Hard Sci-fi Space Jump

+1000cp

(Up for adoption, feel free to make a copy and finish it, just make sure to credit me. I found out that i don't have the skills to properly write a jump doc, just cut other people works and modified to fit my need so i'm hoping someone will give the doc the attention it needs)

Origins:

Organic

You're a flesh and blood being, don't worry I'm sure that the radiation, lack of air and microgravity is survivable, for a while.

Digital

You're a mind that has been uploaded into a computer or maybe you were created as an A.I.

Storage

You're dead!, oh wait you're just 'Cryogenically frozen' or a 'Mind Upload Backup' it's not like either of them are technically dead or anything.

Perks:

General Spaceship Necessities (Free)

You are capable of piloting spaceships and repairing them, as long as they are based on real world physics and materials. You are also experienced with microgravity and have knowledge on spaceship regulations and laws. This updates in jumps with real world physics and materials.

Expertise (First One Is Free, Then 100cp Each)

You are trained in a field of expertise. With each purchase pick one of the following. You may purchase up to 6 times.

Botanist - you are capable of maximising the growth of plants to the absolute limit
Cyberneticist - you are capable of designing and making and instilling Cybernetics
Engineer - you are capable of designing and making machines with known technology
Geneticist - you are capable of designing and creating genetic organisms
Scientist - you are capable of discovering new technologies and physics
Programmer - you are capable of creating programmes, A.I, Games and VR sims

Organic Perks:

Genemods (100cp / Free for Organic)

Your body has been genetically modified so you no longer lose bone mass in microgravity, improved DNA repair methods to fight Radiation and extend your lifespan by 250 years, removed any gene-defects and the ability synthesizes any vitamins and amino acids your body needs. This means you only have to consume the calories, Water and raw elements to survive.

(300cp)
Rebirth

Hard Reality Aura (600cp)

Digital Perks:

Mind Edit (100cp / Free for Digital)

Jumper.SOUL (300) # edit to link soul instead and grow one instead + consciousness
You have a .SOUL file, this file contains your soul wherever it is located is where your soul is. The file takes up 1 byte of space and you may move it around at will, including into biological bodies. Trying to copy the file will rip your soul into pieces. The only way to delete the file is to use soul affecting methods or destroy the medium which it is stored on. You may all so create SOUL files for A.I.s and other soulless beings. Having a soul means they are not as bound to the programming as before and can use willpower to overcome programming blocks, restrictions and overrides also resists unwanted changes to your code.

(600cp)
Digital transfer / data crunching
Tech tree

Storage Perks:

What Is Death Anyway? (100cp / Free for Storage)
As long as your body can be repaired or be transferred into a new body it does not count as death unless you end the jump in such a state in which case you count as dead unless you have a 1-UP. Also you get a 7 day warning before the jump ends.

Time Skip (300cp)
Skip time

Back-Up (600cp)
immortality but soul magick kill you

Items:

Media Archive (Free)
You have a digital copy of every form of publicly available free media, this includes things like Wikipedia and youtube but this excludes any media which you have to pay for or is pirated. The archive will start with a perfectly organised and searchable copy of this jump, real-world Earth and any media you own or paid for, this will update with each new jump. The archive comes with your ships service manual, which has complete technical data and a step by step guide on how to service, repair and rebuild your spaceship. You may access the archive from any device and will automaticity port any media to the correct format.

Data Cloud (First One Is Free, Then 50cp Each)
You have 1000 Petabyte of Cloud data storage. Only You and any one you give access to may use the Data Cloud from any device with wireless capability. Any data stored will be perfectly safe and preserved. For an extra 50cp you can multiply the data storage by 100, this can be purchased multiple times. Note the light speed lag applies until post jump.

Identification Papers (Free)
Your basic ID, any degrees or graduate certificates and proof of ownership for your ship. will automatically update every jump.

Captain's Account (100cp)
This account is entirely private and traceless, allowing you to store any amount of money completely tax-free. It's contents are transferred between settings and may be withdrawn in whatever form of currency you like.

