## 架构

## 模型

关于雾计算网络模型和算法的研究[【79】](【79】Model%20and%20Algorithms%20for%20the%20Planning%20ofFog%20Computing%20Networks.pdf)

## 问题类型

基于虚拟机的在线迁移

## 场景

资源定义：CPU GPU 内存，存储，网络带宽，无线频段，无线功率。

**1、资源发现：** 异构资源发现。

基准测试，确定资源规模。（例如x86，ARM性能归一化）

最优边缘资源寻找（价格、位置、容量等）需要SDN功能完成。

服务发现。

SDN控制器布局问题[【149】](【149】SDN%20Controller%20Placement%20with%20Delay-Overhead%20Balancing%20in%20Wireless%20Edge%20Networks.pdf)

机器学习的方法对雾计算网络质量进行预测性分析[【130】](【130】Predictive%20Analytics%20for%20Fog%20Computing%20using%20Machine%20Learning%20and%20GENI.pdf)

云边架构中雾节点位置确定问题研究[【127】](【127】On%20the%20Location%20of%20Fog%20Nodes%20in%20Fog-Cloud%20Infrastructures.pdf)

基于QoS的服务分类方法[【99】](【99】Class%20of%20Service%20in%20Fog%20Computing%20.pdf)

基于SDN的最优资源寻找[【94】](【94】Adaptive%20Computing%20Optimization%20in%20Software-Defined%20Network-Based%20Industrial%20Internet%20of%20Things%20with%20Fog%20Computing%20.pdf)

kNN实现大规模边缘计算环境的服务发现问题[【91】](【91】Supportingk-Nearest%20Service%20Discoveriesfor%20Large-Scale%20Edge%20Computing%20Environments.pdf)

一种发现和分配边缘计算资源的框架[【90】](【90】Kinaara%20Distributed%20discovery%20and%20allocation%20ofmobile%20edge%20resources.pdf)

提出了一种基于分散和修正的内容中心网络(CCN)的MEC服务部署/发现协议和平台[【89】](【89】Decentralized%20and%20Revised%20Content-CentricNetworking-Based%20Service%20Deployment%20andDiscovery%20Platform%20in%20Mobile%20EdgeComputing%20for%20IoT%20Devices.pdf)

5G雾环境下服务发现框架研究[【88】](【88】DRIVE%20Discovery%20seRvice%20for%20fully-Integrated%205G%20enVironmEnt%20in%20the%20IoT%20.pdf)

提出了一种分布式哈希表的资源发现算法[【87】](【87】Towards%20Dynamic%20Fog%20Resource%20Provisioning%20forSmart%20City%20Applications.pdf)

云边系统资源节点发现问题研究[【86】](【86】Analyzing%20the%20Deployment%20Challenges%20of%20BeaconStuffing%20as%20a%20Discovery%20Enabler%20in%20Fog-to-CloudSystems.pdf)

基于WiFi接入的雾节点发现问题[【85】](【85】Towards%20a%20context-aware%20Wi-Fi-based%20Fog%20Node%20discovery%20scheme%20using%20cellular%20footprints.pdf)

边缘为中心的分布式架构，为物联网应用提供资源发现和访问服务[【84】](【84】Edge-Centric%20Distributed%20Discovery%20andAccess%20in%20the%20Internet%20of%20Things.pdf)

一个轻量级的边缘计算平台，并讨论了相关基准测试的问题[【83】](【83】PiCasso%20A%20Lightweight%20Edge%20Computing%20Platform.pdf)

一个基准测试平台[【82】](【82】EdgeBench%20%20Benchmarking%20%20Edge%20%20Computing%20%20Platforms.pdf)

考虑最大负载和延迟约束情况下的的微云选择[【74】](【74】Ali%20et%20al.%20-%202018%20-%20Joint%20Cloudlet%20Selection%20and%20Latency%20Minimization%20in%20Fog%20Networks-annotated.pdf)

一种资源感知的平台[【62】](【62】Taneja,%20Davy%20-%202016%20-%20Resource%20aware%20placement%20of%20data%20analytics%20platform%20in%20fog%20computing-annotated.pdf)

资源感知模块在云雾计算模型下[【63】](【63】Taneja,%20Davy%20-%202017%20-%20Resource%20Aware%20Placement%20of%20IoT%20Application%20Modules%20in%20Fog-Cloud%20Computing%20Paradigm-annotated.pdf)

一种基于SDN的大尺度范围资源发现[【51】](【51】Afrin,%20Mahmud%20-%20Unknown%20-%20on%20Scalable%20Information%20Systems%20EAI%20Endorsed%20Transactions%20Software%20Defined%20Network-based%20Scalable%20Resource%20Dis-annotated.pdf)

边缘云服务编排Orchestrating Edge Clouds Using Location-Based Focus of Attention [【3】](综述论文/【3】Amento%20et%20al.%20-%202016%20-%20FocusStack%20Orchestrating%20edge%20clouds%20using%20location-based%20focus%20of%20attention-annotated.pdf)

