Triggers

Name	Description	State	Last True	Last False
tBackGardenDripOn	Irrigation Back Garden Drip 1:4 is turned on	false	2015-08-27 23:24:05.159	2015-08-27 23:37:06.341
tBackYardOn	Irrigation Back Yard 1:5 is turned on	false	2015-08-27 23:37:06.410	2015-08-27 23:58:08.325
tFrontStepsDripOn	Irrigation Front Steps Drip 1:2 is turned on	false	2015-08-27 22:51:02.170	2015-08-27 22:59:02.835
tFrontYardOn	Irrigation Front Yard 1:1 is turned on	false	2015-08-27 22:30:00.239	2015-08-27 22:51:02.119
tIrrigationOn	Irrigation All Zones 1:0 is turned on	false	2015-08-27 22:30:00.181	2015-08-27 23:58:08.257
tSideYardOn	Irrigation Side Yard 1:3 is turned on	false	2015-08-27 22:59:02.867	2015-08-27 23:24:05.127

Schedules

Name	On Type	On Time	On Days	Random On Delay	Off After Type	Off Time	Off Days	Random Off Delay	State	Last On	Last Off
sAllOn	Monthly	22:30:00	3,7,11,15,19,23,27,31	None	Interval	02:00:00		None	false	2015-08-27 22:30:00.102	2015-08-28 00:30:00.133
sDripOn	Monthly	22:45:00	1,5,9,13,17,21,25,29	None	Interval	1:00:00		None	false	2015-08-25 22:45:00.100	2015-08-25 23:45:00.100
sEndOfDay	Weekly	23:55:00	1,2,3,4,5,6,7	None	Interval	1:00		None	false	2015-08-28 23:55:00.100	2015-08-28 23:56:00.100
sUpdateRunTimes	Weekly	21:45:00	1,2,3,4,5,6,7	None	Interval	1:00		None	false	2015-08-28 21:45:00.100	2015-08-28 21:46:00.100

Device Properties

Name	Device Name	Device Variable	Value	Last Change	Previous Change
pCurrentRain	o Rain Gauge 24:3	CurrentRain	0.0	2015-08-19 02:00:03.762	2015-08-19 01:04:47.340
pDay5Rain	o Rain Gauge 24:3	Variable5	0.0	2015-08-24 00:00:04.303	2015-08-23 00:00:06.024

Conditions

Name	Repeat	Expression	State	Last True	Last False
cIrrigationOff	No	pCurrentRain!=0.0 and tIrrigationOn	false	2015-08-17 14:47:27.891	2015-08-17 14:47:28.251
cUpdateRunTimes	Yes	sUpdateRunTimes or pDay5Rain!=0	false	2015-08-28 21:45:00.105	2015-08-28 21:46:00.110
cDailyTempIncrement	No	sEndOfDay	false	2015-08-28 23:55:00.105	2015-08-28 23:56:00.104
cStartIrrigation4Day	No	sAllOn and pCurrentRain==0.0	false	2015-08-27 22:30:00.110	2015-08-28 00:30:00.138
cGardenDripOn	No	sDripOn and pCurrentRain==0.0	false	2015-08-25 22:45:00.108	2015-08-25 23:45:00.127
cStepsDripOn	No	(tFrontStepsDripOn;!tBackGardenDripOn) and!tBackGardenDripOn and sDripOn and pCurrentRain==0.0	false	2015-08-25 22:55:01.376	2015-08-25 22:55:01.770