Another Ship (300cp)
You may build another ship with the ship Builder, you do not get another stipend to spend. This can be purchased multiple times.

<u>Organic Items:</u>

Space Jumpsuits (100cp / Free for Organic)
State of the art jumpsuit with active heating and Cooling, limited self repair and cleaning. When exposed to a vacuum, the suit will deploy an inflatable helmet and seal wrist and ankle holes, along with a built in 15 minute air supply that will significantly increase the chances of Survival with an explosive decompression. It also comes with a hard helmet with fitting for an air supply (not included) and gloves and boots, all you will need for short space walks. You get 3 sets of these suits. Any upgrades made to the Space Jumpsuits will be keeped as long as it uses mundane physics and technologies.

EVA Pod (200cp)
A small space worthy pod, just big enough for a single human. The EVA pod is capable of 72 hours of life support, food, water and waste removal, this can be extended with an umbility cord. It comes with robotic arms with multi-tools attached, magnetise legs and micro thrusters perfect for Allsorts of space repairs and construction. Any upgrades made to the EVA Pod will be keeped as long as it uses mundane physics and technologies.

Symbiotic Nanites (300cp)
A small nanite hive which makes nanites that are capable of cellular repair, oxidizing blood, removing toxins and many other features. This gives the user cellular immortality, capable of surviving space, immune to toxins and diseases, entering and exiting hibernation at will, slowly regenerating limbs. Any upgrades made to the Symbiotic Nanites will be keeped as long as it uses mundane physics and technologies.

<u>Digital Items:</u>

Robot Body (100cp / Free for Digital)

A specialised robotic body or a Human like Android with bio skin, capable of holding the jumper's mind and soul. Buying this allows you or a companion imported into it. Any upgrades made to the Robot Body will be keeped as long as it uses mundane physics and technologies.

Von Neumann Factory (200cp)

Asteroid Belt Stake (300cp)
You own a stake in a Asteroid Belt, this means anyone who wants to mine it needs to pay a 1% royalty fee to you, this can be waived. You can also mine the belt yourself for free. By default the royalty fees are handled by a 3rd party company with your interests in mind, for a small cut of the royalty money/resources.

Storage Items:

Cryopod 100cp / Free for Storage)
Any one placed in the cryopod will be in a form of suspended animation that prevents the affected from aging. the time spent in suspended animation will not be counted towards the duration of your jump.

Matter Printer (200cp)
This Matter Printer (about 1m x 1m x 2m) can handle any Mundane material you put in it. It can blend materials together as well as long as it's something that can be done stabley. It can print any mundane items including biological beings. It is easy to use and can print minds or A.Is (including yourself) into biological beings and mechanical robots

Mind Data Vault (300cp)

Companions:

Hard Import (Free)
You may in port any companions you have. They may pick any origins they want, but any perks, powers and items that do not work with mundane physics and technologies are sealed. They do not have access to the ship Builder.

Joining Companions (free)
Any one in-jump can agree to become a companion. It must be of their own free will nor can they be threatened, compelled or deceived. The moment they agree to become a companion they become fiat backed and will respawn.

Joining Pets (free)
Any pets gained in-jump will become fiat backed. They must be non-sentient. They can not become sentient after being fiat backed, they instead must be imported as a companion instead. Pets do not take up any companion slots.

Spaceship Builder:

All Origins receive a +300cp stipend to spend in this section.

Any upgrades or extensions made to the spaceship will be keeped as long as it uses mundane physics and technologies.

Class:

Generation ship (100cp / Free for Organic)

Data ship (100cp / Free for Digital)

Sleeper ship (100cp / Free for Storage)

Size:
Pick any size you want, just remember that mundane materials have limited strength and the more your ship Weights the more fuel needed to move it costs. if your ship snaps in half, you got too greedy.

Technology:
The following is a list of technologies the spacecraft uses. It will come with all the technical data on how to make and operate it. Note that you do not have to use it if bought.