一种进化算法来优化边缘计算服务布局问题[【33】](【33】Guerrero,%20Lera,%20Juiz%20-%202019%20-%20Evaluation%20and%20efficiency%20comparison%20of%20evolutionary%20algorithms%20for%20service%20placement%20optimization%20in%20fog-annotated.pdf)

分布式架构的服务编排A Distributed Architecture for Edge Service Orchestration with Guarantees[【4】](综述论文/【4】Report%20-%20Unknown%20-%20A%20Distributed%20Architecture%20for%20Edge%20Service%20Orchestration%20with%20Guarantees(6)-annotated.pdf)

**2、资源分配：** 基于服务匹配的分配（不同类型的服务对资源需求情况不同，例如， 计算敏感，存储敏感，网络敏感等等）。

定价策略分配。

微云的放置问题及最小能耗的任务分配算法，并通过SDN的框架实现[【144】](【144】Cloudlet%20Placement%20and%20Task%20Allocation%20in%20Mobile%20Edge%20Computing.pdf)

可靠性容量放置结构[【126】](【126】Reliable%20capacity%20provisioning%20for%20distributed%20cloudedgefog%20computing%20applications.pdf)

基于docker的边云需求的按需放置[【121】](【121】Docker%20Layer%20Placement%20for%20On-Demand%20Provisioning%20of%20Services%20on%20Edge%20Clouds.pdf)

移动边云计算考虑需求的高效资源分配[【120】](【120】Efficient%20Resource%20Allocation%20for%20On-Demand%20Mobile-Edge%20Cloud%20Computing.pdf)

考虑卸载成本跟延迟的博弈匹配的资源分配方法[【107】](【107】Cost%20and%20Latency%20Tradeoff%20in%20Mobile%20Edge%20Computing%20A%20Distributed%20Game%20Approach.pdf)

根据服务器大小数量趋于进行优化匹配，通过地理聚类的方式[【96】](【96】Mobile%20Edge%20Computing%20Resources%20Optimizationa%20Geo-clustering%20Approach.pdf)

提出了一种用户感知的资源分配新模型[【81】](【81】Utility-aware%20Resource%20Allocation%20for%20Edge.pdf)

一种元启发方式的服务资源分配方法[【78】](【78】Mishra%20et%20al.%20-%202018%20-%20Sustainable%20Service%20Allocation%20Using%20a%20Metaheuristic%20Technique%20in%20a%20Fog%20Server%20for%20Industrial%20Applications-annotated.pdf)

根据服务流行度的服务与资源匹配算法研究[【77】](【77】Li%20et%20al.%20-%202018%20-%20Service%20Popularity-Based%20Smart%20Resources%20Partitioning%20for%20Fog%20Computing-Enabled%20Industrial%20Internet%20of%20Things-annotated.pdf)

基于时间定价的petri网模型的资源分配策略[【61】](【61】Ni%20et%20al.%20-%202017%20-%20Resource%20Allocation%20Strategy%20in%20Fog%20Computing%20Based%20on%20Priced%20Timed%20Petri%20Nets-annotated.pdf)

雾无线接入网的资源分配问题[【60】](【60】Zhang%20et%20al.%20-%202018%20-%20Resource%20Allocation%20in%20NOMA-Based%20Fog%20Radio%20Access%20Networks-annotated.pdf)

优化资源分配问题[【55】](【55】Li%20et%20al.%20-%202019%20-%20Optimizing%20Resources%20Allocation%20for%20Fog%20Computing-based%20Internet%20of%20Things%20Networks-annotated.pdf)

物联网智慧城市中最优资源配置问题[【53】](【53】Zhao%20et%20al.%20-%202019%20-%20Optimal%20Edge%20Resource%20Allocation%20in%20IoT-Based%20Smart%20Cities-annotated.pdf)

在线组合机制的移动边缘计算资源分配[【52】](【52】Wu%20et%20al.%20-%202019%20-%20Online%20combinatorial%20based%20mechanism%20for%20MEC%20network%20resource%20allocation-annotated.pdf)

考虑时延优化的资源分配策略[【46】](【46】Ren%20et%20al.%20-%202018%20-%20Latency%20optimization%20for%20resource%20allocation%20in%20mobile-edge%20computation%20offloading-annotated.pdf)

考虑云边系统的机器人工作流的 多目标优化的资源分配[【50】](【50】Afrin%20et%20al.%20-%202019%20-%20Multi-objective%20resource%20allocation%20for%20Edge%20Cloud%20based%20robotic%20workflow%20in%20smart%20factory-annotated.pdf)

深度强化学习的方法在低时延边缘计算资源分配[【48】](【48】Deep%20Reinforcement%20Learning%20based%20ResourceAllocation%20in%20Low%20Latency%20Edge%20Computing%20Networks.pdf)

