

Selecting an NI Platform

NI offers over 1000 products for the data acquisition industry. Most of those are hardware, and most work with one or two of five prominent chassis families. Narrowing down the selections to one family can make the overall task of configuring a system less daunting. This paper aims to provide a few questions to ask the end user. The answers can often allow you to focus on a few or just one family quickly and hence facilitate selecting the rest of the hardware required. First, we explain the questions to ask. Then we provide a graphic illustrating how to use the answers in the decision.

Questions To Ask

Will the system need to run unattended and have safety risks? For example, a robot or large fan runs in an accessible area guarded by proximity sensors. When a person trips a sensor, the system must reliably shut down immediately and automatically.

Is there a need to process signals faster than 20K samples / second? The Nyquist criteria dictates that you must sample the signal at least twice as fast as the highest frequency component you wish to capture to obtain information about signals. Thus, if a system has to process frequency information above 10KHz, you will have to sample faster than 20K samples/second. There may be other reasons to use a higher sampling rate.

Are there high channel counts, or RF signal processing? These two questions have the same effect on the overall answer. High channel count is a bit vague and is very dependent on the types of channels. One rough rule of thumb is that if you need more than two of the same module, you will likely have a relatively high channel count. Radio Frequency (RF) testing has several unique challenges and requirements. Only one platform supports RF.

Budget is tight and performance needs are all low. By low performance, we mean relatively low sampling rates and small current needs (Digital outputs limited to 4 mA, for example).

If the answers to all of the above questions are “No,” there is a family for that as well.

If you can obtain the answers to the four questions above, the graphic on the next page will direct you to the most likely product family to consider for the given application. In some cases, different portions of the overall system may have different answers. It is possible to mix NI families within an application. Additional factors to consider in pursuing that approach include:

1. Is it more cost-effective to implement everything in the higher-end family rather than purchasing the chassis for two or more families?
2. Will the answers to the questions change with time?
3. Would space requirements limit the number of platforms used in the same system?

Quick Guide

To quickly narrow down the NI solutions to suggest, ask if:

- The system will run unattended and have safety risks
- Need to process signals faster than 20K samples/second
- High channel counts or RF signal processing
- Budget is tight and performance needs are all low
- None of the above
- In all cases, LabVIEW is the best software choice

