Components

This section describes the structure of the ComponentDefinitions.xml file.

Each component has the following information:

- base information
- list of resources required to construct the component
- list of ComponentStats entries that define the capabilities of the component

Component Base Information

Name	Value Range	Description
ComponentId	0-32767	Unique Id value of component
Name	Text, 100 characters or less	Name of component
Description	Text	Description of component
Size		Size of component. Ship size is total size of all components plus size of hull
Category	Must be a valid component category, as shown in list below	Used to match with component bay type in ship hulls, e.g. component bays of type Engine are designed to accept components with Category of Engine
ImageFilename	Text, 100 characters or less	Image of component shown in Ship Design screen, Ship detail, etc
SoundEffectFilename	Text, 100 characters or less	Primary sound effect used with component: weapons firing effects, hyperdrive jump entry effects, looping activity effects (e.g. construction, mining), etc
SoundEffectVolume	0-1	Volume level for sound effect
SoundEffectFilenameAlternate	Text, 100 characters or less	Secondary sound effect used with component: weapons strike effects, hyperdrive jump exit effects, etc
SoundEffectAlternateVolume	0-1	Volume level for alternate sound effect
DisplayTextureNames	Text array, 100 characters or less	Supporting textures used in custom shaders displaying various aspects of component, e.g. engine exhaust gradients
DisplayColors		Array of RGBA color values that specify tint colors for various types of components. Some examples: • Color 1 & 2 for area blast wave effect for Area Weapons • Tint color for Hyperdrive enter/exit effects
DisplayRotationType		Type of rotation for exterior components. Can be one of the following values: **None**: no rotation or not an exterior component **Constant**: constant rate of rotation, e.g.

		rotating sensor dish **RotateToTarget**: weapon turret that rotates to fire at current target
DisplayRotationRate		Rotation rate of exterior component in radians per second
UseLargeMeshIfAvailable	True or False	When selecting a component mesh in the ship model, determines whether to use a large version of the mesh or the standard-size mesh
WeaponMeshType		When selecting a weapon component mesh in the ship model, determines which weapon mesh to use. Valid values as follows: **Undefined**: component is not a weapon **BarrelledTurret**: laser blasts, rail guns, point defense **VerticalLauncher**: missiles, torpedoes, assault pods **ShortTurret**: phasers, tractor beams
IsFighterOnly	true/false	Specifies whether this component should be used only on fighters. Otherwise can only be used on non-fighter roles
Bonuses		Bonus values that apply to this component
ResourcesRequired		List of resources required to build the component. Each resource entry has a ResourceId and Amount
Values	List of ComponentStats values as defined below	List of component function values. Each entry is a single tech level of values for the component. The first entry is the default set of values, subsequent entries are upgrades to the component. Upgrade levels must be unlocked through research.

Component Categories

- AreaShieldRecharge
- Armor
- AssaultPod
- CargoBay
- Colonization
- CommandCenter
- CommerceCenter
- Construction
- Countermeasures
- CountermeasuresFleet
- CrewQuarters
- DamageControl
- DockingBay
- EnergyCollector
- EnergyToFuel
- Engine
- Extractor
- FighterBay

- FuelStorage
- HyperBlock
- HyperDeny
- HyperDrive
- IonDefense
- MedicalCenter
- PassengerCompartment
- Reactor
- RecreationCenter
- RemoteFuelTransfer
- ResearchLab
- ScannerEmpireMasking
- ScannerExploration
- ScannerJammer
- ScannerJumpTracking
- ScannerLongRange
- ScannerShortRange
- ScannerRoleMasking
- ScannerTrace
- Shields
- ShieldEnhancement
- Stealth
- TargetingComputer
- TargetingComputerFleet
- TractorBeam
- TroopCompartment
- WeaponArea
- WeaponBombard
- WeaponCloseIn
- WeaponIntercept
- WeaponIon
- WeaponStandoff

ComponentStats Values

Each component has a list of one or more ComponentStats entries.

Each ComponentStats entry represents a single tech level for the component, with the first entry being the default. Subsequent entries are upgrades to the default values, which must be unlocked through research (Component Improvements).

A single ComponentStats entry contains values for each type of component functionality, e.g. weapons-related settings, shields, reactor energy output, fuel storage capacity, etc. Multiple values can be set in a single entry to make multi-function components, e.g. a reactor that also has fuel storage, a scanner that also provides targeting, etc.

