7. Scheduling Radar TASKS

The TASK Scheduler configures the automatic operation of the radar. It tells IRIS which radar TASKS to run and when to run them. It can also run interactive manual scans. Because it controls real time processes, this menu can be modified only by an operator, and only one operator at a time can control the menu.

You can schedule TASKS to start at regular times or call for TASKS to run as soon as possible (ASAP). Regularly scheduled TASKS are typically used for the routine operation of IRIS. Schedules can be created, tested, saved and recalled for different modes of operation.

The TASK Scheduler can run TASKS individually or link up to three TASKS together to create a hybrid TASK. For example, a volume scan uses a low PRF to get a large, unambiguous range at low elevation angles and a high PRF to get a large, unambiguous velocity at high elevation angles where range folding does not occur. These two TASKS can be linked to scan both the low and high elevation angles in a single hybrid TASK.

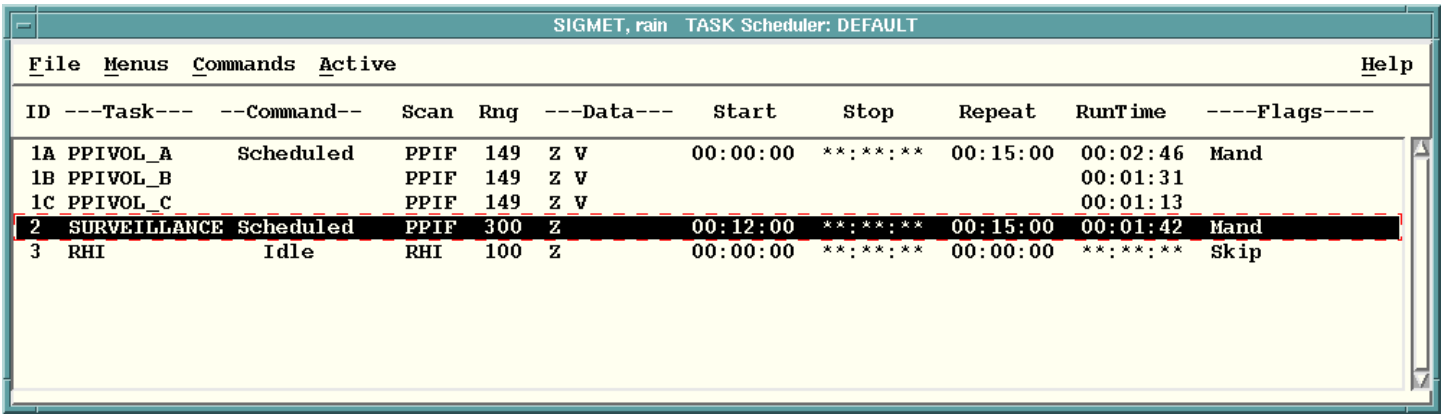
The TASK Scheduler also supports the selection of either “Active” or “Passive” data acquisition. Most systems use active data acquisition where IRIS controls the antenna scanning. However, in some installations, an external system is controlling the antenna and in passive mode, IRIS acquires the data by simply “listening” to what the radar is doing and synchronizing to the external control.

To enter the TASK Scheduler:

Choose **Menus–>Task Scheduler** from the IRIS menu bar or from any of the IRIS menus.

In this chapter:

7.1 TASK Scheduler Menu



Hint: The DEFAULT TASK schedule cannot be deleted. Therefore, you should store your standard operating schedule under DEFAULT.

The body of the menu contains a list of the TASKS that make up the schedule. By positioning the mouse cursor within the list, you can pop up menus of commands to manage the TASKS, set the time that a TASK should run, and resolve scheduling conflicts.

ID and TASK

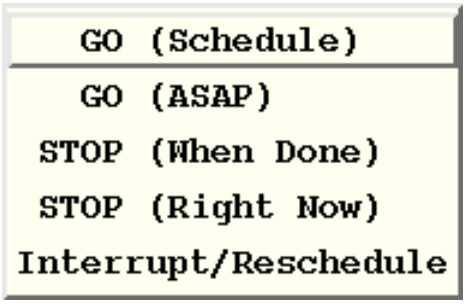
IRIS assigns a sequential ID number to each TASK in a schedule. Members of a hybrid TASK have the same number, plus an A, B or C to differentiate them. This information is shown in the first field of the list, labeled ID. The TASK field shows the name of the TASK assigned in the TASK Configuration menu.