缓存增强的边缘系统中，考虑最小化能量消耗的资源分配问题[【45】](【45】Liu%20et%20al.%20-%202019%20-%20Jointly%20Optimized%20Energy-Minimal%20Resource%20Allocation%20in%20Cache-Enhanced%20Mobile%20Edge%20Computing%20Systems-annotated.pdf)

联合考虑资源分配及和异构服务相关的用户 的多接入边缘计算网络[【43】](【43】Zhou,%20Zhang,%20Wang%20-%202019%20-%20Joint%20Resource%20Allocation%20and%20User%20Association%20for%20Heterogeneous%20Services%20in%20Multi-Access%20Edge%20Computing%20Netw-annotated.pdf)

移动边缘计算异构网络，联合计算卸载和资源分配的优化问题[【41】](【41】Zhang%20et%20al.%20-%202018%20-%20Joint%20Computation%20Offloading%20and%20Resource%20Allocation%20Optimization%20in%20Heterogeneous%20Networks%20with%20Mobile%20Edge%20Compu-annotated.pdf)

联合考虑计算资源、功率信道分配的 D2D辅助通信的非正交多址边缘计算问题[【42】](【42】Diao%20et%20al.%20-%202019%20-%20Joint%20computing%20resource,%20power,%20and%20channel%20allocations%20for%20D2D-Assisted%20and%20NOMA-Based%20mobile%20edge%20computing-annotated.pdf)

考虑成本效率的双匹配资源分配策略[【21】](【21】Jia%20et%20al.%20-%202018%20-%20Double-matching%20resource%20allocation%20strategy%20in%20fog%20computing%20networks%20based%20on%20cost%20efficiency-annotated.pdf)

迭代双拍卖的计算资源交易问题研究[【71】](【71】Sun%20et%20al.%20-%202018%20-%20Double%20Auction-Based%20Resource%20Allocation%20for%20Mobile%20Edge%20Computing%20in%20Industrial%20Internet%20of%20Things-annotated.pdf)

计算资源分配，通过Stackelberg博弈匹配的方式。[【13】](【13】Zhang%20et%20al.%20-%202017%20-%20Computing%20Resource%20Allocation%20in%20Three-Tier%20IoT%20Fog%20Networks%20A%20Joint%20Optimization%20Approach%20Combining%20Stackelber(3)-annotated.pdf)

资源分配，考虑碳排放[【1】](综述论文/【1】Do%20et%20al.%20-%202015%20-%20A%20proximal%20algorithm%20for%20joint%20resource%20allocation%20and%20minimizing%20carbon%20footprint%20in%20geo-distributed%20fog%20computing-annotated.pdf)

超低时延的动态任务卸载和资源分配[【26】](【26】Liu%20et%20al.%20-%202018%20-%20Dynamic%20Task%20Offloading%20and%20Resource%20Allocation%20for%20Ultra-Reliable%20Low-Latency%20Edge%20Computing(7)-annotated.pdf)

云雾环境下通过掺入选择来实现资源分配的优化[【9】](【9】You,%20Yim,%20Barolli%20-%202012%20-%20Advances%20in%20network-based%20information%20systems(2)-annotated.pdf)

考虑时延敏感，计算敏感的应用的动态资源分配策略，包括资源调度和资源匹配[【24】](【24】Tang%20et%20al.%20-%202019%20-%20Dynamic%20resource%20allocation%20strategy%20for%20latency-critical%20and%20computation-intensive%20applications%20in%20cloud–edge%20env-annotated.pdf)

考虑利益最大化的的计算资源批发问题[【27】](【27】Zhang%20et%20al.%20-%202019%20-%20Efficient%20computation%20resource%20management%20in%20mobile%20edge-cloud%20computing-annotated.pdf)

多租户监控的资源分配问题，实现了一个微基准测试[【29】](【28】Abderrahim%20et%20al.%20-%202019%20-%20Efficient%20Resource%20Allocation%20for%20Multi-Tenant%20Monitoring%20of%20Edge%20Infrastructures-annotated.pdf)

考虑健壮性和隐私保护的资源分配方式[【30】](【30】Zhang,%20Li%20-%202018%20-%20Enabling%20robust%20and%20privacy-preserving%20resource%20allocation%20in%20fog%20computing-annotated.pdf)

考虑延迟敏感和节能的计算卸载与资源分配[【31】](【31】Wang%20et%20al.%20-%202019%20-%20Energy-efficient%20computation%20offloading%20and%20resource%20allocation%20for%20delay-sensitive%20mobile%20edge%20computing-annotated.pdf)

考虑QoS的云边资源分配[【39】](【39】Akintoye,%20Bagula%20-%202019%20-%20Improving%20quality-of-service%20in%20cloudfog%20computing%20through%20efficient%20resource%20allocation-annotated.pdf)