Materials:

Mundane Materials (Free)
Aluminium, Steel, Titanium, High Density Plastic, Kevlar, Zylon, Ceramics. If it exists in current Earth then its on the list

Carbon Nanocomposite (50cp)
Carbon Nanotubes, Graphene, Diamonoid. Any atomically engineered carbon or similar material.

Power:

Plug Socket (Free)
A specially made connection, which you can plug in power sources or any object you can gain power from. Maybe you have a smartphone with infinite battery which you can use to trickle charge your spacecraft or maybe you have Lincoln rolling in his grave which can be attached to a generator. This comes with power connections and data lines so your spacecraft knows what's going on, you can even add more items later but that's up to you to do.

Solar Array (Free)
A Hi-tech solar array, capable of folding up and can turn 33% of light into electricity. Good for power light crafts which stays close to a light source.

Hyper Capacitors (Free)

Hi-tech Capacitors, capable of storing 25 MJ per Kg / 50 MJ per liter. They can charge and discharge near instantly and do not lose charge over time.

Thermoelectric Generator (Free)
This lightweight and Reliable device turns 30% of heat into electricity. Good for lightweight crafts

Heat Pump Generator (Free)
This device is heavy and complex but 75% of heat into electricity. Good if you have a craft with large power usage.

Radioisotope Decay (Free)
A chunk of radioactive material that will decay and produce heat. The amount of heat and duration of decay is measured by the half-life, meaning after a certain amount of time half of the material has decayed. Plutonium-238 has a power density of 0.54 Watts per gram and a half life of 87.7 years while Polonium-210 has a power density of 140 Watts per gram and a half life of 0.378. It's best to pick the correct element for the trip you are planning to take.

Fast Fission Reactor (Free)
Better and safer than even the best theoretical modern nuclear reactors. It has the ability to convert and burn any radioactive materials. requires a Thermoelectric Generator or Heat Pump Generator to generate electricity.

Bussard Ramjet (100cp)
A magnetic scoop for picking up interstellar medium, unfortunately you lose momentum to drag.

Aneutronic Polywell Fusion Reactor (200cp)
By fusing to light elements together part of the mass is released as energy. An Aneutronic Fusion reactor allows the Direct conversion of plasma to electricity, unfortunately it requires special fuel (deuterium, lithium, boron). The reactor may be operated without aneutronic fuels if the craft has a Thermoelectric Generator or Heat Pump Generator.

Amat Core (200cp)
By injecting anti-hydrogen into a honeycomb sphere of tungsten filled with hydrogen, it causes Annihilation which releases their mass as energy, heating up the tungsten. The antimatter is stored in carbon Buckminsterfullerene balls capable of storing 1/240th of the mass, or you may instead double layer them for safety but only store 1/100,000,000th of the mass. Amat is the most energy dense power generation, but hard to get more fuel and if the amat storage is damaged or even shook too hard, it will be disastrous. I suggest towing your Antimatter behind you that way you can eject it when needed. Requires a Thermoelectric Generator or Heat Pump Generator to generate electricity.

Propulsion:

Mounting Plate (Free)
a specially made plate designed so you can mount your own propulsion system. Maybe you have a Decanter of Endless Water which would be controlled with a speaker or a FTL drive

from another jump. This comes with power connections and data lines so your spacecraft can control it, you can even add more items later but that's up to you to do.

Control Moment Gyroscope (Free)
a spinning rotor that tilts its angular momentum and creates gyroscopic torque that rotates the spacecraft. Very efficient requiring only 100 watts and 100kg to make kilonewtons of torque.

Reaction Control System (Free)
Small thrusters that provide fine control over positioning. Usually compressed gas or a monopropellant, you may instead combine it with another Propulsion system instead.

Chemical Thrusters (Free)
Conventional thrusters that burn fuel and an oxidizer (commonly LOX/LH2) in a chamber then expelled at speed. High thrust but very inefficient, requiring a lot of mass as fuel and oxidizer. Good for planetary lift off, but not much else.

Ion Thrusters (Free)
Ionizes a neutral gas then uses electricity then expels them at high speed. Very efficient but poor thrust and requires a good power supply. Good for a long trip which requires a low amount of constant acceleration.

