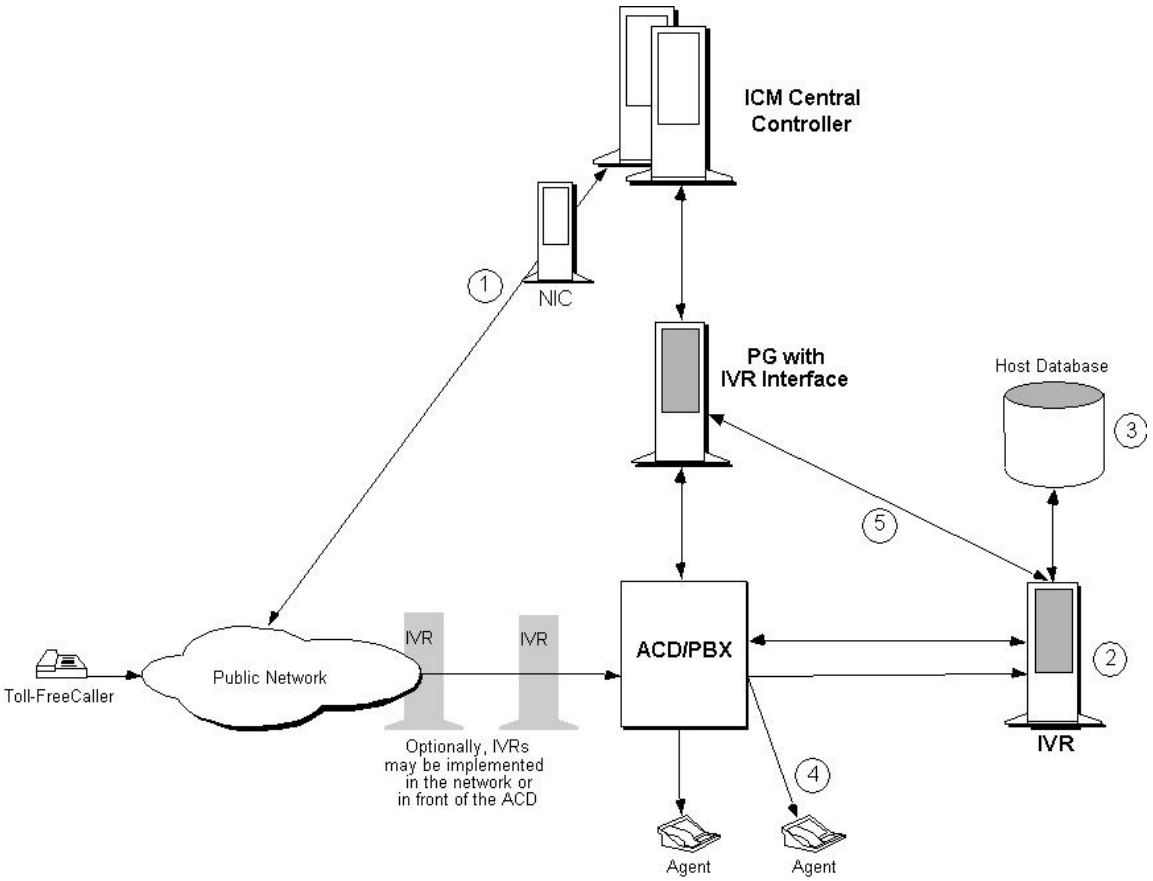
- VRU Configuration Options, on page 1

VRU Configuration Options

VRU's can be located at the customer's call center site or in the IXC network. At the call center, you can connect the VRU on the network side of the ACD or “behind” the ACD. In the IXC network, the network provider can offer the VRU as a service.

In an Unified ICM configuration that includes an VRU, you configure the ACD so that it can transfer calls to the VRU. The following figure shows some of the capabilities of the VRU in an Unified ICM system.

