

Packet Tracer – Diabetic Patient Healthcare IoE Solution

Background / Scenario

John Doe is a 55 year-old type 1 diabetic who lives alone. John has trouble keeping his glucose within a healthy range. He and his healthcare provider have decided to implement an IoE solution to continuously monitor important indicators of his condition and send help if necessary. John will wear a smartwatch to monitor his respiration and exercise level. He will also use a Continuous Glucose Monitor (CGM) that will report his glucose levels. The data from these devices will be sent to his Health Monitoring Company (HMC), which will send medical assistance should his condition become life threatening.

Note: This document is a supplement, but not a replacement, for the video demonstration. The video demonstration is the primary source for how to navigate this activity.

Part 1: Configure Devices for Connectivity

You will configure John's router to use DHCP to assign IP addresses to his IP-enabled devices in his home.

- a. Click **John's Home**.
- b. Click the **Home Gateway** router.
- c. Click the **GUI** tab.
- d. Under the **Network Setup** heading, assign **192.168.0.1** to the **Router IP**. Choose **255.255.255.0** for the **Subnet Mask**.
- e. Click **Enabled** next to **DHCP Server** to start the DHCP server.
- f. Click **Save Settings** to save the changes.

Part 2: Explore all the IoE Devices

Step 1: View John's vitals on an MPTC Tablet.

The medical staff in the Mobile Patient Treatment Center (MPTC) can monitor John's levels while they are traveling to John's home. The medical staff can also receive an unlock code to enter John's house if he is not responsive.

- a. Open one of the tablets in the MPTC.
- b. Click the **HC Mobile Monitoring Web Application** tab to view John's vitals.

Step 2: View John's vitals on his Tablet and Television.

John can also monitor his vitals on his devices, a smartphone, smartwatch, tablet and his television.

- a. Open the Tablet in John's home.
- b. Click the **HC Mobile Monitoring Web Application** tab to monitor his vitals.
- c. Open the Smart TV in John's home.
- d. Click the **HC Mobile Monitoring Web Application** tab to monitor his vitals.

Part 3: Create an Event that Requires a Response

You will trigger an event that will cause John to require medical attention.

Step 1: Explore the Environment window.

In the Environment window, you can influence John's glucose level. When John's glucose level is no longer in his normal range, the HMC will send John alerts on his connected devices to prompt him to call them so that they can assess his condition and send medical help if necessary.

On the dashboard in the Environment window, you can induce hypoglycemia, hyperglycemia, or restore his glucose level back to a normal range.

Note: The levels used to simulate this event are based on John Doe's historical data. Analytics have determined that the pattern and levels reported have led to diabetic coma or emergency room visits for John in the past. These levels do not necessarily signify dangerous levels for all diabetic patients.

Step 2: Induce hyperglycemia.

John has finished a big meal at his family reunion at his house. He has neglected to take his insulin while he is engaged with his family.

- a. Navigate to the **HC Mobile Monitoring Web Application** tab on his tablet to monitor his glucose levels.
- b. Navigate to the **Wearable Watch with Sensors** tab on his smartwatch to monitor his glucose levels.
- c. In the **Environment** window, click **Induce Hyperglycemia** to increase his blood sugar level, simulating a hyperglycemic event.
- d. Observe the alerts on John's smartwatch and tablet.

What actions should John take at this time?

How long will it take before help is sent?

Ignore the warning. What happens when he does not respond?

- e. Restore John's vitals back to normal levels.

Step 3: Induce hypoglycemia.

John skipped his dinner and fell asleep while he was watching television. John's glucose level has dropped to a dangerous level.

- a. Navigate to the **HC Mobile Monitoring Web Application** tab on his smartphone to monitor his vitals.
- b. In the **Environment** window, click **Induce Hypoglycemia** to decrease his blood sugar level, simulating a hypoglycemic event.
- c. Observe the alerts on all his devices, and on the MPTC tablet.

If John does not take the necessary steps to return his glucose level back to his normal range, John will receive an alert from the HMC to call them so that they can assess his condition. If John does not respond to the alert, the MPTC will be dispatched to his location to administer medical assistance.

Notice the alerts on the MPTC tablet.

What happens when the MPTC is dispatched?

How long will it take the MPTC to arrive?

What happens when the MPTC arrives?

- d. Restore John's vitals back to normal levels.