Some types of functionality should not be combined though. This is especially true of exterior components of different types that have display elements, e.g. you should not combine engines with weapons, engines with hangar bays, etc.

All values are positive floating point numbers unless stated otherwise.

Name	Value Range	Description
AreaShieldRechargeAmount		Maximum shield recharge amount
AreaShieldRechargeEnergyUsedPerUnitCharged		Energy required for full recharge to maximum amount (AreaShieldRechargeAmount)
AreaShieldRechargeRange		Range of shield recharge, i.e. how close other ships/bases must be to have their shields recharged
ArmorBlastRating		How much weapons damage energy required to destroy the armor
ArmorReactiveRating		Level of weapons damage that armor will harmlessly absorb before taking damage. Weapon damage levels below this amount will only rarely damage armor
AssaultDefense		Defense value to ward off boarding parties. Defense level for a ship is total of all AssaultDefense component values, troops onboard and ship's own assault pods
AssaultPodBoardingRange		Maximum range that assault pods can be launched at boarding target
AssaultPodEnergyPerLaunch		Energy consumed per assault pod launch
AssaultPodLaunchRate		Seconds between launches, like weapons fire rate
AssaultPodMovementSpeed		Movement speed of assault pod towards boarding target
AssaultPodShieldPenetration		Maximum shield level that assault pod can penetrate. Assault pods will not launch until target shields are lowered to this level
AssaultPodStrength		Boarding assault strength delivered to target, i.e. strength of boarding party
CargoCapacity		Cargo storage capacity
ColonizationPopulationAmount		Population amount when establish new colony

CommandMaintenanceSavings	0-1	Ship maintenance savings amount, e.g. 0.1 = ships and bases cost 10% less to maintain
CommerceTradeBonus	0-1	Trade bonus amount, e.g. 0.1 = 10% bonus to income from trade at this ship/base
ComponentCountermeasuresBonus	-1 to +1	Countermeasures bonus value that applies only to this component, i.e. weapon has extra countermeasures defense. Can be especially used to defend a weapon blast from being intercepted by point-defense weapons. Alternatively, when this value is negative the component has worse countermeasures, e.g. a weapon is easier to intercept
ComponentIonDefense		Ion defense value that **applies only to this component**, i.e. how much Ion damage **this component** can resist. This is in contrast with IonDamageDefense
ComponentTargetingBonus	-1 to +1	Targeting bonus value that applies only to this component, i.e. weapon has extra targeting accuracy. Alternatively, when this value is negative the component has worse targeting, e.g. a weapon has lower accuracy
ConstructionBuildSpeed		Rate per second for building new ships or bases. Units used is total of hull size and size of all components
ConstructionRepairSpeed		Rate per second for repairing damage to existing ships or bases. Units used is total of hull size and size of all components
ConstructionYardCount		Number of construction yards in component. Each construction yard can only build or repair one ship at a time
CountermeasuresBonus	0-1	Amount of countermeasures bonus to make enemy weapons fire miss the ship, e.g. 0.1 = 10% less likely to hit
CountermeasuresFleetBonus	0-1	Amount of countermeasures bonus to make enemy weapons fire miss any ship in a fleet, e.g. 0.1 = 10% less likely to hit
CrewCapacity		Number of crew supported (living quarters and life support)
CrewRequirement	Integer: 0+	Number of crew required to operate this component
DamageReduction	0-1	Percentage reduction of damage after enemy weapons fire gets through shields and armor, e.g. 0.1 = 10%
DamageRepair		Units of damage that can be self-repaired per second. This allows repairs to be made when not docked in a construction yard, and even while in battle. Units used is total of hull size and size of all components
DestroyedRepairChance	0-1	Chance per second of a destroyed component changing status to damaged (after which it can