Figure 1: VRU/ICM Integration Overview



Capabilities of VRU:

1. In most Unified ICM /VRU configurations, calls continue to be Pre-Routed by the Unified ICM system.
2. When a call is routed to an VRU, the VRU answers the call and interacts with the caller.
3. The VRU can access a host system (for example, a customer profile database) to retrieve more information to help process the call.
4. Often, the caller can get all the information he or she needs through simple interaction with the VRU. In some cases, however, the VRU needs to transfer the caller to an agent or another call resource.
5. In some configurations, the VRU can invoke post-routing to select an agent from anywhere in the call center enterprise. To do this, the VRU sends a route request to the PG. The PG forwards the request to the Unified ICM system, which responds with a new destination for the call. The PG returns the new destination to the VRU. The VRU then signals the ACD or network to transfer the call to the specified destination.

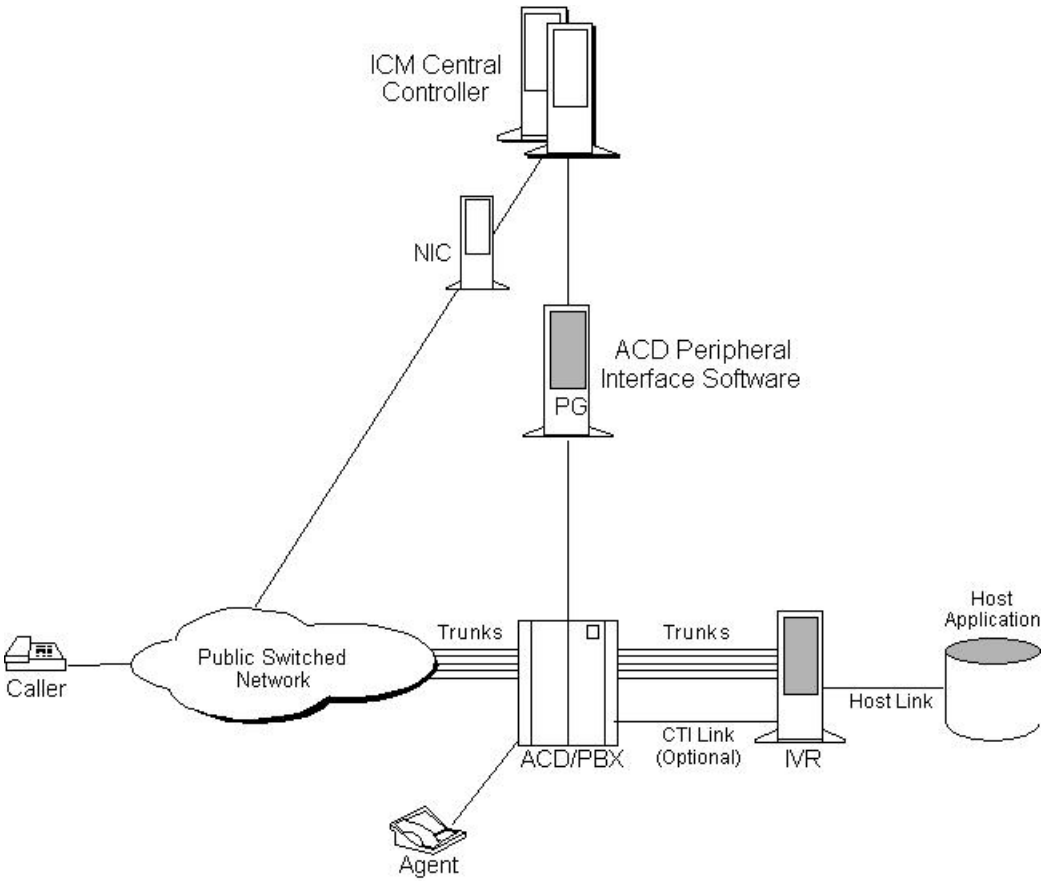
The way in which an VRU is integrated into the Unified ICM system affects the flow of call processing and determines the types of data the Unified ICM can collect from the VRU. For example, an VRU that has a direct interface to an VRU PG provides the Unified ICM system with data that is used in call routing, monitoring, and reporting. A configuration in which the VRU has an interface only to the ACD has more limited capabilities.

You can integrate VRU's into the Unified ICM system in several different ways. Each integration option provides a different set of Unified ICM functionality.

