

Riftborne Sovereigns - Gameplay Guide

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This PDF is generated from the GAMEPLAY_GUIDE folder (player-facing reference).

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RIFTBORNE SOVEREIGNS - GAMEPLAY GUIDE (CONTENTS)

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How to use this folder:

- Start with '00_OVERVIEW.txt'
- Then open whichever section you need
- Ship stat tables are in '19_SHIP_ROSTERS.txt'

MAINTAINERS / UPDATES (REQUIRED)

If you update the game in any way that changes gameplay, stats, rules, UI flows, or balance (ships/buildings/resources/combat/routes/victory/etc.), you MUST also update the relevant files in this folder in the same patch.

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RIFTBORNE SOVEREIGNS - GAMEPLAY GUIDE / INSTRUCTION BOOKLET

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This guide is a player-facing reference for Riftborne Sovereigns (CLI edition). It is written to match the CURRENT IMPLEMENTED GAMEPLAY (what the code does), not what menus/labels might imply.

MAINTAINERS / UPDATES (REQUIRED)

If you update the game in any way that changes gameplay, stats, rules, UI flows, or balance (ships/buildings/resources/combat/routes/victory/etc.), you MUST also update the relevant guide sections in this folder in the same patch so players always have an accurate reference.

Start here:

- '00_CONTENTS.txt' for the index
- '01_GAME_SUMMARY.txt' for the big-picture overview

1) WHAT KIND OF GAME IS THIS?

Riftborne Sovereigns is a real-time (no offline catch-up) sci-fi strategy/empire sim.

You control one commander inside a busy galaxy full of AI commanders.

Core loop:

- 1) Build up your base economy and storage
- 2) Train ships and form fleets
- 3) Use fleets for raids, attacks, reinforcements, spying, and colonization
- 4) Use logistics (trade routes, raid routes, marketplace) to scale faster
- 5) Establish Mining Outposts to mine rare metals and craft SPU augment chips
- 6) Use Noctmarks + the SPU market to buy/sell augments and shape your empire
- 7) Convert resources into "Visions" for your faction
- 8) Fight over the central "Core Nexus" zone and win the endgame

Codex & history:

- The Codex includes a "World History" feed of major events (big battles, faction politics, milestones, and AI war campaigns).
- Some events are also tracked as one-time "Firsts" medals (Hall of Fame) and shown on player profiles and in Rankings -> Medals.

02_STARTING_A_GAME.txt

2) STARTING A GAME (NEW / CONTINUE)

Main menu:

- Continue: loads your save and advances simulation to current time (offline progress)
- New: start a new campaign
- New (Debug): time-warp friendly mode intended for testing

When starting a new campaign you choose a Culture:

- Astraeon: stable energy economy, economy scaling, hiding resources
- Varkon: industrial tempo, cheap pressure tools, upkeep reduction + conscription
- Veil: shards-from-kills + Eldritch upgrades + fast transmutation

Starting boost (current balance):

- Every commander (human + AI) starts with:
 - Silo L5
 - Solar Cell L5
 - All 4 core resources filled to storage cap

3) CONTROLS (GENERAL)

Riftborne Sovereigns is a console UI. Controls are shown on each screen footer/header, but

the "house style" is consistent:

- Up/Down or W/S: move selection / scroll
- Left/Right or A/D: change columns / pages (screen-dependent)
- Enter: confirm / open
- Esc (and usually Z): back / close

HUD shortcuts:

- When the right menu is focused:
 - W/S (or Up/Down) moves the menu selection.
 - Enter opens the selected page.
 - A/D (or Left/Right) cycles the bottom economic ticker mode.
- Direct hotkeys (open immediately):
 - EMPIRE: '1' Infrastructure, '2' Shipyards, '3' Colonies, '4' Factions, '5' SPUs
 - MILITARY: '6' Radar, '7' Garrisons, '8' Logistics, '9' Combat Log
 - INTEL: 'M' Star Map, 'G' Galactic Council, 'L' Alerts, 'C' Codex, 'R'

Rankings

- SYSTEM: 'X' Save (and 'D' Debug Tools in Debug mode)
- Global overlays:
 - '[' or ']' toggles the Help overlay.
 - '/' toggles the Search overlay.
- The bottom strip is an Orbital Exchange economic ticker (informational).

Active Fleets (6):

- Enter on incoming attacks/reinforcements opens the commander profile.
- M jumps the map to the origin base for incoming fleets.
- Z/Esc steps back to the filter picker from the list view.

4) TIME AND HOW THE SIMULATION ADVANCES (NO OFFLINE CATCH-UP)

Riftborne Sovereigns runs a real-time simulation, but it only advances while the game is running.

Core model:

- Actions (builds, training, fleets, transfers, market trades) schedule events in the future.
- Between events, bases generate resources passively (production minus upkeep) and fill storage.
- The simulation advances in whole-second steps (1Hz), independent of keypresses.

No offline catch-up:

- When you load a save, the game resumes at the saved simulation time.
- It does NOT fast-forward from your last session to "now".
- This means your empire does not produce resources or complete events while the game is closed.

What this changes tactically:

- Timers only tick down while you play (fleet ETAs, build queues, training batches, transfers).
- If you want something to finish, you need to let the sim run (stay in-game).

Autosave:

- The game autosaves roughly once per minute.
- It tries to avoid saving while you're actively pressing keys so navigation doesn't feel sticky.

5) THE GALAXY MAP (COORDINATES, DISTANCE, TILE BONUSES)

Coordinates:

- The galaxy is a square grid with integer coordinates (X,Y).
- Default map size is 300x300 with bounds roughly from (-149,-149) to (150,150).
- The map wraps at the edges (toroidal): moving past the max bound loops back to the min bound, and vice versa.

Distance (used for fleet travel time and some ETAs):

- Euclidean distance, but using the *shortest wrapped* dx/dy across the map edges (toroidal distance).

