Creating Your Own DataBroker Server

For security or convenience reasons, customers may wish to create their own version of the DataBroker server on their own hardware rather than using the Jaco DataBroker Appliance. The following highlights the important steps that need to be taken when setting up such a server.

1. The server should be running Linux. Jaco Care software has been tested using Debian 10 and Debian 11, so either of those versions is recommended for operation. The remainder of these instructions assume Debian 10 or 11.
2. Jaco Care expects the server to be operating on UTC/GMT time.
3. The Jaco Care manual assumes a hostname of jacodatabroker; however, any name may be chosen if SmartTouch III units are configured to point to the new hostname or IP address.
4. A user with the name ‘brokeradmin’ should be created. The password should be set to “Jaco611335” for initial setup and can be changed via the CartScope™ Settings page afterwards.
5. The brokeradmin account should be added to the sudoers group and should be given passwordless sudo. (Note, skipping this step will only mean that the server updating features in the CartScope Settings page will not work properly. All other operations should behave correctly.) To perform these steps, use the following lines:
    - Verify the sudo package is installed as root: `apt install sudo`
    - Add brokeradmin to sudoers as root: `usermod -aG sudo brokeradmin`
    - Switch to brokeradmin from root: `su brokeradmin`
    - Turn on passwordless sudo as brokeradmin: `sudo visudo`
        - Append at the end of the file: `brokeradmin ALL=(ALL)NOPASSWD:ALL`
        - Press CTRL+X then Y then ENTER to save
6. Install packages needed for Jaco Care operation:
    - `sudo apt install -y libaugeas0 python3-certbot-apache mosquitto mosquitto-clients npm curl vsftpd ufw clamav clamav-daemon unattended-upgrades unzip`
        - libaugeas0 and python3-certbot-apache are used for the webserver and code operations
        - mosquito and mosquito-clients are used for the MQTT server
        - npm and curl are used with node package installation and upgrading
        - vsftpd is the recommended FTP package
        - ufw clamav clamav-daemon are used for firewall and antivirus
        - unattended-upgrades is used for automatic updates
        - unzip is used by the Jaco Care code to perform updates on itself
7. Setup FTP using vsftpd by entering sudo nano /etc/vsftpd.conf
    - `Uncomment: write_enable=YES`

  - Uncomment: `local_umask=022`
  - Uncomment: `chroot_local_user=YES`
  - Uncomment: `ls_recurse_enable=YES`
  - Add: `allow_writeable_chroot=YES`
  - Add: `pasv_min_port=40000`
  - Add: `pasv_max_port=50000`
  - Add: `userlist_enable=YES`
  - Add: `userlist_file=/etc/vsftpd.userlist`
  - Add: `userlist_deny=NO`
  - Press CTRL+X, Y, then ENTER to save

8. Add the brokeradmin user to the list of allowed FTP users:
    - `echo ″brokeradmin″ | sudo tee -a /etc/vsftpd.userlist`
9. Set timezone: `sudo timedatectl set-timezone UTC`
10. Set up firewall:
    - `sudo ufw default deny incoming`
    - `sudo ufw default allow outgoing`
    - `sudo ufw allow ssh`
    - `sudo ufw allow 80`
    - `sudo ufw allow 8080`
    - `sudo ufw allow 1883`
    - `sudo ufw allow 20,21,990/tcp`
    - `sudo ufw allow 40000:50000/tcp`
    - `sudo ufw allow http`
    - `sudo ufw allow https`
    - `sudo ufw enable`
    - `Press Y`
    - `sudo service vsftpd restart`
11. Set up unattended-upgrades for apt: sudo nano /etc/apt/apt.conf.d/50unattended-upgrades
    - Uncomment:
        - `″origin=Debian,codename=${distro_codename}-updates″;`
        - `″origin=Debian,codename=${distro_codename}-proposed-updates″;`
        - `Unattended-Upgrade::Remove-Unused-Kernel-Packages ″true″;`
        - `Unattended-Upgrade::Remove-Unused-Dependencies ″true″;`
        - `Unattended-Upgrade::Automatic-Reboot ″true″;`

        -
          ```
          Unattended-Upgrade::Automatic-Reboot-WithUsers "false";
          ```

        -
          ```
          Unattended-Upgrade::Automatic-Reboot-Time "02:00";
          ```
            - Note that a time besides 2:00AM UTC can be chosen, 02:00 is just the default.
    - Press CTRL+X, Y, then ENTER to save
    - Enter: sudo nano /etc/apt/apt.conf.d/20auto-upgrades and append:

        -
          ```
          APT::Periodic::AutocleanInterval "7";
          ```
            - This will automatically clean old apt files after 7 days. The number of days can be adjusted.
    - Enable the timers and set unattended-upgrades to automatically run:

        -
          ```
          sudo systemctl enable apt-daily.timer
          ```

        -
          ```
          sudo systemctl start apt-daily.timer
          ```

        -
          ```
          sudo dpkg-reconfigure --priority=low unattended-upgrades
          ```
        - Select Yes

        -
          ```
          sudo reboot
          ```

12. Copy the Jaco Care files .Zip file to brokeradmin's home directory. FileZilla is recommended to perform this operation. Once copied, use the command "unzip JacoCare.zip" in the command line to unzip the files.
13. Upgrade Node to version 14 or newer

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      ```
      sudo curl -fsSL https://deb.nodesource.com/setup_lts.x | sudo bash -
      ```

    -
      ```
      sudo apt-get install -y nodejs
      ```
14. Install the node package that allows for automatically checking for updates

    -
      ```
      sudo npm install --location=global npm-check-updates
      ```
15. Install all necessary node packages

    -
      ```
      sudo npm install --save mqtt sqlite3 ejs request os express fs path
      nodejs-nodemailer-outlook formidable child_process body-parser basic-
      auth --unsafe-perm
      ```

    -
      ```
      sudo npm install --save bufferutil utf-8-validate --unsafe-perm
      ```

    -
      ```
      sudo npm install pm2@latest --location=global
      ```
16. Startup the JacoCare code

    -
      ```
      pm2 start JacoCare.js
      ```

    -
      ```
      pm2 startup
      ```
        - copy and paste the command it generates, should be similar to

    -
      ```
      sudo env PATH=$PATH:/usr/bin /usr/lib/node_modules/pm2/bin/pm2 startup
      systemd -u brokeradmin --hp /home/brokeradmin
      ```

  - `pm2 save`

17. Setup the MQTT Broker
    - `sudo mosquitto_passwd -c /etc/mosquitto/passwd brokeradmin`
        - Enter password twice
    - `sudo nano /etc/mosquitto/conf.d/default.conf`
        - Add the following to the end of the file:
        - `allow_anonymous true`
        - `password_file /etc/mosquitto/passwd`
        - `listener 1883`
    - sudo service mosquitto restart
18. Add the daemon:
    - `sudo apt install -y avahi-daemon`
19. Clear extra files from apt
    - `sudo apt autoremove -y`
20. Perform a restart for good measure
    - `sudo reboot`

The setup should be complete!