Talk2M
The IIoT cloud developer platform

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eWON Flexy

- eWON Flexy = the IIoT router developer platform
  - IOserver
  - Data collection
  - Alarm notification
  - Custom web pages / Reporting
  - Basic scripting
  - Java ETK (& Java IOserver)
  - ...

=> Data available on the eWON
Customer requests/needs

- I want to access my data remotely.
- I need an application to monitor the data of all my remote devices.
- The application should run on my PC but also on my tablet, smartphone, ...
- Transform the raw data in some nice looking KPI
- And in some cases, it would be great if I could interact with my devices on the remote side.
As a developer...

• You know how to:
  • Develop nice front end applications
  • Put data into a database
  • Transform raw data into KPI
  • etc.

• But how to get the remote data into my application, into my database?
Collect remote data
(push method)
What is the pain?

- Hosting a public Internet server
  - Requires IT skills and infrastructure:
    - Server facing the Internet
    - Public IP
    - Firewall
    - SSL certificate for secure connections
What is the pain?

- Manage data synchronization
  - Only send new data!
  - Handle duplicated history samples, etc.

- Remote control?
  - How to interact with a device on remote side
Talk2M

The IIoT cloud developer platform
• **eCatcher**
  - Talk2M VPN client and configuration tool
  - Establishes a VPN tunnel between your PC and the remote LAN
  - Allows remote maintenance of any device connected to eWON (Ethernet, serial, MPI, USB)

• **M2Web**
  - is the HTTPS web portal to Talk2M.
  - Allows connecting to Web Server of your eWON and local devices (PLC, HMI, Camera)
  - Works on any platforms (PC, Tablets, Phone...)

Let’s connect our eWON to Talk2M ...
Talk2M APIs
(developer platform)

• Talk2M APIs:
  • RESTful API
  • Requests performed using HTTPS
  • Answers received in straightforward JSON-based format
    ⇒ Supports all usual programming languages & platforms

• Requirements:
  • **Developer ID** (ex: 61d88c56-6976-4d3e-ad4e-a79d9e788010)
    - to identify the developer

  • **Talk2M account login** (Talk2M account name, user, password)
    - to grant access to the customer’s remote devices (= eWONs)
2 types of Talk2M API:
DMWeb & M2Web

• DMWeb API
  • To synchronize historical data of eWONs:
    - Historical logging
    - Historical alarms
  • Easy and straightforward way to retrieve new field data

• M2Web API
  • To access the web server of:
    - eWON
    - Any Ethernet devices connected to the eWON.
  • Easy way to interact with your device (read / write)
Talk2M DataMailbox (DMWeb API)
• **Temporary storage for tags and alarms history**
• eWON pushes the data to the DataMailbox of the account
• Easy and straightforward way to retrieve **new** historical data
• Remember your old mailbox managed by your ISP
• No need to host a public Internet server
  • Only outgoing https requests to get the data

• DMWeb: A super-easy data synchronization protocol
  • In one call, retrieve the new data

• Push – Pull Method:
  • Everyone (each eWON & your application) synchronizes at their own pace
  • No need of permanent connection
• **Goal:** Download data from the DataMailbox Server

• **HTTPS-based**
  • Base URL: https://data.talk2M.com/
  • Credentials: t2maccount, t2musername, t2mpassword, devid
  • Methods:
    - getewons, getewon
    - getdata: retrieve historical data using criteria (date, tag, ewon)
    - delete, clean
    - **syncdata**: download all NEW historical data without duplicates
**DMWeb API**

**syncdata**

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**DMWeb API**

**syncdata**

- **syncdata?create Transaction**
  - **Historical Data + transaction Id = 1234**
  - **New Data + transaction Id = 4567** + more data available
  - **syncdata?create Transaction & last Transaction Id = 4567**
  - **syncdata?create Transaction & last Transaction Id = 1234**
Example

https://data.talk2m.com/syncdata?t2maccount=myaccount&t2musername=myname&t2mpassword=mypassword&t2mdevid=61ddac56-6976-4d3e-ad4e-a79dde788010&createTransaction&lastTransactionId=4567
Show Time...
• Development tool:
  • for demo purposes
  • to easily generate the URL for the API requests
  • displays the result of the request

The software is available on developer.ewon.biz.

Let's check on an existing DataMailbox ...
1. Create Tags to acquire data from the field
   - Embedded IO-Servers for standard protocols
   - **Basic** Scripting or **Java EDK** for custom protocols

2. Enable historical logging of tags
   - Store on value changes or on time interval

3. Configure the push data to the DataMailbox
   - Setup the Talk2M connection (using wizard)
   - Define URL: `ewondata.talk2m.com`
   - Define upload interval
   - Define Tag filter (only export important data)

Let's check the result inside the DataMailbox …
Use case with a SCADA/Historian software

- Ignition: SCADA by Inductive Automation

- Ignition contains/allows:
  - Internal scripting engine (python script language)
  - HTTPS requests
  - Json decoder

- Using the DMWeb API “syncdata” retrieve data from the DataMailbox and insert it into Ignition Tag historian
DMWeb API

Summary

Talk2M DataMailbox = Data Collection + Easy

• DataMailbox: We do NOT store customer data
  • The Data Mailbox is a temporary buffer
  • This is why we call it a mailbox
    remember your old mailbox managed by your ISP
  • Implemented as a circular buffer with a maximum retention of 10 days
    - Data older than 10 days are automatically deleted
    - Use DMWeb API Delete method to delete data after synchronization

• Use cases
  • Historians
  • Business Intelligence solutions
  • Reporting tools
M2Web API
The M2Web API allows you to access the web server of:

- eWON
- Any devices connected to an eWON.
• Base URL: https://m2web.talk2M.com/t2mapi/ ...