Tile bonuses:

- Each tile can provide additive bonuses to your base multipliers.
- Bonuses are "additive to multiplier" (e.g., +0.35 means 1.35x).
- Some tiles can have negative bonuses.

Random tile types (probability brackets are from map generation):

- Asteroid Field (~18%): Vulkron +0.35, Aurelite +0.20, Deuterium +0.05
- Nebula (~14%): Aurelite +0.05, Deuterium +0.30, Astra +0.10
- Terran World (~10%): Vulkron +0.10, Aurelite +0.10, Deuterium +0.10, Astra +0.10
- Crystal Belt (~10%): Vulkron +0.18, Aurelite +0.30, Deuterium +0.12, Astra +0.08
- Gas Giant (~11%): Deuterium +0.20, Astra +0.15
- Solar Harvest (~5%): Astra +0.25
- Energy Spire (~5%): Astra +0.50, Aurelite +0.05 (also a named "Dormant Spire")
- Black Hole (~5%): Vulkron -0.50, Aurelite -0.20, Deuterium -0.50, Defense -0.20
- Empty Space (rest): no bonuses

Central "Core Nexus" zone (the endgame battleground):

- A circle around (0,0) with radius 10 tiles is marked as "central special".
- Tiles in that zone become "Special Wonder" and gain:
 - Vulkron +0.25, Aurelite +0.20, Deuterium +0.20, Astra +0.50, Defense +0.30
- These tiles are used for victory conditions.

Seeded special energy sites:

- "Ancient Reactor": Astra +3.0, Defense +0.10 (very strong)
- "Lodestar Spire": Astra +2.0, Defense +0.05 (very strong)

Mining Outpost Sites:

- Certain tiles are seeded as "Mining Outpost Site" locations (shown as 'M' on the Star Map, highlighted).
- They provide NO standard tile bonuses (no V/Au/D/Astra multipliers).
- Instead, each site is assigned a rare metal table (weighting summary shown on tile inspect).
- Colonizing a Mining Outpost Site creates a Mining Outpost base (see Bases section).

6) RESOURCES (WHAT THEY ARE, HOW YOU GET THEM, AND CAPS)

Resources:

- Vulkron
- Aurelite
- Deuterium
- Astra

Additional resources (Mining Outposts):

- Rare metal fragments:
Echorite, Prismatic Alloy, Xenocite, Vantium, Radianite, Noctium
- Currency:
Noctmarks (minted from Noctium; used for the SPU market)

Notes:

- Rare metals and Noctmarks are not part of the main 4-resource economy.
- Storage caps (Silo/Solar Cell) apply to passive production of the 4 main resources only.

Production (base starting values):

- Every base produces a base amount per hour for each resource:
Base: 200/hour of each resource
- Then your Culture adds extra on top:
Astraeon: +50 Astra/hour
Varkon: +100 Vulkron/hour, +50 Aurelite/hour, +150 Deuterium/hour
Veil: +50/hour of each resource

Multipliers:

- Tile bonuses and buildings modify your multipliers (see Buildings section).
- Passive production each hour is:
$$\text{Produced(resource)} = \text{ProductionPerHour(resource)} * \text{ResourceMultiplier(resource)}$$

Storage caps:

- Passive production is capped by storage capacity:
If $\text{StorageCapacity(resource)} > 0$, passive production cannot raise you above that cap.
 - IMPORTANT: many other income sources can exceed storage caps:
 - Raid loot delivered by fleets
 - Market trades (scheduled transfers)
 - Manual "Send resources to ally"
 - Trade routes
- Storage caps only clamp passive production.

Upkeep (Astra drain):

- Stationed ships consume Astra each hour (upkeep is per ship type).
- Upkeep is paid by the base that is "feeding" the ships:
 - Colonies: the hosting base pays upkeep for all stationed ships (including reinforcements from other players).
 - Mining Outposts: garrison upkeep drains Astra from the owning commander's economy (not the outpost's own stock).
- Astra never goes negative: it clamps at 0.
- Starvation: if the feeding Astra is 0, stationed ships at that base start dying:
 - Every 10 seconds, 1 ship dies.
 - Lowest-cost ship dies first (highest cost-per-resource last).

7) BASES (WHAT A BASE IS, SLOTS, AND EXPANSION RULES)

A base is your colony site on a map tile. It provides:

- Passive production and storage
- Building construction queue (1 build at a time per base)
- Training queue (1 lane by default; can be 2 with a Veil upgrade)
- Garrisoned ships for defense and for launching fleets

Building slots:

- Each base can have up to 15 "built building slots".
- A building counts as "using a slot" if its Level > 0.
- Upgrading an existing building does not consume extra slots.
- Some buildings can have multiple copies, but only after you have at least one copy at Level 20. Multiple copies still consume slots.

Expansion (owning multiple bases):

- You are locked to 1 base until you reach Central Spire Level 20 on ANY of your bases.
- Once you have a L20 Central Spire, your "base cap" becomes your commander's BaseCapBase (human default is currently 8 in the demo setup).

Mining outposts (special base type):

- Mining Outposts can only be founded on special "Mining Outpost Site" tiles.
- Requirement: the founding base must have Central Spire Level >= 5.
- Mining Outposts do NOT count toward your base cap.
- Mining Outposts do NOT unlock the base cap; the base cap is still unlocked by Central Spire L20.

Colonization (founding new bases):

- Must send a Colonization ship ("colony hull") on a Colonise mission.
- Cannot colonize Black Holes.
- Consumes 1 colony hull to found the base.
- Any additional ships in the fleet become the new base's starting garrison.
- New bases start with the standard base economy and starting storage buildings.

Colonization rules (IMPORTANT):

- Colonies (normal bases) require Central Spire Level >= 20 on the founding base.
- Mining Outposts (only on Mining Outpost Site tiles) require Central Spire Level >= 5 on the founding base.

Destruction:

- Mining Outposts can be sieged like bases.
- When the outpost's fixed structures are reduced to Level 0, the outpost is removed.

