

Defining Data Collection on Dlink Networks

There are a numbers of factors that you should consider when planning data collections for monitored Dlink networks. You must identify the physical arrangement of the devices in your environment and their relationships to each other. Identify the way in which the applications are operating and polling over the network, and identify the type of network you have to determine how the data is collected. The following network types are defined below:

- Rarely Polled Networks
- Frequently Polled Networks
- Sleep Mode Networks

Rarely Polled Networks

Rarely polled networks typically have very little traffic most of the day with the exception of increased traffic at specific times. These networks are good candidates for active data collection. To collect actively, PulseNET requests data from each device directly and intrusively. Active data collection is fast and reliable, but it can impact other traffic that may be flowing through the device at the same time.

If the network devices have limited battery power (for example, solar devices), however, use passive collection so that collection and polling occurs at the same time.

Key Considerations:

- **Schedule** — Use careful scheduling to control collection times and avoid impacting critical network operations. You can independently schedule performance and configuration data collection to occur either on a frequency (for example, every 20 minutes), or on a pre-defined schedule.
- **Request Timeout** — The length of time that PulseNET waits for a response from the device. Remember to consider latency within your network because of the distances between devices, and also the number of gateways or repeaters that may be deployed.
- **Request Gap** — The length of time that PulseNET waits between data requests. A larger request gap means that it takes longer to retrieve all the data for that device, reducing the coherency of the data. However, a larger gap also reduces the intrusiveness of the data collection, relieving network performance. If you need to configure data collection using the frequency technique, select a larger request gap (1-2 seconds).

Frequently Polled Networks

Frequently polled networks typically have significant and frequent traffic on the network. Finding opportunities to schedule active collection may be difficult because active

collection can be intrusive regardless of when it occurs. In these networks, passive data collection is recommended. When you use passive data collection, the performance data requests are sent with your application polling. As a result, PulseNET only receives responses when there is other traffic on the monitored network.

Key Considerations:

- **Data Freshness** — PulseNET requests information from Dlink devices one item at a time. Responses are received only when application data is flowing on the network. If PulseNET needs to collect four data points at a time, and your application polls twice a day, it may take two days before a specific data value is refreshed.
- **Timeouts** — PulseNET assumes a round-robin style of data collection. Timeouts should be configured to reasonably reflect the amount of delay expected between responses from different devices on your network. Timeouts that are too short result in incomplete data collection and the devices are incorrectly marked as unavailable. If you have a layered gateway or repeater devices, multiple data collection cycles may be required before all the devices send back the requested performance data. With these configurations, the timeout value may need to be set as a multiple of your application polling frequency.
- **Forgive Missed Polls** — The value of this parameter determines how quickly a device is marked as unavailable. If a device misses the specified number of consecutive data collection requests, it is considered unavailable.

Sleep Mode Networks

Sleep mode networks typically have limited access to power. These networks are often configured to operate in a low-power mode most of the time, and are woken up periodically for scheduled activities. These networks require special handling in PulseNET and should be monitored with care. Active data collection must be used for these networks.

Passive collection can be used if the sleep mode network is awake for regular intervals, for example if devices are scheduled to be awake for 10 seconds and then sleep for 20 seconds. If you use passive collection, the Passive Collection Repeat Interval parameter value should be low so that the request frequency is high and can catch the devices when they are awake.

Key Considerations:

- **Scheduling** — Allow sufficient time between your application polling and the schedule for PulseNET data collection. Also, consider how the power is consumed for monitoring your devices. Ensure that you leave enough power available for normal application polling.
- **Sleep Inhibit Timeout** — This parameter determines how long the devices stay awake when PulseNET attempts to collect monitoring data. If this parameter is too short, some devices will go back to sleep before they have an opportunity to respond; these devices

are then reported as unavailable. If the parameter value is too long, you may be consuming more power than necessary when monitoring data.

