

Interstellar Gate Station



WIP: This article is a work in progress and is not yet approved for usage in the RP.

The Interstellar-gate Station is a form of faster than light travel used to move massive quantities of traffic instantly from one location to another. What makes this design unique is the capability to have different portions of a gate's portal assigned to different gates, allowing each gate to act as a router and hub to its nearest neighbors.

About the Interstellar Gate

Initially conceived as an answer to the gulf between Lor and Nepleslian territories created by Yamataian claimed territories, the construction of the interstellar gate network was intended to circumvent this limitation. In doing so, the travel time between the two nation would have effectively been cut down to zero - bolstering an economic boom between the two via the exchange of goods and services and great reductions on fuel and energy expenditure, risk, time, and repair costs. Importantly, the Interstellar Gate Network is designed to intensively scan whatever passes through it in order to prevent possible attack, or combative abuses of the system. Additionally the Gate requires those intending to travel to enter an automated queue. This queue has the station take computer control of a starship, guiding it through the gate itself in formation with other vessels. This is intended as a security measure, a means of removing pilot error, and to streamline the movement of traffic beyond the capabilities of uncoordinated vessels.

The network has a maximum throughput of a hundred thousand ships per hour and if in constant use.

The gate itself, technologically speaking, is an expansion and in many ways extrapolation upon the [Freespacer Leyline technology](#). The technology works by using a device known as a rift-generator to create a stable wormhole through four dimensional space to navigate objects from one point to another instantaneously in three dimensional space, facilitating FTL travel.

Due to their stationary nature and relative vulnerability, the massive gates require extensive defensive armaments, functionally rendering them a star-fortress in technicality - though ultimately their function is closer to that of a space-borne industrial port-city. The complex integrates massive automated cargo inventory arrangement and exchange systems, an economic management hub and surface built residences and complexes grafted onto and built into its exterior, using the central axis of the gate as a gravitational centre.

The first gate is planned to be constructed in deep space for use by the Lorath Matriarchy roughly midway between the galactic coordinates of 2711 and 2811. It's sister gate and first link is intended to be constructed in Nepleslian space (somewhere) completing in YE 38 as part of a large international effort to foster increased trade and co-operation between the two factions.

While these are intended to be the first two gates, additional gates may be constructed should interest be expressed.

Known Gates

As time goes on and new gates are constructed, each is likely to have subtle differences in its construction, layout or design as the engineering of the technology itself improves. To this end, while all gates are similar, no two gates are ever alike as the needs - mechanically, logistically and even culturally that they must meet will differ depending on their location, politics and finance.

Gate 01 "Gebärmutter"

Meaning "Great Womb" (an unusually maternal name by Nepleslian standards to commemorate the Nepleslian/Lorath cooperation involved in its construction) in a sourced form of Trade, the Gerbarmutter gate was the first formal gate to be built from scratch as a mass production design, rather than as a prototypical form. As such, it irons out many of the problems found in its predecessor, Gate 02. Many elements of the Gerbarmutter gate are modular which in turn would not be on the original Auren'harba. As such, the Gerbamutter gate has a greater potential for growth but has a higher maintenance upkeep and is almost constantly altered on some level in its construction.

Gate 02 - "Auren'harba"

Meaning "White Sword" in Lorath (an unusually phallic name by Lorath standards to commemorate the Nepleslian/Lorath cooperation involved in its construction), Auren'harba serves as the original blueprint and prototype from which all future gates were based. While initial experiments began as far back as YE32, the Auren'harba itself began life as a well funded scientific curiosity investigating the Freespacer Layline system. Redeveloped on the spot and scaled up enormously, it went on to become the first functioning Layline gate and was able to function compatibly in conjunction with conventional Freespacer layline technologies with which it was tested. The original small-scale experimental gate sits deep inside the bowels of the Auren'harba as a monument on public display to the progress the interstellar gate project hopes to deliver. The Auren'harba uses a wide variety of high-strength meta-materials including zesuaum chain-cables in its core construction in order to ensure a long operational life-span and greatly reduce maintenance costs by investing in its initial outlay.

- Length: 120 kilometers
- Defensive armament:

Gate 03 - Awaiting Assembly & Deployment

As of yet not in operation, Gate 03 exists as an assortment of components held in Lorath supply depots. When an ideal location is chosen, the core components will be assembled and deployed. Importantly, the construction of the gate's exterior will require either immense cooperation with local construction firms, a nearby mining operation and ideally both. Importantly, the gate's components must be towed and transported using an area-of-effect subspace propulsion system, rather than be built at its deployment location. In this sense

Gate 04 - Under Construction

Less developed than Gate 03, Gate 04's primary and critical components are currently under construction in Lorath space. It is thought to be ready to deploy some time around YE 38.

