Interkonnektivität als erster Schritt in Richtung Industrie 4.0 am Beispiel von GE General Electric

Equinix Switzerland
Frank Amann
Solution Architect
Interkonnektivität als erster Schritt in Richtung Industrie 4.0 am Beispiel von GE General Electric

Equinix Switzerland
Frank Amann
Solution Architect
Integrating Cloud Ecosystems ...

... with an Interconnection Oriented Architecture™ ...

... on Platform Equinix™
We protect and connect the digital economy

Unmatched Global Data Centers  Leading Interconnection Solutions  Vibrant Business Ecosystems  Proven Expertise

- 8500+ Enterprises & Providers
- 1,400+ Networks
- 500+ Cloud and 600+ IT service providers
- 800+ financial services firms
- 146 Data centers in 40 major business markets across 21 countries
Unmatched Global Market Reach

- **5 Continents**
- **21 Countries**
- **40 Metros**
- **146 IBX Data Centers**

Global reach with Telecity & Bit-Isle

**Cloud Exchange Availability**
- **5 Continents**
- **11 Countries**
- **21 Metros**
- **79 IBX Data Centers**

Equinix Locations
- Partner Data Center
- Equinix Telecity
- Equinix Cloud Exchange Locations

Equinix.com
Equinix Switzerland – Data centers

Equinix provides more data center space than any other provider in Switzerland

All facilities
- ISO 9001 and 27001 certified
- PCI DSS Security
- Audit SAE3402
- FINMA Circular 08/7 compliant
- N+1 Equipment redundancy
- 100% green power
- High network density
- Largest IT ecosystem in Switzerland

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<th>Opened</th>
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<td>ZH5</td>
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<tr>
<td>GV1</td>
<td>1999</td>
<td>2,060</td>
<td>22,170</td>
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<tr>
<td>GV2</td>
<td>2009</td>
<td>2,500</td>
<td>26,910</td>
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</table>

Excellent customer satisfaction
99.9999% availability for more than 5 years
Equinix Switzerland – Data centers

Equinix provides more data center space than any other provider in Switzerland

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**Geneva**

- **ZH1**: Opened 1998, 5,810 square ft
- **ZH2**: Opened 2004, 4,010 square ft
- **ZH4**: Opened 2010, 11,840 square ft
- **ZH5**: Opened 2013, 71,800 square ft

**Zurich**

- **GV1**: Opened 1999, 22,170 square ft
- **GV2**: Opened 2009, 26,910 square ft

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**All facilities**

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**Excellent customer satisfaction**

99.9999% availability for more than 5 years

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**Roundtrip Map**

- +/- 5 ms
- +/- 10 ms
- +/- 15 ms

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ZH5 International Business Exchange (IBX)
The new standard for data centers and data security

• High energy density, with 14,000kVA power
• Environmentally-friendly architecture and air conditioning
• Dual site strategies with ZH1, 2 & 4
• High availability of energy services
• Client areas and business continuity workspaces

Connectivity
• 96 network service providers
• SIX Swiss Exchange and Swiss stock exchange
• Switzerland's largest internet exchanges: Equinix Internet Exchange and Swiss IX
GV2 International Business Exchange (IBX)
The new standard for data centers and data security

- High energy density
- Environmentally-friendly architecture and air conditioning
- Dual site strategy with GV1
- High availability of energy services
- Client areas and business continuity workspaces

Connectivity
- 56 network service providers
- CERN Internet eXchange Point (CIXP)
- 2 x 100 Pairs Dark fiber GV1-GV2

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Equinix.com
Interconnection builds and reinforces ecosystems ...

1,400+ Networks, **180,000+ Cross-connects**, 100% of Tier 1 Network Routes
Digital is here and now, forcing businesses to transform …

**New Commerce and Collaboration Models**

- **B2C eCommerce**
  - $1.7T
  - ▲18%

- **B2B eCommerce**
  - $1.1T
  - ▲8%

- **Digital Advertising**
  - $72B
  - 57%

- **B2B Acquired Customers via Company Blog**
  - 44%

- **B2B Customer Support via Facebook**
  - 1.6B

**New Connectivity and Data Models**

- **Connected Devices**
  - 4.9B
  - ▲30%

- **App Usage Sessions**
  - 2.1T
  - ▲76%

- **Data Created & Stored**
  - 4.4ZB
  - ▲40%

- **Hybrid Cloud**
  - ~50%
  - ENT adopting hybrid cloud by 2017

- **Mobile Application Spend**
  - 20B
  - ▲22%

- **Cloud Services Spending**
  - $176B
  - ▲16%

* Equinix Vertical & Market Insights, 451 Digital Infrastructure Research, Gartner Digital Business Research, Forrester Digital Enterprise Research
…shifting competitive advantage to Digital Disruptors.
Secure Neutral Marketplace for all Digital Business