考虑接入控制，无线功率分配与资源分配问题[【40】](【40】Zhang%20et%20al.%20-%202018%20-%20Joint%20Admission%20Control%20and%20Resource%20Allocation%20in%20Edge%20Computing%20for%20Internet%20of%20Things-annotated.pdf)

拍卖的资源分配方式，在移动云计算中，通过微云实现[【10】](【10】Jin,%20Song,%20Zhuang%20-%202018%20-%20Auction-Based%20Resource%20Allocation%20for%20Sharing%20Cloudlets%20in%20Mobile%20Cloud%20Computing(2)-annotated.pdf)

**3、计算卸载：** 卸载决策（服务的部署位置、卸载针对算法卸载）。

服务迁移、保证服务连续性（移动性迁移，云边迁移）。

MEC的卸载框架研究综述[【156】](【156】Mobile%20Edge%20Computing%20A%20Survey%20on%20Architecture%20and%20Computation%20Offloading.pdf)

任务放置跟资源分配问题，通过SDN框架实现[【153】](【153】Task%20Offloading%20for%20Mobile%20Edge%20Computing%20in%20Software%20Defined%20Ultra-dense%20Network.pdf)

多跳动态任务卸载问题研究，包括卸载决策，雾节点选择，卸载路径优化等 [【145】](【145】Dynamic%20Task%20Offloading%20in%20Software-Defined%20Fog%20for%20IoT%20Applications.pdf)

节能的设备到设备的流量和计算共同卸载方法[【117】](【117】Energy-Effcient%20Device-to-Device%20Edge%20Computing%20Network%20An%20Approach%20Ofoading%20Both%20Traffc%20and%20Comp.pdf)

雾计算计算卸载方面的综述[【114】](【114】Offloading%20in%20fog%20computing%20for%20IoT%20Review,%20enabling%20technologies,%20and%20research%20opportunities.pdf)

基于蜂窝网的分布式边缘计算卸载策略[【113】](【113】A%20Distributed%20Computation%20Offloading%20Strategy%20in%20Small-Cell%20Networks%20Integrated%20With%20Mobile%20Edge%20Computing.pdf)

移动感知的任务卸载和迁移调度优化研究[【110】](【110】Mobility-Aware%20Task%20Offloading%20and%20Migration%20Schemes%20in%20Fog%20Computing%20Networks.pdf)

通过马尔科夫逼近来解决计算卸载资源分配的优化问题[【108】](【108】Markov%20Approximation%20for%20Task%20Offloading%20and%20Computation%20Scaling%20in%20Mobile%20Edge%20Computing.pdf)

一个基于学习的框架来优化服务迁移[【106】](【106】A%20Learning-based%20Framework%20for%20Optimizing%20Service%20Migration%20in%20Mobile%20Edge%20Clouds.pdf)

联合学习分布式训练的计算卸载资源管理问题[【105】](【105】Federated%20Learning-Based%20Computation%20Offloading%20Optimization%20in%20Edge%20ComputingSupported%20Internet%20of%20Things.pdf)

考虑时延，收益的自适应计算卸载优化[【104】](【104】Adaptive%20Service%20Offloading%20for%20Revenue%20Maximization%20in%20Mobile%20Edge%20Computing%20With%20Delay-Constraint.pdf)

基于SDN架构的流量最小化虚拟机迁移方法[【103】](【103】EdgeIoT%20Mobile%20Edge%20Computing%20for%20theInternet%20of%20Things.pdf)

关于雾计算服务迁移的评价与挑战研究[【100】](【100】Service%20Migration%20from%20Cloud%20to%20Multi-tier%20Fog%20Nodes%20for%20Multimedia%20Dissemination%20with%20QoE%20Support.pdf)

通过强化学习的方式进行流量和计算的共同卸载[【70】](【70】Wang%20et%20al.%20-%202019%20-%20Traffic%20and%20Computation%20Co-Offloading%20with%20Reinforcement%20Learning%20in%20Fog%20Computing%20for%20Industrial%20Applications-annotated.pdf)

考虑虚拟机的雾计算迁移[【69】](【69】Bittencourt%20-%202015%20-%20Towards%20Virtual%20Machine%20Migration%20in%20Fog%20Computing-annotated.pdf)

工业场景下在线迁移的 智能资源规划问题[【67】](【67】Smart%20Resource%20Planning%20for%20Live%20Migration%20inEdge%20Computing%20for%20Industrial%20Scenario.pdf)

资源分配和分布式上行卸载机制研究[【58】](【58】Resource%20allocation%20and%20distributed%20uplink%20offloading%20mechanism%20in%20fog%20environment.pdf)

为计算卸载的自适应资源分配，通过控制理论的方法实现[【8】](【8】Avgeris%20et%20al.%20-%202019%20-%20Adaptive%20Resource%20Allocation%20for%20Computation%20Offloading(2)-annotated.pdf)