When the mouse cursor is positioned over either of these fields, you can pop up the following menu:

Add adds a TASK to the schedule.
Remove deletes a TASK from the schedule.
Edit invokes the TASK Configuration menu for the selected TASK.

Command

You can issue commands to start and stop TASKS by positioning the mouse cursor over the Command field and choosing a command from the pop-up menu:



Go (Schedule) runs the TASK according to schedule.
Go (ASAP) runs the TASK immediately subject to the priority of other TASKS.
STOP (When Done) stops a TASK as soon as it finishes running.
STOP (Right Now) stops a TASK immediately.
Interrupt/Reschedule similar to Stop (Right Now) except that the TASK is stopped immediately and then rescheduled.

This field also shows the status of the TASK as one of the following values:

– – –	There is no name assigned to the TASK.
Inactive	The TASK has not been activated by the Go command.
Scheduled	The TASK has been activated by the Go command, but it is not the TASK's turn to run.
Running	The TASK is currently running.
ASAP	The TASK is scheduled to run as soon as possible. This is the status of a TASK after a Go Now command has been issued.

For hybrid TASKS, the B and C part show only the message "Running" when the TASK is running. Otherwise, this field is blank.

Scan

This is a display-only field showing the type of scan being performed by the TASK, such as a PPI Full or PPI Sector scan. This information is taken from the TASK configuration.

Range

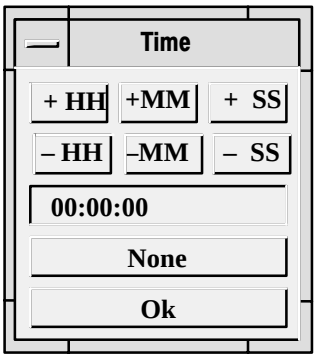
This is a display-only field showing the value of the Max Range field, taken from the TASK configuration.

Data

This is a display-only field showing the value of the Data DSP field, taken from the TASK configuration.

Start, Stop, and Repeat

These fields control when a scheduled TASK runs. IRIS can schedule TASKS to run at a specific time (based on a 24-hour clock), or as soon as possible regardless of the clock time. For hybrid TASKS, the B and C parts are left blank because a hybrid TASK is treated as a single TASK for scheduling purposes. The times specified are either UTC or local based on a question in **setup**/general.



You set the time by positioning the mouse cursor over the field and popping up the Time menu.

Use the plus and minus buttons to increase and decrease the hours, minutes and seconds.

When you are satisfied, press Ok. The time you specify is inserted into the field.

Press the None button to clear the time selection.

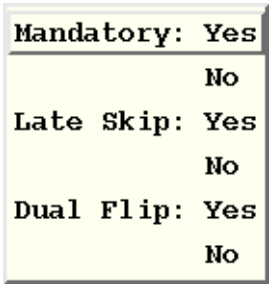
You may also enter a time value directly and press Ok to insert it into the field.

Run Time

The RunTime field is a display-only field that shows the actual time required to run the TASK when the TASK last ran. This is helpful in creating new schedules. As a simple example, if the run time is 00:05:30, the TASK should not be scheduled to run more frequently than every 5 1/2 minutes.

Flags- Mandatory, Skip, Flip

These flags control options relating to priorities and to dual system operation, i.e., when two IRIS systems are controlling two different radars through the same antenna.



Mandatory and Skip- These selections are used to set scan priorities and resolve schedule conflicts. When Mandatory is set to “yes,” the task can interrupt a non-mandatory task when its scheduled time arrives. When Skip is set to “yes,” the task is skipped if the radar is busy with another task when its scheduled time arrives. The task can run late by up to 60 seconds before it is skipped. For hybrid TASKS, the B and C parts are left blank because a hybrid TASK is treated as a single TASK for scheduling purposes.

Dual Flip- This is a special feature used only for dual IRIS systems that operate two different transmitter/receivers through the same antenna. One mode of operation is that when one of the systems finishes the scan, it gives up control of the radar to the other system. In this way, the two systems, perhaps operating at two different wavelengths, can “take turns” such that one system runs a TASK and then the other system runs a TASK. For example, setting the Flip flag to “Yes” on system A will allow system B to run a TASK after A has completed its TASK. If system B does not start a TASK within 3 seconds, then system A is free to resume its TASKS.