Actions

Actions for Condition: cDailyTempIncrement

LUA:

```
--~ Logic
--~ Run at 11:55 pm
--~ Cascade variables back in variable container
--~ Calculate daily temperature average
--~ Put daily average temperature into variable 2 and put tomorrows temps into var 1
local VAR_ID = 249
local WEATHER_ID = 45
local WUNDER_SID = "urn:upnp-micasaverde-com:serviceId:Weather1"
local VAR_SID = "urn:upnp-org:serviceId:VContainer1"

--~ Cascade variables back in variable container
local day3 = luup.variable_get(VAR_SID,"Variable2", VAR_ID)
local day4 = luup.variable_get(VAR_SID,"Variable3", VAR_ID)
local day5 = luup.variable_get(VAR_SID,"Variable4", VAR_ID)

luup.variable_set(VAR_SID,"Variable3",day3,VAR_ID)
luup.variable_set(VAR_SID,"Variable4",day4,VAR_ID)
luup.variable_set(VAR_SID,"Variable5",day5,VAR_ID)

--~ Calculate daily temperature average
local todayHighTemp = luup.variable_get(WUNDER_SID,"Forecast.0.HighTemperature",WEATHER_ID)
local todayLowTemp = luup.variable_get(WUNDER_SID,"Forecast.0.LowTemperature",WEATHER_ID)
local tomorrowHighTemp = luup.variable_get(WUNDER_SID,"Forecast.1.HighTemperature",WEATHER_ID)
local tomorrowLowTemp = luup.variable_get(WUNDER_SID,"Forecast.1.LowTemperature",WEATHER_ID)

local tomorrowAverage = (tomorrowHighTemp + tomorrowLowTemp)/2
local todayAverage = (todayHighTemp + todayLowTemp)/2

--~ Put daily average temperature into variable 2 and put tomorrows temps into var 1
luup.variable_set(VAR_SID,"Variable1",tomorrowAverage,VAR_ID)
luup.variable_set(VAR_SID,"Variable2",todayAverage,VAR_ID)
```

Actions for Condition: cGardenDripOn

Device Actions:

Immediate

Device	Action	Arguments
Irrigation Back Garden Drip 1:4	SetTarget	newTargetValue=1

Actions for Condition: cIrrigationOff

Device Actions:

Immediate

Device	Action	Arguments
Irrigation All Zones 1:0	SetTarget	newTargetValue=0

Actions for Condition: cStartIrrigation4Day

Device Actions:

Immediate

Device	Action	Arguments
Irrigation All Zones 1:0	SetTarget	newTargetValue=1

Actions for Condition: cStepsDripOn

Device Actions:

Immediate

Device	Action	Arguments
Irrigation Front Steps Drip 1:2	SetTarget	newTargetValue=1