8) BUILDINGS (EFFECTS, LIMITS, AND KEY RULES)

Buildings are leveled structures on a base. Construction:

- Only 1 building upgrade can be in progress per base at a time.
- Build time is reduced by the base's BuildSpeedMultiplier.
- Build costs are paid up-front when starting the build (unless in debug "god mode").

Cost/time scaling model (important for understanding progression):

- Each building has a base cost and an exponential growth factor.
- Costs are paid in all 4 resources; the *resource mix is dynamic* (changes by era, culture, and market conditions).
- Build time scales with the same exponential factor.
- The UI rounds displayed costs to whole numbers; internally costs are doubles.

Culture-specific buildings:

- Astraeon only: Overclocker, Nano Storage
- Varkon only: Conscription Service, Drone Facility
- Veil only: Eldritch Conduit, Transmuting Void

Building effects that directly modify base multipliers:

- Extractor: +10% Vulkron income per level (additive)
- Synthesiser: +10% Aurelite income per level (additive)
- Combinator: +10% Deuterium income per level (additive)
- Solar Array: +10% Astra income per level (additive)
- Dyson Sphere: +10% Astra income per level (additive), max level 200
Requires Solar Array L20 + Central Spire L20 to

build/upgrade.

- Overclocker: +10% to ALL resource incomes per level (additive)
- Central Spire: +10% building speed per level (additive)
- Dockyards: +10% ship training speed per level (additive)
+10% ship travel speed per level (additive)
- Ion Shield: +10% base defense multiplier per level (additive)
- Nano Storage: Hide 5% of resources per level from raids (caps at 95%)
- Drone Facility: -4% stationed ship upkeep per level (caps at 80%)

Storage buildings:

- Silo: adds storage to Vulkron/Aurelite/Deuterium:
+500 * (1.28^(level-1)) for each of the 3 resources
- Solar Cell: adds storage to Astra:
+500 * (1.28^(level-1))

Interactive (menu) buildings:

- Orbital Exchange:
 - Marketplace (post/accept offers)
 - Resource shipping to friendly bases
 - Trade routes
 - Merchant slots: you can run up to (Orbital Exchange level) concurrent merchant runs from this base
(market trades + ally shipments). Extra sends queue and depart when a slot frees.
- SPU market (buy/sell SPU chips using Noctmarks)
- Oracle:
 - Converts resources into faction "Visions"
 - Supports one-off sending and an hourly "stream" rate
 - Cost per vision (always):
Vulkron 10, Aurelite 10, Deuterium 5, Astra 5
 - Note: Oracle level currently does not cap the stream rate; it gates

access to the UI.

- Conscription Service (Varkon):
 - Activates a temporary +25% attack buff (global to your commander)
 - Duration: level hours
 - Cost to activate: (200 * level) of EACH resource
- Eldritch Conduit (Veil):
 - Spend Soul Shards (earned from kills) on base upgrades (see Veil section)
- Transmuting Void (Veil):
 - Converts selected input resources into a single output resource after a delay
 - Duration depends on building level:
 - L1 ~ 6h, scaling down to L20 ~ 15m (smooth steps in between)

Mining Outpost structures (fixed set):

- Mining Outposts cannot construct normal buildings.
- They start with 2 special structures that are NOT manually upgradable:
 - Drill
 - Refiner

Drill (mining, minute-based, offline-safe):

- Each elapsed minute of simulation time, the Drill rolls for rare metal fragments.
- Chance per minute depends on Drill Level:
 - $\text{chancePerMinute} = 0.05 + ((L - 1) / 19) * 0.95$
 - (L1 ~ 5% per minute, L20 = 100% per minute)
- The mined metal type depends on the site's rare metal table (tile-specific).
- Auto-upgrade (unlocks by lifetime mined at that outpost):
 - Level 2 at 100 mined
 - Level 20 at 10,000 mined
 - Linear between those milestones

Refiner (SPU crafting + currency minting):

- Attempts 1 SPU craft per hour (event-driven).
- Each craft uses a deterministic permutation of the 5 craftable metals:
 - Echorite (E), Prismatic Alloy (P), Xenocite (X), Vantium (V), Radianite (R)
- Inclusion attempts are proportional to current holdings:
 - For each metal in the permutation, it rolls:
 - $p = \text{metalCount} / \text{totalCraftableMetalCount}$
 - On success, it consumes 1 fragment of that metal and adds it to the SPU's IncludedCodes.
- If a craft ends with no IncludedCodes, the SPU is "ERRORRED" and provides no bonus.
- Auto-upgrade uses the same milestone model as the Drill, based on lifetime SPUs produced.

Outpost delivery and currency:

- Every 24 hours (after the first SPU is produced), the outpost schedules an SPU delivery event to your empire.
- Crafted (pending) SPUs can be viewed on the Mining Outpost Infrastructure page, and in Central Command while your active base is that outpost.
- Every 24 hours, the outpost mints currency:
 - 250 Noctium -> 250 Noctmarks (1:1)

9) SHIPS (STATS, CLASSES, AND WHAT THE NUMBERS MEAN)

Ships are trained in batches at your base and used as fleets or garrisons.

Ship class list (modern roster):

Intelligence, Drone, Skirmisher, Starfighter, Corvette, Frigate, Gunship,
Cruiser, Bomber, Destroyer, Dreadnought (Capital), Carrier, Siege, Colonization

Legacy aliases (older names mapped automatically):

- SpyProbe -> Intelligence
- Interceptor -> Drone
- ColonyShip -> Colonization
- SiegeDrone / OrbitalCannon -> Siege

Ship stats:

- Cost: cost per unit (paid in ALL resources equally; "Cost" is the per-resource amount)
- Time: training time per unit in minutes (before training speed multipliers)
- Upkeep: Astra consumed per hour while stationed at a base
- Attack vs Light/Heavy: used for combat "attack power"
- Defense vs Light/Heavy: used for combat "defense power"
- Speed: tiles per hour (fleet speed uses the SLOWEST ship in the fleet)
- Cargo capacity: used to determine raid loot capacity
- Crit: "crit chance" value used as a power multiplier (see Combat)
- Evasion / Tracking: used as a +/-20% swing vs the opponent (see Combat)
- Siege: used only for building damage during Attacks (not Raids)

Carrier aura (important):

- Each Carrier in a fleet provides a +0.01% aura to every OTHER ship in the fleet.