7.2 Adding, Editing, and Removing TASKS in a Schedule

To add a TASK to a schedule:

1. Position the mouse cursor over either the ID or TASK field and choose **–>Add** from the pop-up menu. IRIS then displays a list of available TASKS.
2. Choose a TASK from the list, and IRIS adds it to the schedule, filling in the information for the selected TASK.

Up to eight TASKS can be loaded into the schedule in this way. To load or view TASKS that are off the screen, use the scroll bar.

Hybrid TASKS are composed of either two or three individual TASKS. Names for hybrid TASKS, assigned in the TASK Configuration menu, have the special form:

`any_name_A`

`any_name_B`

`any_name_C`

The _A, _B and_C added to the end of the TASK name denote the first, second and optional third part of a hybrid TASK.

For scheduling purposes, hybrid TASKS are treated as a single TASK. When one part of the TASK is added into a schedule, all the other parts are added as well.

To edit a TASK configuration:

If more information is needed about a TASK, or if you want to modify the TASK, IRIS provides a convenient way to go directly to the TASK Configuration menu.

1. Check that the TASK is not active — its status should not be “Scheduled” or “Running.”
2. Position the mouse cursor over the TASK or ID field and choose **–>Edit** from the pop-up menu. This brings up the TASK Configuration menu with the current TASK loaded into the menu.
3. After you have viewed or modified the TASK, be sure to save the configuration before you exit. Otherwise, the new configuration is lost when you return to the TASK Scheduler.

To remove a TASK from the schedule:

1. Check that the TASK is inactive — its status is not “Scheduled” or “Running.”
2. Position the mouse cursor over the TASK or ID field and choose **–>Remove** from the pop-up menu.

7.3 Running and Stopping a TASK

To run a TASK:

1. Select the TASK you want to run.
2. Position the mouse cursor over the Command field and choose either: **–>Go (Schedule)** or **–>Go (ASAP)** from the pop-up menu.

The Go (Schedule) command starts automatic operation according to the TASK's schedule. Note that the TASK status changes from "Inactive" to either "Running" or "Scheduled" when the Go command is issued.

The Go ASAP command is similar, but the first run of the TASK starts immediately, subject to the priority of other TASKS that may be running. This is used for interactive operation. The status changes to "ASAP," indicating that the TASK is scheduled to run as soon as possible. The TASK runs once, then the status changes to "Scheduled" — it is inserted into the schedule as if the Go command were issued.

To stop a TASK that is running:

1. Select the TASK you want to stop.
2. Position the mouse cursor over the Command field and choose either **–>Stop (When Done)** or **–>Stop (Immediately)** from the pop-up menu.

If the TASK is not running (its status is "Scheduled"), the Stop and Stop ASAP commands behave the same. However, if a TASK is "Running," the Stop (When Done) command allows the TASK to complete, while the Stop (Immediately) command stops the TASK immediately, even though it has not completed.

⚠ **Caution: When Stop Immediately is used, TASK data may be lost.**

7.4 Scheduling Automatic TASKS

You can schedule a TASK to run at regular clock intervals and assign priorities to each TASK. This is important when system operation requires that products be generated on a regular basis.

TASKS are scheduled by setting the Start, Stop, and Repeat fields, as follows:

- Start specifies the first time after midnight that the TASK runs.
- Stop specifies the last time after midnight that the TASK runs. If a TASK should run the entire day, specify "None."
- Repeat specifies the interval between successive runs.

For 24-hour clock scheduling, the schedule is repeated daily. Consider the following examples:

Schedule	TASK	Start Time	Stop Time	Repeat
Hourly, on the hour, all day		00:00:00	None	01:00:00
5 minutes after the hour, every 15 minutes, all day		00:05:00	None	00:15:00
Every 2 hours on the half hour from 02:30 to 8:30, and hourly for the rest of the day	1	02:30:00	08:30:00	02:00:00
	2	09:30:00	01:30:00	01:00:00

In the third example, two identical tasks are defined with different ID's and scheduled at different times. The second TASK is scheduled to start at 09:30 to achieve hourly runs after the first TASK ends at 08:30. The second TASK is scheduled to stop at 01:30 because that is the last possible time the TASK can run before the first TASK starts again at 2:30.