Gates 05-08 - To be announced

Still at this point only existing on the drawing-board as preparation for future efforts, Lorath and Neplesian manufacturing infrastructures are gearing up for the production of potentially another four gates over the next five to ten years.

Construction, layout & interior structures

While individual gates may differ in terms of their outer construction, their general core functional layout remains the same: A long corridor which serves for the migration of traffic moving in and out of the gate, repair, maintenance and trade docks along its length, external structures of civilian or government construction and at the end of the corridor, the gate ring itself which is usually supported by a large-scale network of gravity manipulation devices which help to stabilize the Layline and improve its operational range. These devices are usually redundant in construction (with up to 65% of them able to fail and the gate remain operational). They also create the primary gravitational vector of the gate, running through the centre-line of the gate. This means the exterior of the corridor plates can be walked upon under conditions similar to 1G, though the closer one moves toward the middle (ie within the corridor itself), the lower gravity becomes until it ceases around the centre of the corridor through which traffic flows.

The structure itself is usually somewhere around fifteen to fifty kilometers long depending on its capacity. Maintaining this structure, given the rigors of space and the nature of conventional materials is a near permanent task, requiring constant assessment, repair and maintenance which though quite expensive, is cheaper than the costs of more traditional FTL shipping methods with the savings made and the improved trade-boom having paid for its construction as well as mitigating the cost of maintenance.

Normally, the gravity manipulation devices act as a central balancing system. High tensile cables and meta-material liquid pistons absorb subtle vibrations which amass enormously over the gates construction. In doing so, mechanical vibrations which could quickly become harmful or even destructive resonances (ripping the gate apart) are safely controlled. Surprisingly, a lot of the station is composed not of conventional metals but a specially engineered waxy form of concrete with twenty-four meter diameter rebar tubing running through it in complex mesh-wire grids throughout its construction. These rebar tube tunnels not only absorb excess stress and connect to the absorbance pistons but usually contain an atmosphere and can contain a civilian population or even become a cargo-space. It is not unusual to "burrow" through the hyper-concrete structures in order to create new pockets or spaces, provided the interior walls are coated with the same material as the rebar itself - or even to burrow up through to the surface and construct great spires, towers or even connect dry-docks such as the Lorath Wh'ki.

Delivering matter, water, electricity, atmosphere and managing the temperature of such complex structures is a large undertaking, involving anything up to 35% of the gates entire electrical throughput, using sub-rebar tubing composed of pico-polymers- a form of picojelly which is sandwiched into ultra-dense flexible self-healing shape-memory plastic which can be thought of smaller cables or tubes lining the interior of each tunnel complete with insulation and self-diagnostic capacity. Any given tunnel is usually divided into five floors and it is not unusual to have buildings inside them, not unlike a town or city. In turn, these rebar structures and the concrete itself are repaired using a combination of specialty pico-jelly derived materials and automated drones - usually to the standards of the nation's government under contract from private companies which repair and expand the internal and external structures of a given gate.

Providing this energy is a massively redundant collection of powerplants, liquid-plasma electrical exchange systems (since physical electrical exchangers would fray, break or become damaged over time). The exact choice in power source and the specifics involved including the placement of powerplants differ from gate to gate.

Using the Gate

While civilians use the gate for free, private companies pay a levy - a small annual cost to aid the upkeep costs and the past construction costs of the gate itself though these differ from territory to territory and only include the gate that is entered through, not the gate that is exited through.

The procedure in using a gate is first to contact the automated control hub and request transit and destination. The user will then be assigned a ticket and instructed to follow a position in the queue with the option to surrender navigation control to the gate. Upon entering the "corridor", this slaved navigation control is mandatory and if it cannot be met, on-station authorities will remove the craft from the queue and tow it to docking for evaluation and possible legal recourse in the event of an accident.

At this point, the vessel moves through the transit corridor alongside other vessels in an orderly fashion. Passing through the gate, it exits through the other side instantaneously, during which the vessel follows the queue to its logical conclusion or exits the queue to dock with the interior ceilings of the corridor or branched hanger-bays alongside the corridor's support structures. This docking is performed automatically by the gate-station's computers and accounts for the size, mass, safety and docking requirements of the vessel in question.