- Formula: $\text{buff} = 1.0 + (\text{Carriers} * 0.0001)$
- Carriers themselves do not receive this buff.
- This buff applies to attack/defense, speed, cargo, crit/evasion/tracking, and siege.

10) FLEETS & MISSIONS (HOW TO USE SHIPS)

Fleets are ships in flight. A fleet always has:

- An origin base
- A target coordinate
- A mission type
- A departure time and arrival time

Mission types:

- Reinforce:
 - Sends ships to another base; ships become stationed there on arrival.
 - Reinforcing a different-faction base increases their sentiment toward your faction.
- Spy:
 - Only Intelligence ships are allowed (no mixed fleets).
 - On arrival: spies skirmish vs defender spies; survivors generate intel.
- Raid:
 - "Soft" combat: casualties are reduced (see Combat).
 - Loot is limited by cargo capacity and hidden resources.
 - Raiding allies is blocked.
- Attack:
 - "Hard" combat: one side is forced to be wiped out (see Combat).
 - If you bring Siege ships, you can destroy building levels.
 - Attacking non-enemies is blocked (must be Enemy stance).
- Colonise:
 - Requires at least one Colonization ship.
 - Found a new base if the tile is empty and legal.
- Return:
 - Automatically created after attack/raid/spy when needed.
 - Returns surviving ships and any cargo to the origin base.

Stances and restrictions:

- Attack requires target faction stance = Enemy.
- Raid is blocked against Allies.
- Reinforce is blocked against Enemies.

11) COMBAT (THE RULES, THE FORMULAS, AND WHAT REALLY HAPPENS)

Combat occurs when fleets arrive on Attack/Raid missions (and some edge cases). There is no "round-by-round" simulation; combat resolves with weighted power math.

11.1 Light vs Heavy composition

- Each side's fleet is treated as a mix of "Light" and "Heavy" hulls.
- Attack and defense values are weighted against the enemy's mix:
$$\text{WeightedAttack(ship)} = \text{AttackVsLight} * \text{enemyLightShare} + \text{AttackVsHeavy} * \text{enemyHeavyShare}$$

$$\text{WeightedDefense(ship)} = \text{DefenseVsLight} * \text{enemyLightShare} + \text{DefenseVsHeavy} * \text{enemyHeavyShare}$$
- Then summed across all ships (with carrier aura applied).

11.2 Attacker power vs defender power

Attacker:

- $\text{attackerPower} = \text{sum}(\text{ships} * \text{weightedAttack}) * (1 + \text{avgCrit}/200) * (1 + \text{trackingEdge})$
- $\text{trackingEdge} = \text{clamp}((\text{attackerTracking} - \text{defenderEvasion}) / 200, -0.2, +0.2)$
- If the Varkon Conscription buff is active: $\text{attackerPower} *= (1 + \text{AttackBuffPercent})$ where $\text{AttackBuffPercent}=0.25$.
- If Eclipse Ascension (War) was chosen at the launch base: $\text{attackerPower} *= 1.25$ (and fleet takes fewer losses).

Defender:

- $\text{defenderAttack} = \text{sum}(\text{defender ships} * \text{weightedAttack})$
- $\text{defenderUnitDefense} = \text{sum}(\text{defender ships} * \text{weightedDefense}) * \text{DefenseMultiplier}$
- baseDefenseBonus and "wallMultiplier" come from buildings (see below)
- $\text{defenderPower} = \text{defenderAttack} * (1 + \text{defenderAvgCrit}/200) + \text{defenderUnitDefense} * \text{wallMultiplier} + \text{baseDefenseBonus} * \text{DefenseMultiplier}$
- defenderPower also gets a trackingEdge multiplier vs attacker evasion:
 $\text{defenderPower} *= (1 + \text{defenderTrackingEdge})$
 $\text{defenderTrackingEdge} = \text{clamp}((\text{defenderTracking} - \text{attackerEvasion}) / 200, -0.2, +0.2)$

11.3 Base defense from buildings

Combat adds extra defense from:

- Ion Shield level and Central Spire level.
- There is also a "wall multiplier" that amplifies defender unit defense.

Implemented formulas (current):

- $\text{baseDefenseBonus} = (\text{IonShieldLevel} * 50) + (\text{IonShieldLevel} * 30) + (\text{CentralSpireLevel} * 10) + (\text{IonShieldLevel} * 5 * 25)$
- $\text{wallMultiplier} = 1.0 + (\text{IonShieldLevel} * 0.05) + (\text{IonShieldLevel} * 0.03)$
- DefenseMultiplier (from Ion Shield, tile defense, etc.) multiplies both the unit defense and the baseDefenseBonus .

11.4 Casualties (Raid vs Attack)

After power is computed:

- $\text{total} = \text{attackerPower} + \text{defenderPower}$
- $\text{fracAttLost} = \text{defenderPower} / \text{total}$
- $\text{fracDefLost} = \text{attackerPower} / \text{total}$

Raid:

- Both sides take only 50% of "normal" losses:
 $\text{fracAttLost} *= 0.5$
 $\text{fracDefLost} *= 0.5$
- It is common for both sides to survive.
- Overmatch rule:
 If the defender heavily outclasses the attacker, raids become punishing:
 - Tiny poke raids into strong defense can be wiped.
 - Large overmatched raids typically lose most attackers (often ~95%).

Attack:

- One side MUST be wiped out:
 The higher loss fraction is scaled up to 1.0 and the other is scaled accordingly.