Configuration with ACD PG Only

In this option, the IVR is attached only to the ACD. The ACD, in turn, is attached to a PG. The PG is running the Cisco peripheral interface software (PG software process) required to communicate with the specific type of ACD. There is no direct interface between the IVR and the Unified ICM system (in other words, an IVR process is not implemented).

Figure 2: Configuration with an ACD PG Only



In this configuration, you must connect the IVR to an ACD that supports post-routing. The IVR and ACD cooperate so that calls are transferred from the IVR to the ACD, and then post-routed by the ACD via the PG. The PG in this configuration has only the ACD peripheral interface software. It does not have the IVR interface software; therefore, it does not provide the IVR with full access to post-routing.

In the preceding figure, the IVR can handle a call in two different ways:

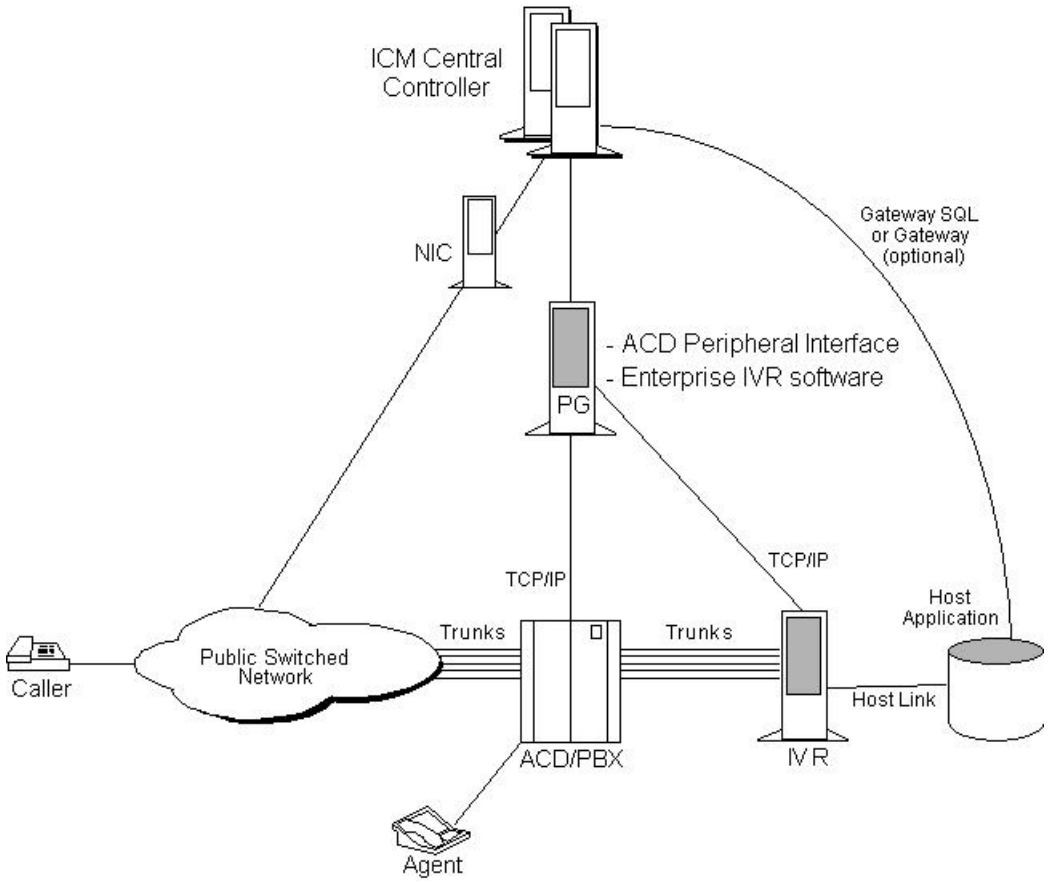
- The IVR can handle the call to completion (for example, if the caller wanted current billing information and needed no further assistance, the IVR can complete the call.)
- The IVR can transfer the call to the ACD. The ACD can then use the PG to post-route the call.

Configuration with IVR and ACD PGs

This configuration option is similar to the previous option except that an IVR process and host link to the IVR are implemented. In addition to monitoring the ACD for real-time agent and call event data, the PG can monitor the IVR for call and application data and control the movement of calls into and out of the IVR. The IVR data is also forwarded to the CallRouter for call routing and reporting.

