

# Overview

## Abstract

This document specifies the Cron module for the Neutron network.

Cron module implement a mechanism to add cron schedules through governance proposals to execute arbitrary cosmwasm messages with given period.

## Concepts

### High level Mechanism

- add schedule using governance proposals[Permissioned - Main DAO];
- remove schedule using governance proposals[Permissioned - Main DAO or Security DAO];
- every given block period execute cosmwasm msgs for added schedules.

### General Mechanics

The module allows to receiveAddSchedule andRemoveSchedule custom neutron messages from cosmwasm contracts.

It also contains permissions:

- AddSchedule can only be executed as main dao governance proposal
- RemoveSchedule can only be executed as main dao governance proposal OR security subdao proposal

In EndBlocker module searches for all schedules (with limit byParams.Limit ) that are ready to be executed, usinglast\_execute\_height .

That way after the schedule was added it will be executed everyperiod of blocks (or more thanperiod if too many schedules ready to execute).

The formats are as follows:

```
// AddSchedule adds new schedule to the cron module type AddSchedule struct
```

```
{ // Name of the schedule Name string
```

```
  json:"name" // Period of the schedule in blocks Period uint64
```

```
  json:"period" // Msgs that will be executed every period Msgs [ ] MsgExecuteContract json:"msgs" }
```

```
// MsgExecuteContract defined separate from wasmtypes since we can get away with just passing the string into bindings  
type MsgExecuteContract struct
```

```
{ // Contract is the address of the smart contract Contract string
```

```
  json:"contract,omitempty" // Msg json encoded message to be passed to the contract Msg string
```

```
  json:"msg,omitempty" } After collecting all schedules ready for execution, we execute them in order.
```

For each schedule, every stored msg is complemented with more necessary fields to form wasmtypes.MsgExecuteContract:

```
// wasmtypes.MsgExecuteContract msg :=
```

```
type MsgExecuteContract struct
```

```
{ Sender string
```

```
  // Cron module account Contract string
```

```
  // Passed with AddSchedule.Msgs Msg // Passed with AddSchedule.Msgs Funds sdk . Coins // Empty Coins } Then it's  
  executed using wasmd WasmMsgServer implementation.
```

For state to be modified, all messages in a given schedule should return successful result. If any cosmwasm msg fails to execute for any reason, all messages in a given schedule will be rolled back.

## Example

## Adding schedule

To add schedule we need to send governance proposal using dao contracts.

Construct a message in a following format:

```
{ "propose" :  
  { "msg" :  
    { "propose" :  
      { "title" :  
        "Proposal title" , "description" :  
        "Proposal description" , "msgs" :  
        [ { "custom" :  
          { "add_schedule" :  
            { "name" :  
              "simple" ,  
              // schedule name "period" :  
              5 ,  
              // period in blocks [ { "contract" :  
                "neutron123412341234" ,  
                // contract address to be called "msg" :  
                "{ \"send\\\": { \"to\\\": \" neutron123 \", \\\"amount\\\": 100} }" ,  
                // message to be executed } , ] , } , } } , ] , } , } , } , } Submit the proposal to the Main DAO using prePropose contract  
                address.
```

If it will be accepted, schedule will be added with the given params.

## Removing schedule

To remove schedule we need to send governance proposal using dao contracts.

Construct a message in a following format:

```
{ "propose" :  
  { "msg" :  
    { "propose" :  
      { "title" :  
        "Proposal title" , "description" :  
        "Proposal description" , "msgs" :  
        [ { "custom" :  
          { "remove_schedule" :  
            { "name" :  
              "simple" ,  
              // schedule name } , } } , ] , } , } , } , } Submit the proposal to the Main DAO using prePropose contract address.
```

If it will be accepted, schedule will be added with the given params.

TODO: how to propose RemoveSchedule message using Security DAO? [Previous State Next Client](#)