Eclipse Ascension (War) defense effect (fleet-level):

- If the attacker fleet has $\text{DefenseMultiplier} > 1.0$, its fractional losses are reduced:
 $\text{fracAttLost} = \text{fracAttLost} / \text{DefenseMultiplier}$

Loss application:

- Each ship type loses approximately $\text{round}(\text{count} * \text{fractionLost})$.

11.5 Loot (Raid + Attack)

Loot happens if the attacker has surviving ships:

- 1) Compute fleet carry capacity:
 $\text{totalCarry} = \text{sum}(\text{shipCount} * \text{cargoCapacity} * \text{carrierAuraApplied})$
 $\text{totalCarry} *= \text{fleet.CargoCapacityMultiplier}$ (Veil upgrade can make this

1.20)

- 2) Compute defender resources available:
 $\text{totalAvailable} = \text{sum}(\text{defenderBase.Resources}[\text{rt}])$
 $\text{maxStealable} = \text{min}(\text{totalCarry}, \text{totalAvailable})$

- 3) Raid multiplier (Veil Siphon upgrade):
 if mission is Raid and $\text{fleet.RaidLootMultiplier} > 1$:
 $\text{maxStealable} = \text{min}(\text{totalAvailable}, \text{maxStealable} * \text{fleet.RaidLootMultiplier})$ (typically x1.20)

- 4) Hidden resources (Nano Storage / Shadow Hoard):
 $\text{hiddenFrac} = \text{clamp}(\text{defenderBase.HiddenResourceFraction}, 0.0, 0.95)$
 Only the $(1 - \text{hiddenFrac})$ portion of each resource can be stolen.

- 5) Loot distribution:

Loot is pulled randomly in 1-unit chunks across available resources until the maxStealable budget is exhausted or only hidden amounts remain.

- 6) Stolen Breath upgrade (extra raid siphon):

After normal steal, raids can siphon extra loot:

$\text{desiredExtra} = \text{stolenTotal} * 0.10$

$\text{capExtra} = \text{remainingTotal} * 0.05$

$\text{extraBudget} = \text{min}(\text{desiredExtra}, \text{capExtra})$

Extra is also pulled in 1-unit chunks, still respecting hiddenFrac.

Loot is stored in fleet cargo and delivered when the fleet returns.

11.6 Siege damage (Attack only)

Siege ships can destroy building levels, but ONLY on Attacks.

Target building:

- If you specify a target building, siege will focus it.

- If you do not specify a target and you brought siege ships, the highest-level building on the base is targeted automatically.

Siege budget:

- $\text{rawSiege} = \text{sum}(\text{siegeStat} * \text{count})$ with carrier aura applied
- $\text{siegeStatsTotal} = \text{rawSiege} * \text{fleet.SiegeMultiplier}$ (Veil upgrade can make this 1.50)
- $\text{survivalScale} = \max(0.2, \text{survivingSiege} / \text{initialSiege})$
- $\text{siegeBudget} = \text{siegeStatsTotal} * \text{survivalScale}$
- If defender has Stasis Bastion upgrade: $\text{siegeBudget} *= 0.75$

Spending siege budget:

- Each building level destroyed costs:
 $\text{siegeCost} = (\text{sum of that level's build cost across all resources}) * 0.40$
- Levels are destroyed one by one while siegeBudget can afford the next level cost.

Base destruction:

- If ALL buildings on a non-spawn base are reduced to Level 0, the base is removed.
- Spawn bases (your initial base) cannot be removed this way.

12_ESPIONAGE.txt

12) ESPIONAGE (SPY INTEL)

Spy missions:

- Only Intelligence ships may be sent.
- Attacker and defender spies "trade 1 for 1" up to min(attackerSpies, defenderSpies).
- If attacker has survivors, they gain intel about the target base including:
 - Resources (snapshot)
 - Defender ship counts (snapshot)
 - Ion Shield level
 - DefensePoints estimate
 - Traps (currently a placeholder count)
 - Hidden fraction
 - Whether conscription is active on the target commander

Diplomacy effect:

- Successful/attempted spying reduces defender sentiment toward the attacker's faction.

13) LOGISTICS: TRADE ROUTES AND RAID ROUTES

Routes run automatically over time and are a major way to scale.

13.1 Trade routes

Trade routes move resources per hour from a source base to a target base.

Key properties:

- RatePerHour: amount of each resource to attempt to send each hour
- ShipType: used ONLY to compute travel time for timing/ETA logic
- MinuteOfHour: the minute within each hour the route triggers
- UseArrivalTime: if true, the route schedules departures so arrivals line up to MinuteOfHour

Rules:

- Hostile (Enemy stance) trade is blocked.
- Each hour, the route attempts to send up to RatePerHour of each resource, but cannot exceed available resources at the source base.
- Cross-faction trade increases sentiment for both sides by:
 $1 + (\text{transferredTotal} / 500)$

13.2 Raid routes

Raid routes automatically launch Raid fleets every hour according to a ship plan.

Key properties:

- ShipsPerHour: how many of each ship type to send per hour (limited by stationed ships)
- NextDeparture: hourly cadence
- AlwaysSend: keeps a "due" queue item armed so it fires as soon as ships become available
- LossStreak / SuccessStreak: used to pause/boost the route

Queue model:

- If a route is due but the ships are not available, the departure is queued.
- When ships become available (including when fleets return or training completes),
queued departures are drained fairly (oldest due time wins per source base).

Auto-pause:

- If a route fails repeatedly, it can become inactive (loss streak ≥ 3).

14) THE MARKETPLACE (ORBITAL EXCHANGE)

The Orbital Exchange provides:

- Global marketplace offers (post/accept)
- Direct shipping of resources to friendly bases
- SPU market (buy/sell SPU chips using Noctmarks)

Posting an offer:

- You input an "Offer" and a "Want" (4 numbers each: Vulkron Aurelite Deuterium Astra).
- Your Offer is removed from your base immediately and held by the market.