As shown in the following figure, you can install the IVR and ACD interface software on the same PG hardware platform.

Figure 3: Configuration with IVR and ACD PGs

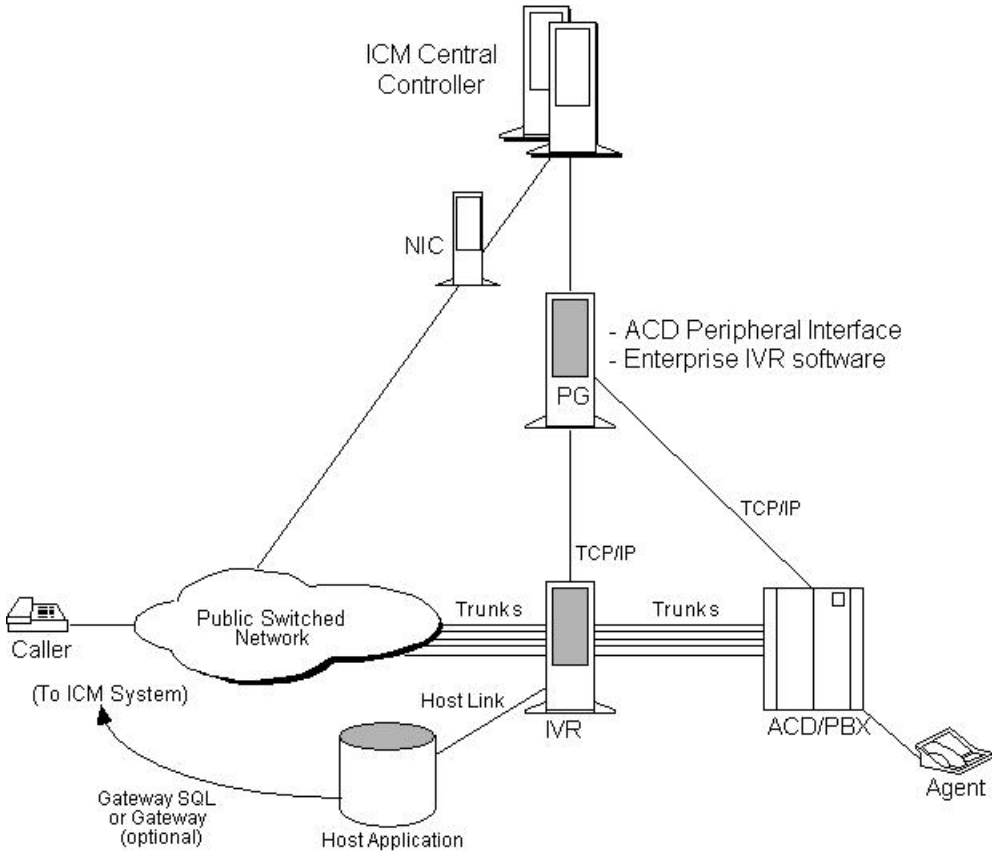


Network-Side VRU with VRU and ACD PGs

The next configuration option places the VRU on the network side of the ACD. In this configuration, the VRU is connected to the network and potentially to the ACD. The VRU can receive calls directly from the network without ACD involvement. The Unified ICM can pre-route these calls, but it is not a requirement.

The VRU can also receive calls from the ACD (for example, when an agent transfers a call to the VRU). Again, the Unified ICM may or may not have routed these calls. The following figure shows an example.