• Example of parameters & methods:
  • t2mapi/getaccountinfo
  • t2mapi/getewons? [pool=...]
  • t2mapi/getewon? name=...
  • t2mapi/wakeup? name=...
  • t2mapi/sendoffline? name=...
  • t2mapi/get/ <ewonname>/ <path>? <query>
  • t2mapi/get/ <ewonname>/proxy/ <deviceIp>/ <path>? <query>
Example

https://m2web.talk2m.com/t2mapi/getewons?t2maccount=myaccount&t2musername=myname&t2mpassword=mypassword&t2mdeveloperid=61ddac56-6dde-4d3e-ad4e-a79dde788010
M2Web APIs allow the access of any eWON's web resources.

eWON provides many web forms that give the possibility to:

- Get eWON files, tag values, alarms history, user files,... through Export Block Descriptors
- Write Tag values (Memory Tags as well as PLC Tags)
- Acknowledge alarms
- Execute a script
- ...

See «Web Reference Guide» on our support website
• **Export Block Descriptor** = string defining data to export from eWON

• EBD Syntax = successive parameters having following structure:
  \[ xx \text{YY} \]
  Where xx is the parameter name
  YY is the parameter value

• EBD examples:
  - $dtIV $ftH => realtime values in text format
  - $dtHT $ftT $st_h2 $et_m0 => historical table of last 2 hours
  - $dtUF $uf/myfile.xyz => export a file of the /usr directory

• There are mainly 3 kind of parameter to define:
  - The type of data to export (Instant value, Logs, Historical logging, ...)
  - The format of the export (binary, text, HTML)
  - In case of timestamped data, the timeframe to export.
M2Web API & eWON Example

Get Instantaneous Tag values through M2Web API

eWON Web Form to execute an EBD:
http://10.0.0.53/rcgi.bin/ParamForm?AST_Param=<EBD>

The EBD to export realtime data (tags):
$dtIV$ftT

Execute an EBD when locally connected to eWON:
http://10.0.0.53/rcgi.bin/ParamForm?AST_Param=$dtIV$ftT

Execute an EBD through the M2Web API:
https://m2web.talk2m.com/t2mapi/get/eWONName/rcgi.bin/ParamForm?AST_Param=$dtIV$ftT
&t2maccount=MyTalk2MAccount
&t2musername=MyTalk2MUser
&t2mpassword=MyTalk2MPassword
&t2mdeveloperid=61ddac64-6ade-493e-ad4e-a79dde788010
&t2mdeviceusername=eWON_Username
&t2mdevicepassword=eWON_Password
A .NET library is available to ease the job of .NET developers. It exposes the M2WebAPI features through a .NET object model, including the communication with the eWON.
```csharp
var m2web = new M2Web
{
    Talk2MDevId = "TODO: YOU-GUID-COMES-HERE",
    AccountName = "TODO: YOUR ACCOUNT NAME COMES HERE",
    Username = "TODO: YOUR USERNAME NAME COMES HERE",
    Password = "TODO: YOUR PASSWORD NAME COMES HERE",
};

Console.WriteLine("Retrieving list of eWONs...");
m2web.LoadEwons();

Console.WriteLine("Online eWONs:");
var onlineEwons = m2web.Ewons.Where(ewon => ewon.Status == EwonStatus.Online);

foreach (var ewon in onlineEwons)
    Console.WriteLine(ewon.Name + (!string.IsNullOrEmpty(ewon.Description) ? "(" + ewon.Description + ")" : ""));

Console.WriteLine("Strike <Enter> to continue.");
```
Show Time...
• Setup the Talk2M connection (using wizard).
• Nothing further to configure. Web forms are already existing on the eWON.

Let’s check this on our eWON, using a Web browser for demonstration ...

Example 1: Display the eWON-list of my Talk2M account
Example 2: using EBD retrieve instant values
Example 3: using EBD retrieve a /usr file
Example 4: access device behind eWON
Small monitoring app

• Goal: Using M2Web API, we turn on/off the light on our demo Rack

• Developed using C#.NET and console output to demonstrate / interact with the user.

```csharp
Console.WriteLine("+++++++++++++++++++++++++++ ");
Console.WriteLine("+++ Welcome in the LIMP SWITCHING application +++ ");
Console.WriteLine("+++++++++++++++++++++++++++\n\n");
Console.WriteLine("Let's first get the list of eUCNs inside the Talk2M account 'eWON_sales' \n");

M2WebLibrary.M2Web M2WebLib = new M2WebLibrary.M2Web();
M2WebLib.AccountName = "eWON_sales";
Console.Write("Enter Talk2M account username: ");
M2WebLib.Username = Console.ReadLine();
Console.WriteLine();
Console.Write("Enter Talk2M account password: ");
```
• To access the web server of:
  • eWON
  • an Ethernet device connected to the eWON.

• Use cases
  • Monitoring Mobile Apps
  • Remote Control Applications
  • Remote Management of eWON
Almost over...
We hope we could convince you that...

**eWON Flexy** = your IIoT router developer platform

**Talk2M** = your IIoT cloud developer platform
Where to start from...

• Flexthink starter KIT

• Developer web site: https://developer.ewon.biz/

• Developer forum: https://techforum.ewon.biz/
  • Exchange info
  • Ask eWON and Talk2M related developer questions
Thank you!