A diverse ecosystem of participants to exchange commerce, insights, and ideas

Greatest Density in: Cloud, Content, Networks, and Financial Services. Enterprise is now fastest growing
To transform, the Business needs IT to **disrupt** ...
To disrupt, IT needs to re-architect

Flip the architecture

Simplify the topology

Deploy hybrid footprint
To disrupt, IT needs to **re-architect** the network and the edge …

*Step 1: Re-architect how systems engage People*
To disrupt, IT needs to re-architect the network and the edge …

Step 2: Re-architect network topology to accommodate growth in Locations

Localize traffic and services
To disrupt, IT needs to **re-architect** the network and the edge …

*Step 3: Re-architect for secure & flexible delivery of services across multiple Clouds*
To disrupt, IT needs to **re-architect** the network and the edge …

*Step 4: Re-architect the platform to accommodate distributed analytics and Data*
To disrupt, IT needs to **re-architect** the network and the edge ...

*Step 5: Converge architecture change at the **Edge***
We codified Interconnection best practices into a repeatable architecture called an Interconnection Oriented Architecture™ …
Who is GE?

- Founded April 15, 1892
- 330,000 Employees
- 170 countries
- Primary business divisions:
  - GE Power
  - GE Oil & Gas
  - GE Renewable Energy
  - GE Energy Connections
  - GE Aviation
  - GE Healthcare
  - GE Transportation
  - GE Capital
  - GE Digital
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  • GE Transportation
  • GE Capital
  • GE Digital

• What’s the Matter with Owen?
GEs future of the Digital Transformation

Investment in IIoT is expected to top $60 trillion during the next 15 years.*

Example:
In aviation, one flight produces 1TB of data

GEs future of the Digital Transformation

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What is Predix?

- Connectivity
- Cloud-Services
  - Assets
  - Analytics
  - Data
  - Security
  - Operations
- Applications
  - UI / Mobile Applications
- Predix Machine Software / Analytics
- Enterprise Systems External data
- End-to-End Security
Connect ALL your OT / IT Systems

- ANY asset (GE, non-GE; new, old)
- ANY TIME, ANY PLACE connectivity
- EDGE analytics
- PUSH software updates
- SECURED device management
- Connectivity Service
Digitize, Analyze, Monetize in the Cloud

- **ASSET DATA** models, from pipe to plant
- **ANALYTIC** modeling (R, Matlab, …)
- Packaged **DATA SCIENCES** (GE, partners)
- Data at **SCALE** (fast, vast)
- **METERING** and **COSTING** (BizOps)
Build & design your apps 5-10x FASTER

More information: https://www.predix.io/

Minds + Machines, Nov. 16, The Building Blocks for a Digital Industrial | GE
https://www.youtube.com/watch?v=ovKPZdRrLmU
Connectivity Service with Predix Edge devices
IOA ARCHITECTS ENTERPRISE IT FOR REVENUE GENERATION

GE Software Leverages Equinix to Launch Predix Industrial Cloud

Push Industrial Apps & Machine Data Capture to the Edge

Connect & Deliver via Predix Industrial PaaS Cloud

Locate Industrial Big Data & Analytics Adjacent
Enterprises implementing an **Interconnection Strategy at Equinix** have achieved transformational value…

<table>
<thead>
<tr>
<th>Problem</th>
<th>People</th>
<th>Locations</th>
<th>Clouds</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate User Experience</td>
<td>Uncontrollable Bandwidth Costs &amp; Time to Provision</td>
<td>Inefficient &amp; insecure multi-cloud access</td>
<td>Insufficient Customer Insight &amp; Data Compliance</td>
<td></td>
</tr>
<tr>
<td>Scenario</td>
<td>Interconnecting Employees, Customers and Partners</td>
<td>Interconnecting Geographic Markets, Ecosystems and Business Location</td>
<td>Interconnecting Multiple Clouds Across Multiple Locations</td>
<td>Interconnecting Data for Accessibility and Real Time Analytics</td>
</tr>
<tr>
<td>Apps</td>
<td>Distributed Users &amp; Apps</td>
<td>Network Topology Optimization</td>
<td>Multi-Cloud</td>
<td>Distributed Analytics</td>
</tr>
</tbody>
</table>

**Equinix’s Validated Impact**

- **217% increase** in bandwidth/employee while **reducing OPEX by 25%**
- **38% reduction** in application latency of global collaboration workflow
- **45% reduction** in bandwidth OPEX / employee
- **40% reduction** in latency of customer facing apps
- **25% reduction** in latency of real-time data analytics apps
- **50% reduction** in OPEX per app
- **30% cost reduction** in cloud connectivity cost/analytic application
- **$8MM annual OPEX savings** implementing hybrid cloud
INDUSTRIE 4.0

MENSCHEN MITNEHMEN

1. Qualifizierung
2. Change Management

Tanjafoehr.com