Figure 4: Network-Side VRU with VRU and ACD PGs



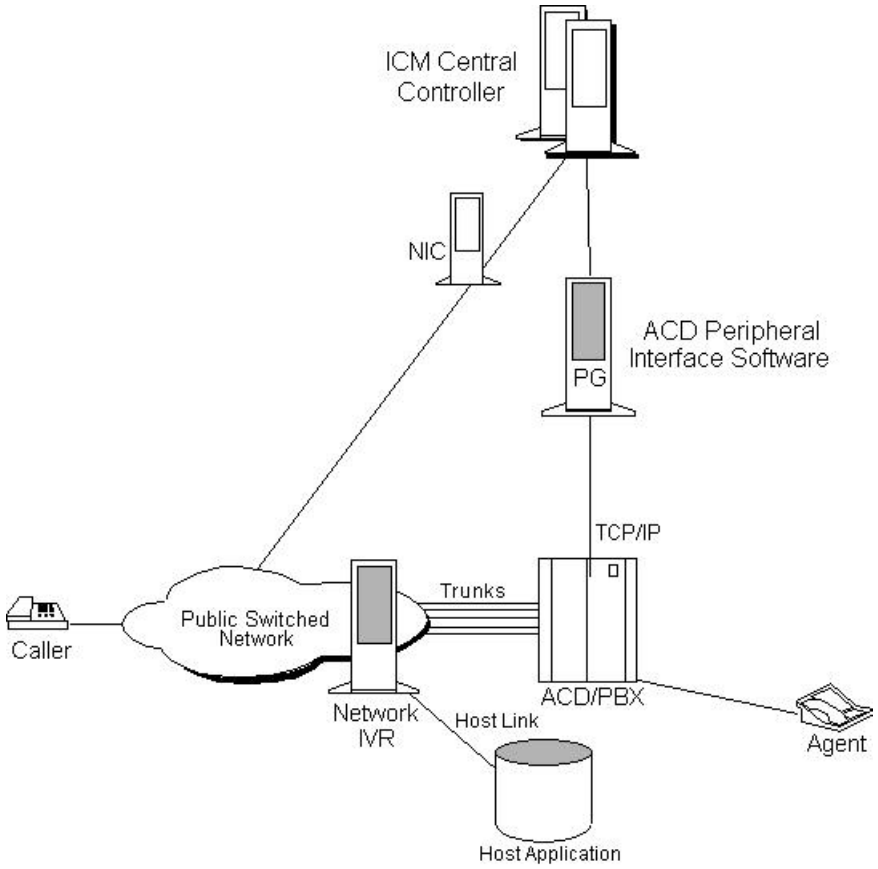
After the VRU receives a call, it handles the call to completion or transfers the call off-VRU for subsequent handling. The VRU can also use post-routing to select a target for the transfer. If the VRU transfers the call to an ACD, the VRU may or may not request routing instructions from the Unified ICM.

This configuration is different from the earlier options in several ways:

- The VRU is connected to both the network and the ACD.
- You can transfer a call that originated in the network to the local ACD by tandem connecting a second trunk with the original trunk. You can transfer a network call to a remote ACD either by connecting a second trunk in tandem with the original trunk, or by invoking a “call take-back” feature in the network.
- You can use post-routing to transfer a call that originated at the local ACD to any target.

In-Network VRU with ACD PG Only

In this configuration, the VRU is provided as a service by the network service provider. The PG monitors the ACD and forwards data to the Unified ICM system for call routing and reporting.