基于虚拟机的在线迁移的模型分析跟性能评估[【2】](综述论文/【2】Callegati,%20Cerroni%20-%202013%20-%20Live%20migration%20of%20virtualized%20edge%20networks%20Analytical%20modeling%20and%20performance%20evaluation-annotated.pdf)

联合计算卸载决策和计算资源，传输功率，无线带宽的分配；解决云雾混合系统的计算卸载问题[【11】](【11】Du%20et%20al.%20-%202018%20-%20Computation%20Offloading%20and%20Resource%20Allocation%20in%20Mixed%20FogCloud%20Computing%20Systems%20with%20Min-Max%20Fairness%20Guarantee(2)-annotated.pdf)

车载雾节点情况下，通过契约匹配的方法，来实现资源分配、任务分配的优化。[【12】](【12】Zhou%20et%20al.%20-%202019%20-%20Computation%20Resource%20Allocation%20and%20Task%20Assignment%20Optimization%20in%20Vehicular%20Fog%20Computing%20A%20Contract-Matching%20(2)-annotated.pdf)

移动边缘计算的计算卸载和资源分配，通过博弈匹配方法[【18】](【18】Pham%20et%20al.%20-%202018%20-%20Decentralized%20computation%20offloading%20and%20resource%20allocation%20for%20mobile-edge%20computing%20A%20matching%20game%20approach-annotated.pdf)

动态拥塞感知的卸载方法[【29】](【29】Guo%20et%20al.%20-%202019%20-%20Efficient%20resource%20assignment%20in%20mobile%20edge%20computing%20A%20dynamic%20congestion-aware%20offloading%20approach-annotated.pdf)

考虑系统吞吐量最大而进行的公平资源分配[【35】](【35】Zhu%20et%20al.%20-%202018%20-%20Fair%20resource%20allocation%20for%20system%20throughput%20maximization%20in%20mobile%20edge%20computing-annotated.pdf)

雾计算时间不确定性的异构任务的资源分配和卸载[【59】](【59】Resource%20Allocation%20and%20Task%20Offloading%20for%20Heterogeneous%20Real-Time%20Tasks%20With%20Uncertain%20Duration%20Time%20in%20a%20Fog%20Queueing%20System-annotated-annotated.pdf)

智能家居中的智能资源管理方法[【66】](【66】Gill,%20Garraghan,%20Buyya%20-%202019%20-%20ROUTER%20Fog%20enabled%20cloud%20based%20intelligent%20resource%20management%20approach%20for%20smart%20home%20IoT%20devices-annotated.pdf)

雾计算的5G通信的工业物联网 一种QoE感知的资源分配模型[【36】](【36】Aazam,%20Harras,%20Zeadally%20-%202019%20-%20Fog%20Computing%20for%205G%20Tactile%20Industrial%20Internet%20of%20Things%20QoE-Aware%20Resource%20Allocation%20Model-annotated.pdf)

**4、服务负载整合：**服务工作负载预测。

边缘数据中心的位置感知的数据负载预测[【143】](【143】Location-aware%20load%20prediction%20in%20Edge%20Data%20Centers.pdf)

通过优化服务器放置策略来优化负载均衡问题[【142】](【142】%20Edge%20server%20placement%20in%20mobile%20edge%20computing%20.pdf)

基于虚拟机迁移和功率控制的方法来平衡微云的工作负载[【140】](【140】Cloudlets%20Activation%20Scheme%20for%20Scalable%20Mobile%20Edge%20Computing%20with%20Transmission%20Power%20Control%20and%20Virtual%20Machine%20Migration.pdf)

移动边缘计算中 云辅助的高效负载调度问题[【139】](【139】Cost-Efficient%20Workload%20Scheduling%20in%20Cloud%20Assisted%20Mobile%20Edge%20Computing.pdf)

混合负载编排方法，通过FogCloudSim验证[【137】](【137】%20Fuzzy%20Workload%20Orchestration%20for%20Edge%20Computing.pdf)

MEC中一种基于匹配理论的任务分配机制[【136】](【136】Context-Aware%20Task%20Offloading%20for%20Multi-Access%20Edge%20Computing%20Matching%20with%20Externalities.pdf)

边缘计算环境中，非启发式工作负载防止问题研究[【135】](【135】Online%20Placement%20of%20Multi-Component%20Applications%20in%20Edge%20Computing%20Environments.pdf)

基于SDN的处理多边云环境中数据密集型应用高效工作负载的方案[【134】](【134】Optimal%20Decision%20Making%20for%20Big%20Data%20Processing%20at%20Edge-Cloud%20Environment%20An%20SDN%20Perspective.pdf)

一个雾计算环境中的负载编排的平台[【133】](【133】Foggy%20a%20platform%20for%20workload%20orchestration%20in%20a%20Fog%20Computing%20environment.pdf)

动态深度网络来实现边缘计算的高效负载分配[【132】](【132】A%20Dynamic%20Deep%20Neural%20Network%20Design%20for%20Efficient%20Workload%20Allocation%20in%20Edge%20Computing.pdf)