Accepting an offer:

- You pay the Want immediately.
- A resource transfer is scheduled so BOTH sides receive the swapped resources at the same arrival time.
- If either base is at merchant capacity, the trade is queued until a merchant slot frees (ETA increases).

Market travel time (ETA):

- Market transfers use a simplified speed model:
$$\text{tradeSpeed} = 5.0 \text{ tiles/hour} * \text{your base ShipTravelSpeedMultiplier}$$
- This means improving ship travel speed improves market ETAs.

Merchant slots (Orbital Exchange level):

- Each base can have up to (Orbital Exchange level) merchant runs in flight at once.
- Runs include: market trades + direct resource shipments.
- If you are at capacity, new runs are queued and depart when a slot frees (ETA includes the queue delay).

Orbital Exchange Economic Ticker (HUD bottom strip):

- The bottom HUD strip shows a scrolling ticker with world aggregates:
 - World Total: sum across all bases, all commanders
 - Market Supply: sum of all offered amounts on the market
 - Market Demand: sum of all wanted amounts on the market
 - Strength Index: a scalar derived from supply/demand
- Strength Index formula (deterministic):
$$\text{stabilizer} = \max(1, \text{WorldTotal} * 0.02)$$
$$\text{strengthIndex} = (\text{MarketDemand} + \text{stabilizer}) / (\text{MarketSupply} + \text{stabilizer})$$

Interpretation:

- > 1.0 means demand is high relative to supply
- < 1.0 means supply is high relative to demand

SPU Market (Noctmarks currency):

- SPUs are crafted by Mining Outposts (see Buildings).
- The Orbital Exchange also supports a global SPU market:
 - Post SPU offer: removes SPUs from your inventory and lists them for sale.
 - Accept SPU offer: pays Noctmarks immediately; an SPU transfer is scheduled and arrives by market ETA.
 - Seller receives Noctmarks at the scheduled arrival time.
- SPU transfers appear in Fleet Movements as incoming deliveries.

15) VEIL SYSTEMS: SOUL SHARDS + ELDRITCH CONDUIT UPGRADES

Soul Shards:

- Only Veil culture commanders earn Soul Shards.
- Each unit kill grants 1 Soul Shard (credited after battle).
- Shards go into a shared player vault (shared across ALL bases).

Eldritch Conduit:

- The Conduit is a building on a base. Upgrades are base-specific.
- Currency (shards) is shared on the player.
- Many upgrades apply to fleets launched from THIS base, or to THIS base's economy/defense.

Eldritch upgrade list (costs are in Soul Shards):

- 1) Shadow Hoard (46,000): Hide +20% resources from raids (caps at 95%).
- 2) Veil Siphon (60,000): Raids launched from this base steal +20% more resources.
- 3) Whisper Relay (48,000): Spy fleets launched from this base travel +20% faster.
- 4) Nullwake Drives (55,000): All fleets launched from this base travel +20% faster.
- 5) Phase Foundry (50,000): Ship training speed at this base +20%.
- 6) Gloom Ward (52,000): Base defense multiplier +20%.
- 7) Spectral Targeting (44,000): Fleets launched gain +5 tracking.
- 8) Shiver Screens (44,000): Fleets launched gain +5 evasion.
- 9) Crit-Chain Doctrine (58,000): Fleets launched gain +10 crit.
- 10) Void Siege Rites (60,000): Fleets launched gain +50% siege.
- 11) Umbral Stockpiles (54,000): +25% storage capacity at this base.
- 12) Astra Suture Seal (56,000): -20% upkeep at this base (after other reductions).
- 13) Obsidian Overclock (50,000): +20% building construction speed at this base.
- 14) Rift Cargo Manifolds (52,000): Fleets launched gain +20% cargo capacity.
- 15) Stolen Breath (57,000): Successful raids siphon +10% extra loot (capped).
- 16) Phantom Treaty (42,000): 80% less diplomatic penalty from raids/attacks launched here.
- 17) Stasis Bastion (48,000): Defending: incoming siege budget reduced by 25%.
- 18) Tithe of the Fallen (59,000): Active: convert ALL shards into faction visions (1 shard -> 1 vision).
- 19) Riftwalk Logistics (60,000): This base can train an additional batch simultaneously (2 lanes).
- 20) Eclipse Ascension (100,000): Capstone: choose one permanent base path:
 - War: +25% attack and +25% defense for fleets launched from this base
 - Economy: +50% production at this base
 - Espionage: spy missions launched from this base have (near) instant travel

16_TRANSMUTATION.txt

16) TRANSMUTATION (TRANSMUTING VOID)

Transmutation converts a chosen set of input resources into ONE chosen output resource.

Rules:

- Input is 4 numbers (Vulkron Aurelite Deuterium Astra).
- Total input (sum of all 4) becomes the output amount in the chosen resource.
- The input is spent immediately.
- The output arrives after the building's transmutation duration.
- Transmutation is per-base and is "one in progress at a time" (per base).

17) DIPLOMACY (FACTIONS, STANCES, AND SENTIMENT)

Faction stances:

- Ally, Neutral, Enemy
- These stances gate actions (trade/raid/attack/reinforce).

Sentiment:

- Each commander tracks sentiment toward other factions, in range [-100, +100].
- Combat and trade adjust sentiment.

Major sentiment adjustments:

- Reinforcing a different-faction base: recipient sentiment toward your faction +3 (clamped).
- Being raided/attacked: defender sentiment toward attacker faction decreases by:
 - Raid base penalty: 4
 - Attack base penalty: 8
 - Plus loot penalty: $\min(15, \text{resourcesStolen} / 200)$(Phantom Treaty can reduce this penalty for raids/attacks launched from that base.)
- Attacker sentiment toward defender faction changes by +2 if attacker wins, else -2.

Faction-wide votes:

- Once per day, each faction re-evaluates stance toward other factions based on average sentiment.
- Sudden sentiment surges can flip stances to Enemy or Ally.