	then be repaired), e.g. 0.1 = 10% chance per second of component status changing from destroyed to damaged
DockingBayShipCount	Number of docking bays in component. Each docking bay can only service one ship at a time
DockingBayThroughput	Rate of loading/unloading for cargo, fuel and passengers. For passengers this value is multiplied by Constants.PopulationTransferMultiplier, which has a default value of 1000
EnergyCollectionRate	Rate of energy collection from energy sources (e.g. stars) in units per second. Note that energy collection rates decrease the further a ship is from an energy source
EnergyFuelProductionRate	Rate of fuel production in units per second. This is the maximum rate when placed near an optimal energy source (e.g. a star with ideal energy output)
EngineMainCruiseThrust	Cruise thrust level
EngineMainCruiseThrustEnergy Usage	Energy usage per second when engine is operating at cruise thrust
EngineMainMaximumThrust	Maximum thrust level
EngineMainMaximumThrustEn ergyUsage	Energy usage per second when engine is operating at maximum thrust
EngineVectoringEnergyUsage	Energy usage per second when ship is maneuvering
EngineVectoringThrust	Maneuvering thrust level
ExtractionRangeAsteroid	Mining range for nearby asteroids when a mining station is in an asteroid field. Other asteroids (other than the asteroid where the mining station is built) within this range will also be mined by the mining station. Note that this only applies when the mining station is built at an asteroid, and only applies to other asteroids at the same location
ExtractionRate	Mining rate for resources per second. Note that actual mining yield will also factor in the abundance of each resource at a location
FighterBayBuildRate	Rate per second for building new fighters. Units used is total of fighter's hull size and size of all components
FighterBayCapacity	Number of fighters hosted
FighterBayRepairRate	Rate per second for repairing damage to existing fighters. Units used is total of fighter's hull size and size of all components
FuelStorageCapacity	Fuel storage capacity
HullRepair	Repair rate per second for hull damage
HyperDenyEnergyUsage	Energy used per second when HyperDeny is operational
HyperDenyRange	Range within which ships cannot initiate hyperjump. Note that this affects all ships, not just

		enemies
HyperDenyStrength		Strength of hyperdeny zone. Ships with HyperDriveBlockingInsulation levels at or above this value ***can*** initiate a hyperjump
HyperDriveBlockingInsulation		Resistance to hyperjump blocking. HyperDeny levels below this value will not prevent a ship from jumping. HyperStop levels below this value will not pull a ship out of hyperspace.
HyperDriveEnergyUsage		Energy used per second when in hyperjump. This value combined with HyperDriveSpeed relates to the effective fuel range for a ship
HyperDriveJumpAccuracy		The minimum jump exit range when jumping to a location where empire does not have a presence (colony or base). Higher values means the hyperdrive is less accurate and ships will need to travel further at sub-light speeds to reach their target after exiting their jump.
HyperDriveJumpInitiationTime		Typical hyperjump initiation time in seconds
HyperDriveJumpRange		Maximum range of a single hyperjump. Ships typically need multiple hyperjumps in a path to reach a distant destination
HyperDriveRechargeTime		Time in seconds to recharge for a new hyperjump after the previous hyperjump has completed
HyperDriveSpeed		Top speed of hyperdrive
HyperStopRange		Range where any jumping enemy ship will be pulled out of hyperspace. This provides a buffer zone around ship/base where enemy ships must travel at sub-light speeds
HyperStopStrength		Strength of hyperstop zone. Enemy ships with HyperDriveBlockingInsulation levels at or above this value ***will not*** be pulled out of hyperspace
IonDamageDefense		Defense level against Ion damage. Ion strikes against the ship will first be reduced by this amount before inflicting any remainder ion damage
MedicalRating		Effectiveness rating for medical facilities
PassengerCapacity		Passenger capacity
ReactorEnergyOutputPerSecond		Energy output per second
ReactorEnergyStorageCapacity		Energy storage capacity
ReactorFuelResourceId	Integer value 0-32767	Id value of resource used for reactor fuel
ReactorFuelUnitsForFullCharge		Units of fuel required for a full reactor charge (ReactorEnergyStorageCapacity). This value strongly correlates to fuel efficiency – lower values mean better efficiency
RecreationRating		Recreation level
RemoteFuelTransferRate		Fuel transfer rate for remote fuel transfer components
RemoteFuelTransferRange		Range of remote fuel transfer. Fuel Tanker must