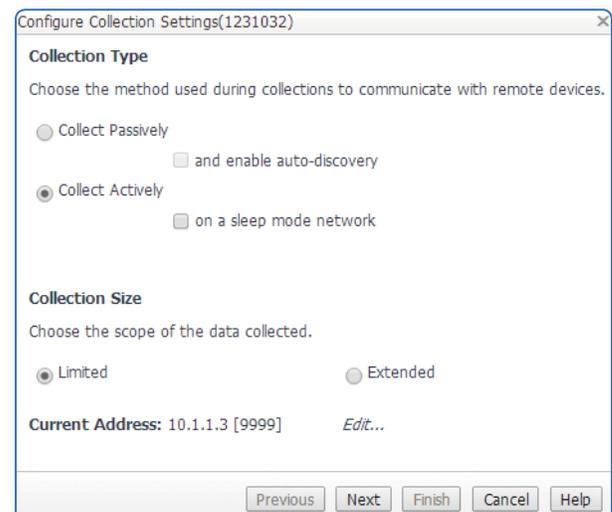
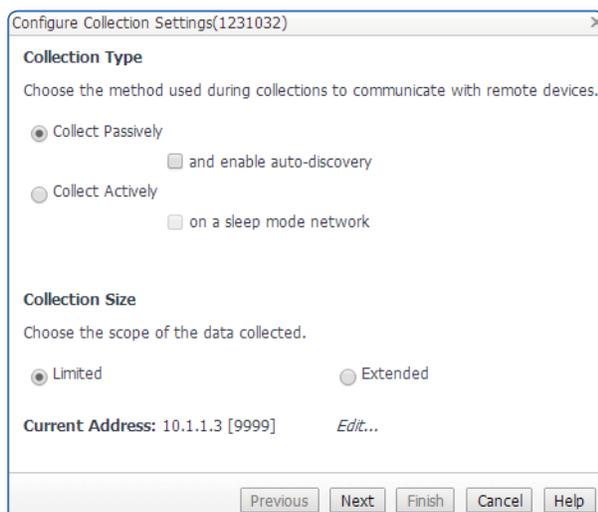
Collecting Data through Dlink Master Devices

Use the Configure Collection Wizard to define the collection type and the scope of data that is collected on individual Dlink master devices.

Default settings are predefined globally for master devices in the Dlink Advanced Configuration dialog. For more information, see “Changing Global Advanced Dlink Settings” in the Administration Guide.

To define the settings for an individual master device:

- 1 On the Detail view for the master, click the  **Administration** menu icon and select **Configure Collection** from the list.
- 2 In the Configure Collection Wizard, select the appropriate collection type for the master. (Use the information in [Defining Data Collection on Dlink Networks](#) to decide which collection type is appropriate for the Dlink network.)
 - *Collect Passively* — If you choose passive collection, you can also select the option for Continuous Auto-discovery. When PulseNET broadcasts the passive data collection request, all of the remote devices in the network receive the request, even unauthorized remote devices. If an unauthorized remote device returns data, the information is collected and stored. Administrators can view and authorize these discovered remote devices at any time in Passive Dlink Selection (Administration > Device Selection). If Continuous Auto-discovery is not selected, the information about the unauthorized remote devices is discarded.
 - *Collect Actively* — If some of the remote devices on the network are in sleep mode, also select Sleep mode network.



- 3 Choose the collection size. To minimize the impact of data collection, which can be intrusive or slow, you can limit the amount of data collected. The polling interval for passive collection is determined by your enterprise application polling interval.

- **Limited**—a smaller selection of data is requested and returned for masters and remote devices. This is the default value. Be aware that the following metrics are not returned by a limited collection: Active Freq TX; Active Freq RX; Continuous Key; Data Key Mode; EMP; RTU Simulator ID; Seamless Setting; and Seamless Timer.

The total time to complete a limited collection will be less than for an extended collection. For example, an SD radio network that is being polled every five minutes may take 30 minutes to complete a limited performance collection and almost two hours to complete a limited configuration collection in passive mode.

If this same network is only being polled every hour, it may take three hours to complete a limited performance collection and almost twenty hours to complete a limited configuration collection in passive mode. These estimated completion times will be longer for non-SD radio networks.

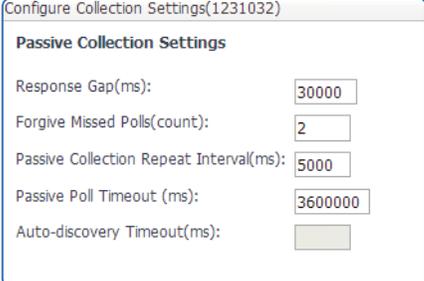
- **Extended**—all available data is requested and returned for masters and remote devices.

The total time to complete an extended collection will be greater than for a limited collection. For example, an SD radio network that is being polled every five minutes may take between two and three hours to complete an extended configuration collection in passive mode.

If this same network is only being polled every hour, it may take more than a day to complete an extended configuration collection in passive mode. These estimated times will be longer for non-SD radio networks.

- 4 Click **Next**.
- 5 If you selected **Collect Passively**, complete the following steps. Otherwise, continue to next step.