通过虚拟机放置和负载分配来提高资源利用率[【131】](【131】Virtual%20Machine%20Placement%20and%20Workload%20Assignment%20for%20Mobile%20Edge%20Computing.pdf)

通过公共计算资源来分担云端负载[【129】](【129】Fog%20Computing%20Through%20Public-Resource%20Computing%20and%20Storage.pdf)

基于上下文感知的任务分配问题研究[【128】](【128】%20A%20Distributed%20and%20Context-Aware%20Task%20Assignment%20Mechanism%20for%20Collaborative%20Mobile%20Edge%20Computing%20.pdf)

雾计算中一种高效的数据复制和负载均衡技术[【125】](【125】An%20efficient%20data%20replication%20and%20load%20balancing%20technique%20for%20fog%20computing%20environment.pdf)

基于OpenStack的中间件的负载资源协调[【124】](【124】%20Enabling%20Workload%20Engineering%20in%20Edge,%20Fog,%20and%20Cloud%20Computing%20through%20OpenStack-based%20Middleware%20.pdf)

考虑雾计算协作的负载均衡[【123】](【123】A%20Cooperative%20Fog%20Approach%20for%20Effective%20Workload%20Balancing.pdf)

通过工作负载的分配来实现时延功耗的权衡[【122】](【122】Towards%20Power%20Consumption-Delay%20Tradeoff%20by%20Workload%20Allocation%20in%20Cloud-Fog%20Computing.pdf)

通过马尔科夫近似方法来进行服务的最优编排[【109】](【109】Markov%20Approximation%20Method%20for%20Optimal%20Service%20Orchestration%20in%20IoT%20Network.pdf)

工作负载分配（均衡，时延保证等）。

基于图重划分的动态负载均衡[【102】](【102】Fog%20Computing%20Dynamic%20Load%20Balancing%20Mechanism%20Based%20on%20Graph%20Repartitioning.pdf)

考虑均衡时延和能量消耗的最优负载分配[【97】](【97】Optimal%20Workload%20Allocation%20in%20Fog-CloudComputing%20Toward%20Balanced%20Delayand%20Power%20Consumption.pdf)

低时延应用的动态任务卸载和调度[【72】](【72】Alameddine%20et%20al.%20-%202019%20-%20Dynamic%20Task%20Offloading%20and%20Scheduling%20for%20Low-Latency%20IoT%20Services%20in%20Multi-Access%20Edge%20Computing-annotated.pdf)

考虑负载感知的边云计算VM整合方法[【73】](【73】Mohiuddin,%20Almogren%20-%202019%20-%20Workload%20aware%20VM%20consolidation%20method%20in%20edgecloud%20computing%20for%20IoT%20applications-annotated.pdf)

应用感知的负载分配[【5】](【5】Fan,%20Ansari%20-%202018%20-%20Application%20Aware%20Workload%20Allocation%20for%20Edge%20Computing-Based%20IoT-annotated.pdf)

**5、资源管理：** 动态分配（根据负载规模等）。

优化问题。

负载均衡

考虑无线干扰的资源分配算法[【141】](【141】Frequency%20Resource%20Allocation%20and%20Interference%20Management%20in%20Mobile%20Edge%20Computing%20for%20an%20Internet%20of%20Things%20System.pdf)

通过NSGA-II实现的多目标优化的资源调度[【116】](【116】%20Multi-objective%20Optimization%20of%20Resource%20Scheduling%20in%20Fog%20Computing%20Using%20an%20Improved%20NSGA-II%20.pdf)

通过银行家算法避免死锁的超可靠资源配置算法[【76】](【76】Ugwuanyi%20et%20al.%20-%202018%20-%20Reliable%20resource%20provisioning%20using%20bankers'%20deadlock%20avoidance%20algorithm%20in%20MEC%20for%20industrial%20IoT-annotated.pdf)

智能工厂下基于容器的 考虑任务调度和资源分配问题[【75】](【75】Yin,%20Luo,%20Luo%20-%202018%20-%20Tasks%20Scheduling%20and%20Resource%20Allocation%20in%20Fog%20Computing%20Based%20on%20Containers%20for%20Smart%20Manufacturing-annotated.pdf)

QoS 感知的资源放置跟移动设备功率管理[【57】](【57】Yao,%20Ansari%20-%202019%20-%20QoS-Aware%20Fog%20Resource%20Provisioning%20and%20Mobile%20Device%20Power%20Control%20in%20IoT%20Networks-annotated.pdf)

考虑QoS感知的雾计算网络资源管理[【56】](【56】Hong%20et%20al.%20-%202018%20-%20QCon%20QoS-aware%20network%20resource%20management%20for%20fog%20computing-annotated.pdf)

异构化负载情况下的优化资源配置[【54】](【54】Kherraf%20et%20al.%20-%202019%20-%20Optimized%20Provisioning%20of%20Edge%20Computing%20Resources%20with%20Heterogeneous%20Workload%20in%20IoT%20Networks-annotated.pdf)

