# Overview

The name “Vortex” comes from a game published in Ahoy magazine, I see this as a sequel of sorts with a similar concept but multiplayer. Need a good name for a sequel (“Beyond the Vortex?”).

Early screen mockup:

# Gameplay - General

The game plays similarly to Zone Ranger and Raid on Bungeling Bay in that it is a top-down view, 2D scrolling game with movement in any direction. Fly by pushing the joystick in that direction and shoot by pressing the button. Powerups can be triggered with the keyboard.

An important gameplay element is the ability to destroy some of the blocks in the map (similar to Fort Apocalypse or the original Vortex). This allows the players to blast through planetoids and remove obstacles (asteroids, protective files etc.)

The object of the game is primarily survival, gathering energy orbs (mostly contained within planetoids) and other powerups placed within the map. A larger-scale goal of defeating the enemy, scoring points along the way.

To encourage multiplayer, it should be impossible to “win the game” or solve certain puzzles alone. Teamwork such as some players blasting away tiles while others fend off the enemy ships should be common tactics.

Enemy ships are controlled by the server, which will generally chase and attack the closest player, though different behaviours could be programmed. They could also potentially rebuild areas that the human players have destroyed.

The game should be fun and fast-paced!

# The Map

The map will be 100x100 screens (10,000 screens!), this is large enough to be technically impressive but not so large that players and enemy ships can’t find each other.

The map data would be generated by the server on first run, if there is no pre-existing map. It should be serialized to disk periodically, and re-read on startup if it exists.

Elements in the map would be planetoids with a powerup in the middle, asteroid belts, an auto-generated “maze” with a significant powerup in the middle… etc.

Each cell has a character ID (in the charset) and a type. Types can be:

* + Background – Have no effect, ships can fly right over them.
  + Destructable – Can be destroyed by players’ weapons.
  + Infrastructure – Cannot be destroyed.
  + Animated – Things like doors/lasers that open and close. Might be a few of these to track current state.
  + Might need a few of these to differentiate.

Major areas of the Map

* Player Spawn Area (this can be thought of where players enter the alien dimension when passing through the Vortex).
* Alien base, possibly contained within an asteroid belt.
* A mazelike area with numerous animated doors
* A few large planets

# Networking

The currently visible screen, as extracted from the map, is streamed in a single packet 20 times per second to each client C64. This is admittedly heavy bandwidth-wise, but it drastically simplifies the logic, and allows all map mods, animations, and things like open-closed doors to be controlled entirely by the server.

At startup, the character set and sprite data will be retrieved from the server via TFTP. This reduces the size of the client-size executable, and allows the graphics to be updated remotely. Some of the game logic could be sent this way too. Music too?

# Raster Time

Currently looking at a round-robin approach to managing the raster time to balance everything that has to be done with smooth game play.

i.e.

All frames: Poll the joystick and update direction/velocity.  
Frame #1: Send an update to the server with current player actions (takes most of a screen)  
Frame #2: Check for and receive packets from the server (takes most of a screen).  
Frame #3: If a packet was received in previous frame, copy it to the screen buffer and scroll the screen (takes most of a screen).

# Sound

TBD.

# Gameplay – Initialization

1. Initialization
   1. Attempt to detect RR-Net
   2. Perform DHCP (maybe have fixed IP?)
   3. Prompt for Forwarding Port 3000
   4. Fetch graphics data via TFTP. Music, MOTD?
   5. When complete, move on to:
2. Title Screen
   1. Play Music
   2. Show Logo and MOTD. Introduction story and credits starts after a few seconds.
   3. Show number of players (server should send periodically)
   4. Show lag, etc to the server?
3. Ship and profile customization? Colors and name at least
4. Main game
   1. Send an announce packet to the server every second.
   2. When game data starts to stream in, switch to main game screen.

# Powerups

1. Most powerups are contained within planetoids which must be destroyed block-by-block to reach the center (kind of like the original Vortex.)
2. Powerups can be:
   1. Enhanced weapons?
   2. Mines. Press M to drop one at your current location. Great for slowing down or destroying a pursuer.
   3. Warp. Warp to a random (empty) location. One-shot use?
   4. Shields. Press S to protect your ship from damage, but this takes energy.
   5. Energy/fuel
3. Some powerups can regenerate, ideally when no players are nearby.

# Technical Gotchas

1. Screen scrolling
2. Eight Sprite Limit
   1. Due to the crazy amounts of raster time needed by the network and screen copying, probably won’t be able to use traditional sprite multiplexing.
   2. Workaround would be to have the server track which sprites are displayed and send 8 at a time, rotating through them.
3. Or display the 8 closest entities to the player.
4. Collisions
   1. Every frame, check the

# Alien Behaviour

1. Most aliens will be flying around the map randomly.
2. They can see what’s around them and will dodge infrastructure and shots fired at them.
3. When sufficiently damaged they would run away.
4. To stimulate gameplay and keep players moving, consider having a “seeker” type of Alien ship that always tracks down the closest player and attempt to collide with it.

# Gameplay – Details

1. Players spawn in a safe zone that the aliens cannot enter. But weapons don’t work here, and they can’t drop mines.
   * Need to randomize spawn location within the zone so players (usually) aren’t spawning on top of each other.
2. Initially they are at 100% Energy, 0% damage, 0 points.
3. Player flies out of the safe zone in search of aliens, powerups, and other goals TBD.
4. Some basic powerups can be found floating freely in space.
5. Some powerups are contained within planetoids that have to be destroyed, block-by-block (like in the original Vortex, also see Fort Apocalypse).
6. Alien ships will eventually find the player and attack (shooting). Players can dogfight with the ships.
7. Flying into a warp zone transports you to a new area of the map (like in Zone Ranger).