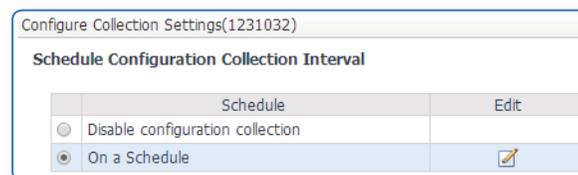
- In the **Response Gap** field, type the value for the length of time, in milliseconds, that the system waits for the device to respond to the request. If the request timeout is reached, another request is sent.
- In the **Forgive Missed Polls** field, type the number of times a device can be unresponsive to consecutive requests before it is marked as unavailable.
- In the **Passive Collection Repeat Interval** box, type the delay time, in milliseconds, between passive requests. For example, if the value is 0 (zero), a single passive request is sent and then the system waits until the request times out (Response Gap). If the value is 10000, a



Passive Collection Settings	
Response Gap(ms):	30000
Forgive Missed Polls(count):	2
Passive Collection Repeat Interval(ms):	5000
Passive Poll Timeout (ms):	3600000
Auto-discovery Timeout(ms):	

passive request is sent every 10 seconds until the request times out. The system resets the timeout value if it receives a response from any new devices before timing out.

- In the **Passive Poll Timeout** box, type the length of time, in milliseconds, that the system waits for a poll to happen. The value is typically high because it is based on how often the network is polled.
- In the **Continuous Passive Discovery Timeout** box, type length of time, in milliseconds, required for the poll to visit all of the devices on the network. (The box appears disabled if Continuous Discovery was not selected on the previous wizard page.)
- Click **Next**.
- Schedule the configuration data collection by selecting one of the following options:
 - *Disable configuration collection* — Configuration collection may interrupt your application polling. Disable this option if you expect the configuration data to be static. (Configuration data collection retrieves and updates information about TransNET device relationships. Ensure that you schedule configuration collections occasionally if you want updates on TransNET device relationships.)

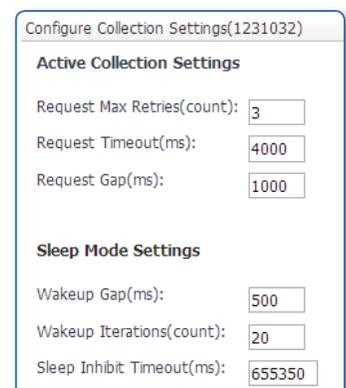


- *On a Schedule* — Schedule configuration data to be collected on specific days of the week or dates during the month. Click **Edit** to change the schedule settings. For more information about scheduling configuration data collection, see “Scheduling Device Data Collection” in the Administration Guide.

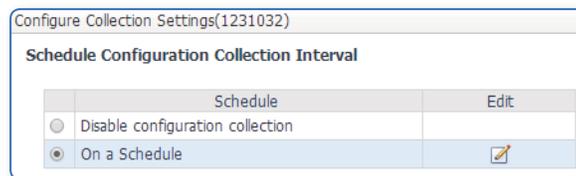
- Click **Finish**.

6 If you selected **Collect Actively** in step 3, complete these steps.

- Type the values for the active collection settings. If the values are not changed, the global values in Dlink Advanced Configuration are used. (For more information about the settings and default values, see “Changing Global Advanced Dlink Settings” in the Administration Guide.)
- Type the values for the sleep mode settings. If the values are not changed, the global values in Dlink Advanced Configuration are used.



- Click **Next**.
- Select the type of schedule for performance data collection. Click  **Edit** to change the schedule settings.
- Click **Next**.
- Schedule the configuration data collection by selecting one of the following options:
 - *Disable configuration collection* — Configuration collection can interrupt your application polling. Disable this option if you expect the configuration data to be static. (Configuration data collection retrieves and updates information about TransNET device relationships. Ensure that you schedule configuration collections occasionally if you want updates on TransNET device relationships.)



- *On a Schedule* — Schedule configuration data to be collected on specific days of the week or dates during the month. Click  **Edit** to change the schedule settings. (For more information about scheduling configuration data collection, see “Scheduling Device Data Collection” in the Administration Guide.)
- Click **Finish**.

The Dlink master device is updated with the collection type and scope of data. When the scheduled collection returns data, you can view the information by navigating to the **Summary** dashboard and clicking on a device to see more details.

Managing Firmware

For PulseNET operators with elevated privileges, the  **Administration** menu on the **Summary** dashboard may show the *Firmware Push* option. When this option is selected, the **Manage Firmware** dashboard is displayed. For information about how to use all of the options on this dashboard, please refer to “Managing Firmware Images” in the Administration Guide.