Ideally, you should adjust the scheduling so that no conflicts occur — no two TASKS should run at the same time. However, if new TASKS are created to observe specific phenomena, such as an RHI scan through a thunderstorm that needs to run "ASAP," it is possible for even the best planned schedule to fall behind.

The Mandatory flag can help resolve scheduling conflicts. It defines the priority of the TASK. To set this flag, position the mouse cursor over the field and choose **–>Mandatory– Yes** from the pop-up menu if the TASK must run at the scheduled time without interruption; choose **–>Mandatory– No** if the TASK can be interrupted. If a TASK is interrupted, the resulting data base is complete up to the time of interruption.

When a mandatory TASK is running and another TASK comes up to run, the second TASK is placed on hold. When this happens, operations can fall behind schedule. The Skip feature can help get the system back on schedule. If the Skip flag is set to "Yes," the late TASK is simply skipped. If it is set to "No," the scheduled TASK runs as soon as possible after completion of the current TASK. In the case of multiple late TASKS, IRIS picks the latest to run next, starting with any mandatory TASKS.

The following summarizes the priority of TASKS:

- Mandatory TASKS always interrupt non-mandatory TASKS.
- Mandatory TASKS can never be interrupted.
- If a mandatory TASK is late and the Skip flag is set to “No,” it runs before any non-mandatory TASK.
- If more than one mandatory TASK is late and the Skip flag is set to “No” for these, then the latest runs first.

When the Go Immediately command runs a TASK immediately, the priority of the TASK is used to arbitrate conflicts in a manner identical to that described above. The Skip flag does not apply because the TASK runs only once.

If TASKS are running consistently late, the overall scheduling should be reexamined and adjusted accordingly.

7.5 Scheduling and Running Manual Scans

Manual TASKS are inserted into the schedule the same way other scan types are inserted, except that antenna control is not automatic. For interactive manual scans, you should use the **real time display** and the **antenna** utility (both described in the *IRIS/RDA Utilities Manual*). This will let you have interactive control and feedback. IRIS will never take a noise sample before running a manual scan.

To run a manual scan TASK, first insert it into the schedule. The TASK can be scheduled identically to any other TASK, but in most cases, you should use a manual scan TASK on an *ad hoc* basis. In this case, you do not want the manual scan TASK to interfere with your regularly scheduled TASKS. Here are some tips for doing this:

- Set the Stop field to "None" so the scan can work at any time of day.
- Set the Repeat field to "None."
- Set the Mandatory field to non-mandatory, so it does not interfere with mandatory scans, such as a regularly scheduled volume scan.
- Set the Skip field to "Yes," so that if it is preempted, it does not run.

Choose either **–>Go Schedule** or **–>Go ASAP** to start a manual scan TASK. The Go command delays the start of the TASK according to the Repeat field, like any other TASK. If the Repeat field is set to "None," the Go and Go Now commands have the same effect.

When the TASK configuration is set to "Non-Continuous," the TASK stops automatically after it has collected the prescribed number of data rays (up to 720). If the TASK configuration is set to "Continuous," you must stop the TASK manually by issuing the Halt command. You should usually set the TASK configuration to "Continuous", especially if your are doing and interactive scan with the real time display and the **antenna** utility. (See Chapter 6 for information on configuring a manual scan.)

7.6 Passive IRIS

For some installations, IRIS is not in active control of the radar. Rather the radar system is controlled by an external system and IRIS merely “listens” and acquires data. This is called “passive IRIS”. For more information, refer to **Appendix C**.

The configuration of the **Setup** utility (setup/ingest/scanning) determines whether your system functions as:

- Active only
- Passive only
- Active/passive (selectable)

In the first two cases, there is no user configuration to do and the Task Scheduler menu will simply show either Active or Passive in the top line of the menu on the right side. In the third case, where you can select active or passive operation, this selection is made in the Task Scheduler on the first menu line.

In passive mode, the Task schedule should be loaded with the Tasks corresponding to what the active system is doing and these should all be set to the command “Go on schedule”. Note that if you request Go ASAP in passive mode, an error message will inform you that this is not allowed.