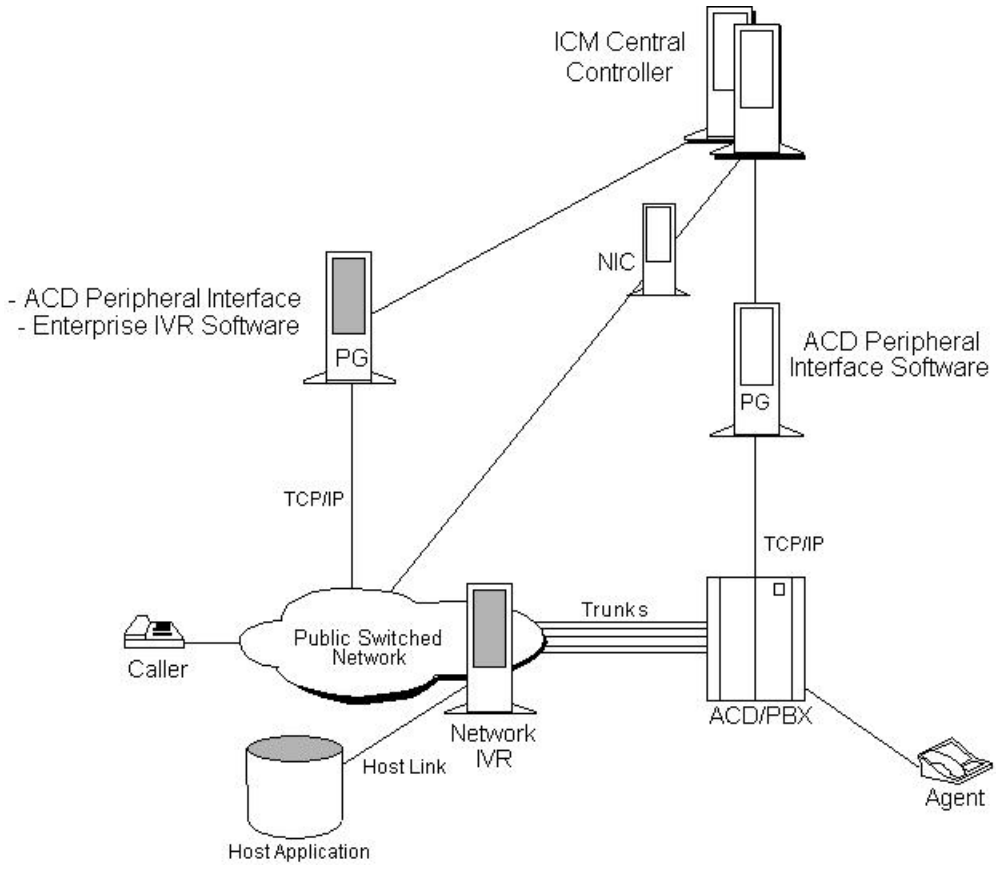


When the caller dials the toll-free number, the Unified ICM instructs the network to transfer the call to the network-based VRU. The network VRU then prompts the caller for input. If the caller requires additional information (such as speaking to an agent), the VRU dials a “hidden” toll-free number. The network then queries the Unified ICM system for a routing destination. The Unified ICM system returns a routing label and the network transfers the call to the specified ACD and DNIS. An agent at the ACD can handle the call to completion or transfer the call for subsequent handling.

In-Network VRU with VRU and ACD PGs

In this configuration, the VRU is provided as a service by the network provider. The network transfers all calls to a destination VRU. The VRU either handles a call to completion or transfers the call to another resource (for example, an agent at an ACD).

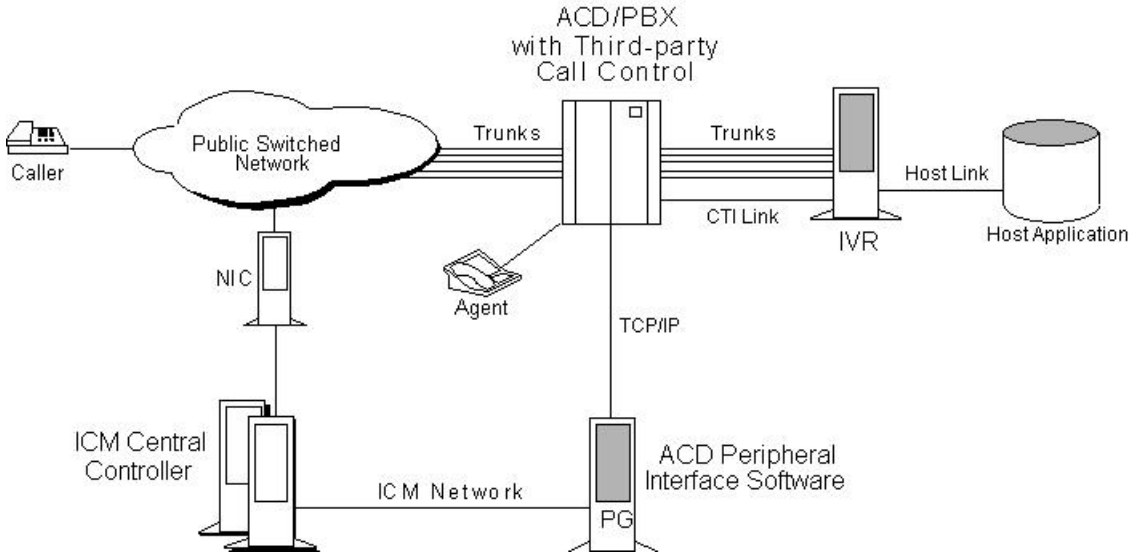
Figure 5: In-Network VRU with VRU and ACD PGs



VRU Transfer Routing Using Third-Party Call Control

In this configuration, the VRU invokes a transfer request to transfer a call to the ACD. The VRU uses a CTI link to the ACD which sets variables in the transfer request (for example, CED, DNIS, CLID, Social Security number, or account number). This configuration is viable only if the VRU is attached to an ACD that supports post-routing. The following figure provides an example of this configuration.