		be within this range of target ship to transfer fuel
ResearchLabOutput		Research output level
ScannerEmpireMaskingPower	0-255, Inoperative below 30	Allows masking a ships empire transponder, making it appear to be independent. However the ships real empire will be revealed by Long Range Scanner power levels above this masking power
ScannerExplorationPower	0-255	Power level of exploration scanners. Higher power levels allow scanning for hidden items, e.g. hidden resources, bonuses or ruins at planets
ScannerExplorationRange		Range of scanning for discovery of resource, ruins, planet bonuses, etc
ScannerExplorationTime		Time in seconds to perform a scan. The ship must remain at the planet until the scan is complete
ScannerExplorationSurveyAmount		Exploration amount for a single survey. Survey teams allow deeper exploration than scanners, because they generally have higher maximum levels (ScannerExplorationPower vs ScannerExplorationSurveyMaximumLevel). However planets which are already partially explored will produce less exploration for each survey.
ScannerExplorationSurveyMaximumLevel		The maximum exploration level that surveying can attain at a planet. When the exploration level for a planet increases towards this value, the amount gained from a survey is reduced (ScannerExplorationSurveyAmount).
ScannerExplorationSurveyTime		Time in seconds taken to perform a survey. The ship must remain at the planet until the survey is complete
ScannerJammingPower		Prevent trace scanners from scanning the cargo, troops, characters or component status of a ship. To prevent enemy trace scanning, jamming power levels must be higher than trace scanner power (ScannerTracePower)
ScannerJumpTrackingChance	0-1	0 means no jump tracking, 1 means always able to track jump
ScannerLongRange		Range of long range scanner
ScannerLongRangePower	0-255, Typical=100	Scan power of long range scanner. Scan power is highest nearest scanner and decreases linearly to zero at maximum scan range. Long Range Scanner power can overcome Stealth, Empire Masking and Role Masking tech, especially at closer ranges.
ScannerRoleMaskingPower		Allows masking a ships role signature, making it appear to be a freighter. However the ships real role will be revealed by Long Range Scanner power levels above this masking power
ScannerTracePower		Power level of trace scanner. Scan power is highest nearest scanner and decreases linearly to zero at maximum scan range. Trace scan power must be greater than a target ships jamming

		power (ScannerJammingPower) to scan inside it
ScannerTraceRange		Trace scanner range. Allows scanning another ship or base to determine its cargo, onboard troops, characters and component status
ShieldPenetrationChance	0-1	Chance that weapon damage will bypass the shields, e.g. 0.1 = 10% chance
ShieldPenetrationRatio	0-1	Ratio of weapon damage that will strike target if shields are bypassed (ShieldPenetrationChance), e.g. 0.5 = 50% of damage strikes target
ShieldRechargeRate		Amount of shield charging per second (to maximum value of ShieldStrength)
ShieldResistance		Level of weapons damage that shields will harmlessly absorb before being reduced. Weapon damage levels below this amount will only rarely reduce shields. Similar to ArmorReactiveRating
ShieldStrength		Maximum strength of shields
StaticEnergyUsed		Static energy used by component per second (i.e. constant energy consumption, even when component is not being actively used)
StealthRating		Stealth level. This determines when a ship becomes visible to long range scanners. Higher levels of stealth reduce range at which a ship is detected. Even when detected, stealth tech makes a ship stay partially visible for longer. When a ship is partially visible, its empire and role are unknown
TargetingBonus	0-1	Amount of targeting bonus to make weapons fire hit enemy target, e.g. 0.1 = 10% more likely to hit
TargetingFleetBonus	0-1	Amount of targeting bonus to make weapons fire of any ship in a fleet hit enemy target, e.g. 0.1 = 10% more likely to hit
TractorBeamDwellTime		Duration of single firing in seconds
TractorBeamEnergyPerShot		Energy used per firing
TractorBeamFireRate		Fire rate in seconds (i.e. average time between firing)
TractorBeamPower		Pulling/pushing power of tractor beam per second
TractorBeamPowerFalloff		Tractor beam power loss per 1000 units of distance
TractorBeamRange		Range of tractor beam
TroopCapacity		Troop capacity. This relates to troop unit sizes, i.e. total size of all carried troop units must be less than or equal to this value
WeaponAreaEffectRange		Range of explosive wave for weapons with WeaponDamageType of AreaEffect.
WeaponArmorBypass	-1 to +1	Ratio of weapon damage that bypasses armor, e.g. 0.1 = 10%. Alternatively, when this value is negative more weapon damage is absorbed by armor, i.e. the weapon inflicts less damage to armor
WeaponBombardDamageQuali		Planetary bombardment that reduces planet