联合任务分配 传输和计算资源分配的多层移动边缘计算网络系统[【44】](【44】Wang%20et%20al.%20-%202019%20-%20Joint%20task%20assignment,%20transmission,%20and%20computing%20resource%20allocation%20in%20multilayer%20mobile%20edge%20computing%20systems-annotated.pdf)

研究方向调研，关于资源管理方面，并提出了基准测试的程序[【25】](【25】Dynamic%20Resource%20Management%20Across%20Cloud-EdgeResources%20for%20Performance-Sensitive%20Applications.pdf)

通过强化学习的方式，学习用户迁移规律，来进行自动资源管理[【49】](【49】Resource%20Management%20at%20the%20Network%20Edge%20A%20Deep%20Reinforcement%20Learning%20Approach.pdf)

考虑负载均衡的动态资源分配[【23】](【23】Dynamic%20Resource%20Allocation%20for%20LoadBalancing%20in%20Fog%20Environment.pdf)

通过深度Q学习的方法，实现对计算资源和缓存资源的统一管理，并提出了一种软件定义的信息中心物联网结构[【22】](【22】Xu%20et%20al.%20-%202019%20-%20DQN%20inspired%20Joint%20Computing%20and%20Caching%20Resource%20Allocation%20Approach%20for%20Software%20Defined%20Information-Centric%20Intern-annotated.pdf)

雾无线网络中联合模式选择（云-设备 设备-设备模式）和资源管理，通过强化学习的方法来提高系统性能[【19】](【19】Sun,%20Peng,%20Mao%20-%202019%20-%20Deep%20reinforcement%20learning-based%20mode%20selection%20and%20resource%20management%20for%20green%20fog%20radio%20access%20networks-annotated.pdf)

耦合资源管理问题[【16】](【16】Wang%20et%20al.%20-%202019%20-%20Coupling%20resource%20management%20based%20on%20fog%20computing%20in%20smart%20city%20systems-annotated.pdf)

**6、部署问题：** 具体实现问题。

仿真工具ifogsim[【38】](【38】%20Gupta%20et%20al.%20-%202017%20-%20iFogSim%20A%20toolkit%20for%20modeling%20and%20simulation%20of%20resource%20management%20techniques%20in%20the%20Internet%20of%20Things,%20Edge%20an-annotated.pdf)

实时性框架。

一种用于资源管理的层次博弈架构[【6】](【6】Zhang%20et%20al.%20-%202017%20-%20A%20Hierarchical%20Game%20Framework%20for%20Resource%20Management%20in%20Fog%20Computing(3)-annotated.pdf)

一种线程级别的内存资源管理框架[【7】](【7】Zhu%20et%20al.%20-%202019%20-%20A%20Thread-Oriented%20Memory%20Resource%20Management%20Framework%20for%20Mobile%20Edge%20Computing-annotated.pdf)

基于容器的雾计算架构，考虑能量限制的雾计算节点[【15】](【15】Luo%20et%20al.%20-%202019%20-%20Container-based%20fog%20computing%20architecture%20and%20energy-balancing%20scheduling%20algorithm%20for%20energy%20IoT-annotated.pdf)

一个智能框架，虚拟化异构资源，使其充分利用[【17】](【17】CUE%20An%20Intelligent%20Edge%20Computing%20Framework%20Boran.pdf)

一种基于命名数据网络的边云计算架构[【20】](【20】Design%20and%20Implementation%20of%20an%20Open%20Source%20Framework%20and%20Prototype%20For%20Named%20Data%20Networking-Based%20Edge%20Cloud%20Computing%20System.pdf)

一个用来收集边缘网络中未利用数据资源的架构[【34】](【34】Markakis%20et%20al.%20-%202017%20-%20EXEGESIS%20Extreme%20edge%20resource%20harvesting%20for%20a%20virtualized%20fog%20environment-annotated.pdf)

基于SDN的云边资源分配框架[【68】](【68】Zaman,%20Jarray,%20Karmouch%20-%202019%20-%20Software%20Defined%20Network-Based%20Edge%20Cloud%20Resource%20Allocation%20Framework-annotated.pdf)

一个雾计算中资源放置的框架[【64】](【64】skarlat2016-annotated-annotated.pdf)

一个为计算卸载资源管理的框架[【32】](【32】Wang%20et%20al.%20-%202017%20-%20ENORM%20A%20Framework%20For%20Edge%20NOde%20Resource%20Management-annotated.pdf)

嵌入式的雾计算平台及服务的框架[【93】](【93】mePaaS%20Mobile-Embedded%20Platform%20as%20a%20Servicefor%20Distributing%20Fog%20Computing%20to%20Edge%20Nodes.pdf)

一种薄雾计算的web服务框架[【95】](【95】Adaptive%20mobile%20Web%20serverframework%20for%20Mist%20computingin%20the%20Internet%20of%20Things.pdf)