Figure 6: VRU Transfer Routing with Third-Party Call Control



When the ACD receives the transfer from the VRU, it makes a route request to the PG to conduct an enterprise-wide agent selection. The PG routing client sends a route request to the CallRouter. The CallRouter passes a response to the PG and on to the ACD. The ACD then transfers the call to the specified destination.

VRU Programming and Application Development

The Open VRU Interface allows the Unified ICM to see some level of VRU application-specific data (for example, menu selections). An VRU application developer can use the Open VRU Interface to implement call routing (routing client) and monitoring capabilities.

The VRU routing client allows the VRU to send route requests to the Unified ICM via the PG. These requests can include data variables such as Customer ID and Menu Selections. The Unified ICM system uses this data to instruct the VRU where to transfer the call. The application developer uses the VRU monitoring interface to send VRU port and application activity data to the Unified ICM system for call routing and reporting.

VRU Peripheral Gateway

The Cisco VRU interface software runs as a logical PG on a standard Peripheral Gateway hardware platform. A single PG hardware platform can support a maximum of two logical PGs. A single PG platform may run one or two VRU PGs or an VRU PG and an ACD PG. For example, you can have a PG hardware platform that runs an Aspect CallCenter PG and an VRU PG. A logical PG can have PIMs for one type of ACD, plus an VRU PIM. The hardware platform must have sufficient capacity to handle the aggregate load from all attached peripherals.

Note The multi-instance CTIOS configuration supports up to ten logical PGs on a single PG platform. These PGs are configured as separate customer instances.

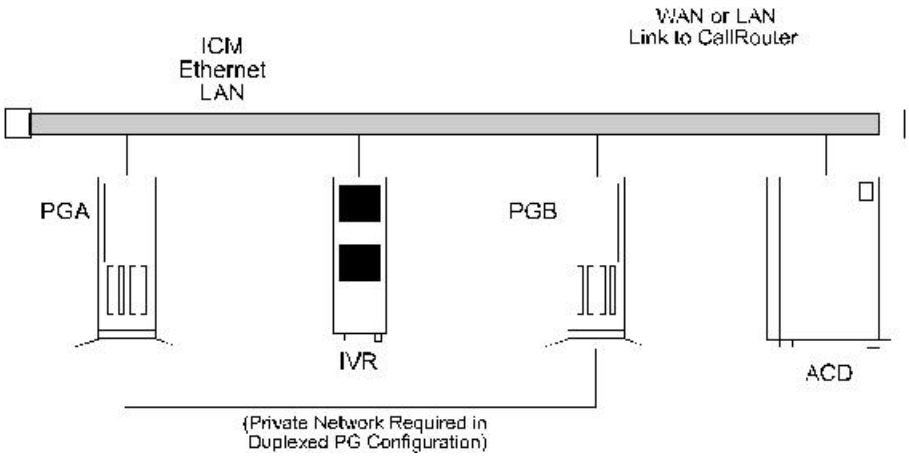
In the following figure, a duplexed set of PGs serve both an VRU system and an ACD system. These PGs are equipped with both ACD and VRU interface software.

Note The VRU can also be on a System UCCE PG or a UCCE Generic PG.

The VRU Peripheral Gateway can run in simplexed or duplexed configurations. In a duplexed configuration, only one side of the PG has an active connection to the VRU at a time.

Note When multiple VRUs are connected to a PG, VRUs that use poll-based monitoring cannot be mixed with VRUs using any other kind of monitoring.

Figure 7: VRU-to-PG Interface



For information on how VRU systems fit into the Unified ICM data communications networks, see Datacom Requirements.