Actions for Condition: cUpdateRunTimes

LUA:

```
--**Update Irrigation Zone Run Times PLEG Action**
--~ Logic:
--~ Watering is based on 60 degree daily average.
--~ Need to adjust when avg. temp is higher or lower.
--~ Need to decrease if there was rain in the past x days.
--~ After times are calculated, update individual variables for each zone device

local VAR_AVG_ID = 249 --Device ID of the average daily temp variable container
local VAR_BASELINE_ID = 248 --Device ID of the baseline zone run time @ 60 degrees variable container
local RAIN_ID = 226
local ZONE1_ID = 230
local ZONE2_ID = 231
local ZONE3_ID = 232
local ZONE4_ID = 235
local ZONE5_ID = 234
local WEATHER_ID = 45

local VAR_SID = "urn:upnp-org:serviceId:VContainer1"
local WUNDER_SID = "urn:upnp-micasaverde-com:serviceId:Weather1"

--The two variables below are used to create a calculation that will increase the run time based on daily average
--temperature.  The default (DEGREE_CALC) for most zones should be 60 (for fahrenheit).  As the daily average temperature
--increases above 60 degrees the run time will also increase.  On an 80 degree average day the runtime will increase
--33%.  When the average temp drops below 60 the run times will decrease.  So, when calculating default run times
--base them off of a 60 degree average day.
--
--For Vegetables the GARDEN_DEGREE_CALC should be used.  Vegetables need more water as the average temp increases
--On an 80 degree average day the runtime will increase almost 60%
--Here is the forumla used - based on 60 degree average days ((((twoDayAverage - (DEGREE_CALC - GARDEN_DEGREE_CALC)) - GARDEN_DEGREE_CALC) / GARDEN_DEGREE_CALC)
--I am running my drip irrigation every 2 days and my lawn irrigation every 4.  So, factor that in when you
--Calculate how much water is needed every week.
local DEGREE_CALC = 60 --See above description.  Need to change if using metric
local GARDEN_DEGREE_CALC = 34 --See above description. Need to change if using metric.



local RAIN_3_DAY_CALC = 12 --Amount of rain (in MM) needed in last 3 days to stop irrigation (used to reduce drip run times)
local RAIN_5_DAY_CALC = 25 --Amount of rain (in MM) needed in last 5 days to stop irrigation (used to reduce irrigation run times)


--~ Calculate average temp for the last 5 days
local day1 = luup.variable_get(VAR_SID,"Variable1", VAR_AVG_ID)
local day2 = luup.variable_get(VAR_SID,"Variable2", VAR_AVG_ID)
local day3 = luup.variable_get(VAR_SID,"Variable3", VAR_AVG_ID)
local day4 = luup.variable_get(VAR_SID,"Variable4", VAR_AVG_ID)
local day5 = luup.variable_get(VAR_SID,"Variable5", VAR_AVG_ID)

local fiveDayAverage = ((day1 + day2 + day3 + day4 + day5) / 5)
local twoDayAverage = (day1 + day2) / 2
```

```
--Load baseline watering times from Var container
local zone1Baseline = luup.variable_get(VAR_SID,"Variable1", VAR_BASELINE_ID)
local zone2Baseline = luup.variable_get(VAR_SID,"Variable2", VAR_BASELINE_ID)
local zone3Baseline = luup.variable_get(VAR_SID,"Variable3", VAR_BASELINE_ID)
local zone4Baseline = luup.variable_get(VAR_SID,"Variable4", VAR_BASELINE_ID)
local zone5Baseline = luup.variable_get(VAR_SID,"Variable5", VAR_BASELINE_ID)

--Load rain history.
local rainDay1 = luup.variable_get(VAR_SID,"Variable1", RAIN_ID)
local rainDay2 = luup.variable_get(VAR_SID,"Variable2", RAIN_ID)
local rainDay3 = luup.variable_get(VAR_SID,"Variable3", RAIN_ID)
local rainDay4 = luup.variable_get(VAR_SID,"Variable4", RAIN_ID)
local rainDay5 = luup.variable_get(VAR_SID,"Variable5", RAIN_ID)

--My rain gauge adds amount of rain from the previous days so I need to find out the amount of rain for that specific day
rainDay5 = rainDay5 - rainDay4
rainDay4 = rainDay4 - rainDay3
rainDay3 = rainDay3 - rainDay2
rainDay2 = rainDay2 - rainDay1

--Now, let's adjust the total amount of rain depending on how many days ago it was.