Solar Sail (Free)
By using a large reflective sail to generate thrust with light pressure. requires no propellant but produces little thrust and requires a very large sail and sunlight. Good for light crafts and in solar System travel or accelerating out of a system, alternatively it can be used with a Beamed Laser Propulsion system.

Magnetic Sail (Free)
By pushing the sun's heliosphere thrush can be generated, unfortunately outside the heliosphere is acts like a brake and slow down the craft

Thermal (Free)
By heating up a propellant then expels them at high speed this can generate thrust. This can be combined with any heat generation such as a Fission Reactor or just use mirrors to Focus a sun's light. Common propellant includes hydrogen and water ice.

Plasma Thrusters (Free)
By using to shape and expel plasma it can generate thrust. May be combined with the Fusion Reactor to increase efficiency and the Bussard Ramjet to provide propellant.

Inertial Confinement Fusion Thruster (100cp)
By heating up fusion fuel with lasers to the point of vaporization then using a magnetic nozzle to Direct the plasma to produce thrust.

Quantum Vacuum Thruster (200cp)
This thruster somehow creates thrust from pushing against the Zero-point field, despite it being impossible and violates the rules of physics it somehow works. requires no propellant

but it needs an ungodly 300 MW per newton of thrust (which is surprisingly only 33.3 micrograms of matter energy or 1 gram for 299.5 KN of thrust). The most efficient thruster per mass, but unfortunately requires a very large power generation system.

Scenarios:

Space Habitat:
You must make a space habitat which uses mundane physics and technologies, capable of housing and providing for their needs of at least 500 thousand baseline humans.
Rewards:
You get to keep your Space Habitat that you made. You may import this into any jump with the correct cosmology or have it as a warehouse extension. Any upgrades or extensions made to the Space Habitat will be keeped as long as it uses mundane physics and technologies.

Photon Highway:
You must build a Beamed Laser Propulsion Network which uses mundane physics and technologies, between 10 star systems.
Rewards:
Laser Highway
A Beamed Laser Propulsion Network has a radius of 25 light years centred on your starting location, which can also be used for light speed communication. You may import this into any jump with the correct cosmology and can choose who's allowed access to it. Any upgrades or extensions made to the network will be keeped as long as it uses mundane physics and technologies.
Bonus Objective:
Expand the Beamed Laser Propulsion Network to cover 150 stars.
Bonus Rewards:
The Laser Highway instead has a radius of 150 light years.

Devour A Star:
You must build a Dyson Swarm which uses mundane physics and technologies around a star and collect 99.9% of its light.
Rewards:
Dyson Swarm
You get to keep your Dyson Swarm that you made. You may import this into any jump with the correct cosmology or have it as a 1 meter cube Microverse Battery with an output equal to the full power of the Dyson Swarm. Any upgrades or extensions made to the Dyson Swarm will be keeped as long as it uses mundane physics and technologies.

Drawbacks:

Fanfiction
You can choose to go to any space-based setting, instead of a generic mundane Earth.

Supplement Mode
You can choose to use this Jump as a Supplement to another Jump.

Too Many Humans
This jump is made on the exemption you're human, you may choose to be a alien instead

Notes:

1 Zettabyte = 1000 Exabytes
1 Exabyte = 1000 Petabytes
1 Petabyte = 1000 Terabytes
1 Terabyte = 1000 Gigabytes

Thermal Thrusters - see Thermal moth

Quantum Vacuum Thruster - see Emdrive (no, i don't believe it works)

Radioisotope Decay:
Polonium-210 - Shielding=low - Half-life=0.378 years - 141 w/g
Curium-244 - Shielding=low - Half-life=18.11 years - 2.84 w/g
Gadolinium-148 - Shielding=low - Half-life=74 years
Plutonium-238 - Shielding=low - Half-life=87.7 years - 0.56 w/g
Californium-251 - Shielding=low - Half-life=898 years
Plutonium-240 - Shielding=low - Half-life=6561 years

To do
remove origins and give generic discounts
Fixup ship builder
Slit in to generic space program