Rivalries & friendships (player-vs-player)

Rivalries:

- Commanders track per-opponent "rivalry" stats from hostile actions (raids, attacks, spying).
- Rivalries decay over time but remain as a long-term signal of grudges.

Friendships:

- Commanders track per-opponent "friendship" stats from allied support actions:
 - Reinforcements (sending ships to reinforce an ally base)
 - Allied resource transfers
- These scores help surface long-term allies vs grudges in the UI.

Where to view:

- Player Profile screen includes a "Rivalries & Friends" section.

18_VICTORY_CONDITIONS.txt

18) VICTORY CONDITIONS (HOW YOU WIN)

Your faction wins when ALL of the following are true:

- 1) Your faction has at least 1,000,000 Visions.
- 2) Your faction controls a majority (>50%) of all "central special" tiles.
- 3) Your faction controls the base at (0,0) AND that base has a Central Spire Level 20.

Central special tiles are the Core Nexus zone around (0,0) (radius 10).

19_SHIP_ROSTERS.txt

19) REFERENCE: SHIP ROSTERS (AS IMPLEMENTED)

Below are the current ship stat tables (from ships.csv).

Column notes:

- Cost is the per-resource cost (you pay that amount of V, Au, D, As)
- Time is minutes per unit before training speed multipliers
- UPKEEP is Astra per hour while stationed
- L/H indicates "Light" or "Heavy"

=== ASTRAEAN ROSTER ===

Name	Class	Type	Cost	Time	UPKEEP	ATTACK VS LIGHT	ATTACK VS HEAVY	DEFENCE VS LIGHT	DEFENCE VS HEAVY	SPEED	CARGO CAPACITY	CRIT	EVASION	TRACKING	SIEGE
Solar Wisp	Intelligence	Light	35	2.8	0.8	0	0	12	10	17	6	0	55	70	0
Halo Automaton	Drone	Light	110	1.2	1.7	85	15	28	16	12.5	18	14	30	110	0
Comet Rapier	Skirmisher	Light	70	2.1	1.1	75	12	24	12	10.5	28	18	32	85	0
Nebula	Starfighter	Light	175	4.6	3	30	125	44	78	6.2	35	10	12	55	0
Auric	Corvette	Light	160	3.4	1.9	65	25	22	18	12	22	20	40	95	0
Quasar	Frigate	Heavy	255	5	2.8	60	95	120	105	5.6	140	5	8	65	0
Photon	Gunship	Heavy	320	6.8	3	12	160	130	40	4.6	15	6	5	45	0
Zenith	Cruisers	Heavy	430	5.7	3.6	35	70	85	80	6	75	7	10	60	0
Oras Duster	Bomber	Heavy	360	12.5	3.5	15	175	22	32	5	50	12	10	55	0
Radiance	Destroyer	Heavy	670	13	5	100	160	105	110	4.5	150	6	5	70	0
Seraph	Dreadnought	Heavy	560	8	4.2	80	135	90	85	4.2	60	12	6	65	0
Lumen	Carrier	Heavy	730	9.5	5.2	20	55	75	70	4.4	130	4	8	80	0
Breacher	Siege	Heavy	950	32	5.5	0	200	60	85	3	10	4	3	55	200
Eidolon	Colonization	Heavy	880	40	2.1	0	0	30	30	1.2	2200	0	6	15	0

=== VEIL ROSTER ===

Name	Class	Type	Cost	Time	UPKEEP	ATTACK VS LIGHT	ATTACK VS HEAVY	DEFENCE VS LIGHT	DEFENCE VS HEAVY	SPEED	CARGO CAPACITY	CRIT	EVASION	TRACKING	SIEGE
Membraine	Intelligence	Light	32	3.2	0.9	0	0	10	10	15.5	4	0	60	65	0
Nocturne Sentry	Drone	Light	100	0.9	1.8	95	20	18	10	12	15	18	35	75	0
Sable	Skirmisher	Light	75	2.2	1.3	110	18	16	10	9.5	20	24	45	60	0
Vex	Starfighter	Light	170	4.3	3.1	28	150	32	60	6	30	14	18	45	0
Void Prowler	Corvette	Light	155	3.2	2	80	30	18	12	11.5	18	22	42	90	0
Silhouette	Frigate	Heavy	245	5.4	3	50	110	80	85	5.2	110	8	12	75	0
Murk Harrower	Gunship	Heavy	310	7.2	3.2	15	180	95	25	4.3	12	10	6	40	0
Regent Caravel	Cruisers	Heavy	410	5.8	3.4	40	90	65	70	5.7	65	12	16	55	0
Nightglass	Bomber	Heavy	350	11	3.8	20	195	18	28	4.8	45	20	12	45	0
Wraith	Destroyer	Heavy	620	13.5	5	130	145	85	95	4.6	130	12	8	65	0
Specter	Dreadnought	Heavy	540	8.2	4.4	85	155	70	75	4.1	45	18	10	60	0
Raven	Carrier	Heavy	710	9.4	5.4	30	70	80	75	4.3	115	8	12	70	0
Chasm	Siege	Heavy	880	30	5	0	180	55	70	3.3	12	8	6	50	170
Cryo	Colonization	Heavy	820	38	2.4	0	0	24	24	1.3	1900	0	10	20	0

=== VARKON ROSTER ===

Name	Class	Type	Cost	Time	UPKEEP	ATTACK VS LIGHT	ATTACK VS HEAVY	DEFENCE VS LIGHT	DEFENCE VS HEAVY	SPEED	CARGO CAPACITY	CRIT	EVASION	TRACKING	SIEGE
Maul Talon	Intelligence	Light	28	3	0.6	0	0	14	12	12.5	6	0	25	55	0
Rivet Locust	Drone	Light	85	0.8	1.4	75	25	40	28	10	22	8	15	100	0
Skarn Falconet	Skirmisher	Light	65	2	1.1	70	20	35	20	7.5	25	6	12	75	0
Rampart Lancer	Starfighter	Light	190	5	3.4	35	180	70	150	4.8	45	4	4	50	0
Bastille	Corvette	Light	155	3.8	2	55	45	30	35	9	28	10	18	80	0
Bulwark	Frigate	Heavy	270	5.8	3.1	60	130	150	170	4.4	160	2	3	50	0
Hammer	Gunship	Heavy	340	7.5	3.4	20	190	180	80	3.5	25	2	1	40	0
Vanguard	Cruisers	Heavy	450	6.5	3.9	30	85	120	140	4.8	100	3	4	55	0
Mech Pulverizer	Bomber	Heavy	340	13	3.6	12	200	30	55	4	65	4	4	35	0