实时虚拟机迁移框架综述[【92】](【92】From%20Cloud%20to%20Fog%20Computing%20A%20Review%20anda%20Conceptual%20Live%20VM%20Migration%20Framework.pdf)

基于K8S平台的资源放置[【65】](【65】Santos%20et%20al.%20-%202019%20-%20Resource%20Provisioning%20in%20Fog%20Computing%20From%20Theory%20to%20Practice%20†-annotated.pdf)

一个分布式雾环境的建模仿真套件[【80】](【80】FogNetSim++%20A%20Toolkit%20for%20Modeling%20andSimulation%20of%20Distributed%20Fog%20Environment.pdf)

雾计算仿真框架综述[【101】](【101】Simulating%20Fog%20and%20Edge%20Computing%20Scenarios%20An%20Overview%20and%20Research%20Challenges%20.pdf)

云雾服务委托和资源分配框架[【98】](【98】An%20Architecture%20of%20IoT%20Service%20Delegation%20and%20Resource%20Allocation%20Based%20on%20Collaboration%20between%20Fog%20and%20Cloud%20Computing.pdf)

基于SDN的节能分布式边缘计算框架[【112】](【112】SoftEdgeNet%20SDN%20Based%20Energy-Effcient%20Distributed%20Network%20Architecture%20for%20Edge%20Computing.pdf)

雾计算服务放置的一个框架[【111】](【111】Fog%20Based%20Framework%20for%20IoT%20Service%20Provisioning.pdf)

一个微服务编排的架构[【115】](【115】A%20Capillary%20Computing%20Architecture%20for%20Dynamic%20Internet%20of%20Things%20Orchestration%20of%20Microservices%20from%20Edge%20Devices%20to%20Fog%20and%20Cloud%20Providers.pdf)

基于docker的微服务编排[【119】](【119】%20Orchestration%20of%20Microservices%20for%20IoT%20Using%20Docker%20and%20Edge%20Computing%20.pdf)

一个比容器和VM更轻量级的安卓代码卸载框架[【118】](【118】Android%20Unikernel%20Gearing%20Mobile%20Code%20Offloading%20Towards%20Edge%20Computing.pdf)

一种无隧道的SDN框架实现计算资源地理分布的伸缩[【146】](【146】A%20Multi-Clustering%20Approach%20to%20Scale%20Distributed%20Tenant%20Networks%20for%20Mobile%20Edge%20Computing.pdf)

一种基于嵌入式硬件的数据结构来提高系统能源效率和吞吐量[【138】](【138】%20Efficient%20Compute%20at%20the%20Edge%20Optimizing%20Energy%20Aware%20Data%20Structures%20for%20Emerging%20Edge%20Hardware%20.pdf)

物联网雾计算路由的SDN框架解决方法综述[【148】](【148】Routing%20in%20Fog-Enabled%20IoT%20Platforms%20A%20Survey%20and%20an%20SDN-based%20Solution.pdf)

物联网SDN框架的传输优化问题[【150】](【150】Adaptive%20Transmission%20Optimization%20in%20SDN-Based%20Industrial%20Internet%20of%20Things%20With%20Edge%20Computing.pdf)

SDN框架的高效网络资源的利用[【151】](【151】Integration%20of%20IoT,%20Transport%20SDN,%20and%20EdgeCloud%20Computing%20for%20Dynamic%20Distribution%20of%20IoT%20Analytics%20and%20Efficient%20Use%20of%20Network%20Resources.pdf)

物联网基准测试的中间件[【158】](【158】Benchmarking%20IoT%20Middleware%20Platforms.pdf)

SDN与雾计算综述[【147】](【147】IoT%20Survey%20An%20SDN%20and%20Fog%20Computing%20Perspective.pdf)

最小部署成本等等。

考虑计算资源使用的雾服务器部署技术[【37】](【37】Lee,%20Chung,%20Kim%20-%202019%20-%20Fog%20server%20deployment%20technique%20An%20approach%20based%20on%20computing%20resource%20usage-annotated.pdf)

整体综述：

Edge computing A survey[【47】](【47】Edge%20computing%20A%20survey.pdf)

Edge Computing for the Internet of Things: A Case Study[【157】](【157】Edge%20Computing%20for%20the%20Internet%20of%20Things%20A%20Case%20Study.pdf)

Fog and IoT: An Overview of Research Opportunities[【155】](【155】Fog%20and%20IoT%20An%20Overview%20of%20Research%20Opportunities.pdf)

Edge Computing: Vision and Challenges[【154】](【154】Edge%20Computing%20Vision%20and%20Challenges.pdf)

Future Edge Cloud and Edge Computing for Internet of Things Applications[【152】](【152】Future%20Edge%20Cloud%20and%20Edge%20Computing%20for%20Internet%20of%20Things%20Applications.pdf)