Attempts to run the gate and skip through the queue result in legal action as well as a ban from the use of the entire gate network system (unless a fine is paid). Those who run the gate on multiple occasions run the risk of being permanently banned from the entire system, and those who repeatedly put other users at risk will be registered with local legal services and law-enforcement agencies.

It is not uncommon for a vessel to join the queue under auto-pilot and the crew be allowed to sleep, only awakened when the vessel docks. Alternatively it is a frequent practice for 100% automated vessels to be used.

The absolute maximum wait time in the event that the gate is running at full capacity (which it rarely

does) is somewhere around 15 minutes – though provided vessels in the stream are capable, the speed of the queue may be raised. As such, there is usually a posted minimum entry and acceleration speed, a specification that must be met in order to receive a ticket. As such, there are usually multiple differing queues which can be thought of as different lanes on a freeway with differing vessel size classifications, mass, speed and other classification information deciding the lane that a given vessel is automatically assigned to.

Example Template

Since aside from the core Gate Mechanism components each Station is likely to be relatively unique, the features being largely dictated by who happens to be running the gate, instead of a formal systems list a template is provided outlining the general features of the Station allowing for each hub to be detailed to suit the faction controlling it as well as providing fluff to make the locales unique and interesting to visit.

Gate Mechanism

The primary gate mechanism uses a variant on the [technology](#) used in the [Freespacer Ley Line](#) gate networks. The main difference comes in the application of the technology. While the largest Freespacer Mainframes were designed to accommodate even the largest of Freespacer starships and large volumes of traffic, the Interstellar Gate Array has been modified to support the activation of multiple rifts of varying sizes allowing the Gate to provide connections to multiple gates simultaneously. This provides the Gate the flexibility to link multiple locales together allowing for greater flexibility and reduced wait times as in most cases the entirety of the gate will not be taken up by a single large wormhole.

===== Integrated features =====

Features such as:

- * Power plants
- * Defences
- * Life Support
- * Control Systems (For directing and moving traffic entering and existing the Gate.)

===== External Elements =====

These typically small elements are external to the core systems of the Gate and can be easily replaced in the event of component failure.

===== Shipyards =====

Any shipyards affixed to the superstructure should be noted.

===== Trading-posts =====

Essentially a modified docking area, trading-posts integrate with the Interstellar Gate's internal supply-system, allowing

for the exchange of cargo between vessels and between gates.

==== Cargo Depot ====

Externally stored, cargo-depots are connected storage systems which allow for the exchange of standardized cargo-containers with the trading post component of the interstellar gate. Importantly, the cargo-depot exists outside of the main body, allowing it to be extended vastly based on the demands of the gate as time passes.

==== Supply Depot ====

Built into the gate, supply depots are used by the integrated shipyards and trading posts and are essentially containers taken from cargo-depots which are currently in active circulation through the interior of the station.

===== Main Body =====

This section describes the main body of the Gate.

==== Frontal Prong ====

Integrating the docking and trading systems of the Interstellar Gate, the frontal prongs are designed to be enlarged as the required capacity of the gate grows.

===== Primary Elements =====

==== Ring Assembly ====

Containing three massive redundant gravity manipulation, the function of the ring assembly is to act as a stabilizing control system of the gate's primary assembly. Importantly, the three rings can be moved throughout the prong assembly -- important for when maintenance needs to be performed on one of the rings involved.

==== Correction Ring ====

A family of massive gravity manipulation devices, used to stabilize the gate's position. They double as long-range sensors and early warning systems.

==== Radiator Plates ====

Essentially a massively redundant heat management system, radiator plates vent the excess heat caused by peak travel.

==== Rotary Colony ====

Toward the rear is a 9km long space colony

(<http://upload.wikimedia.org/wikipedia/commons/thumb/9/94/Spacecolony3edit.jpg/1280px-Spacecolony3edit.jpeg> | O'Neill cylinder type))

OOC Notes

Submit this along with Gate 02 as an example of what an actual gate article will look like.

Link from here to Gate articles and vice versa.

Get into contact with Lamb and Kampfer for their okay.

Will approach Wes for the concept of having one in Yamataian space. Because I play nice with everyone.

Should interest be shown gates might be offered to the HSC/Neshaten.

Should also probably make sure that it is clear that some gates might connect to certain gates that others might not. For example Gate 01 might provide a connection to a Freespacer Ley Line network that can only be reached from Gate 01.

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