Ravager, Destroyer, Heavy, 700, 15, 5.6, 120, 190, 160, 180, 3.8, 200, 2, 1, 55, 0
Elemental, Dreadnought, Heavy, 600, 9, 5, 90, 180, 130, 170, 3.6, 70, 4, 2, 60, 0
Dreadrock, Carrier, Heavy, 740, 10, 5.6, 25, 80, 110, 120, 3.9, 140, 2, 3, 60, 0
Harvester, Siege, Heavy, 980, 36, 6, 0, 195, 120, 160, 2.7, 18, 1, 0, 35, 200
Homestead, Colonization, Heavy, 950, 45, 2.7, 0, 0, 60, 60, 0.9, 2400, 0, 2, 12, 0

20) RANKINGS, WORLD HISTORY, AND "READING" THE GALAXY

These screens are the game's instrumentation: they tell you what the galaxy is doing, who is ahead, and (importantly) why momentum is shifting.

Rankings (R):

- Rankings are designed to be practical, not just decorative. Use them to answer:

- Who is scaling economy/population fastest?
- Who is winning wars (attack/defense kills)?
- Who is raiding effectively (loot per hour, loot totals)?
- Which factions are surging, and which are bleeding out?
- "All Players" is the fastest snapshot: sort by Combined/Pop/Power/Econ/h/Tot/h and look for outliers.

Player profiles:

- Profiles are a deep read on one commander:
 - Current population and power
 - 24h deltas (growth/war/loot)
 - Lifetime totals
 - Medals and "Firsts" (Hall of Fame)
- Use this to predict behavior:
 - High Loot/h with modest Econ/h usually means a raider economy.
 - High Defense + low Attack often means a turtle or a base that's being hammered.

World History (Codex -> World History):

- World History is a curated feed built from:
 - Persistent log records (events that can't be derived reliably later)
 - Notable battles/raids derived from battle reports (big ship counts, big loot, meaningful siege)
- It is meant for reconnaissance:
 - If a commander is repeatedly appearing in raid records, they have active routes and targets.
 - If you see major siege events, expect weakened infrastructure and follow-up vulnerability.

Alerts (L):

- Alerts are your "inbox" for things that demand attention:
 - Incoming attacks
 - Completed training batches / build steps
 - Market and delivery arrivals
- The intended use is to treat Alerts as a triage queue: open, resolve, return to your plan.

TIP: Use Rankings to pick targets, and World History to validate your read.

- Rankings tells you who is strong.
- World History tells you how they got strong (and whether they are currently committed elsewhere).

21) ORGANIZATIONS, CONTRACTS, AND SHARES (ORBITAL EXCHANGE META-ECONOMY)

Organizations add an extra strategic layer on top of pure base-building:

- They track turnover and "health" (a score derived from market activity and contract completion).
- They issue shares with a dynamic price and a sell-order book.
- They post contracts that pay out resource escrow to the commander who completes them.

Organizations directory:

- Shows major organizations, their ticker, health, turnover, share supply, and price.
- You can open an org to see its contract board and share market.

Contracts (general):

- A contract is a public objective with a resource payout.
- The payout is escrowed up front (split across resources) from a specific base.
- A commander can accept a pending contract; progress updates as relevant battles/events occur.
- Contract types include (examples):
 - Destroy base / destroy building levels (siege outcomes)
 - Destroy ships worth X Astra/hr
 - Raid total resources / raid a single large amount

How to use contracts (practical):

- As a builder: post contracts to pressure a rival without committing your own fleets.
- As a warlord: accept contracts that align with what you were going to do anyway (free upside).
- As a scout: the contract list tells you who is being targeted and what kind of damage is being traded.

Shares and the order book:

- Shares are traded in Dolbeks.
- The share market is an order book of sell orders; buyers take the best available price.
- You can place your own sell orders, cancel them, and buy from other sellers.
- Price + 24h gives a quick read of sentiment/health. "Market cap" is price * total shares issued.

TIP: Contracts and shares are not a side activity in long campaigns.

- If you're ahead, contracts let you turn surplus resources into pressure.
- If you're behind, shares/contracts can be a catch-up lever (profit, alignment, and opportunistic fights).

22_TROUBLESHOOTING_AND_PERFORMANCE.txt

22) TROUBLESHOOTING, LARGE SAVES, AND PERFORMANCE TIPS

This is a terminal game, so performance is mostly about two things:

- How much the simulation needs to process per second
- How much HUD work is being done per render (building lists, sorting, formatting)

If navigation feels sticky in a big save:

- Prefer a modern terminal (Windows Terminal / iTerm2 / Konsole).
- Keep the window size reasonable; extremely wide/tall windows increase draw cost.
- Let the sim run at 1Hz: the clock and ETAs update once per second, and heavy tables cache by sim-second.

Where to look for bottlenecks:

- The slowest screens are usually those that aggregate galaxy-wide data:
 - Rankings, World History, Markets, Garrisons, Logistics tables
- If you enable verbose HUD perf logging, you can spot "death by a thousand cuts":
 - Set environment variable: SPACELEGENDS_PERFHUD_VERBOSE=1

Save files:

- Campaign save is written to: ./saves/galaxy.json (relative to the build output folder).
- Scenario saves are stored separately under ./scenario_saves/.

TIP: If something feels wrong, open the Codex and World History.

- These two views are the quickest way to verify if the sim is doing what you think it is.