--If it was 5 days ago only calculate 20% of the rain amount.  If 4 days ago take 40% of the rain.

local rain3Days = rainDay1 + (rainDay2 * .8) + (rainDay3 * .6)
local rain5Days = rain3Days + (rainDay4 * .4) + (rainDay5 * .2)

--Check the amount of rain forecast from the Wunderground App
local day0Forecast = luup.variable_get(WUNDER_SID,"Forecast.0.QPFDay",WEATHER_ID)
local night0Forecast = luup.variable_get(WUNDER_SID,"Forecast.0.QPFNight",WEATHER_ID)
local day1Forecast = luup.variable_get(WUNDER_SID,"Forecast.1.QPFDay",WEATHER_ID)
local night1Forecast = luup.variable_get(WUNDER_SID,"Forecast.1.QPFNight",WEATHER_ID)

--Add the forecast rain then divide by 2 in case they are wrong)
local forecastRain = (day0Forecast + night0Forecast + day1Forecast + night1Forecast) / 2

--Convert forecast to MM (if using metric comment this out)
forecastRain = forecastRain * 25.4


--Add past and future rain then convert into percentage of total irrigation run time.
rain3Days = (forecastRain + rain3Days)/RAIN_3_DAY_CALC
rain5Days = (forecastRain + rain5Days)/RAIN_5_DAY_CALC

--If percentage is greater than 1 set to 1 so we don't get a negitive number
if (rain3Days > 1) then
        rain3Days = 1
end
if (rain5Days > 1) then
        rain5Days = 1
end

--Calculate new zone 1 run times based on past average daily temp and rainfall
--Adjust run time based on average day temps.  This is the calculation that will increase/decrease the
--run time based on average temp.  To change the ratio you will need to adjust this.
--The standard ratio will adjust watering times around 33% for a 20 degree (fahrenheit) increase
--in average daily temperature
local zone1Time = ((((fiveDayAverage - DEGREE_CALC) / DEGREE_CALC)+1) * zone1Baseline)

--Adjust run based on past rain and round to nearest whole number
zone1Time = math.floor((zone1Time - (zone1Time * rain5Days))+0.5)

--If time is negitive set run time to 0
if (zone1Time < 0) then
        zone1Time = 0
end

--Set new zone watering time to variable 1 and variable 2
luup.variable_set(VAR_SID,"Variable1",zone1Time,ZONE1_ID)
luup.variable_set(VAR_SID,"Variable2",zone1Time,ZONE1_ID)

--Set remaining zones (without comments)
--Zone 2 (Drip)
local zone2Time = ((((twoDayAverage - DEGREE_CALC) / DEGREE_CALC)+1) * zone2Baseline)
zone2Time = math.floor((zone2Time - (zone2Time * rain3Days))+0.5)
if (zone2Time < 0) then
        zone2Time = 0
end
luup.variable_set(VAR_SID,"Variable1",zone2Time,ZONE2_ID)
luup.variable_set(VAR_SID,"Variable2",zone2Time,ZONE2_ID)
--Zone 3
local zone3Time = ((((fiveDayAverage - DEGREE_CALC) / DEGREE_CALC)+1) * zone3Baseline)
zone3Time = math.floor((zone3Time - (zone3Time * rain5Days))+0.5)
if (zone3Time < 0) then
        zone3Time = 0
end
luup.variable_set(VAR_SID,"Variable1",zone3Time,ZONE3_ID)
luup.variable_set(VAR_SID,"Variable2",zone3Time,ZONE3_ID)
--Zone 4 (Vegetable Garden Drip)
--Vegetables need more water as the temps go up.  Changing equation to give 60% more water
--when the daily average temp is 20 degrees (fahrenheit) hotter than the daily average temp
--local zone4Time = ((((twoDayAverage - DEGREE_CALC) / DEGREE_CALC)+1) * zone4Baseline)
local zone4Time = (((((twoDayAverage - (DEGREE_CALC-GARDEN_DEGREE_CALC))-GARDEN_DEGREE_CALC) / GARDEN_DEGREE_CALC)+1) * zone4Baseline)
zone4Time = math.floor((zone4Time - (zone4Time * rain3Days))+0.5)
if (zone4Time < 0) then
        zone4Time = 0
end
luup.variable_set(VAR_SID,"Variable1",zone4Time,ZONE4_ID)
luup.variable_set(VAR_SID,"Variable2",zone4Time,ZONE4_ID)
--Zone 5
local zone5Time = ((((fiveDayAverage - DEGREE_CALC) / DEGREE_CALC)+1) * zone5Baseline)
zone5Time = math.floor((zone5Time - (zone5Time * rain5Days))+0.5)
if (zone5Time < 0) then
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```
        zone5Time = 0
end
luup.variable_set(VAR_SID,"Variable1",zone5Time,ZONE5_ID)
luup.variable_set(VAR_SID,"Variable2",zone5Time,ZONE5_ID)
```