ty		quality. One point of damage here reduces planet quality by approximately 0.01%
WeaponBombardDamagePopulation		Planetary bombardment that reduces planet population. One point of damage here reduces population by approximately 0.1-2 million, depending on current population levels (higher populations lose more, lower populations lose less)
WeaponBombardDamageMilitary		Planetary bombardment that may destroy troops and characters at a colony
WeaponBombardDamageInfrastructure		Planetary bombardment that reduces planet development level and may destroy facilities, artifacts and cargo. One point of damage here reduces development level by approximately 0.01%
WeaponDamageFalloffRatio	0-1 or higher	Ratio of damage loss per 1000 units distance, e.g. 0.1 = 10%. This falloff ratio applies to all types of weapon damage: standard raw damage, bombard damage, intercept damage, ion damage, area damage
WeaponDamageType		Can be one of following values: **Impact**: standard impact damage (laser blasts, rail guns, missiles, torpedoes, etc) that only damages single target **AreaEffect**: wide-area explosive wave that may damage multiple targets within the vicinity
WeaponDwellTime		Time in seconds that a FullLengthBeam weapon is displayed. Has no effect on amount of damage. Only applies to weapons with WeaponFireType=FullLengthBeam
WeaponEnergyPerShot		Energy consumed per firing
WeaponFireRate		Fire rate in seconds (i.e. average time between firing)
WeaponFireType		Can be one of following values: **Undefined**: component is not a weapon **DirectFire**: laser blasts, rail guns, point defense **Seeking**: missiles, torpedoes, assault pods **FullLengthBeam**: beam from firer to target, e.g. tractor beams, phasers
WeaponInterceptComponentTargetingBonus	-1 to +1	Targeting bonus value that applies only when firing as intercept weapon, i.e. intercept weapon has extra targeting accuracy. Alternatively, when this value is negative the intercept weapon has worse targeting (less accuracy). This value is separate from ComponentTargetingBonus and thus allows different targeting accuracy for intercept weapons (e.g. more accurate)
WeaponInterceptDamageDirectFire		Point-defense intercept damage against enemy direct-fire weapon blasts
WeaponInterceptDamageFight		Point-defense intercept damage against enemy

er		fighters
WeaponInterceptDamageFullLengthBeam		Point-defense intercept damage against enemy full length beam weapon blasts
WeaponInterceptDamageSeeking		Point-defense intercept damage against enemy seeking weapon blasts
WeaponInterceptEnergyPerShot		Energy consumed when firing as an intercept weapon. If this value is zero then WeaponEnergyPerShot will be used instead
WeaponInterceptFireRate		Fire rate in seconds (i.e. average time between firing) when firing as an intercept weapon. If this value is zero then WeaponFireRate will be used instead
WeaponInterceptIonDamageRatio	0-1	Proportion of Ion damage to be applied to a target when intercepting. E.g. if set to 0.5 then 50% of the normal ion damage amounts are inflicted on the target when intercepting
WeaponInterceptRange		Maximum range when firing as an intercept weapon. If this value is zero then WeaponRange will be used instead
WeaponIonEngineDamage		Amount of Ion damage to engines
WeaponIonGeneralDamage		Amount of Ion damage to all other component types (not Engines, Hyperdrives, Sensors, Shields or Weapons)
WeaponIonHyperDriveDamage		Amount of Ion damage to hyperdrives
WeaponIonSensorDamage		Amount of Ion damage to sensors
WeaponIonShieldDamage		Amount of Ion damage to shields
WeaponIonWeaponDamage		Amount of Ion damage to weapons
WeaponRange		Maximum range of weapon
WeaponRawDamage		Initial damage amount of weapon. This value may decrease over distance, i.e. less damage at longer ranges. See WeaponDamageFalloffRatio
WeaponShieldBypass	-1 to +1	Ratio of weapon damage that bypasses shields, e.g. 0.1 = 10%. Alternatively, when this value is negative more weapon damage is absorbed by shields, i.e. the weapon inflicts less damage to shields
WeaponSpeed		Movement speed of shots. This value has no effect for FullLengthBeam weapons where shots impact the target immediately
WeaponVolleyAmount	0-255	Number of shots in single volley. If value is 1 or less, then volleys are not used for this weapon
WeaponVolleyFireRate		Time in seconds between each shot in a volley. This must be less than (WeaponFireRate / WeaponVolleyAmount)